
R E F E R E N C E G U I D E

InterMail[®]

Version 4.0

Software.com[™]
THE INTERNET INFRASTRUCTURE COMPANY[®]

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Preface

Welcome to InterMail!

The InterMail *Reference Guide* provides in-depth coverage of system architecture and contains comprehensive lists of InterMail configuration options and administrative commands. This document is intended as reference material, rather than as something you should read from cover to cover. It assumes you have a technical background as well as a working knowledge of the Internet and high-end system issues.

This manual is supplemented by the *InterMail Operations Guide*, which provides instructions for the operation of InterMail, as well as the *InterMail Installation Guide*, which offers detailed instructions for installing InterMail.

Overview of the Manual

The content of this manual is organized as follows:

- Chapter 1 provides an overview of InterMail servers and their functions.
- Chapter 2 describes the function and architecture of the Message Transport Agent (MTA), the InterMail server responsible for delivering messages.
- Chapter 3 describes the function and architecture of the Queue Server, the InterMail server responsible for storing mail that cannot be delivered from memory immediately.
- Chapter 4 describes the function and architecture of the Directory Cache Server, the InterMail server responsible for storing and distributing user account information.
- Chapter 5 describes the Message Store Server (MSS), the InterMail server responsible for storing users' e-mail messages.
- Chapter 6 describes the function and architecture of the POP Server, the InterMail server that provides access to Message Stores for standards based POP mail clients.
- Chapter 7 describes the function and architecture of the IMAP Server, the InterMail server that provides access to Message Stores for most standards based IMAP mail clients.
- Chapter 8 describes the function and architecture of the Configuration Server, the InterMail server that distributes updates of configuration information to all the InterMail hosts.
- Chapter 9 describes the function of the Manager Server, the InterMail server that allows you to issue startup and shutdown commands for any InterMail server running on any InterMail host machine.
- Chapter 10 describes the function and architecture of the SNMP Server, the InterMail server that provides the ability to monitor certain events and processes.
- Chapter 11 provides a complete listing of all the InterMail configuration keys. These are the parameters used to set security features, port configurations, auto-reply messages and a wide variety of other InterMail settings and behaviors.
- Chapter 12 provides a complete listing of all the InterMail administration commands.
- Chapter 13 provides a listing of all of InterMail's log events.

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- To assist you in understanding the material presented in this manual, the following conventions have been observed:
- Commands and configuration options are referenced by their proper names.
- Environment variables (set at time of installation) are referenced with a preceding "\$" (e.g., \$spoolDir).
- Commands (and other entries you might type) appear in `monospaced type`.
- Variable names for elements within a command either appear between <angle brackets>.
- Optional entries within a command appear in [square brackets]. No option is required in such a list.
- Optional entries separated by a vertical bar (pipe) as in [option 1 | option 2] are exclusive—you can choose only one item from such a list.
- Optional entries followed by an ellipsis (...) can be repeated. When an ellipsis follows a bracketed set, the expression within the brackets can be repeated.
- {Curly braces} surround a list of options, one of which is required as an argument.
- **Boldface** indicates literal input used in an example

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1

System Overview

The purpose of this chapter is to give you an overview of InterMail's various servers and databases, and explain how they work together to speed message flow through the system. Most of the subjects outlined in this chapter are discussed in far greater detail throughout this manual.

The topics covered in this chapter are:

- InterMail Server
- InterMail Databases
- How messages and other communications flow through an InterMail system

1.1 InterMail Servers

The InterMail system includes ten servers which perform the basic operations required to provide message delivery, message storage, message retrieval, and system management. The architecture of each of the servers is described in subsequent chapters of this manual.

Note: The names in parenthesis are the names of the server processes.

Six of the servers play a direct role in the flow of messages through the InterMail system. They are:

- **The Message Transport Agent (mta)**

The MTA handles the receipt of all incoming messages. For recipients in the local domain, it obtains account information from the Directory Cache Server then hands the message on to the Message Store Server. For recipients in other domains, it sends the message to the remote location over the Internet.
- **The Message Store Server (mss)**

The Message Store Server is responsible for persistent storage of messages in a user's mailbox. It takes delivery of messages from the MTA and services requests for message retrieval from the POP and IMAP Servers. It maintains information about mailboxes, folders, message headers and message structure in the Message Store database, and stores the messages themselves as individual files in the Message File system.
- **The POP Server (popserv)**

The POP Server handles requests for message retrieval from any client that supports the POP3 protocol. It communicates with the Directory Cache Server to validate the user's login name and password, and to obtain the name of the host on which the user's Message Store resides. The POP Server also communicates with the Message Store Server to service message retrieval requests on behalf of the client.

- **The IMAP Server (imapserv)**

The IMAP Server handles requests for message retrieval from mail clients that support the IMAP protocol. It communicates with the Directory Cache Server to validate the user's login name and password, and to obtain the name of the host on which the user's message store resides. The IMAP Server also communicates with the Message Store Server to service message retrieval requests on behalf of the client.

- **The Directory Cache Server (imdircacheserv)**

The Directory Cache Server responds to requests for account information. It has access to the Integrated Services Directory, but services most requests directly from its cache, which contains a local copy of the required account information. The Cache Server interacts with the MTA, as well as the POP Server and IMAP Server, verifying account information and responding with additional data such as the name and location of a subscriber's Message Store. The Directory Cache Server gets regular updates from the Integrated Services Directory, and can read through to the ISD directly to find account information not yet in its cache.

- **The Queue Server (imqueueserv)**

If the MTA cannot deliver a message immediately (as when a remote host is temporarily off line) it passes the message to a Queue Server, which stores it in a spool directory. At regular intervals, the MTA will request stored messages from the Queue Server and attempt to deliver them again. The Queue Server also spools local messages that the MTA cannot deliver immediately (e.g., because they are very large). In this case, the processing of the message will continue from the spool rather than completely in memory, since processing too large a message in memory might leave the network vulnerable to timeouts.

In addition to the six servers that help move messages through the system, there are four servers that play an important role in managing InterMail. Although they do not directly affect message flow, these four servers are mentioned here to help provide an overview of the entire system. The architecture of these servers is also described in detail later in this manual.

- **The Configuration Server (imconfserv)**

Each host on an InterMail system has its own configuration database that contains a complete set of system settings. The Configuration Server runs on a single host and holds a "master" configuration database. The purpose of the Configuration Server is to distribute the latest version of the master configuration database to all the other InterMail hosts.

- **The Manager Server (immgrserv)**

A Manager Server is installed on each InterMail host. The Manager Server allows administrators to log on to a single InterMail host and start or stop any of the servers running on that host or any other InterMail host.

- **The SNMP Server (snmpdm)**

The SNMP (Simple Network Management Protocol) Server allows you to monitor a variety of server behavior and view the information in real-time, without having to develop scripts or parse logs. The SNMP Server interacts with standard SNMP clients, such as HP Openview.

- **The Web Server (httpd)**

The Web Server provides access to account information via web interface.

1.2 InterMail Databases

InterMail also has five important databases that are involved in communications flow through the system.

- **The Message Store Database**

When the MSS receives a message from the MTA, it places a variety of data about that message in the Message Store database. This data includes header information, such as the location of the user's Message Store. The Message Store database also holds information about message status, such as whether or not the user has read a particular message. The actual text of messages is stored in the Message File system.

- **The Message File System**

While the MSS stores information about a message in the Message Store Database, it stores the actual body of the message (along with another copy of the header) in the Message File System. Among other things, this means that the text of a message destined for many recipients is only stored once, saving valuable system resources.

- **The Integrated Services Directory**

The Integrated Services Directory stores users' account information, such as mailbox names and passwords. The Integrated Services Directory also plays a vital role in other Software.com products, such as InterRADIUS and InterLDAP.

- **The Directory Cache**

Each Directory Cache Server maintains its own cached copy of account information from the Integrated Services Database. Because it is much more efficient to retrieve information from the cache than from the ISD, the Directory Cache Server is able to service requests for account information very quickly.

- **The Configuration Database**

The Configuration Database contains a complete set of system settings that govern a variety of system functions as diverse as message routing, mail blocking, Message Store creation, and bounce messages. These settings are controlled through the use of Configuration Keys, which are described throughout the InterMail documentation. For a complete listing of InterMail Configuration Keys, see Chapter 11 of this manual.

a wide variety of things like mail routing, mail blocking, bounce messages and Message Store creation.

1.3 Message Flow through the InterMail System

Understanding individual InterMail components is important, but it is equally important to see the relationships between servers and databases in order to understand how the InterMail system works as a whole.

The diagram that follows illustrates message and communications flow through a sample InterMail system. Your InterMail installation will likely include multiple instances of most of the servers, but in order to simplify the diagram, only the Directory Cache Server is represented more than once.

The large rectangles represent host machines. Again for simplicity's sake, each host is dedicated to a particular mail server function—message delivery, message storage and message access. However, this is not meant to imply a recommended or even a typical InterMail installation. The exact configuration of your system will depend on a variety of factors, such as number of users, average message size, average number of messages handled per day, security considerations, and so forth.

The solid line connectors represent actual message flow, while the broken line connectors indicate the flow of communications between system components.

Note: The servers dedicated to managing the InterMail system are not shown here since they do not play a direct role in message flow.

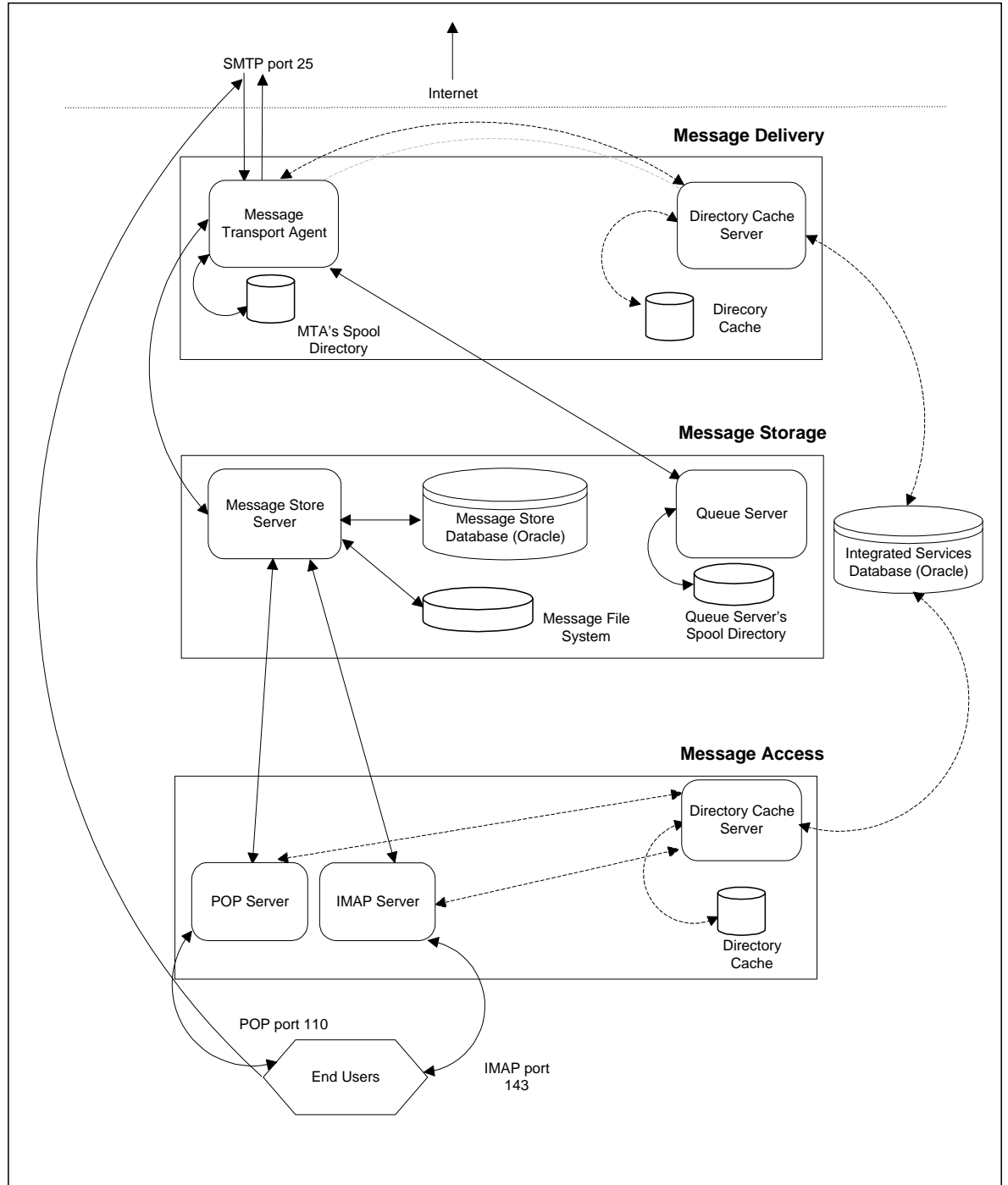


Figure 1 Message and Communications flow in InterMail

InterMail Reference Guide

1. All incoming messages, whether from a local client or another mail server, arrive at SMTP port 25 by default. The MTA listens at this port and accepts messages into the system for processing.
2. The MTA is responsible for initial screening, performing tasks such as dropping connections or blocking mail from unauthorized senders.
3. Once a message is accepted into the system, the MTA determines if it is destined for remote or local delivery.
 - If the message is for remote delivery, the MTA contacts the indicated server and delivers the message there.
 - If the message is for local delivery, the MTA requests account information from the Directory Cache Server. This information includes the local user's mailbox name and the host which the user's Message Store resides. At this point, one of two things happens:
 - If a user's account information is in the Cache Server's cache, the information is immediately returned to the MTA.
 - If the account information is not yet in the cache, the Directory Cache Server reads through the Integrated Services database, retrieves the required information, updates its cache immediately, and returns the desired information to the MTA.
4. Once it has the required account information, the MTA establishes a connection (if one does not already exist) with an MSS on the host machine indicated and sends a request to open the user's Message Store. The MTA then sends the message to be delivered to that Message Store.
5. The MTA usually handles the entire delivery transaction in memory, without writing anything to disk; however, if a message has more than a specified number of recipients, will take longer than a specified time to deliver, is larger than a specified size, or if its intended destination is temporarily unavailable, the MTA does one of the following:
 - It sends the message to the Queue Server, which stores it in its file system for future delivery.
 - If any of the above delivery problems occur and a Queue Server is temporarily unavailable, the MTA can store the message in its own local spool directory and then retrieve it for delivery later on, just as if it had been stored on a Queue Server.

Note: *To prevent message loss, the MTA will not signal acceptance of a message to the sending agent until either successful delivery has been accomplished or the message data has been safely queued.*

6. The MSS is responsible for storing the message data sent by the MTA. Upon receipt of a new message, the MSS writes information to both the Message Store Database and the Message File System. Part of the information written to the Message Store Database is a pointer to file's location in the Message File System. Only after successful completion of these operations does the MSS signal acceptance of the message to the MTA. At this point the MTA is free to delete any temporary files and signal acceptance of the message to the sending server.
7. Local users request message retrieval via a POP or IMAP client. The client contacts POP port 110 or IMAP port 143 (where the InterMail POP and IMAP Servers are listening), and passes the customer's login name and password.
8. The POP and IMAP Servers forward this information to the Directory Cache Server in order to validate the user's identity. The Directory Cache Server checks the user's account information to authenticate the password, and (assuming the password is valid) replies with the user's mailbox name and the name of the host on which the Message Store resides.
9. The POP or IMAP Server connects with an MSS on the host indicated and processes the user's requests. In the case of POP, the user's messages are download to a local machine. In the case of IMAP, the user can either download his/her messages to a local machine, or else work with them directly on the host where they reside.

2

Message Transport Agent (MTA)

The MTA is responsible for delivering incoming — whether it is destined for a local user or a remote recipient. The MTA is a single multi-threaded process that fully supports the SMTP protocol.

When a mail client or another mail server attempts a connection, the MTA accepts the connection and receives incoming messages (it can receive more than one message per connection). The MTA determines if the mail is destined for local or external delivery, then performs those tasks required to complete the delivery operation.

This chapter discusses the MTA in detail and provides information on the following topics:

- Mail flow through the MTA
- Specific tasks performed by the MTA
- Temporary mail storage on the MTA

2.1 MTA Message Flow

The MTA is designed to operate as a stateless process; when a client submits a message to the MTA, the message is either successfully delivered or forwarded to a Queue Server for temporary storage before receipt is signaled to the sending client. The installation and configuration of multiple Queue Servers provides a backup mechanism which supports this behavior. If the MTA cannot communicate with a Queue Servers, the MTA is capable of storing mail in process on its local file system, thereby guaranteeing that mail is never lost.

The flow of messages through the MTA is shown in Figure 2 MTA Message Flow

. Dashed lines represent the flow of messages when the MTA is unable to communicate with a Queue Server, and must store mail in process on its local file system — although this behavior will rarely (if ever) be required.

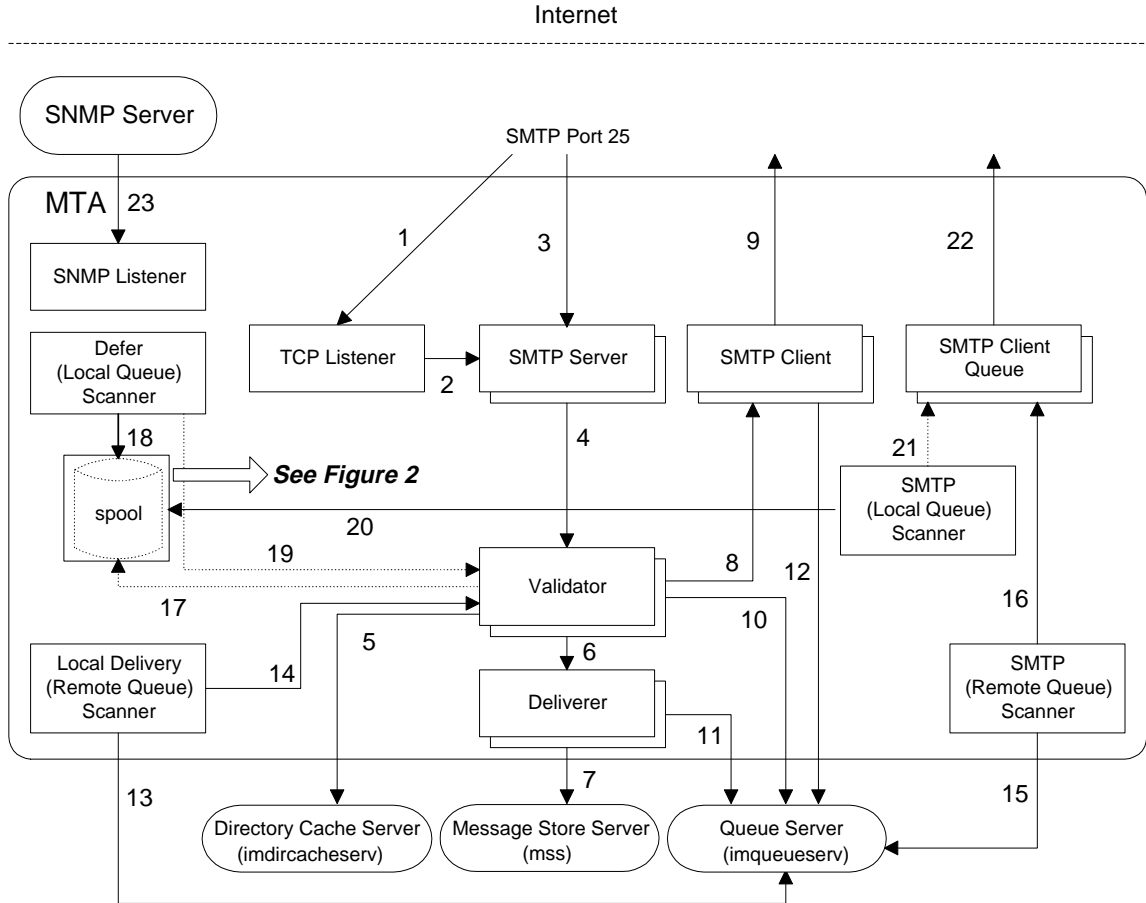


Figure 2 MTA Message Flow

Accepting Mail for Processing

1. The TCP Listener listens for incoming connections on port 25. If the MTA is SSL-enabled, it may alternately listen on port 465. (The port numbers used for SMTP and SSL communication are configurable, but would rarely vary from the well known port numbers established as standards by the RFCs.)
2. The TCP Listener accepts a connection if there is an SMTP Server thread available.
3. The SMTP Server receives the message(s) from the connection and creates InterMail message objects to represent them.
4. The message is handed to a Validator task, which determines if the message is destined for local and/or remote delivery. If the message is local, it will proceed to step 5; if remote, it will proceed to step 8.

Delivering Mail to Local Users

5. For local delivery, the Validator contacts a Directory Cache Server (`imdircacheserv`) to verify the existence of the recipient and to obtain the location of the recipient's mailbox.
6. If the Directory Cache Server returns with valid information, the Validator will pass the message on to the appropriate Deliverer thread.
7. The Deliverer thread contacts the appropriate MSS and attempts to add the message to the recipient's mailbox.

Delivering Mail to Remote Users

8. For remote delivery, the Validator hands the message to an SMTP Client thread.
9. The SMTP Client thread contacts the external mail server and attempts to hand off the message.

Queuing Mail

10. If processing of a message cannot be accommodated entirely in memory within a very brief period of time, the message is passed to a Queue Server for temporary storage. Temporary mail storage is simply a means of insuring against message loss. In most cases, the system continues to process delivery of the message in memory after securing it temporarily to disk.

All incoming messages are subject to temporary storage if they meet one or more of the following criteria:

- the message is larger than the size defined by the `maxDirectKb` configuration key
 - the number of recipients exceeds the limit set by the `maxDirectDelivery` configuration key
 - delivery of the message takes more time than the limit set by the `timeoutServerDelivery` configuration key
11. When the Deliverer thread cannot contact the MSS (because the MSS host is down), the message is sent to the Queue Server.
 12. If a remote mail server is unavailable, the message will be passed to a Queue Server as deferred mail.

Processing Queued Mail

13. The Local Delivery (Remote Queue) Scanner periodically queries the Queue Server, requesting messages that are deferred for local delivery.
14. If the Local Delivery (Remote Queue) Scanner receives deferred messages from the Queue Server, it sends them to the Validator for reprocessing.
15. The SMTP (Remote Queue) Scanner periodically queries the Queue Server for any messages that are deferred for remote delivery.
16. The SMTP (Remote Queue) Scanner passes any messages that have been deferred for remote delivery to the SMTP Client Queue.

For more information about temporary storage of mail on the Queue Server and how it is processed, see Chapter 3 in this manual.

Queuing Mail on the MTA's Local File System

17. If all Queue Servers are unavailable, messages that require temporary storage are housed in the `spool` directory on the MTA's local file system. For information about the directory structure of the `spool` directory, see Section 2.2.

Processing Mail Stored on the MTA's Local File System

18. The Defer (Local Queue) Scanner task starts up periodically and scans the deferred queue on the local file system.
19. If the Defer (Local Queue) Scanner task detects any messages deferred for delivery to local users, it sends those messages to the Validator for reprocessing.
20. The SMTP Local Queue Scanner also periodically queries the local deferred queue.
21. If the SMTP Local Queue Scanner finds messages intended for remote recipients on the local defer queue, it passes them to the SMTP Client Queue for reprocessing.
22. The SMTP Client Queue delivers the deferred messages to the appropriate remote mail host.

Interacting with the SNMP Server

23. The SNMP Listener listens on port 7005 and transmits information on reportable parameters to the SNMP Server.

2.2 Storing Mail in Process on the MTA

“Mail in process” is Queue mail that has been received by an MTA, but not yet delivered to all of its intended recipients. Mail in process is generally stored on the Queue Server, in a directory whose path is typically `$INTERMAIL/queue`. However, in the rare event that all Queue Servers are unavailable, mail that must be stored temporarily is spooled on the MTA's local file system. The structure of these directories on the Queue Server and MTA is identical with the exception that the root for the entire directory structure is called `spool` on the MTA and `queue` on the Queue Server.

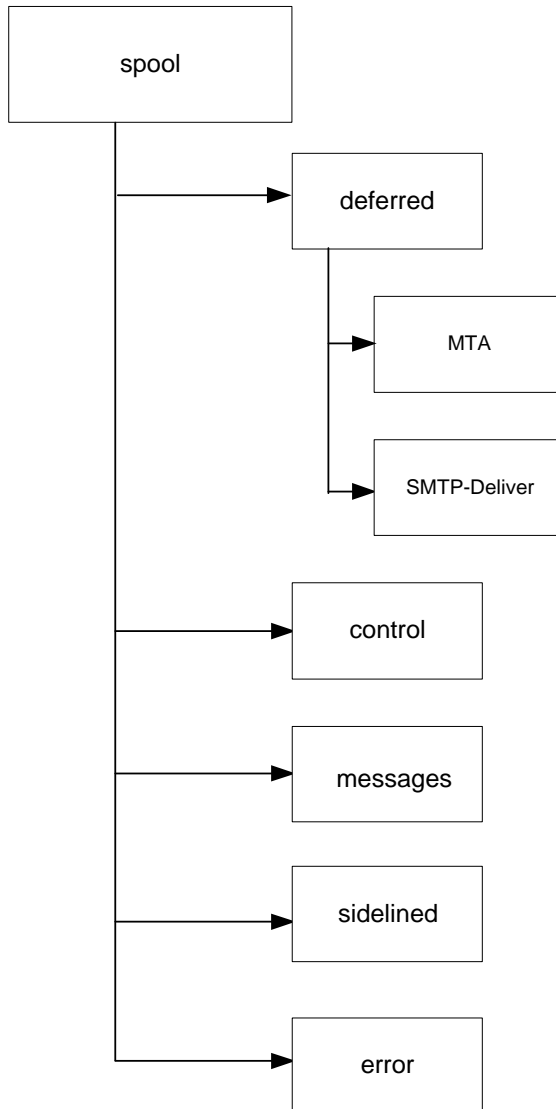


Figure 3 Structure of the spool directory on the MTA

<code>spool</code>	Root directory for “mail in process”
<code>deferred</code>	Contains the MTA and SMTP-Deliver directories which, in turn, contain all deferred mail.
<code>deferred/MTA</code>	Contains deferred messages destined for local delivery.
<code>deferred/SMTP-Deliver</code>	Contains deferred messages destined for outbound delivery.
<code>control</code>	Contains Control files for messages that are deferred because they exceed the maximum message size, maximum number of recipients, or maximum time allowed for direct delivery.
<code>messages</code>	Contains Body and Header files of messages that are deferred because they exceed the maximum message size or number of recipients allowed for direct delivery.
<code>sidelined</code>	Contains mail that is sidelined; the Control, Body and Header files are all stored in this directory.
<code>error</code>	Contains messages that are deferred because of an error condition caused by the message itself (e.g., a problem with the sender or recipient’s address), Control, Body and Header files are all stored in this directory.

For more information about the contents and structure of the `spool` directory and its subdirectories, see Chapter 7 in the *InterMail Operations Guide*.

2.3 MTA Tasks

The MTA consists of the following tasks: TCP Listener, SMTP Server, Validator, Deliverer, SMTP Client, SMTP Remote Queue Scanner, SMTP Local Queue Scanner, SMTP Client Queue, Local Delivery (Remote Queue) Scanner, and Defer (Local Queue) Scanner. These tasks are described in the sections that follow.

2.3.1 Thread Pools

The SMTP Server, SMTP Client, SMTP Client Queue, Validator, and Deliverer tasks are controlled by pools of threads. Each pool contains numerous threads. The exact number of threads per pool is configurable; the value chosen depends upon hardware and network connectivity considerations.

2.3.2 TCP Listener

The TCP Listener task is a single thread that listens for incoming connections on SMTP port 25. It will accept a connection if there are SMTP Accept threads available to service it *and* if the connection does not violate any connection dropping policy.

2.3.3 SMTP Server

The SMTP Server receives the message(s) from the connection and creates InterMail message objects to represent them. The SMTP Server performs the checks necessary to enforce mail blocking and relay prevention policies. Those message objects that pass this initial screening are sent to the Validator for further processing.

The SMTP Server is also responsible for passing message files to the Queue Server if temporary storage of mail in process is required.

Writing Control, Header, and Body Files

Messages can be processed in memory without requiring temporary storage provided one or more of the following configurable parameters are not exceeded: the message is less than 100K in size, the message has less than 15 recipients, and the delivery process takes less than 5 seconds. If any of these parameters is exceeded, the SMTP Server process will write a Control, Body, and Header file for the message. These files will be sent to the Queue Server to be temporarily stored and then reprocessed at a later time.

The SMTP Server process generates unique filenames for Control, Body, and Header files. They are of the following format

```
<date>.<sequence-string><pid>.<mtahost>@<hello-hostname-or-ip>-  
[Control|Header|Body]
```

The prefix of each filename consists of a time stamp, a 3-letter count of the number of messages received (the first is AAA, the next is AAB, etc.), the process id (pid), the MTA hostname, and the HELO/EHLO hostname (if it appears legitimate) or the IP address, assuming that one or the other exists. The prefix is followed by -Control, -Body, or -Header for Control, Body and Header files respectively.

The HELO/EHLO hostname should conform to RFC 821. It is considered legitimate if both the following conditions are met:

- the hostname has at least one "." in it
- the first character is not a '[' as in [my.ip.address]

For example,

```
19980601171253.AHA6542.mta1@pluto.software.com-Body
```

If the HELO hostname is not considered legitimate, the IP address of the connection is used in the filename.

For example,

```
19980601171253.AHA6542.mta1@[10.2.6.98]-Body
```

If neither the HELO hostname or IP address exists (e.g., if it is an internally-generated bounce message that is stored in the errors directory because it cannot be delivered), the @<hello-hostname-or-ip> is omitted from the filename.

To guarantee unique filenames in cases where one Queue Server is serving multiple MTAs on different machines, the MTA's host name is also included in the filename. The <mtahost> is not fully qualified.

2.3.4 Validator

The message is handed from the SMTP Server to the Validator. The Validator examines the recipients of the message to determine if they are destined for a local domain or not. The Validator determines which recipients are local by checking the domain in their address against a list of domains maintained in the Integrated Services Directory.

At installation, a default domain is established via the `defaultDomain` configuration key. For example, to establish `software.com` as the default domain, the following entry would be made:

```
mta/defaultDomain: [software.com]
```

Setting a default domain in the configuration database is a separate procedure from adding a domain to the Integrated Services Directory. See the *Integrated Services Directory Reference Guide* for more information on creating and modifying domain entries.

Local Delivery

If a message is to be delivered locally, the Validator contacts the Directory Cache Server (`imdircacheserv`) to determine the location of each recipient's mailbox. In addition to being delivered, a message may be bounced, forwarded, or deferred. In some cases, mail may be blocked for local delivery (See the Mail Blocking discussion immediately following this section).

The Validator will bounce a message if the recipient is not found by the Directory Cache Server or if the account status is `deleted`. It will forward mail if the Directory Cache Server returned forwarding information. The Validator will defer mail if the Directory Cache Server is unavailable or if the account is in maintenance mode.

When the Validator detects a forwarding address in a message, this address is appended to the existing recipient list of that message.

For a message destined for delivery to a local message store, the Validator thread finds out which MSS host to contact from the Directory Cache Server. The Validator passes the InterMail message to the appropriate Deliverer thread.

The Validator can handle a message addressed to multiple recipients. It queries the Directory Cache Server for each recipient, then splits the message up into as many copies as necessary. A copy is required for each separate action. For example, a message has four recipients: one of which does not exist and three of which are required for local delivery. Of those three local recipients, two are located on one MSS host, the third on another. The Validator would split the original message into three separate items. One would be the message to be bounced, the second would be for the two recipients on the same MSS host, and the third would be for the recipient on the other MSS host.

Messages can be blocked system-wide or per-account instead of dropping the connection completely. In addition, custom mail filters can be run against all incoming mail, specifying that the mail be rejected, bounced, sidelined, forwarded, thrown away, or delivered normally, based on its content. See Chapter 4 in the *InterMail Operations Guide* for more information on configuring mail blocking and mail filtering.

2.3.5 Deliverer

Each Deliverer thread that is created connects to an MSS on a particular host on a particular port number. This thread keeps open the connection to the MSS process during its entire lifetime and will exit when it cannot contact its MSS (after deferring any mail it was currently trying to deliver).

If contact with an MSS was lost, the next time delivery is tried (after 15 seconds have passed), an attempt to reconnect will be made. Once it succeeds, the host:port combo will be marked “up” and further mail will be delivered immediately. The deferred mail is left in the deferred queue into the next defer scan (at a configurable interval; 10 minutes is the default).

The Deliverer thread tries to deliver the message to the appropriate MSS. If the MSS realizes that another MSS process on that machine has the mailbox open, it rejects the message, sending back an error status which specifies the MSS that has it open. The InterMail message is then handed to the Deliverer thread for that host:port combination (it is created if it doesn’t already exist), and the message is delivered.

With multiple recipients things get a bit more complicated. When delivering to multiple mailboxes, some of the mailboxes may be loaded on various MSS hosts, so we have to route each recipient to the proper MSS by splitting the message up into as many copies as necessary. In this case, each InterMail message would differ only in the recipient field and in the MSS port number to use.

If the MSS returns an error that a mailbox does not exist, the Deliverer will create the mailbox (if the `createsMboxes` configuration key is set to `true`) and attempt to redeliver the message. If mailbox creation is not allowed, the message will be deferred.

Upon successful delivery of a message to all recipients, the associated Control, Header, and Body files are deleted.

The Deliverer thread will bounce a message if the mailbox is over quota or if delivery to the mailbox is disallowed.

External Delivery

A message destined for external delivery is called a relay. If relay is not allowed (see Mail Relay Prevention section that follows), the SMTP Server will reject the message from the SMTP connection. If relay is allowed, the SMTP Validator splits the recipients up by domain (an SMTP Client thread will be generated for each one). A new Control file is created per domain and there will be a “Host-To:” line added in the Control file that specifies the domain we need to deliver to. Thus there will only be one destination host per Control file.

The Header and Body filenames need to match, so links are created to the new names and the originals are removed. An SMTP Client thread will be spawned for each one separately. Since we have `<n>` Header, Body, and Control files for `<n>` destinations, the SMTP Client can delete the files when finished without worrying if another thread is sharing the Header or Body.

2.3.6 SMTP Client

For remote delivery, the Validator hands the message to an SMTP Client thread. The SMTP client thread will contact the external site and attempt to hand off the message. If the site is unavailable, the message will be deferred.

If the delivery succeeds, the message is deleted. If the delivery fails, the SMTP Client will move the Control file into the deferred directory on the Queue Server based on the domain name of the recipient (first creating the SMTP-Deliver and domain directories as necessary):

```
$queueDir/deferred/SMTP-Deliver/<destination domain name>
```

For example:

```
$queueDir/deferred/SMTP-Deliver/notanswering.com
```

SMTP Client will defer a message whenever it has a transient failure while delivering a message to a remote mail system. These include time-outs while looking up the domain in the DNS, “Server Failed” responses from the DNS, a failure to connect to the system, any 400-level response during the SMTP conversation, or a time-out during the SMTP conversation.

Additional messages intended for that domain will accumulate in the same directory. Once a domain has a queue, all subsequent messages destined for that domain are immediately queued without first trying to deliver them. They will be retried during the next queue run.

This behavior can be overridden via two configuration keys: `AlwaysQueue` and `AlwaysTryFirst`

The `AlwaysQueue` key determines whether outbound SMTP messages are delivered immediately upon receipt, or if they are queued and only delivered during queue processing. If set to “false” (which is the default value), SMTP-Deliver will attempt to deliver the messages first rather than put them into the deferred area.

When the `AlwaysTryFirst` key is set to `true`, the SMTP Server will attempt to deliver mail for a domain even if there is a queue directory present for it. It will attempt to deliver all subsequent messages immediately, while other mail that is already in the queue for that domain will remain there until the next scheduled delivery time.

Note: In the event that both `AlwaysQueue` and `AlwaysTryFirst` are set to “true”, `AlwaysQueue` will override the value of `AlwaysTryFirst`.

The SMTP Client will generate an error for a message if the destination host of the recipient is non-existent or if the host responds with a 500-level code during the SMTP conversation. SMTP Client will write to the Control file to indicate the error and notify the Error-Handler. The action taken (e.g., a bounce message returned to the sender) is determined by the Error-Handler.

2.3.7 SMTP Remote Queue Scanner

The SMTP Remote Queue Scanner periodically checks to see if any messages have been deferred to the Queue Server destined for delivery to external sites.

2.3.8 SMTP Local Queue Scanner

The SMTP Local Queue Scanner periodically checks to see if any messages have been deferred to the local file system of the MTA intended for delivery to external sites. Typically, this task will not find any messages on the local file system, as the default behavior of the MTA is to pass deferred mail to the Queue Server for temporary storage.

2.3.9 SMTP Client Queue

The SMTP Client Queue accepts any deferred messages, found by the SMTP Remote Queue Scanner or SMTP Local Queue Scanner and delivers them to external sites.

2.3.10 Local Delivery (Remote Queue) Scanner

The Local Delivery (Remote Queue) Scanner periodically checks to see if any messages intended for local delivery have been deferred to the Queue Server.

2.3.11 Defer (Local Queue) Scanner

The Defer (Local Queue) Scanner periodically checks to see if any messages intended for local delivery have been deferred to the local file system of the MTA. Typically, this task will not find any messages on the local file system, as the default behavior of the MTA is for the Local Delivery (Remote Queue) Scanner to check for deferred messages on the Queue Server.

2.3.12 Error Handler

In the MTA, the Validator, Deliverer, and SMTP Client tasks may bounce mail. The main reasons that mail may bounce are:

- the remote host is not found
- a remote server rejected a recipient or message
- the account is disabled
- no such user was found
- mailbox is over quota

The steps taken when bouncing mail include:

1. Set the recipient (the sender of the original message).
2. Link the Body and Header files.

3. Create a new Control file, adding the lines:
 - Error: Use by the Error-Handler to determine the correct action to take. The error handler looks up the error in the configuration database to see what action needs to be performed (either bounced, logged, and/or held) for that error and then takes the appropriate action.
 - Error-Text: Appended to the bounce message (e.g., “No such user”).
4. Notify the Error-Handler.

The process that generates the error (e.g., the MTA) puts extra lines in the Control file to indicate what the Error Handler should do, along with the error message text. These are the “Error:” and “Error-Text:” fields, respectively. The Error Handler looks up the error in the configuration database to see what action needs to be performed (either bounce, log, or hold) for that error and then takes the appropriate action.

If a bounce is generated, the Error-Handler pulls the canned error message and appends the Error-Text from the Control file. It uses this text as the Body of the bounce message and includes the original message. Once a bounce message has been generated, the Error-Handler will remove the original message. It then routes the message to the Validator for delivery back to the sender. A log is written when the log option is set. The message is moved to the dead letter area (the errors directory) if the hold option is set. There can be more than one of these options set, but some combinations obviously don’t make sense (hold and return, for example).

What happens if a bounced message fails?

The Header, Body, and Control files are moved into the errors directory in \$queueDir (or \$spoolDir under rare circumstances when the MTA is operating in a “stateful” mode) where they will sit until they are processed or deleted by the administrator.

When/why would a letter become “dead”?

A dead letter is one that couldn’t be delivered to the specified recipient(s), and the bounce message couldn’t be delivered back to the sender. (Many of these are probably the result of the sender having a misconfigured mail client that omits the domain in the sender’s address.)

What happens when the smtpAcceptNumThreads is reached?

For the case of SMTP Accept, the TCP Listener will ignore the SMTP port while the maximum number are running, so additional clients will queue up in the listen queue until that gets full and any more are refused. For SMTP-Deliver and Error-Handler, a list of messages that are waiting to be processed is kept, and when a process is freed up, another is spawned to work on the next message on the list.

2.4 MTA Configuration Keys

The following configuration keys are useful for controlling or modifying the behavior of the MTA. For a further discussion of these keys (including default values), see Chapter 11 in this manual.

<code>adminPort</code>	Sets an administrative port for SNMP activity.
<code>allowEtrn</code>	Enables/disables support for the SMTP command ETRN.
<code>allowExpn</code>	Enables/disables support for the SMTP command EXPN.
<code>allowHelp</code>	Enables/disables support for the SMTP command HELP.
<code>allowQsnd</code>	Enables/disables support for the SMTP command QSNQ.
<code>allowVrfy</code>	Enables/disables support for the SMTP command VRFY.
<code>autoreplySuppressList</code>	Specifies the addresses that are exempt from auto-reply features.
<code>blockAddresses</code>	If set to <code>true</code> , the SMTP server checks the entire MAIL FROM: address against the list in <code>blockTheseAddresses</code> ; if a match is found, the server rejects and logs each message that the client attempts to deliver.
<code>blockConnections</code>	If set to <code>true</code> , the SMTP server checks the IP address of the client against the list of <code>blockTheseIPs</code> ; if a match is found, the server rejects and logs each message that the client attempts to deliver.
<code>blockDomains</code>	If set to <code>true</code> , the SMTP server checks the domain portion of the MAIL FROM: address against the list in <code>blockTheseDomains</code> ; if a match is found, the server rejects and logs each message that the client attempts to deliver.
<code>blockLocalNoAcct</code>	If set to <code>true</code> , the SMTP server checks MAIL FROM: addresses that appear to be in a local domain; if these addresses are not in the directory then messages are blocked.
<code>blockPerAccount</code>	If enabled, the SMTP Server checks the MTA Filtering Class of Service option on a per-account basis and apply the configured Mail Blocking rules for those users that have this option enabled.

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<code>blockReplyCode</code>	The standard SMTP error code that is returned in response to RCPT TO: when a message is being blocked.
<code>blockReplyText</code>	Text string that is returned in response to RCPT TO: when a message is being blocked.
<code>blockTheseAddresses</code>	A list of complete addresses that are to be blocked by the SMTP server.
<code>blockTheseDomains</code>	A list of domain names that are to be blocked by the SMTP server.
<code>blockTheseIPs</code>	A list of IP addresses that are to be blocked by the SMTP server.
<code>blockTheseUsers</code>	A list of usernames (as shown in the RCPT TO: header) that are to be blocked by the SMTP server.
<code>blockUsers</code>	The SMTP server checks the user portion of the MAIL FROM: address against the list in <code>blockTheseUsers</code> ; if a match is found, the server rejects and logs each message that the client attempts to deliver.
<code>bounceOnQuotaFull</code>	Turns off bouncing for users when they have exceeded their mail quota. Mail will be deferred until space is available.
<code>cacheLimitInKb</code>	Defines the maximum size in kilobytes of the MTA cache.
<code>checkAuthentication</code>	Determines how clients are to authenticate themselves based on AUTH LOGIN extension.
<code>clientConnectionLimitTable</code>	Defines an optional list of restrictions for simultaneous SMTP connections, on a per IP or per IP subnet basis.
<code>clientHeaps</code>	Controls the number of thread heaps used by the MTA.
<code>createsMboxes</code>	Specifies whether to create mailboxes when delivering to a mailbox that doesn't exist. Used for on-the-fly creation.
<code>deferProcessInterval</code>	Sets the length in time between retry intervals when the MTA sends a message to the Queue Server because it cannot be delivered immediately.
<code>dropConnections</code>	Enables/disables all connection dropping features.
<code>dropMaxMessageRCPTs</code>	Specifies the number of recipients that are allowable before the connection will be dropped; when set to "0," there is no maximum number of recipients specified.

<code>dropRCPTsReplyText</code>	Text string that is displayed when a connection has been dropped.
<code>dropTheseIPs</code>	List of IP addresses that are to be refused when attempting to open an SMTP connection.
<code>fileDescriptors</code>	Sets the maximum number of file descriptors used by the MTA.
<code>incomingMailFilter</code>	Defines a set of filtering rules to use for incoming mail.
<code>localFallback</code>	Determines what to do if a client attempts to deliver a message while the Queue Server is down; either store temporarily on the MTA host or refuse to accept.
<code>mailRoutingHost</code>	Defines a host to which all mail is routed if it is addressed to a domain that is not defined as a local or non-authoritative mail domain.
<code>mailRoutingTable</code>	Sets a series of routing hosts.
<code>maxDirectDelivery</code>	Sets the maximum number of recipients for a message that will be delivered directly from the MTA to an MSS.
<code>maxDirectKb</code>	Determines the maximum size of a message the system is willing to accept from a client (via SMTP), specified in kilobytes.
<code>maximumMtaHops</code>	Causes the SMTP Accept process to reject any message that has been relayed more than that number of times (determined by counting the number of Received headers in the message).
<code>maxNullSenderRCPTs</code>	Sets the maximum number of recipients allowed when the return address is from an empty address.
<code>maxQueueTimeInDays</code>	Sets the maximum number of days that a message will be kept in the queue.
<code>mimeParseMode</code>	Enables or disables MIME parsing of messages.
<code>minFreeDiskSpaceInKb</code>	The amount of disk space that must be left free on the MTA.
<code>msgValidatorNumThreads</code>	Controls threads for the Validator task.
<code>msgDelivererNumThreads</code>	Controls threads for the Deliverer task.
<code>mtaSpool</code>	Sets the location of the MTA <code>spool</code> directory.
<code>outboundDeferProcessInterval</code>	Period between processing deferred mail, represented in seconds.
<code>rejectSenderBadDomain</code>	Sets whether a sender's mail should be rejected because of a bad domain.

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<code>rejectSenderIpDomain</code>	Sets whether a sender's mail should be rejected because an IP address has been specified as a domain.
<code>rejectSenderNoDomain</code>	Sets whether a sender must specify a mail domain.
<code>relayDestAllowList</code>	Destination domains that can be relayed to by those members specified by the relay policy.
<code>relayDestDenyList</code>	Destination domains that are restricted for relay by those members specified by the relay policy.
<code>relayHost</code>	A relay hostname that the MTA will use to relay its mail.
<code>relayLocalDomainsOk</code>	If <code>relaySourcePolicy</code> has been set up with an "allowListed" list, this key will, if set to <code>true</code> , set the policy for relaying when a sender has a local domain in their address.
<code>relayLocalMustExist</code>	If set to <code>true</code> , when the sender's domain is a local domain, the MTA checks the directory to verify that the sender has a valid account. If there is no account, then relaying will be restricted. (overrides <code>relayLocalDomainsOk</code>)
<code>relayMaxRCPTs</code>	The maximum number of recipients that mail will be relayed to when the sender is restricted; when set to "0," there is no maximum number of recipients specified.
<code>relayNullRestricted</code>	If <code>relaySourcePolicy</code> has been set up with a "denyListed" list, this key will restrict any relaying for mail sent from the empty address.
<code>relayReplyCode</code>	Standard SMTP error code that is returned in response to RCPT TO if <code>relayMaxRCPT</code> value has been reached.
<code>relayReplyText</code>	Error text that is returned in response to RCPT TO if <code>relayMaxRCPT</code> value has been reached.
<code>relaySourceLocalIpList</code>	A list of local IP addresses to which the relay policy set up in <code>relaySourcePolicy</code> will be applied.
<code>relaySourceDomainList</code>	A list of domain names to which the relay policy set up in <code>relaySourcePolicy</code> will be applied.
<code>relaySourcePolicy</code>	Defines the relay policy to be enforced by InterMail.
<code>relaySourceRemoteIpList</code>	A list of remote IP addresses to which the relay policy set up in <code>relaySourcePolicy</code> will be applied.
<code>requireSecureAuth</code>	Specifies SMTP authentication is enabled and that clients must authenticate themselves with SMTP authentication, or their mail will be rejected.

<code>rewriteDomains</code>	Specifies, along with <code>rewritePrimary</code> , how addresses are rewritten.
<code>rewriteGatewayHeaderList</code>	Specifies a list of headers that need rewriting on outgoing mail when relaying to gateways that require header rewriting.
<code>rewriteHeaderList</code>	Sets a list of headers that need rewriting on incoming mail.
<code>rewriteMaxMtaHops</code>	Specifies the number of MTA hops during which a header will be rewritten.
<code>rewriteOnlyLocal</code>	Determines how message headers are rewritten, based on their sender address.
<code>rewritePrimary</code>	Specifies, along with <code>rewriteDomains</code> , how addresses are rewritten.
<code>rewriteSaveOrig</code>	Saves the original header in a new X-header.
<code>runDir</code>	Specifies the directory that contains the MTA executable.
<code>sidelineMessages</code>	Sets the policy for Message Sidelining.
<code>sidelineNullToMany</code>	Specifies that messages that arrive from the empty address, <code><></code> , are sidelined if they are destined for more than a single recipient.
<code>sidelineNumRCPTs</code>	Specifies the number of allowable recipients for a single message before it is sidelined as possible spam.
<code>sidelineNumRCPTsPerConnection</code>	Sets the number of recipients before sidelining messages on a per-connection basis.
<code>smtpAcceptNumThreads</code>	Controls threads for the SMTP Server task.
<code>smtpDeliverNumThreads</code>	Controls threads for the SMTP Client task.
<code>smtpQueueProcessNumThreads</code>	Controls threads for the SMTP Client Queue task.
<code>smtpQueueBucketCount</code>	Controls the number of buckets used in the <code>deferred/SMTP-Deliver</code> directory.
<code>smtpPort</code>	Sets the standard SMTP Port.
<code>sslCacheAgeSeconds</code>	Defines the lifetime in seconds of an SSL session cache entry.
<code>sslCacheBucketLen</code>	Defines the maximum number of entries in each bucket of the SSL session cache.
<code>sslCacheBucketNum</code>	Defines the number of buckets in the SSL session cache.
<code>sslCertChaininPathandFile</code>	Specifies the name of a file containing a private key and certificates.

<code>sslCertPassword</code>	Name of the password used to decrypt the server private key.
<code>sslSMTPPort</code>	Sets an alternate SMTP Port for secure transmissions.
<code>sslUseSessionCache</code>	Defines whether or not to use the SSL session cache.
<code>stateless</code>	Specifies whether the Queue Server or the local file system of the MTA will be used to defer messages.
<code>timeoutClientGreet</code>	Amount of time SMTP-Deliver will wait for the initial 220 response from the SMTP server.
<code>timeoutClientHelo</code> <code>timeoutClientMailFrom</code> <code>timeoutClientRcptTo</code> <code>timeoutClientData</code> <code>timeoutClientRset</code> <code>timeoutClientQuit</code>	Specify how long the MTA will wait for a response to the HELO, MAIL, RCPT, DATA, RSET, and QUIT commands, respectively.
<code>timeoutClientDataSend</code>	Amount of time it will wait between sending message data packets.
<code>timeoutClientDataDot</code>	Amount of time it will wait for a response to the final '.' after sending a message.

2.5 Logging

All the logging configuration keys are common to the entire InterMail system and are therefore found under `/*/common` in the configuration database. The values can be overridden for the MTA components only by setting the values under `/*/mta`. For more general information on InterMail logging procedures, please see Chapter 8 in the *InterMail Operations Guide*.

Each MTA process will create normal logs which report activity as it is happening and statistics logs which contain the following information:

- the number of current SMTP connections
- the total number of SMTP connections
- the number of received messages
- the number of bounced messages
- the number of deferred messages
- the number of processed messages
- the number of delivered messages
- the received volume of mail (the sum of the messages' sizes)
- the number of forwarded messages
- the number of autoreplied messages
- the amount of memory used

The log files are differentiated by their file suffix of either .log or .stat.

Additionally, the MTA may write a trace file (with a file suffix of .trace) which is used for debugging and diagnostic purposes. Debugging output is only available if the software is compiled with the debugging enabled. Diagnostic output is always available. A particularly useful diagnostic for the MTA is seen by setting the variable status=<number of seconds>. This causes a status line to be printed at the interval specified. The status line contains:

- a “+” to indicate values have incremented or a space to indicate no change since last status line.
- I-number of messages processed
- M-number of messages delivered
- B-number of messages bounced
- D-number of messages deferred
- [amount of memory used or “no limit”]
- R=MsgMaker: number of queued, working, authorized, and free threads
- V=Validator: number of queued, working, authorized, and free threads
- M=MSSClient: number of queued messages; number of working, authorized, and free threads

3

Queue Server

The Queue Server is responsible for the temporary storage of messages which can not be processed immediately by the MTA. The Queue Server communicates with MTA hosts and the local file system of the Queue Server, listening for requests.

When a connection occurs from the MTA to the Queue Server, the Queue Server accepts files from the MTA and stores them in the appropriate location (based on the reason for deferral). When the MTA requests messages for reprocessing, the Queue Server will move the Control files for requested messages into the `control` directory and send these requested Control files to the MTA. The MTA will then read all Body and Header files and send them to the appropriate task for delivery.

This chapter provides information on the following topics:

- Mail flow through the Queue Server
- Handling and processing deferred mail for remote and local delivery
- Queue Server Configuration Options and statistics

3.1 Queue Server Message Flow

When a message needs to be stored temporarily, it is sent from the MTA to the Queue Server. The Queue Server accepts the message and notifies the MTA that it has accepted the message. It then listens for reprocessing requests from the MTA.

The flow of messages through the Queue Server is shown in Figure 4 Message Flow.

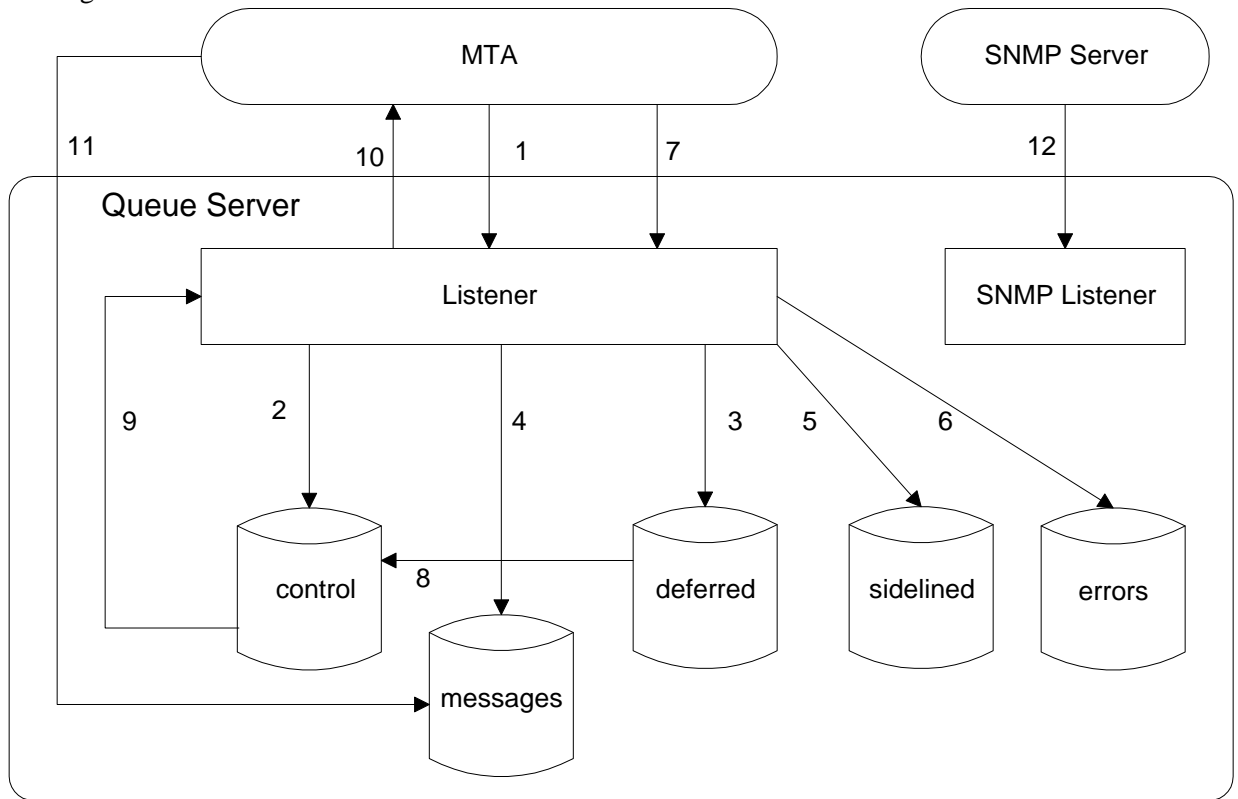


Figure 4 Queue Server Message Flow

1. The MTA passes a message that needs to be secured, is undeliverable, or has been deferred for local or remote delivery to the Listener.
2. If a message needs to be secured, the Listener passes the Control file to the `control` directory and puts Body and Header files in the `messages` directory.
3. If a message is deferred for local or remote delivery, the Listener passes the Control file to the `deferred` directory and creates sub-directories for the control based on its destination as local or remote. If remote, a domain queue will be created.
4. Any associated message Body and Header files are written to the `messages` directory.
5. If a sidelining policy has been established and a message violates this policy, the message that violates this policy (the control, body, and header files) will be moved to the `sidelined` directory.
6. Messages that could not be delivered by the MTA for any reason are sent to the `errors` directory on the Queue Server.
7. At regular, configurable intervals, the MTA requests work from the Queue Server.
8. When the MTA requests work from a specified deferred queue, a configurable number of Control files are moved to the `control` directory and are available for reprocessing.
9. In reprocessing messages that have been secured or have been deferred, the Listener accepts Control files from the `control` directory.

10. After the Listener has received Control files from the `control` directory, it sends these files to the MTA.
11. The MTA retrieves the Body and Header files relating to the Control files gathered in Step 10; these files are then reprocessed by the MTA.
12. The SNMP Listener listens on port 7004 (or another configured port number) and transmits information on reportable parameters to the SNMP Server.

3.2 Message Deferral via the Queue Server

The Queue Server handles deferred messages and the reprocessing of all messages that need to be secured. The Queue Server is also responsible for the storage of messages that can not be delivered.

Note: As noted in Chapter 2, under some unusual circumstances, it is possible for the MTA instead of the Queue Server to store deferred messages on its local file system.

3.2.1 Local Message Deferral

Deferring Local Mail

Local messages are deferred for various reasons by the Validator and the Deliverer.

The Validator may defer messages for any of the following reasons:

- the mailbox is in maintenance mode
- the Directory Cache Server is down

The Deliverer may defer messages for any of the following reasons:

- failure to connect to the MSS
- MSS goes down in the middle of delivery
- auto-reply fails
- quota is full and the `bounceOnQuotaFull` configuration key is `false`
- an error from the MSS is received when creating a message
- mailbox creation is turned off and the mailbox does not exist

Processing Local Mail

Once every queue processing interval, defined by the `outboundDeferProcessInterval` configuration key, the Local Delivery (Remote Queue) Scanner checks to see if an MTA subdirectory exists on the Queue Server.

```
$queueDir/deferred/MTA
```

If this directory exists, the Local Delivery Remote Queue Scanner receives deferred messages from the Queue Server and passes them to the Validator on the MTA for reprocessing.

3.2.2 Remote Message Deferral

Deferring Remote Mail

Remote messages are deferred for various reasons by the SMTP Client threads.

The SMTP Client may defer messages for any of the following reasons:

- remote SMTP host down
- remote SMTP host temporarily unable to process a recipient or message
- MX lookup failure

When deferring a message, it is sent to the Queue Server and a new Control file is generated and placed in the `control` directory, which contains a textual description of the error that caused to the message to be deferred. (This is just for humans to look at; the text isn't actually used for anything.)

The original Header and Body files are sent to the `messages` directory and kept around until all processing of the message is complete. Linked copies of the Header and Body files are made. This is necessary because the message might be being processed in multiple places in parallel in the MTA. Plus, a message may have multiple recipients, with individual messages that succeed or are deferred for different reasons, so the message may have to be split when deferring.

When sent to the Queue Server, the Control file is moved to the following directory:

```
$queueDir/deferred/SMTP-Deliver/<server>
```

and identified by the actual server process, `<server>`, that caused the deferral. The Header and Body files stay in one of the buckets in:

```
$queueDir/messages
```

If the message has already been processed by the Validator, a defer state code is written to the Control file which indicates whether delivery or auto-reply is the ongoing operation on this message. This is necessary in case delivery succeeds but auto-reply needs to be deferred until later. When the message is processed later, the delivery should not be re-attempted, only the auto-reply.

Processing Remote Deferred Mail

Once every queue processing interval, defined by the `outboundDeferProcessInterval` configuration key, the SMTP Remote Queue Scanner will check to see if an `SMTP-Deliver` subdirectory exists on the Queue Server.

```
$queueDir/deferred/SMTP-Deliver
```

If this directory exists, one SMTP Queue Client thread is started per defer queue.

The SMTP Queue Client establishes a connection to the remote mail server and all deferred messages are sent. These threads can run for extended periods of time, so many of them can be running in parallel, working on different parts of the queue.

1. The SMTP will attempt to lock the current domain. If that fails (because it is already locked by another thread), it will ask the queue client manager for another domain to work on.
2. When it obtains a lock on a directory, it will read the directory to find all the control files.
3. It will then do a send of all messages in that directory to the domain for that directory, in a single TCP session. If that fails (all servers down, too busy, etc.), it will unlock the directory and ask its manager for another domain.
4. If it succeeded, it will remove the domain directory, and ask for another domain.

Note: If there are multiple messages in a given deferred domain directory, it is possible for some of them to be successfully sent, while others fail (possibly insufficient room for all of them, or various other problems). If this happens, the ones successfully delivered are removed, and the ones that failed are left in the directory for further attempts at delivery.

The SMTP Remote Queue Scanner re-attempts delivery based on the `queueRetryInterval` configuration key by moving the control file back to one of the bucket directories in

```
$queueDir/control
```

and reprocessing it. The default defer period is set to 10 minutes.

The `maxQueueTimeInDays` and `minQueueIdleTime` configuration keys determine how to process locally deferred messages.

The `maxQueueTimeInDays` configuration key specifies the maximum time in days a message is to be held in a deferred state before returning it to the sender. As each deferred message is processed, SMTP Queue Client checks its date to see if it is more than the maximum number of days old. If so, the message is considered to be “undeliverable.” The Queue Client will then write to the control file to indicate the error and notify the Error-Handler. The action taken (e.g., a bounce message returned to the sender) is determined by the Error-Handler. The error for this case would be “SMTP-Deliver:QueuedTooLong,” and the Error-Text should indicate the destination host and length of time queued.

The `minQueueIdleTime` key specifies how long in seconds we should ignore a host’s queue after a failed attempt to connect to it before retrying it. This allows other SMTP Queue Client threads to skip over recently tried queues that are likely to fail.

3.2.3 Undeliverable Mail

Messages that cannot be delivered are processed by the Validator in the MTA and generate a bounce message which is delivered to the sender. Once the bounce message is generated and sent, the undeliverable mail is sent to the `errors` directory on the Queue Server. These messages remain in the `errors` directory until they are manually checked, fixed and reintroduced into the system, or are deleted.

3.3 Queue Server Journaling

All queuing activity is journaled. Queue journaling is a mechanism for recovery in the event of a loss of mail in process held in the `queue` directory.

The journal entry includes the date and time the entry took place, the type of operation (message addition), the location and name of the message file, and the entire content of the new message. When the garbage collector runs and deletes a message, it also makes an entry in its journal file. In this case the operation recorded is a message delete. The message content is not included in this entry as it is not necessary.

Queue journal files have a `.queue` extension and are stored in the directory defined in the configuration key `journalDir` (set at time of installation).

The size and time of journal rollover are controlled via the configuration keys `journalRollMbytes` and `journalRollHours`, respectively.

3.4 Queue Server Configuration Keys

The following configuration keys are useful for controlling or modifying the behavior of the Queue Server. Some of these keys are listed in the MTA chapter too, as they affect both the MTA and the Queue Server. For a further discussion of these keys (including default values), see Chapter 11 in this manual.

<code>queueDir</code>	The location of the Queue Server.
<code>maxQueueTimeInDays</code>	The maximum number of days that a message will be kept in the Queue Server.
<code>minQueueIdleTime</code>	The minimum time (in seconds) between attempts to deliver queued mail to a given domain.
<code>queueRetryInterval</code>	The interval at which the MTA retries connections to the Queue Server.
<code>queueServerHosts</code>	The list of colon-separated Queue Servers to contact when the system is in stateless mode.
<code>queueServerConnections</code>	The number of threads from the MTA to the Queue Server.
<code>adminPort</code>	The port for the SNMP Listener.
<code>queueServerPort</code>	The port number for the Queue Server.

3.5 Queue Server Statistics

Statistics files contain statistical information for a period of time. You can use these statistics to measure system performance.

The Queue Server writes the following statistics to `queueserv.stat`.

- Startup time
- Total number of current connections
- Accumulated connections
- Failed connections
- Accumulated locks
- Total locks

For a complete discussion of statistics files, including their format, see Chapter 8 of the *InterMail Operations Guide*.

4

Directory Cache Server

All InterMail account information is stored in the Integrated Services Directory (ISD) database, which is a critical component of the InterMail system. All requests for user information and authentication are serviced by the directory.

While it is highly desirable to have a centralized directory for ease of administration and management, it is not acceptable for the directory to be a bottleneck in the system. For this reason, the InterMail Integrated Services Directory is complemented by a set of Directory Cache Servers. The name of the Directory Cache Server process is `imdircacheserv`.

The Directory Cache Servers act as front ends to the Integrated Services Directory, speeding access to vital user information by storing it in their caches. An InterMail system can contain as many Directory Cache Servers as necessary to support the lookup throughput needed by other system components. The Configuration Database on each machine contains a list of hosts on which Directory Cache Servers will run. A client trying to access a Directory Cache Server tries the first entry on its list (the primary Directory Cache Server) first. If communication with this cache server fails for some reason, it will go down the list until it finds one that is active. Clients always periodically attempt to re-connect with their primary Directory Cache Server. Using this mechanism, the load on the Directory Cache Servers can be spread across all available servers, while simultaneously supporting redundancy.

The rest of this chapter discusses the Directory Cache Server in detail, and includes information on the following topics:

- Directory Cache Server interfaces
- Log expiration
- The Directory Cache
- Directory Cache Server architecture and information flow
- Directory Cache Server configuration options
- Directory Cache Server statistics

4.1 The Directory Cache

Each host that runs a Directory Cache Server maintains its own local copy of necessary ISD information. This data is stored in the cache file in Berkeley db format, and provides a level of memory buffering (caching) disk access.

4.2 Directory Cache Server Interfaces

The Directory Cache Server uses an RME interface as its primary communication interface. This proprietary protocol facilitates communication with other InterMail servers.

There are three RME query types made to the Directory Cache Server:

- Alias (i.e., give me the account information for this alias).
- Primary SMTP, and
- POP queries

Each query type returns a status, along with the following data:

- Success
- Bad password
- Non-existent account
- Account in maintenance mode, or
- Account locked

Alias queries return success only if the supplied address is an SMTP alias, or the primary SMTP address. Primary SMTP queries return success only if the supplied address is a primary SMTP address. POP queries return success only if the supplied address is a POP address.

When a query fails, either because the information is not in the directory cache file, or the password is incorrect, the Directory Cache Server reads-through to the ISD. If newer information is found, the directory cache file is updated with the newer information. This means that a query will never fail due to stale data.

***Note:** The Directory Cache Server also supports database read-through via a backup read-through server. This is most useful in cases where the ISD is replicated using Oracle replication, and primary read-through is done using the replicated directory. The principal ISD can then serve as an alternate for read-through, providing high availability.*

The Directory Cache Server is multi-threaded. Each RME query uses its own thread; threads are created dynamically for new connections, and destroyed when connections close.

4.3 Architecture and Information Flow

The flow of information within a Directory Cache Server can be seen in Figure 5 which describes the internal operation of the `imdircachserv` process.

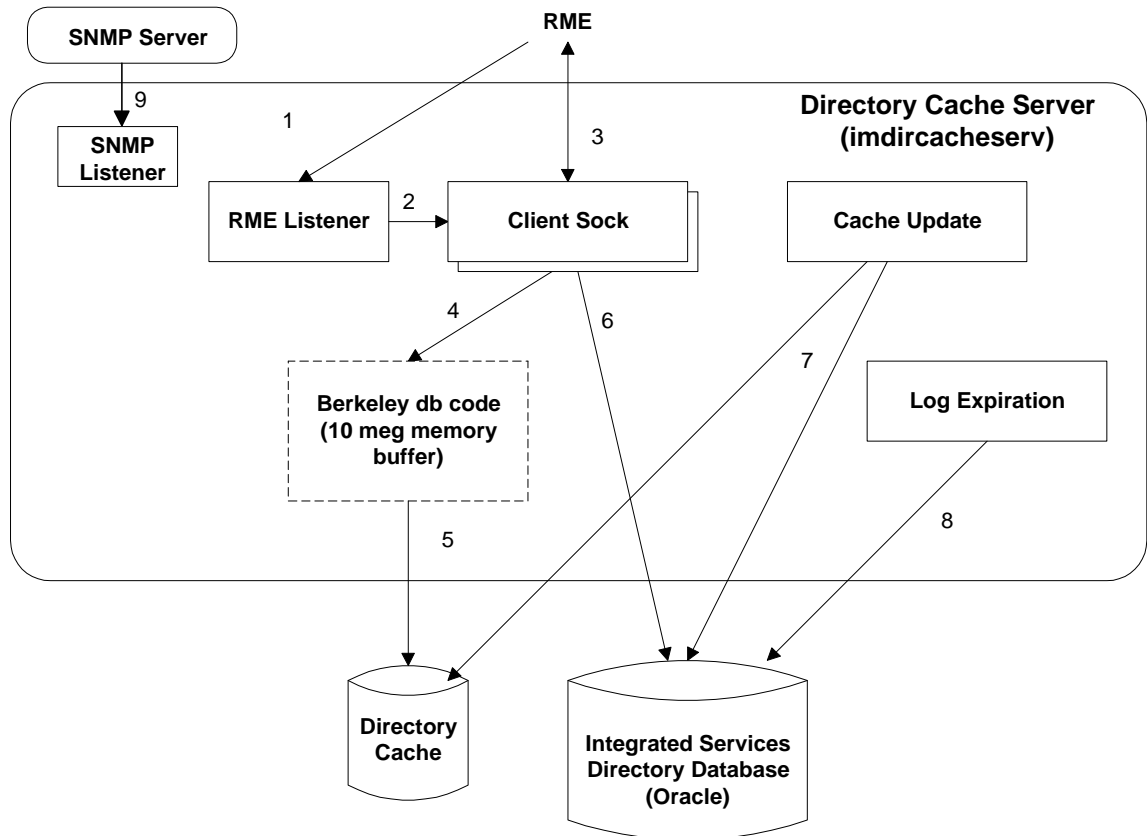


Figure 5. Architecture and information flow in the Directory Cache Server

1. The RME Listener task accepts RME requests from clients (other servers or utility programs).
2. For each connection, a Client Sock task (thread) is created.
3. The Client Sock handles all communications for this connection. The RME operations include requesting user or forwarding information.
4. The client task checks its internal memory first, then
5. It consults the Directory Cache database (the local cache file). If the information is found, it is returned to the caller.
6. If the user information is not found (e.g., it doesn't exist or the password doesn't match), the client task will consult the ISD. It will update the cache with the new information. The information (or potential failure if the information was not found in the database) is returned to the caller.

7. Periodically (on a configurable interval which defaults to 60 seconds) a synchronizer task is started. It reads the ISD and updates the cache, if necessary. It obtains update information from the log entries. Each log entry contains the full data of the change (so that costly lookups don't have to be done on the other tables). Each log entry also has a sequential index number, which is used to determine the last row a particular Directory Cache Server has received.
8. Periodically (on a configurable interval which defaults to 4 hours) garbage collection is performed by the log expiration task (thread). This task will delete expired entries used for cache update.
9. The SNMP Listener listens and transmits information on reportable parameters to the SNMP Server.

4.4 Directory Information Replication

The Directory Cache Server maintains its own copy of information that is stored in the Integrated Services Directory database, and responds to requests from InterMail components to validate or retrieve information. The InterMail system can include multiple Directory Cache Servers, and typically includes at least two. By using multiple Directory Cache Servers, the InterMail system provides scalability and eliminates bottlenecks on requests for information from the Integrated Services Directory.

Whenever an InterMail component needs to access information that is stored in the Integrated Services Directory, it first contacts one of these Directory Cache Servers for the information. If the Directory Cache Server can provide the requested information, then it does so. The Directory Cache Server makes a request directly to the Integrated Services Directory only if it does not include contain the requested information or cannot verify authentication data.

The Directory Cache Server stays current with the Integrated Services Directory by using an update thread. The update thread checks for new entries in the Integrated Services Directory, using an index stored in the directory cache file to determine the last index it has updated. A typical update period is 60 seconds, but this period can be reconfigured using the `dirCacheUpdatePeriod` configuration key.

An InterMail system can contain as many Directory Cache Servers as necessary to support the lookup throughput needed by other system components. The Configuration database stored on each host in the system contains a list of available Directory Cache Servers specified using the configuration key `dirCacheHosts`. A server that attempts to access a Directory Cache Server initially tries the first entry on its list (the primary Directory Cache Server). If communication with this cache server fails for some reason, it will go down the list until it finds one that is active. Clients periodically attempt to reconnect with their primary Directory Cache Server. Using this mechanism, the load on the Directory Cache Servers can be spread across all available servers, while still supporting redundancy.

4.5 Log Expiration

The Directory Cache Server also does garbage collection on the log entries. Log expiration can be configured using two configuration keys, `logExpireHours` and `logAgeHours`. The

`logExpireHours` key tells the log expiration logic how often to attempt to expire log entries. The `logAgeHours` key tells the log expiration logic to delete entries that are older than a certain number of hours. Log expiration runs in a separate thread.

4.6 Directory Cache Server Configuration Options

The following configuration keys are useful for controlling or modifying the behavior of the Directory Cache Server. For a further discussion of these keys (including default values), see Chapter 11 in this manual.

<code>dirCacheConnections</code>	This key is read by Directory Cache Server clients—i.e., the MTA, POP and IMAP servers. It determines the maximum number of connections clients can make to the cache server. The client does not open this number of connections at startup, rather it is best seen as a connection pool from which a client can draw on demand. Connections are opened only when they are actually required. If all the allotted connections are in use, the directory cache server asks the client to wait until another connection becomes free.
<code>dirCacheHosts</code>	Lists the hosts in the InterMail system running Directory Cache Servers.
<code>dirCacheMaxSecondary Calls</code>	Specifies the number of times a secondary <code>imdircacheserv</code> should be called before trying to reconnect to the primary <code>imdircacheserv</code> . The primary <code>imdircacheserv</code> is the one on the first host mentioned in the <code>dirCacheHosts</code> parameter, whereas all others are secondary.
<code>dirCachePort</code>	The port number used by the Directory Cache Server. This is the port over which the Directory Cache Server listens for RME requests.
<code>dirCacheSyncOnWrite</code>	Boolean to define the “ <code>syncOnWrite</code> ” mode parameter for the <code>dirCache</code> db object. If true, the cache will perform a file system “ <code>sync</code> ” after all cache db write operations. If false, no “ <code>sync</code> ” operation is performed after cache db writes until the end of each Directory Cache Server update interval. Setting this value to <code>false</code> can substantially decrease update thread execution time, especially when the cache file is large and/or when operating on a journaled file system.
<code>dirCacheUpdatePeriod</code>	Specifies the frequency with which the Directory Cache Server updates its information from the Integrated Services Directory database. This value is expressed as a number of seconds; after the specified number of seconds have elapsed, the local database file used by the Directory Cache Server is updated.

4.7 Directory Cache Server Statistics

Statistics files contain statistical information for a period of time. You can use these statistics to measure system performance.

The Directory Cache Server writes the following statistics to `dircacheserv.stat`.

- Startup time
- Number of queries processed
- Number of queries that succeeded
- Number of queries that failed
- Number of user validation requests that returned UNKNOWN USER
- Number of validation requests that returned BAD PASSWORD
- Number of validation requests that returned PASSWORD OK
- Number of seconds spent in processing (`indircacheserv`) cache updates
- Number of updates from the authoritative source
- Total number of current connections
- Number of total connections accumulated
- Number of failed connections (connections fail when an attempt to create a socket for the client fails, typically because the maximum number of connections has been reached.)

For a complete discussion of statistics files, including their format, see Chapter 8 of the *InterMail Operations Guide*.

5

Message Store Server (MSS)

The Message Store Server (MSS) is responsible for hosting mailboxes, storing incoming messages, and providing access to clients' mailboxes. Each MSS has its own database, which contains a unique set of mailboxes. Information about these mailboxes, including their users and their exact physical location, is maintained by the Integrated Service Directory (ISD). Large InterMail systems may have several MSS machines.

Message storage is transaction-based and transactions are recorded in journals for full data integrity and recoverability. Messages are stored only once per MSS (regardless of the number of intended recipients), with references in each user's mailbox to the single stored copy. The fact that a message intended for hundreds of users need be stored just once can provide significant savings in terms of system resources.

The MSS is independent of the client access protocols. Those are supported by separate client access servers (e.g., the POP and IMAP Servers). Access to the MSS is via the distributed object protocol: RME. The client access servers and the MTA communicate with the MSS via this protocol. Administration utilities also connect to the MSS process via RME.

The MSS is multi-threaded for fast performance. Every connection request from a client causes an MSS socket to be created to handle communication with that client.

The rest of this chapter discusses the MSS in detail, and includes information on the following topics:

- Data Storage Mechanisms
- Architecture and Message Flow within the MSS
- Message Journaling
- Garbage Collection
- Message Store Server Configuration Options
- Message Store Server Statistics

5.1 Data Storage Mechanisms

The MSS organizes messages into Message Stores, which are owned by individual accounts. Users' messages are stored in folders. The POP3 protocol allows only a single "inbox" folder that is referred to as the user's mailbox. The IMAP protocol allows the user to create a large number of additional mailbox folders.

In addition to message data, a Message Store also maintains "state" information about messages. This information is kept in a Message Store Database, and consists of things like:

- Message "status flags" that tell whether or not a user has read a message
- A record of the number and size of a subscriber's stored messages
- Expiration information about subscribers' messages

For individual messages the actual message text is stored in a file system (called the Message File System). Pointers in the database indicate the precise location of the message text within the Message File System.

Note: Quota (total size) limits for mailboxes are maintained as part of the account information in the Integrated Services Directory.

Storage of messages can be shared not only among different folders within a single Message Store (as between IMAP mailboxes), but between different Message Stores. With messages intended for more than one recipient, there is only one copy of the message text stored per server.

Database transaction logging provides data integrity and robustness, while journaling insures complete recovery capability. This is of critical importance, since the database contains information that can change frequently.

Message journaling provides for recovery in the event of a problem in the Message File System. When used in conjunction with full backups of the Message File System, message journaling allows for complete recovery of all messages—up to the second that the file system was lost. Because the message data itself cannot change (messages can be added and deleted, but an individual message cannot be edited), the overhead of database transactions is not required.

5.2 Message Store Server Architecture

The MSS process is multi-threaded, meaning that a new thread is created for each client connection. In addition, there can be multiple instances of the server process running on each host.

5.2.1 Message Flow within the MSS

Message flow within the MSS process is illustrated by the following diagram.

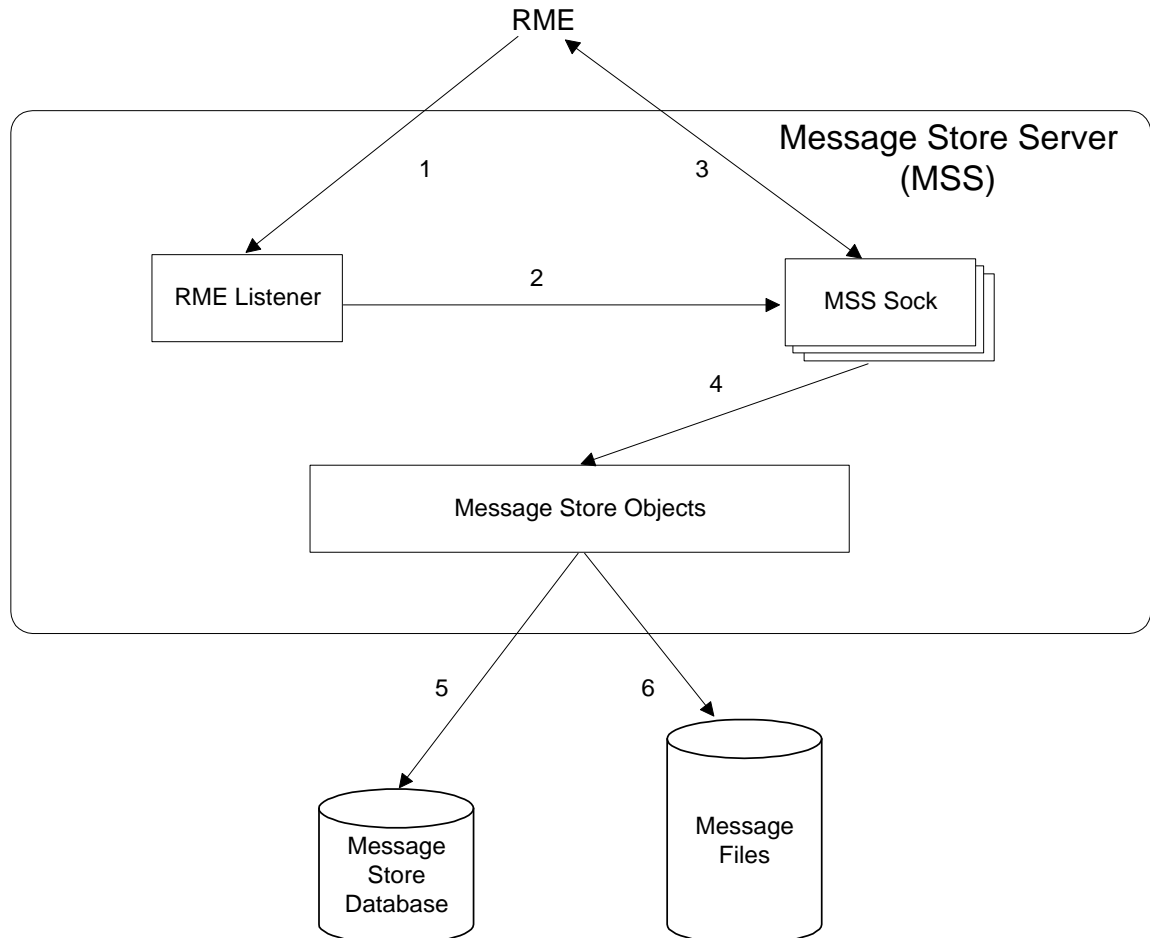


Figure 6. Message Flow in the Message Store Server

1. The RME Listener task accepts RME requests from clients (i.e., other InterMail servers).
2. For each client connection, an MSS Sock task (thread) is created.
3. The MSS Sock task handles all communications for this connection. RME operations may be targeted to (and thus handled by) different objects representing features of this Message Store.
4. The MSS sock object passes requests to the appropriate Message Store object for processing. Results of a request are returned to the client.
5. A Message Store object accesses the Message Store Database to read/store/update information about the Message Store.
6. A Message Store object accesses the Message File System to read or store an individual message.

5.2.2 Shared Memory

Each MSS process has its own access to the Message Store Database. To protect data integrity, an individual Message Store can only be opened by one MSS process at a time. In order to establish which process has opened which Message Store, a shared memory table is used by all MSS processes.

The shared memory table is created automatically at run time. The ID of the shared memory table is written to the file `$INTERMAIL/tmp/MSSTable`. As each MSS process starts up, it reads this ID and attaches to the shared segment.

Each client of the MSS (e.g., the POP server) checks the configuration data for the port numbers of the running MSS processes. The client will then make round-robin calls to open Message Stores among the MSS processes.

When an MSS process receives the command to open a Message Store, it checks the shared memory table to see if that Message Store is open as a result of another MSS process. If not, it will lock the interprocess mutex, write the Message Store name and the port number of this MSS into the shared memory segment, and unlock the mutex. When a Message Store is closed, the MSS process locks the interprocess mutex, removes the entry for the Message Store, and unlocks the mutex.

For example, we have three MSS processes (mss1, mss2, and mss3) running on ports 5490, 5491, and 5492 respectively. The Message Store mbox1 is opened by mss1 and the Message Store mbox2 is opened by mss2. The shared memory table would look as follows:

interprocess	mutex
mbox1	5490
mbox2	5491

Figure 7. Shared Memory Table

If an MSS process discovers that a Message Store (say mbox1) is already in the table, it will refuse to open the Message Store, handing an error back to the caller stating that the Message Store is already opened by another MSS process, and returning the port number of the MSS process that has this Message Store open. The caller will re-invoke the call to open the Message Store, directing the call to the port number of the MSS process controlling this Message Store.

5.3 Message Journaling

Message journaling is a mechanism for recovery in the event of a failure of the Message File System. When used in conjunction with full backups of the Message File System, journaling allows for complete recovery of all messages up to the second that the file system was lost. (Messages sent after the file system was lost will end up being queued by the MTA, as the MSS will not be able to accept the message.)

Journaling is carried out by every MSS and garbage collection process, and each process writes to its own journal file. When a message is accepted by the MSS and stored in the message file directory, the MSS also makes an entry in its journal file to record the operation. The journal entry includes the time the entry took place, the type of operation (message addition), the location and name of the message file, and the entire content of the new message. When the garbage collector runs and deletes a message, it also makes an entry in its journal file. In this case the operation recorded is a message delete. The message content is not included in this entry as it is not necessary.

The journal files are stored in the directory defined in the configuration key `journalDir` (set at time of installation). They have names in the form

```
jrn.YYYYMMDD.HHMMSS.[gc | mss].[0-9]+
```

where `YYYYMMDD.HHMMSS` is the date and time of creation for the journal file, `gc` corresponds to the garbage collection process, and `mss` indicates the process generating the journal (with `[0-9]` being the index to a particular MSS process). Each journal file is left open until its size exceeds a defined limit (100 Mb by default) or until a defined time period has passed (one hour by default). Once either of these parameters is exceeded, a new journal file is created.

Note: *The size and time of journal rollover are controlled via the configuration keys `journalRollMbytes` and `journalRollHours`, respectively.*

Since journal files are provided as a recovery mechanism to be used in the event of a Message File System crash, it is imperative they be kept on a separate file system from the message files themselves. Remember, as the entire content of each message is in the journal entries, these journal files will tend to use disk space at the same rate that new messages enter the Message File System.

See Chapter 10 of the *InterMail Operations Guide* for detailed instructions on system recovery, including use of the journal files and the Oracle redo logs from the Message Store Database.

5.4 Garbage Collection

Messages that are deleted from a Message Store have an entry placed in the `IM_MessageDeleted` table. The MSS process does not actually delete the message. Instead, messages are deleted from Message Stores by a background garbage collection process. This process is not run interactively, but rather is run regularly, via `cron`. (For a more detailed discussion of garbage collection, see Chapter 6 in *The InterMail Operations Guide*).

5.5 MSS Configuration Options

The following configuration keys are useful for controlling or modifying the behavior of the Message Store Server. For a further discussion of these keys (including default values), see Chapter 11 in this manual.

<code>mssBasePort</code>	The base port number for MSS processes on a host. If a single host runs multiple MSS processes, these processes will use a contiguous set of port numbers that begin at the port number given here.
<code>mssLogRedirects</code>	Option for logging the redirection of messages to specific MSS processes. When an MSS process attempts to open an account's mailbox, but finds that it is already in use by another MSS process, it redirects the message to that MSS. When <code>mssLogRedirects</code> is set to true, a log entry is made each time a message is redirected in this manner.
<code>mssNumPorts</code>	The number of ports reserved for use by MSS processes on a single host. InterMail also uses this value to determine the number of MSS process that are running on a particular host.
<code>maxMssDeliverCount</code>	Sets the maximum number of messages that can be delivered to an MSS in a single transaction. (Though this setting actually controls the behavior of the MTA, it has an effect on the amount of traffic the MSS may have to handle.
<code>cosMinUpdateSeconds</code>	Sets the amount of time (in seconds) that the MSS will cache the class of service information before refreshing it from the Directory Cache Server.

5.6 Message Store Server Statistics

Statistics files contain statistical information for a period of time. You can use these statistics to measure system performance.

The Message Store Server writes the following statistics to `mss.stat`.

- MSS startup time
- number of received messages
- Received volume (sum of the MIME size of received messages)
- Number of stored messages. (This value differs from the number of received messages by considering what messages are duplicates of messages already received. Duplicate messages are not saved to the database.)
- Stored volume (sum of the MIME size of stored messages)
- Number of current connections
- Number of accumulated connections
- Number of failed connections

For a complete discussion of statistics files, including their format, see Chapter 8 of the *InterMail Operations Guide*.

6

POP Server

The InterMail POP Server provides access to user mailboxes for Internet standards based POP mail clients. The POP Server employs a multi-threaded process named `popserv` to provide multiple simultaneous access to mailboxes. A POP sock thread is created for each client connection.

The rest of this chapter discusses the POP Server in detail and covers the following topics:

- POP Server architecture and message flow
- POP Sock
- Communication with Directory Cache Servers
- Communication with Message Store Servers
- POP Server Configuration Options
- POP Server Statistics

6.1 POP Server Architecture and Message Flow

The POP Server listens on the POP port (110). POP port 110 is the default, however this setting is configurable using the `POP3Port` configuration key. POP3 is the download model in which clients connect, retrieve all their messages from the mail server, and then disconnect. All clients that use the POP3 protocol are supported.

For high loads, you may run multiple POP Servers on different hosts. Round-robin DNS can be used to distribute the incoming connection load over the available servers. It doesn't matter which process a client connects to; the POP Server uses the Directory Cache Server to determine the correct Message Store Server to contact for the user.

Information flow within the POP Server process can be seen in the following illustration. Note that everything above the dotted line represents the Internet.

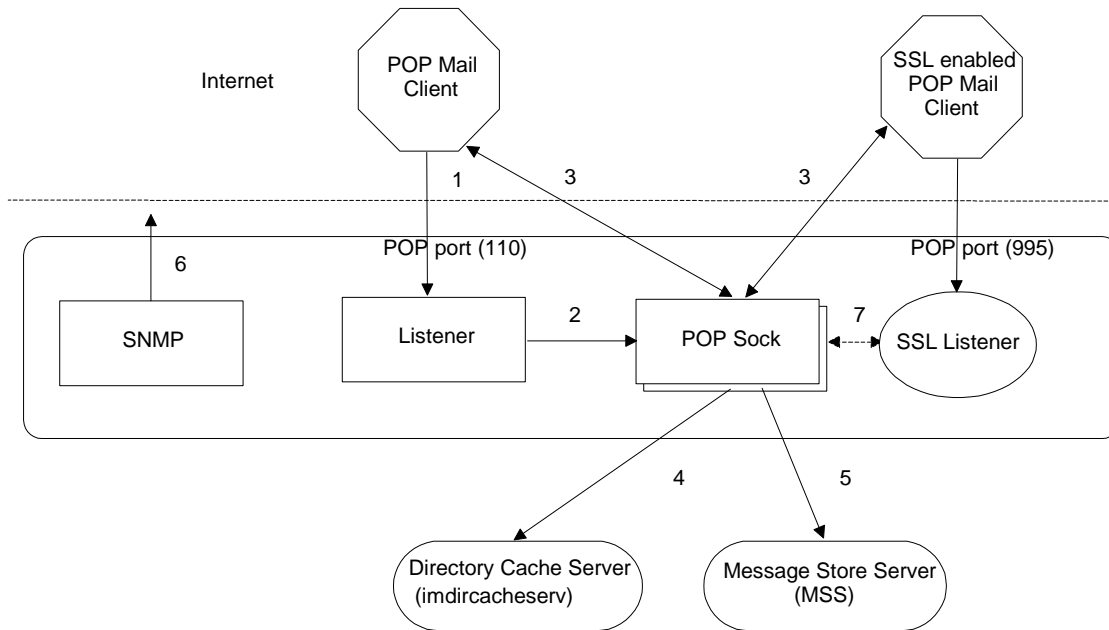


Figure 8. Message flow through the POP Server

1. POP clients contact the POP Server via the standard POP3 port (110).
2. The Listener thread accepts the connection and attempts to create a POP Sock task to handle communication with this client. A POP client can only successfully establish a connection to the server if the configured maximum number of sessions has not been reached. If the maximum number is reached, the POP Server does not immediately reject the connection. Instead, it waits for the number of sessions to fall below the limit of three times (with a small delay between attempts) before giving up.
3. The POP Sock task handles all RME communications to clients. Once the client connection is dropped, the associated POP Sock thread is destroyed.
4. The POP Sock thread contacts the Directory Cache Server via RME to authenticate this user and to identify the user's mailbox.
5. Assuming the user was authenticated, the POP Sock thread contacts the appropriate Message Store Server via RME to perform the requested command.
6. All server threads can communicate with the SNMP thread whenever an SNMP-visible event occurs. The SNMP thread passes this information along to the SNMP server.
7. SSL performs authentication before any message transactions occur between SSL-enabled POP clients and the POP Server. The SSL-enabled POP client contacts InterMail on an alternate port (995 by default), causing the POP Sock to switch to SSL encrypted mode. For a complete discussion of SSL encryption, see Chapter 4 of the *InterMail Operations Guide*.

6.2 POP Sock

Once a connection is established with the POP client, the POP Server sends a greeting. The client and POP Server then exchange commands and responses (respectively) until the connection is closed or aborted. When a client connection is closed, the associated POP sock thread is destroyed.

Commands in the POP3 protocol consist of a keyword, optionally followed by one or more arguments. Responses in the POP3 protocol consist of a status indicator and a keyword, optionally followed by additional information. There are currently two status indicators: positive (+OK) and negative (-ERR).

InterMail supports the following POP commands:

```
USER name
PASS string
QUIT
STAT
LIST [msg]
RETR msg
DELE msg
NOOP
RSET
QUIT
TOP msg n
UIDL [msg]
```

A user's connection with the POP Server can be in one the following states:

- **AUTHORIZATION**—The POP Server has sent the initial greeting and is waiting for the client to identify itself (via the `USER/PASS` commands).
- **TRANSACTION**—The POP client has successfully identified itself. The POP Server acquires resources associated with the client's mailbox. `POPSERV` is waiting for client's requests (e.g., `STAT`, `RETR`, etc.).
- **UPDATE**—When a POP client has issued the `QUIT` command, the POP Server releases any resources acquired on behalf of this client and closes the TCP connection.
- **MSSDOWN**—This state is specific to InterMail (i.e. is not defined in RFC 1725). It represents the case where a Message Store Server machine has gone down while connections to mailboxes on it were open.

6.3 Communication with Directory Cache Servers

The POP Server asks the Directory Cache Server (via an RME call) to authenticate a user. A pool of connections to the Directory Cache Server is maintained; the size of the pool is controlled using the configuration key `dirCacheConnections`. If all resources are in use, the POP Server will queue additional requests until a resource becomes available.

If authentication fails, the POP client receives an error notification. The POP session remains established in the authentication state and the client may attempt to authenticate again.

If authentication is successful, the host and name of the user's mailbox is returned to the POP Server. The POP Server opens a connection to the user's mailbox by contacting a Message Store Server on the host indicated. If the mailbox does not yet exist (this may be the first time the mailbox has been accessed), the POP Server creates it, provided the configuration key `createsMboxes` is true. If the configuration key `logMailBoxCreation` is true, creations are noted in the POP Server log file. Both these configuration keys are described later in this chapter.

If the mailbox was successfully opened (and the user has rights to read it), the POP Server is ready to handle the user's requests (it is now in the TRANSACTION state). Otherwise, an error is returned to the POP client and the event is recorded in the InterMail logs.

6.4 Communication with Message Store Servers

The POP Server communicates with the MSS via RME to open a user's mailbox, get message statistics, retrieve messages, and delete messages. Typically, messages are deleted from the MSS after retrieval by the POP. Messages are marked for deletion by the POP Server, but are not actually deleted until the POP client connection is closed (i.e. the `update` state is entered). In the `update` state, all messages marked for deletion are removed by calling the appropriate RME folder operation. If a POP client terminates the session abnormally, messages are not deleted.

Occasionally, a POP client may abort during retrieval. If an error is encountered while attempting to retrieve a message, the POP Server instructs the MSS to move the message to the `.ERRORS` folder. This action will allow the POP client to reconnect and move to retrieving other mail. The offending message can be identified and moved back to the user's inbox using the administration utilities `imbadmsglist` and `imbadmsgfix`.

When the client closes the connection to the POP Server and update processing is complete, the POP Server closes its connection to the MSS and deletes the POP sock thread.

6.5 POP Server Configuration Options

The following configuration keys are useful for controlling or modifying the behavior of the POP Server. For a further discussion of these keys (including possible values), see Chapter 11 in this manual.

<code>createsMboxes</code>	Used for on-the-fly creation of mailboxes for new accounts. If true, the POP Server will attempt to create missing mailboxes on the MSS where the Central Directory Database says they should be.
<code>pop3Port</code>	The port number used by the POP Server. Under normal circumstances, this should not be modified.
<code>clientTimeout</code>	The maximum amount of time (in seconds) a client may stay connected without issuing any commands. After this period has elapsed, the POP Server may unilaterally end the session.
<code>maxSessions</code>	The maximum number of concurrent POP connections. When this number of concurrent sessions has been reached, additional connections will not be accepted.
<code>logMailBoxCreation</code>	Controls the logging of mailbox creation. If true, the POP Server logs an event when a mailbox is created with the <code>createsMboxes</code> configuration variable.
<code>maxMsgTextCache</code>	The maximum amount of text (in bytes) that may be cached for any single message.

6.6 POP Server Statistics

Statistics files contain statistical information for a period of time. You can use these statistics to measure system performance.

The POP Server writes the following statistics to `popserv.stat`.

- Number of messages retrieved
- Total MIME size of all retrieved messages
- Number of current connections
- Number of total connections accumulated
- Number of failed connections (connections fail when an attempt to create a POP sock thread for the client fails, typically because the maximum number of connections was reached.)
- Number of rejected connections (connections are rejected if authentication fails.)
- Number of times that a connection was “timed” out (connections will time out if a client is inactive for a configurable amount of time.)

For a complete discussion of statistics files, including their format, see Chapter 8 of the *InterMail Operations Guide*.

7

IMAP Server

The InterMail IMAP Server provides access to user mailboxes for most standards based IMAP mail clients. You can run multiple IMAP Servers on different hosts to support high loads.

The rest of this chapter discusses the InterMail IMAP Server in detail, and includes information on the following topics:

- IMAP Server function and architecture
- Special handling of messages for IMAP
- IMAP Server configuration options
- IMAP Server statistics

7.1 IMAP Server Architecture and Message Flow

The IMAP Server listens on port 143 and employs a multi-threaded process named `imapserv` to provide multiple simultaneous access to mailboxes. An IMAP thread is created for each client connection.

Unlike POP clients, IMAP users are not required to download messages to their local file system to read them (though can do so if they wish to). The IMAP protocol allows for a more “interactive” relationship between client and server, where the client can ask the server just for headers or bodies of specific messages, or else search for messages that meet specific criteria. Messages in a mailbox can be marked with various flags (e.g., *deleted* or *answered*) and they stay in the mailbox until the subscriber specifically deletes or moves them. In short, IMAP is designed to allow the manipulation of messages on the server as if they were on a local machine.

As a result, IMAP client connections generally last much longer than POP client connections, and involve more sophisticated operations, such as searching, partial message retrieval, and mailbox management. Mailbox management may involve creating additional mailboxes (and deleting them), and also moving and copying messages from one mailbox to another; and, since IMAP users typically leave messages on the server for extended periods of time, IMAP service requires greater storage capacity on your system.

Note: *The term “mailbox” has a somewhat different meaning in the world of IMAP than it does elsewhere. With POP protocol, users have access only to a single folder, sometimes called the “inbox.” With IMAP, users can create additional mail folders on the server, and each of these folders is called a mailbox. However, even IMAP users can have no more than one “inbox.”*

You can run multiple IMAP Servers on different hosts to support high loads. Round-robin DNS distributes the incoming connection load over the available servers. It doesn't matter which IMAP Server a client connects to, since each `imapserve` process uses the Directory Cache Server to determine the correct MSS to contact to on the user's behalf.

The following diagram illustrates the internal components of the IMAP Server, with arrows indicating the order of operations related to the server:

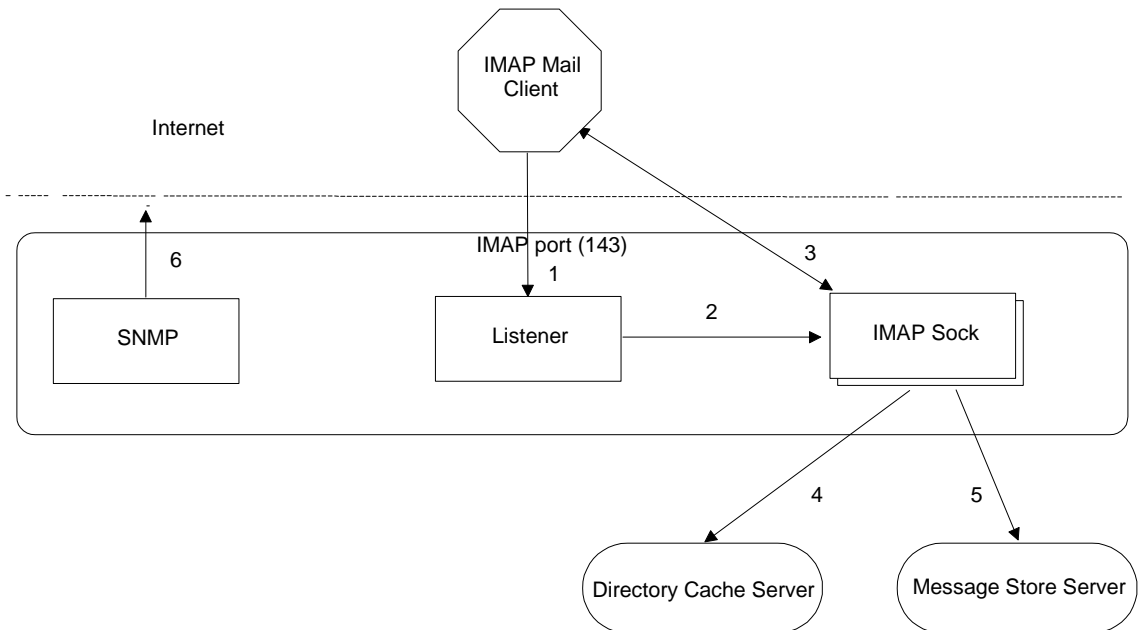


Figure 9. Message flow through the IMAP Server

1. IMAP clients contact the IMAP Server via the standard port 143.
2. The Listener task accepts the connection and creates an IMAP Sock task to handle communication with this client. Every connection request from a client causes a new IMAP thread to be created to handle the connection.
3. The IMAP thread handles all (RME) communications for this connection.
4. The IMAP Sock task contacts the Directory Cache Server via RME to authenticate this user and to identify the user's mailbox.
5. Assuming the user was indeed authenticated, the IMAP thread contacts the appropriate Message Store Server via RME to perform the requested command.
6. All server threads can communicate with the SNMP thread whenever an SNMP-visible event occurs. The SNMP thread passes this information along to the SNMP server.

7.2 Server Operation

This section contains additional information that is specific to the IMAP Server.

7.2.1 Supported IMAP4 Options

The following group of issues describe details of InterMail's implementation of the IMAP4 protocol, as defined in RFC 2060:

- The server does not support versions of the IMAP protocol prior to IMAP4rev1.
- The server does not support any method of authentication other than clear passwords.
- The flags stored for each message are not extensible; additional keywords cannot be defined.
- IMAP subscribers can create additional mailboxes, and nest other mailboxes within them; but an IMAP mailbox cannot be deleted if it contains additional mailboxes nested within it. Mailboxes must be deleted from the bottom level up.

7.2.2 Special Handling of Messages for IMAP

The MTA, Integrated Services Directory, MSS, and IMAP Server cooperate in some special handling of mailboxes used by IMAP clients.

The Integrated Services Directory determines whether IMAP access to a mailbox is allowed. The MTA scans the recipients of a message looking for IMAP-enabled accounts. If none are found, the message receives no special handling. An IMAP Server must be able to answer queries about the structure of any messages that use the MIME standard. Since this information is moderately expensive to calculate, the MTA extracts this information for IMAP accounts and delivers it along with the message. This information is stored as part of the message by the MSS.

When the IMAP Server accesses a message in the MSS, one of the first things it requests is the MIME information. If this information is not present, it retrieves the entire text of the message and extracts the information itself.

7.2.3 Multi-threading

The `imapserv` process is multi-threaded. Every connection request from a client causes a new IMAP sock to be created to handle the client connection. An IMAP client can only connect to the server if the configured maximum number of sessions has not been reached. When the maximum number of sessions has been reached, the client is sent a "NO" response (with an explanation) followed by a "BYE" response, and the connection is dropped by the server. These actions take place in the listener before a new thread is spawned in order to reduce the impact of denial of service attacks. When a client connection is closed, the thread is destroyed.

7.3 IMAP Server Configuration Options

The following configuration keys are useful for controlling or modifying the behavior of the IMAP Server. For a further discussion of these keys (including possible values), see Chapter 11 in this manual.

<code>createsMboxes</code>	Used for on-the-fly creation of mailboxes for new accounts. If true, the IMAP Server will attempt to create missing mailboxes on the MSS where the Central Directory Database says they should be.
<code>imap4Port</code>	The port number used by the IMAP Server. Under normal circumstances, this should not be modified.
<code>clientTimeout</code>	The maximum amount of time (in seconds) a client may stay connected without issuing any commands. After this period has elapsed, the IMAP Server may unilaterally end the session. The client may simply issue a NOOP command to keep the session alive.
<code>maxSessions</code>	The maximum number of concurrent IMAP connections. When this number of concurrent sessions has been reached, additional connections will not be accepted.
<code>maxBadPassword</code>	The number of allowed bad password attempts before a connection will be dropped.
<code>logMailBoxCreation</code>	Controls the logging of mailbox creation. If true, The IMAP Server logs an event when a mailbox is created per the <code>createsMboxes</code> configuration variable. This does not log the creation of IMAP mailboxes (i.e., MSS folders).
<code>maxMsgTextCache</code>	The maximum amount of text (in bytes) that may be cached for any single message.

7.4 IMAP Server Statistics

Statistics files contain statistical information for a period of time. You can use these statistics to measure system performance.

The IMAP Server writes the following statistics to `imapserv.stat`.

- IMAP startup time
- Number of messages retrieved
- Volume of messages retrieved in kilobytes
- Number of current connections
- Accumulated number of client connections established during this invocation
- Number of failed connections (Connections fail when an attempt to create a socket for the client fails, typically because the maximum number of connections has been reached.)
- Number of rejected connections (Connections are rejected if authentication fails.)
- Number of client connections that have timed out (Connections time out if a client is inactive for a configurable amount of time.)

For a complete discussion of statistics files, including their format, see Chapter 8 of the *InterMail Operations Guide*.

Configuration Server

All InterMail components are controlled by a configuration database, which contains values for any and all configuration options for each server. This configuration data is stored in a file named `config.db`. Although each InterMail host keeps a local copy of the configuration database, a single host maintains the “master” configuration database. On this host—known as the *master configuration host*—the Configuration Server responds to requests by individual servers for updated configuration information. Changes to the configuration database can be made only on the master configuration host.

The following topics are covered in this chapter:

- Configuration Server architecture and function
- Centralized configuration
- Configuration keys associated with the Configuration Server
- Statistics generated by the Configuration Server

8.1 Configuration Server Architecture and Function

Each host on an InterMail system has its own Configuration Database that contains a complete set of system settings. The Configuration Server, or `imconfserv` process, runs on a single host and holds a “master” Configuration Database. The only difference between the “master” and “slave” Configuration Databases is that the master is on the Configuration Server host and is considered to be “owned” by that server (no one else writes to it), and slaves exist on other machines (if any) and are written to by any InterMail program that becomes aware of a newer version from the Configuration Server. The `config.db` file resides in `$INTERMAIL/config/config.db`.

The Configuration Server is read-only (i.e., clients cannot change the master configuration database through the Configuration Server).

The first host to be installed must be the one that is to be the master Configuration Server. The configuration editing utility, `imconfedit`, is installed on all hosts. The installation process gives the installer the ability to choose the Configuration Server port, but will default to 5000.

The master configuration host can contain any other InterMail components – there are no restrictions on what can be run on this machine.

After the first machine installation is complete, the configuration update server must be started before continuing with additional installations.

The Configuration Server is identified to all hosts in the InterMail system by the following two configuration keys.

- `confServPort`
- `confServHost`

Figure 1 shows how InterMail programs get the most recent configuration information from the Configuration Server.

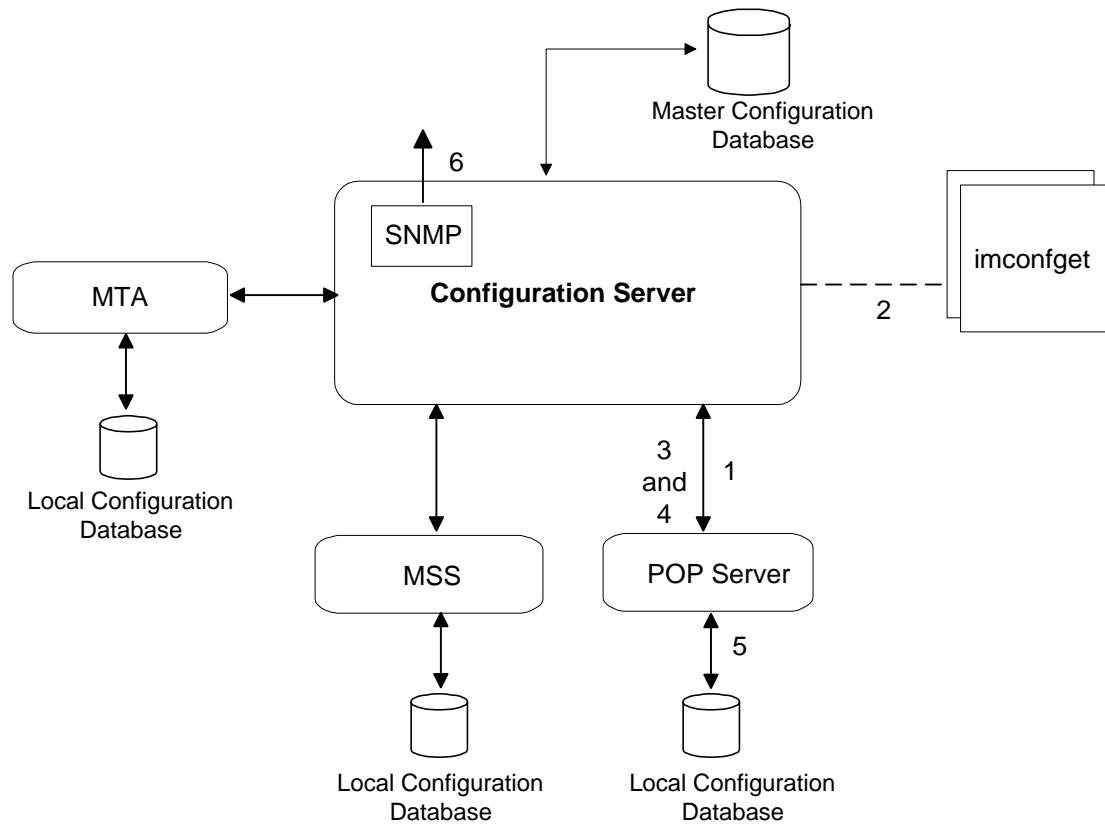


Figure 10 Updating Configuration Information in Local Configuration Databases

1. A server, after performing the initialization common to all InterMail applications, leaves the socket to the Configuration Server open and launches a thread (`CfgObjectServer`) to monitor this RME socket. These threads are long-lived and continuously solicit notifications of updates to the configuration database.
2. A non-server application (in this scenario, `imconfget`) behaves in the same way as above, but launches a short-lived thread. It does not continuously solicit update information.
3. When the Configuration Server receives an update request from the client, it first checks the received timestamp against the last modified time of its current configuration database file. If the timestamps are the same, it simply returns an indication that an update is not required (`update = FALSE`).

4. If the client's timestamp is older, or newer, than the configuration database file's timestamp, the Configuration Server sends the configuration data back to the client with an indication that an update is required (`update=TRUE`).
5. The client will, if it is not running on the same host as the Configuration Server, rewrite the local `config.db`. If the server is unable to obtain the lock on the configuration database file (indicating that the configuration database is in the process of being changed) an error is returned to the client specific to this case. It is also logged in the `imconfserv` log file.
6. All server threads can communicate with the SNMP thread whenever an SNMP-visible event occurs. The SNMP thread passes this information along to the SNMP Server.

8.2 Centralized Configuration

Although an InterMail system can consist of numerous hosts and each host contains a local copy of the configuration database, the configuration database employs a “centralized configuration” and only one `config.db` will typically be edited.

When configuration data is modified by the administrator, information about all potential changes is sent to each InterMail server. Each server then responds by indicating the impact of the new changes. One of the following statuses regarding the impact of a change is communicated:

- `CFG_TRIVIAL`: the value of the configuration key is re-fetched each time it is used, so the next fetch will get the new value
- `CFG_FIXABLE`: the old value of the configuration key is either cached in some variable, or it has influenced the current state in some other way that would need to be fixed; but a function exists which can make the necessary fixes
- `CFG_SERV_RESTART`: this server would have to be restarted in order to accommodate the change
- `CFG_NOT_SERVER`: the entity using the configuration key is not a server but a short-lived program.
- `CFG_NOT_POSSIBLE`: the change cannot be accommodated at all (for example, it is not clear that `commonUser` could be changed and still have the system operate).

For example, a server may report that it must be restarted to accommodate the changes. The administrator is informed of the effects of his/her changes, and has the option to commit or cancel the changes.

Once changes to the configuration database are committed, each host is alerted to the presence of configuration changes. These hosts then request a copy of the new configuration database from the Configuration Server. The new configuration database overwrites the previous `config.db` file, and all previous configuration data is discarded. Because configuration changes are automatically propagated throughout the system, manual intervention is not required.

8.3 Configuration Server Configuration Options

The following configuration keys are useful for controlling or modifying the behavior of the Configuration Server. For a further discussion of these keys (including possible values), see Chapter 11 in this manual.

<code>versionConfigDB</code>	If true, then each time the Configuration Server writes a new master configuration database file, the old one will be renamed to <code>config.db.YYYYMMDDHHMMSS</code> . This makes it easier to revert to an earlier <code>config.db</code> should that later prove necessary.
<code>extraCopyConfigDBPath</code>	If present, indicates where an extra copy of the configuration database file should be written each time that the master <code>config.db</code> is changed.
<code>confServPort</code>	Stores the port number of the configuration server on the master configuration host.
<code>confServHost</code>	the name of the host that the configuration server is running on
<code>confTimeStamp</code>	contains the time stamp of the last database update. It is used to determine if the database needs to be updated compared to the master configuration database

8.4 Configuration Server Statistics

Statistics files contain statistical information for a period of time. You can use these statistics to measure system performance.

The Configuration Server writes the following statistics to `confserv.stat`.

- Startup time
- Total number of queries processed
- Total number of queries that succeeded
- Total number of queries that failed
- Number of current connections
- Total number of times the Configuration Server was requested to assess configuration parameters
- Number of assessments that failed
- Total number of installs
- Number of failed installs
- Number of total connections accumulated
- Number of failed connections (Connections fail when an attempt to create a socket for the client fails, typically because the maximum number of connections has been reached.)
- Number of rejected connections (Connections are rejected if authentication fails.)

For a complete discussion of statistics files, including their format, see Chapter 8 of the *InterMail Operations Guide*.

9

Manager Server

The Manager Server, which runs on each InterMail host, allows you to start or stop a server on one machine from any other machine. This means that there is no need to log on to each InterMail host separately in order to start or shut down its servers.

Note: This chapter is not meant as an operational guide for starting or stopping the servers in your InterMail system. For a complete discussion of that subject, see Chapter 3 of the *InterMail Operations Guide*.

The following topics are covered in this chapter:

- The `imctrl` administration command
- Manager Server configuration keys
- Manager Server function and architecture

9.1 imctrl

The administration command responsible for starting up and shutting down InterMail servers is `imctrl`. When executed, `imctrl` determines the hosts affected by the specified commands, and then passes these commands to the Manager Server of each affected host. In addition, `imctrl` knows which servers depend on which other servers, and ensures that clients, across all hosts, are shut down before the servers they depend on. The Manager Servers then execute the appropriate startup or shutdown operations for the affected servers. A more complete discussion of `imctrl`, including its syntax, can be found in Chapter 3 of the *InterMail Operations Guide*.

9.2 Manager Server Function and Architecture

Although you won't need to stop and start servers very often, there are certain situations where stops and starts may be necessary. A typical instance would be after you have changed a configuration setting that requires a server restart (e.g., if you were to change the port setting for the Configuration Server).

The name of the Manager Server process is `immgrserv`.

The Manager Server Data Flow diagram illustrates how an administrator, logged on to a hypothetical host machine named `cosmo` can stop and start servers on two other InterMail hosts (`fido` and `norton`), using their Manager Servers to pass along the start and stop instructions. (This two host scenario is just an example. The administrator could perform the same operations for every host on the system.)

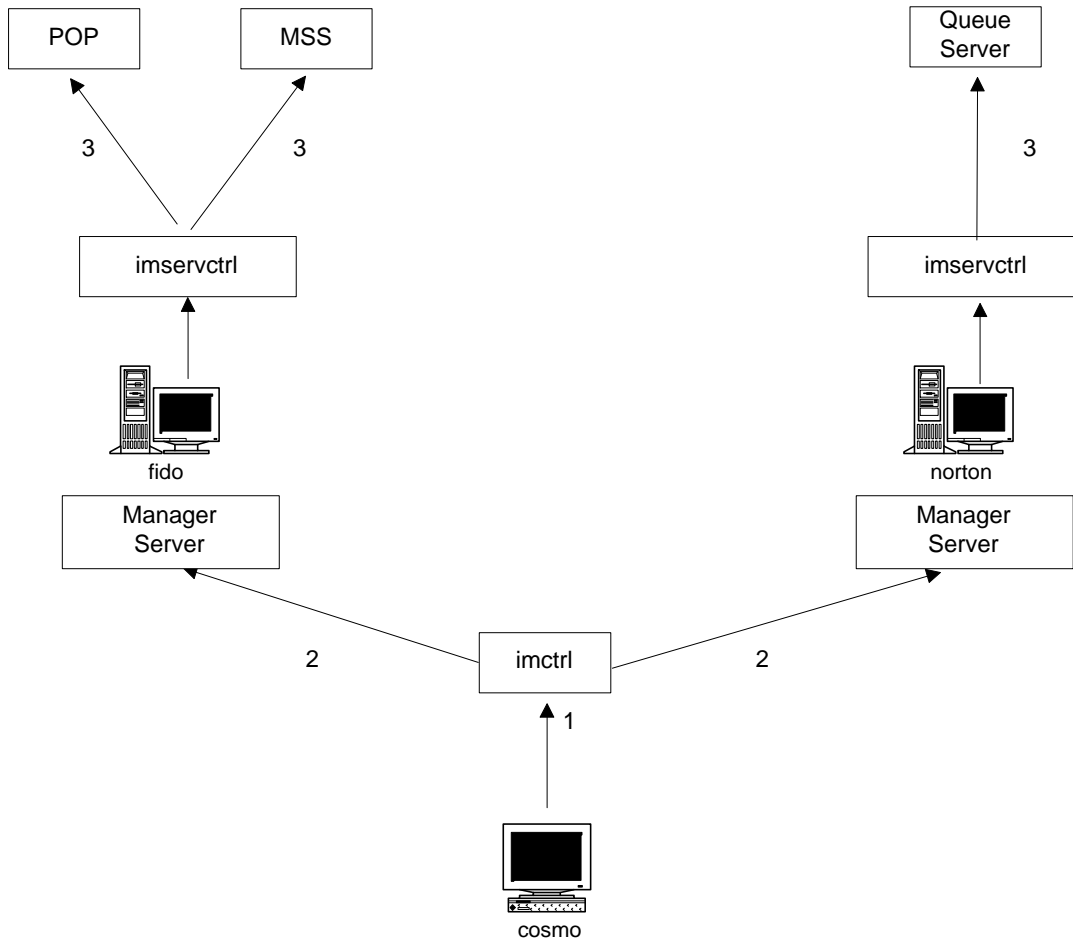


Figure 11. Manager Server Data Flow

1. The administrator logs on to `cosmo` and issues `imctrl` commands to start the POP and MSS Servers on `fido` and stop the Queue Server on `norton`.
2. The `imctrl` command is heard by the Manager Servers on `fido` and `norton`.
3. On `fido`, an `imservctrl` command is issued, starting the POP and MSS Servers. On `norton`, an `imservctrl` command is issued stopping the Queue Server.

Note: *imservctrl* is not a command you should ever have to issue. It is a lower-level command than *imctrl*, and is invoked automatically on the host whose servers you wish to start or stop. If you wish to know more about *imservctrl*, see Chapter 12 in this manual.

Theoretically, it would be just as easy to log onto `fido` (or `norton`) and issue an `imctrl` command to start or stop any servers that may be running on `cosmo`. In this case, the Manager Server on `cosmo` would hear the `imctrl` command and the rest of the process would be no different. This is how the Manager Server allows you to use any host machine to start and stop servers on any other host machine(s).

9.3 Manager Server Configuration Options

The following configuration keys are important for Manager Server operations. For a further discussion of these configuration keys, including syntax and possible values, see Chapter 11 in this manual.

<code>legalHosts</code>	A list of hosts from which the Manager Server will accept connections. In order to manage the servers that run on a particular host, that host must appear in this configuration parameter. A setting of <code>all</code> specifies all hosts on the system.
<code>mgrServerPort</code>	The port the Manager Server listens on for RME requests from <code>imctr1</code> . You can use any valid port number.

SNMP Server

The Simple Network Management Protocol (SNMP) establishes a framework for managing, monitoring and controlling distributed systems independent of any specific vendor implementation. Systems that conform to SNMP can, therefore, be manipulated and observed by other arbitrary SNMP-enabled management stations.

InterMail supports SNMP which means that it provides the ability to monitor certain events and processes via SNMP. It allows you to find out useful system information such as the number of connections to the POP server since the server was started, the total number of messages that are stored in the MTA, and the total number of messages stored in the MSS. This information is output to a user-defined SNMP monitoring station (e.g., HP OpenView) allowing you to view the information in real-time, without having to develop special scripts or parse log files.

The following topics are covered in this chapter:

- SNMP Server architecture
- The InterMail SNMP agent and its interaction with SNMP management stations
- The set of MIB (Management Information Base) objects supported by InterMail
- Configuration keys that affect the SNMP server

10.1 Basic Concepts

- **InterMail SNMP Master Agent:** In InterMail, the SNMP master agent or SNMP server is a process that interacts with SNMP monitoring stations and other SNMP-enabled InterMail servers (or sub-agents).
- **InterMail SNMP Sub-agent:** In InterMail, a sub-agent is an SMP-enabled InterMail server. It collects and stores statistics and management information, and responds to requests from the master agent.
- **SNMP Monitoring Station:** This is an entity that generates requests to retrieve management information, receives the response to requests, and receives event reports.
- **InterMail Management Information Base (IMIB):** A MIB is a set of logically related objects grouped together. These objects contain definitions of management information that can be used to remotely monitor and control networked systems. In InterMail, each SNMP-enabled server has a set of defined MIB objects or reportable parameters.

10.2 SNMP Server Architecture

In InterMail, SNMP operates as a server process that interacts with a monitoring station on one end, and with other InterMail servers on the other end. Each monitored InterMail server (currently, the POP, IMAP, MTA, MSS, Directory Cache, and Queue servers) contains a client that “speaks” SNMP.

Information can flow between the SNMP Server and the third party SNMP monitoring stations in the following ways:

- **get** - a monitoring station initiates action to retrieve information from InterMail sub-agents. This is equivalent to “pulling” information from the sub-agents.

SNMP “pulls” correspond to the information reported in the InterMail .stat files.

- **trap** - a sub-agent sends unsolicited information to a monitoring station. This is equivalent to sub-agents “pushing” information to the monitoring station.

SNMP traps correspond to the events that are logged in InterMail .log files (for example, connectivity failure between two InterMail components). Traps can be filtered according to their severity level using the `trapMask` configuration key.

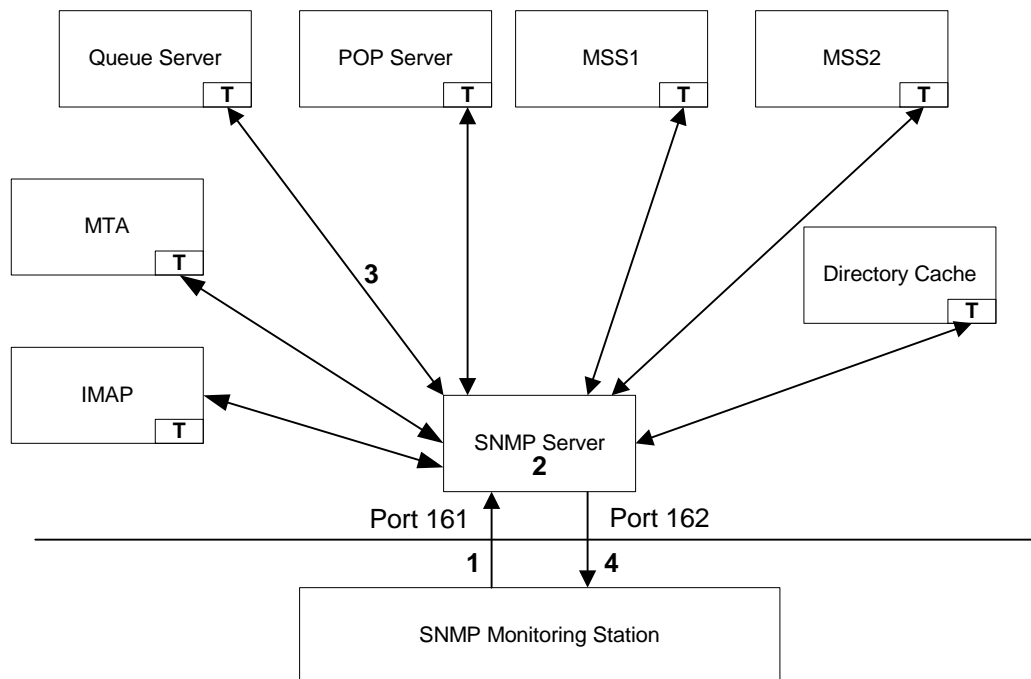


Figure 12. SNMP Client-Server Relationship in InterMail

Figure 12 shows the relationship between an SNMP Monitoring station, the SNMP Server, and other InterMail servers.

1. An SNMP request is sent by a monitoring station to the SNMP Server. The server receives the request on port 161 (an SNMP-standard port although the port number is configurable).

Each SNMP operation is encoded in a separate packet called a Protocol Data Unit (PDU). PDUs are carried through the network via the User Datagram Protocol (UDP).

2. The SNMP Server listens for requests from SNMP management stations. It receives a UDP datagram from the monitoring station, verifies that it is indeed the intended destination, and then decodes the PDU.
3. The SNMP Server forwards the request to the appropriate SNMP-enabled InterMail server. The SNMP thread resident on the SNMP-enabled InterMail server responds to the request.

When requests are not pending, this thread dispatches whatever traps are pending. Any of the SNMP-enabled InterMail servers may raise a trap (a notification) through the SNMP Server.

4. The SNMP Server returns the response to the request to the monitoring station via port 162 (an SNMP-standard although the port number can be changed if required).

10.3 InterMail Management Information Base (IMIB)

The InterMail MIB is a collection of managed objects based on the Mail and Directory Management MIB (MADMAN MIN). Broadly speaking, a managed object is a specific data item internal to a service.

Each SNMP-enabled InterMail server maintains a number of managed objects also known as “reportable parameters”. Each managed object is internally represented as a reportable parameter.

The following tables show the available MIB objects for various InterMail servers.

10.3.1 MTA MIB Objects

The following managed objects are related to the MTA. (Since the length of some of the MIB objects shown in the table exceeded the column width, they have been split using a hyphen. Please note that the hyphen is *not* part the object.)

MIB Object	Description
mtaTable	The table holding information specific to an MTA server.
mtaEntry	The entry associated with each MTA server.
mtaReceivedMessages	The number of messages received since the last MTA initialization.
mtaStoredMessages	The total number of messages currently stored in the MTA.
mtaTransmittedMessages	The number of messages transmitted since the last MTA initialization.
mtaReceivedVolume	The total volume of messages received since the last MTA initialization, measured in kilo-octets
mtaStoredVolume	The total volume of messages currently stored in the MTA, measured in kilo-octets.
mtaTransmittedVolume	The total volume of messages transmitted since MTA initialization, measured in kilo-octets.
mtaReceivedRecipients	The total number of recipients specified in all messages received since MTA initialization.
mtaStoredRecipients	The total number of recipients specified in all messages currently stored in the MTA.
mtaGroupTable	The table holding information specific to each MTA group.
mtaGroupEntry	The entry associated with each MTA Group.
mtaGroupIndex	The index associated with a group for a given MTA.
mtaGroupReceivedMessages	The number of messages received to this group since the last MTA initialization.
mtaGroupRejectedMessages	The number of messages rejected by this group since MTA initialization.
mtaGroupStoredMessages	The total number of messages currently stored in this group's queue.
mtaGroupTransmittedMessages	The number of messages transmitted by this group since the last MTA initialization.

MIB Object	Description
mtaGroupReceivedVolume	The total volume of messages (measured in K-octets) received to this group since the last MTA initialization.
mtaGroupStoredVolume	The total volume of messages (measured in K-octets) currently stored in this group's queue..
mtaGroupTransmittedVolume	The total volume of messages (measured in K-octets) transmitted by this group since MTA initialization.
mtaGroupReceivedRecipients	The total number of recipients specified in all messages received to this group since MTA initialization.
mtaGroupStoredRecipients	The total number of recipients specified in all messages currently stored in this group's queue.
MtaGroupTransmitted-Recipients	The total number of recipients specified in all messages transmitted by this group since MTA initialization.
mtaGroupOldestMessageStored	Time since the oldest message in this group's queue was placed in the queue.
mtaGroupInboundAssociations	The number of current associations to the group, where group is the responder.
MtaGroupOutbound-Associations	The number of current associations to the group, where group is the initiator.
MtaGroupAccumulated-InboundAssociations	The total number of associations to the group since MTA initialization, where the group is the responder.
MtaGroupAccumulated-OutboundAssociations	The total number of associations to the group since MTA initialization, where group is the initiator.
mtaGroupLastInboundActivity	Time since the last time that this group had an active inbound association for message reception.
MtaGroupLastOutbound-Activity	Time since the last time that this group had an active outbound association for message delivery.
MtaGroupRejectedInbound-Associations	The total number of inbound associations the group has rejected since MTA initialization.
MtaGroupFailedOutbound-Associations	The total number of associations where the group was the initiator and association establishment has failed since MTA initialization.
MtaGroupInboundRejection-Reason	The reason for failure, if any, for the last association this group refused to respond to. An empty string indicates that the last attempt was successful. If no association has been made since the MTA was initialized, the value should be "never".

MIB Object	Description
MtaGroupOutboundRejectionReason	The reason for failure, if any, for the last association this group initiated. An empty string indicates that the last attempt was successful. If no association has been made since the MTA was initialized, the value should be "never".
mtaGroupScheduledRetry	The time when this group is scheduled to next attempt to make an association.
mtaGroupMailProtocol	An identification of the protocol being used by this group.
mtaGroupName	A descriptive name for the group.
mtaGroupAssociationTable	The table holding information regarding the associations for each group.
mtaGroupAssociationEntry	The entry containing information regarding the associations for each MTA group.
mtaGroupAssociationIndex	Reference into association table to allow correlation of this group's active associations with the association table.
mtaCompliance	The compliance statement for SNMPv2 entities that implement the Mail Monitoring MIB for basic monitoring of MTAs.
mtaAssociationCompliance	The compliance statement for SNMPv2 entities that implement the Mail Monitoring MIB for monitoring of MTAs and their associations.
mtaGroup	A collection of objects providing basic monitoring of MTAs.
mtaAssocGroup	A collection of objects providing monitoring of MTA associations.

Traps

Trap	Description
mtaEventType	The type of event raised by the server. The supported types are Notification, Fatal, Urgent, Error, and Warning.
mtaEventMessage	Text describing the event raised by the server.
mtaAlarm	An alarm triggered by an event. Reports the type of event and text explaining the event.

10.3.2 Directory Cache Server MIB objects

The following managed objects are related to the Directory Cache Server.

MIB Object	Description
dcsNumberOfUpdates	The number of entries updated in the Directory Cache on the last cache synchronization.
dcsUpdateTime	Time (in seconds) taken to complete the last Directory Cache synchronization.
dcsTotalQueries	The total number of queries serviced by the Directory Cache. These include the queries to obtain user information, forwarding information, radius information, and updates.
DcsMailBoxAcceccFailures	The number of times that the Directory Cache failed to access any mailbox.
DcsUnknownUsers	The number of users not known to the Directory Cache.
DcsNonAuthenticatedUsers	The number of users that failed the authentication check.
DcsAuthenticatedUsers	The number of users that passed the authentication check.
dcsCurrCnxs	The number of current connections.
dcsAccumCnxs	The number of accumulated connections.
dcsFailedCnxs	The number of connection requests that resulted in failures since the last Directory Cache initialization.

Traps

Trap	Description
dcsEventType	The type of event raised by the server. The supported types are Notification, Fatal, Urgent, Error, and Warning.
dcsEventMessage	Text describing the event raised by the server.
dcsAlarm	An alarm triggered by an event. Reports the type of event and text explaining the event.

10.3.3 IMAP MIB Objects

The following managed objects are related to the IMAP Server.

MIB Object	Description
imapTable	The table holding information specific to an IMAP server.
imapEntry	The entry associated with each IMAP server.
imapRetrieveMsgs	The number of messages retrieved by the IMAP server since the last server initialization.
imapRetrieveVol	The volume of mail (in K-octets) retrieved by the IMAP server since the last server initialization.
imapCurrentCnxs	The current number of client connections being serviced by the server.
imapAccumCnxs	The accumulated number of client connections serviced by the server since the last server initialization.
imapFailedCnxs	The total number of failed client connections since the last server initialization.
imapRejectCnxs	The total number of client connections timed out since the last server initialization.

Traps

Trap	Description
imapEventType	The type of event raised by the server. The supported types are Notification, Fatal, Urgent, Error, and Warning.
imapEventMessage	Text describing the event raised by the server.
imapAlarm	An alarm triggered by an event. Reports the type of event and text explaining the event.

10.3.4 Queue Server MIB Objects

The following managed objects are related to the Queue Server.

MIB Object	Description
mqsTable	The table holding information specific to a Message Queue server.
mqsEntry	The entry associated with each Queue server.
mqsCurrentCnxs	The number of current connections.
mqsAccumCnxs	The accumulated number of connections since the last server initialization.
mqsFailedCnxs	The total number of connections requests that resulted in failures since the last server initialization
mqsCurrentLocks	The number of current locks.
mqsAccumLocks	The accumulated number of locks since the last sever initialization.

Traps

Trap	Description
mqaEventType	The type of event raised by the server. The supported types are Notification, Fatal, Urgent, Error, and Warning.
mqaEventMessage	Text describing the event raised by the server.
mqaAlarm	An alarm triggered by an event. Reports the type of event and text explaining the event.

10.3.5 Message Store Server MIB Objects

The following managed objects are related to the Message Store Server.

MIB Object	Description
mssTable	The table holding information specific to an MSS.
mssEntry	The entry associated with each MSS.
mssInstance	The unique identifier for an instance to an MSS. This value is used as the index value for the table.
mssReceivedMessages	The number of messages received by the MSS since the last server initialization.
mssReceivedVol	The total volume of mail (in K-octets) received by the MSS since the last MSS initialization.
mssStoredMessages	The total number of messages stored by the MSS since the last server initialization.
mssStoredVol	The total volume of mail (in K-octets) stored by the MSS since the last server initialization.
mssCurrentCnxs	The current number of client connections being serviced by the server.
mssAccumCnxs	The accumulated number of client connections serviced by the server since the last MSS initialization.
mssFailedCnxs	The total number of client connection failures since the last server initialization.

Traps

Trap	Description
mssEventType	The type of event raised by the server. The supported types are Notification, Fatal, Urgent, Error, and Warning.
mssEventMessage	Text describing the event raised by the server.
mssAlarm	An alarm triggered by an event. Reports the type of event and text explaining the event.

10.3.6 Post Office Protocol (POP) Server

The following managed objects are related to the POP Server.

MIB Object	Description
popTable	The table holding information specific to a POP server.
popEntry	The entry associated with each POP server.
popRetrievedMsgs	The number of messages retrieved by the POP server since the last initialization.
popRetrievedVol	The volume of mail in (K-octets) retrieved since the last POP server initialization
popCurrentCnxs	The current number of client connections being serviced by the server.
popAccumCnxs	The accumulated number of client connections serviced by the server since the last initialization.
popFailedCnxs	The total number of failed client connections since the last POP server initialization.
popRejectedCnxs	The total number of client connections rejected since the last POP server initialization.
popTimeOuts	The total number of client connections timed-out since the last POP server initialization.

Traps

Trap	Description
popEventType	The type of event raised by the server. The supported types are Notification, Fatal, Urgent, Error, and Warning.
popEventMessage	Text describing the event raised by the server.
popAlarm	An alarm triggered by an event. Reports the type of event and text explaining the event.

10.4 SNMP Configuration Options

The following configuration keys are useful for controlling or modifying the behavior of the POP Server. For a further discussion of these keys (including possible values), see Chapter 11 in this manual.

<code>trapMask</code>	The severity levels that will be reported. Valid values are Fatal, Urgent, Error, Notification, and Warning.
<code>eventMaxWait</code>	The maximum amount of time (in milliseconds) that the SNMP thread will block waiting for a request from a management station.
<code>masterAgentHost</code>	The host on which the SNMP master agent can be found.
<code>trapQueueSize</code>	The maximum number of traps that can be stored in the queue.

11

Configuration Key Reference

The behavior of InterMail servers and various utilities can be customized using the configuration keys described in this chapter. The keys are listed alphabetically in table format, with each table containing a variety of information about the key being discussed.

Note: For a complete discussion of configuration management and instructions on changing configuration keys, please see Chapter 3 of the *InterMail Operations Guide*.

This chapter contains the following:

- A sample configuration key, along with an explanation of terminology
- An alphabetical listing of all InterMail configuration keys

11.1 Sample Configuration Key

The table for the fictional configuration key `configKeyName` introduces the table format and terminology used throughout this chapter.

Note: Though multi-word keys are written in both upper and lower case, this is solely for the sake of readability. All configuration keys are case-insensitive.

configKeyName

Description:	Explains the purpose of the key, describes the format of key entries, and provides suggested settings where appropriate.
Related Keys:	Lists additional configuration keys (if any) that work together with this key to achieve a specific result.
Servers Affected:	Indicates the InterMail servers affected by this key. (See Section 1.1.1 for a list of InterMail servers and the associated processes.)
Change Impact:	Describes the implications of changing the value of a particular configuration key. The possible impacts are: <ul style="list-style-type: none">• server restart required• trivial, no server restart required• no impact on server See Section 1.1.2 for a description of the various change impacts.
Possible Values:	Describes the allowable values for a key, e.g., true or false, a text string, an integer, etc.

- Initial Value:** Defines the “starter” entry that is set for a particular configuration key when InterMail is installed.
- Default Value:** Specifies the value the system will insert if an explicit value has not been set for this particular key.
- If several servers use the same configuration key, there may be a different default settings for each server.
- “Null” represents the absence of a value.
- Example:** Sample syntax for the key, including the complete configuration hierarchy, the key name, a colon, a space, and the value of the key enclosed in square brackets. For example:
- ```
/*/mta/configKeyName: [true]
```

### 11.1.1 InterMail Servers and Processes

Each InterMail server has a corresponding process name. Unless otherwise indicated, the syntax for each configuration key must include the appropriate server process name. For example:

```
/*/imapserv/clientTimeout: [1800]
```

sets the client timeout period of the IMAP Server (*imapserv*) at 1800 seconds (30 minutes).

The InterMail servers and their corresponding server process names are as follows:

| <b>Server Name:</b>           | <b>Server Process Name:</b> |
|-------------------------------|-----------------------------|
| MTA (Message Transport Agent) | <i>mta</i>                  |
| MSS (Message Store Server)    | <i>mss</i>                  |
| POP Server                    | <i>popserv</i>              |
| IMAP Server                   | <i>imapserv</i>             |
| Directory Cache Server        | <i>imdircachserv</i>        |
| Queue Server                  | <i>imqueueserv</i>          |
| Configuration Server          | <i>imconfserv</i>           |
| Manager Server                | <i>immgserv</i>             |
| SNMP Server                   | <i>snmpdm</i>               |
| WebServer                     | <i>httpd</i>                |

The *sysadmin* module may also be used in place of the server process name for certain configuration settings. Where this is the case, it is clearly indicated in the example.

### **Common server configuration**

Some configuration keys can define settings for more than one server at a time. Where indicated, you can use `common` in place of the server process name to configure identical settings for every server affected by this particular key.

For example, the `badPasswordDelay` key, which sets the number of seconds that a bad password will delay subsequent authentication attempts, may be applied to both the POP and IMAP servers. Therefore, you can define the delay for both servers with a single command, by using `common` in place of the process name, as follows:

```
/*/common/badPasswordDelay: [5]
```

### **Individual server configuration**

If there were a requirement to have different delay periods for the POP and IMAP servers, they would have to be set independently, as in the following example:

```
/*/popserv/badPasswordDelay: [5]
/*/imapserv/badPasswordDelay: [8]
```

## **11.1.2 Impact of Configuration Key Changes**

The Change Impact section of the configuration key table describes the implications of changing the value of a particular configuration key. The possible impacts are:

- **Server restart required**—you must restart the server in order for the change you made to take affect. This is because the server can read the new setting only at startup time.  
  
The server will not restart automatically, rather you must take action to restart it. If you do not restart the server immediately, the system will continue to operate, however it will do so with the previous configuration setting, which remains in effect until the server is restarted.
- **Trivial, no server restart required**—the server will be able to read the new configuration setting the next time it is required without having to be restarted first.
- **No impact on server**—changing the value of the configuration key affects something other than a server, typically a utility which will retrieve the new value the next time it is run.

---

## 11.2 InterMail Configuration Keys

### <server>\_opt

- Description:** Defines the command line options for the InterMail server identified by the <server> variable.  
The options listed in this key are invoked by the `imservctrl` command.  
*Note:* System administration keys, such as <server>\_opt, are listed in the configuration hierarchy under the path /<host>/sysadmin/.
- Related Keys:** none
- Servers Affected:** all servers
- Change Impact:** **Warning!** Do not attempt to modify the value of this key.
- Possible Values:** any command line options that are valid for the <server> indicated
- Initial Value:** set during installation
- Default Value:** null
- Example:** /venus/sysadmin/mss\_opt: [-db]

### <server>\_run

- Description:** Indicates whether or not the InterMail server identified by the <server> variable is configured to run on a particular host.  
This key is used by `imservctrl` in deciding which servers it should start up or shut down on each host.  
*Note:* System administration keys, such as <server>\_opt, are listed in the configuration hierarchy under the path /<host>/sysadmin/.
- Related Keys:** none
- Servers Affected:** all servers
- Change Impact:** **Warning!** Do not attempt to modify the value of this key.
- Possible Values:** on or off
- Initial Value:** set during installation
- Default Value:** off
- Example:** /neptune/sysadmin/mta\_run: [on]

## abortIfLogFails

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Enables/disables the option for servers to abort if they are unable to write to their log file.</p> <p>If the <code>abortIfLogFails</code> configuration key is set to <code>true</code> and a server is unable to log its activity, the server will stop running.</p> <p>If the <code>abortIfLogFails</code> key is set to <code>false</code> and logging fails, servers keep running and an error is written to the standard operating system log file.</p> <p>To maximize system availability, it is recommended that you disable this option by setting the value of the <code>abortIfLogFails</code> key to <code>false</code>.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Example:</b>          | <code>/*/common/abortIfLogFails: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## adminMessageStoreName

|                          |                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Specifies the name of the administrative mailbox.</p> <p>Each Message Store Database contains an administrative mailbox used to store the “welcome” message and other special messages. All messages in the administrative mailbox are exempt from the absolute limit on message lifetimes, which means they are allowed to remain in the mailbox indefinitely.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | a text string                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | admin                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Default Value:</b>    | admin                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Example:</b>          | <code>/*/mss/adminMessageStoreName: [admin]</code>                                                                                                                                                                                                                                                                                                                     |

## adminPort

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the port on which an InterMail server listens for special instructions (e.g., requests to shut down or return its version number).<br><br>The value of the <code>adminPort</code> configuration key must be unique for every server on a given host. However, to prevent the possibility of port conflict in the event of system failover (a high availability option), it is recommended that the value of the <code>adminPort</code> configuration key be unique for every server in your entire InterMail installation. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | set during installation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>/mercury/imconfserv/adminPort: [5001]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## advertiseProduct

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Controls whether or not InterMail product identification is sent with the MTA's standard 220 greeting response.<br><br>When the <code>advertiseProduct</code> key is set to <code>true</code> (the default setting), the MTA responds to connections on the SMTP port with a 220 greeting that includes information identifying InterMail as the mail system software. Both the product's name and its version number are included.<br><br>If you wish to hide the identity of your mail system software, disable this option by setting the <code>advertiseProduct</code> key to <code>false</code> . |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/mta/advertiseProduct: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## allowEtrn

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables support for the SMTP command ETRN, which is used to request immediate processing of queued mail for a particular domain.<br><br>If the <code>allowEtrn</code> configuration key is set to <code>true</code> , ETRN requests are accepted and queued mail processing attempted for the domain specified.<br><br>If the <code>allowEtrn</code> key is set to <code>false</code> , ETRN requests are not allowed. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | true                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | true                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mta/allowEtrn: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                           |

## allowExpn

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables support for the SMTP command EXPN, which is used to “expand” an alias or mailing list address to determine the addresses to which it forwards mail.<br><br>If the <code>allowExpn</code> configuration key is set to <code>true</code> , the system responds to EXPN requests with expanded account information.<br><br>If the <code>allowExpn</code> key is set to <code>false</code> , EXPN requests are not allowed.<br><br>To maintain system security at the highest level, it is recommended that the value of the <code>allowExpn</code> configuration key be set to <code>false</code> . |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/allowExpn: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## allowHelp

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables support for the SMTP command <code>HELP</code> , which provides a list of the SMTP commands supported by your mail server.<br><br>If the <code>allowHelp</code> configuration key is set to <code>true</code> , the system responds to <code>Help</code> requests with a list of supported SMTP commands.<br><br>If the <code>allowHelp</code> key is set to <code>false</code> , <code>HELP</code> requests are not allowed. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Example:</b>          | <code>/*/mta/allowHelp: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                          |

## allowQsnd

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables support for the <code>QSNQ</code> command that requests immediate processing of queued mail for a particular host, or for all hosts.<br><br>If the <code>allowQsnd</code> configuration key is set to <code>true</code> , <code>QSNQ</code> requests are accepted and desired queued processing is attempted.<br><br>If the <code>allowQsnd</code> key is set to <code>false</code> , <code>QSNQ</code> requests are not allowed.<br><br><i><b>Note:</b> The <code>QSNQ</code> command was developed prior to the SMTP command <code>ETRN</code> (see the <code>allowEtrn</code> configuration key for a description). It is a proprietary queue-processing command that remains supported for backward compatibility.</i> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/allowQsnd: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## allowVrfy

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Enables/disables support for the SMTP command VRFY, used to verify that the server recognizes the intended recipient before a message is sent.</p> <p>If the <code>allowVrfy</code> configuration key is set to <code>true</code>, the system responds to VRFY requests by indicating if the recipient is known or unknown.</p> <p>If the <code>allowVrfy</code> key is set to <code>false</code>, VRFY requests are not allowed.</p> <p><i>Note:</i> The VRFY command is not commonly used by SMTP clients. It is most frequently used as a tool for debugging mail delivery problems.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | true                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | true                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/allowVrfy: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## alwaysQueue

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Enables/disables the option to queue all outgoing messages whether or not a queue already exists for the destination host.</p> <p>When the <code>alwaysQueue</code> key is set to <code>true</code>, immediate delivery of outgoing mail is never attempted. Instead, all outgoing messages are queued and delivery attempted at the next queue processing interval.</p> <p>When the <code>alwaysQueue</code> key is set to <code>false</code>, the system attempts to deliver outgoing mail immediately, unless mail is already queuing for the host to which a particular message is addressed. If mail is already queuing for a destination host, messages addressed to that host are added to the queue to await delivery at the next queue processing interval (as defined by the <code>outboundDeferProcessInterval</code> configuration key).</p> <p>A setting of <code>true</code> can delay mail delivery, so setting the value to <code>false</code> is recommended.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>/*/mta/alwaysQueue: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## alwaysTryFirst

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Indicates whether or not mail delivery should be attempted for a host when a queue already exists for that host.<br><br>In standard InterMail operation, if a queue already exists for a particular host, subsequent mail that arrives for that host is automatically queued. Setting the <code>alwaysTryFirst</code> key to <code>true</code> causes InterMail to attempt to deliver all subsequent messages immediately. (Other mail that is already in the queue for that host remains in queue until the next scheduled queue processing interval.)<br><br>The <code>alwaysQueue</code> configuration key takes precedence over the <code>alwaysTryFirst</code> key. If the <code>alwaysQueue</code> configuration key is set to <code>true</code> , the value in <code>alwaysTryFirst</code> will be ignored.<br><br><i>Note:</i> The setting for <code>alwaysTryFirst</code> is applied to all domains for which mail is queued. It cannot be applied to individual domains. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Example:</b>          | <code>/*/mta/alwaysTryFirst: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## autoReplyCharset

|                          |                                                        |
|--------------------------|--------------------------------------------------------|
| <b>Description:</b>      | Defines the character set used in auto-reply messages. |
| <b>Related Keys:</b>     | none                                                   |
| <b>Servers Affected:</b> | MTA                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                    |
| <b>Possible Values:</b>  | us-ascii                                               |
| <b>Initial Value:</b>    | us-ascii                                               |
| <b>Default Value:</b>    | us-ascii                                               |
| <b>Example:</b>          | <code>/*/mta/autoReplyCharset: [us-ascii]</code>       |

## autoReplyDefaultMessage

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Defines the default auto-reply message.</p> <p>When mail arrives for an account that has the auto-reply feature enabled, the system generates a text message automatically in response. The content of the message can be established on a per account basis (via the <code>imreplyctrl</code> command) and is typically different for each account.</p> <p>If an account has the auto-reply feature enabled, but an account-specific reply message does not exist, the message defined in the <code>autoReplyDefaultMessage</code> configuration key is used.</p> <p>The value of the <code>autoReplyDefaultMessage</code> key may include multiple lines of text, but each line must be contained within its own set of square brackets.</p> |
| <b>Related Keys:</b>     | <code>autoReplyCharset</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | a text string                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | no autoreply message defined                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/mss/autoReplyDefaultMessage: [hello]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## autoReplyExpireDays

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Specifies the number of days until the restriction on vacation auto-reply messages expires.</p> <p>When an account has the auto-reply feature enabled in <code>Vacation</code> mode, users who send messages to that account receive only one copy of the vacation message within a specified time period.</p> <p>The <code>autoReplyExpireDays</code> configuration key sets the number of days before senders are eligible to receive an additional copy of the vacation message. For example, a value of 7 indicates that users can receive another copy of an account's vacation message every seven days.</p> <p>A null value indicates no limit.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mss/autoReplyExpireDays: [7]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## autoReplySuppressList

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Identifies senders that will not receive automatic responses via InterMail's auto-reply feature. This key is used to indicate addresses to which sending an auto-reply would typically be inappropriate (e.g., mailing list managers, or other auto-reply addresses).<br><br>Entries in the <code>autoReplySuppressList</code> key are interpreted as the local portion of a standard e-mail address. The value of the key applies to all addresses whose local portion matches an entry in the list.<br><br>For example, if <code>listserv</code> is in the list (which it is by default), then the MTA will never send an auto-reply message to any address with <code>listserv</code> as its local portion (e.g., <code>listserv@software.com</code> , <code>listserv@accordance.com</code> , <code>listserv@anydomain.com</code> ).<br><br>The value of the <code>autoReplySuppressList</code> key may include multiple entries, but each entry must appear on a separate line between its own set of square brackets. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Possible Values:</b>  | any RFC821-compliant username (the local portion of an e-mail address)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | the entries <code>autoanswer</code> , <code>echo</code> , <code>listserv</code> , <code>mailerdaemon</code> , <code>mailer-daemon</code> , <code>mirror</code> , <code>netserv</code> , <code>server</code> , <code>uucp</code> , <code>mailer</code> , <code>listproc</code> , <code>majordomo</code> , and <code>list.manager</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Example:</b>          | <pre>/*/mta/autoReplySuppressList: [listserv]                                [echo]                                [list.manager]</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## backupDbConnection

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b> | Specifies the Oracle connection string for the backup Integrated Services Directory (ISD).<br><br>The <code>backupDbConnection</code> key is used in conjunction with the <code>backupDbUserInfo</code> key to define the connection parameters for the backup directory database.<br><br>If both these parameters are specified and the primary connection fails, the Directory Cache Server will automatically use the backup connection for database read-through and write-through operations. If either key is left unspecified, the ability to connect to a backup database is disabled.<br><br><i>Note:</i> The Directory Cache Server's <code>expire</code> and <code>update</code> threads do not use the backup database connection. This guarantees that the directory cache will only be updated with information from the primary database. |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                       |
|--------------------------|-----------------------------------------------------------------------|
| <b>Related Keys:</b>     | backupDbUserInfo                                                      |
| <b>Servers Affected:</b> | Directory Cache Server                                                |
| <b>Change Impact:</b>    | server restart required                                               |
| <b>Possible Values:</b>  | an Oracle connection string                                           |
| <b>Initial Value:</b>    | the name of the Oracle database instance provided during installation |
| <b>Default Value:</b>    | null                                                                  |
| <b>Example:</b>          | <code>/* /common/backupDbConnection: [IMDB]</code>                    |

## backupDbUserInfo

|                          |                                                                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the Oracle username and password for the backup ISD.<br><br>The backupDbUserInfo key is used in conjunction with the backupDbConnection key to define the connection parameters for the backup directory database. |
| <b>Related Keys:</b>     | backupDbConnection                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                                                                                                                       |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                      |
| <b>Possible Values:</b>  | <string>/<string>                                                                                                                                                                                                            |
| <b>Initial Value:</b>    | the InterMail UID and GID values at time of installation                                                                                                                                                                     |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/* /common/backupDbUserInfo: [imail/imail]</code>                                                                                                                                                                      |

## badPasswordDelay

|                          |                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the amount of time (in seconds) that a bad password will delay subsequent authentication attempts during the same connection. Delays are cumulative up to the limit defined by the value of the maxBadPasswordDelay configuration key.<br><br>This key can be used independently on either the POP Server or the IMAP Server. When the server variable is set to common, it impacts both servers. |
| <b>Related Keys:</b>     | maxBadPasswordDelay                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | POP Server, IMAP Server                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | 5                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | 5                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/* /common/badPasswordDelay: [5]</code>                                                                                                                                                                                                                                                                                                                                                          |

## badPasswordWindow

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <b>Description:</b>      | <p>Sets a limit on the amount of time (in minutes) that information is tracked about bad password attempts on a particular account or from a particular IP address (both are used to calculate the password delay time).</p> <p>After this period has elapsed, InterMail resets the number of failed password attempts to zero, thereby removing any restrictions previously imposed by InterMail's password defense mechanisms on a particular account or IP address.</p> <p>This key can be used independently on either the POP Server or the IMAP Server. When the server variable is set to <code>common</code>, it impacts both servers.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | POP Server, IMAP Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Default Value:</b>    | 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Example:</b>          | <code>/*/common/badPasswordWindow: [120]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## blockAddresses

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| <b>Description:</b>      | <p>Enables/disables mail blocking by e-mail address.</p> <p>When the <code>blockAddresses</code> configuration key is set to <code>true</code>, the MTA checks the <code>MAIL FROM:</code> address of each incoming message against the addresses listed in <code>blockTheseAddresses</code>. If a match is found, the server rejects the message and logs the rejection.</p> <p>When the <code>blockAddresses</code> key is set to <code>false</code>, the MTA does not block mail based on the sender's address (regardless of the entries in the <code>blockTheseAddresses</code> configuration key).</p> <p><i><b>Note:</b> The application of all blocking policies is further restricted by the entry in the <code>blockPerAccount</code> configuration key.</i></p> |
| <b>Related Keys:</b>     | <code>blockTheseAddresses</code> , <code>blockPerAccount</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*/mta/blockAddresses: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## blockConnections

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <b>Description:</b>      | Enables/disables mail blocking by client IP address.<br><br>When the <code>blockConnections</code> configuration key is set to <code>true</code> , the MTA checks the IP address of the client against the list of IP addresses in <code>blockTheseIPs</code> . If a match is found, all messages sent by that client are blocked and a log entry is written to record this event.<br><br>When the <code>blockConnections</code> key is set to <code>false</code> , the MTA does not block mail based on the connecting IP address (regardless of the entries in the <code>blockTheseIPs</code> configuration key).<br><br><i>Note:</i> The application of all blocking policies is further restricted by the entry in the <code>blockPerAccount</code> configuration key. |
| <b>Related Keys:</b>     | <code>blockTheseIPs</code> , <code>blockPerAccount</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*/mta/blockConnections: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## blockDomains

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables mail blocking by sender domain.<br><br>When the <code>blockDomain</code> configuration key is set to <code>true</code> , the MTA checks the domain portion of the <code>MAIL FROM:</code> address against the addresses listed in <code>blockTheseDomains</code> . If the address includes a listed domain, the message is blocked.<br><br>When the <code>blockDomain</code> key is set to <code>false</code> , the MTA does not block mail based on the domain in the sender's address (regardless of the entries in the <code>blockTheseDomains</code> configuration key).<br><br><i>Note:</i> The application of all blocking policies is further restricted by the entry in the <code>blockPerAccount</code> configuration key. |
| <b>Related Keys:</b>     | <code>blockTheseDomains</code> , <code>blockPerAccount</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Example:</b>          | <code>/*/mta/blockDomains: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## blockLocalNoAcct

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables the verification of local sender addresses.<br>When the <code>blockLocalNoAccount</code> configuration key is set to <code>true</code> , the domain portion of the <code>MAIL FROM:</code> address is checked against the list of local mail domains in the Integrated Services Directory (ISD). If this address includes a local mail domain, the Directory Cache Server is asked to verify the existence of the sender address in the ISD. If the address does not exist, the message is blocked.<br><br>This behavior prevents users from fraudulently including one of your domains in their e-mail addresses, which might allow them to avoid mail blocking or other policies.<br><br><i>Note:</i> The application of all blocking policies is further restricted by the entry in the <code>blockPerAccount</code> configuration key. |
| <b>Related Keys:</b>     | <code>blockPerAccount</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <code>/*/mta/blockLocalNoAcct: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## blockPerAccount

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines whether mail blocking policies and any <code>reject</code> instructions listed in the <code>incomingMailFilter</code> configuration key are applied globally or on a per-account basis.<br><br>If the <code>blockPerAccount</code> configuration key is set to <code>false</code> , then blocking policies and any <code>reject</code> instructions listed in the <code>incomingMailFilter</code> configuration key are applied universally to all recipients of incoming mail.<br><br>If the <code>blockPerAccount</code> key is set to <code>true</code> , then blocking policies and any <code>reject</code> instructions listed in the <code>incomingMailFilter</code> configuration key are only applied to messages whose recipients desire mail blocking (as indicated by their account profile in the Integrated Services Directory). |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Example:</b>          | <code>/*/mta/blockPerAccount: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## blockReplyCode

|                          |                                                                                                                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the three-digit SMTP error code that is sent to the client when a message is blocked. By default, this value is 550, the standard SMTP code to indicate that the client operation was not successful.<br><br>This code is accompanied by the text specified in <code>blockReplyText</code> . |
| <b>Related Keys:</b>     | <code>blockReplyText</code>                                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                  |
| <b>Possible Values:</b>  | any integer from 400 to 599                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | 550                                                                                                                                                                                                                                                                                                  |
| <b>Default Value:</b>    | 550                                                                                                                                                                                                                                                                                                  |
| <b>Example:</b>          | <code>/*/mta/blockReplyCode: [550]</code>                                                                                                                                                                                                                                                            |

## blockReplyText

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the error text that is returned with the <code>blockReplyCode</code> error code. This text informs the client of the nature of the message failure.<br><br>If the word <code>ADDRESS</code> is included in the text string, it is treated as a variable and replaced with the recipient's address.<br><br>The value of the <code>blockReplyText</code> key may include multiple lines of text, but each line must be contained within its own set of square brackets. |
| <b>Related Keys:</b>     | <code>blockReplyCode</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Possible Values:</b>  | a text string                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | you are not allowed to send mail to <code>ADDRESS</code>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | you are not allowed to send mail to <code>ADDRESS</code>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/*/mta/blockReplyText: [We're sorry, but you may not ]<br/>[send mail to <code>ADDRESS</code>.]</code>                                                                                                                                                                                                                                                                                                                                                                    |

## blockTheseAddresses

|                          |                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the addresses that are to be blocked by the MTA if the <code>blockAddresses</code> configuration key is set to <code>true</code> .<br><br>The <code>blockTheseAddresses</code> key may include multiple entries, but each entry must appear on a separate line within its own set of square brackets. |
| <b>Related Keys:</b>     | <code>blockAddresses</code>                                                                                                                                                                                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                             |
| <b>Possible Values:</b>  | any valid e-mail address                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <pre>/*/mta/blockTheseAddresses: [get.rich@scam.com]                              [make.money@bogus.com]</pre>                                                                                                                                                                                                  |

## blockTheseDomains

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies a list of domains that are to be blocked by the MTA if <code>blockDomains</code> is set to <code>true</code> .<br><br>Domain names may be fully qualified (e.g., <code>software.com</code> ), or they may include a wildcard prefix (e.g., <code>*.software.com</code> ). Use of a wildcard blocks all subdomains associated with a given domain (e.g., <code>sales.software.com</code> , <code>support.software.com</code> ).<br><br>The <code>blockTheseDomains</code> key may include multiple entries, but each entry must appear on a separate line within its own set of square brackets. |
| <b>Related Keys:</b>     | <code>blockDomains</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | any fully qualified domain name or a domain name that includes a wildcard prefix                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <pre>/*/mta/blockTheseDomains: [scam.com]                              [bogus.com]                              [*.bogus.com]</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## blockTheseIPs

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Defines a list of IP addresses that are blocked by the MTA if <code>blockConnections</code> is set to <code>true</code>.</p> <p>To specify all systems within a class-C network, use a 0 (zero) as a wildcard (e.g., <code>10.3.21.0</code>). IP addresses may also be entered as subnets to specify all systems within a range of IP address (e.g., <code>10.3.21.16/24</code>).</p> <p>The <code>blockTheseAddresses</code> key may include multiple entries, but each entry must appear on a separate line within its own set of square brackets.</p> |
| <b>Related Keys:</b>     | <code>blockConnections</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | any valid IP address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <pre> /*/mta/blockTheseIPs: [10.3.21.0]                       [21.5.117.4] </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## blockTheseUsers

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Defines a list of usernames that are blocked by the MTA if <code>blockUsers</code> is set to <code>true</code>.</p> <p>Users are blocked based on the local portion of their addresses only. For example, if <code>big.bucks</code> were listed, mail from <code>big.bucks@scam.com</code>, <code>big.bucks@software.com</code>, and <code>big.bucks@&lt;anydomain.com&gt;</code> would all be blocked.</p> <p>The <code>blockTheseUsers</code> key may include multiple entries, but each entry must appear on a separate line within its own set of square brackets.</p> |
| <b>Related Keys:</b>     | <code>blockUsers</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Possible Values:</b>  | any valid username (the local portion of an e-mail address)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <pre> /*/mta/blockTheseUsers: [big.bucks]                         [hacker] </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## blockUsers

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables mail blocking by the sender's username.<br><br>When the <code>blockUsers</code> configuration key is set to <code>true</code> , the MTA checks the username portion of the <code>MAIL FROM:</code> address of all incoming messages against the usernames listed in <code>blockTheseUsers</code> . If the address includes a listed username, the message is blocked.<br><br>When the <code>blockUsers</code> key is set to <code>false</code> , the MTA does not block mail based on the sender's username (regardless of the entries in the <code>blockTheseUsers</code> configuration key).<br><br><i>Note:</i> The application of all blocking policies is further restricted by the entry in the <code>blockPerAccount</code> configuration key. |
| <b>Related Keys:</b>     | <code>blockTheseUsers</code> , <code>blockPerAccount</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Example:</b>          | <code>/*/mta/blockUsers: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## bodyDataBuffer

|                          |                                                                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the amount of memory (in bytes) that will be allocated for handling message body parts. If a body part exceeds this size, InterMail will keep the data in a file rather than in memory. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                              |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                               |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                     |
| <b>Initial Value:</b>    | 32768                                                                                                                                                                                             |
| <b>Default Value:</b>    | 32768                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/common/bodyDataBuffer: [32768]</code>                                                                                                                                                    |

## bounceFailureBody

- Description:** Specifies the text used in the bounce notification sent with any SMTP 5xx error code.
- The entry for this key may include macros, which are enclosed in angle brackets (<>). Real text is substituted for the macros when this message is sent. Supported macros are identified in the example that follows.
- The value of the `bounceFailureBody` key may include multiple lines of text, but each line must be contained within its own set of square brackets.
- Related Keys:** `bounceFailureHeader`
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** a text string (which may include any of the supported macros)
- Initial Value:** as indicated in the example below
- Default Value:** null
- Example:**
- ```

/*/mta/bounceFailureBody:
[Content-Type: text/plain]
[]
[This Message was undeliverable due to the following ]
[reason:]
[]
[<ErrorText>]
[]
[Please reply to Postmaster@<PostmasterDomain>]
[if you feel this message to be in error.]

```

bounceFailureHeader

- Description:** Specifies the header text used in the bounce notification sent with any SMTP 5xx error code.
- The entry for this key may include macros, which are enclosed in angle brackets (<>). Real text is substituted for the macros when this message is sent. Supported macros are identified in the example that follows.
- The value of the `bounceFailureHeader` key may include multiple lines of text, but each line must be contained within its own set of square brackets.
- Related Keys:** `bounceFailureBody`
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** a header (which may include any of the supported macros)
- Initial Value:** as indicated in the example below

Default Value: null

Example:

```
/*/mta/bounceFailureHeader:  
[To: <ReturnAddress>]  
[From: Mail Administrator <Postmaster@<Domain>>]  
[Reply-To: Mail Administrator <Postmaster@<Domain>>]  
[Subject: Mail System Error - Returned Mail]
```

bounceOnQuotaFull

Description: Sets the desired response to incoming messages that would cause a recipients' mailbox to exceed one of its defined quotas.

If the `bounceOnQuotaFull` configuration key is set to `true`, the MTA returns the message to its sender.

If `bounceOnQuotaFull` is set to `false`, the message is queued for internal delivery with delivery reattempted at regular intervals as defined by the `deferProcessInterval` configuration key.

Related Keys: none

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: true or false

Initial Value: true

Default Value: true

Example:

```
/*/mta/bounceOnQuotaFull: [true]
```

bounceQuotaNotice

Description: Defines the message to be put in a mailbox every time a message is bounced because that mailbox is over quota. The maximum number of unread bounce notices allowed in any mailbox is specified in `maxBounceNotices`.

***Note:** If `maxBounceNotices` is set to 1 or greater, you should define a message in this configuration key.*

The entry for this key may include macros, which are enclosed in angle brackets (<>). Real text is substituted for the macros before the message is sent. Supported macros are identified in the list that follows.

- `<Available_Resource>`
indicates the unused portion of a user's quota
- `<Requested_Resource>`
indicates the quota that has been exceeded (e.g., maximum mailbox size, maximum message size, maximum number of messages in a mailbox)
- `<User_Quota>`
indicates the user's total quota

- <Bounced_Message_From>
indicates the content of the bounced message's From: header
- <Bounced_Message_Reply_To>
indicates the content of the bounced message's Reply To: header
- <Bounced_Message_ID>
indicates the message ID of the bounced message
- <Bounced_Message_Date>
indicates the date of the bounced message
- <Bounced_Message_Subject>
indicates the content of the bounced message's Subject: header
- <Bounced_Message_Size>
indicates the size of the bounced message

Related Keys: maxBounceNotices

Servers Affected: MSS

Change Impact: trivial, no server restart required

Possible Values: a text string (which may include any of the supported macros)

Initial Value: as indicated in the example below

Default Value: null

Example:

```

/*/mss/bounceQuotaNotice:
[Return-Path: <>]
[From: <Bounce_Notice_From>]
[Subject: <Bounce_Notice_Subject>]
[Date: <Bounce_Notice_Date>]
[]
[A message was sent to you that was returned to ]
[the sender(bounced) because it would have caused ]
[your mailbox quota to be exceeded.]
[]
[The following is the reason that the message was ]
[over quota:]
[]
[Quota Type: <Requested_Resource>]
[Quota Available: <Available_Resource>]
[Total Quota: <User_Quota>]
[]
[The following is the information on the message ]
[that was bounced:]
[]
[Sender: <Bounced_Message_From>]
[Subject: <Bounced_Message_Subject>]
[Size: <Bounced_Message_Size>]
[Message ID: <Bounced_Message_ID>]
[Date: <Bounced_Message_Date>]
[Reply_To: <Bounced_Message_Reply_To>]
[]
[To fix this problem, delete some messages from ]
[your mailbox, and contact the sender to resend ]
[the message.]
[]
[If the size of the message is too big, contact ]
[the sender to reduce the size of the message and ]
[resend the message.]

```

bounceSuccessBody

- Description:** Specifies the text used in the bounce notification sent to indicate bouncing of a successful delivery status notification (DSN).
The entry for this key may include macros, which are enclosed in angle brackets (<>). Real text is substituted for the macros when this message is sent. Supported macros are identified in the example that follows.
The value of the `bounceSuccessBody` key may include multiple lines of text, but each line must be contained within its own set of square brackets.
- Related Keys:** `bounceSuccessHeader`
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** a text string (which may include any of the supported macros)
- Initial Value:** as indicated in the example below
- Default Value:** null
- Example:**
- ```
/*/mta/bounceSuccessBody:
[Content-Type: text/plain]
[]
[<ErrorText>]
[]
[Please reply to Postmaster@<PostmasterDomain>]
[if you feel this message to be in error.]
```

## bounceSuccessHeader

- Description:** Specifies the header text used in the bounce notification sent to indicate bouncing of a successful delivery status notification (DSN).  
The entry for this key may include macros, which are enclosed in angle brackets (<>). Real text is substituted for the macros when this message is sent. Supported macros are identified in the example that follows.  
The value of the `bounceSuccessHeader` key may include multiple lines of text, but each line must be contained within its own set of square brackets.
- Related Keys:** `bounceSuccessBody`
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** a header (which may include any of the supported macros)
- Initial Value:** as indicated in the example below
- Default Value:** null
- Example:**
- ```
/*/mta/bounceSuccessHeader:  
[To: <ReturnAddress>]  
[From: Mail Administrator Postmaster@<Domain>]  
[Reply-To: Mail Administrator <Postmaster@<Domain> >]  
[Subject: Mail System Delivery Report]
```

bucketCount

Description:	Defines the number of bucket directories to be created within the <code>Control</code> and <code>Messages</code> directories. This value should not be modified once service has begun, as messages that are already in the system could end up in the wrong bucket.
Related Keys:	none
Servers Affected:	MTA
Change Impact:	<i>Warning!</i> Do not attempt to modify the value of this key.
Possible Values:	any integer greater than zero
Initial Value:	499
Default Value:	499
Example:	<code>/*/mta/bucketCount: [499]</code>

cacheAuthoritativeOnDbFail

Description:	Indicates whether or not the information in the directory cache should be considered authoritative if the Integrated Services Directory (ISD) cannot be reached. Under normal circumstances the Directory Cache Server reads through to the ISD if it cannot find a particular user or the proper password in its local cache. If the <code>cacheAuthoritativeOnDbFail</code> key is set to <code>true</code> and the ISD is unavailable, the Directory Cache Server returns “unknown user” errors for accounts that cannot be found in the cache and “bad password” errors for passwords that are incorrect or missing from the cache. If the <code>cacheAuthoritativeOnDbFail</code> key is set to <code>false</code> and the ISD is unavailable, the Directory Cache Server returns an error to the client indicating that the request cannot be serviced at this time and suggesting that the client try again later.
Related Keys:	none
Servers Affected:	Directory Cache Server
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>true</code>
Default Value:	<code>true</code>
Example:	<code>/*/imdircacheserv/cacheAuthoritativeOnDbFail: [true]</code>

cacheLimitInKb

Description:	Defines the maximum size of the server's cache (in kilobytes).
Related Keys:	none
Servers Affected:	all servers
Change Impact:	trivial, no server restart required
Possible Values:	any integer greater than zero
Initial Value:	256
Default Value:	256
Example:	<code>/* /common/cacheLimitInKb: [256]</code>

canonicalize

Description:	Enables/disables completion of the MAIL FROM: address on incoming messages. When <code>canonicalize</code> is set to <code>true</code> and the MAIL FROM: address on an incoming message is incomplete, the address is completed with the domain name defined in the <code>defaultDomain</code> configuration key. If <code>canonicalize</code> is set to <code>false</code> and the MAIL FROM: address on an incoming message is incomplete, the message is bounced.
Related Keys:	<code>defaultDomain</code>
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>true</code>
Default Value:	<code>true</code>
Example:	<code>/* /mta/canonicalize: [true]</code>

checkAuthentication

Description:	Enables/disables the option to validate From: and MAIL FROM: address lines against the addresses in the Integrated Services Directory. If <code>checkAuthentication</code> is set to <code>true</code> , authenticated SMTP login (via the AUTH LOGIN command) is required for those addresses that have the Authenticated SMTP option enabled in their account profile. If <code>checkAuthentication</code> is set to <code>false</code> , SMTP authentication is not required for any address.
Related Keys:	none
Servers Affected:	MTA

Change Impact: trivial, no server restart required
Possible Values: true or false
Initial Value: false
Default Value: false
Example: `/*/mta/checkAuthentication: [false]`

clientConnectionLimitTable

Description: Defines a series of limits for the number of simultaneous SMTP connections. Limits may be established for an individual IP address or for a range of IP addresses. In addition, a default limit may be established for IP addresses other than those specifically listed.

If the configured number of connections is exceeded, the SMTP connection will be dropped with a 421 error. This is one method to prevent junk e-mail.

Every entry in the list should be on a separate line, between its own set of square brackets. The content within the brackets should be in the form indicated below (spaces are not allowed):

```
<ip_address>[/<significant_bits>]:<num_connections>
```

The entry that follows specifies that for IP address 207.42.31.10, only 10 simultaneous connections should be allowed at any time:

```
207.42.31.10:10
```

The entry that follows specifies that the IP address 209.33.47.110 or any address whose first 8 bits match this IP number, will be allowed an unlimited number of simultaneous connections:

```
209.33.47.110/8:unlimited
```

The entry that follows specifies that for any unspecified IP address, the maximum number of simultaneous connections will be 5:

```
default:5
```

Related Keys: none
Servers Affected: MTA
Change Impact: trivial, no server restart required
Possible Values: zero or more entries in the format:
`<ip_address>[/<significant_bits>]:<num_connections>`
Initial Value: null (allows an unlimited number of simultaneous connections)
Default Value: null (allows an unlimited number of simultaneous connections)
Example: `/*/mta/clientConnectionLimitTable: [198.116.0.0/16:2]
[198.146.0.0/16:2]
[198.147.0.0/16:2]
[10.0.0.0/8:2]
[default:unlimited]`

clientHeaps

Description:	Defines the number of thread heaps used by the various InterMail servers. This key may be set for each server individually, or for all servers as a group. The <code>clientHeaps</code> configuration key can be used to increase performance by reducing thread contention for heap access. <i>Note:</i> You may enter a value larger than the number of threads for a particular server; the additional heaps simply are not used.
Related Keys:	none
Servers Affected:	all servers
Change Impact:	trivial, no server restart required
Possible Values:	any integer greater than zero
Initial Value:	Directory Cache Server: 16 MTA: 64 MSS: 16 POP Server: 32 IMAP Server: 32 remaining servers: 16
Default Value:	32
Example:	<code>/*/mta/clientHeaps: [64]</code>

clientLineLengthLimit

Description:	Defines the maximum line length to allow before rejecting an SMTP client's command or data line. If <code>clientLineLengthLimit</code> is set to zero, no limit on server response lengths is imposed; however, this would allow a hostile client to force the MTA to run out of memory. <i>Note:</i> The maximum RFC821 command line length is 512, and the RFC821 maximum line length is 1000.
Related Keys:	none
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	any non-negative integer (including zero)
Initial Value:	1000
Default Value:	1000
Example:	<code>/*/mta/clientLineLengthLimit: [1000]</code>

clientTimeout

Description:	Sets the maximum amount of time (in seconds) a client may stay connected without issuing any commands. After this period has elapsed, the POP server or IMAP Server may end the session without waiting for the client's request. RFC 2060 mandates that this period must be no less than 1800 seconds (30 minutes). The default is set according to the RFC, however, you are free to modify this value. A value of zero disables the timeout entirely.
Related Keys:	none
Servers Affected:	POP Server, IMAP Server
Change Impact:	trivial, no server restart required
Possible Values:	any non-negative integer (including zero)
Initial Value:	POP Server: 240 (4 minutes) IMAP Server: 1800 (30 minutes)
Default Value:	POP Server: 240 (4 minutes) IMAP Server: 1800 (30 minutes)
Example:	<pre>*/popserv/clientTimeout: [240] */imapserv/clientTimeout: [1800]</pre>

commonGroup

Description:	Specifies the UNIX group ID (GID) under which all InterMail server processes will run. It is critical that this group name be the one that was used during InterMail installation; if not, InterMail directory and file name permissions will be incorrect.
Related Keys:	commonUser
Servers Affected:	all servers
Change Impact:	Warning! Do not attempt to modify the value of this key.
Possible Values:	a valid GID on the machine on which InterMail is installed
Initial Value:	the InterMail GID provided during installation
Default Value:	imail
Example:	<pre>*/common/commonGroup: [imail]</pre>

commonUser

Description:	Specifies the UNIX user ID (UID) under which all InterMail server processes will run. It is critical that this user name be the one that was used during InterMail installation, and it must be part of the <code>commonGroup</code> group, or InterMail directory and file name permissions will be incorrect.
Related Keys:	<code>commonGroup</code>
Servers Affected:	all servers
Change Impact:	Warning! Do not attempt to modify the value of this key.
Possible Values:	a valid UID on the machine on which InterMail is installed
Initial Value:	the InterMail UID provided during installation
Default Value:	<code>imail</code>
Example:	<code>*/common/commonUser: [imail]</code>

completionMethod

Description:	Determines the MTA's response to an incomplete <code>RCPT TO:</code> or header address on an incoming message. If the <code>completionMethod</code> key is set to default, the address will be completed with the value in the <code>defaultDomain</code> configuration key. If the <code>completionMethod</code> key is set to bounce, address completion will not be attempted and the message will be bounced. If the <code>completionMethod</code> key is set to sender, address completion will be performed for local senders only (using the domain found in the sender's <code>MAIL FROM:</code> address). A message is considered to be from a local sender if the domain in the <code>MAIL FROM:</code> address matches one of the <i>known</i> mail domains listed in the Integrated Services Directory (any local, nonauthoritative, or rewrite domain).
Related Keys:	<code>defaultDomain</code>
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	<code>default</code> , <code>bounce</code> , or <code>sender</code>
Initial Value:	<code>default</code>
Default Value:	<code>default</code>
Example:	<code>*/mta/completionMethod: [default]</code>

confServHost

Description:	Identifies the host on which the Configuration Server is running. All servers need to know the location of the Configuration Server so that they can retrieve updated configuration information.
Related Keys:	none
Servers Affected:	all servers
Change Impact:	trivial, no server restart required
Possible Values:	any valid host name
Initial Value:	set during installation
Default Value:	null
Example:	<code>*/common/confServHost: [venus]</code>

confServPort

Description:	Identifies the port number that the Configuration Server listens on for connection requests from other InterMail programs.
Related Keys:	none
Servers Affected:	the Configuration Server
Change Impact:	server restart required
Possible Values:	any valid, unused port number
Initial Value:	set during installation
Default Value:	0
Example:	<code>*/imconfserv/confServPort: [5000]</code>

confTimeStamp

Description:	Contains the time stamp of the last configuration database update. The <code>confTimeStamp</code> key is added to a <code>config.db</code> file when the file is written to disk. It is used when another server connects to the Configuration Server. The value of <code>confTimeStamp</code> in the local <code>config.db</code> file is compared to the value of <code>confTimeStamp</code> in the master <code>config.db</code> file to quickly determine if the two configuration databases are the same (or if resynchronization is necessary). This value is not used by servers directly. Do not manually set this key, as it will be reset by the Configuration Server.
Related Keys:	none
Servers Affected:	all servers
Change Impact:	<i>Warning! Do not attempt to modify the value of this key.</i>
Possible Values:	any valid date and time in date (1) format (see example below)
Initial Value:	null
Default Value:	null
Example:	<code>/*/common/confTimeStamp: [Wed May 6 17:49:38 EDT 1998]</code>

convertDomainLiterals

Description:	Determines whether or not InterMail will attempt to convert IP addresses to literal domain names. If <code>convertDomainLiterals</code> is set to <code>true</code> , then mail sent to an e-mail address that includes an IP address (e.g., <code>user@10.21.27.5.</code>) will be delivered if the IP address actually maps to a valid destination domain (e.g., <code>software.com</code>). If this key is set to <code>false</code> , mail for literal IP addresses will be bounced with a host not found error.
Related Keys:	none
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>true</code>
Default Value:	<code>true</code>
Example:	<code>/*/mta/convertDomainLiterals: [true]</code>

cosMinUpdateSeconds

Description:	Sets the amount of time (in seconds) that the MSS will cache class-of-service information before refreshing it from the Directory Cache Server.
Related Keys:	none
Servers Affected:	MSS
Change Impact:	trivial, no server restart required
Possible Values:	any integer
Initial Value:	300 (5 minutes)
Default Value:	300 (5 minutes)
Example:	<code>/*/mss/cosMinUpdateSeconds: [300]</code>

createsMboxes

Description:	<p>Enables/disables the creation of mailboxes “on the fly.”</p> <p>When <code>createsMboxes</code> is set to <code>true</code>, a mailbox is created automatically the first time it is needed (the first time a message arrives for the account, or the first time the user attempts to retrieve mail).</p> <p>Setting this key to <code>true</code> allows you to create accounts in the Integrated Services Directory without explicitly creating mailboxes for the new accounts in an MSS database—the mailbox will simply be created by InterMail when required.</p> <p>When this key is set to <code>false</code>, you must explicitly create a mailbox for every new account.</p> <p>This key can be specified independently for MTA, IMAP and POP servers, which allows you to limit mailbox creation to time of message delivery (by setting MTA only) or message retrieval (by setting POP and IMAP).</p>
Related Keys:	none
Servers Affected:	MTA, POP Server, IMAP Server
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>true</code>
Default Value:	<code>true</code>
Example:	<code>/*/common/createsMboxes: [true]</code>

dbCacheSizeInKb

Description:	The size (in kilobytes) of the in-memory directory cache. A larger cache increases the memory footprint of the server, but speeds up queries. If this value is set to zero, a default cache size is used.
Related Keys:	none
Servers Affected:	Directory Cache Server
Change Impact:	server restart required
Possible Values:	any integer greater than zero
Initial Value:	2048
Default Value:	2048
Example:	<code>/*/imdircacheserv/dbCacheSizeInKb: [2048]</code>

dbFilePath

Description:	Sets the path on the file system to the location of directory cache (the <code>dirCacheDB</code> file). This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory.
Related Keys:	none
Servers Affected:	Directory Cache Server
Change Impact:	server restart required
Possible Values:	any valid file path
Initial Value:	set during installation
Default Value:	null
Example:	<code>/*/imdircacheserv/dbFilePath: [dirCacheDB]</code>

dbPageSizeInKb

Description:	Sets the page size (in kilobytes) to be used for reading from and writing to the directory cache. If this value is set to zero, a page size is chosen based on the underlying file system's I/O block size.
Related Keys:	none
Servers Affected:	Directory Cache Server
Change Impact:	server restart required
Possible Values:	0-64
Initial Value:	16
Default Value:	16
Example:	<code>/*/imdircacheserv/dbpagesizeinkb [16]</code>

defaultAdminName

Description:	Defines the name of the sender used in messages generated by the MSS. The MSS is responsible for creating over quota bounce messages, and near quota notifications.
Related Keys:	none
Servers Affected:	MSS
Change Impact:	trivial, no server restart required
Possible Values:	any text string
Initial Value:	admin
Default Value:	admin
Example:	<code>/*mss/defaultAdminName: [admin]</code>

defaultDomain

Description:	Specifies the default domain name used by the MTA to complete unqualified addresses for message recipients or senders, or to complete unqualified host names in a message route, <i>if the completionMethod key is set to default.</i> <i>Note: If the defaultDomain key is not set, then the value specified in the domainName key is used for address completion (when required).</i>
Related Keys:	completionMethod
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	any valid domain name
Initial Value:	null
Default Value:	null
Example:	<code>/*mta/defaultDomain: [software.com]</code>

defaultStackSizeInKb

Description:	Specifies the default stack size (in kilobytes) for new threads created in servers. If the key is not set or has a value of zero, the operating system default is used. The stack size for threads can only be set at the time a thread is created.
Related Keys:	none
Servers Affected:	all servers
Change Impact:	server restart required
Possible Values:	any non-negative integer (including zero)
Initial Value:	64
Default Value:	0
Example:	<code>/*/common/defaultStackSizeInKb: [64]</code>

deferOnMxLookupFail

Description:	Determines if, on failing to locate an MX record, the system immediately defers the message or attempts to locate an A record. When this key is set to <code>true</code> and an MX record lookup times out or the server cannot otherwise process the query, the mail is deferred. When this key is set to <code>false</code> and an MX record lookup times out, the MTA then initiates an A record lookup. If the A record lookup also fails, the mail is deferred at that point.
Related Keys:	none
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>true</code>
Default Value:	<code>true</code>
Example:	<code>/*/mta/deferOnMxLookupFail: [true]</code>

deferProcessInterval

Description:	Controls the interval at which the system will re-attempt delivery of mail that has been deferred for an internal server (mail that could not be delivered immediately because a mailbox or user account information was temporarily unavailable). The value of the key is specified in seconds.
Related Keys:	none
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	any integer greater than zero
Initial Value:	600 (10 minutes)
Default Value:	600 (10 minutes)
Example:	<code>/*/mta/deferProcessInterval: [600]</code>

dirCacheConnections

Description:	Determines the maximum number of client connections to the Directory Cache Server. The MTA, MSS, POP Server and IMAP Server are all potential clients of the Directory Cache Server. This key defines a connection pool from which these clients can draw on demand. Connections are opened only when they are actually required. Once a connection is opened, it stays open unless there is an error. If all the allotted connections are in use, the Directory Cache Server asks clients to wait until another connection becomes free.
Related Keys:	none
Servers Affected:	all servers that are clients of the Directory Cache Server
Change Impact:	server restart required
Possible Values:	any integer greater than 1
Initial Value:	40
Default Value:	10
Example:	<code>/*/common/dirCacheConnections: [40]</code>

dirCacheHosts

Description: Lists the hosts in the InterMail system running Directory Cache Servers. The ordering of the entries in this key is significant. The first item in the list is the primary host. Typically, this is the local host. Additional items in the list are used as backups, in the order specified.

In a system with three hosts (`venus`, `jupiter`, and `pluto`) and a Directory Cache Server running on each host, the following configuration would distribute the burden for answering requests for account information while still providing necessary backup.

```
/venus/common/dirCacheHosts: [venus:jupiter:pluto]  
/jupiter/common/dirCacheHosts: [jupiter:pluto:venus]  
/pluto/common/dirCacheHosts: [pluto:venus:jupiter]
```

When the `dirCacheHosts` key is configured as indicated, the InterMail servers on `venus` always try to contact the local Directory Cache Server first. If this Directory Cache Server is unavailable, an attempt is next made to contact the Directory Cache Server on `jupiter`. If the Directory Cache Server on `jupiter` is also unavailable, an attempt to contact the one on `pluto` is then be made.

Similarly, the servers on `jupiter` try to contact their local Directory Cache Server first, then look to `pluto`, then to `venus`. The servers on `pluto` look locally, then to `venus`, then to `jupiter`.

Once a backup Directory Cache Server is in use, subsequent requests for directory information continue to be directed to the backup until the limit defined by the `dirCacheMaxSecondaryCalls` key is reached. Then, the server attempts to reconnect with its primary Directory Cache Server.

Note: If this key is missing, a usable list is generated automatically by the system.

Related Keys: none

Servers Affected: all servers that are clients of the Directory Cache Server

Change Impact: trivial, no server restart required

Possible Values: one or more valid host names separated by colons

Initial Value: set during installation

Default Value: null

Example: `/venus/common/dirCacheHosts: [venus:jupiter:pluto]`

dirCacheMaxSecondaryCalls

Description:	Specifies the number of times a backup Directory Cache Server should be called before the client tries to reconnect to its primary Directory Cache Server. The primary Directory Cache Server is the first one specified in the <code>dirCacheHosts</code> key for a particular host. All subsequently specified entries are considered backup Directory Cache Servers for that host.
Related Keys:	none
Servers Affected:	all servers that are clients of the Directory Cache Server
Change Impact:	trivial, no server restart required
Possible Values:	any integer greater than zero
Initial Value:	100
Default Value:	100
Example:	<code>/*/imdircacheserv/dirCacheMaxSecondaryCalls: [100]</code>

dirCachePort

Description:	Specifies the port number on which the Directory Cache Server listens for RME requests. To support failover, it is recommended that each Directory Cache server be assigned a different port number; this allows you to run two virtual hosts on a single system without creating port number conflicts.
Related Keys:	none
Servers Affected:	Directory Cache Server
Change Impact:	server restart required
Possible Values:	any valid, unused port number
Initial Value:	set during installation
Default Value:	null
Example:	<code>/*/imdircacheserv/dirCachePort: [5888]</code>

dirCacheSyncOnWrite

- Description:** Determines whether or not database write operations are synchronized by the directory cache.
- If the `dirCacheSyncOnWrite` key is set to `true`, the cache will flush its buffers to disk after each database cache write operation.
- If the `dirCacheSyncOnWrite` key is set to `false`, the cache will instead flush its buffers at the end of each cycle (as defined by the `dirCacheUpdatePeriod` configuration key).
- Setting the value of this key to `false` can substantially decrease update thread execution time, especially when the cache file is large and/or when operating on a journaled file system.
- A setting of `true` is strongly recommended.
- Related Keys:** none
- Servers Affected:** Directory Cache Server
- Change Impact:** server restart required
- Possible Values:** `true` or `false`
- Initial Value:** `true`
- Default Value:** `true`
- Example:** `/*/imdircacheserv/dirCacheSyncOnWrite: [true]`

dirCacheUpdatePeriod

- Description:** Specifies the frequency with which the Directory Cache Server updates its information from the Integrated Services Directory (ISD). This value is expressed as a number of seconds.
- After the specified number of seconds has elapsed, the local directory cache is updated from information in the ISD.
- The setting in `logAgeHours` determines how long update information in the ISD will remain available to the Directory Cache Server. Therefore, the value of `dirCacheUpdatePeriod` must be less than the value of `logAgeHours`.
- Related Keys:** `logAgeHours`
- Servers Affected:** Directory Cache Server
- Change Impact:** server restart required
- Possible Values:** any integer greater than zero
- Initial Value:** 60
- Default Value:** 60
- Example:** `/*/imdircacheserv/dirCacheUpdatePeriod: [60]`

domainName

Description:	Specifies the domain name used wherever a domain name is needed (as the backup value for address completion, the primary value for host name completion, etc.)
Related Keys:	defaultDomain
Servers Affected:	all servers
Change Impact:	server restart required
Possible Values:	any valid domain name
Initial Value:	the domain name provided during installation
Default Value:	null
Example:	<code>/*/common/domainName: [software.com]</code>

domainUpdateInterval

Description:	Defines the interval (in seconds) at which the MTA requests updated domain information.
Related Keys:	none
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	any integer greater than zero
Initial Value:	60
Default Value:	60
Example:	<code>/*/mta/domainUpdateInterval: [60]</code>

dropConnections

Description:	Enables/disables connection dropping. When this key is set to <code>true</code> , the IP address of every connecting client is compared to the list of IP addresses specified by <code>dropTheseIPs</code> to determine if the connection should be dropped. And if there is a recipient limit defined in <code>dropMaxMessageRCPTs</code> , the message recipients are counted and compared against that limit. If a connection is in violation of either of these policies, the server immediately terminates the connection. When the <code>dropConnections</code> key is set to <code>false</code> , the connection dropping feature is disabled.
Related Keys:	<code>dropTheseIPs</code> , <code>dropMaxMessageRCPTs</code>
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>false</code>
Default Value:	<code>false</code>
Example:	<code>/*/mta/dropConnections: [false]</code>

dropMaxMessageRCPTs

Description:	Specifies the maximum number of recipients that are allowed before a connection is dropped. If <code>dropConnections</code> is set to <code>true</code> and a client attempts to send a single message to more than the number of users specified in the <code>dropMaxMessageRCPTs</code> key, the connection is dropped. When the <code>dropMaxMessageRCPTs</code> key is set to zero, there is no maximum number of recipients specified—the system will allow an unlimited number of recipients per connection.
Related Keys:	<code>dropConnections</code>
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	any non-negative integer (including zero)
Initial Value:	0
Default Value:	0
Example:	<code>/*/mta/dropMaxMessageRCPTs: [100]</code>

dropRCPTsReplyText

Description:	Specifies the text that is returned with the 421 error code to clients whose connections are dropped because they exceed the maximum number of recipients per connection as defined in <code>dropMaxMessageRCPTs</code> .
Related Keys:	<code>dropMaxMessageRCPTs</code> , <code>dropConnections</code>
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	a text string
Initial Value:	<code>service unavailable</code>
Default Value:	<code>service unavailable</code>
Example:	<code>/*/mta/dropRCPTsReplyText: [service unavailable]</code>

dropTheseIPs

Description:	<p>Lists the IP addresses that are subject to connection dropping.</p> <p>When <code>dropConnections</code> is set to <code>true</code>, the IP address of each connecting client is compared to the values in this list. If a match is found, the connection is immediately terminated.</p> <p>The value of the <code>dropTheseIPs</code> configuration key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets.</p> <p>Zero may be used as a wildcard to specify all hosts within a network (e.g., <code>10.3.21.0</code>).</p>
Related Keys:	<code>dropConnections</code>
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	any valid IP address
Initial Value:	null
Default Value:	null
Example:	<code>/*/mta/dropTheseIPs: [100.28.56.44] [10.3.21.0]</code>

dupMessageDetect

Description:	Enables/disables detection of duplicate messages. A setting of <code>true</code> enables duplicate detection. When duplicate detection is enabled, the system checks to see if an incoming message is the same as one that has already been stored. If so, a link is created to the original message and the duplicate is not stored. A setting of <code>false</code> disables duplicate detection. <i>Note:</i> The process of duplicate detection can be time-consuming, however, this feature may be useful if your mail system receives a large number of duplicate messages.
Related Keys:	none
Servers Affected:	MSS
Change Impact:	trivial, no server restart required
Possible Values:	<code>true</code> or <code>false</code>
Initial Value:	<code>true</code>
Default Value:	<code>true</code>
Example:	<code>/* /mss/dupMessageDetect: [true]</code>

Error-Actions/acctInactive

Description:	Specifies the error action taken by the MTA when a message arrives for a user whose account has been disabled (via deletion or suspension). The possible error actions (which may be used independently or in combination) are as follows: <ul style="list-style-type: none">• <code>return</code>—return the message to its sender• <code>hold</code>—hold the message for postmaster action• <code>log</code>—record the event in the MTA's log This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets. The recommended setting is <code>log</code> and <code>return</code> . A null setting means the message will be deferred.
Related Keys:	the corresponding <code>Error-Code</code> and <code>Error-Text</code> configuration keys
Servers Affected:	MTA

Change Impact: trivial, no server restart required
Possible Values: one or more of the values `return`, `hold`, and `log`
Initial Value: `log` and `return`
Default Value: `null`
Example: `/*/mta/Error-Actions/acctInactive: [log]`
`[return]`

Error-Actions/acctInvalidUser

Description: Specifies the error action taken by the MTA when a message arrives for an unrecognized destination address (e.g., an incomplete address or unknown user).

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A `null` setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/acctInvalidUser: [log]`
`[return]`

Error-Actions/badReturn

Description:	<p>Specifies the error action taken by the MTA when an undeliverable message cannot be successfully returned due to a problem with the return address.</p> <p>The possible error actions (which may be used independently or in combination) are as follows:</p> <ul style="list-style-type: none">• <code>return</code>—return the message to its sender• <code>hold</code>—hold the message for postmaster action• <code>log</code>—record the event in the MTA's log <p>This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.</p> <p>The recommended setting is <code>log</code> and <code>hold</code>. A null setting means the message will be deferred.</p>
Related Keys:	the corresponding <code>Error-Code</code> configuration key
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	one or more of the values <code>return</code> , <code>hold</code> , and <code>log</code>
Initial Value:	<code>log</code> and <code>hold</code>
Default Value:	null
Example:	<pre>/*/mta/Error-Actions/badReturn: [log] [hold]</pre>

Error-Actions/filtActionBounce

Description:	<p>Specifies the error action taken by the MTA when a filter for incoming mail determines that a message should not be delivered.</p> <p>The possible error actions (which may be used independently or in combination) are as follows:</p> <ul style="list-style-type: none">• <code>return</code>—return the message to its sender• <code>hold</code>—hold the message for postmaster action• <code>log</code>—record the event in the MTA's log <p>This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.</p> <p>The recommended setting is <code>log</code> and <code>return</code>. A null setting means the message will be deferred.</p>
Related Keys:	the corresponding <code>Error-Code</code> and <code>Error-Text</code> configuration keys
Servers Affected:	MTA

Change Impact: trivial, no server restart required
Possible Values: one or more of the values `return`, `hold`, and `log`
Initial Value: `log` and `return`
Default Value: `null`
Example: `/*/mta/Error-Actions/filtActionBounce: [log]`
`[return]`

Error-Actions/msLimitMsgSize

Description: Specifies the error action taken by the MTA when a message arrives that exceeds the limit on maximum size for a single message (as defined in the mailbox's associated account profile).

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A `null` setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/msLimitMsgSize: [log]`
`[return]`

Error-Actions/msLimitNumMsgs

Description: Specifies the error action taken by the MTA when a message arrives that would exceed the limit on a mailbox's maximum number of messages (as defined in the associated account profile).

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A null setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: null

Example:

```
/*/mta/Error-Actions/msLimitNumMsgs: [log]
[return]
```

Error-Actions/msLimitTotalSize

Description: Specifies the error action taken by the MTA when a message arrives that would exceed the limit on a mailbox's maximum size (as defined in the associated account profile).

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A null setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/msLimitTotalSize: [log]`
`[return]`

Error-Actions/msNoAllowDeliver

Description: Specifies the error action taken by the MTA when a message arrives for a mailbox that is disabled.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A `null` setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/msNoAllowDeliver: [log]`
`[return]`

Error-Actions/mtaHostInvalid

- Description:** Specifies the error action taken by the MTA when a message arrives addressed to an invalid host (a destination machine that cannot be found).
The possible error actions (which may be used independently or in combination) are as follows:
- `return`—return the message to its sender
 - `hold`—hold the message for postmaster action
 - `log`—record the event in the MTA’s log
- This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.
- The recommended setting is `log` and `return`. A null setting means the message will be deferred.
- Related Keys:** the corresponding `Error-Code` and `Error-Text` configuration keys
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** one or more of the values `return`, `hold`, and `log`
- Initial Value:** `log` and `return`
- Default Value:** null
- Example:**

```
/*/mta/Error-Actions/mtaHostInvalid: [log]
                                     [return]
```

Error-Actions/mtaMaxMtaHopCountExceeded

- Description:** Specifies the action taken by the MTA when a message exceeds the maximum number of MTA hops.
A message is said to have “hopped” when it is transferred from one MTA to another. Hops are measured by the number of `Received` lines in a message.
The possible error actions (which may be used independently or in combination) are as follows:
- `return`—return the message to its sender
 - `hold`—hold the message for postmaster action
 - `log`—record the event in the MTA’s log
- This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.
- The recommended setting is `log` and `hold`. A null setting means the message will be deferred.

Related Keys: maximumMtaHops, the corresponding Error-Code configuration key

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values return, hold, and log

Initial Value: log and hold

Default Value: null

Example: /*/mta/Error-Actions/mtaMaxMtaHopCountExceeded: [log]
[hold]

Error-Actions/mtaMessageDelivered

Description: Determines handling of a delivery status notification generated to indicate that a message was successfully delivered.

The possible error actions (which may be used independently or in combination) are as follows:

- return—send the delivery status notification
- hold—hold the delivery status notification
- log—record the event in the MTA’s log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is return. A null setting means the message will be deferred.

Note: While this situation is not really associated with an 'error', delivery status notifications behave like bounce messages, and are therefore controlled via similar configuration keys.

Related Keys: the corresponding Error-Code and Error-Text configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values return, hold, and log

Initial Value: return

Default Value: null

Example: /*/mta/Error-Actions/mtaMessageDelivered: [return]

Error-Actions/mtaMessageExpanded

Description: Determines handling of a delivery status notification generated to indicate that a message has reached its destination and was forwarded to at least two mailboxes or recipients.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—send the delivery status notification
- `hold`—hold the delivery status notification
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `return`. A null setting means the message will be deferred.

Note: While this situation is not really associated with an 'error', delivery status notifications behave like bounce messages, and are therefore controlled via similar configuration keys.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/mtaMessageExpanded: [return]`

Error-Actions/mtaMessageQueuedTooLong

Description: Specifies the error action taken by the MTA when a deferred message has been queued longer than the configured limit set in `maxQueueTimeInDays`.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A null setting means the message will be deferred.

Related Keys:	MaxQueueTimeInDays, the corresponding Error-Code and Error-Text configuration keys
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	one or more of the values return, hold, and log
Initial Value:	log and return
Default Value:	null
Example:	<code>/*/mta/Error-Actions/mtaMessageQueuedTooLong: [log] [return]</code>

Error-Actions/mtaMessageRejected

Description:	<p>Specifies the error action taken by the MTA when a message is rejected by the receiving SMTP Server.</p> <p>The possible error actions (which may be used independently or in combination) are as follows:</p> <ul style="list-style-type: none"> • return—return the message to its sender • hold—hold the message for postmaster action • log—record the event in the MTA’s log <p>This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.</p> <p>The recommended setting is return. A null setting means the message will be deferred.</p>
Related Keys:	the corresponding Error-Code and Error-Text configuration keys
Servers Affected:	MTA
Change Impact:	trivial, no server restart required
Possible Values:	one or more of the values return, hold, and log
Initial Value:	return
Default Value:	return
Example:	<code>/*/mta/Error-Actions/mtaMessageRejected: [return]</code>

Error-Actions/mtaMessageRelayed

- Description:** Specifies the handling of the delivery status notification generated when a message has been relayed to a machine that does not handle delivery status notification.
- The possible error actions (which may be used independently or in combination) are as follows:
- `return`—send the delivery status notification
 - `hold`—hold the delivery status notification
 - `log`—record the event in the MTA's log
- This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.
- The recommended setting is `return`. A null setting means the message will be deferred.
- Related Keys:** the corresponding `Error-Code` and `Error-Text` configuration keys
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** one or more of the values `return`, `hold`, and `log`
- Initial Value:** `return`
- Default Value:** `null`
- Example:** `/*/mta/Error-Actions/mtaMessageRelayed: [return]`

Error-Actions/mtaMessageTooLarge

- Description:** Specifies the error action taken by the MTA when it rejects a message because that message is larger than it is willing to accept (i.e., greater than the size limit defined in the `maxMessageSizeInKb` key).
- The possible error actions (which may be used independently or in combination) are as follows:
- `return`—return the message to its sender
 - `hold`—hold the message for postmaster action
 - `log`—record the event in the MTA's log
- This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.
- The recommended setting is `log` and `return`. A null setting means the message will be deferred.
- Related Keys:** `maxMessageSizeInKb`, the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/mtaMessageTooLarge: [log]`
`[return]`

Error-Actions/mtaMsgNoRecipients

Description: Specifies the error action taken by the MTA when it receives a message that does not include any recipients.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `hold`. A `null` setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` configuration key

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `hold`

Default Value: `null`

Example: `/*/mta/Error-Actions/mtaMsgNoRecipients: [log]`
`[hold]`

Error-Actions/mtaRecipientsRejected

- Description:** Specifies the action taken by the MTA when one or more message recipients are rejected by the receiving SMTP server.
- The possible error actions (which may be used independently or in combination) are as follows:
- `return`—return the message to its sender
 - `hold`—hold the message for postmaster action
 - `log`—record the event in the MTA's log
- This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.
- The recommended setting is `log` and `return`. A null setting means the message will be deferred.
- Related Keys:** the corresponding `Error-Code` and `Error-Text` configuration keys
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** one or more of the values `return`, `hold`, and `log`
- Initial Value:** `log` and `return`
- Default Value:** null
- Example:** `/*/mta/Error-Actions/mtaRecipientsRejected: [log]
[return]`

Error-Actions/mtaSenderRejected

- Description:** Specifies the error action taken by the MTA when a message cannot be delivered because the return address is refused (e.g., not allowed to send mail to users on your system).
- The possible error actions (which may be used independently or in combination) are as follows:
- `return`—return the message to its sender
 - `hold`—hold the message for postmaster action
 - `log`—record the event in the MTA's log
- This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.
- The recommended setting is `log` and `return`. A null setting means the message will be deferred.
- Related Keys:** `rejectSenderBadDomain`, `rejectSenderIPDomain`, `rejectSenderNoDomain`, and the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: `null`

Example: `/*/mta/Error-Actions/mtaSenderRejected: [log]
[return]`

Error-Actions/smtpClientMailLoopDetected

Description: Specifies the error action taken by the MTA when it detects a message that is caught in a mail loop.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `hold`. A `null` setting means the message will be deferred.

Related Keys: `maximumMtaHops`, the corresponding `Error-Code` configuration key

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `hold`

Default Value: `null`

Example: `/*/mta/Error-Actions/smtpClientMailLoopDetected: [log]
[hold]`

Error-Actions/smtpDnsBadConfig

Description: Specifies the error action taken by the MTA when it attempts a lookup on an MX record, but fails because the remote domain's DNS records are configured incorrectly.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A null setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA

Change Impact: trivial, no server restart required

Possible Values: one or more of the values `return`, `hold`, and `log`

Initial Value: `log` and `return`

Default Value: null

Example: `/*/mta/Error-Actions/smtpDnsBadConfig: [log]
[return]`

Error-Actions/smtpProtocolNotSupported

Description: Specifies the error action taken when the system cannot connect to a remote mail server because the remote server does not support the SMTP protocol.

The possible error actions (which may be used independently or in combination) are as follows:

- `return`—return the message to its sender
- `hold`—hold the message for postmaster action
- `log`—record the event in the MTA's log

This key supports multiple values, however, each entry must appear on a separate line within its own set of square brackets.

The recommended setting is `log` and `return`. A null setting means the message will be deferred.

Related Keys: the corresponding `Error-Code` and `Error-Text` configuration keys

Servers Affected: MTA
Change Impact: trivial, no server restart required
Possible Values: one or more of the values return, hold, and log
Initial Value: log and return
Default Value: null
Example: `/*/mta/Error-Actions/smtpProtocolNotSupported: [log]
[return]`

Error-Code/<keyName>

Description: Specifies the error code that is returned when the value of the corresponding `Error-Action` key is set to return.
Related Keys: the corresponding `Error-Action` and `Error-Text` configuration keys
Servers Affected: MTA
Change Impact: *Warning! Do not attempt to modify the value of these keys.*

Error-Text/<keyName>

Description: Specifies the text of the bounce message that is returned when the value of the corresponding `Error-Action` key is set to return.
Related Keys: the corresponding `Error-Action` and `Error-Code` configuration keys
Servers Affected: MTA
Change Impact: *Warning! Do not attempt to modify the value of these keys.*

eventMaxWait

Description: Sets the maximum time (in seconds) a server can wait for any event. After this period has expired, servers will time out.
Related Keys: none
Servers Affected: all servers
Change Impact: trivial, no server restart required
Possible Values: any integer greater than zero
Initial Value: 3000
Default Value: 3000
Example: `/*/common/eventMaxWait: [3000]`

expireDbConnection

- Description:** Specifies the Oracle connection string for the database accessed by the Directory Cache Server's `expire` thread.
- The `expire` thread deletes update information from the database that is identified by the `expireDbConnection` and `expireDbUser` configuration keys. This task runs at an interval defined by the value of `logExpireHours` and deletes information that is older than the value of `logAgeHours`. This operation limits the amount of update information stored and conserves database resources.
- If either the `expireDbConnection` or `expireDbUser` key is left unspecified, the `expire` task uses the database connection defined by the `primaryDbUserInfo` and `primaryDbConnection` keys.
- Related Keys:** `expireDbUserInfo`
- Servers Affected:** Directory Cache Server
- Change Impact:** server restart required
- Possible Values:** an Oracle connection string
- Initial Value:** null
- Default Value:** null
- Example:** `/*/imdircacheserv/expireDbConnection: [IMDB]`

expireDbUserInfo

- Description:** Specifies the Oracle username and password for the database accessed by the Directory Cache Server's `expire` thread.
- If either the `expireDbConnection` or `expireDbUser` key is left unspecified, the `expire` thread uses the database connection defined by the `primaryDbUserInfo` and `primaryDbConnection` keys.
- Related Keys:** `expireDbConnection`
- Servers Affected:** Directory Cache Server
- Change Impact:** server restart required
- Possible Values:** `<string>/<string>`
- Initial Value:** null
- Default Value:** null
- Example:** `/*/imdircacheserv/expireDbUserInfo: [imail/imail]`

extentFullWarningThresholdPercent

Description:	<p>Defines a threshold used by the <code>imdbspacecheck</code> and <code>imdbspacequickcheck</code> administrative commands. When this threshold is exceeded, administrators are warned that available space is at a point where it is advisable to add more.</p> <p>The value in this key is expressed as a percentage. It indicates the percentage of space already filled in the final extent of a particular database object (an index or a table).</p> <p>When the space used within the final extent exceeds this threshold, an <code>Urgent</code> entry is recorded in the log file warning that there may not be enough space available to add another extent.</p>
Related Keys:	none
Servers Affected:	the <code>imdbspacecheck</code> and <code>imdbspacequickcheck</code> commands
Change Impact:	no impact on server
Possible Values:	any integer from 0 to 100
Initial Value:	90
Default Value:	90
Example:	<code>/*db/extentFullWarningThresholdPercent: [85]</code>

extentGrowthAllowanceDays

Description:	<p>Defines the number of days warning desired in advance of a possible shortage of database space.</p> <p>The value in this key is expressed as a number of days until a particular database object (an index or table) is expected to fill its final extent. This prediction is made by the <code>imdbspacecheck</code> administrative command based on calculations against historical data.</p> <p>When the target number of days is reached, administrators are warned that available space is likely to be exceeded in the number of days defined in <code>extentGrowthAllowanceDays</code>.</p>
Related Keys:	none
Servers Affected:	the <code>imdbspacecheck</code> command
Change Impact:	no impact on server
Possible Values:	any non-negative integer (including zero)
Initial Value:	21
Default Value:	21
Example:	<code>/*db/extentGrowthAllowanceDays: [15]</code>

extraCopyConfigDbPath

- Description:** Sets the path on the file system to the location of a backup copy of the master configuration database.
- If a path is defined in the `extraCopyConfigDbPath` configuration key, the Configuration Server writes an extra copy of each new master configuration database file to the location specified.
- If no path is set with this key (a null value), the Configuration Server does not create a backup copy of the master configuration database.
- This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory.
- Related Keys:** none
- Servers Affected:** Configuration Server
- Change Impact:** trivial, no server restart required
- Possible Values:** any valid file path
- Initial Value:** null
- Default Value:** null
- Example:** `/*/imconfserv/extraCopyConfigDBpath:[cfbak]`

failoverGroups

- Description:** Defines a group of hosts that can potentially fail over to one another.
- When failover occurs, the programs which normally run on a failed host automatically begin running on another host without interruption. The `failoverGroups` configuration key identifies a list of hosts which may failover to one another.
- Hosts that are in the same failover group must not be running servers that access the same ports. For example, if `venus` and `jupiter` both had a POP Server, they could not be in the same failover group, because in a failover situation both POP Servers would both be trying to listen on port 110 on the same physical machine (port 110 being the standard port for POP communication).
- To avoid conflicts, the Configuration Server takes failover groups into account when assigning ports.
- To establish a failover group, set the `failoverGroups` key with a list of host names separated by slashes. For example, to create a failover group for the hosts `venus`, `jupiter` and `pluto`, you would enter the following:
- ```
venus/jupiter/pluto
```
- If the value of this key is set to null, then no failover groups exist.

If the value is set to `all`, then any machine can potentially fail over to any other machine.

**Warning!** Care should be taken to set this key correctly at the very outset, as changing it later may introduce port conflicts.

|                          |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| <b>Related Keys:</b>     | none                                                                        |
| <b>Servers Affected:</b> | all servers                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                         |
| <b>Possible Values:</b>  | <code>all</code> , or two or more valid host names separated by slashes (/) |
| <b>Initial Value:</b>    | set during installation                                                     |
| <b>Default Value:</b>    | null                                                                        |
| <b>Example:</b>          | <code>/*/common/failoverGroups: [venus/jupiter/pluto]</code>                |

## fatalSigHandlers

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b> | <p>Determines whether or not all servers attempt to recover from fatal signals.</p> <p>If set to <code>true</code>, all servers attempt to recover from fatal signals (<code>SIGILL</code>, <code>SIGABRT</code>, <code>SIGEMT</code>, <code>SIGFPE</code>, <code>SIGBUS</code>, <code>SIGSEGV</code>, <code>SIGSYS</code>). The signal is logged and the server attempts to continue.</p> <p>If set to <code>false</code>, servers do not attempt to recover when a fatal signal is received. In this case, you will need to restart the affected server(s) directly.</p> <p>It is recommended that you set this key to <code>false</code> since, if a server gets a fatal signal, its internal state is most likely corrupt. If the server attempts to proceed in this state, it is possible that mail will be lost or misdelivered. The server may also hang. For these reasons, it is generally better to restart the server after a fatal signal.</p> <p><i>Note:</i> On DEC, this key is ignored; DEC servers never attempt to recover from fatal signals.</p> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                  |
|--------------------------|--------------------------------------------------|
| <b>Related Keys:</b>     | none                                             |
| <b>Servers Affected:</b> | all servers                                      |
| <b>Change Impact:</b>    | server restart required                          |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>          |
| <b>Initial Value:</b>    | <code>false</code>                               |
| <b>Default Value:</b>    | <code>false</code>                               |
| <b>Example:</b>          | <code>/*/common/fatalSigHandlers: [false]</code> |

## fileDescriptors

|                          |                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of file descriptors that can be opened for any server.<br><br>It is best to keep this number above 100. Each operating system has a specific ceiling. A value of zero specifies the operating system default. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                             |
| <b>Initial Value:</b>    | MTA: 2048<br>MSS: 2048<br>POP Server: 2048<br>IMAP Server: 2048<br>remaining servers: 0                                                                                                                                               |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                     |
| <b>Example:</b>          | <code>/*/mta/fileDescriptors: [2048]</code>                                                                                                                                                                                           |

## gmtLogTimes

|                          |                                                                                                                                                                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines whether or not GMT (Greenwich Mean Time) is used in log time stamps.<br><br>If the value of this key is set to <code>true</code> , log time stamps are generated using GMT.<br><br>If the value of this key is set to <code>false</code> , log time stamps are generated using local time. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/common/gmtLogTimes: [false]</code>                                                                                                                                                                                                                                                           |

## idleFlushTimeoutSecs

|                          |                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the minimum number of seconds that a mailbox should remain in the MSS's memory after activity for the mailbox has ceased.<br>Values are set in seconds. |
| <b>Related Keys:</b>     | none                                                                                                                                                            |
| <b>Servers Affected:</b> | MSS                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                             |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                   |
| <b>Initial Value:</b>    | 10                                                                                                                                                              |
| <b>Default Value:</b>    | 10                                                                                                                                                              |
| <b>Example:</b>          | <code>/*/mss/idleFlushTimeoutSecs: [10]</code>                                                                                                                  |

## imap4Port

|                          |                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the port on which the IMAP server listens for incoming connections. The standard IMAP port is 143. |
| <b>Related Keys:</b>     | none                                                                                                       |
| <b>Servers Affected:</b> | IMAP Server                                                                                                |
| <b>Change Impact:</b>    | server restart required                                                                                    |
| <b>Possible Values:</b>  | any valid, unused port number                                                                              |
| <b>Initial Value:</b>    | 143                                                                                                        |
| <b>Default Value:</b>    | -1                                                                                                         |
| <b>Example:</b>          | <code>/*/imapserv/imap4Port: [143]</code>                                                                  |

## inboxcopyNumThreads

|                          |                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of threads used by the <code>inboxcopy</code> administrative command (unless overridden by the command's <code>-threads</code> option). |
| <b>Related Keys:</b>     | none                                                                                                                                                            |
| <b>Servers Affected:</b> | MSS Server                                                                                                                                                      |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                             |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                   |
| <b>Initial Value:</b>    | 30                                                                                                                                                              |
| <b>Default Value:</b>    | 30                                                                                                                                                              |
| <b>Example:</b>          | <code>/*/mss/inboxcopyNumThreads: [30]</code>                                                                                                                   |

## inboxmigrateNumThreads

|                          |                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of threads the <code>inboxmigrate</code> administrative command can (unless overridden by the command's <code>-threads</code> option). |
| <b>Related Keys:</b>     | none                                                                                                                                                           |
| <b>Servers Affected:</b> | MSS                                                                                                                                                            |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                            |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                  |
| <b>Initial Value:</b>    | 30                                                                                                                                                             |
| <b>Default Value:</b>    | 30                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mss/inboxmigrateNumThreads: [30]</code>                                                                                                               |

## incomingMailFilter

**Description:** Defines a set of filtering rules to use for all incoming mail. A null setting means that no filtering is enforced.

InterMail allows you to extend its relay prevention, mail blocking, and message sideling features through the use of custom mail filters.

Each MTA can have one associated `incomingMailFilter` key, which defines all of the filtering criteria used by that MTA.

Because the InterMail filtering feature is extremely flexible, the filtering rules are necessarily complex. Before attempting to set this key, please refer to Chapter 4 of the *InterMail Operations Guide* for a complete discussion of mail filtering.

InterMail mail filtering is based on the SIEVE filtering language. The general syntax of a mail filter is:

```
if <test> <action> [else <action>];
```

where:

`<test>` specifies a boolean expression that is true or false, based on a characteristic of the message

`<action>` defines an action taken against the message by the MTA.

For example, if the `incomingMailFilter` key is set as follows, any incoming message that includes a recipient address in the domain `accordance.com` would be bounced.

```
if RECIPIENTS matches "*@accordance.com" BOUNCE;
```

The value of the `incomingMailFilter` key may include multiple lines, but each line must be contained within its own set of square brackets (see example below).

*Note:* Since no validation checks are performed on this key, it is important that you verify your filters before using them. The administrative command `imfiltercheck` provides this verification.

**Related Keys:** blockPerAccount

**Servers Affected:** MTA

**Change Impact:** server restart required

**Possible Values:** See Chapter 4 of the *InterMail Operations Guide*.

**Initial Value:** null

**Default Value:** null

**Example:**

```

/*/mta/incomingMailFilter: [if size >= 100k {]
[if SENDER.DOMAIN IS-NOCASE ("software.com") KEEP;]
[else if HEADER("Is-Junk:") IS-NOCASE "yes" TOSS;]
[else if RECIPIENTS.COUNT >= 100 TOSS;]
[else SIDELINE "too large";]
[}]

```

## inDeliveryDeferKb

**Description:** Sets a limit for mail in delivery. Mail in delivery is defined as all messages that have not yet been delivered or explicitly deferred.

This key allows you to throttle message processing in the event that your system is under load. When the limit set by the inDeliveryDeferKb key is exceeded, all incoming mail is automatically deferred, and an MtaTooBusyDefer entry is written in the log file.

Mail that is deferred via throttling is treated as any other deferred mail, and is reprocessed automatically at regular intervals.

The value of this key is set in kilobytes. A value of zero means there are no limits.

**Related Keys:** none

**Servers Affected:** MTA

**Change Impact:** trivial, no server restart required

**Possible Values:** any non-negative integer (including zero)

**Initial Value:** 1000000

**Default Value:** 1000000

**Example:**

```

/*/mta/inDeliveryDeferKb: [1000000]

```

## inDeliveryRejectKb

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Sets a limit for mail in delivery. Mail in delivery is defined as all messages that have not yet been delivered or explicitly deferred.</p> <p>This key allows you to throttle message processing in the event that your system is under load. When the limit set by the <code>inDeliveryRejectKb</code> key is exceeded, all incoming mail is rejected with a message indicating that it cannot be processed at this time. In addition, an <code>MtaTooBusyReject</code> entry is written in the log file.</p> <p>The value of this key is set in kilobytes. A value of zero means there is no limit.</p> <p>When the value of this key is not zero, it should always be higher than the value set in <code>inDeliveryDeferKb</code>.</p> <p>By setting the value in the <code>inDeliveryDeferKb</code> key lower than the value in the <code>inDeliveryRejectKb</code> key, you reserve the more drastic measure for last. The <code>inDeliveryDeferKb</code> limit, which is reached first, merely defers mail, rather than rejecting it outright.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mta/inDeliveryRejectKb: [0]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## inDeliveryStopDeferProcessKb

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Sets an independent limit for deferred mail processing based on the current amount of mail in delivery.</p> <p>The value of this key is checked at the start of each defer processing interval. If the current amount of mail in delivery exceeds the limit set by this key, processing of deferred mail does not occur and an <code>MtaTooBusyStopDefer</code> entry is written to the log. The system will again attempt to deliver deferred mail at the next defer processing interval.</p> <p>The value of this key is set in kilobytes. A value of zero means there is no limit.</p> <p><i>Note:</i> Typically, the value of <code>inDeliveryStopDeferProcessKb</code> would be higher than the value set in <code>inDeliveryDeferProcessKb</code>.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Change Impact:** trivial, no server restart required  
**Possible Values:** any non-negative integer (including zero)  
**Initial Value:** 0  
**Default Value:** 0  
**Example:** `/*/mta/inDeliveryStopDeferProcessKb: [10000]`

## indexReorganizationTimeLimitMinutes

**Description:** Restricts the amount of time that the `imdbindexreorg` command is allowed to run a reorganization.  
 The value of the key is set in minutes.

**Related Keys:** none

**Servers Affected:** the `imdbindexreorg` command

**Change Impact:** no impact on server

**Possible Values:** any non-negative integer (including zero)  
**Initial Value:** 0  
**Default Value:** 0  
**Example:** `/*/db/indexReorganizationTimeLimitMinutes: [60]`

## initClientTimeout

**Description:** Sets the POP client timeout during the initialization.  
 The value of this key is set in seconds. If set to zero, the default client timeout is used.

**Related Keys:** none

**Servers Affected:** POP Server

**Change Impact:** trivial, no server restart required

**Possible Values:** any non-negative integer (including zero)  
**Initial Value:** 240  
**Default Value:** 0  
**Example:** `/*/popserv/initClientTimeout: [240]`

## journalDir

**Description:** Identifies a path on the file system to the location of the directory in which MSS, Queue Server and garbage collector journal files are written. These files can take up a significant amount of disk space, so this directory should be on a drive partition with large amounts of free space. This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory.

**Warning!** *Failing to specify this key will cause a fatal MSS error.*

**Related Keys:** none  
**Servers Affected:** MSS, Queue Server  
**Change Impact:** server restart required  
**Possible Values:** any valid directory path  
**Initial Value:** set during installation  
**Default Value:** null  
**Example:** `*/mss/journalDir: [/opt/InterMail/bigdisk/imjrn1]`

## journalRollHours

**Description:** Sets the number of hours a message journal file may record information before being rolled over. After this number of hours has expired, the journal file is closed and a new journal file is created. All subsequent journal entries are written to the new file (until it in turn is rolled over).

**Related Keys:** none  
**Servers Affected:** MSS  
**Change Impact:** server restart required  
**Possible Values:** any integer greater than zero  
**Initial Value:** 1  
**Default Value:** 1  
**Example:** `*/common/journalRollHours: [2]`

## journalRollMbytes

|                          |                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the amount of information a message journal file may record before being rolled over.<br><br>Once a journal file reaches this size, the existing file is closed and a new journal file is created. All subsequent journal entries are written to the new file (until it in turn is rolled over).<br><br>The value of this key is set in megabytes. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                 |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                           |
| <b>Initial Value:</b>    | 100                                                                                                                                                                                                                                                                                                                                                     |
| <b>Default Value:</b>    | 100                                                                                                                                                                                                                                                                                                                                                     |
| <b>Example:</b>          | <code>/*/mss/journalRollMbytes: [80]</code>                                                                                                                                                                                                                                                                                                             |

## ldap

|                     |                                                                                 |
|---------------------|---------------------------------------------------------------------------------|
| <b>Description:</b> | For all configuration keys beginning with “ldap,” consult the InterLDAP manual. |
|---------------------|---------------------------------------------------------------------------------|

## legalHosts

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Lists the hosts from which the Manager Server accepts connections. Only the hosts that appear in this list respond to commands from the Manager Server, (e.g., <i>stop</i> , <i>start</i> , <i>restart</i> , <i>drain</i> ).<br><br>The value may consist of one or more hostnames (not IP addresses) each on a separate line enclosed by square brackets; or a value of <i>all</i> may be entered which specifies all hosts on the system.<br><br>The content of this configuration key is managed by the InterMail installation process. As each new host is added to the system, it is entered in the <code>legalHosts</code> key in the master configuration database. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | Manager Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | any valid host name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | <i>all</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Default Value:</b>    | <i>all</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>*/immgrserv/legalHosts: [venus]<br/>                                  [jupiter]<br/>                                  [neptune]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## lifetimeForMsgsDays

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the number of days any message is allowed to live, regardless of whether not it has been retrieved.<br><br>If the <code>lifetimeOnMsgsOption</code> key is set to <code>true</code> , all messages older than the number of days specified in <code>lifetimeForMsgsDays</code> are deleted, even if they have not been read or retrieved.<br><br>If the <code>lifetimeOnMsgsOption</code> key is set to <code>false</code> , the value in this key has no effect. |
| <b>Related Keys:</b>     | <code>lifetimeOnMsgsOption</code>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | 365                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Default Value:</b>    | 365                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*/mss/lifetimeForMsgsDays: [90]</code>                                                                                                                                                                                                                                                                                                                                                                                                                               |

## lifetimeForRetrievedMsgsDays

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the number of days a message retrieved via POP is permitted to live.<br><br>Once a message has been retrieved, it may remain on the server for an additional period of time. This period is defined by the number of days specified in the <code>lifetimeForRetrievedMsgsDays</code> key. Once this period has elapsed, the retrieved messages are deleted.<br><br>In order for <code>lifetimeForRetrievedMsgsDays</code> to have any affect, the <code>lifetimeOnRetrievedMsgsOption</code> key must be set to <code>true</code> . |
| <b>Related Keys:</b>     | <code>lifetimeOnRetrievedMsgsOption</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mss/lifetimeForRetrievedMsgsDays: [14]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## lifetimeOnMsgsOption

|                          |                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Indicates whether or not a lifetime policy on all messages should be enforced, regardless of status as read or retrieved.<br><br>If this key is set to <code>true</code> , the message aging policy defined by <code>lifetimeForMsgsDays</code> is in effect.<br><br>If this key is set to <code>false</code> , the message aging policy defined by <code>lifetimeForMsgsDays</code> is ignored. |
| <b>Related Keys:</b>     | <code>lifetimeForMsgsDays</code>                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Example:</b>          | <code>/*/mss/lifetimeOnMsgsOption: [false]</code>                                                                                                                                                                                                                                                                                                                                                |

## lifetimeOnRetrievedMsgsOption

|                          |                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Indicates whether or not a lifetime policy on all retrieved messages should be enforced.<br><br>If this key is set to <code>true</code> , the retrieved message aging policy defined by <code>lifetimeForRetrievedMsgsDays</code> is in effect.<br><br>If this key is set to <code>false</code> , the retrieved message aging policy defined by <code>lifetimeForRetrievedMsgsDays</code> is ignored. |
| <b>Related Keys:</b>     | <code>lifetimeForRetrievedMsgsDays</code>                                                                                                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mss/lifetimeOnRetrievedMsgsOption: [false]</code>                                                                                                                                                                                                                                                                                                                                            |

## listenBacklog

|                          |                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the size of the <code>Listener</code> thread's backlog queue.<br><br>The <code>Listener</code> creates a connection queue for all network connections on the port attached to the socket. When another machine tries to connect to the port (i.e., SMTP, POP, etc.), its connection request is held in the queue; if the queue is full, then the connection is rejected. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | 5 to 1024                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | 1024                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | 1024                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Example:</b>          | <code>/* /common/listenBacklog: [1024]</code>                                                                                                                                                                                                                                                                                                                                      |

## localFallback

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines the MTA's behavior with regard to temporary mail storage in situations when all Queue Servers are unavailable.<br><br>If this key is set to <code>false</code> , messages that require temporary storage are rejected.<br><br>If this key is set to <code>true</code> , messages that require temporary storage are spooled locally on the MTA's file system. Messages stored locally are not protected by journaling and should be protected by disk mirroring. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <code>/* /mta/localFallback: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## lockTimeout

|                          |                                                                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the number of seconds the POP Server waits before releasing its lock on a user's mailbox. Once the lock is released other POP clients can connect to the same mailbox. |
| <b>Related Keys:</b>     | none                                                                                                                                                                        |
| <b>Servers Affected:</b> | POP Server                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                         |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                   |
| <b>Initial Value:</b>    | 15                                                                                                                                                                          |
| <b>Default Value:</b>    | 15                                                                                                                                                                          |
| <b>Example:</b>          | <code>*/popserv/lockTimeout: [15]</code>                                                                                                                                    |

## logAgeHours

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Specifies the length of time that update information is maintained in the Integrated Services Directory.</p> <p>Directory Cache Servers must update their caches within the window specified by <code>logAgeHours</code>, or they will be unable to synchronize the content of their caches with the ISD.</p> <p>The value of the <code>logAgeHours</code> key must be larger than the value of the <code>dirCacheUpdatePeriod</code> key to ensure automatic synchronization. Also, it should be larger than the value specified in <code>logExpireHours</code> in order to prevent excessive update information from being maintained.</p> <p>See Chapter 4 of the <i>InterMail Reference Guide</i> for a detailed explanation of directory synchronization.</p> |
| <b>Related Keys:</b>     | <code>logAgeHours</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Initial Value:</b>    | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>*/imdircacheserv/logAgeHours: [12]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## logDir

|                          |                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the path on the file system to the location of the directory to which server log files are written. This directory will contain very large amounts of data, so it is important that it be on a file system with substantial free space.<br><br>This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | a valid directory path name                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | log                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | log                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/common/logDir: [log]</code>                                                                                                                                                                                                                                                                                                                                          |

## logExpireHours

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the frequency with which a Directory Cache server attempts to expire update information in the Integrated Services Directory.<br><br>When the expiration operation is performed, upgrade information older than the value specified in the <code>logAgeHours</code> key is deleted.<br><br>The value set in <code>logExpireHours</code> should be less than the value specified in <code>logAgeHours</code> . |
| <b>Related Keys:</b>     | <code>logAgeHours</code>                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | 4                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Default Value:</b>    | 4                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Example:</b>          | <code>*/imdircacheserv/logExpireHours: [4]</code>                                                                                                                                                                                                                                                                                                                                                                  |

## loginDefaultDomain

|                          |                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the domain name that is automatically added to usernames when logging in via the POP and IMAP servers.<br>Typically the value of this configuration key should be null. |
| <b>Related Keys:</b>     | none                                                                                                                                                                         |
| <b>Servers Affected:</b> | POP Server, IMAP Server                                                                                                                                                      |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                          |
| <b>Possible Values:</b>  | any valid domain name                                                                                                                                                        |
| <b>Initial Value:</b>    | null                                                                                                                                                                         |
| <b>Default Value:</b>    | null                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*/common/loginDefaultDomain: [software.com]</code>                                                                                                                    |

## loginFilter

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines a regular expression used on login names by the Directory Cache Server.<br><br>The value of the <code>loginFilter</code> key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets. In addition, Each entry must follow the format:<br><code>sXpatXrepXopt</code><br>where X is any single character that does not occur in <code>pat</code> or <code>rep</code> . |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | a regular expression                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/imdircacheserv/loginFilter: [s%xyz/%i]</code>                                                                                                                                                                                                                                                                                                                                                                                           |

## loginNameConvertFrom

|                          |                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines a list of characters to convert in a login name.<br>Used in conjunction with <code>loginNameConvertTo</code> . |
| <b>Related Keys:</b>     | <code>loginNameConvertTo</code>                                                                                        |
| <b>Servers Affected:</b> | all servers                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                    |
| <b>Possible Values:</b>  | any valid character or characters                                                                                      |
| <b>Initial Value:</b>    | null                                                                                                                   |
| <b>Default Value:</b>    | null                                                                                                                   |
| <b>Example:</b>          | <code>/* /common/loginNameConvertFrom: [ ]</code>                                                                      |

## loginNameConvertTo

|                          |                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the character used to replace characters in a login name that match those specified in <code>loginNameConvertFrom</code> . |
| <b>Related Keys:</b>     | <code>loginNameConvertFrom</code>                                                                                                    |
| <b>Servers Affected:</b> | all servers                                                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                  |
| <b>Possible Values:</b>  | any valid character or characters                                                                                                    |
| <b>Initial Value:</b>    | @                                                                                                                                    |
| <b>Default Value:</b>    | @                                                                                                                                    |
| <b>Example:</b>          | <code>/* /common/loginNameConvertTo: [ @ ]</code>                                                                                    |

## logMailBoxCreation

|                          |                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines whether or not the creation of mailboxes “on the fly” should be logged.<br><br>When this key is set to <code>true</code> , automatic mailbox creation is noted in the log generated by the server which created the mailbox.<br><br>When this key is set to <code>false</code> , automatic mailbox creation is not logged. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | POP Server, IMAP Server, MTA                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                     |
| <b>Default Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                     |
| <b>Example:</b>          | <code>/* /common/logMailBoxCreation: [ true ]</code>                                                                                                                                                                                                                                                                                  |

## logNamedPipeMode

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines the behavior of the named pipe that transmits log file information.<br><br>If the value is set to zero, a named pipe is not be created.<br><br>If the value is set to 1, a named pipe is created if necessary, and log entries transmitted to the pipe whether or not there is a reader on the pipe.<br><br>If the value is set to 2, the named pipe is blocked until there is a reader.<br><br>If you plan to use a named pipe, the recommended value is 1. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Possible Values:</b>  | 0, 1, or 2                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Example:</b>          | <code>/* /common/logNamedPipeMode: [1]</code>                                                                                                                                                                                                                                                                                                                                                                                                                           |

## mailRoutingHost

|                          |                                                                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the name of a host to use if there is no default route in the <code>mailRoutingTable</code> key. Note that addresses with explicit routes have those routes respected even if this option is used. |
| <b>Related Keys:</b>     | <code>mailRoutingTable</code>                                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                 |
| <b>Possible Values:</b>  | any valid host name                                                                                                                                                                                     |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                    |
| <b>Default Value:</b>    | null                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/* /mta/mailRoutingHost: [firewall.software.com]</code>                                                                                                                                           |

## mailRoutingTable

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines a series of instructions that can be used to route messages to a machine other than the destination specified in their address.<br><br>Normally this is used in situations where a firewall prevents direct access to the destination mail server, or when mail needs to be sent through a gateway to another network (such as a UUCP network).<br><br>Entries in the table consist of a host name, followed by a colon, and then another host name. You can also use a pattern, followed by a colon, and then a hostname.<br><br>Any mail addressed to a host that matches the pattern to the left of the colon is sent to the host listed immediately after the colon.<br><br><i>Note:</i> You may also include instructions in the mailRoutingTable entry to indicate header and domain rewriting for outgoing mail. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | See the Chapter 5 of the <i>InterMail Operations Guide</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <pre>/*/mta/mailRoutingTable: [neptune:venus.software.com]                         [domain:gateway.otherdomain]</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## masterAgentHost

|                          |                                                               |
|--------------------------|---------------------------------------------------------------|
| <b>Description:</b>      | Identifies the host on which the SNMP master agent runs.      |
| <b>Related Keys:</b>     | none                                                          |
| <b>Servers Affected:</b> | SNMP Server                                                   |
| <b>Change Impact:</b>    | server restart required                                       |
| <b>Possible Values:</b>  | any valid host name                                           |
| <b>Initial Value:</b>    | set during installation                                       |
| <b>Default Value:</b>    | null                                                          |
| <b>Example:</b>          | <pre>/*/snmpdm/masterAgentHost: [saturn.accordance.com]</pre> |

## maxBadCommands

|                          |                                                                                                                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum number of invalid SMTP commands that may be transmitted during a client session.<br><br>If a connecting client issues more than this number of invalid SMTP commands, the MTA will close the connection to that client. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                           |
| <b>Possible Values:</b>  | any integer greater than or equal to 3                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | 10                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | 10                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mta/maxBadCommands: [10]</code>                                                                                                                                                                                                      |

## maxBadPassword

|                          |                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the number of bad password attempts allowed before a client connection is dropped.<br><br>This key can be used independently for either the POP server or the IMAP server. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                 |
| <b>Servers Affected:</b> | POP Server, IMAP server                                                                                                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                  |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                            |
| <b>Initial Value:</b>    | 3                                                                                                                                                                                    |
| <b>Default Value:</b>    | 3                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/common/maxBadPassword: [3]</code>                                                                                                                                           |

## maxBadPasswordAddr

- Description:** Specifies the maximum number of IP addresses that can be tracked for violations of the POP or IMAP password policy.
- Each time a failed authentication occurs, InterMail stores the IP address of the client that issued the incorrect login information. Additional entries are logged until the size of the list reaches the limit established by this key. When the limit is reached, this fact is logged and the list is reset to zero.
- Related Keys:** none
- Servers Affected:** POP Server, IMAP Server
- Change Impact:** trivial, no server restart required
- Possible Values:** any non-negative integer (including zero)
- Initial Value:** 10240
- Default Value:** 10240
- Example:** `/* /common/maxBadPasswordAddr: [10240]`

## maxBadPasswordDelay

- Description:** Sets the maximum delay time (in seconds) for POP or IMAP authentication attempts.
- This key is used in conjunction with the `badPasswordDelay` configuration key, which defines an enforced delay period between failed authentication attempts. Delays specified in `badPasswordDelay` are cumulative up to the limit defined by the value of the `maxBadPasswordDelay` configuration key.
- A value of zero means there is no limit.
- Related Keys:** `badPasswordDelay`
- Servers Affected:** POP Server, IMAP Server
- Change Impact:** trivial, no server restart required
- Possible Values:** any non-negative integer (including zero)
- Initial Value:** 90
- Default Value:** 90
- Example:** `/* /common/maxBadPasswordDelay: [60]`

## maxBadPasswordUsers

|                          |                                                                                                                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum size for a list of accounts for which an incorrect password was given.<br><br>When the size limit for this list is reached, the event is logged and the list size is reset to zero. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | POP Server, IMAP Server                                                                                                                                                                                   |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                       |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                 |
| <b>Initial Value:</b>    | 10240                                                                                                                                                                                                     |
| <b>Default Value:</b>    | 10240                                                                                                                                                                                                     |
| <b>Example:</b>          | <code>/* /common/maxBadPasswordUsers: [10240]</code>                                                                                                                                                      |

## maxBounceNotices

|                          |                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum number of unread <code>bounceQuotaNotice</code> messages there can be in any one mailbox.<br><br>A setting of -1 (or any other negative number) means there is no limit to the number of unread bounce quota messages in a mailbox.<br><br>A setting of zero means that users will not receive any <code>bounceQuotaNotice</code> messages. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                              |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | any integer                                                                                                                                                                                                                                                                                                                                                       |
| <b>Initial Value:</b>    | 20                                                                                                                                                                                                                                                                                                                                                                |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>/* /mss/maxBounceNotices: [3]</code>                                                                                                                                                                                                                                                                                                                        |

## maxDirectDelivery

|                          |                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of recipients for a message that are delivered directly from memory.<br>Any message with more than this number of recipients is immediately secured by writing it to the <code>queue</code> directory and acceptance is signaled to the sending server. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                             |
| <b>Possible Values:</b>  | any integer greater than 1                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | 15                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | 15                                                                                                                                                                                                                                                                              |
| <b>Example:</b>          | <code>/*/mta/maxDirectDelivery: [15]</code>                                                                                                                                                                                                                                     |

## maxDirectKb

|                          |                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum size (in kilobytes) for a message that are delivered directly from memory.<br>Any message larger than this size is immediately secured by writing it to the <code>queue</code> directory and acceptance is signaled to the sending server. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | any integer greater than 1                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | 100                                                                                                                                                                                                                                                         |
| <b>Default Value:</b>    | 100                                                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*/mta/maxDirectKb [120]</code>                                                                                                                                                                                                                       |

## maxFolders

|                          |                                                                     |
|--------------------------|---------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of folders allowed within a user's mailbox. |
| <b>Related Keys:</b>     | none                                                                |
| <b>Servers Affected:</b> | MSS                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                 |
| <b>Possible Values:</b>  | any integer greater than 3                                          |
| <b>Initial Value:</b>    | 100                                                                 |
| <b>Default Value:</b>    | 100                                                                 |
| <b>Example:</b>          | <code>/*/mss/maxFolders: [100]</code>                               |

## maximumMtaHops

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum number of MTA hops allowed for a message.<br>A message is said to have “hopped” when it is transferred from one MTA to another. Hops are measure by the number of <code>Received:</code> lines in the message header.<br><br>The number of hops is significant because messages that have been handled many times by many mail servers may be caught in a mail loop.<br><br>When InterMail receives a message which has been handled more than the defined number of times, it stops delivery of the message, and handles it as defined in the <code>Error-Actions/mtaMaxMtaHopCountExceeded</code> configuration key. |
| <b>Related Keys:</b>     | <code>Error-Actions/mtaMaxMtaHopCountExceeded</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | any integer from 2 to 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/maximumMtaHops: [30]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## maxMessageSizeInKb

|                          |                                                                                                                                                                                                                                                          |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum size of a message that the system is willing to accept from a client (via SMTP).<br><br>Messages greater than this size are rejected with a 552 code.<br><br>Values are in kilobytes. A value of zero indicates unlimited message size. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                      |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                      |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | 10240 (10 Mb)                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | 10240 (10 Mb)                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mta/maxMessageSizeInKb: [10240]</code>                                                                                                                                                                                                          |

## maxMsgTextCache

|                          |                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum amount of message text the IMAP server should try to cache.<br><br>Caching message text in the IMAP Server reduces the load on the MSS by allowing the IMAP Server to handle a series of <code>FETCH</code> requests from an IMAP client.<br><br>The value of this key is specified in bytes. The default value is one megabyte (1024x1024). |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | IMAP Server                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                |
| <b>Possible Values:</b>  | <i>Warning! Do not attempt to modify the value of this key.</i>                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | 1048576                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | 1048576                                                                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/imapserv/maxMsgTextCache: [1048576]</code>                                                                                                                                                                                                                                                                                                                |

## maxMssDeliverCount

|                          |                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of messages that can be delivered to an MSS in a single transaction. |
| <b>Related Keys:</b>     | none                                                                                         |
| <b>Servers Affected:</b> | MTA                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                          |
| <b>Possible Values:</b>  | any integer greater than zero                                                                |
| <b>Initial Value:</b>    | 20                                                                                           |
| <b>Default Value:</b>    | 20                                                                                           |
| <b>Example:</b>          | <code>/*/mta/maxMssDeliverCount: [20]</code>                                                 |

## maxNullSenderRCPTs

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of recipients allowed when the MAIL FROM: address in any message is NULL (“<”).<br><br>Messages sent from the NULL address (e.g., bounce notices) typically do not include more than one recipient. Messages from the NULL address with more than one recipient, should be suspected as unsolicited commercial e-mail.<br><br>A value of zero means that an unlimited number of recipients is allowed. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Example:</b>          | <code>/*/mta/maxNullSenderRCPTs: [1]</code>                                                                                                                                                                                                                                                                                                                                                                                    |

## maxPasswordFailures

|                          |                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies a limit on the number of authentication failures on an account or by an IP Address before connections are dropped. |
| <b>Related Keys:</b>     | none                                                                                                                         |
| <b>Servers Affected:</b> | POP Server, IMAP Server                                                                                                      |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                          |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                    |
| <b>Initial Value:</b>    | 10                                                                                                                           |
| <b>Default Value:</b>    | 10                                                                                                                           |
| <b>Example:</b>          | <code>/*/common/maxPasswordFailures: [10]</code>                                                                             |

## maxQueueTimeInDays

- Description:** Specifies the maximum number of days that a message is kept in the queue for deferred outbound mail.
- Messages that can not be immediately delivered (for example, mail sent to a remote host that is temporarily unavailable) are queued for subsequent delivery attempts, which occur regularly at the expiration of the queue processing interval (as defined in the `outboundDeferProcessInterval` key).
- After a message has been queued for the number of days defined in `maxQueueTimeInDays`, InterMail assumes that the message cannot be delivered and returns the message to its sender.
- Internet standards recommend queuing such messages for 4 or 5 days. However, you may want to shorten that period if there is a more urgent need to know when mail has not been delivered.
- Related Keys:** none
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** 0.5 (half a day), or any integer from 1 to 14 (two weeks)
- Initial Value:** 4
- Default Value:** 4
- Example:** `/*/mta/maxQueueTimeInDays: [4]`

## maxSessions

- Description:** Specifies the maximum number of simultaneous sessions the POP or IMAP server will support.
- When this number of concurrent sessions has been reached, additional connections are not be accepted.
- A value of zero means there is no limit.
- Related Keys:** none
- Servers Affected:** POP Server, IMAP Server
- Change Impact:** trivial, no server restart required
- Possible Values:** any non-negative integer (including zero)
- Initial Value:** 0
- Default Value:** 0
- Example:** `/*/imapserv/maxSessions: [50]`

## messageFilesDir

|                          |                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the path on the file system to the location of the directory that contains the message files.<br><br>This directory will contain every message for every account stored on a particular MSS host, so it should be on a partition with as much free space as possible.<br><br>This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | server restart required                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | no impact on server                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | any valid directory path                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | set at installation time                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Example:</b>          | <code>/*/mss/messageFilesDir: [msgfiles]</code>                                                                                                                                                                                                                                                                                                                                                        |

## messageReadTracing

|                          |                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables message tracing for message-reading operations in the MSS.<br><br>When set to <code>true</code> , the MSS writes <code>MsMsgRead</code> and <code>MsMsgRangeRead</code> log entries when it fetches messages for a client.<br><br>When set to <code>false</code> , the MSS does not write <code>MsMsgRead</code> and <code>MsMsgRangeRead</code> log entries. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mss/messageReadTracing: [false]</code>                                                                                                                                                                                                                                                                                                                                |

## messageTracing

|                          |                                                                                                                                                                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets whether or not to report message trace notifications in the log files.<br><br>This is an important option for debugging and measuring system performance, since it tracks the flow of messages through the InterMail system.<br><br>This key can be set independently for any server. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                        |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | MSS: false<br>remaining servers: true                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | MSS: false<br>remaining servers: true                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/mta/messageTracing: [true]</code>                                                                                                                                                                                                                                                 |

## mgrServerPort

|                          |                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines the port on which the Manager Server listens for requests to start, drain, stop and restart servers. |
| <b>Related Keys:</b>     | none                                                                                                            |
| <b>Servers Affected:</b> | Manager Server                                                                                                  |
| <b>Change Impact:</b>    | server restart required                                                                                         |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                   |
| <b>Initial Value:</b>    | set during installation                                                                                         |
| <b>Default Value:</b>    | null                                                                                                            |
| <b>Example:</b>          | <code>*/immgrserv/mgrServerPort: [5004]</code>                                                                  |

## mimeParseMode

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Defines how locally-delivered mail is pre-parsed before delivery to the MSS.</p> <p>If the value in <code>mimeParseMode</code> is set to <code>on</code>, all locally delivered mail is subject to IMAP parsing.</p> <p>If the value is set to <code>off</code>, no mail is subject to IMAP parsing.</p> <p>If the value is set to <code>imap-only</code>, the only messages subject to IMAP parsing are those destined for local users whose accounts have IMAP delivery enabled.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | <code>on</code> , <code>off</code> , or <code>imap-only</code>                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Initial Value:</b>    | <code>imap-only</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | <code>imap-only</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/mimeParseMode: [imap-only]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## minFreeDiskSpaceInKb

|                          |                                                                                                                                                                                                                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Specifies the minimum free disk space required for the MTA to continue accepting messages.</p> <p>If the amount of system disk space is less than this value, the MTA stops accepting messages temporarily.</p> <p>Values are in kilobytes. A value of zero indicates no limit.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | 10000                                                                                                                                                                                                                                                                                  |
| <b>Default Value:</b>    | 10000                                                                                                                                                                                                                                                                                  |
| <b>Example:</b>          | <code>/*/mta/minFreeDiskSpaceInKb: [10000]</code>                                                                                                                                                                                                                                      |

## minQueueIdleTime

**Description:** Defines the minimum time (in seconds) between attempts to process queued mail for any individual domain. A value of zero means there is no limit.

This key is used to distribute queue processing time among all queues, and prevent a single large queue from consuming a disproportionate amount of available processing time.

The `minQueueIdleTime` key operates in conjunction with the `outboundDeferProcessInterval` key, which sets an interval between queue processing intervals. In order to be effective, the value of `minQueueIdleTime` must be *higher* than the value in `outboundDeferProcessInterval`.

For a further discussion of how `minQueueIdleTime` and `outboundDeferProcessInterval` are used, please see Chapter 7 of the *InterMail Operations Guide*.

**Related Keys:** `outboundDeferProcessInterval`

**Servers Affected:** MTA

**Change Impact:** trivial, no server restart required

**Possible Values:** any non-negative integer (including zero)

**Initial Value:** 900 (15 minutes)

**Default Value:** 60 (1 minute)

**Example:** `/*/mta/minQueueIdleTime: [900]`

## moveRetrieveErrors

**Description:** Enables/disables the POP Server's ability to automatically move messages that caused a download error.

If set to `true`, and the POP server encounters a message that causes an error, the server moves the message into the `.ERROR` folder in the account's mailbox (creating this folder if necessary). The server then checks all other messages in this mailbox to verify that they are retrievable.

If set to `false`, the POP server does not move messages when it encounters a download error. This may lead to problems for connecting clients, and require administrator intervention.

The recommended value is `true`.

**Related Keys:** none

**Servers Affected:** POP Server

**Change Impact:** trivial, no server restart required

**Possible Values:** true or false  
**Initial Value:** true  
**Default Value:** true  
**Example:** `/*/popserv/moveRetrieveErrors: [true]`

## msgDelivererNumThreads

**Description:** Specifies the maximum number of threads available for the MTA's Deliverer task.  
 The Deliverer is responsible for communicating with the MSS to deliver mail destined for a local mailbox.

**Related Keys:** none

**Servers Affected:** MTA

**Change Impact:** trivial, no server restart required

**Possible Values:** any integer greater than zero

**Initial Value:** 40

**Default Value:** 10

**Example:** `/*/mta/msgDelivererNumThreads: [40]`

## msgFileCacheSizeInKb

**Description:** Sets the size of the message file cache on the MSS.  
 The value of the key is specified in kilobytes.

**Related Keys:** none

**Servers Affected:** MSS

**Change Impact:** trivial, no server restart required

**Possible Values:** any integer greater than zero

**Initial Value:** 100

**Default Value:** 100

**Example:** `/*/mss/msgFileCacheSizeInKb: [100]`

## msgValidatorNumThreads

|                          |                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum number of threads available for the MTA's Validator task.<br><br>This validator queries the Directory Cache Server to determine the destination of a message. It also handles errors, and is responsible for examining and rewriting message headers. Therefore, there should be more msgValidatorNumThreads than dirCacheConnections. |
| <b>Related Keys:</b>     | dirCacheConnections                                                                                                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | 80                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | 10                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/msgValidatorNumThreads: [80]</code>                                                                                                                                                                                                                                                                                                             |

## mssBasePort

|                          |                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the base port number for MSS processes on a host.<br><br>If a single host runs multiple MSS processes, these processes use a contiguous set of port numbers that begin at the port number set here.<br><br><i>Note: If multiple MSS processes will be run on the same host, this port should have enough contiguous unused ports after it to accommodate the desired number of MSS processes.</i> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | set during installation                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/venus/mss/mssBasePort: [8050]</code>                                                                                                                                                                                                                                                                                                                                                                 |

## mssDeliverTimeoutSecs

|                          |                                                                                                                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies how long the MTA should wait for the MSS to respond before timing out. This applies only to multiple delivery operations.<br><br>The value of this key is specified in seconds. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                      |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                       |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                             |
| <b>Initial Value:</b>    | 1200                                                                                                                                                                                      |
| <b>Default Value:</b>    | 1200                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/mta/mssDeliverTimeoutSecs: [1200]</code>                                                                                                                                         |

## mssLogRedirects

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Enables/disables logging the redirection of messages to specific MSS processes.<br><br>When an MSS process attempts to open an account's mailbox, but finds that it is already in use by another MSS process, it redirects the message to that MSS.<br><br>When <code>mssLogRedirects</code> is set to <code>true</code> , a log entry is made each time a message is redirected to another MSS.<br><br>When <code>mssLogRedirects</code> is set to <code>false</code> , no log entry is made when a message is redirected to another MSS.<br><br><i>Note: This feature is relevant only if more than one MSS is running on a single host.</i> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <code>/*/mss/mssLogRedirects: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## **mssNumPorts**

|                          |                                                                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the number of ports reserved for use by MSS processes on a single host.<br><br>InterMail also uses this value to determine the number of MSS processes that are running on a particular host. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                 |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                           |
| <b>Initial Value:</b>    | set during installation                                                                                                                                                                                 |
| <b>Default Value:</b>    | 1                                                                                                                                                                                                       |
| <b>Example:</b>          | <code>/*mss/mssNumPorts: [1]</code>                                                                                                                                                                     |

## **mtaSpool**

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the path on the file system to the location of the MTA <code>spool</code> directory. This is the directory in which deferred messages are stored.<br><br>Deferred mail can take up a significant amount of disk space, so this directory should be on a drive partition with large amounts of free space.<br><br>This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Possible Values:</b>  | a valid file path                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | <code>spool</code>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Default Value:</b>    | <code>spool</code>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*mta/mtaSpool: [spool]</code>                                                                                                                                                                                                                                                                                                                                                                                                       |

## nearQuotaNotice

- Description:** Defines the text of the near-quota notification message.
- The entry for this key may include macros, which are enclosed in angle brackets (<>). Real text is substituted for the macros before the message is sent. Supported macros are identified below:
- <Available\_Resource>  
indicates the unused portion of a user's quota
  - <Requested\_Resource>  
indicates the quota that has been exceeded (e.g., maximum mailbox size, maximum message size, maximum number of messages in a mailbox)
  - <User\_Quota>  
indicates the user's total quota
- The following additional macros could be used if this facility is generalized to other quotas:
- <Resource\_Name>  
indicates the name of the resource (e.g., message bytes)
  - <Resource\_Type>  
indicates a type for the resource (e.g., bytes)
  - <Resource\_Referent>  
indicates the object referenced (e.g., mailbox)
- Related Keys:** none
- Servers Affected:** MSS
- Change Impact:** trivial, no server restart required
- Possible Values:** a text string (which may include any of the supported macros)
- Initial Value:** From: <HWM\_Notice\_From>  
Subject: <HWM\_Notice\_Subject>  
Date: <HWM\_Notice\_Date>  
Your mailbox is over the high water mark.  
Please delete some messages from your mailbox!
- Default Value:** Please delete some messages from your mailbox.
- Example:** `/*/mss/nearQuotaNotice: [Please delete some mail.]`

## **netTimeout**

|                          |                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the timeout for network operations.<br>Values are specified in seconds.                                  |
| <b>Related Keys:</b>     | none                                                                                                          |
| <b>Servers Affected:</b> | all servers                                                                                                   |
| <b>Change Impact:</b>    | server restart required                                                                                       |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                 |
| <b>Initial Value:</b>    | for the <code>imconfget</code> command: 30<br>for the <code>imconfcontrol</code> : 30<br>for all servers: 240 |
| <b>Default Value:</b>    | 120                                                                                                           |
| <b>Example:</b>          | <code>/*/common/netTimeout: [240]</code>                                                                      |

## **nlsDir**

|                          |                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the directory where the NLS (National Language Support) catalogs are kept. |
| <b>Related Keys:</b>     | none                                                                                 |
| <b>Servers Affected:</b> | all servers                                                                          |
| <b>Change Impact:</b>    | no impact on server                                                                  |
| <b>Possible Values:</b>  | a valid full file path                                                               |
| <b>Initial Value:</b>    | <code>nlslib</code>                                                                  |
| <b>Default Value:</b>    | null                                                                                 |
| <b>Example:</b>          | <code>/*/common/nlsDir: [nlslib]</code>                                              |

## oracleConnection

|                          |                                                                                                                                                                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the Oracle connection string for the Message Store Database associated with a particular MSS.<br><br>The <code>oracleConnection</code> key is used in conjunction with the <code>oracleUserPassword</code> key to define the required connection parameters. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | server restart required for MSS; no impact on server for utilities                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | an Oracle connection string                                                                                                                                                                                                                                            |
| <b>Initial Value:</b>    | the name of the Oracle database instance provided during installation                                                                                                                                                                                                  |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                   |
| <b>Example:</b>          | <code>&lt;logical_host&gt;/mss/oracleConnection: [IMM1]</code>                                                                                                                                                                                                         |

## oracleConnectWait

|                          |                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the Oracle reconnect delay (in seconds).<br><br>Used by the Directory Cache Server to delay subsequent attempts to connect to the Integrated Services Directory after an attempt to connect fails. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                                                                                                       |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                      |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                |
| <b>Initial Value:</b>    | 60                                                                                                                                                                                                           |
| <b>Default Value:</b>    | 60                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/imdircacheserv/oracleConnectWait: [60]</code>                                                                                                                                                       |

## **oracleHome**

|                          |                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the home directory for Oracle.<br><br>This key is set at installation and defines the path where Oracle binaries are kept. |
| <b>Related Keys:</b>     | none                                                                                                                               |
| <b>Servers Affected:</b> | none                                                                                                                               |
| <b>Change Impact:</b>    | no impact on server                                                                                                                |
| <b>Possible Values:</b>  | a valid full file path                                                                                                             |
| <b>Initial Value:</b>    | set during installation                                                                                                            |
| <b>Default Value:</b>    | null                                                                                                                               |
| <b>Example:</b>          | <code>/*/common/oracleHome: [/disk2/oracle/7.3.4]</code>                                                                           |

## **oracleMaxOperationTime**

|                          |                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies how long the Directory Cache Server should wait when trying to contact Oracle.<br><br>Values are specified in seconds. |
| <b>Related Keys:</b>     | none                                                                                                                             |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                              |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                    |
| <b>Initial Value:</b>    | 120                                                                                                                              |
| <b>Default Value:</b>    | 120                                                                                                                              |
| <b>Example:</b>          | <code>*/imdircacheserv/oracleMaxOperationTime: [90]</code>                                                                       |

## **oracleTrace**

|                          |                                           |
|--------------------------|-------------------------------------------|
| <b>Description:</b>      | Enables/disables Oracle trace logs.       |
| <b>Related Keys:</b>     | none                                      |
| <b>Servers Affected:</b> | none                                      |
| <b>Change Impact:</b>    | trivial, no server restart required       |
| <b>Possible Values:</b>  | on or off                                 |
| <b>Initial Value:</b>    | off                                       |
| <b>Default Value:</b>    | off                                       |
| <b>Example:</b>          | <code>/*/common/oracleTrace: [off]</code> |

## oracleUserPassword

|                          |                                                                                                                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the Oracle username and password for the Message Store Database associated with a particular MSS.<br><br>The <code>oracleConnection</code> key is used in conjunction with the <code>oracleUserPassword</code> key to define the required connection parameters. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | server restart required for MSS; no impact on server for utilities                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | <string>/<string>                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | the InterMail GID and UID set during installation                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                       |
| <b>Example:</b>          | <code>/*/mss/oracleUserPassword: [imail/imail]</code>                                                                                                                                                                                                                      |

## outboundDeferProcessInitialWait

|                          |                                                                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the initial amount of time to wait before processing the queue of mail deferred for external delivery.<br><br>The value of this key is specified seconds. |
| <b>Related Keys:</b>     | none                                                                                                                                                                |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                 |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                           |
| <b>Initial Value:</b>    | 0                                                                                                                                                                   |
| <b>Default Value:</b>    | 0                                                                                                                                                                   |
| <b>Example:</b>          | <code>/*/mta/outboundDeferProcessInitialWait: [0]</code>                                                                                                            |

## **outboundDeferProcessInterval**

|                          |                                                                                                                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the processing interval (in seconds) for mail deferred for external delivery.<br><br>When this number of seconds have elapsed, the MTA attempts to send messages that it had previously deferred.<br><br>Values are in specified seconds. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                 |
| <b>Possible Values:</b>  | any integer greater than 60                                                                                                                                                                                                                         |
| <b>Initial Value:</b>    | 300                                                                                                                                                                                                                                                 |
| <b>Default Value:</b>    | 300                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>/*/mta/outboundDeferProcessInterval: [300]</code>                                                                                                                                                                                             |

## **pidDir**

|                          |                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the path on the file system to the location of the directory where pid files are stored.<br><br>These pid files are used to store the UNIX process IDs of the InterMail processes that are running.<br><br>This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | a valid directory path                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | tmp                                                                                                                                                                                                                                                                                                                                  |
| <b>Default Value:</b>    | tmp                                                                                                                                                                                                                                                                                                                                  |
| <b>Example:</b>          | <code>/*/common/pidDir: [tmp]</code>                                                                                                                                                                                                                                                                                                 |

## pop3Port

|                          |                                                                                                                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the port number used by the POP server to listen for incoming POP3 connections.<br><i>Warning! Changing the value from the standard POP3 port (110) is not recommended.</i> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                  |
| <b>Servers Affected:</b> | POP Server                                                                                                                                                                            |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                               |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                                                                                         |
| <b>Initial Value:</b>    | 110                                                                                                                                                                                   |
| <b>Default Value:</b>    | 110                                                                                                                                                                                   |
| <b>Example:</b>          | <code>*/popserv/pop3Port: [110]</code>                                                                                                                                                |

## popProxyHost

|                          |                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the name of the host that handles POP connections for unknown POP login names.<br><br>This is typically used during migration to InterMail from another mail system, and allows accounts to be migrated over a period of time. If no proxy host is defined here, the POP server returns an error to a connecting client when that client sends an unknown POP login name. |
| <b>Related Keys:</b>     | popProxyPort                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | POP Server                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | any valid hostname                                                                                                                                                                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Example:</b>          | <code>*/popserv/popProxyHost: [jupiter.accordance.com]</code>                                                                                                                                                                                                                                                                                                                     |

## popProxyPort

|                          |                                                                     |
|--------------------------|---------------------------------------------------------------------|
| <b>Description:</b>      | Defines the POP port to use for the host specified in popProxyHost. |
| <b>Related Keys:</b>     | popProxyHost                                                        |
| <b>Servers Affected:</b> | POP Server                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                 |
| <b>Possible Values:</b>  | the port on which the POP Server on popProxyHost is listening       |
| <b>Initial Value:</b>    | 110                                                                 |
| <b>Default Value:</b>    | 110                                                                 |
| <b>Example:</b>          | <code>*/popserv/popProxyPort: [110]</code>                          |

## primaryDbConnection

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the Oracle connection string for the primary Integrated Services Directory (ISD).<br><br>The <code>primaryDbConnection</code> key is used in conjunction with the <code>primaryDbUserInfo</code> key to define the required connection parameters.<br><br><i>Note:</i> The ISD is the master source of all account, domain, and class of service information. It is queried by the Directory Cache server when information in the cache is considered out-of-date. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Possible Values:</b>  | an Oracle connection string                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | the name of the Oracle database instance provided during installation                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Example:</b>          | <code>/*/common/primaryDbConnection: [IMDB]</code>                                                                                                                                                                                                                                                                                                                                                                                                                           |

## primaryDbNumConnections

|                          |                                                                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the number of Oracle connections to the primary Integrated Services Directory (as specified by <code>primaryDbConnection</code> configuration key).<br><br>Using a larger value increases the throughput of the Directory Cache Server when it is doing read-throughs and write-throughs to Oracle. |
| <b>Related Keys:</b>     | <code>primaryDbConnection</code>                                                                                                                                                                                                                                                                              |
| <b>Servers Affected:</b> | Directory Cache Server                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | any positive integer from 1 to the licensed limit                                                                                                                                                                                                                                                             |
| <b>Initial Value:</b>    | 1                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | 1                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>*/imdircacheserv/primaryDbNumConnections: [15]</code>                                                                                                                                                                                                                                                   |

## primaryDbUserInfo

|                          |                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the Oracle username and password for the primary ISD.<br><br>The <code>primaryDbUserInfo</code> key is used in conjunction with the <code>primaryDbConnection</code> key to define the required connection parameters. |
| <b>Related Keys:</b>     | <code>primaryDbConnection</code>                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                      |

**Change Impact:** server restart required  
**Possible Values:** <string>/<string>  
**Initial Value:** the InterMail UID and GID values set at time of installation  
**Default Value:** null  
**Example:** /\*/common/primaryDbUserInfo: [imail/imail]

## queueDir

**Description:** Sets the path on the file system to the location of the root for the Queue directory, under which all “mail in process” directories on the Queue Server are placed.  
 This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory.

**Related Keys:** none  
**Servers Affected:** all servers  
**Change Impact:** server restart required  
**Possible Values:** a valid directory path  
**Initial Value:** queue  
**Default Value:** queue  
**Example:** /\*/common/queueDir: [queue]

## queueRetryInterval

**Description:** Specifies how often the MTA should retry connections to Queue Servers that were previously unavailable.  
 Values are indicated in seconds.

**Related Keys:** none  
**Servers Affected:** MTA  
**Change Impact:** trivial, no server restart required  
**Possible Values:** any integer greater than zero  
**Initial Value:** 15  
**Default Value:** 15  
**Example:** /\*/mta/queueRetryInterval: [15]

## queueServerConnections

|                          |                                                                           |
|--------------------------|---------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the maximum number of simultaneous connections to a Queue Server. |
| <b>Related Keys:</b>     | none                                                                      |
| <b>Servers Affected:</b> | MTA                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                       |
| <b>Possible Values:</b>  | any integer greater than zero                                             |
| <b>Initial Value:</b>    | 10                                                                        |
| <b>Default Value:</b>    | 10                                                                        |
| <b>Example:</b>          | <code>/*/mta/queueServerConnections: [10]</code>                          |

## queueServerPort

|                          |                                                                                    |
|--------------------------|------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the port number on which the Queue Server listens for incoming requests. |
| <b>Related Keys:</b>     | none                                                                               |
| <b>Servers Affected:</b> | MTA                                                                                |
| <b>Change Impact:</b>    | server restart required                                                            |
| <b>Possible Values:</b>  | any valid, unused port number                                                      |
| <b>Initial Value:</b>    | set during installation                                                            |
| <b>Default Value:</b>    | null                                                                               |
| <b>Example:</b>          | <code>/*/mta/queueServerPort: [5010]</code>                                        |

## queueServHosts

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b> | <p>Lists the hosts in the InterMail system running Queue Servers.</p> <p>The key may contain one or more host names separated by colons.</p> <p>The ordering of the entries in this key is significant. The first item in the list indicates the primary host. Typically, this is the local host. Additional items in the list indicate hosts to be used as backups, in the order specified.</p> <p>The MTAs always try to contact their local Queue Server first. If this Queue Server is unavailable, an attempt is next made to contact the second Queue Server listed in this key. If the second attempt should fail, the third host would be tried, and so on.</p> <p>Once a backup Queue Server is in use, subsequent requests for temporary mail storage continue to be directed to the backup until the interval defined in the <code>queueRetryInterval</code> configuration key expires. Then, the MTA attempts to reconnect with its primary Queue Server.</p> |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                |
|--------------------------|----------------------------------------------------------------|
| <b>Related Keys:</b>     | none                                                           |
| <b>Servers Affected:</b> | all servers                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                            |
| <b>Possible Values:</b>  | one or more valid host names separated by colons               |
| <b>Initial Value:</b>    | set during installation                                        |
| <b>Default Value:</b>    | null                                                           |
| <b>Example:</b>          | <code>/*/neptune/queueServHosts: [neptune:uranus:pluto]</code> |

## queueSplitFactor

|                          |                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum number of messages that can be handled at one time by one MTA.<br><br>This allows load to be distributed among multiple MTAs by restricting the amount of work given to any one server. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                           |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                 |
| <b>Initial Value:</b>    | 100                                                                                                                                                                                                           |
| <b>Default Value:</b>    | 100                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/queueSplitFactor: [100]</code>                                                                                                                                                                   |

## radius

|                     |                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------|
| <b>Description:</b> | For all configuration keys beginning with “radius,” consult the InterRADIUS documentation. |
|---------------------|--------------------------------------------------------------------------------------------|

## rejectDnsServer

|                          |                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines a specially configured DNS server to use when looking for domains to reject. |
| <b>Related Keys:</b>     | none                                                                                 |
| <b>Servers Affected:</b> | MTA                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                  |
| <b>Possible Values:</b>  | any valid host name                                                                  |
| <b>Initial Value:</b>    | null                                                                                 |
| <b>Default Value:</b>    | null                                                                                 |
| <b>Example:</b>          | <code>/*/mta/rejectDnsServer: [pluto]</code>                                         |

## **rejectSenderBadDomain**

|                          |                                                                                                                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies whether or not a sender's mail should be rejected because of a bad domain.<br><br>If <code>rejectSenderBadDomain</code> is set to <code>true</code> , the sender's domain must exist in DNS or the message is rejected. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                              |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                               |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/rejectSenderBadDomain: [false]</code>                                                                                                                                                                                |

## **rejectSenderIpDomain**

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies whether or not senders are allowed to provide an IP address instead of a domain in the MAIL command.<br><br>If <code>rejectSenderIpDomain</code> is set to <code>true</code> , senders are not allowed to give an IP address for their domain in the MAIL command.<br><br>If <code>rejectSenderIpDomain</code> is set to <code>false</code> , senders may give an IP address for their domain in the MAIL command and it will be accepted. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Example:</b>          | <code>/*/mta/rejectSenderIpDomain: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                    |

## rejectSenderNoDomain

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies whether or not senders are required to provide a domain in the MAIL command.<br><br>If <code>rejectSenderNoDomain</code> is set to <code>true</code> , senders must provide a domain in their MAIL command in order for it to be accepted.<br><br>If <code>rejectSenderIpDomain</code> is set to <code>false</code> , no requirement is made that senders may give an IP address for their domain in the MAIL command. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mta/rejectSenderNoDomain: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                |

## relayDestAllowList

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Identifies a list of domains to which messages can be relayed, regardless of restrictions on the source of the messages.<br><br>Including domains in this list implies that no other domains receive mail that is restricted by your relay source policies.<br><br>The value of the <code>relayDestAllowList</code> key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Possible Values:</b>  | a valid domain name                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>/*/mta/relayDestAllowList: [accordance.com]<br/>[software.com]</code>                                                                                                                                                                                                                                                                                                                                                                          |

## relayDestDenyList

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Identifies the destination domains for which restricted relay mail is denied.<br><br>Any message whose source is restricted (according to your relay source policies) is not sent to these domains. Including domains in this list implies that all other destination domains receive relay mail regardless of source restrictions.<br><br>The value of the <code>relayDestDenyList</code> key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | a valid domain name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/*/mta/relayDestDenyList: [accordance.com]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## relayHost

|                          |                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Identifies the host to which mail should be relayed if it is addressed to unknown users.<br><br>This option is used during migration from an existing mail system, and allows accounts to be migrated in groups while the InterMail system is up and running. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                           |
| <b>Possible Values:</b>  | any valid host name                                                                                                                                                                                                                                           |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <code>/*/mta/relayHost: [jupiter]</code>                                                                                                                                                                                                                      |

## relayLocalDomainsOk

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Controls the option to include local mail domains in the list of domains specified by <code>relaySourceDomainList</code> .<br><br>This option applies only if <code>relaySourcePolicy</code> restricts relay except for those hosts, domains, and users specified in <code>(allowListed)</code> .<br><br>When this key is set to <code>true</code> , all messages whose return address includes a local mail domain are relayed without restriction. |
| <b>Related Keys:</b>     | <code>relaySourcePolicy</code> , <code>relaySourceDomainList</code> , <code>allowListed</code>                                                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/relayLocalDomainsOk: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                      |

## relayLocalMustExist

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Controls the option to verify local senders before allowing relay.<br><br>When this key is enabled, and the return address of a submitted message includes a local mail domain, InterMail confirms the existence of the sender in the Integrated Services Directory. If the address exists in the ISD, relay is allowed; if the address does not exist, relay is denied.<br><br>This key overrides the <code>relayLocalDomainsOk</code> key. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/relayLocalMustExist: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                             |

## relayMaxRCPTs

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the minimum number of recipients that a message must have before relay restrictions are applied to it.<br><br>This key allows you to exempt messages from your anti-relay policies if they are addressed to one (or a few) recipients.<br><br>For example, if this value is set to 3, and a user attempts to relay a message addressed to two recipients, the relay is allowed regardless of other relay policies. <i>If you intend to prevent all third-party relay, set this key to 1 to eliminate this exemption.</i> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Example:</b>          | <code>/*/mta/relayMaxRCPTs: [100]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## relayNullRestricted

|                          |                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the option for restricting messages that have a null (<>) return address.<br><br>This option applies only if <code>relaySourcePolicy</code> allows relay except from specified host, domains, and users ( <code>denyListed</code> ).<br><br>If set to false, no restrictions are placed on mail with a null source address. |
| <b>Related Keys:</b>     | <code>relaySourcePolicy</code> , <code>denyListed</code>                                                                                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | true                                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | true                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/relayNullRestricted: [true]</code>                                                                                                                                                                                                                                                                                  |

## relayReplyCode

|                          |                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the error code to be returned in response to RCPT TO if the value set in the <code>relayMaxRCPT</code> configuration key has been reached. |
| <b>Related Keys:</b>     | none                                                                                                                                                 |
| <b>Servers Affected:</b> | MTA                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                  |
| <b>Possible Values:</b>  | an error code                                                                                                                                        |
| <b>Initial Value:</b>    | 550                                                                                                                                                  |
| <b>Default Value:</b>    | 550                                                                                                                                                  |
| <b>Example:</b>          | <code>/*/mta/relayReplyCode: [550]</code>                                                                                                            |

## relayReplyText

|                          |                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the error text that is returned in response to RCPT TO if the value set in the <code>relayMaxRCPT</code> key has been reached; the word <code>DOMAIN</code> (all caps) is replaced with the domain name. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                |
| <b>Possible Values:</b>  | a text string                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | Relaying mail to <code>DOMAIN</code> is not allowed                                                                                                                                                                |
| <b>Default Value:</b>    | Relaying mail to <code>DOMAIN</code> is not allowed                                                                                                                                                                |
| <b>Example:</b>          | <code>/*/mta/relayReplyText:<br/>[relaying mail to <code>DOMAIN</code> is not allowed]</code>                                                                                                                      |

## relaySourceDomainList

- Description:** Identifies a list of domains to which the relay policy defined by `relaySourcePolicy` is applied.
- When the return address of a message (defined by the `MAIL FROM` command) includes a domain listed in this key, the message is restricted or allowed based on the value of `relaySourcePolicy`.
- The value of the `relaysourceDomainList` key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets.
- Related Keys:** `relaySourcePolicy`
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** a fully qualified domain name or a domain name with a wildcard prefix
- Initial Value:** null
- Default Value:** null
- Example:**

```
/*/mta/relaySourceDomainList: [acme.com]
 [newday.com]
```

## relaySourceLocalIpList

- Description:** Specifies a list of local IP addresses to which the relay policy defined by `relaySourcePolicy` is applied.
- When a message is received by an InterMail MTA from a host whose IP address is listed in this key, the message is restricted or allowed based on the value of `relaySourcePolicy` for this host.
- Related Keys:** `relaySourcePolicy`.
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** any valid IP address
- Initial Value:** null
- Default Value:** null
- Example:**

```
/*/mta/relaySourceLocalIpList: [10.3.21.0]
 [10.20.20.0]
```

## relaySourcePolicy

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the overall relay policy.<br>The available policies are as follows: <ul style="list-style-type: none"> <li>• allowAll—allow all relay</li> <li>• denyListed—allow relay except from specific users/hosts/domains</li> <li>• allowListed—deny relay except from specific users/hosts/domains</li> <li>• denyAll—and deny all relay</li> </ul> When defining relay restrictions, you should always start by setting (or verifying) the value of this key. |
| <b>Related Keys:</b>     | relaySourceRemoteIPList, relaySourceLocalIPList                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Possible Values:</b>  | allowAll, denyAll, allowListed, denyListed                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | allowAll                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | allowAll                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/*/mta/relaySourcePolicy: [denyAll]</code>                                                                                                                                                                                                                                                                                                                                                                                                                |

## relaySourceRemoteIpList

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies a list of remote IP addresses to which the relay policy defined by <code>relaySourcePolicy</code> is applied.<br>When a message is received from a host whose IP address is given here, the message is restricted or allowed based on the value of <code>relaySourcePolicy</code> .<br>The value of the <code>relaySourceRemoteIpList</code> key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets. |
| <b>Related Keys:</b>     | <code>relaySourcePolicy</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | a valid IP address                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/relaySourceRemoteIpList: [10.20.20.0]</code>                                                                                                                                                                                                                                                                                                                                                                                                                               |

## remoteDatabaseOption

|                          |                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Indicates whether or not the Message Store Database is on a different machine than the MSS itself.<br>Set this key to <code>true</code> , if the Message Store Database is on a different machine.<br>Set this key to <code>false</code> , if you are following the recommended configuration for superior performance (i.e., the Message Store Database is on the same host as the MSS). |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/*mss/remoteDatabaseOption: [false]</code>                                                                                                                                                                                                                                                                                                                                          |

## reportParamsInterval

|                          |                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines how frequently (in seconds) a server examines its activity statistics, and writes the changed values to a <code>.stat</code> file. |
| <b>Related Keys:</b>     | none                                                                                                                                          |
| <b>Servers Affected:</b> | all servers                                                                                                                                   |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                           |
| <b>Possible Values:</b>  | any integer greater than 1                                                                                                                    |
| <b>Initial Value:</b>    | 180                                                                                                                                           |
| <b>Default Value:</b>    | 180                                                                                                                                           |
| <b>Example:</b>          | <code>/*common/reportParamsInterval: [180]</code>                                                                                             |

## requireCRLF

|                          |                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Servers should terminate lines with CRLF. Setting this key to <code>true</code> prevents bare line feed characters from terminating lines. |
| <b>Related Keys:</b>     | none                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                        |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                    |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                         |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                         |
| <b>Example:</b>          | <code>/*mta/requireCRLF: [false]</code>                                                                                                    |

## requireSecureAuth

|                          |                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines whether or not SMTP clients for whom SMTP authentication is enabled must authenticate themselves with SMTP authentication.<br><br>If this key is set to <code>true</code> , SMTP authentication is required or their mail is rejected.<br><br><i>Note:</i> This only applies when <code>checkAuthentication</code> is set to <code>true</code> , and when <code>AUTH_LOGIN</code> is used. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Example:</b>          | <code>*/mta/requireSecureAuth: [false]</code>                                                                                                                                                                                                                                                                                                                                                         |

## rewriteDomains

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Indicates whether or not domain rewriting is desired for headers on incoming messages.<br><br>If the <code>rewriteDomains</code> key is set to <code>true</code> , tests for domain rewriting are performed on the headers for incoming mail. Only those headers indicated in the <code>rewriteHeaderList</code> configuration key are eligible for domain rewriting.<br><br>If the <code>rewriteDomains</code> key is set to <code>false</code> , tests for domain rewriting are not performed on the headers for incoming mail.<br><br>See Chapter 5 of the <i>InterMail Operations Guide</i> for a complete discussion of the InterMail routing and rewriting rules. |
| <b>Related Keys:</b>     | <code>rewritePrimary</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Example:</b>          | <code>*/mta/rewriteDomains: [true]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## rewriteGatewayHeaderList

|                          |                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines a list of headers on outgoing mail for which header rewriting is desired.<br><br>The value of the <code>rewriteGatewayHeaderList</code> key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                              |
| <b>Possible Values:</b>  | the name(s) of any headers that may contain addresses                                                                                                                                                                                                                            |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/rewriteGatewayHeaderList: [To:]</code>                                                                                                                                                                                                                              |

## rewriteHeaderList

|                          |                                                                                                                                                                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines a list of headers on incoming mail for which header rewriting is desired.<br><br>The value of the <code>rewriteHeaderList</code> key may include multiple entries, but each entry must appear on a separate line contained within its own set of square brackets.<br><br>A null value means don't rewrite headers. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                        |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                        |
| <b>Possible Values:</b>  | the name(s) of any headers that may contain addresses                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                       |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                       |
| <b>Example:</b>          | <code>/*/mta/rewriteHeaderList: [To:]<br/>[From:]</code>                                                                                                                                                                                                                                                                   |

## rewriteMaxMtaHops

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Establishes a restriction on header rewriting for incoming mail based on the number of mail servers that have already handled the message.<br><br>If a message has passed through more than this number of MTAs, then its header is not rewritten.<br><br>The default setting of 1 means that headers are not rewritten if the message has passed through more than one SMTP server on its way to the InterMail MTA. |
| <b>Related Keys:</b>     | RewriteOnlyLocal, rewriteHeaderList, rewriteGatewayHeaderList, rewriteSaveOrig                                                                                                                                                                                                                                                                                                                                       |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Initial Value:</b>    | 1                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | 1                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/rewriteMaxMtaHops: [2]</code>                                                                                                                                                                                                                                                                                                                                                                           |

## rewriteOnlyLocal

|                          |                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Establishes a restriction on header rewriting for incoming mail based on the sender's identity.<br><br>If set to <code>true</code> , message headers are only rewritten if the sender address (from the SMTP envelope) is in a known domain—a domain established in the Integrated Services Directory.<br><br>If <code>false</code> , headers are rewritten regardless of the sender address. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                           |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                       |
| <b>Initial Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | <code>true</code>                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/rewriteOnlyLocal: [false]</code>                                                                                                                                                                                                                                                                                                                                                 |

## rewritePrimary

**Description:** Indicates whether or not primary address rewriting is desired for headers on incoming messages.

If the `rewritePrimary` key is set to `true`, tests for primary address rewriting are performed on the headers for incoming mail. Only those headers indicated in the `rewriteHeaderList` configuration key are eligible for primary address rewriting. If primary address rewriting is indicated, the address in the header is replaced with the user's primary address.

If the `rewritePrimary` key is set to `false`, tests for primary address rewriting are not performed on the headers for incoming mail.

See Chapter 5 of the *InterMail Operations Guide* for a complete discussion of the InterMail routing and rewriting rules.

**Related Keys:** `rewriteDomains`

**Servers Affected:** MTA

**Change Impact:** trivial, no server restart required

**Possible Values:** `true` or `false`

**Initial Value:** `false`

**Default Value:** `false`

**Example:** `/*/mta/rewritePrimary: [true]`

## rewriteSaveOrig

**Description:** Determines if original addressing information is preserved when header rewriting occurs.

If set to `true`, the original header information is saved in an "X-Original-" header within the message.

**Related Keys:** none

**Servers Affected:** MTA

**Change Impact:** trivial, no server restart required

**Possible Values:** `true` or `false`

**Initial Value:** `true`

**Default Value:** `true`

**Example:** `mta/rewriteSaveOrig: [true]`

## rmeConnectTimeout

|                          |                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the network timeout value (in seconds) for RME connection attempts.<br><br>If a response to the connection attempt is not received within this period, the connection fails with an <code>NioTimeout</code> event error. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                          |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                   |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                 |
| <b>Initial Value:</b>    | 10                                                                                                                                                                                                                            |
| <b>Default Value:</b>    | 10                                                                                                                                                                                                                            |
| <b>Example:</b>          | <code>*/common/rmeConnectTimeout: [10]</code>                                                                                                                                                                                 |

## rolloversPerDay

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Number of times per day that InterMail logs roll over to new log files.<br><br>Logs roll over at equally spaced intervals. For example, if <code>rolloversPerDay</code> is set to 24, logs will roll over once per hour.<br><br>The <code>rolloversPerDay</code> key can be applied individually to any server. You may want to vary the number of rollovers per day by server and establish a larger number of daily rollovers for servers that record events more frequently. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Possible Values:</b>  | any integer from 1 to 1440                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Initial Value:</b>    | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Example:</b>          | <code>*/common/rolloversPerDay: [1]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## **rolloverTimeZero**

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines an offset from midnight GMT at which log rollovers start.<br>The value is entered in seconds.<br>You should set this for your time zone prior to bringing InterMail online.<br>An offset of 18,000 (5 x 60 x 60) would specify midnight EST.<br>The <code>rolloverTimeZero</code> key can be applied to any server, but should be applied to all servers in common using the following entry:<br><code>/*/common/rolloverTimeZero</code><br>Otherwise, it might be difficult to remember the different time periods for the different servers. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Possible Values:</b>  | any integer from 0 to 86399                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/common/rolloverTimeZero: [18000]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## **runDir**

|                          |                                                            |
|--------------------------|------------------------------------------------------------|
| <b>Description:</b>      | Specifies the working directory for the InterMail servers. |
| <b>Related Keys:</b>     | none                                                       |
| <b>Servers Affected:</b> | all servers                                                |
| <b>Change Impact:</b>    | server restart required                                    |
| <b>Possible Values:</b>  | a valid directory path                                     |
| <b>Initial Value:</b>    | <code>/var/tmp</code>                                      |
| <b>Default Value:</b>    | <code>/tmp</code>                                          |
| <b>Example:</b>          | <code>/*/common/runDir: [/var/tmp]</code>                  |

## serverLineLengthLimit

|                          |                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum line length to allow before rejecting an SMTP server's response to our commands.<br><br>The minimum command line length is defined in RFC821 as 512, and the maximum text line length RFC821 is 1000.<br><br>If the <code>serverLineLengthLimit</code> key is set to zero, no limit is imposed. However, this would allow a hostile server to force the MTA to run out of memory. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                                                                                                                                                                                                                                          |
| <b>Initial Value:</b>    | 1000                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | 1000                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Example:</b>          | <code>/*/mta/serverLineLengthLimit: [1000]</code>                                                                                                                                                                                                                                                                                                                                                  |

## serverThreadStackSizeInKb

|                          |                                                                            |
|--------------------------|----------------------------------------------------------------------------|
| <b>Description:</b>      | The size of the stack used by MSS threads.<br><br>Values are in kilobytes. |
| <b>Related Keys:</b>     | none                                                                       |
| <b>Servers Affected:</b> | MSS                                                                        |
| <b>Change Impact:</b>    | server restart required                                                    |
| <b>Possible Values:</b>  | any integer greater than zero                                              |
| <b>Initial Value:</b>    | 64                                                                         |
| <b>Default Value:</b>    | 0                                                                          |
| <b>Example:</b>          | <code>/*/mss/serverThreadStackSizeInKb: [128]</code>                       |

## serverTimeout

- Description:** Limits the amount of time the Configuration Server waits for a response. The value is indicated in seconds.
- If a response is not received within the time indicated by the `serverTimeout` value, the Configuration Server abandons its request and logs an error to the screen.
- Related Keys:** none
- Servers Affected:** Configuration Server
- Change Impact:** trivial, no server restart required
- Possible Values:** any integer greater than zero
- Initial Value:** 30
- Default Value:** 30
- Example:** `/*/imconferv/serverTimeout: [30]`

## serverTotalLinesLimit

- Description:** Sets the maximum number of lines to allow before rejecting an SMTP server's response to the MTA's commands.
- If set to zero, no limit is imposed. However, this would allow a hostile server to force the MTA to run out of memory.
- Related Keys:** none
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** any non-negative integer (including zero)
- Initial Value:** 100
- Default Value:** 100
- Example:** `/*/mta/serverTotalLinesLimit [100]`

## servWarnToStderr

- Description:** Controls the option to print InterMail events to stderr.
- By default, the InterMail servers do not report events to stderr, however you can force the servers to print all events of severity level Warning and above by setting the value of the `servWarnToStderr` key to `true`.
- Related Keys:** none
- Servers Affected:** all servers
- Change Impact:** trivial, no server restart required

**Possible Values:** true or false  
**Initial Value:** false  
**Default Value:** false  
**Example:** `/*/common/servWarnToStderr: [true]`

## sidelineMessages

**Description:** Enables/disables message sideling.  
 If set to `true`, messages that violate the values set in the `sidelineNumRcpts` or `sidelineNullToMany` keys are moved to the `sideline` directory within the `queue` directory.  
***Note:** Sideline messages should be reviewed then deleted, or reprocessed via the `immsgprocess` command.*

**Related Keys:** none  
**Servers Affected:** MTA  
**Change Impact:** trivial, no server restart required  
**Possible Values:** true or false  
**Initial Value:** false  
**Default Value:** false  
**Example:** `/*/mta/sidelineMessages: [true]`

## sidelineNullToMany

**Description:** Indicates whether or not messages that arrive from the empty (null) address, `<>`, are sidelined if they are destined for more than a single recipient.  
 If `sidelineNullToMany` is set to `true`, messages that meet this criteria are sidelined for later review.

**Related Keys:** none  
**Servers Affected:** MTA  
**Change Impact:** trivial, no server restart required  
**Possible Values:** true or false  
**Initial Value:** false  
**Default Value:** false  
**Example:** `/*/mta/sidelineNullToMany: [true]`

## **sidelineNumRCPTs**

|                          |                                                                                                                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the maximum number of allowable recipients for a single message before it is sidelined as possible unsolicited commercial e-mail.<br>If set to zero, this feature is disabled. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                   |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                    |
| <b>Possible Values:</b>  | any non-negative integer (including zero)                                                                                                                                              |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                      |
| <b>Default Value:</b>    | 0                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/mta/sidelineNumRCPTs: [1000]</code>                                                                                                                                           |

## **sidelineNumRCPTsPerConnection**

|                          |                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of recipients allowed over a given connection before messages are sidelined.<br>A value of zero means there is no limit. |
| <b>Related Keys:</b>     | none                                                                                                                                             |
| <b>Servers Affected:</b> | MTA                                                                                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                              |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                    |
| <b>Initial Value:</b>    | 0                                                                                                                                                |
| <b>Default Value:</b>    | 0                                                                                                                                                |
| <b>Example:</b>          | <code>/*/mta/sidelineNumRCPTsPerConnection: [0]</code>                                                                                           |

## **smtpAcceptNumThreads**

|                          |                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of threads for the MTA's SMTP Server task, the task responsible for receiving incoming messages. |
| <b>Related Keys:</b>     | none                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                      |
| <b>Change Impact:</b>    | server restart required                                                                                                  |
| <b>Possible Values:</b>  | an integer from 1 to 1000                                                                                                |
| <b>Initial Value:</b>    | 10                                                                                                                       |
| <b>Default Value:</b>    | 10                                                                                                                       |
| <b>Example:</b>          | <code>/*/mta/smtpAcceptNumThreads: [10]</code>                                                                           |

## smtpDeliverNumThreads

|                          |                                                                                                                                                                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of threads for the <code>SMTP Client</code> task.<br>This limit defines the number of threads allowed for processing outgoing mail.<br>There is a separate pool (defined by <code>smtpQueueProcessNumThreads</code> ) for queue processing. |
| <b>Related Keys:</b>     |                                                                                                                                                                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                 |
| <b>Possible Values:</b>  | an integer from 1 to 1000                                                                                                                                                                                                                                           |
| <b>Initial Value:</b>    | 10                                                                                                                                                                                                                                                                  |
| <b>Default Value:</b>    | 10                                                                                                                                                                                                                                                                  |
| <b>Example:</b>          | <code>/*/mta/smtpDeliverNumThreads: [10]</code>                                                                                                                                                                                                                     |

## smtpPort

|                          |                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the port on which the MTA listens for incoming SMTP connections.<br>Changing this value from the standard SMTP port (25) is not recommended. |
| <b>Related Keys:</b>     | none                                                                                                                                              |
| <b>Servers Affected:</b> | MTA                                                                                                                                               |
| <b>Change Impact:</b>    | server restart required                                                                                                                           |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                                                     |
| <b>Initial Value:</b>    | 25                                                                                                                                                |
| <b>Default Value:</b>    | 25                                                                                                                                                |
| <b>Example:</b>          | <code>/*/mta/smtpPort: [25]</code>                                                                                                                |

## smtpQueueBucketCount

|                          |                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Establishes the number of buckets in the <code>queue/SMTP-Deliver</code> directory.<br>These buckets store the messages queued for delivery to external sites. |
| <b>Related Keys:</b>     | none                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                            |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                  |
| <b>Initial Value:</b>    | 101                                                                                                                                                            |
| <b>Default Value:</b>    | 101                                                                                                                                                            |
| <b>Example:</b>          | <code>/*/mta/smtpQueueBucketCount: [101]</code>                                                                                                                |

## smtpQueueProcessNumThreads

|                          |                                                                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of threads for the MTA's Queue Client task. This task is responsible for processing outgoing mail that was previously held in a queue. |
| <b>Related Keys:</b>     | none                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                            |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                  |
| <b>Initial Value:</b>    | 10                                                                                                                                                             |
| <b>Default Value:</b>    | 10                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/smtpQueueProcessNumThreads: [10]</code>                                                                                                           |

## sqlContextCount

|                          |                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the maximum number of threads within an MSS process that can access the Oracle database concurrently.<br><br>There are two implications to setting this key. First, the MSS opens this number of connections to the Oracle database when it initializes. Second, this number of threads is created when the MSS opens its connections to the database. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                             |
| <b>Servers Affected:</b> | MSS                                                                                                                                                                                                                                                                                                                                                              |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                                                                                                                                                                    |
| <b>Initial Value:</b>    | 20                                                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | 10                                                                                                                                                                                                                                                                                                                                                               |
| <b>Example:</b>          | <code>/*/mss/sqlContextCount: [20]</code>                                                                                                                                                                                                                                                                                                                        |

## sslCacheAgeSeconds

|                          |                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the lifetime (in seconds) of an SSL session cache entry. Entries older than the number of seconds specified are expired. |
| <b>Related Keys:</b>     | none                                                                                                                             |
| <b>Servers Affected:</b> | MTA, POP Server                                                                                                                  |
| <b>Change Impact:</b>    | server restart required                                                                                                          |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                    |
| <b>Initial Value:</b>    | 7200                                                                                                                             |
| <b>Default Value:</b>    | 7200                                                                                                                             |
| <b>Example:</b>          | <code>/*/popserv/sslCacheAgeSeconds: [7200]</code>                                                                               |

## sslCacheBucketLen

|                          |                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the maximum number of entries in each bucket of the SSL session cache.<br><br>If a bucket reaches the maximum number, then the first entries (i.e., FIFO) are removed to make room for new entries. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA, POP Server                                                                                                                                                                                             |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                     |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                               |
| <b>Initial Value:</b>    | 1000                                                                                                                                                                                                        |
| <b>Default Value:</b>    | 1000                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/*/mta/sslCacheBucketLen: [1200]</code>                                                                                                                                                               |

## sslCacheBucketNum

|                          |                                                         |
|--------------------------|---------------------------------------------------------|
| <b>Description:</b>      | Defines the number of buckets in the SSL session cache. |
| <b>Related Keys:</b>     | none                                                    |
| <b>Servers Affected:</b> | MTA, POP Server                                         |
| <b>Change Impact:</b>    | server restart required                                 |
| <b>Possible Values:</b>  | any integer greater than zero                           |
| <b>Initial Value:</b>    | 499                                                     |
| <b>Default Value:</b>    | 499                                                     |
| <b>Example:</b>          | <code>/*/popserv/sslCacheBucketNum: [499]</code>        |

## sslCertChainPathAndFile

**Description:** Specifies the name of a file containing a PKCS 5 password encrypted, formatted private key, followed by DER formatted certificates defining the private key and certificate chain for the POP server. The last certificate in the file is the root certificate.

The encrypted private key and certificates are delimited by "\_\_\_\_\_Begin " and "\_\_\_\_\_End" PEM syntax. If this configuration key does not exist, or if there are errors reading the file, then POP server operation on the secure port is automatically disabled.

*Note:* This key is reserved for future use.

**Related Keys:** none

**Servers Affected:** MTA, POP Server

**Change Impact:** server restart required

**Possible Values:** a valid file path

**Initial Value:** null

**Default Value:** null

**Example:** `/*/mta/sslCertChainPathAndFile: [<pathname>]`

## sslCertPassword

**Description:** Specifies the SSL password.

*Note:* This key is reserved for future use.

**Related Keys:** none

**Servers Affected:** MTA, POP Server

**Change Impact:** server restart required

**Possible Values:** a text string

**Initial Value:** InterMail

**Default Value:** InterMail

**Example:** `/*/mta/sslCertPassword: [InterMail]`

## sslPop3Port

|                          |                                                                                                                                                                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Defines the port for secure POP server operation.</p> <p>If this key has a value of -1, or if the key does not exist at all, secure POP server operation is disabled.</p> <p>If you assign this key a valid, unused port number, the POP server operates in secure mode on the specified port.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                  |
| <b>Servers Affected:</b> | POP Server                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                                                                                                                                                                                                         |
| <b>Initial Value:</b>    | 443                                                                                                                                                                                                                                                                                                   |
| <b>Default Value:</b>    | -1                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/popserv/sslPop3Port: [443]</code>                                                                                                                                                                                                                                                            |

## sslSmtpport

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Sets the port number (usually 465) that the MTA listens on for SSL (Secure Socket Layer) connection requests from other MTAs.</p> <p>When <code>sslSMTPPort</code> is not defined at all, or has a value of -1, the SSL operation is disabled.</p> <p>If the port specified is 25, then the secure SMTP operates in the mode defined by the SMTP Service Extension for Secure SMTP over TLS.</p> <p>On any other port, it operates in pure SSL mode.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | any valid, unused port number                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Initial Value:</b>    | 465                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Default Value:</b>    | -1                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <code>/*/mta/sslSmtpport: [465]</code>                                                                                                                                                                                                                                                                                                                                                                                                                      |

## sslTrustedCertPathAndFile

|                          |                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Specifies the file containing DER formatted trusted certificates.<br>Each file may contain one or more certificates.<br>Each certificate is delimited by "____Begin" and "____End"<br>PEM syntax.<br>These certificates are used during the client and server authentication.<br><i>Note:</i> This key is reserved for future use. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                               |
| <b>Servers Affected:</b> | MTA, POP Server                                                                                                                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | any valid file path                                                                                                                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                               |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                                                                                                               |
| <b>Example:</b>          | <pre>/*/mta/sslTrustedCertPathAndFile:<br/>[imail/imail/lib/certs/im_default_certs.txt]</pre>                                                                                                                                                                                                                                      |

## sslUseSessionCache

|                          |                                                      |
|--------------------------|------------------------------------------------------|
| <b>Description:</b>      | Defines whether or not to use the SSL session cache. |
| <b>Related Keys:</b>     | none                                                 |
| <b>Servers Affected:</b> | MTA, POP Server                                      |
| <b>Change Impact:</b>    | server restart required                              |
| <b>Possible Values:</b>  | true or false                                        |
| <b>Initial Value:</b>    | true                                                 |
| <b>Default Value:</b>    | true                                                 |
| <b>Example:</b>          | <pre>/*/popserv/sslUseSessionCache: [true]</pre>     |

## stateless

|                      |                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>  | If this key is set to true, then the MTA operates in stateless mode, using a Queue Server for managing deferred mail.<br>If set to false, deferred mail spools locally in the MTA's <code>spool</code> directory.<br>Because the Queue Server is capable of journaling its deferred message files (while the MTA is not), it is strongly recommended that the <code>stateless</code> key be set to true. |
| <b>Related Keys:</b> | none                                                                                                                                                                                                                                                                                                                                                                                                     |

**Servers Affected:** MTA  
**Change Impact:** server restart required  
**Possible Values:** true or false  
**Initial Value:** true  
**Default Value:** true  
**Example:** `/*/mta/stateless: [true]`

## statNamedPipeMode

**Description:** In InterMail, all events that are reported in log files can also be accessed via a named pipe. This key allows you to write .stat files (files that contain statistical information) to a named pipe.  
 A value of zero (0) indicates that statistics should not be written to the named pipe.  
 A value of 1 directs the servers to write statistics to the named pipe.

**Related Keys:** none

**Servers Affected:** all servers

**Change Impact:** server restart required

**Possible Values:** 0, 1

**Initial Value:** 0

**Default Value:** 0

**Example:** `/*/common/statNamedPipeMode: [1]`

## subDomains

**Description:** Defines a comma separated list of domain names, used when canonicalizing domains.  
 When an unqualified domain is converted to canonical form, the value of this key is checked first for possible expansions.  
 An entry in this key is required when it's not acceptable to canonicalize a domain by blindly appending the domain.

**Related Keys:** none

**Servers Affected:** MTA

**Change Impact:** trivial, no server restart required

**Possible Values:** one or more valid subdomains separated by commas

**Initial Value:** null

**Default Value:** null

**Example:** `/*/mta/subDomains:  
[hostx.software.com, hosty.software.com]`

## **timeoutClientData**

|                          |                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the timeout value (in seconds) for how long the MTA waits to accept SMTP data. If there is no successful input/output after this elapsed interval, the MTA socket shuts down. |
| <b>Related Keys:</b>     | none                                                                                                                                                                               |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                |
| <b>Possible Values:</b>  | any integer from 300 to 28800                                                                                                                                                      |
| <b>Initial Value:</b>    | 600 (10 minutes)                                                                                                                                                                   |
| <b>Default Value:</b>    | 300 (5 minutes)                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/TimeoutClientData: [600]</code>                                                                                                                                       |

## **timeoutClientDataDot**

|                          |                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Socket timeout value (in seconds) for the <code>SMTP-Deliver</code> process when waiting for a response to the end-of-message character (“.”). |
| <b>Related Keys:</b>     | none                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                            |
| <b>Possible Values:</b>  | any integer greater than or equal to 600                                                                                                       |
| <b>Initial Value:</b>    | 600 (10 minutes)                                                                                                                               |
| <b>Default Value:</b>    | 900 (15 minutes)                                                                                                                               |
| <b>Example:</b>          | <code>/*/mta/timeoutClientDataDot: [900]</code>                                                                                                |

## **timeoutClientDataSend**

|                          |                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Socket timeout value (in seconds) for the <code>SMTP-Deliver</code> process when sending message data. |
| <b>Related Keys:</b>     | none                                                                                                   |
| <b>Servers Affected:</b> | MTA                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                    |
| <b>Possible Values:</b>  | any integer greater than or equal to 180                                                               |
| <b>Initial Value:</b>    | 180                                                                                                    |
| <b>Default Value:</b>    | 300                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/TimeoutClientDataSend: [300]</code>                                                       |

## timeoutClientGreet

|                          |                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Socket timeout value (in seconds) for the <code>SMTP-Deliver</code> process when waiting for a response to the SMTP greeting. |
| <b>Related Keys:</b>     | none                                                                                                                          |
| <b>Servers Affected:</b> | MTA                                                                                                                           |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                           |
| <b>Possible Values:</b>  | any integer greater than or equal to 300                                                                                      |
| <b>Initial Value:</b>    | 300                                                                                                                           |
| <b>Default Value:</b>    | 600                                                                                                                           |
| <b>Example:</b>          | <code>/*/mta/timeoutClientGreet: [600]</code>                                                                                 |

## timeoutClientHelo

|                          |                                                                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Socket timeout value (in seconds) for the <code>SMTP-Deliver</code> process when waiting for a response to the <code>HELO</code> command. |
| <b>Related Keys:</b>     | none                                                                                                                                      |
| <b>Servers Affected:</b> | MTA                                                                                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                       |
| <b>Possible Values:</b>  | any integer greater than or equal to 300                                                                                                  |
| <b>Initial Value:</b>    | 300                                                                                                                                       |
| <b>Default Value:</b>    | 600                                                                                                                                       |
| <b>Example:</b>          | <code>/*/mta/timeoutClientHelo: [600]</code>                                                                                              |

## timeoutClientMailFrom

|                          |                                                                                                                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the time (in seconds) that <code>SMTP-Deliver</code> waits for a server's response to a <code>MAIL FROM</code> command.<br><br>After this time has elapsed, the server times out. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                   |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                    |
| <b>Possible Values:</b>  | any integer greater than or equal to 300                                                                                                                                               |
| <b>Initial Value:</b>    | 300                                                                                                                                                                                    |
| <b>Default Value:</b>    | 600                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/mta/timeoutClientMailFrom: [600]</code>                                                                                                                                       |

## **timeoutClientQuit**

|                          |                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Socket timeout value (in seconds) for the SMTP-Deliver process when waiting for a response to the QUIT command. |
| <b>Related Keys:</b>     | none                                                                                                            |
| <b>Servers Affected:</b> | MTA                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                             |
| <b>Possible Values:</b>  | any integer from 300 to 28800                                                                                   |
| <b>Initial Value:</b>    | 300                                                                                                             |
| <b>Default Value:</b>    | 600                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/timeoutClientQuit: [600]</code>                                                                    |

## **timeoutClientRcptTo**

|                          |                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the socket timeout value (in seconds) for the SMTP-Deliver process when waiting for a response to the RCPT TO command. |
| <b>Related Keys:</b>     | none                                                                                                                        |
| <b>Servers Affected:</b> | MTA                                                                                                                         |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                         |
| <b>Possible Values:</b>  | any integer greater than or equal to 300                                                                                    |
| <b>Initial Value:</b>    | 300                                                                                                                         |
| <b>Default Value:</b>    | 600                                                                                                                         |
| <b>Example:</b>          | <code>/*/mta/timeoutClientRcptTo: [600]</code>                                                                              |

## **timeoutClientRset**

|                          |                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the socket timeout value (in seconds) for the SMTP-Deliver process when waiting for a response to the RSET command. |
| <b>Related Keys:</b>     | none                                                                                                                     |
| <b>Servers Affected:</b> | MTA                                                                                                                      |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                      |
| <b>Possible Values:</b>  | any integer greater than or equal to 300                                                                                 |
| <b>Initial Value:</b>    | 300                                                                                                                      |
| <b>Default Value:</b>    | 600                                                                                                                      |
| <b>Example:</b>          | <code>/*/mta/timeoutClientRset: [600]</code>                                                                             |

## timeoutServerCommand

|                          |                                                                                                                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the default timeout value (in seconds) used by the SMTP server when reading from a socket.<br><br>This is the time that the MTA will wait without success for input/output on this socket before shutting it down |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                   |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                    |
| <b>Possible Values:</b>  | any integer greater than zero                                                                                                                                                                                          |
| <b>Initial Value:</b>    | 300                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                      |
| <b>Example:</b>          | <code>/*/mta/timeoutServerCommand: [300]</code>                                                                                                                                                                        |

## timeoutServerData

|                          |                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------|
| <b>Description:</b>      | The timeout value (in seconds) for reads and writes when responding a DATA command. |
| <b>Related Keys:</b>     | none                                                                                |
| <b>Servers Affected:</b> | MTA                                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                                 |
| <b>Possible Values:</b>  | any integer greater than zero                                                       |
| <b>Initial Value:</b>    | 300                                                                                 |
| <b>Default Value:</b>    | 0                                                                                   |
| <b>Example:</b>          | <code>/*/mta/timeoutServerData: [300]</code>                                        |

## **timeoutServerDelivery**

- Description:** Sets the maximum number of seconds that a client is kept waiting for notice of a successful delivery after it has given a message to the MTA.
- If InterMail is able to deliver the message while the client is still connected, it does not need to write the message file to disk or store it in a safe location.
- This feature allows InterMail to process messages more quickly by keeping them in memory. However, a long delay period (more than a few seconds) may cause clients to time out, or may be noticed by end users
- It is recommended that the value of this key be set no higher than 5.
- Related Keys:** none
- Servers Affected:** MTA
- Change Impact:** trivial, no server restart required
- Possible Values:** any integer greater than zero
- Initial Value:** 5
- Default Value:** 5
- Example:** `/*/mta/timeoutServerDelivery: [5]`

## **tmpDir**

- Description:** Sets the path on the file system to the location of the directory used for temporary storage on any named server.
- This configuration key can be set as an absolute path or as a path relative to the InterMail installation directory.
- Related Keys:** none
- Servers Affected:** all servers
- Change Impact:** server restart required
- Possible Values:** a valid directory path
- Initial Value:** tmp
- Default Value:** tmp
- Example:** `/*/common/tmpDir: [tmp]`

## tnsAdmin

|                          |                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the path on the file system to the location of the administrative directory for a local/remote Oracle installation. |
| <b>Related Keys:</b>     | none                                                                                                                     |
| <b>Servers Affected:</b> | all servers                                                                                                              |
| <b>Change Impact:</b>    | server restart required                                                                                                  |
| <b>Possible Values:</b>  | any valid directory path                                                                                                 |
| <b>Initial Value:</b>    | null                                                                                                                     |
| <b>Default Value:</b>    | null                                                                                                                     |
| <b>Example:</b>          | <code>/*common/tnsAdmin:[/disk2/oracle/7.3.4/network/admin]</code>                                                       |

## traceNamedPipeMode

|                          |                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Sets the pipe mode when creating trace files for diagnostics.</p> <p>If set to zero (0), do not create a named pipe.</p> <p>If set to one (1), write to a named pipe but don't block while waiting for a reader.</p> <p>If set to two (2), write to a named pipe, but block if necessary until there is a reader.</p> <p>The recommended value is 1.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                        |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                 |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | 0, 1, or 2                                                                                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default Value:</b>    | 0                                                                                                                                                                                                                                                                                                                                                           |
| <b>Example:</b>          | <code>/*common/traceNamedPipeMode: [1]</code>                                                                                                                                                                                                                                                                                                               |

## **traceOutputLevel**

|                          |                                                                                                                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Determines the level of diagnostic output to the <code>.trace</code> file for any InterMail program. The environment variable <code>IMDIAG</code> can be used to affect this at program startup. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                             |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                      |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                              |
| <b>Possible Values:</b>  | any valid trace category/number                                                                                                                                                                  |
| <b>Initial Value:</b>    | null                                                                                                                                                                                             |
| <b>Default Value:</b>    | null                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/venus/mta/traceOutputLevel: [rme=1,sock=2]</code>                                                                                                                                         |

## **traceToStderr**

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Controls whether or not the output to a server's <code>trace</code> file also goes to <code>stderr</code>.</p> <p>If set to <code>true</code> for any InterMail application, the output to the <code>trace</code> file also goes to <code>stderr</code>.</p> <p>Actually, if either this key is set to <code>true</code>, or the program was launched with a <code>-traceToConsole</code> option, the trace also goes to <code>stderr</code>.</p> <p>But without this guard, setting output trace level could clutter up the screen to the point of making applications unusable, especially if it is set to <code>/*/common/traceOutputLevel: [default=1]</code>, which causes all diagnostic statements to file.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/*/common/traceToStderr: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## trapMask

|                          |                                                                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Defines the severity of log events that are reported to the SNMP Server for reporting to the monitoring station.<br><br>Multiple values are allowed, but each entry must be on a separate line, between its own set of square brackets. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | SNMP Server                                                                                                                                                                                                                             |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | notification, warning, error, urgent, fatal                                                                                                                                                                                             |
| <b>Initial Value:</b>    | fatal and urgent                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | null                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <pre>*/common/trapMask: [fatal]                     [urgent]</pre>                                                                                                                                                                      |

## trapQueueSize

|                          |                                                                                                                                                                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Controls the size of the queue that each SNMP-enabled server maintains (i.e., how many traps can be stored in the queue).<br><br>This queue contains the events (traps) that are sent to the monitoring station periodically.<br><br>The value is specified in megabytes. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | SNMP Server                                                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | server restart required                                                                                                                                                                                                                                                   |
| <b>Possible Values:</b>  | any integer from 512 to 4096                                                                                                                                                                                                                                              |
| <b>Initial Value:</b>    | 1024                                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | 1024                                                                                                                                                                                                                                                                      |
| <b>Example:</b>          | <pre>*/common/trapQueueSize: [1024]</pre>                                                                                                                                                                                                                                 |

## updateDbConnection

- Description:** Specifies the Oracle connection string for the database accessed by the Directory Cache Server's `update` thread.
- The `update` thread deletes update information from the database that is identified by the `updateDbConnection` and `updateDbUser` configuration keys. It runs at regular intervals (defined by the value of `dirCacheUpdatePeriod`) reading information from the database indicated (typically the primary ISD) and updating the Directory Cache Server's local directory cache.
- If either the `updateDbConnection` or `updateDbUser` key is left unspecified, the `update` task uses the database connection defined by the `primaryDbUserInfo` and `primaryDbConnection` keys.
- Related Keys:** none
- Servers Affected:** Directory Cache Server
- Change Impact:** server restart required
- Possible Values:** an Oracle connection string
- Initial Value:** null
- Default Value:** null
- Example:** `/*/imdircacheserv/updateDbConnection: [IMD1]`

## updateDbUserInfo

- Description:** Specifies the Oracle username and password for the database accessed by the Directory Cache Server's `update` thread.
- The `updateDbUserInfo` key is used in conjunction with the `updateDbConnection` key to define the required connection parameters. If either the `updateDbConnection` or `updateDbUser` key is left unspecified, the `update` thread uses the database connection defined by the `primaryDbUserInfo` and `primaryDbConnection` keys.
- Related Keys:** none
- Servers Affected:** Directory Cache Server
- Change Impact:** server restart required
- Possible Values:** `<string>/<string>`
- Initial Value:** the InterMail UID and GID values set at time of installation
- Default Value:** null
- Example:** `/*/imdircacheserv/updateDbUserInfo: [imail/imail]`

## updateServerDN

|                          |                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Used to change the update server DN, which requires rebuilding the LDAP database for the ldap server.<br><br>Changing the value causes the update servers to fail on restart until their databases are rebuilt. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                            |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                     |
| <b>Change Impact:</b>    | <b>Warning!</b> Do not attempt to modify the value of this key.                                                                                                                                                 |
| <b>Possible Values:</b>  | cn=<string>,o=<string>,c=<string>                                                                                                                                                                               |
| <b>Initial Value:</b>    | cn=updatethread,o=software.com,c=us                                                                                                                                                                             |
| <b>Default Value:</b>    | null                                                                                                                                                                                                            |
| <b>Example:</b>          | <pre>/* /common/updateServerDN: [ cn=updatethread,o=software.com,c=us ]</pre>                                                                                                                                   |

## useContentDisposition

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | A setting of <code>true</code> allows the writing of the <code>Content-Disposition</code> header for bounced mail.<br><br>If <code>true</code> , the “Content-Disposition: attachment” is put into the next sections (i.e., not the first section) of multipart mime messages which do not have “Content-Type: mime” explicitly set.<br><br>This operation is not performed by default because it may make it more difficult for some mailers to resend bounced messages. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Possible Values:</b>  | <code>true</code> or <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Initial Value:</b>    | null                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default Value:</b>    | <code>false</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <pre>/* /common/useContentDisposition: [false]</pre>                                                                                                                                                                                                                                                                                                                                                                                                                      |

## useMmapReads

|                          |                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets whether or not to use memory mapped writes. If this key is set to true, then memory mapping is used to read files.<br><i>Note:</i> This may cause segmentation faults if there are disk errors or other problems when reading the file. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                         |
| <b>Servers Affected:</b> | all servers                                                                                                                                                                                                                                  |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                          |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                        |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                        |
| <b>Example:</b>          | <code>/* /common/useMmapReads: [false]</code>                                                                                                                                                                                                |

## useMmapWrites

|                          |                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets whether or not to use memory mapped writes. If this key is set to true, then memory map I/O is used. |
| <b>Related Keys:</b>     | none                                                                                                      |
| <b>Servers Affected:</b> | all servers                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                       |
| <b>Possible Values:</b>  | true or false                                                                                             |
| <b>Initial Value:</b>    | false                                                                                                     |
| <b>Default Value:</b>    | false                                                                                                     |
| <b>Example:</b>          | <code>/* /common/useMmapWrites: [false]</code>                                                            |

## useMx

|                          |                                                                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Controls the option to use MX records when looking up the MX record for a delivery address.<br>If this key is set to true, MX records are used.<br>If this key is set to false, A records are used. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                 |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                 |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                       |
| <b>Initial Value:</b>    | true                                                                                                                                                                                                |
| <b>Default Value:</b>    | true                                                                                                                                                                                                |
| <b>Example:</b>          | <code>/* /mta/UseMx: [true]</code>                                                                                                                                                                  |

**validatorBatchSize**

|                          |                                                                                  |
|--------------------------|----------------------------------------------------------------------------------|
| <b>Description:</b>      | Sets the maximum number of directory lookups that can be performed concurrently. |
| <b>Related Keys:</b>     | none                                                                             |
| <b>Servers Affected:</b> | MTA                                                                              |
| <b>Change Impact:</b>    | trivial, no server restart required                                              |
| <b>Possible Values:</b>  | any integer greater than zero                                                    |
| <b>Initial Value:</b>    | 5                                                                                |
| <b>Default Value:</b>    | 1                                                                                |
| <b>Example:</b>          | <code>/*/mta/validatorBatchSize: [5]</code>                                      |

**verifyDeferOk**

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | <p>Determines the action taken by the MTA when mail is received, but no Directory Cache server is available to verify account data (required for mail blocking, relay prevention, or recipient verification).</p> <p>In this case, InterMail can either accept the message (assuming that the recipient is valid), or request that the connecting client defer the message and attempt delivery at a later time (when the MTA can use the Directory Cache server to verify account data).</p> <p>When this key is set to true, InterMail instructs the connecting client to defer the message; if it is false, InterMail accepts the message.</p> |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Example:</b>          | <code>/*/mta/verifyDeferOk: [false]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## verifyRCPTs

|                          |                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | Option for refusing to accept incoming mail that is addressed to unknown accounts within a local mail domain. InterMail rejects the message with a standard notice; response to that notice (an error message, storage in a dead letter file, etc.) is controlled by the sender's mail client. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                           |
| <b>Servers Affected:</b> | MTA                                                                                                                                                                                                                                                                                            |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                            |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                  |
| <b>Initial Value:</b>    | false                                                                                                                                                                                                                                                                                          |
| <b>Default Value:</b>    | false                                                                                                                                                                                                                                                                                          |
| <b>Example:</b>          | <code>/*/mta/verifyRCPTs: [false]</code>                                                                                                                                                                                                                                                       |

## versionConfigDB

|                          |                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description:</b>      | If this key is set to <code>true</code> it means that each time the Configuration Server writes a new master configuration database file, the old one is renamed with the following time stamp format:<br><br><code>config.db.YYYYMMDDHHMMSS.</code><br><br>This makes it easy to revert to an earlier configuration database should that be necessary. |
| <b>Related Keys:</b>     | none                                                                                                                                                                                                                                                                                                                                                    |
| <b>Servers Affected:</b> | Configuration Server                                                                                                                                                                                                                                                                                                                                    |
| <b>Change Impact:</b>    | trivial, no server restart required                                                                                                                                                                                                                                                                                                                     |
| <b>Possible Values:</b>  | true or false                                                                                                                                                                                                                                                                                                                                           |
| <b>Initial Value:</b>    | true                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default Value:</b>    | true                                                                                                                                                                                                                                                                                                                                                    |
| <b>Example:</b>          | <code>/*/imconfserv/versionConfigDB: [true]</code>                                                                                                                                                                                                                                                                                                      |

## welcomeMsgId

- Description:** The Message ID of the welcome message sent to new accounts.  
This is the literal value of the Message-ID header of the new account welcome message, which is created in an administrative mailbox by using the `immsinit` command, described in Chapter 12 of this manual.  
The Message-ID value of the message created by `immsinit` is `<Welcome>`.
- Related Keys:** none
- Servers Affected:** MSS
- Change Impact:** trivial, no server restart required
- Possible Values:** any valid rfc822 message ID.
- Initial Value:** `<Welcome>`
- Default Value:** null
- Example:** `/*mss/WelcomeMsgId: [<Welcome>]`



# 12

## General Administration Commands

---

The InterMail messaging system supports a command line interface, with commands that allow the user to perform tasks such as:

- Starting and stopping the InterMail servers
- Reporting statistics on server usage
- Retrieving account information
- Modifying accounts and mailboxes
- Analyzing and fixing corrupted messages

---

**Note:** For information on *imdbcontrol*, please refer to the *Integrated Services Directory Guide*.

---

Unless otherwise specified by their absolute paths, all directories discussed in this manual are relative to the InterMail installation directory (i.e. `tmp` refers to `$INTERMAIL/tmp`, not the root `/tmp` of your operating system). In addition, although you may have specified directory name that differ from the installation defaults (e.g. you may have chosen a name like “transaction” or “record” for InterMail's journal directory), this chapter uses the default entries that are supplied during installation—`journal`, `spool`, etc.

---

### 12.1 Command Descriptions

This chapter is organized alphabetically; each command is shown by name, with a short usage statement, a list of all available arguments to the command (command syntax), a description of these arguments, and a short example. However, while commands are listed in this chapter, some commands are very involved. In these cases, only the usage and available arguments associated with these commands are described and detailed examples are shown in the *InterMail Operations Guide*. If you would like to see commands grouped by functionality, also refer to the *Operations Guide*.

---

**Note:** When a command does not have an optional argument to specify a host name (i.e. *imservdisplay*, *imbadmsglist*), or when a command has an optional argument to specify a host but this argument is not used (e.g. *imdirupdate*), the command will be run on the local host machine where the command is issued.

When a command requires a `<host>` argument, make sure that the host specified matches the logical host name that was defined for the machine during installation (defined in the *config/hostname* file).

Documentation for InterMail administrative commands is also available as man pages.

---

## 12.1.1 imaccountquery

The `imaccountquery` command allows you to perform a query into the Integrated Services Directory. You can specify one or more query parameters and the logic to be used between the query parameters. Multiple parameters can be set up for a single field and wildcard characters (%) are allowed in all query parameters (e.g. specifying `%.software.com` will return all users in the `software.com` domain).

### Syntax

```
imaccountquery [-r full|addr|count] [-and | -or] [-a
{<MessageStoreName> | <e-mailAddress>} |-m <host> |-s <status> |-t
<type>]
```

### Where:

|                                          |                                                                                                                                                                                               |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-r full</code>                     | Display record type containing e-mail address, password, MSS host, Internal ID, Account ID, Account Status, and Account Type. This is the default.                                            |
| <code>-r Addr</code>                     | Display e-mail address record type only.                                                                                                                                                      |
| <code>-r Count</code>                    | Prints out the total number of accounts that match the query parameters.                                                                                                                      |
| <code>-and</code>                        | When multiple query parameters are used, <code>imaccountquery</code> performs a logical ‘and’ for search results; only results that fulfill all specified query parameters will be displayed. |
| <code>-or</code>                         | When multiple query parameters are used, perform a logical ‘or’ for search results; results that fulfill any one of the specified query parameters will be displayed.                         |
| <code>-a &lt;MessageStoreName&gt;</code> | Search for an account with the Message Store Name search parameter.                                                                                                                           |
| <code>-a &lt;e-mailAddress&gt;</code>    | Search for an account with the e-mail address search parameter.                                                                                                                               |
| <code>-m &lt;host&gt;</code>             | Search for an account with the MSS host search parameter.                                                                                                                                     |
| <code>-s &lt;status&gt;</code>           | Account Status query parameter (Possible Account Status options are: ‘A’ for Active, ‘L’ for Locked, ‘D’ for Deleted, ‘M’ for Maintenance, ‘S’ for Suspended, or ‘P’ for Proxy).              |
| <code>-t &lt;type&gt;</code>             | Account Type query parameter (Possible Account Types are ‘A’ for Administrator or ‘S’ for Subscriber).                                                                                        |

**Example**

To query for accounts that are of active or locked status, invoke `imaccountquery` with multiple parameters for a single field:

```
venus% imaccountquery -r full -or -s A -s L
imaccountquery: fetching master account information from Oracle...

Email Address Password TY ST MSS Host InternalID AccountID

john.doe@software.com $secret A A venus.software. 1 13
susie.queue@software.co rosebud S A venus.software. 2 15
joe.schmoe@software.com Jschoe S L venus.software. 3 16
imail@software.com imail_pw S A venus.software. -2 21
postmaster@software.com postmast S A venus.software. -1 22
root@software.com root_pw S A venus.software. -3 23
mailer-daemon@software. mailer-d S A venus.software. -4 24

7 rows selected.
imaccountquery: done
```

## 12.1.2 imbadmsgfix

The `imbadmsgfix` command is used when a message is received by the InterMail MTA but cannot be retrieved by the POP server—either because the message is corrupted or because some problem has occurred between the application software and InterMail—and an `.ERROR` folder has been created for the user’s mailbox with an irretrievable message (or messages). The contents of `.ERROR` folders are determined by running `imbadmsglist`; these messages are then manually examined and fixed. After these messages are fixed, `imbadmsgfix` is run to move the corrected messages to the user’s `INBOX` folder.

The `imbadmsgfix` command instructs the system to read a file (originally generated by `imbadmsglist`) identifying the contents of all `.ERROR` folders, and move those messages into the `INBOX` folder for the mailbox(es) it lists. If the `-v` option is used, messages are checked for validity before they are moved back into the `INBOX` folder. Messages which fail this check will not be moved.

---

**Note:** *You must run `imbadmsgfix` on the specific MSS host that contains “bad” messages to be fixed. Also, while you can execute `imbadmsgfix` without the `-v` option, it is not suggested because messages may be moved back to the user’s `INBOX` but not truly fixed.*

---

**Syntax**

```
imbadmsgfix [-v] <filename>
```

Where:

|                               |                                                                                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-v</code>               | Verbose mode; performs validity checking on message files to ensure that they are corrected before they are moved to a user’s <code>INBOX</code> . |
| <code>&lt;filename&gt;</code> | File containing all messages in <code>.ERROR</code> folders. This file is produced by the <code>imbadmsglist</code> command.                       |

### Example

To process fixed messages (in this case, messages that were in a file called “bad” and then manually fixed), run `imbadmsgfix` as in the following example:

```
venus% imbadmsgfix -v bad

imbadmsgfix:
2.....
..... 0 messages still in .ERROR
```

## 12.1.3 imbadmsglist

The `imbadmsglist` command produces a list of messages that could not be retrieved via the POP server and were therefore moved from a user’s INBOX to their `.ERROR` folder. The command prints a line containing two fields for each message in an “`.ERROR`” folder—the Message Store ID and path and file name of the “bad” message body. For each message listed, you should attempt to determine the problem and whether or not it can be corrected. Messages that cannot be fixed should be deleted using `immsgdelete`. Once all the problems with the remaining messages have been resolved, the messages can be made available to the POP client again by running `imbadmsgfix`.

---

**Note:** Typically, you will want to redirect the output of `imbadmsglist` into a file (e.g. `imbadmsglist > bad`) to keep track of which messages need to be fixed and to serve as an input file for `imbadmsgfix`.

---

### Syntax

```
imbadmsglist
```

### Example

To find out the contents of `.ERROR` folder, run `imbadmsglist` as in the following example:

```
venus% imbadmsglist

3 Messages/aaat/aapy/amhs/0023DD57.b
```

## 12.1.4 imboxcopy

The `imboxcopy` command copies InterMail mailboxes from one MSS host to another, or to a Berkeley-format mailbox or to a proprietary binary file. It can be used to copy a single source to a single destination (both specified on the command line) or can be used to copy a number of sources to a single corresponding destination (specified in a batch file on the command line). This command is mentioned here for completeness but is rarely used except in initial migration and system recovery.

---

**Note:** Running `imboxcopy` will not change information in the Integrated Services Directory.

---

### Syntax

The syntax for `imboxcopy` is quite lengthy and contains numerous options. The following `imboxcopy` methods are used in conjunction with a single mailbox/file:

```
imboxcopy <flags> <srcMbox> <dstMbox>
imboxcopy <flags> -mbox <username> [-src <host>]
imboxcopy <flags> -file <username> [-src <host>]
```

The following `imboxcopy` methods are used in conjunction with a “batch” of mailboxes/files:

```
imboxcopy <flags> -batch <file> [-src <host>]
imboxcopy <flags> -batch <file> -mbox [-src <host>]
imboxcopy <flags> -batch <file> -file [-src <host>]
imboxcopy <flags> -batch <file> -host <host> [-src <host>]
```

Where the following `<flags>` specify how to copy the mailbox(-es) or file(s):

```
[-append|-force|-create|-forcewarn|-compare|-inbox|-nocompare|-
threads <number>|-help]
```

Where:

|                                      |                                                                                                                                                                  |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-append</code>                 | Adds messages to an existing mailbox and fails if the mailbox does not exist.                                                                                    |
| <code>-create</code>                 | Adds messages to a new mailbox and fails if the mailbox already exists.                                                                                          |
| <code>-force</code>                  | Adds messages to an existing mailbox and creates a new mailbox if it is not present.                                                                             |
| <code>-forcewarn</code>              | Adds messages to an existing mailbox, creates a mailbox if it is not present, and logs a warning message.                                                        |
| <code>-compare</code>                | Compare the original messages with stored messages.                                                                                                              |
| <code>-inbox</code>                  | Compare the messages in the INBOX.                                                                                                                               |
| <code>-nocompare</code>              | Turn off the validation.                                                                                                                                         |
| <code>-threads &lt;number&gt;</code> | Specifies the number of worker threads to use while moving mailboxes; this will override the <code>imboxcopyNumThreads</code> configuration key (default is 30). |
| <code>-help</code>                   | Provides usage statement.                                                                                                                                        |
| <code>&lt;srcMbox&gt;</code>         | Specifies a source mailbox to move from the original MSS host.                                                                                                   |
| <code>&lt;dstMbox&gt;</code>         | Specifies a target mailbox to move to a new MSS host.                                                                                                            |
| <code>-mbox &lt;username&gt;</code>  | Specifies that a mailbox ( <code>&lt;username&gt;</code> ) should be copied to a Berkeley-format file.                                                           |
| <code>-file &lt;username&gt;</code>  | Specifies that a mailbox ( <code>&lt;username&gt;</code> ) should be copied to an InterMail binary format file.                                                  |
| <code>-src &lt;host&gt;</code>       | specifies that the provided <code>&lt;host&gt;</code> be used as the source host for copy operations regardless of what is in the Integrated Services Directory. |
| <code>-batch &lt;file&gt;</code>     | The list of user accounts is provided in the file specified by <code>&lt;file&gt;</code> .                                                                       |

|                                 |                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <code>-mbox</code>              | Specifies that mailboxes should be copied to Berkeley-format ( <code>mbox</code> ) files with the same name as the account names. |
| <code>-file</code>              | Specifies that mailboxes should be copied to InterMail binary format with the same name as the account names.                     |
| <code>-host &lt;host&gt;</code> | Specifies the destination host to which the mailboxes should be copied.                                                           |

---

**Note:** *The `imboxcopy` command is subtle in its intended usage and application. Please see Chapter 6 of the *InterMail Operations Guide* for more information.*

---

## 12.1.5 imboxcreate

The `imboxcreate` command creates an InterMail mailbox. When mailbox creation on-the-fly is enabled in the configuration database, mailboxes are created upon the first POP or MTA transaction affecting a user who does not currently have a mailbox. However, if creation on-the-fly is disabled, you can use the `imboxcreate` command to create the mailbox.

When you use the `imboxcreate` command to create a mailbox for an InterMail user, you must specify the MSS host and the Internal ID for the user (you may use `imaccountquery` to determine this information).

Optionally, you may specify a quota value for the total allowable bytes in this mailbox (`<TotalBytes>`).

---

**Note:** *`imboxcreate` is typically used for single mailbox creation. In the event that you wish to create mailboxes for any accounts that do not currently have a mailbox (“batch” mailbox creation), use the `imboxsync` command. The `imboxsync` command creates a mailbox for each user in the Integrated Services Directory.*

---

### Syntax

```
imboxcreate [-help] <host> <InternalID> [<TotalBytes>]
```

Where:

|                                 |                                                        |
|---------------------------------|--------------------------------------------------------|
| <code>-help</code>              | Provides usage statement.                              |
| <code>&lt;host&gt;</code>       | The name of the MSS host where the mailbox is located. |
| <code>&lt;InternalID&gt;</code> | The Message Store ID.                                  |
| <code>&lt;TotalBytes&gt;</code> | The maximum number of bytes for this mailbox.          |

### Example

To use `imboxcreate` to create a mailbox, run `imboxcreate` as in the following example:

```
venus% imboxcreate venus 123456 1000000
imboxcreate: Message store 123456 created!
```

---

**Note:** *Setting up an initial TotalBytes quota with imboxcreate does not prohibit you from increasing or decreasing that value at a later time. If the quota is not specified, it will default to 0, which means no quota or “unlimited.”*

---

## 12.1.6 imboxdelete

The `imboxdelete` command deletes an InterMail mailbox from an MSS host.

---

**Note:** *Deleting an InterMail mailbox is NOT the same as deleting an account. Please refer to the Integrated Services Directory Guide for more information on how to delete an account..*

---

### Syntax

```
imboxdelete <host> <InternalID>
```

### Where:

<host>                                   The name of the MSS host where the mailbox is located.  
 <InternalID>                            The Message Store ID.

### Example

To delete a mailbox, run `imboxdelete` as in the following example:

```
venus% imboxdelete venus 654321
imboxdelete: Message store 654321 deleted!
```

## 12.1.7 imboxget

The `imboxget` command reports the Message Store ID and the name of the MSS host where mail is stored for a specified user.

### Syntax

```
imboxget <e-mailAddress>
```

### Where:

<e-mailAddress>    A valid e-mail address.

### Example

To find out the MSS host and Message Store ID for a particular user, run `imboxget` as in the following example:

```
venus% imboxget joe.schmoe@venus.software.com
Host=earth Message store=1000
```

## 12.1.8 imboxmove

The `imboxmove` command moves large numbers of mailboxes from a source MSS host to a user-specified target MSS host and updates the MSS host information in the Integrated Services Directory, so that all future mail will be directed to the new location.

### Syntax

```
imboxmove [-i|-b] <dstHost> <file> [<file>...]
imboxmove [-e] <dstHost> <srcHost> [<exclude>]
```

Where:

|                              |                                                                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <code>-i</code>              | Run in “interactive mode,” where the user is prompted to hit <Enter> before <code>imboxmove</code> will proceed to the next step. |
| <code>-b</code>              | Run in “batch” mode where there is no prompting.                                                                                  |
| <code>&lt;dstHost&gt;</code> | The target MSS host to which all accounts will be moved.                                                                          |
| <code>&lt;file&gt;</code>    | File containing the list of user accounts which should be moved to the target MSS host.                                           |
| <code>-e</code>              | Move only empty mailboxes from one host to another.                                                                               |
| <code>&lt;srcHost&gt;</code> | Source MSS host from which mailboxes will be moved.                                                                               |
| <code>&lt;exclude&gt;</code> | List of mailboxes to exclude from the <code>imboxmove</code> process.                                                             |

---

**Note:** Any MTA servers that are running must be stopped before running `imboxmove` with the `-e` option; for this reason, the `-e` option is rarely used.

---

## 12.1.9 imboxstats

The `imboxstats` command reports the current volume of mail stored in a given mailbox. The mailbox is identified by the pair (MSS host/Internal ID or MSS host/e-mail address). The MSS host may be a remote MSS host or the local host.

### Syntax

```
imboxstats <host> {<InternalID> | <e-mailAddress>}
```

Where:

|                                    |                                                        |
|------------------------------------|--------------------------------------------------------|
| <code>&lt;host&gt;</code>          | The name of the MSS host where the mailbox is located. |
| <code>&lt;Internal-ID&gt;</code>   | The Message Store ID.                                  |
| <code>&lt;e-mailAddress&gt;</code> | A valid e-mail address.                                |

**Example**

To report the current volume of mail for a particular mailbox, run `imboxstats` as in the following example:

```
earth% imboxstats venus joe.schmoe@venus.software.com
statistics for joe.schmoe@earth.software.com are totalMsgs=112/MsgsQuota=0,
totalBytes=2613599/BytesQuota=0
```

**12.1.10 imboxsync**

The `imboxsync` command, executed on an InterMail MSS host, synchronizes the Integrated Services Directory and the Message Store Database. `imboxsync` checks to make sure that, for each user account listed in the Integrated Services Directory, there is a corresponding mailbox on an MSS host. Likewise, `imboxsync` checks to make sure that there is no mailbox on the MSS host which does not correspond to an InterMail user account listed in the Integrated Services Directory.

The `imboxsync` command provides a mechanism to make changes to the Message Store Database when users are added to and deleted from the Integrated Services Directory by executing the following steps:

1. `imboxsync` reads the entire Integrated Services Directory.
2. `imboxsync` will read the Message Store Database for the local MSS host specified.
3. `imboxsync` will determine the Internal ID for each user account which is listed as being stored on the local MSS host. If that ID is not one of the mailboxes in this Message Store Database, then `imboxsync` will add that mailbox on this machine.
4. `imboxsync` checks each mailbox that is listed in this Message Store Database; if `imboxsync` determines that a mailbox (as identified by its Internal ID) is not in the Integrated Services Directory as a mailbox which is supposed to exist on this MSS host, then it will delete that mailbox from this host.

---

**Note:** *No mss process should be running using the Message Store Database while this script executes. The `ORACLE_HOME` environment variable must be set appropriately before running this script, and the user running the script must have permission to run queries on both the Integrated Services Directory and the Message Store Database.*

---

**Syntax**

```
imboxsync [-help] {-n|-y|-c|-d}
```

Where:

|                    |                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <code>-help</code> | Provides usage statement.                                                                                                     |
| <code>-n</code>    | Modify Message Store Database without prompting.                                                                              |
| <code>-y</code>    | Prompt before modifying Message Store Database (default), optionally saving <code>immsscall</code> input for later execution. |
| <code>-c</code>    | Prompts only before creating new mailboxes.                                                                                   |
| <code>-d</code>    | Prompts only before deleting new mailboxes.                                                                                   |

### Example

To synchronize the Integrated Services Directory and the Message Store Database, run `imboxsync` as in the following example:

```
venus% imboxsync
imboxsync: Fetching master account information from Oracle...
imboxsync: Fetching InterMail MSS account information...
imboxsync: Comparing account information...
imboxsync: need to CREATE 4 MSS mailboxes:
imboxsync: Ready to run immsscall to create the mailboxes [y/n]? y
imboxsync: creating mailboxes...
venus%
```

In this example, `imboxsync` is used to synchronize the user accounts that are in the Integrated Services Directory with the mailboxes in the Message Store Database. By choosing the `-y` option, `imboxsync` issues a prompt to confirm all actions. It is possible to select no when prompted (“Please confirm execution”), inspect the `tmp/imboxsync.add` and `tmp/imboxsync.del` files to confirm that you want to add and delete these mailboxes, and then repeat the process.

If you choose “y” for execution, the `imboxsync` command will synchronize the Message Store Database and the Integrated Services Directory; each account will have a mailbox associated with it and no mailboxes will exist if a corresponding account does not exist.

## 12.1.11 imboxtest

The `imboxtest` command checks connectivity to a mailbox via the POP server. `imboxtest` tests whether the POP server is running and functioning properly, whether the directory account has been set up properly, whether the POP server is able to communicate with the Message Store Database, and if the mailbox is functioning properly.

### Syntax

```
imboxtest <host> <LoginName> <Password>
```

Where:

|             |                                                  |
|-------------|--------------------------------------------------|
| <host>      | Name of the host running the POP or IMAP server. |
| <LoginName> | The POP or IMAP login name for a user.           |
| <Password>  | The password of the user.                        |

### Example

To test a user’s ability to connect to a mailbox from a POP session, run `imboxtest` as in the following example:

```
venus% imboxtest venus john.doe $secret
+OK InterMail POP3 server ready
+OK please send PASS command
+OK john.doe is welcome here
+OK 152 1928370
+OK john.doe Intermail POP3 server signing off.
```

This example shows a healthy response for the POP server. First, a connection is made to the POP server and a series of POP3 commands is issued.

Next, the USER command is sent to identify the user to the POP server, using the user name you provided on the command line. The POP server uses this name to look up information about this user in the Directory. Then the PASS command is then issued, sending the password which you provided on the command-line. This verifies to the POP server that this password is correct and allows access to the mailbox indicated. These first two commands test the POP server's connectivity to the Directory. Then, `imboxtest` issues a STAT command. This lists the number and total size of messages stored in the mailbox. This tests the functioning of the MSS host. Finally, `imboxtest` issues the QUIT command in order to cleanly end the POP session.

---

**Note:** *When an incorrect LoginName or Password has been entered, or if a communication problem has occurred with the POP or IMAP server, an error will be displayed.*

---

### 12.1.12 imbucketscreate

The `imbucketscreate` command has three applications related to the Message File System. Initially, when installing InterMail, `imbucketscreate` creates the Message File System where messages will be stored.

As a second application, `imbucketscreate` distributes message files evenly in the directories of the Message File System. This function helps performance when message files are read from or written to individual directories. This application of `imbucketscreate` is automatically run periodically by cron.

Finally, `imbucketscreate` can be used to expand the Message File System as necessary after it has been created.

#### Syntax

```
imbucketscreate [<dir> <c1...cn>]
```

Where:

|                              |                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>&lt;dir&gt;</code>     | Relative path to an existing directory to be created directly under the directory set by the <code>mss/messageFilesDir</code> configuration key. |
| <code>&lt;c1...cn&gt;</code> | A series of one or more positive numbers representing the number of subdirectories at each level below <code>&lt;dir&gt;</code> .                |

For more information on how to use `imbucketscreate` to expand the Message File system is shown in chapter 9 of the *InterMail Operations Guide*.

### 12.1.13 imcachecheck

The `imcachecheck` command checks the status of the Directory Cache database file. If successful, it returns "errors = 0." If an error condition is returned, the output will differ from 0.

#### Syntax

```
imcachecheck <file>
```

Where:

|                           |                                            |
|---------------------------|--------------------------------------------|
| <code>&lt;file&gt;</code> | A valid Directory Cache database filename. |
|---------------------------|--------------------------------------------|

## 12.1.14 imcacheread

The `imcacheread` command prints out information about a particular user which is stored in the directory cache. This allows a quick query on a specified user, because a lookup does not need to proceed to the Integrated Services Directory, but is instead read from the local directory cache.

### Syntax

```
imcacheread [-help | -f | -r | -ro] [-h <host>] {<e-mailAddress> |
<LoginName> <Password>}
```

Where:

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| <code>-help</code>                 | Provides usage statement.                                         |
| <code>-f</code>                    | Print forwarding addresses associated with the specified address. |
| <code>-r</code>                    | Prints RADIUS attributes for the specified address.               |
| <code>-ro</code>                   | Prints RADIUS attributes only.                                    |
| <code>&lt;host&gt;</code>          | The name of the MSS host where the mailbox is located.            |
| <code>&lt;e-mailAddress&gt;</code> | Any valid e-mail address for a user.                              |
| <code>&lt;LoginName&gt;</code>     | The POP or IMAP login name for a user.                            |
| <code>&lt;Password&gt;</code>      | The password of the user.                                         |

Either a user's e-mail address or login name and password are used to invoke `imcacheread`. If specified on the command line, then information will be returned about that user as explained above and then the command will end.

If only the host is specified, the command goes into "standard input" mode and awaits input from the keyboard (or else from a pipe). In standard input mode, you type either an e-mail address or a POP login name and password on each line and information about that user is printed. Instead of ending, `imcacheread` then waits for the next user that you specify. To end the program, you must type either `^D` or `^C`.

---

**Note:** *If you are specifying the user by their e-mail address (in which case you do not specify a POP password), then the password field is echoed as "\*".*

---

## 12.1.15 imcmdlist

The `imcmdlist` command prints a list of all InterMail commands and a short description to standard output.

### Syntax

```
imcmdlist
```

**Example**

To produce a list of available commands in InterMail, run `imcmdlist` as in the following example:

```

venus% imcmdlist

```

| Command Name                | Description                                                   |
|-----------------------------|---------------------------------------------------------------|
| <code>imaccountquery</code> | Allows user to easily query the Integrated Services Directory |
| <code>imbadmsgfix</code>    | Moves messages from .ERROR folder to inbox                    |
| <code>imbadmsglist</code>   | Lists to file those messages in the .ERROR folder             |
| <code>imboxcopy</code>      | Copies mailboxes                                              |
| <code>imboxcreate</code>    | Creates mailboxes                                             |
| <code>imboxdelete</code>    | Deletes mailboxes                                             |
| <code>imboxget</code>       | Reports Mbox-id and MSS Host, given email address             |
| .....                       |                                                               |

**12.1.16 imconfcontrol**

The `imconfcontrol` command is used to install changes made to a configuration database and is mentioned here for completeness; however it is reserved for specific maintenance conditions and should be used only in conjunction with Software.com technical support.

**12.1.17 imconfedit**

The `imconfedit` command allows the user to view or change the configuration database. It invokes the `imconfget`, `imconfcontrol`, and `imconfxlate` scripts, reading either the default configuration database file (`config.db`) or one that you specify on the command-line. A text editor, set by the `$EDITOR` or `$VISUAL` environment variables, displays the configuration database. At this point, the user can edit or view the configuration information, evaluate the effect of editing on the system, and propagate these changes throughout the system.

Although an InterMail system can consist of numerous hosts and each host contains a local copy of the configuration database, the configuration database uses a “centralized configuration” mechanism (see Chapter 8); typically, only one `config.db` file will be edited. This master configuration database will be the `config.db` of the host that you have designated as the Master host.

**Syntax**

```
imconfedit [-help] [-x] [-viewonly] [<filename>]
```

Where:

|                               |                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-help</code>            | Provides usage statement.                                                                                                                                          |
| <code>-x</code>               | Executes <code>imconfedit</code> in verbose mode; all program invocations that <code>imconfedit</code> calls are shown as they execute.                            |
| <code>-viewonly</code>        | Invokes a read-only copy of the <code>config.db</code> file in <code>vi</code> or other editor defined by <code>\$EDITOR</code> or <code>\$VISUAL</code> variable. |
| <code>&lt;filename&gt;</code> | An alternate configuration database file (instead of <code>config.db</code> ).                                                                                     |

### Example

To modify the configuration database, run `imconfedit` as in the following example:

```
venus% imconfedit
imconfserv is running on venus
```

`imconfedit` first checks to make sure the configuration server, necessary for editing and propagating changes to InterMail, is running. Next, the `vi` editor displays the configuration database file which you can edit.

```
/*/common/abortIfLogFails: [false]
/*/common/badPasswordDelay: [5]
/*/common/badPasswordWindow: [120]
/*/common/cacheLimitInKB: [256]
.....
```

After you finish making changes and exit the editor, `imconfedit` will review the changes you made and ask you whether you wish to assess these changes:

```
The changes you have made are:

12c12
< /*/common/dirCacheConnections: [40]

> /*/common/dirCacheConnections: [39]

Do you want to assess the changes now (Re-edit/Quit) [Proceed] ?
```

If you type “r” (re-edit), the `vi` editor is reopened and you can review your changes or make new changes that you may have omitted in your first editing pass. If you type “q” (quit), `imconfedit` will exit and your changes will be saved to a file in the format

`config.db.<date/time-stamp>`

in the `config` directory. This file can be later reintroduced with `imconfedit <filename>`.

If you press Enter or type “p” (proceed), you will be informed what server actions will be required to make you changed throughout the InterMail system:

```
"
*
* Impacts of Changes
*
* -----
* *****
* Servers Needing Re-starting
* *****
* imapserv on venus (dirCacheConnections): requires a re-start
* imconfserv on venus (domainName): requires a re-start
* mss.1 on venus (dirCacheConnections): requires a re-start
* mta on venus (dirCacheConnections): requires a re-start
* popserv on venus (dirCacheConnections): requires a re-start
* *****
* Parms Not Yet (if ever) Fetched
* *****
* imconfserv on venus (journalDir): has not yet been fetched
* -----

Do you want to install the changes now (Re-edit/Quit) [Proceed] ?
```

If you type “r,” then the configuration file will again be displayed in vi. If you type “q,” the file will be saved as previously described. If you press Enter or type “p,” then `imconfedit` will make the necessary changes and, if you desire, restart all necessary servers.

```
---- The changes have been made on the config server ----
Do you want to re-start the servers now? (Y/N) y
executing "imctrl venus restart imapserv:imconfserv:mss.1:mta:popserv"
```

**Note:** Although `imconfedit` has the ability to restart servers, typically this is a manual operation to be performed at an off-peak time or during a maintenance window. Instead, use `imservctrl` or `imctrl` to restart servers.

Notice that `imconfedit` will not successfully complete until you have reviewed changes, assessments have been made on the servers, and servers restarted—whether manually or through `imconfedit`.

**Warning:** The master configuration database should always be edited; if you need to enter host-specific keys, simply add them to the configuration database. For example, if you have a master host named “venus” and there is an additional MSS host named “earth,” simply specify additional host-specific configuration keys on venus as in the following example:

```
/*/common/abortIfLogFails: [false]
/earth/common/abortIfLogFails: [true]
.....
/*/common/clientHeaps: [16]
/earth/common/clientHeaps: [13]
```

Configuration management contains much more information than is shown in the `imconfedit` or related commands.

## 12.1.18 imconfget

The `imconfget` command displays the value of a one or more configuration keys.

### Syntax

```
imconfget [-localconfig][-s][-c][-n][-h <host>][-fullpath][-m
<module>][-d <default>]<key>[<key>...]

imconfget [-h <host>] -servers

imconfget -hosts

imconfget -server <name>
```

Where:

- `-localconfig` Specifies that `imconfget` should query the configuration database on the local host. If this flag is omitted, `imconfget` retrieves an up-to-date configuration database from the Configuration Server before executing the query.
- `-s` Formats output so that both key name and value are echoed to standard output.

- `-c` Specifies that directory values that are defined relative to `$INTERMAIL` should be output as full path.
- `-n` Multi-valued (list-valued) configuration keys use a newline as the list item separator; ordinarily `imconfget` just prints them as they are, with one value per line. The `-n` option causes `imconfget` to replace the newlines with “\n”.
- `-h <host>` Specifies the host name portion of the queried configuration entry.
- `-fullpath` Specifies that the configuration key defined in the `<key>` parameter is defined as a full configuration path (i.e., `/<host>/<server>/<key>`). If this flag is omitted, `imconfget` assumes that the key is given with no host or server path, and queries the configuration database for the key under the path:  
`/<localhost>/common/<key>`  
For example, if you execute `imconfget` on the host `venus`, and search for the key `binDir`, omitting the `-fullpath` flag causes `imconfget` to search for the key at:  
`/venus/common/binDir`  
Including the `-fullpath` flag prevents the host and server path from being added to the given key.
- `-m <module>` Specifies the server name portion of the queried configuration entry. The possible values for this parameter are: `httpd`, `mta`, `mss`, `imdircacheserv`, `popserv`, `imapserv`, `imqueueserv`, `imconfserv`, `immgrserv`, `sysadmin` or `common`.
- `-d <default>` Options for returning a “default” value if no entry is found. When this option is used, and the queried key does not exist in the configuration database, the value given after the `-d` flag is returned.
- `<key>` The name of the specific configuration key.
- `-servers` Lists the names of all servers specified in the configuration database.
- `-hosts` Lists the names of all hosts specified in the configuration database.
- `-server <name>` Lists the names of all hosts in the configuration database which have keys associated with a specific server process (`<name>`).

**Example**

To get the value of a single configuration key, run `imconfget` as in the following example:

```
venus% imconfget -h venus -m common binDir
bin
```

## 12.1.19 imconfxlate

The `imconfxlate` command is used to modify a configuration database and is mentioned here for completeness; however it is reserved for specific maintenance conditions and should be used only in conjunction with Software.com technical support.

## 12.1.20 imctrl

The `imctrl` command controls servers on a local or remote host, allowing the user to remotely control the operation of InterMail.

### Syntax

```
imctrl [-verbose] {<host>[:<host>]|localhost|allhosts} {start|drain|
stop|kill|restart|drainStart|stopStart|exitStart|killStart}
{<server>[:<server>:<server>]|mailservers|allservers} [-dryrun]
```

Where:

|                             |                                                                                                                                                                                                                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-verbose</code>       | Verbose execution.                                                                                                                                                                                                                                                      |
| <code>&lt;host&gt;</code>   | A host machine (or list of colon-separated hosts).                                                                                                                                                                                                                      |
| <code>localhost</code>      | The host machine that the <code>imctrl</code> command is executed on.                                                                                                                                                                                                   |
| <code>allhosts</code>       | All hosts in the InterMail system.                                                                                                                                                                                                                                      |
| <code>start</code>          | Start the designated server or servers.                                                                                                                                                                                                                                 |
| <code>drain</code>          | Drain the specified server(s), cause it/them to refuse any new work assignments, complete those assignments in process, then exit.                                                                                                                                      |
| <code>stop</code>           | Stop a server as soon as possible; interrupt client sessions, and display error or status messages to clients.                                                                                                                                                          |
| <code>kill</code>           | Kill a server process as soon as possible (i.e. <code>kill -9</code> ).                                                                                                                                                                                                 |
| <code>restart</code>        | Stop and then restart the affected server(s).                                                                                                                                                                                                                           |
| <code>drainStart</code>     | Drain and then restart the affected server(s).                                                                                                                                                                                                                          |
| <code>stopStart</code>      | Stop and then restart the affected server(s).                                                                                                                                                                                                                           |
| <code>exitStart</code>      | Stop and then restart the affected server(s).                                                                                                                                                                                                                           |
| <code>killStart</code>      | Kill and then restart the affected server(s).                                                                                                                                                                                                                           |
| <code>&lt;server&gt;</code> | An InterMail server (or list of colon-separated servers).                                                                                                                                                                                                               |
| <code>mailservers</code>    | All servers that affect the processing of mail (this excludes <code>immgrserv</code> and <code>imconfserv</code> ).                                                                                                                                                     |
| <code>allservers</code>     | All servers that in the InterMail system except <code>immgrserv</code> (i.e. <code>httpd</code> , <code>imapserv</code> , <code>imconfserv</code> , <code>imdircaheserv</code> , <code>immgrserv</code> , <code>mss</code> , <code>mta</code> , <code>popserv</code> ). |
| <code>-dryrun</code>        | Displays information on what steps will be performed with the specified <code>imctrl</code> invocation, but does not actually perform these steps.                                                                                                                      |

### Example

To remotely control the behavior of servers in the InterMail system, run `imctrl` as in the following example:

```
venus% imctrl localhost restart mta
```

You execute multiple sets of arguments, run `imctrl` as in the following example:

```
venus% imctrl earth restart mta:mss venus start mta venus kill popserv
```

## 12.1.21 imdbalertlogmonitor

The `imdbalertlogmonitor` command alerts user of critical errors by reading the Oracle “alert log.” This command is intended to be left running constantly while the database is operational. It reads each new entry as it is written into the Oracle alert log, and logs an “Urgent” message if there is an event that requires attention. This file is written to `imdbalertlogmonitor.log` for each Oracle instance (e.g. “IMM1,” “IMD1”).

If `imdbalertlogmonitor` notices an error message added to the alert log that implies there is a shortage of space in the database, it logs a `DbToolsOutOfSpaceCrisis` event. `imdbalertlogmonitor` logs a `DbToolsSeriousErrorLogged` event for all other error messages.

### Syntax

```
imdbalertlogmonitor [-dir][-v]
```

Where:

- |                   |                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------|
| <code>-dir</code> | Monitor the alert log of the Integrated Services Directory instead of the Message Store Database. |
| <code>-v</code>   | verbose execution.                                                                                |

## 12.1.22 imdbcheckshadows

The `imdbcheckshadows` command checks to see if Oracle has left an orphaned shadow process (which can waste in an `mss` or `imdircaheserv` process). These processes waste system resources. `imdbcheckshadows` prints a message to the system console about each shadow it discovers is an orphan.

---

**Note:** *The `imdbcheckshadows` command should be run on the same host where the database being monitored is running.*

---

In some cases, the database client for a given shadow will be running on a remote machine. `imdbcheckshadows` can only verify such a shadow is an orphan if `rsh` can be employed to run a UNIX `ps` command on the remote system. If `rsh` does not work, `imdbcheckshadows` prints out a message warning that a given shadow process is an orphan if a given remote process is no longer running.

**Syntax**

The syntax for `imdbcheckshadows` depends on how it is run.

1. If you are the `imail` user, then run `imdbcheckshadows` as follows:

```
imdbcheckshadows [-kill][-dir][-v]
```

Where:

|                    |                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------|
| <code>-kill</code> | Perform a “kill -9” on every detected defunct shadow.                                              |
| <code>-dir</code>  | Detect defunct shadows in the Integrated Services Directory instead of the Message Store Database. |
| <code>-v</code>    | Show verbose output                                                                                |

2. If you are the `oracle` user, then run `imdbcheckshadows` as follows:

```
imdbcheckshadows [-kill] [-v] -dbname $ORACLE_SID
```

Where:

|                                   |                                                                                                                                               |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-dbname \$ORACLE_SID</code> | The database instance (typically ‘IMM1’ will refer to the Message Store Database and ‘IMD1’ will refer to the Integrated Services Directory). |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|

---

**Note:** *If the “-kill” flag is specified, the script does a “kill -9” to every process it believes is an orphaned shadow. Because some shadow processes inevitably will not be owned by the “imail” user, the script accommodates being run as “root” or “oracle.”*

---

### 12.1.23 imdbcoparchredo

The `imdbcoparchredo` command processes archived redo logs. Archived redo logs are vital to full recovery. Losing one archived redo log is enough to make full recovery impossible.

`imdbcoparchredo` addresses this problem by copying archived redo logs soon after they are created so that two copies exist on independent devices.

There are two associated problems with the loss of an archived redo log is that it is a problem that can easily go unnoticed.

Another problem with archived redo logs is that, left unchecked, they eventually fill up the `archive_dest` device. When this occurs, the database literally freezes up.

`imdbcoparchredo` addresses this problem by regularly pruning old archived redo logs from the `archive_dest` directory.

---

**Note:** *imdbcoparchredo typically should run as a cron job, frequently enough so that an archived redo log is copied before its on-line redo log original gets overwritten.*

---

### Syntax

```
imdbcopyparchredo [-cronjob] [-copytodisk <directory>] [-archive_dest <directory>] [-emergency_backups <command>][-daystokeeparchivedredo <n>] [-daystokeepcopiedredo <n>] [-logdir <directory>] -dbname $ORACLE_SID -id USER/PASS[@SID]
```

### Where:

|                              |                                                                                                                                                                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -cronjob                     | Suppress output to stdout; instead writes log entries in a log file named CopyArchRedo.<date>.log in the destination_directory.                                                                                                                       |
| -copytodisk <directory>      | archived redo logs will be copied to a directory named:<br><directory>/COPIED_ARCHIVED_REDO_\${ORACLE_SID}.                                                                                                                                           |
| -archive_dest <directory>    | Defines the Oracle archive_dest directory for the database. If this flag is not supplied, imdbcopyparchredo looks up the archive_dest pathname directly from the database. Including this flag improves efficiency.                                   |
| -emergency_backups <command> | If imdbcopyparchredo discovers that an archived redo log in archive_dest is missing, it immediately kicks off an emergency backup by running the <command>. If this flag is not used, only a log entry is written to report this dangerous condition. |
| -daystokeeparchivedredo <n>  | Archived redo logs older than <n> * 24 hours are deleted from the archive_dest directory.                                                                                                                                                             |
| -daystokeepcopiedredo <n>    | Copied archived redo logs older than <n> * 24 hours are deleted from the destination_directory.                                                                                                                                                       |
| -logdir <directory>          | ignored unless -cronjob is specified.                                                                                                                                                                                                                 |
| -dbname \$ORACLE_SID         | Oracle instance.                                                                                                                                                                                                                                      |

## 12.1.24 imdbdatasizereport

The imdbdatasizereport command prints a report that shows the number of rows in each table, and the average number of bytes each column in every table takes up in a row. This command is intended to help diagnose why a database might be prematurely running low on space. This command takes a long time to run, and is best run at an off-peak time as imdbdatasizereport performs several large queries that will probably fail (due to Oracle rollback segment wrap) if there is a significant amount of database activity at the time.

---

**Note:** To run the command, log in as the InterMail UNIX user (by default, this is set to "imail").

---

**Syntax**

```
imdbdatasizereport [-dir]
```

**Where:**

`-dir` Report on Integrated Services Directory instead of the Message Store Database.

## 12.1.25 imdbhotbackup

The `imdbhotbackup` command allows the user to make backup copies of critical data files.

**Syntax**

```
imdbhotbackup [-dryrun][-cronjob][-sleeptime <n>][-backupindexes]
[-othertemporarytablespaces <Temp1> [<Temp2>...][-backuptemp]
[-backupdestdir <directory>] [-totalbackupskept <n>]
[-backupcopydestdir <directory>] [-totalcopybackupskept <n>]
[-backupdirexception <file> [<directory>]] [-logdir <directory>]
[-backupcommand <command>] -dbname <${ORACLE_SID}> -id
<USER/PASS>[@ORACLE_SID] [-dir]
```

**Where:**

|                                                                         |                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-dryrun</code>                                                    | Show what would happen when the script is run without copying any files or actually putting any tablespaces in backup mode. Writes the text of commands and sql statements it would have run in a “real” run to stdout                                                                                                                                                 |
| <code>-cronjob</code>                                                   | Suppress output to stdout; instead write log entries to a log file. If the <code>-logdir</code> flag is not specified, the directory where the log file will be created is determined by the <code>logDir</code> configuration key. If the <code>-dryrun</code> flag is used with <code>-cronjob</code> , commands and sql statements will still be written to stdout. |
| <code>-sleeptime &lt;n&gt;</code>                                       | Sleep for <code>&lt;n&gt;</code> seconds between backing up each data file.                                                                                                                                                                                                                                                                                            |
| <code>-backupindexes</code>                                             | Back up index tablespaces. By default, <code>imdbhotbackup</code> does not backup any index tablespaces, since these can be recreated from data tablespaces. <code>imdbhotbackup</code> creates scripts to recreate index tablespaces from scratch.                                                                                                                    |
| <code>-othertemporarytablespaces &lt;Temp1&gt; [&lt;Temp&gt;...]</code> | For a standard InterMail 3.1 or 3.2 install, use <code>othertemporarytablespaces TEMP</code> .                                                                                                                                                                                                                                                                         |
| <code>-backuptemp</code>                                                | Back up temporary tablespaces. By default, <code>imdbhotbackup</code> does not back up temporary tablespaces, since these can be easily and quickly recreated from scratch. <code>imdbhotbackup</code> generates scripts for recreating temporary tablespaces from scratch.                                                                                            |

|                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-backupdestdir &lt;directory&gt;</code>                     | Specifies where to place the backup copies of data files. See following note.                                                                                                                                                                                                                                                                                                                                                     |
| <code>-totalbackupskept &lt;n&gt;</code>                          |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <code>-backupcopydestdir &lt;directory&gt;</code>                 | Instead of overwriting the last backup in the backup directory given by <code>-backupdestdir</code> , <code>imdbhotbackup</code> will keep the <code>&lt;n&gt;-1</code> previous hot backups in subdirectories named <code>PREVIOUS.1</code> , <code>PREVIOUS.2</code> , . . . , <code>PREVIOUS.N-1</code> . The current hot backup will be kept in a subdirectory called <code>CURRENT</code> if <code>&lt;n&gt; &gt; 1</code> . |
| <code>-totalcopybackupskept &lt;n&gt;</code>                      | Analogous to the <code>-totalbackupskept</code> flag, except it applies to the <code>-backupcopydestdir</code> directory.                                                                                                                                                                                                                                                                                                         |
| <code>-backupdirexception &lt;file&gt; [&lt;directory&gt;]</code> |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <code>-logdir &lt;directory&gt;</code>                            | Ignored unless the <code>-cronjob</code> flag is used.                                                                                                                                                                                                                                                                                                                                                                            |
| <code>-backupcommand &lt;command&gt;</code>                       | When backing up a data file, instead of <code>imdbbackup</code> using its own mechanism to copy the data file, it invokes the specified command supplying a single argument, the complete path name of the data file. The command should return "0" if it succeeds.                                                                                                                                                               |
| <code>-dbname &lt;\${ORACLE_SID}&gt;</code>                       | The database instance name, as identified by the <code>ORACLE_SID</code> environment variable.                                                                                                                                                                                                                                                                                                                                    |
| <code>-id &lt;USER/PASS&gt; [\${ORACLE_SID}]</code>               | Oracle name and password; this argument can be specified with an alternate database instance name.                                                                                                                                                                                                                                                                                                                                |
| <code>-dir</code>                                                 | Back up the Integrated Services Directory (Message Store Database is the default)                                                                                                                                                                                                                                                                                                                                                 |

---

**Note:** *-backupdestdir: If the `-totalbackupskept` flag is one or is not specified, the backup data file copies and the scripts generated by `imdbhotbackup` will be placed in a directory named `directory/ORACLE_HOT_BACKUP_SID`. If `-totalbackupskept` is greater than one, the new backup data file copies and the generated scripts will be placed in a directory named `directory/ORACLE_HOT_BACKUP_SID/CURRENT`, and the previous backup will be placed in a directory named `directory/ORACLE_HOT_BACKUP_SID/PREVIOUS.1`. The next oldest previous backup will be placed in a subdirectory named `PREVIOUS.2`, the next oldest in `PREVIOUS.3`, etc. If the `-backupcommand` flag is utilized, backup copies of data files will not be written into directory or any subdirectory of directory. `imdbhotbackup` maintains a history file about previous backups that is stored in `directory/ORACLE_HOT_BACKUP_SID`, regardless of the `-totalbackupskept` or `-backupcommand` flags.*

---

## 12.1.26 imdbindexbloatreport

The `imdbindexbloatreport` command prints a report that shows how much space is wasted in each database index. Indexes in Oracle do not recycle space well, and tend to become more and more internally fragmented as rows in the indexed table are updated and deleted. This command is intended to be used to help diagnose why a database might be running low on space. This command takes a long time to run, and is best run at an off-peak time. The command does several large queries that will probably fail (due to Oracle rollback segment wrap) if there a significant amount database activity at the time.

### Syntax

```
imdbindexbloatreport [-dir]
```

Where:

|                   |                                                                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-dir</code> | Report on the Integrated Services Directory (without <code>-dir</code> , <code>imdbindexbloatreport</code> will report on the Message Store Database). |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|

## 12.1.27 imdbindexreorg

The `imdbindexreorg` command eliminates the fragmented free space that builds up in Oracle indexes over time. This problem occurs because Oracle's implementation of indexes causes them to grow without bound when the underlying tables have considerable update activity, like many of the tables found in the InterMail databases. Using `imdbindexreorg` eliminates wasted space caused by fragmentation, which also increases the performance of the database, because every index block contains more information, which helps reduce the number of disk reads.

---

**Note:** *The use of `imdbindexreorg` is described with real-world examples in the InterMail Operations Manual. Also, note that the `imdbindexreorg` command must be run during a maintenance window when all services that attempt to modify the database have been shut down. When running this command against a mailbox, the specified MSS host must be shut down. `immssgc` (the garbage collector), usually run as a cron job, can be left running only because it is not interactive. `immssgc` will not process any operations while indexes are rebuilt on the tables it modifies, but this has no impact on end users.*

---

### Syntax

```
imdbindexreorg -tablespaces <filename> [-v] [-timelimit <number>] [-dir <name>] [-degree <number>] [-dryrun] [-bloat <number>]
```

Where:

|                                            |                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-tablespaces &lt;filename&gt;</code> | Specifies the pathname of a file in which the command writes the names of the Oracle tablespaces that require (hot) backups following the termination of the command.                                                                                                                                                                                                                  |
| <code>-v</code>                            | verbose execution.                                                                                                                                                                                                                                                                                                                                                                     |
| <code>-timelimit &lt;number&gt;</code>     | Allows the user to override the value of the <code>db/indexReorganizationTimeLimitMinutes</code> configuration key and specify a longer time period to complete an index reorganization.                                                                                                                                                                                               |
| <code>-dir &lt;name&gt;</code>             | Reorganize indexes in the Integrated Services Directory. (The Message Store Database is the default.)                                                                                                                                                                                                                                                                                  |
| <code>-degree &lt;number&gt;</code>        | Specifies the amount of parallelism to use when reorganizing an index. A respectable value is the number of CPUs in your system. (The default value is two).                                                                                                                                                                                                                           |
| <code>-dryrun</code>                       | Runs the command as normal, except the database is not actually modified. Any SQL statements that modify the database are written to standard error instead of being processed.                                                                                                                                                                                                        |
| <code>-bloat &lt;number&gt;</code>         | (percent) by default 50. Indexes whose actual size is less than this percent larger than their compact size are not reorganized. By default then, any index less than 50% larger than its minimal possible size is left alone. Reorganizing an index is time consuming, and you don't want to waste valuable maintenance time on reorganizing indexes that aren't intolerably bloated. |

## 12.1.28 imdbmsgbackup

The `imdbmsgbackup` command queries the Message Store Database to determine the list of message files to back up. It does not backup garbage message files—that is, message files for messages that are not in a particular mailbox. Therefore `imdbmsgbackup` can run before or after the garbage collector runs; however avoid running `imdbmsgbackup` concurrently with the garbage collector (to prevent contention for a particular file in the Message File System).

### Syntax

```
imdbmsgbackup <backupDirectory> [-cronjob] [-tempdir <directory>] [-batchsize <size>] [-messagebackuplimit <n>] [-sleeptime <m>][-threads <n>] [-id <user>/<pass>] [-dbname $ORACLE_SID]
```

Where:

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>&lt;backupDirectory&gt;</code>        | The root of the backup Message File System copy. Message files are copied into a subdirectory of this directory named <code>BACKUP_MESSAGES</code> .<br><br><i>Note: if any subdirectory is missing, <code>imdbmsgbackup</code> will automatically create it.</i>                                                                                                                                  |
| <code>-cronjob</code>                       | Write information to log entries in a log file instead of writing information to stdout.                                                                                                                                                                                                                                                                                                           |
| <code>-tempdir &lt;directory&gt;</code>     | Use the indicated directory for storage of temporary files. The utility creates a temporary file that contains the pathname of each message file that will be copied to the backup. If not specified, <code>imdbmsgbackup</code> uses the <code>tmp</code> directory.                                                                                                                              |
| <code>-batchsize &lt;n&gt;</code>           | If specified along with <code>-cronjob</code> , <code>imdbmsgbackup</code> logs a message concerning its progress after every <code>&lt;n&gt;</code> message files are copied.                                                                                                                                                                                                                     |
| <code>-messagebackuptlimit &lt;n&gt;</code> | When specified, <code>imdbmsgbackup</code> will not copy more than <code>&lt;n&gt;</code> messages. If not specified, <code>imdbmsgbackup</code> will copy all the messages it has not previously backed up. The actual number of messages backed up will tend to be less than <code>&lt;n&gt;</code> ; the actual number of messages copied will be <code>&lt;n&gt;</code> less garbage messages. |
| <code>-sleeptime &lt;n&gt;</code>           | If specified along with <code>-batchsize</code> , <code>imdbmsgbackup</code> sleeps for <code>&lt;n&gt;</code> seconds after copying each batch of messages.                                                                                                                                                                                                                                       |
| <code>-threads &lt;n&gt;</code>             | Instead of processing all work in one single thread, <code>imdbmsgbackup</code> will divide the messages needing backup into <code>&lt;n&gt;</code> sets of the same size before processing, and then will run a separate “thread” (actually a process) to handle each individual set.                                                                                                             |
| <code>-id &lt;user&gt;&lt;pass&gt;</code>   | Oracle username and password to utilize. If not specified, <code>imdbmsgbackup</code> uses the <code>mss</code> configuration parameters to determine this value.                                                                                                                                                                                                                                  |
| <code>-dbname \$ORACLE_SID</code>           | The SID of the database. If not specified, <code>imdbmsgbackup</code> uses the configuration parameters for the MSS to determine this value.                                                                                                                                                                                                                                                       |

## 12.1.29 imdbplaygcjrn

The `imdbplaygcjrn` command plays garbage collector journals that it has not played (before but are at least 24 hours old) against a backup copy of the Message File System.

### Syntax

```
imdbplaygcjrn [-cronjob] -journaldir <directory> [-journallimit
<n>][-playedjournalnames <file>] -messagebackupdir <directory>
[-logdir <directory>] [-logdir <directory>] [-logfile <file>]
[-tarandremove <directory>] [-compression <command>]
```

### Where:

|                                                      |                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-cronjob</code>                                | Writes log entries in a log file in the InterMail log directory instead of writing information to stdout.                                                                                                                                                                                                            |
| <code>-journaldir<br/>&lt;directory&gt;</code>       | The directory where the garbage collector journal files to play can be found.                                                                                                                                                                                                                                        |
| <code>-journallimit &lt;n&gt;</code>                 | Restrict <code>imdbplaygcjrn</code> to playing no more than N garbage collector journal files.                                                                                                                                                                                                                       |
| <code>-playedjournalnames<br/>&lt;file&gt;</code>    | If specified, <code>imdbplaygcjrn</code> records the name (just the name, not the path name) of each garbage collector journal file in the given file, one per line.                                                                                                                                                 |
| <code>-messagebackupdir<br/>&lt;directory&gt;</code> | The root of the backup copy of the Message File System to play garbage collector journal files against. The directory pathname should be the same as the directory pathname passed as the first argument to <code>imdbmsgbackup</code> .                                                                             |
| <code>-logdir &lt;directory&gt;</code>               | Ignored unless <code>-cronjob</code> is specified. The path name of the directory where the log file will be located. If not specified, the InterMail log directory will be utilized.                                                                                                                                |
| <code>-logfile &lt;file&gt;</code>                   | Ignored unless <code>-cronjob</code> is specified. The path name of the file to record log entries in. If not specified, the log file name will be of the format <code>PlayGCJournals.&lt;time&gt;.log</code> .<br><br>If specified, <code>-logdir</code> is ignored.                                                |
| <code>-tarandremove<br/>&lt;directory&gt;</code>     | If specified, <code>imdbjrnplay</code> tars up all the garbage collector files it played against the backup Message File System, puts the resulting tar file in the specified directory, and deletes the journal files. The tar file is given a name of the format <code>jrnmgr.&lt;time&gt;.immssgcjrn.tar</code> . |
| <code>-compression &lt;command&gt;</code>            | Compresses the tar file using the indicated command. Ignored unless <code>-tarandremove</code> is specified.                                                                                                                                                                                                         |

## 12.1.30 imdbschemareport

The `imdbschemareport` command produces extremely detailed information about all available tables in either the Message Store Database or the Integrated Services Directory.

### Syntax

```
imdbschemareport [-dir]
```

Where:

`-dir` Report Oracle information for the Integrated Services Directory instead of the Message Store Database.

### Example

The output from `imdbschemareport` is quite lengthy; the following is a short sample of this output:

```

.....
TABLE IM_HDRTEXT
COLUMNS
 MESSAGENUM NUMBER NOT NULL
 HDRNUM NUMBER NOT NULL
 HDRPART NUMBER NOT NULL
 HDRTYPE NUMBER NOT NULL
 TEXT VARCHAR2(255)
CONSTRAINTS
 PK_IM_HDRTEXT: PRIMARY_KEY on MESSAGENUM, HDRNUM, HDRPART
.....

```

## 12.1.31 imdbshutdownkit

The `imdbshutdownkit` command cleans up and manages Oracle trace and log files. If left unchecked, these files will eventually expand and consume the remaining space on the disk. These log files contain textual messages about various events in the database, and should not be confused with the redo log files Oracle uses for recovery. The `imdbshutdownkit` command has no affect on the redo log files.

---

**Note:** *imdbshutdownkit should be run under the “oracle” user ID, to avoid problems with file permissions. If imdbshutdownkit runs into any problems, a message describing the problem is written to Standard Error.*

---

### Syntax

```
imdbshutdownkit [-v] [-sqlnetlogdir <pathname>] [-alertloglifetime
<number>] [-loglifetime <number>]
```

Where:

- v verbose execution.
- sqlnetlogdir <pathname> Specifies the directory where Sql\*Net log files are found. Defaults to \$TNS\_ADMIN/./log.
- alertloglifetime <number> Specifies the number of days old alert log files are retained. Defaults to 120.
- loglifetime <number> Specifies the number of days old trace and log files, with the exception of alert log files, should be retained. Defaults to 60.

## 12.1.32 imdbspacecheck

The `imdbspacecheck` command monitors the remaining free space in an Oracle database, and estimates when more space will be required. It warns when available space is at the point where it is prudent to add more. It can be run while InterMail is in full operation and is intended to be run regularly (i.e., daily) by cron. It logs an “Urgent” message when available space is at the point where it is prudent to add more.

This command maintains historical information about database growth in the log file `imdbspacecheck.$ORACLE_SID.hst`. `imdbspacecheck` depends on this information to track rates of growth of objects in the database.

The command logs an “Urgent” message (`DbToolsPredictedSpaceCrisis`) about space trends if either of two conditions is satisfied. First, the command will log an “Urgent” message when there is an object (table or index) whose last extent is 90% full (adjustable via the `db/extentFullWarningThresholdPercent` configuration key) and there is a scenario in which the database as currently configured can't accommodate growth of the object. “Static” objects, that is tables and indexes known not to grow, are exempt from this check.

The command also logs the same “Urgent” message about space trends if there is an object whose last extent is predicted to fill within the next three weeks (adjustable via the `db/extentGrowthAllowanceDays` configuration key), and there is a scenario in which the object cannot grow in the database as currently configured. The prediction is based upon historical data. `imdbspacecheck` updates this historical data each time it is run.

### Syntax

```
imdbspacecheck [-v] [-thresholdpercent <number>] [-thresholddays
<number>] [-dir]
```

Where:

|                            |                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------|
| -v                         | verbose execution.                                                                                    |
| -thresholdpercent <number> | Overrides the value of the db/extentFullWarningThresholdPercent configuration key.                    |
| -thresholddays <number>    | Overrides the value of the db/extentGrowthAllowanceDays configuration key.                            |
| -dir                       | Reorganize indexes in the Integrated Services Directory. (The Message Store Database is the default.) |

### 12.1.33 imdbspacegrow

The `imdbspacegrow` command allows a user to grow the database. The log entries created by `imdbspacecheck` and `imdbspacequickcheck` that give warning of a space crisis (`DbToolsSpaceEmergencyCrisis` and `DbToolsPredictedSpaceCrisis`) identify the name of an Oracle tablespace that is running low on space. When this happens, run `imdbspacegrow` to add space to the identified tablespace.

This interactive command takes as input the name of the tablespace to grow, the path name for the file that will be created and added to the tablespace, and the amount of space that can be used for the file. The tool creates the new data file and alters the database to use it. This tool can be run while InterMail is in full operation. It does not interfere with the normal operation of InterMail. A hot backup should be run immediately after using this tool, however, so running the tool during a non-peak period is preferable.

---

*Note:* The usage of `imdbspacegrow` is described in more detail in the *InterMail Operations Guide*.

---

#### Syntax

```
imdbspacegrow [-dir] [-dryrun]
```

Where:

|         |                                                                                                                                                                                |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -dir    | Grow the Integrated Services Directory. (Message Store Database is the default.)                                                                                               |
| -dryrun | Runs the command as normal, except the database is not actually modified. Any SQL statements that modify the database are merely written to stdout instead of being processed. |

## 12.1.34 imdbspacequickcheck

The `imdbspacequickcheck` command warns of an impending space crisis in Oracle. It serves as a last-chance safety net to catch space problems before a crisis erupts. This command is intended to be run as a cron job approximately once per half hour.

`imdbspacequickcheck` logs an “Urgent” message (`DbToolsSpaceEmergencyCrisis`) if there is an object (table or index) whose last extent is 90% full (configurable via the `db/extentFullWarningThresholdPercent` configuration key), and the object cannot grow. “Static” objects, that is tables and indexes known not to grow, are exempt from this check.

`imdbspacequickcheck` does a much less sophisticated space audit than `imdbspacecheck`. First, no historical information is used. Second, `imdbspacequickcheck` does not consider the effect of several objects trying to grow simultaneously. If two objects are getting full, and there is room for only one of them to grow, `imdbspacecheck` produces a log message.

`imdbspacequickcheck` does not produce a log message until one of the objects has actually grown and made it impossible for the second to grow.

### Syntax

```
imdbspacequickcheck [-v] [-thresholdpercent <number>] [-dir]
```

Where:

|                                               |                                                                                             |
|-----------------------------------------------|---------------------------------------------------------------------------------------------|
| <code>-v</code>                               | verbose execution.                                                                          |
| <code>-thresholdpercent &lt;number&gt;</code> | overrides value of the <code>db/extentFullWarningThresholdPercent</code> configuration key. |
| <code>-dir</code>                             | Check the Integrated Services Directory. (Message Store Database is the default.)           |

## 12.1.35 imdbspacereport

The `imdbspacereport` command prints out information about an Oracle database, including the exact version of Oracle in use, the value of all Oracle parameters in `init.ora`, and information about space usage in the database.

When `imdbspacecheck` or `imdbspacequickcheck` warn of low space, `imdbspacereport` can be run to obtain a snapshot of space allocation in the database in order to better understand the depth of the impending crisis.

### Syntax

```
imdbspacereport [-dir]
```

Where:

|                   |                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------|
| <code>-dir</code> | Reports on space in the Integrated Services Directory (Message Store Database is the default). |
|-------------------|------------------------------------------------------------------------------------------------|

## 12.1.36 imdirprobe

The `imdirprobe` command checks whether each of a set of InterMail accounts has a given value for MSS host and/or account status. `imdirprobe` can also be used to update the directory cache. `imdirprobe` confirms certain information (namely, MSS host and account status) for a specified set of InterMail accounts. It accomplishes this by accessing either the Integrated Services Directory or by accessing one or several Directory Cache Servers.

### Syntax

```
imdirprobe {-cache <hosts> | -master} <addresses> [-t <threads>] [-u]
[-p <pass>] [-f <fail>] [-h <host>] [-m <mode>]
```

### Where:

|                                 |                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| <code>-cache</code>             | Forces <code>imdirprobe</code> to use the Directory Cache servers.                                      |
| <code>&lt;hosts&gt;</code>      | A colon-separated list of hosts running Directory Cache servers.                                        |
| <code>-master</code>            | Forces <code>imdirprobe</code> to use the Integrated Services Directory.                                |
| <code>&lt;addresses&gt;</code>  | A file containing e-mail addresses, one per line.                                                       |
| <code>-t &lt;threads&gt;</code> | Specifies how many threads to run per cache server (default 1, not allowed with <code>-master</code> ). |
| <code>-u</code>                 | Forces a cache update (using a bad password); not allowed with <code>-master</code> .                   |
| <code>-p &lt;pass&gt;</code>    | Specifies an output file for addresses that succeed (default <code>imdirprobe.pass</code> ).            |
| <code>-f &lt;fail&gt;</code>    | Specifies an output file for addresses that fail (default <code>imdirprobe.fail</code> ).               |
| <code>-h &lt;host&gt;</code>    | Verifies the MSS host for the specified addresses.                                                      |
| <code>-m</code>                 | Verifies the mode (A,S,M) of the specified addresses.                                                   |

## 12.1.37 imdirsync

The `imdirsync` command is a database synchronization command. This means that it will bring the directory cache up to date with the Integrated Services Directory. `imdirsync` can retrieve either the full contents of the Integrated Services Directory to create the cache file or can incrementally update the directory cache file. When `imdirsync` operates in an incremental mode, the only changes which will be acted upon are those changes which have occurred since the last update.

### Syntax

```
imdirsync -u [-f <file>]
```

### Where:

|                              |                                                              |
|------------------------------|--------------------------------------------------------------|
| <code>-u</code>              | Incrementally updates the cache file.                        |
| <code>-f &lt;file&gt;</code> | Specifies a temporary file to use instead of the cache file. |

---

**Warning!** If the “-u” option is used, the Directory Cache Server (imdircacheserv) must NOT be running.

---

**Note:** With no arguments, imdirsync does a full update and creates the cache file.

When the “-f <file>” option is used, the temp cache file is used; however, after this temp file is created, the file replaces the directory cache file (dirCacheDB).

---

## 12.1.38 imdirupdate

The imdirupdate command is a batch command to write (the same) information to multiple InterMail account entries in the master Directory. The types of information which can be written includes the status of the account (‘A’ for Active, ‘M’ for Maintenance, ‘P’ for Proxy, ‘L’ for Locked, or ‘S’ for Suspended) and also the MSS host on which the mailbox for this user resides.

### Syntax

```
imdirupdate [-h <host>] [-m <status>] <accounts>
```

Where:

|             |                                            |
|-------------|--------------------------------------------|
| -h <host>   | change the MSS host of the accounts.       |
| -m <status> | change the status of the accounts.         |
| <accounts>  | A file containing a list of account names. |

### Example

In order to change information for multiple account entries in the Integrated Services Directory, you will need to run imaccountquery to find out information on the relevant InterMail accounts.

```
venus% imaccountquery -r full -or -s A -s L
....
```

Next, create an input file using vi or another editor containing the e-mail address of each account (one per line) to be affected with imdirupdate.

Then run imdirupdate on the file.

```
venus% imdirupdate -m A imdirupdate.in
imdirupdate: fetching account information...
imdirupdate: updating accounts...
imdbcontrol cmd done:
imdirupdate: done.
```

---

**Note:** It is suggested that you run imaccountquery again to confirm your account changes after running imdirupdate.

---

## 12.1.39 imfiltercheck

The `imfiltercheck` command allows the user to apply a filtering rule set based on the SIEVE language which, when executed, can cause incoming mail to be bounced, sidelined, forwarded, discarded, or delivered normally, based on content.

### Syntax

```
imfiltercheck {-v <filterFile> ...|-vi |-vc <key> |
 -e [<filterFile>|-c <key>] <messageFile> ... |
 -es [<filterFile>|-c <key>] <headerFile> <bodyFile> |
 -ei [<filterFile>|-c <key>] < <messageFile>}
```

### Where:

|                                  |                                                                                                                                                                                      |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>-v</code>                  | Validates that one or more filters (as specified in files) are valid.                                                                                                                |
| <code>-vc</code>                 | Validates that a filter (as specified in a configuration key) is valid.                                                                                                              |
| <code>-vi</code>                 | Validates that a filter (taken from standard input) is valid.                                                                                                                        |
| <code>-e</code>                  | Executes the given filter on a message (defined in a single file).                                                                                                                   |
| <code>-es</code>                 | Executes the given filter on a message (defined in a body and header file).                                                                                                          |
| <code>-ei</code>                 | Executes the given filter on a message (taken from standard input).                                                                                                                  |
| <code>&lt;filterFile&gt;</code>  | Specifies the file that contains the filter to validate.                                                                                                                             |
| <code>key</code>                 | Specifies a configuration key that contains the filter to validate. The value of this parameter is typically the value set by the <code>incomingMailFilter</code> configuration key. |
| <code>&lt;messageFile&gt;</code> | Specifies a Message file to execute the filter on.                                                                                                                                   |
| <code>&lt;headerFile&gt;</code>  | Specifies a Header file to execute the filter on.                                                                                                                                    |
| <code>&lt;bodyFile&gt;</code>    | Specifies a Body file to execute the filter on.                                                                                                                                      |

---

**Note:** See Chapter 4 of the *InterMail Operations Guide* for examples of how to use `imfiltercheck`.

---

## 12.1.40 iminboxlist

The `iminboxlist` command lists the header information for all messages in a specified mailbox's INBOX folder. The INBOX is where all messages are originally stored upon delivery from the MTA. The INBOX is also the only folder which the POP protocol supports.

### Syntax

```
iminboxlist <host> {<MessageStoreName> | <e-mailAddress>} [-all | <attribute>]
```

### Where:

|                                       |                                                                                                                                                                                               |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>&lt;host&gt;</code>             | The name of the MSS host where the mailbox is located.                                                                                                                                        |
| <code>&lt;MessageStoreName&gt;</code> | Name of a Message Store.                                                                                                                                                                      |
| <code>&lt;e-mailAddress&gt;</code>    | A valid e-mail address.                                                                                                                                                                       |
| <code>-all</code>                     | Indicates that all of the header attributes should be printed. The default is to print out the From, Subject, Message-ID and Date attributes.                                                 |
| <code>attribute</code>                | Indicates 0 or more header attributes. The available attributes include the following: From, To, Subject, Date, cc, bcc, Message-ID, Received, Reply-To, Resent-To, Resent-From, Resent-Date. |

---

**Note:** *In addition to the standard headers shown with the attribute option, additional client- and server-specific headers may be included for a given message. The header output for each header attribute consists of a message index, a colon followed by the header attribute type (e.g., From), a colon and the value of the header attribute. The output for each message is separated by a blank line.*

---

### Example

To report header information, run `iminboxlist` as in the following example:

```
venus% iminboxlist venus susie.queue@venus.software.com From Subject
0: From: john.doe@venus.Software.com (John Doe)
0: Subject: What's going on, Susie?
```

## 12.1.41 imjrnplay

The `imjrnplay` command is used for playback of journal files and is mentioned here for completeness; however it is reserved and should be used only in conjunction with Software.com technical support.

## 12.1.42 imjrnrecover

The `imjrnrecover` command recovers messages from the Message File system at a known point by “replaying” all of the Message File system activity to that point. Journaling is a recovery mechanism provided in the event of a failure of the Message File system. When used in conjunction with frequent full backups of the Message File system, journaling allows complete recovery of all messages to the very second that the Message File system was lost.

---

**Note:** Please Chapter 10 of the Operations Guide for a full description on how to use `imjrnrecover`.

---

### Syntax

```
imjrnrecover [-a][-b <beginTime>] [-e <endTime>] [-r <pathPrefix>] [-v] [-j <journalDir>]
```

Where:

- a Plays all journal files.
- b <beginTime> Play back journal files which occurred after the specified time (in YYYYMMDD.HH[.MM[.SS] format).
- e <endTime> Play back journal files which occurred before the specified time (in the same format as <begin-time>).
- r <pathPrefix> Restrict recovery to message files, in <messageFilesDir> or <queueDir> containing a pathPrefix.
- v Verbose Mode.
- j <journalDir> specify an alternate journal directory (without this argument, the journal directory is assumed to be `journal`).

### Example

To replay all message file transactions in all journal files, run `imjrnrecover` as in the following example:

```
venus% imjrnrecover -a -v

imjrnplay: processing /voll/imap/journal/jrn.19971020.182443.queue.0

M deferred/MTA/ /voll/imap/journal/jrn.19971020.182443.queue.0 76 0
M deferred /voll/imap/journal/jrn.19971020.182443.queue.0 106 0
C messages/268/19971021014044.AAA14752@venus.software.com-Body
/voll/imap/journal/jrn.19971020.182443.queue.0 131 245
C messages/268/19971021014044.AAA14752@venus.software.com-Header
/voll/imap/journal/jrn.19971020.182443.queue.0 453 493
C control/268/19971021014044.AAA14752@venus.software.com-Control
/voll/imap/journal/jrn.19971020.182443.queue.0 1025 405
D messages/268/19971021014044.AAA14752@venus.software.com-Body
/voll/imap/journal/jrn.19971020.182443.queue.0 1509 0
D messages/268/19971021014044.AAA14752@venus.software.com-Header
/voll/imap/journal/jrn.19971020.182443.queue.0 1586 0
D control/268/19971021014044.AAA14752@venus.software.com-Control
/voll/imap/journal/jrn.19971020.182443.queue.0 1665 0

imjrnplay: processed 8/8 records in /voll/imap/journal/jrn.19971020.182443.queue.0
imjrnplay: processing /voll/imap/journal/jrn.19971020.184104.mss.1

C Messages/aaaa/aaak/aaeg/000002D0.b /voll/imap/journal/jrn.19971020.184104.mss.1 76
1119

imjrnplay: processed 1/1 records in /voll/imap/journal/jrn.19971020.184104.mss.1
```

## 12.1.43 imlogprint

The `imlogprint` command runs as a UNIX filter, reading standard input and writing to standard output. Input is expected to be lines from a log, stat, or trace file. Output is formatted so that it is much more readable than viewing the raw log file and does not require prior knowledge of the error Message IDs.

`imlogprint` is used to present log file (including stat file and trace file) information to the user in a format that is less terse and more readily understandable. It is usually used after the logs have been pre-filtered to removed unwanted entries. Log entry fields, (specified by a single number, series of numbers, or range of numbers indicating the field(s)) can be included or excluded from the output. The date field is by default in American format, e.g., 1/31/1997, but can be printed in European format, e.g., 31.1.1997. The output is by default printed on one line, but can be made multi-line (-m), which makes is easier to read. In addition, the fields can be tagged, to make it clear which field has what meaning.

---

**Note:** When you are finished with `imlogprint`, enter `^D` to kill the process.

---

### Syntax

```
imlogprint [-f <value> [...<value>]][-x <value> [...<value>]][-l][-e][-t][-m][-h][< <logfile>]
```

Where:

- f <value> A number or series of numbers to indicate which fields to include when printing to standard out.
- x <value> A number or series of numbers to indicate which fields to exclude when printing to standard out.
- l Output the local time of the host machine.
- e Convert date to "eurodate."
- t Place descriptive tags in the beginning of each output field.
- m Place output on multiple lines.
- h Print help statement.
- <logFile> A log file to use as input.

### Example

To format log output from standard input with sample arguments, run `imlogprint` as in the following example:

```
venus% imlogprint -m
19980316 142216530-0800 lyons immgrserv 28322 4 6 Note;ConfServerLock(51/59)
28689:lyons:locked

03/16/1998 14:22:16.530-0800 lyons immgrserv 28322 4 6 Notification:[ConfServerLock]
The process 28689 on host "lyons" has locked the configuration server.
^D
```

To format log output from standard input and place entries on multiple lines with tags, run `imlogprint` as in the following example:

```
venus% imlogprint -t -m
19971021 021512922 venus popserv 14812 7 14 Note;PopProtocolErr(66/1) AUTH
twinkie:cmd=AUTH twinkie

date=10/21/1997 time=02:15:12.922 GMT host=venus prog=popserv pid=14812 lwp=7
thread=14 sev=Notification:[errorCode=PopProtocolErr]
 A POP protocol error occurred during session: POP cmd: "AUTH twinkie".
 cmd=AUTH twinkie
```

Finally, to format log output and exclude certain fields from being summarized, run `imlogprint` as in the following example:

```
venus% imlogprint -t -m -x 1-2
19971021 021512922 venus popserv 14812 7 14 Note;PopProtocolErr(66/1) AUTH
twinkie:cmd=AUTH twinkie

host=venus prog=popserv pid=14812 lwp=7 thread=14
sev=Notification:[errorCode=PopProtocolErr]
 A POP protocol error occurred during session: POP cmd: "AUTH twinkie".
 cmd=AUTH twinkie
```

While the default behavior for `imlogprint` is to enter a log entry from standard input, you may use `imlogprint` on an entire log file by directing a named log file into `imlogprint` in the following manner:

```
venus% imlogprint -t -m < mta.log
```

If you choose this option, you will probably want to redirect this output to a second file (i.e., `mta.log.printout`).

## 12.1.44 imlogsum

The `imlogsum` command processes log and stat files to produce a summary of events occurring in the log files. The statistics pertinent to each log file are printed to standard output as soon as the file is processed. At the end of the run `imlogsum` prints the cumulative information for all files processed. The names of the files to process can be supplied either on the command line, or interactively, or both ways simultaneously.

### Syntax

```
imlogsum [-l <severity>] [-h] [-v] [-s | <logFile>] [<logFile> ...]
```

Where:

- l <severity>    Lowest level of severity to process (0: notification, 1: warning, 2: error, 3: urgent, 4: fatal).
- h                Print this usage statement.
- v                Verbose mode.
- s                Sticky mode—after processing all files on the command line (if any), reads the standard input for \*names\* of the files to process.
- <logFile>        Name of the log file to use as input.

**Example**

To produce a summary for a log file, showing all events of at least notification (-l notification) and producing a histogram of all messages that have been handled by the MTA, run `imlogsum` as in the following example:

```

venus% imlogsum -l notification mta.log

File 'mta.log' {
 242: MsgTrace
 121: SmtplibConnectionClosed
 121: SmtplibConnectionReceived
}

***** Totals of messages in '.log' files *****

 242: MsgTrace
 121: SmtplibConnectionClosed
 121: SmtplibConnectionReceived

Message Traffic Histogram

Time delivered-venus.software.com

11/11/97 00:00 15
11/11/97 01:00 6
11/11/97 02:00 9
11/11/97 03:00 11
11/11/97 04:00 8
11/11/97 05:00 3
11/11/97 06:00 3
11/11/97 07:00 1
11/11/97 08:00 1
11/11/97 09:00 2
11/11/97 10:00 6
11/11/97 11:00 1
11/11/97 13:00 3
11/11/97 14:00 12
11/11/97 15:00 10
11/11/97 16:00 13
11/11/97 17:00 8
11/11/97 18:00 9

Total: 121

```

**12.1.45 immsgdelete**

The `immsgdelete` command deletes one or more messages from a mailbox. Printed output includes each message being deleted and one warning message for all of the messages that couldn't be deleted. Since `immsgdelete` interacts with the Message Store Database, you must use the Internal ID and host to identify the mailbox.

In addition to specifying the mailbox you want to act upon, you also must specify the message(s) you want to remove. To determine the Message IDs of some of the messages in the mailbox, you can run the `iminboxlist` command, which will list all of the messages in an INBOX.

**Syntax**

```

immsgdelete <host> {<MessageStoreName> | <e-mailAddress>}
{<msgID>...|-all}

```

Where:

|                    |                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <host>             | The name of the MSS host where the mailbox is located.                                                                                    |
| <MessageStoreName> | Name of a Message Store.                                                                                                                  |
| <e-mailAddress>    | A valid e-mail address.                                                                                                                   |
| <msgID>            | Name(s) of message(s) to delete. This name is derived through <code>iminboxlist</code> and must be specified in the format '<Message-ID>' |
| -all               | All messages in the mailbox.                                                                                                              |

### **Example**

To delete a message from a user's mailbox, run `immsgdelete` as in the following example:

```
venus% immsgdelete venus joe.schmoe@venus.software.com
'<3.0.32.19971112154439.009bc2e0@getmail-earth.software.com>'

Deleting msg 3 -- <3.0.32.19971112154439.009bc2e0@getmail-earth.software.com>
```

---

*Note:* Use `iminboxlist` to determine Message IDs.

---

## **12.1.46 immsgdump**

The `immsgdump` command is used to view the actual messages which are stored in mailboxes. This command will print out the message header and body. The particular message dumped is specified by an index. The index number starts at '0'; therefore, the first message in a user's mailbox will have the 'msgNum' of '0.' This index number can be determined by running `iminboxlist`.

### **Syntax**

```
immsgdump <host> {<MessageStoreName> | <e-mailAddress>} <msgNum>
```

Where:

|                    |                                                                                 |
|--------------------|---------------------------------------------------------------------------------|
| <host>             | The name of the MSS host where the mailbox is located                           |
| <MessageStoreName> | Name of a Message Store.                                                        |
| <e-mailAddress>    | A valid e-mail address.                                                         |
| <msgNum>           | The number of the message to view (as identified by <code>iminboxlist</code> ). |

**Example**

To show an actual message from a mailbox, run `immsgdump` as in the following example:

```
venus% immsgdump venus joe.schmoe@venus.software.com 1

Received: from earth.software.com ([1.2.2] by venus.software.com
 (InterMail v3.1 117) with ESMTMP
 id <19971024031526.ABS19760@venus.software.com>
 for <joe.schmoe@venus.software.com>;
 Thu, 23 Oct 1997 20:15:26 -0700
Date: Thu, 23 Oct 1997 23:16:57 -0400 (EDT)
From: john.doe@venus.Software.com
Message-ID: <971023231330_863569333@emout12.mail.aol.com>
To: joe.schmoe@software.com
Subject: Have you seem Susie?

Have you seen Susie Queue? She was waiting at the printer, but after the job printed,
she went away.
-john
```

## 12.1.47 immsgfind

The `immsgfind` command finds one or more Message Numbers in an InterMail mailbox given their Message IDs. The header line for the `<msgID>` attribute will be printed if the Message ID was found. If a message with a matching Message ID was not found, a warning is printed.

---

*Note:* See `inboxcreate` for information on Internal IDs versus SMTP addresses as stored in the Directory. See `immsgdelete` for more information on Message IDs.

---

**Syntax**

```
immsgfind <host> {<MessageStoreName> | <e-mailAddress>} <msgID>
[...<msgID>]
```

**Where:**

|                                       |                                                                                                                                                                                                                                                                                                              |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>&lt;host&gt;</code>             | The name of the MSS host where the mailbox is located.                                                                                                                                                                                                                                                       |
| <code>&lt;MessageStoreName&gt;</code> | Name of a Message Store.                                                                                                                                                                                                                                                                                     |
| <code>&lt;e-mailAddress&gt;</code>    | A valid e-mail address.                                                                                                                                                                                                                                                                                      |
| <code>&lt;msgID&gt;</code>            | One or more messages to find in the user's mailbox. This name is derived through <code>iminboxlist</code> and must be specified in the format ' <code>&lt;Message-ID&gt;</code> .' Similar to <code>immsgdelete</code> , the Message ID is specified with leading and ending single quotations and brackets. |

**Example**

To find out a message number, run `immsgfind` as in the following example:

```
venus% immsgfind venus joe.schmoe@venus.software.com \
'<3.0.32.19971112160632.009bf240@getmail-earth.software.com>'

3 : Message-ID: <3.0.32.19971112160632.009bf240@getmail-earth.software.com>
```

## 12.1.48 immsgmassmail

The `immsgmassmail` command sends a single message to a group of recipients. The message and the recipients must be stored in files with a standard format. The recipients file must contain a single e-mail address per line. Blank lines, leading and trailing whitespace, and “” comments are ignored.

### Syntax

```
immsgmassmail [-f <e-mailAddress>] <recipientsFile> {<messageFile> |
- }
```

### Where:

|                                       |                              |
|---------------------------------------|------------------------------|
| <code>-f &lt;e-mailAddress&gt;</code> | The sender's e-mail address. |
| <code>&lt;recipientsFile&gt;</code>   | A list of e-mail addresses.  |
| <code>&lt;messageFile&gt;</code>      | An e-mail message to send.   |
| <code>-</code>                        | Invoke standard input mode.  |

### Example

The `immsgmassmail` command can be executed in two ways: either by creating a message file or by entering a message through standard input. The following example shows a properly formatted message file:

```
From: support@yourdomain.net
To: Our Valued Users
Subject: Routine Maintenance

All mail services will be unavailable from 3:00am to 3:30am
tonight while we upgrade our services. We appreciate your
patience while we improve our system to serve you better.

Regards,
Your Systems Administrators
```

The message file must contain at least three headers: “From:,” “To:,” and “Subject.” If any of these headers is missing, or if any of them shows up more than once, the script will exit with an error. The contents of the “From:” header should be a valid e-mail address that the recipients can use when replying to your message. The contents of the “To:” header will not be an e-mail address, since you will specify the recipients-list to contain e-mail addresses comprising your intended audience. `immsgmassmail` will also insert three other headers if they are not already present in the message file: Message-ID, Date, and X-Mailer. After the message headers have been specified, an empty line must be entered. All remaining lines constitute the body of the message.

To send a message (created in a file called `to.list`) using standard input mode, run `immsgmassmail` as in the following example:

```
venus% immsgmassmail to.list -

From: joe.schmoe@venus.software.com
To: john.doe, susie.queue
Subject: Do not interfere...

Are you guys coming to lunch?
^D

immsgmassmail: Notice: saved message in
"/vol1/imap/tmp/immsgmassmail.980519210155.9522"
joe.schmoe@venus.software.com
susie.queue@venus.software.com
```

After typing the message headers, entering a blank space, and typing the message body, you must exit standard input in a specific manner: enter a carriage return and then type `^D`. After exiting standard input mode, `immsgmassmail` will save the message in a date-time stamped file in the `tmp` directory and echo the recipients of the message.

If you have been alerted (via standard error) that some recipients have not received the message, then the command should be rerun in the following manner:

1. Edit the recipients-file to include only the names of recipients who have not received the message.
2. Run `immsgmassmail` again, using the message file saved in the `tmp` directory (as the `messageFile`).

## 12.1.49 immsgprocess

The `immsgprocess` command resubmits control files that have been sidelined or moved to the errors directory. The program works by simply moving the control file into the deferred directory on the Queue Server, which gets scanned periodically by the MTA. The control file is also modified to have the correct "Header-File:" and "Body-File:" lines. The header and body files get moved into the appropriate bucket directories. With `immsgprocess`, the user can use either the Control file name; Control and Header; or Control, Header, and Body file name(s) to reintroduce the messages.

### Syntax

```
immsgprocess <controlFile> [<headerFile> [<bodyFile>]]
```

Where:

|               |                                           |
|---------------|-------------------------------------------|
| <controlFile> | Control file to specify for reprocessing. |
| <headerFile>  | Header file to specify for reprocessing   |
| <bodyFile>    | Body file to specify for reprocessing.    |

## 12.1.50 immsgverify

The `immsgverify` command extracts a list of all message paths from the Message Store Database and the Message File system and compares them for inconsistencies. Extracting the two lists could take quite a while, but comparing them is relatively fast.

If a message file is referenced in the database, but does not exist in the file system, it is referred to as a “widow.” Any message file that is not referenced by the database is referred to as an “orphan.” After the first comparison is done, a second pass is made for orphans that were in the process of being created and are currently linked into the database.

A text listing file is created for orphans, and another for widows. Each listing file holds the paths to the extras or missing message files with problems. If problems are found, the names of the listing files are reported to the console. If no orphans or widows are found, the corresponding (empty) listing file is simply removed.

At this point, orphans can simply be deleted manually from the appropriate Message File System directory by the system administrator. Widows are a more serious problem. If possible, the missing message files should be restored to the Message File System using `imjrnrecover`. If that is not possible, the messages can be deleted from the Message Store Database using `immsgdelete`.

### Syntax

```
immsgverify [-h][-f <altBucketsFile>]
```

Where:

-h                                   Print help statement.  
-f <altBucketsFile>               Path and file name for alternate `buckets.dir` file.

### Example

To check for widows and orphans, run `immsgverify` as in the following example:

```
venus% immmsgverify
find: path-list predicate-list
immsgverify: widows found, see /voll/imap/tmp/immsgverify.22184.widows
```

If widows are found, as in this example, they will be reported to a file under the `tmp` directory. This file will contain a list of body files. These body files are widows in the InterMail system.

## 12.1.51 immsinit

The `immsinit` command is used to create a welcome message to greet new users and to inform them of system policies, quotas, etc.

### Syntax

```
immsinit [-he[lp]][-ho[st] <host>] [-w <welcomeMsgFile>] [-a <adminID>]
```

Where:

|                     |                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------|
| -he[lp]             | Produce a help statement.                                                                                            |
| -ho[st] <host>      | The MSS host.                                                                                                        |
| -w <welcomeMsgFile> | A text file that contains the welcome message, properly formatted with a “From,” “Subject,” and “Message-ID” header. |
| -a <adminID>        | The Message Store ID of the admin user.                                                                              |

### Example

To create an administrative mailbox with a welcome message, run `immsinit` as in the following example:

```
venus% immsinit
immsinit: connecting to MSS on venus
immsinit: Creating mailbox for admin
immsinit: importing a message for admin
immsinit: Finished building message store for admin
```

## 12.1.52 immsscall

The `immsscall` command is used for mailbox creation and deletion and is mentioned here for completeness; however it should be used only in conjunction with Software.com technical support.

## 12.1.53 immssgc

The `immssgc` command is an internal command used for controlling Message Store Database garbage collection and is called by cron.

Messages are stored until they are read and perhaps deleted by the user (for example, via the POP protocol). Although the Message Store Database will immediately remove references to deleted messages, the messages themselves are only “marked” for deletion. When `immssgc` runs, it will do the actual deletion of any message which has been marked for deletion.

---

**Note:** *Without any arguments, immssgc will delete 1000 messages at a time.*

---

### Syntax

```
immssgc [-altrb][[-c <number>]][-h <hours>][[-f]][-p][[-v]
```

Where:

|             |                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -help       | Provides usage statement.                                                                                                                                                                                                        |
| -altrb      | Use alternate rollback segment for garbage collection.                                                                                                                                                                           |
| -c <number> | Run garbage collection in increments of <number>                                                                                                                                                                                 |
| -h <hours>  | Minimum age at which to delete messages.                                                                                                                                                                                         |
| -f          | Known as “full garbage collection,” this mode will check every message in the database to determine if any messages are not referenced in any folders, and only if a message is not referenced in any folder will it be deleted. |
| -p          | Prompt before each batch of messages (implies -v).                                                                                                                                                                               |
| -v          | Verbose execution.                                                                                                                                                                                                               |

---

**Warning!** The `-altrb` argument can be destructive if used improperly. **DO NOT USE this argument except under the direction of Software.Com personnel.**

In addition, note that the `-f` argument is not typically necessary for garbage collection. It is not suggested because `immsssgc -f` it is a very slow process which may inefficiently use system resources.

---

## 12.1.54 immssshare

The `immssshare` command is used for the manipulation of shared memory in the Message Store Database and is mentioned here for completeness; however it should be used only in conjunction with Software.com technical support.

## 12.1.55 immtacheck

The `immtacheck` command examines the state of the InterMail MTA message queue prints a report showing the number of messages in the system and their status.

### Syntax

```
immtacheck [-d][-h][-p][-q][-s]
```

Where:

|    |                                                           |
|----|-----------------------------------------------------------|
| -d | Show how many dead letters are in the system.             |
| -h | Print this help message.                                  |
| -p | Report how many messages are currently being processed.   |
| -q | Show detailed information about queued outbound messages. |
| -s | Print a summary of all messages in the system.            |

---

**Note:** *If invoked with no arguments, immtacheck defaults to -dpqs*

---

To show the state of the message queue and print a report of transactions in the MTA, run `immtacheck` as in the following example:

```

venus% immtacheck

Summary of all messages currently stored in the
InterMail MTA
Number Length of time in the system

0
Messages currently being processed: 0
Dead Letters that are not being processed
Number Length of time in the system

1 19 hours
1 1 day

2

```

The summary goes through the `queue/messages` subdirectories looking for body files and counts the number that are the same age. It groups them by hour if they are less than a day old, otherwise it groups whole days together.

The “currently being processed” messages are those found in the `queue/control` directory.

Dead letters are messages that couldn't be delivered and couldn't be returned to their senders. Their header, body, and control files are stored in `spool/errors`.

## 12.1.56 immtarescan

The `immtarescan` command forces the mta to rescan its control directory.

### Syntax

```
immtarescan
```

## 12.1.57 imoldmsgdel

The `imoldmsgdel` command finds all messages that violate the absolute lifetime policy and deletes them. Intended to be run periodically, perhaps once per month, preferably during a non-peak period. If this command is not run, messages violating the lifetime policy will not be deleted.

`imoldmsgdel` is essentially the “grim reaper” for messages violating the lifetime policy. Only by running the command is the policy actually enforced.

While this command is running, some users might experience delays or “ERR account locked” messages when attempting to POP mail. For this to occur, a user has to attempt to POP mail during the time the command is deleting an old message from that particular user's message store. It should typically take at most a few seconds to delete a message from a particular user's message store.

### Syntax

```
imoldmsgdel [-v] [-threads <number>]
```

Where:

- v Run with verbose execution.
- threads <number> Specify a number of threads the program should use to concurrently delete message copies.

---

**Note:** *To reduce the time the command takes to run, use additional threads (this command uses 2 threads by default). A respectable choice is the number of CPUs. Using too many threads will decrease performance.*

---

## 12.1.58 imoldmsgview

The `imoldmsgview` command runs the `imoldmsgdel` command in such a way that it performs all its normal actions except nothing is actually changed in the database. Instead, a listing of the messages that would have normally been deleted is produced on stdout.

### Syntax

```
imoldmsgview [-v] [-threads <number>]
```

Where:

- v Run with verbose execution.
- threads <number> Specify a number of threads the program should use to concurrently delete message copies.

## 12.1.59 imoldretrmsgdel

The `imoldretrmsgdel` command finds all message copies that violate the lifetime policy on retrieved messages and deletes them. Intended to be run periodically, preferably once a day during a non-peak period.

`imoldretrmsgdel` is essentially the “grim reaper” for retrieved message copies violating the lifetime policy. Only by running the command is the policy actually enforced.

---

**Note:** *The command will refuse to run if the `lifetimeOnRetrievedMsgsOption` configuration key is set to false.*

---

While this command is running, some users might experience delays or “ERR account locked” messages when attempting to POP mail. For this to occur, a user has to attempt to POP mail during the time the command is deleting mail from that particular user’s inbox. It should typically take no more than a few seconds to delete mail from a particular user’s message store.

### Syntax

```
imoldretrmsgdel [-v] [-threads <number>]
```

Where:

- v Run with verbose execution.
- threads <number> Specify a number of threads the program should use to concurrently delete message copies.

---

**Note:** *To reduce the time the command takes to run, use additional threads (this command uses 2 threads by default). A respectable choice is the number of CPUs. Using too many threads will decrease performance.*

---

## 12.1.60 imoldretrmsgview

The `imoldretrmsgview` runs the `imoldretrmsgdel` command in such a way that it performs all its normal actions except nothing is actually changed in the database. Instead, a listing of the message copies that would have normally been deleted is produced on stdout.

### Syntax

```
imoldretrmsgview [-v] [-threads <number>]
```

Where:

- `-v` Run with verbose execution.
- `-threads <number>` Specify a number of threads the program should use to concurrently delete message copies.

## 12.1.61 imoraupgrade4

The `imoraupgrade4` command upgrades an InterMail 3.x Directory Database or Message Store Database to the InterMail 4.0 schema for the Integrated Services Directory or Message Store Database.

Before upgrading an Message Store Database, all mss processes on the host that access the database must be shut down. After a Message Store Database is upgraded, it will be incompatible with older versions of the Message Store Database and the `immssgc` command.

The suggested procedure for upgrading an mss database is to shut down the mss, delete the old binaries, upgrade the database, install the new binaries, and restart the mss process.

---

**Note:** *imoraupgrade must be run local to the host that needs to be upgraded; SQL\*Net will not be employed during the upgrade.*

---

**Warning!** It is imperative to back up the relevant database before attempting to upgrade. The upgrade deletes several tables.

After upgrading all directory binaries to InterMail 4.0, leave the “`imail`” Oracle user alone. “`imail`” owns all the directory tables, and deleting or changing this user would cause a major crisis as all account data would disappear.

---

The `imoraupgrade4` command “remembers” how far it had progressed in the event that unexpected problems cause the upgrade quit while running. If this does occur, just fix the cause the error and then rerun the `imoraupgrade4`.

For example, say rebuilding a table won't work because a tablespace has inadequate free space, and the upgrade quits. Just add more space to the tablespace, and rerun the upgrade. The upgrade automatically restarts at the step of rebuilding the table, rather than from the beginning.

While it is running, the upgrade might note that certain tablespaces should be backed up after the upgrade completes. If recovery is required before these tablespaces are backed up, certain indexes will have to be recreated by hand, a situation to avoid by promptly running backups after the upgrade.

The upgrade obtains the name of the database and the Oracle username and password from the configuration database file.

The upgraded database is backward and forward compatible. After upgrading the Directory database to the Integrated Services Directory, the replacement of InterMail 3.x directory binaries with InterMail 4.0 binaries can proceed in a piecemeal fashion host-by-host. After replacing the binaries on a host, the `primaryDBuserInfo` configuration key must be changed before the binaries are executed. New binaries have to log into the database with a different Oracle user name than old binaries (by default `imail4` instead of `imail`).

**Syntax**

```
imoraupgrade4 [-dir] [-dryrun]
```

Where:

- dir           Upgrades the Integrated Services Directory rather than an Message Store Database.
- dryrun       Show what DDL (data definition language) and DML (data manipulation language) statements would be run against the database during a “real” upgrade, but do not actually run them.

---

**Note:** *The Directory database can be upgraded to the Integrated Services Directory with InterMail “live,” provided you are upgrading from InterMail 3.2. If an attempt is made to upgrade live with an earlier version of InterMail, the imdircacheserv will crash during the upgrade. While the upgrade is running, commands that attempt to access the directory database will fail, but the imdircacheserv processes in 3.2 will continue to run.*

---

## 12.1.62 imoraupgrade4batch

The `imoraupgrade4batch` command upgrades a InterMail 3.x Directory Database or Message Store Database to the InterMail 4.0 schema for the Integrated Services Directory or Message Store Database. `imoraupgrade4batch` is a non-interactive version of the `imoraupgrade4` command. Before running `imoraupgrade4batch`, it is important to edit the script to tailor the upgrade. `imoraupgrade4batch` file mainly contains environment variable assignments.

---

**Note:** *You will need to change the values assigned to these variables to customize the install. Comments in this command describe what each variable does.*

---

Review the `imoraupgrade4` command before using `imoraupgrade4batch`. Except as noted above, the `imoraupgrade4batch` command runs in the same manner as `imoraupgrade4`.

**Syntax**

```
imoraupgrade4batch [-dir] [-dryrun]
```

Where:

- dir Upgrades the Integrated Services Directory rather than an Message Store Database.
- dryrun Show what DDL (data definition language) and DML (data manipulation language) statements would be run against the database during a “real” upgrade, but do not actually run them.

### 12.1.63 impopcheck

The `impopcheck` command reports the state information about the POP port on the machine where the command is run. The `impopcheck` command uses the `netstat` command to determine the current state of the port on which the InterMail POP server is running. `impopcheck` does not assume the typical default, but instead checks the `pop3Port` configuration key. To change this configuration key, use `imconfedit`.

---

*Note:* This command requires that `netstat` be accessible in a directory set in the resource file (`.cshrc` or `.profile`) of the InterMail account (`imail`).

*Typically, `netstat` will exist in either `/usr/bin`, `/usr/sbin` or `/usr/etc`.*

---

#### Syntax

```
impopcheck
```

### 12.1.64 impopuserstats

The `impopuserstats` command reports the number of POP server transactions that occurred between the server and the specified user each hour. `impopuserstats` parses the `popserv.log` files in the `log` directory or specified `popserv.log` files in order to list the number of messages delivered to the specified user within each day and hour.

#### Syntax

```
impopuserstats <LoginName> [<logFile>... [<logFile>]]
```

Where

- <LoginName> The POP login name for a user.
- <logFile> A single or multiple set of `popserv.*.log` files. The <logFile> can be literally expressed or specified with a wildcard (e.g. `popserv.venus.*`)

#### Example

To report POP server transactions, run `impopuserstats` as in the following example:

```
venus% impopuserstats jschmoe
2 970102 13
1 970102 15
1 970102 16
1 970103 14
4 970108 11
```

## 12.1.65 impwdhash

The `impwdhash` command allows the user to store passwords in what is called a “hashed” format. The `impwdhash` command takes clear-text strings as input and “scrambles” them, resulting in an apparently random binary string (called a “hash”) from which the original plain text cannot be recovered. There is no way to “figure out” what this hashed password is by looking at either the cache or the database, because, unlike encryption, hashing is a one-way algorithm. The only way to return the clear-text equivalent value of a hash is to take another clear-text value, run it through the same hashing algorithm, and compare the result to see if you have a match, in which case you know that the new plain text matches the original plain text.

Two forms of hashing are supported: MD5-PO and UNIX [`crypt()` algorithm]. InterMail supports the capability to specify different hash schemes on a per-user basis. User passwords are stored in the Integrated Services Directory stores user passwords. If hashing is desired, the hashed passwords are stored in the Integrated Services Directory.

---

**Note:** Typically, the `impwdhash` command is used in conjunction with `imdbcontrol` to get and set hashed passwords (see the *InterMail Integrated Services Directory Guide* for more information on `imdbcontrol`); however, `impwdhash` is used in earlier versions of InterMail.

---

### Syntax

```
impwdhash -a [md5-po|unix] <Password> [<hashedPassword>]
```

Where:

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| <code>-a</code>                     | Algorithm strategy to use for hashing. |
| <code>md5-po</code>                 | md5-po hashing strategy                |
| <code>Unix</code>                   | UNIX hashing strategy                  |
| <code>&lt;Password&gt;</code>       | POP password for the account.          |
| <code>&lt;hashedPassword&gt;</code> | Hashed password.                       |

### Example

To set a password, run `impwdhash` in conjunction with `imdbcontrol` as in the following example:

---

**Note:** The following example includes the creation of a new user account. Account creation is covered in the *InterMail Integrated Services Directory Guide*.

---

```
venus% impwdhash -a unix $secret
f3HiwyRyBcEX2venus% imdbcontrol createaccount john.doe venus@software.com 25 jdoe
f3HiwyRyBcEX2 unix
```

In this example, we first have hashed the password “\$secret.” Then the hashed password and password algorithm are used as input into `imdbcontrol` as the account was created. Now, although the hashed string “f3HiwyRyBcEX2” is stored in the Integrated Services Directory, you still see the “\$secret” password when identifying yourself to the POP server.

## 12.1.66 imqueuesplit

The `imqueuesplit` command allows the user to split outgoing e-mail queues. During some service periods, when outgoing e-mail cannot be delivered because the remote domain is not available, the mail must be deferred and outgoing mail queues can get very large. Deferred mail messages are placed in outgoing queues—a single queue for each remote domain which cannot be reached.

Periodically, InterMail will scan all out-going queues. For each queue still containing deferred e-mail messages, InterMail will attempt to connect to the corresponding domain. Once InterMail successfully connects to the remote domain, it will attempt to deliver all messages in the queue, one at a time.

In a heavily loaded InterMail system, thousands of messages could accumulate in the deferred queue while the remote domain is rejecting connections. In this case, once since the remote server is again accepting connections, it could take some time before all the messages are delivered—since InterMail is only delivering one message at a time for each deferred queue. In order to get InterMail to deliver several messages to the same remote domain simultaneously, it is necessary to divide the mail in the deferred queue between several different queues. `imqueuesplit` will split these outgoing queues for reprocessing of messages.

### Syntax

```
imqueuesplit <destdomain> <newdest> [<newdest>]
```

Where:

|                                 |                                                     |
|---------------------------------|-----------------------------------------------------|
| <code>&lt;destdomain&gt;</code> | Domain name for outgoing queued mail.               |
| <code>&lt;newdest&gt;</code>    | Additional domain name(s) for outgoing queued mail. |

## 12.1.67 imreplyctrl

The `imreplyctrl` command controls the auto-reply feature of InterMail. This feature automatically sends messages back to anybody who sends a message to an account which has the Auto Reply feature activated.

### Syntax

```
imreplyctrl [vacation|reply|echo] <username> <domain> <messageFile>
imreplyctrl none <username> <domain>
imreplyctrl sethost <username> <domain> <host>
imreplyctrl expire <host>
```

Where:

|                                  |                                                                                                                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>vacation</code>            | Sends a specific message back to the sender ( <code>Message-File</code> ); one message will be sent to each sender for the duration of the vacation period (set by the <code>mss/autoReplyExpireDays</code> configuration key). |
| <code>reply</code>               | Sends a specific message back to the sender ( <code>Message-File</code> ) each time a sender submits a message to the user.                                                                                                     |
| <code>echo</code>                | Sends the user-defined message and the incoming message back to the sender.                                                                                                                                                     |
| <code>none</code>                | Discontinues autoreply mode for a specific user on a given domain.                                                                                                                                                              |
| <code>sethost</code>             | Moves the autoreply information for a specific user from the host where it currently resides ( <code>&lt;domain&gt;</code> ) to a specified MSS host.                                                                           |
| <code>expire</code>              | Removes old auto-reply history maintained for each user on the specified MSS host. If no host is specified, the default host is the one on which <code>imreplyctrl</code> is running.                                           |
| <code>&lt;username&gt;</code>    | The local portion of a user's e-mail address (the part which precedes the '@' symbol in the e-mail address).                                                                                                                    |
| <code>&lt;domain&gt;</code>      | The domain name where the user's mailbox resides.                                                                                                                                                                               |
| <code>&lt;host&gt;</code>        | MSS host which maintains auto-reply information about the user.                                                                                                                                                                 |
| <code>&lt;messageFile&gt;</code> | A plain-text file which contains the auto-reply message to be sent for the vacation and reply modes.                                                                                                                            |

## 12.1.68 `imservctrl`

The `imservctrl` command starts and stops servers on the local machine. Based on the parameters used to call it, `imservctrl` will either start, restart, or stop a single server, a list of servers, or all servers.

### Syntax

```
imservctrl {start|stop|restart|drain|kill|exit|drainStart|killStart}
[<server>... [<server>]]
```

Where:

|                         |                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------|
| <code>start</code>      | Start a server that is configured but not currently running.                           |
| <code>stop</code>       | Stop a server that is configured and currently running.                                |
| <code>restart</code>    | Stops and starts a server that is configured and running.                              |
| <code>drain</code>      | Shuts down the servers without interrupting any current client connections             |
| <code>kill</code>       | Shuts down the servers by issuing a UNIX <code>kill -9</code> on the relevant process. |
| <code>exit</code>       | Same as <code>stop</code> .                                                            |
| <code>drainStart</code> | Performs a <code>drain</code> and then starts the servers.                             |

|                             |                                                                                                                                                                                                                                                                                |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>killStart</code>      | Performs a <code>kill</code> and then starts the servers.                                                                                                                                                                                                                      |
| <code>&lt;server&gt;</code> | any one (or a list) of the following server processes: <code>httpd</code> , <code>mta</code> , <code>mss</code> , <code>popserv</code> , <code>imapserv</code> , <code>imqueueserv</code> , <code>immgrserv</code> , <code>imconfserv</code> , or <code>imdircaheserv</code> . |

**Note:** The `imservctrl` command will have no effect on a server that is not currently configured to run. A server is considered “configured to run” if the configuration key `server_run` has a value of “on”. Otherwise the server is not considered configured to run. The `<serv>_run` configuration key is in the `sysadmin` configuration module and can be read either by running `imconfedit` and searching for this variable using your editor, or else by running `imconfget -h <hostname> -m sysadmin <serv>_run`.

### Example

To stop all servers on the local InterMail host, run `imservctrl` as in the following example:

**Note:** When running `imservctrl`, the full path (`/lib/imservctrl`) is required.

```
venus% imservctrl stop
imservctrl: stopping imapserv (25421)
imservctrl: stopping popserv (25584)
imservctrl: stopping mta (25481)
imservctrl: stopping imqueueserv (21381)
imservctrl: stopping mss.1 (25267)
imservctrl: stopping imdircaheserv (21295)
imservctrl: stopping immgrserv (21282)
imservctrl: stopping snmpdm (21265)
imservctrl: stopping imconfserv (25351)
imservctrl: cleaning /voll/imap/tmp ...
imservctrl: done
venus%
```

**Note:** Notice that in both stopping and starting the servers that there can be several Message Store processes running at the same time on the same machine. These processes are called `mss.1`, `mss.2`, etc.

The server list is optional and when no list is specified, `imservctrl` will act upon all of the servers that are configured to run on the current machine. To start a particular server and no others, you need to specify this particular server as the third parameter to `imservctrl`. For example, to start the POP server only, run `imservctrl` in the following manner:

```
venus% imservctrl start popserv
```

Using `imservctrl` with `mss` processes is a special case. To use `imservctrl` to act on all of the `mss` processes, just specify `mss` as the name of the server (`imservctrl start mss`). To get `imservctrl` to act on a single `mss` process, in this case `mss.2`, just use that `mss` process name as the third parameter to `imservctrl`:

```
venus% imservctrl restart mss.2
```

## 12.1.69 imservdisplay

The `imservdisplay` command displays information about InterMail servers.

### Syntax

```
imservdisplay
```

### Example

To view a report on server activity, run `imservdisplay` as in the following example:

```
venus% imservdisplay
Monitoring InterMail modules: httpd imconfserv imdir cacheserv immgrserv mss
.....
imconfserv Report:

Note: ProcFound: imconfserv process Found as PID: 9136.
Note: ServerPing: imconfserv responded to version query ...
/voll/imap/log/imconfserv.log, Severity: Note {
 6: ConfChangeAssessment
 66: ConfClientConnect
 3: ConfEndUpdate
 6: ConfInstallSucceeded
 21: ConfParmsPush
 34: ConfPortConflict
 15: ConfServerLock
 3: ConfStartUpdate
 4: ProcConfigChange
.....
```

The output from `imservdisplay` tells the user which servers are in operation and reports summarized information from log files.

## 12.1.70 imservping

The `imservping` command probes InterMail servers for a heartbeat, checking to see if they are accessible through the network.

---

**Note:** *The server configuration files are created by the installation script and can be found in the `config` directory.*

---

### Syntax

```
imservping [-f <logFile>] [-v] [-h <host>] [<warnTimeout>]
[<maxTimeout>] [<server>... [<server>]]
```

Where:

|               |                                                                                                                                      |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------|
| -f <logfile>  | The name of the file to which <code>imservping</code> messages will be written (if no file name, output will go to standard output). |
| -v            | Verbose output.                                                                                                                      |
| -h <host>     | Specify a host to check for all servers or <server>                                                                                  |
| <warnTimeout> | A timeout period signal for the first probe (in seconds).                                                                            |
| <maxTimeout>  | A timeout period signal for the second probe (in seconds).                                                                           |
| <server>      | Name of server(s) to ping.                                                                                                           |

---

**Note:** *If the name of the file is a full path name (i.e. begins with a slash '/') that name will be used to create the file; otherwise, a log will be created under the subdirectory "spool/logs" of the installation directory.*

*If a server is down, `imservping` will return immediately; timeouts only apply when `imservping` is waiting for a response once a connection is ESTABLISHED.*

---

### Example

To check the status of all InterMail processes, run `imservping` as in the following example:

```
venus% imservping 1 5
Tue May 19 16:08:54 1998. imservping: (Info) mss/mss.1 responded
Tue May 19 16:08:54 1998. imservping: (Info) imconfserv responded
Tue May 19 16:08:54 1998. imservping: (Info) immgrserv responded
Tue May 19 16:08:54 1998. imservping: (Info) imdircaheserv responded
.....
```

If the server does not respond during the <maxTimeout> time an alarm message is displayed to the console. If all probed servers respond, `imservping` exits with a status of 0 (zero); otherwise, `imservping` will exit with a status equal to the number of unanswered probes (i.e., non-responding servers).

It should be noted that the server argument is optional and if it is absent all configured servers will be probed (see `imservctrl` for information on servers and on how to check if a server is configured as "on").

---

**Note:** *The `imservping` command can be run without timeout values (<warnTimeout> and <maxTimeout>). If run this way `imservping` will report server status with a <warnTimeout> of 3 and a <maxTimeout> of 6 seconds or report the server(s) as unreachable.*

---

## 12.1.71 `imservshutdown`

The `imservshutdown` command is called by `imservctrl` when servers are shut down and is mentioned here for completeness; however it is reserved for specific maintenance conditions and should be used only in conjunction with Software.com technical support.

## 12.1.72 imsmtpcheck

The `imsmtpcheck` command reports the state information about the SMTP port on the machine where the command is run. The output of this command goes to the `imsmtpcheck.log` file. This command runs in a similar fashion to `impopcheck`.

### Syntax

```
imsmtpcheck
```

## 12.1.73 imspoolistoldfiles

The `imspoolistoldfiles` command lists all spooled mail messages which are more than four days old. When mail is received by the InterMail MTA, it may be temporarily spooled in files beneath the `queue` directory. Files should not be left in the `queue` directory for more than a few seconds in a typical situation. It is possible that some files are not properly handled by the MTA. These errors typically result in a piece of mail being bounced back to the originator. In some situations it is possible for the MTA to never dispose of a message properly. The `imspoolistoldfiles` command identifies these files.

---

**Note:** *if you want to change the “trigger age” from 4 days to some other number, you need to modify the `imspoolistoldfiles` script. Also, this command cannot be used before the 4<sup>th</sup> of a given month.*

---

### Syntax

```
imspoolistoldfiles
```

## 12.1.74 imsysmon

The `imsysmon` utility performs a wide variety of checks in order to determine the operational state of InterMail. It identifies not only existing performance “warning” conditions in InterMail but also detects potential disturbances in the InterMail system as a whole.

### Syntax

```
imsysmon [-c <cfgFilePath>][--h][--l <logFile>][--O][--v][--version]
```

Where:

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| <code>-c &lt;cfgFilePath&gt;</code> | The path to the configuration file. |
| <code>--h</code>                    | Print usage statement.              |
| <code>--l &lt;logFile&gt;</code>    | Print output to specified log file. |
| <code>--O</code>                    | Monitor local Oracle components.    |
| <code>--v</code>                    | Verbose mode.                       |
| <code>--version</code>              | Show version information.           |

---

**Note:** *For an example of how to configure and run `imsysmon`, please refer to Chapter 9 in the InterMail Operations Guide.*

---

# 13

## Event Logging

---

This chapter describes the log events that occur in InterMail. These descriptions will help you understand why these events occur and what you can do (if anything) to control/stop errors.

The log events are presented in logical groups (according to server/process/functionality) and arranged alphabetically. For each log event, the following information is provided:

- **Event Name:** The actual log event name that is reported in the log file.
- **Description:** A short synopsis of the message.
- **Parameters:** The parameters, arguments, or variable names that are provided in the description of the event.
- **Cause:** The specific reason(s) why an event occurred.
- **Effect:** The effect that an event will have on the operation of InterMail, including the severity level.
- **Actions:** The suggested course of action to correct the problem, or an action to minimize the effect of the problem.

---

*Note:* When you see “Contact Software.com” as an action, send e-mail to [Support@Software.com](mailto:Support@Software.com).

---

For information about how logging occurs in InterMail, types of log files, and how to view log files, see Chapter 8 of the *InterMail Operations Guide*.

---

### 13.1 Account Log Events

#### AcctBadPswd

- Description:** A bad password was given for the user.
- Parameters:** None.
- Cause:** This can happen because the user has forgotten his or her password, or may have entered a wrong password, or the password may have been changed. The user name can be found in the log entry as an additional tagged argument, e.g. “user=Joe.Bloe@domain.com”. Passwords (even bad ones) are, for security reasons, not entered in the log. The program `imcacheread` can be used to verify returns from the directory cache server.
- Effect:** This message is of informational severity.
- Action(s):** Generally, no action is required. Users eventually remember the correct password.

## **AcctBadPswdMax**

- Description:** Maximum invalid password attempts from user.
- Parameters:** None.
- Cause:** None.
- Effect:** This error is of informational severity.
- Action(s):** This message was added to curtail people trying to crack pop passwords by repeated authentication attempts. When you see this notification message, first determine if this is a malicious attempt to crack a pop password or a problem with a user's email configuration. If it is the latter, contact the user and assist as needed. Otherwise, report this to a person in charge of network security.

## **AcctBadPswdMaxAddrs**

- Description:** Reached maximum number of IP addresses making invalid password attempts.
- Parameters:** None.
- Cause:** None.
- Effect:** This error is of informational severity.
- Action(s):** This message was added to curtail people trying to crack pop passwords by repeated authentication attempts. When you see this notification message, first determine if this is a malicious attempt to crack a pop password or a problem with a user's email configuration. If it is the latter, contact the user and assist as needed. Otherwise, report this to a person in charge of network security.

## **AcctBadPswdMaxDelay**

- Description:** User reached maximum delay.
- Parameters:** None.
- Cause:** This message was added to curtail people trying to crack pop passwords by repeated authentication attempts. The Popserver will put timed delays before the standard "-Err" reply to repeated bad password attempts. Each unsuccessful authentication attempt causes this delay to increase until a maximum delay, defined in the configuration database, is reached.
- Effect:** This error is of informational severity.
- Action(s):** When you see this message, first determine if this is a malicious attempt to crack a pop password or a problem with a user's email configuration. If it is the latter, contact the user and assist as needed. Otherwise, report this to a person in charge of network security.

## **AcctBadPswdMaxFailures**

- Description:** User has failed to log on more than the maximum number of times in the defined time span.
- Parameters:** None.
- Cause:** This message was added to curtail people trying to crack pop passwords by repeated authentication attempts.
- Effect:** This error is of informational severity.
- Action(s):** When you see this message, first determine if this is a malicious attempt to crack a pop password or a problem with a user's email configuration. If it is the latter, contact the user and assist as needed. Otherwise, report this to a person in charge of network security.

## **AcctBadPswdMaxUsers**

- Description:** Reached maximum number of users making invalid password attempts.
- Parameters:** None.
- Cause:** This message was added to curtail people trying to crack pop passwords by repeated authentication attempts.
- Effect:** This error is of informational severity.
- Action(s):** When you see this message, first determine if this is a malicious attempt to crack a pop password or a problem with a user's email configuration. If it is the latter, contact the user and assist as needed. Otherwise, report this to a person in charge of network security.

## **AcctDirCacheDown**

- Description:** The directory cache server has gone down.
- Parameters:** None.
- Cause:** The directory cache server has gone down and cannot be contacted by this client. This message never appears in a log file, but is used instead only to defer messages internally.
- Effect:** This event is of major severity.
- Action(s):** Look into the log for related messages about failure to contact the directory cache server.

## **AcctDirCacheError**

- Description:** In the program `imboxcopy`, a request was made to the directory cache server to get the status, host, and mailbox name for the user *userName*, but a status other than `NULL_PASSWORD` or `MAINTENANCE` was received. Because of this, the mailbox was not moved.
- Parameters:** *userName*: the name of the user.  
*reason*: the reason the request was denied.
- Cause:** The status returned was one of:  
`UNKNOWNUSER`: the user name given has no directory entry.  
`BADPASSWORD`: since `imboxcopy` does not submit password, this should never happen, and could only indicate a problem with the communication channel or the directory cache server.  
`FORWARDTO`: the user is forwarding mail. Though this feature is currently not supported, it may be in the future.  
`FAILED`: the call to the directory cache server failed.  
`INACTIVE`: the account for the user is inactive
- Effect:** None.
- Action(s):** You may want to access the directory cache server directly using the program `imcacheread` to verify the results reported in the log.

## **AcctDirCacheUnknownError**

- Description:** The information received from the directory cache server had either the *hostname* or the message store name null.
- Parameters:** *hostname*: name of the MSS host returned by the directory cache server.  
*mailboxName*: name of the message store returned by the directory cache server.  
*status*: status from directory cache server.
- Cause:** There are no known causes for this. It should never happen.  
Check the `imcachedirserv` log for anomalies.
- Effect:** This error is of warning severity.
- Action(s):** The program `imcacheread` can be used to verify returns from the directory cache server.

## AcctForwardTo

- Description:** The `imcachedirserv` has returned information indicating that the mail for this user should be forwarded to another address, but it did so using an old protocol which is no longer supported.
- Parameters:** None.
- Cause:** This indicates mismatched executables, and is a configuration problem.
- Effect:** This error is of warning severity.
- Action(s):** Check to make sure all executables are the original versions as installed.

## AcctImapNotAllowed

- Description:** A user attempted to retrieve mail through the IMAP server, but the user's account is not authorized for IMAP use.
- Parameters:** None.
- Cause:** The user is not allowed to use the IMAP server.
- Effect:** This error is of informational severity.
- Action(s):** Verify that the user is authorized to use IMAP.

## AcctInactive

- Description:** Mailbox is currently inactive.
- Parameters:** None.
- Cause:** The `imdircacheserv` returned a status for this user indicating that this mailbox is currently inactive. Mail is not delivered to and cannot be read from inactive mailboxes.
- Effect:** This error is of warning severity.
- Action(s):** Contact the mail system administrator to find out why the mailbox is inactive.

## AcctInvalidUser

- Description:** *Username* does not exist in the directory service.
- Parameters:** *recipient*: the address of the invalid recipient.
- Cause:** The *username* was not found in the directory service, and thus is not valid at this site.
- Effect:** This message is of informational severity.
- Action(s):** None.

## AcctLookupFail

- Description:** Directory cache lookup failed.
- Parameters:** None.
- Cause:** The `imdircachesserv` was not able to obtain information from the authoritative directory service, because of a cache lookup error.
- Effect:** This message is of major severity.
- Action(s):** Rebuild the directory cache using `imdirsync`.

## AcctMaintenance

- Description:** Mailbox cannot be accessed because it is in a maintenance mode.
- Parameters:** None.
- Cause:** The mailbox is being exclusively accessed by a maintenance program (such as `imboxmove`) and cannot be accessed until that program finishes with it.
- Effect:** This message is of informational severity.
- Action(s):** Wait a while and try again. If the status does not change within a reasonable period of time, check to see if someone has forgotten to take the account out of maintenance status.

## AcctNotUser

- Description:** *Username* does not exist in the directory service.
- Parameters:** None.
- Cause:** The *username* was not found in the directory service, and thus is not valid at this site.
- Effect:** This message is of informational severity.
- Action(s):** None.

## AcctOtherFailure

- Description:** A user entry from the directory cache indicated forwarding, an inactive account, or an account undergoing maintenance.
- Parameters:** None.
- Cause:** This should never appear in a log file.
- Effect:** This error is of warning severity.
- Action(s):** None.

## AcctPopFilterSyntaxInvalidRegex

- Description:** While reading the popFilter configuration during application initialization, a substitution rule with an empty or invalid regular expression was found.
- Parameters:** *substitution rule*: the rule, in the form “s/pat/rep/opts”
- Cause:** The popFilter configuration must contain one or more rules of the form “sXpatXrepXopts”, where X can be any character not used in “pat” or “rep”. The “pat” component is a POSIX regular expression, which cannot be non-empty, and must conform to the syntax for regular expressions.
- Effect:** This error is of minor severity. The popFilter substitution rule containing the invalid regular expression will be ignored. This may cause some POP and/or IMAP users to have difficulty connecting to their mailbox.
- Action(s):** Edit the configuration value to correct the syntax or remove the rule.

## AcctPopFilterSyntaxMissingSeparator

- Description:** While reading the popFilter configuration during application initialization, a substitution rule was found at the specified character position that does not contain three separators.
- Parameters:** *separator count*: the number of separators that were actually found after the specified character offset.  
*character position*: the offset from the start of the configuration value where the error was detected.
- Cause:** The popFilter configuration must contain one or more rules of the form “sXpatXrepXopts”, where X can be any character not used in “pat” or “rep”. The character following the initial “s” is interpreted as a separator between the “pat”, “rep”, and “opts” components, and all three separators are required to form a valid substitution rule.
- Effect:** This error is of minor severity. All popFilter substitution rules after the specified position in the configuration value will be ignored. This may cause some POP and/or IMAP users to have difficulty connecting to their mailbox.
- Action(s):** Edit the configuration value to correct the syntax

## **AcctPopFilterSyntaxMissingStart**

- Description:** While reading the `popFilter` configuration during application initialization, a substitution rule was found at the specified character position that does not begin with “s”.
- Parameters:** *character position*: the offset from the start of the configuration value where the error was detected.
- Cause:** The `popFilter` configuration must contain one or more rules of the form “sXpatXrepXopts”, where X can be any character not used in “pat” or “rep”. The initial “s” is required to form a valid substitution rule.
- Effect:** This error is of minor severity. All `popFilter` substitution rules after the specified position in the configuration value will be ignored. This may cause some POP and/or IMAP users to have difficulty connecting to their mailbox.
- Action(s):** Edit the configuration value to correct the syntax.

## **AcctPopNotAllowed**

- Description:** A user attempted to retrieve mail through the POP Server, but the user is not authorized for POP use.
- Parameters:** None.
- Cause:** The user is not allowed to use the POP Server.
- Effect:** This error is of informational severity.
- Action(s):** Verify that the user is authorized to use the POP Server.

## **AcctPswdBad**

- Description:** An invalid password was given for the user.
- Parameters:** None.
- Cause:** A user gave a bad password for his or her mail account.
- Effect:** This error is of warning severity.
- Action(s):** Usually nothing needs to be done. The user will eventually remember his or her password or will have to be issued a new one.

## **AcctSSIPopNotAllowed**

- Description:** A user attempted to retrieve mail through the POP server using SSL, but the user's account is not authorized for POP use with SSL.
- Parameters:** None.
- Cause:** The user is not allowed to use SSL with the POP server.
- Effect:** This message is of informational severity.
- Action(s):** Verify that the user is authorized to use SSL with the POP server.

## **AcctUnknownUser**

- Description:** *Username* does not exist in the directory service.
- Parameters:** None.
- Cause:** The *username* was not found in the directory service, and thus is not valid at this site.
- Effect:** This message is of informational severity.
- Action(s):** None.

## 13.2 Configuration Log Events

### ConfBadChecksum

- Description:** A bad checksum was found in the config file.
- Parameters:** *badChecksum*: the bad MD5 checksum found in the config file.  
*filename*: the path to the config file.
- Cause:** This indicates that changes were made by a means other than the `imconfedit` utility. The message is merely informational, but if syntax errors were introduced by the user, the file may fail to be read in.
- Effect:** This error is of critical severity.  
If the host's config file (`$INTERMAIL/config/config.db`) has been modified in a way that introduced syntax errors, all InterMail applications will fail to initialize and will not execute.
- Action(s):** If the config file was successfully read in spite of the bad checksum, then no action needs to be taken. In this case, to stop the continual complaining log entries, copy the `config.db` to another file (for instance, `config.bad`). Then use `imconfcontrol` to install the new `config.bad` file and in the process calculated and write a new checksum.  
If syntax errors were introduced, log entries will indicate the nature of the error as well as the line number in the file.  
In any case, the system administrator may want to investigate to determine who caused the problem.

### ConfBadKey

- Description:** A bad key was found in the config file.
- Parameters:** *badKey*: the bad key found in the config file.  
*filename*: the path to the config file.  
*errorLine*: the line number at in the config file.
- Cause:** This indicates that a bad key was found in the config file. Keys are of the form `“///”`. One of the first three slashes was missing.
- Effect:** This error is of critical severity.  
The named config file has been modified in a way that introduced syntax errors. If this is the host's main config file (`$INTERMAIL/config/config.db`), all InterMail applications will fail to initialize and will not execute.
- Action(s):** Fix the config file manually using a text editor.

## ConfChangeAssessment

- Description:** The configuration server `imconfserv` has been asked to read and assess the impact of a configuration database file.
- Parameters:** *extension*: the extension of the `config.db` file
- Cause:** This is caused by an invocation of `imconfcontrol`.
- Effect:** None.
- Action(s):** None.

## ConfChangeInstall

- Description:** The configuration server `imconfserv` has been asked to read and install a new configuration database file.
- Parameters:** None.
- Cause:** This is caused by an invocation of `imconfcontrol`.
- Effect:** None.
- Action(s):** None.

## ConfClientConnect

- Description:** A client program has connected to the configuration server.
- Parameters:** *clientProgram*: the client program connecting to `imconfserv`.  
*clientHost*: the host the client program is running on.  
*timeStamp*: the *timestamp* of the client's configuration parameters.
- Cause:** A client program has connected to the configuration server.
- Effect:** None.
- Action(s):** None.

## **ConfCommonPort**

- Description:** The value of a port number configuration variable has been specified in a way that would allow it to be used by various servers and/or various hosts. This is not allowed.
- Parameters:** *portNumber*: the port number value of the configuration parameter.  
*parmKey*: the full key of the parameter.
- Cause:** A configuration parameter whose name ends in “port” (and which is presumed to specify a listening port) was found with a host name of “\*” or a program name of “common” or both. The parameter should have been host- and server-specific, e.g. “/hostA/popserv/pop3Port”.
- Effect:** The attempt to change the config data will be rejected, and no changes will be made to any parameters.
- Action(s):** None.

## **ConfCommonPortRange**

- Description:** The value of a port number configuration variable has been specified in a way that would allow it to be used by various servers and/or various hosts. This is not allowed.
- Parameters:** *firstPortNumber*: the first port number of the range of the configuration parameter.  
*lastPortNumber*: the last port number of the range of the configuration parameter.  
*parmKey*: the full key of the parameter.
- Cause:** A configuration parameter whose name ends in “port” (and which is presumed to specify a listening port) was found with a host name of “\*” or a program name of “common” or both. The parameter should have been host- and server-specific, e.g. “/hostA/popserv/pop3Port”.
- Effect:** The attempt to change the config data will be rejected, and no changes will be made to any parameters.
- Action(s):** None.

## ConfDuplicateKey

- Description:** A bad key was found in the config file.
- Parameters:** *badKey*: the bad key found in the config file.  
*filename*: the path to the config file.  
*errorLine*: the line number at in the config file.
- Cause:** This indicates that a bad key was found in the config file.  
 Keys are of the form *///*. Key components ( , , and ) should be composed only of letters, numbers, and the characters “/”, “.”, and “\_”. The component can also be “\*” (meaning all hosts). The component violated this rule.
- Effect:** This error is of critical severity. The named config file has been modified in a way that introduced syntax errors, and if this is the host's main config file (\$INTERMAIL/config/config.db), all InterMail applications will fail to initialize and will not execute.
- Action(s):** Fix the configuration file manually using a text editor.

## ConfEndUpdate

- Description:** The operation of assessing the impact of a new set of configuration parameters has ended.
- Parameters:** *oldTimeStamp*: the timestamp of the previous dictionary.  
*newTimeStamp*: the timestamp of the new dictionary.  
*numImpacts*: the number of parameter changes that had a significant impact.
- Cause:** This is caused by an invocation of `imconfcontrol`. If the number of impacts (changes that cannot be handled by the program while continuing to run) is non-zero, then the servers internal state regarding parameters will not change. In this case `imconfcontrol` will indicate the extent of the problem to the user of `imconfcontrol` or `imconfedit`.
- Effect:** None.
- Action(s):** None.

## ConfFixerFuncFailed

- Description:** An attempt to accommodate a change in a configuration parameter has failed.
- Parameters:** *paramName*: the name of the configuration parameter.  
*hostName*: the host name for which the parameter value was sought.  
*programName*: the program name for which the parameter value was sought.
- Cause:** A function was called to accommodate a change in the configuration parameter, but the function failed or raised an exception.
- Effect:** The program's behavior will not change with respect to the parameter that changed.
- Action(s):** Restart the program to accommodate the change.

## ConfFoundOtherDirCache

- Description:** A directory cache server was found already listening on port. Since only one process can be listening on any port, the second directory cache server will refuse to come up until the first directory cache server relinquishes the port.
- Parameters:** *port*: the port number this process was to listen on.
- Cause:** Ordinarily, the .pid files indicate which port the directory cache server is using and `imctrl` will not attempt to launch a new directory cache server process whose port conflicts with the running directory cache server. If the .pid file is deleted, or a directory cache server process fails to stop when requested, then `imctrl` may be unable to detect the problem and launch a conflicting directory cache server.
- Effect:** This error is of critical severity. Assuming that the directory cache server that currently owns the port should have been killed previously, the directory cache server may no longer be functioning properly. At a minimum, the process will not be aware of any recent changes to the system configuration. This could result in degraded system performance or failure to communicate with other parts of the system.
- Action(s):** Check the directory cache server process on this machine. If the directory cache server is already running correctly, do nothing. If there is a problem, use `imctrl` to stop and restart the directory cache server. If this is not successful, you may have to use the `ps` command to find out which servers are running, then use `kill -9` to stop them manually.

## ConfFoundOtherMSS

- Description:** An MSS was found already listening on this port. Since only one process can be listening on any port, the second MSS will refuse to come up until the first MSS relinquishes the port.
- Parameters:** *port*: the port number that this process was to listen on.
- Cause:** Ordinarily, the *.pid* files indicate which MSS ports are in use, and *imctr1* will not attempt to launch a new MSS process whose port conflicts with a running MSS process. If the *.pid* files are deleted, or an MSS process fails to stop when requested, then *imctr1* may be unable to detect the problem and launch a conflicting MSS.
- Effect:** This error is of critical severity. Assuming that the MSS that currently owns the port should have been killed previously, the MSS may no longer be functioning properly. At a minimum, the process will not be aware of any recent changes to the system configuration. This could result in degraded system performance or failure to communicate with other parts of the system.
- Action(s):** Check the MSS processes on this machine. If the MSS processes are already running correctly, do nothing. If there is a problem, use *imctr1* to stop and restart the MSS processes. If this is not successful, you may have to use the *ps* command to find out which servers are running, then use *kill -9* to stop them manually.

## ConfInstallFailed

- Description:** The new configuration information was not successfully installed by the Configuration Server.
- Parameters:** None.
- Cause:** The program *imconfcontrol* was used to attempt to install a new set of configuration parameters.
- Effect:** This error is of critical severity.
- Action(s):** Read the *imconfserv* log to find out what problems were encountered.

## ConfInstallSucceeded

- Description:** The new configuration information was successfully installed by the Configuration Server.
- Parameters:** None.
- Cause:** The program *imconfcontrol* was used to install a new set of configuration parameters.
- Effect:** The effect depends upon which parameters were changed.
- Action(s):** None.

## ConfInvalidHostName

- Description:** A bad key was found in the configuration file.
- Parameters:** *badKey*: the bad key found in the configuration file.  
*filename*: the path to the configuration file.  
*errorLine*: the line number at in the configuration file.
- Cause:** This indicates that a bad key was found in the configuration file.  
Keys are of the form *///*. Key components ( , , and ) should be composed only of letters, numbers, and the characters “/”, “.”, and “\_”. The component can also be “\*” (meaning all hosts). The component violated this rule.
- Effect:** This error is of critical severity.  
The named config file has been modified in a way that introduced syntax errors. If this is the host's main config file (\$INTERMAIL/config/config.db), all InterMail applications will fail to initialize and will not execute.
- Action(s):** Fix the config file manually using a text editor.

## ConfInvalidParmName

- Description:** A bad key was found in the configuration file.
- Parameters:** *badKey*: the bad key found in the configuration file.  
*filename*: the path to the configuration file.  
*errorLine*: the line number at in the configuration file.
- Cause:** This indicates that a bad key was found in the configuration file.  
Keys are of the form *///*. Key components ( , , and ) should be composed only of letter, numbers, and the characters “/”, “.”, and “\_”. The component can also be “\*” (meaning all hosts). The violated this rule.
- Effect:** This error is of critical severity. The named configuration file has been modified in a way that introduced syntax errors, and if this is the host's main config file (\$INTERMAIL/config/config.db), all InterMail applications will fail to initialize and will not execute.
- Action(s):** Fix the configuration file manually using a text editor.

## ConfInvalidProgName

- Description:** A bad key was found in the configuration file.
- Parameters:** *badKey*: the bad key found in the configuration file.  
*filename*: the path to the configuration file.  
*errorLine*: the line number at in the configuration file.
- Cause:** This indicates that a bad key was found in the configuration file.  
 Keys are of the form *///*. Key components ( , , and ) should be composed only of letter, numbers, and the characters “/”, “.”, and “\_”. The component can also be “\*” (meaning all hosts). The violated this rule.
- Effect:** This error is of critical severity. The named configuration file has been modified in a way that introduced syntax errors, and if this is the host's main config file (\$INTERMAIL/config/config.db), all InterMail applications will fail to initialize and will not execute.
- Action(s):** Fix the configuration file manually using a text editor.

## ConfKeyAdded

- Description:** A key/value pair has been added to the Configuration Server's copy of the config.db.
- Parameters:** *parmKey*: the name of the configuration parameter added.  
*parmValue*: the value of the configuration parameter added.
- Cause:** The program `imconfcontrol` was used by someone to add this key.
- Effect:** Varies widely depending on the particular parameter.
- Action(s):** None.

## ConfKeyDeleted

- Description:** A key/value pair has been deleted from the Configuration Server's copy of the config.db.
- Parameters:** *parmKey*: the name of the configuration parameter deleted.
- Cause:** The program `imconfcontrol` was used by someone to delete this key.
- Effect:** Varies widely depending on the particular parameter.
- Action(s):** None.

## ConfLockFail

- Description:** The application was unable to obtain a lock on the configuration file.
- Parameters:** None.
- Cause:** Another application has the configuration file locked for its use, or an application may have exited or been killed before it had a chance to delete the lock file.
- Effect:** No configuration changes can be made while the file is locked.
- Action(s):** Examine the contents of the file `$INTERMAIL/config/config.db.lk.pid`. It contains the process id of the process that created the lock file. Using `ps(1)` (on UNIX) or other appropriate tools, determine if that process is still running. If not, the `config.db.lk` and `config.db.lk.pid` files can be safely deleted and the original application run again, if necessary.
- If the process is still running, however, it may in fact be in a comatose state. Explore other means to ascertain the health of the running program. If appropriate, kill the process and remove the lock files to get around the impasse.

## ConfMiscError

- Description:** An error occurred while reading the configuration.
- Parameters:** None.
- Cause:** Corrupt configuration file.
- Effect:** This error is of critical severity. No InterMail application that uses the configuration database will run.
- Action(s):** Replace the configuration file with a copy known to be good.

## ConfMissingBracket1

- Description:** The left bracket which indicates the beginning of the parameter value was not found.
- Parameters:** *key*: the key found in the config file.  
*filename*: the path to the config file.  
*errorLine*: the line number at in the config file.
- Cause:** Someone has incorrectly edited the file.
- Effect:** This error is of critical severity. The named config file has been modified in a way that introduced syntax errors, and if this is the host's main config file (`$INTERMAIL/config/config.db`), all InterMail applications will fail to initialize and will not execute.
- Action(s):** Fix the config file manually using a text editor.

## ConfMissingBracket2

- Description:** The same key (parameter name) was found twice in the config file.
- Parameters:** *key*: the key found in the config file.  
*filename*: the path to the config file.  
*errorLine*: the line number at in the config file.
- Cause:** Someone has incorrectly edited the file.
- Effect:** None. The last value found in the file for a key will override all preceding values.
- Action(s):** Fix the config file manually using a text editor.

## ConfMissingColon

- Description:** The colon which terminates a parameter name was not found.
- Parameters:** *key*: the key found in the config file.  
*filename*: the path to the config file.  
*errorLine*: the line number at in the config file.
- Cause:** Someone has incorrectly edited the file.
- Effect:** This error is of critical severity. The named config file has been modified in a way that introduced syntax errors, and if this is the host's main config file (\$INTERMAIL/config/config.db), all InterMail applications will fail to initialize and will not execute. In this case manual correction on the file using a text editor will be necessary.
- Action(s):** Fix the config file manually using a text editor.

## ConfMissingRequiredParameter

- Description:** A necessary parameter is missing from the config.db file.
- Parameters:** *parmName*: the paramter specifying the non-standard port
- Cause:** An ill-advised edit session may be at fault (Note that InterMail as installed has all the necessary parameters.)  
 In any case, consult the documentation for the *parmName* and re-edit the config.db, giving it an appropriate value.
- Effect:** Usually serious, but depends on the particular parameter.
- Action(s):** Put the required parameter back in the config.db.

## ConfModNameSizeTooLarge

- Description:** A program name longer than sizeLimit characters has been given to the configuration initialization routine. No known InterMail program has, or will have, names this long.
- Parameters:** *moduleNameSize*: the size of the module  
*name.sizeLimit*: the limit on the size of the module name.
- Cause:** A program name longer than 256 characters has been specified to the configuration initialization routine.
- Effect:** This error is of critical severity. The program will not run.
- Action(s):** If you have renamed an InterMail program with a new name that is longer than 256 characters, then you should choose a shorter name. Contact Software.com.

## ConfMsgCatNotFnd

- Description:** The catalog file for national language support could not be found.
- Parameters:** *messageCatalogName*: the name of the message catalog  
*file.language*: the language selected.  
*pathSearchList*: the list of directories to be searched for catalog.
- Cause:**
- The NLSPATH or LANG environment variable is set incorrectly.
  - The NLS file has been deleted, or does not have read permission.
- Effect:** This error is of minor severity. A few operations will fall back to hard-coded default strings instead of using the value specified in the NLS file. This could result in slightly different text for error messages and other informational messages.
- Action(s):** Check that the InterMail NLS files are correctly installed and readable.

## ConfMsgCatStatFail

- Description:** A message catalog specified using an absolute pathname was not found, or was unreadable.
- Parameters:** *messageCatalogPath*: full pathname to the message  
*catalog.systemErrorString*: system error from the stat call.
- Cause:**
- The NLSPATH or LANG environment variable is set incorrectly.
  - The NLS file has been deleted, or does not have read permission.
- Effect:** This error is of minor severity. A few operations will fall back to hard-coded default strings instead of using the value specified in the NLS file. This could result in slightly different text for error messages and other informational messages.

**Action(s):** Check the values of the NLSPATH environment variable. Remove any components that do not contain the %L and %N substitution fields. Check the values of the LANG environment variable. Try setting it to “C”, or leaving it unset. Check that the InterMail NLS files are correctly installed and readable.

## ConfNewerParmsReturned

**Description:** The Configuration Server has accepted a connection from a program with an out-of-date set of parameter values with the timestamp shown. The configuration server has transmitted a newer set of values to the program.

**Parameters:** *programName*: the name of the program connecting  
*hostName*: the name of the host the program is running on  
*timestamp*: the timestamp of the new set of configuration parameters

**Cause:** A client connecting to the configuration server.

**Effect:** None.

**Action(s):** None.

## ConfNoConnTrace

**Description:** A request that uses connection tracking was requested from a server that does not support it. Connection tracking monitors the number and type of RME clients that are connected to a server.

**Parameters:** None.

**Cause:** This version of the MSS was compiled without connection tracking.

**Effect:** This error is of warning severity. Some administrative features will not be available with the current release.

**Action(s):** None.

## ConfNoDomain

**Description:** The configuration value for *domainName* is missing from the configuration database.

**Parameters:** *domainName*: name of the domain

**Cause:** This indicates that the configuration database does not contain a *domainName* configuration key.

**Effect:** This error is of urgent severity. The MTA uses the configured *domainName* to complete its hostname, which is used in SMTP greetings, etc. The hostname will not be fully qualified. This problem may cause mail to be deferred.

**Action(s):** Use *imconfedit* to edit the configuration database. Add one or more of the following keys:

```
*/common/domainName: [<your.domain>]
<host>/common/domainName: [<your.domain>]
```

## ConfNoHeader

- Description:** The config file had no header and no checksum.
- Parameters:** *fileName*: the path to the config file.
- Cause:** This indicates that either this configuration file was not written by an InterMail application (or was subsequently modified by a user.)
- Effect:** This message is informational. If no other errors occur, there will be no impact on service.
- Action(s):** None.

## ConfNonStandardPort

- Description:** A non-standard port has been specified in the config.db file.
- Parameters:** *parmName*: the parameter specifying the non-standard port.  
*progName*: the program portion of the parm key.  
*hostName*: the hostname portion of the parm key.  
*standardPort*: the standard value for this port.  
*nonStandardPort*: the non-standard value for this port.
- Cause:** This may not be a problem, but it is unusual. If, for example, the pop3Port is specified as 8050, instead of the usual 110, then pop clients may not be configured for this unusual situation and will try to connect to 110 and fail.
- Effect:** If clients are not apprised of the change, they will be unable to connect to the server.
- Action(s):** Check to see if the unusual port assignment was intentional or not.

## ConfNotAConfiguredHost

- Description:** The host *hostName* has no config.db entries at all, and is probably incorrect.
- Parameters:** *hostName*: the host name.
- Cause:** Usually an incorrect host name.
- Effect:** No major impact.
- Action(s):** None.

## ConfOtherHostHasLocked

- Description:** An InterMail package is being installed on the host *hostname*.
- Parameters:** *hostName*: the hostname where a package installation is taking place.
- Cause:** An InterMail package is being installed on the host *hostname*.
- Effect:** No changes can be made to the master config.db until the installation Clients reading the config.db information will continue using the local copy of config.db. As soon as the installation is completed, running servers will be apprised of any config.db changes. If the installation is aborted, there will be no changes.
- Action(s):** None.

## ConfNoUpdate

- Description:** An update request was made and it was determined that no update was required.
- Parameters:** None.
- Cause:** The configuration file at the requesting host was the same as the configuration file at the configuration update server host. Or, an attempt to update the configuration was made at the host already running the master copy of the configuration.
- Effect:** This message is simply a notification indicating that the configuration is up to date.
- Action(s):** None.

## ConfParmChanged

- Description:** The value of a configuration variable changed in a running program.
- Parameters:** *hostName*: name of the host for the configuration parameter.  
*programName*: name of the program for the configuration parameter.  
*paramName*: name of the configuration parameter.  
*oldValue*: the previous value of the parameter.  
*newValue*: the new value of the parameter.  
*oldTimeStamp*: the timestamp of the previous dictionary.  
*newTimeStamp*: the timestamp of the new dictionary.
- Cause:** A program received a new set of configuration parameters from the configuration server (*imconfserv*) and the configuration parameter *paramName* changed its value.
- Effect:** The program will begin using the new value of the parameter.
- Action(s):** None.

## ConfParamsPush

- Description:** The Configuration Server has pushed a new set of configuration parameters to the server *programName* running on host *hostName*.
- Parameters:** *newTimeStamp*: the timestamp of the new dictionary.  
*programName*: the name of the server program.  
*hostName*: the host the server program is running on.
- Cause:** This is caused by an invocation of *imconfcontrol*.
- Effect:** None.
- Action(s):** None.

## ConfPortConflict

- Description:** Two or more config db parameters specifying port numbers are in conflict.
- Parameters:** *portNumber*: the number of the port in conflict.  
*serverName*: name of the server that would use this port.  
*hostName*: name of the server's host.  
*parm*: the name of the parameter specifying the port.  
*scopeOfConflict*: the scope of the conflict.
- Cause:** An inconsistency has been detected in the configuration data whereby two or more servers would be trying to listen on the same port. A log entry will be found for each parameter in conflict.
- If the scope of conflict is “a conflict on the same host”, then this is clearly always a serious conflict.
- If the scope is “a conflict within a failover group”, then the conflict will cause problems if and when the hosts mentioned are actually running on the same machine.
- If the scope is “a conflict among all hosts”, then all hosts are considered to be in the same failover group and thus any two uses of the same port number constitute a conflict. Failover groups are defined by the */\*/common/failoverGroups* config parameter, where each value is of the form *host1/hostb/hostc*. If the value is “all”, then all hosts are considered to be in the same failover group.
- Effect:** The attempt to change the config data will be rejected, and no changes will be made to any parameters.
- Action(s):** None.

## ConfPortConflictRange

**Description:** Two or more config db parameters specifying port numbers or port number ranges are in conflict.

**Parameters:** *firstPortNumber*: the first port number of the range in conflict.

*lastPortNumber*: the last port number of the range in conflict.

*serverName*: name of the server that would use this port.

*hostName*: name of the server's host.

*parm*: the name of the parameter specifying the port.

*scopeOfConflict*: the scope of the conflict.

**Cause:** An inconsistency has been detected in the configuration data whereby two or more servers would be trying to listen on the same port. A log entry will be found for each parameter in conflict.

If the scope of conflict is “a conflict on the same host”, then this is clearly always a serious conflict.

If the scope is “a conflict within a failover group”, then the conflict will cause problems if and when the hosts mentioned are actually running on the same machine.

If the scope is “a conflict among all hosts”, then all hosts are considered to be in the same failover group and thus any two uses of the same port number constitute a conflict. Failover groups are defined by the `/* /common/failoverGroups` config parameter, where each value is of the form `host1/hostb/hostc`. If the value is “all”, then all hosts are considered to be in the same failover group.

**Effect:** The attempt to change the configuration data will be rejected, and no changes will be made to any parameters.

**Action(s):** None.

## ConfSearchDirsArraySize

**Description:** An array provided to the configuration initialization routine was of length `arraySize` when a minimum size of `minSize` is required.

**Parameters:** *arraySize*: the size of the array used.

*minSize*: the minimum allowed size of the array

**Cause:**

**Effect:** This error is of critical severity. The application will not run.

**Action(s):** Contact Software.com.

## **ConfServerLocked**

- Description:** The Configuration Server has been locked, unlocked, or reverted the host/pid mentioned.
- Parameters:** *processID*: the id of the process that performed the action.  
*HostName*: the host which has performed the action.  
*Action*: the action performed.
- Cause:** Typically this happens from an `imconfedit` session, but the installation process also locks the Configuration Server.
- Effect:** None.
- Action(s):** None.

## **ConfServerNotConfiguredForHost**

- Description:** The server *serverName* is not configured to run on the host *hostName*; i.e., there is no entry like `/hostName/sysadmin/serverName_run`.
- Parameters:** *serverName*: the server name.  
*hostName*: the host name.
- Cause:** Usually an incorrect host or server name.
- Effect:** None.
- Action(s):** None.

## **ConfServerNotLocked**

- Description:** An attempt has been made using `imconfcontrol` to end an install but hostname was not registered as an installing host.
- Parameters:** *hostName*: the hostname where `imconfcontrol` was used.
- Cause:** A mistaken use of the `-endInstall` or `-abortInstall` options of `imconfcontrol` on a host where `-startInstall` was not previously used.
- Effect:** None.
- Action(s):** None.

## ConfStartUpdate

- Description:** The operation of assessing the impact of a new set of configuration parameters has begun.
- Parameters:** *oldTimeStamp*: the timestamp of the previous dictionary  
*newTimeStamp*: the timestamp of the new dictionary
- Cause:** The program has received a new set of configuration parameters from the configuration server and has begun to assess the impact. This action is begun by `imconfedit`.
- Effect:** None. Individual parameter changes are reported via *confParmChanged*.
- Action(s):** None.

## ConfWrongNumDynamicKeys

- Description:** A `ConfigParmDict` with *keysRequired* keys was constructed for *paramName*, but the call to `getString()` provided only *keysProvided* keys.
- Parameters:** *keysRequired*: the number of keys required.  
*keysProvided*: the number of keys provided in the `getString()` call.  
*paramName*: the name of the configuration parameter.
- Cause:**
- Effect:** The program will not be able to get the correct value for the configuration parameter. The results are not predictable.
- Action(s):** Contact Software.com.

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## 13.3 Database Log Events

### DbMessageFilesDirNotSpecified

- Description:** During initialization, an application (usually the MSS) could not find a value for `mssMessageFileDir` in the InterMail configuration.
- Parameters:** None.
- Cause:**
1. Missing or corrupted `config.db`.
  2. Incorrect value for `$INTERMAIL` environment variable.
- Effect:** This error is of critical severity. All incoming mail destined for the MSS on the current host will be deferred, and no mailboxes on the MSS will be accessible for reading.
- Action(s):** Verify that the installation and the configuration of the InterMail software is correct.

## DbCacheConnect

- Description:** Successfully connected to InterMail Directory database.
- Parameters:** None.
- Cause:** NA.
- Effect:** This error is informational.
- Action(s):** None.

## DbCacheDisconnect

- Description:** Disconnected from InterMail Directory server.
- Parameters:** None.
- Cause:** The InterMail application lost its connection to the InterMail Directory server. This could be due to network problems or because the database server is no longer running
- Effect:** This error is of minor severity. New accounts created while the Directory database is unavailable will not be accessible, and modifications to existing accounts will not be visible, since the Directory server will be relying on cached information.
- Action(s):** If this notice is not due to known problems with the network or the database server, check the application's log file for more severe events.

## DbDatabaseError

- Description:** The database operation `sqlOp` requested by the InterMail Directory server failed with error `dberr`. The `dberr` will usually contain more detailed information about the database error.
- Parameters:** *sqlOp*: the database operation in progress when the error occurred.  
*dbErr*: details about the error from the database server.
- Cause:** This may be caused by one of the following errors with the database:
- Database configuration error.
  - Database storage failure.
  - Database corruption.
  - Insufficient rollback resources.

**Effect:** This error is minor in that the MTA may be unable to deliver new messages to one or more mailboxes, and the POP server may be unable to retrieve messages from the affected mailboxes.

However, this error is major if the database error affects a large number of tables, or a large portion of any particular table, or one of the system-wide tables, e.g. IM\_Server. In these cases the entire MSS may be effectively inoperative. Failure to determine the cause of this error and resolve it may lead to lost or corrupted messages.

**Action(s):** Check the database trace directory (\$ORACLE\_HOME/admin/ptrace) for more detailed information about the failure.

## DbEmptySelect

**Description:** The SQL operation `sqlOp` on an InterMail database found no matching rows when at least one was expected.

**Parameters:** `sqlOp`: the failed SQL SELECT operation.

**Cause:** Database corruption.

**Effect:** This error is of minor severity. The MTA may be unable to deliver new messages to one or more mailboxes, and the POP server may be unable to retrieve messages from the affected mailboxes.

**Action(s):** Check the database logs for other messages indicating errors occurring within the database. If the error is in the MSS database, run `immsgverify` to check for consistency between the database and the message file system. Using the details from the log file, probe the database using `sqlplus` to isolate which accounts are having problems, and consider deleting rows that are causing the unexpected inconsistency.

## DbInitNoPath

- Description:** Getting the value of *config-key* from the configuration database failed. This value specifies the location of the Directory cache file. This error only happens when the IMDIRCACHESERV process is being launched.
- Parameters:** *config-key*: configuration key where pathname to DB file is registered.
- Cause:**
- The system is incorrectly configured.
  - The configuration database is not in the correct place.
  - The configuration database is corrupted.
- Effect:** The Directory Cache Server will exit immediately, which may cause incoming mail to be deferred and POP access to be suspended.
- The effect will be minor if other `imdircachserv` processes are still running, and if the configuration on the current host is set up to fall back to these servers.
- The effect will be critical if no other `imdircachserv` processes are running, or if fallback behavior has not been specified, since all Directory access will fail.
- Action(s):**
- Verify that the system is configured correctly.
  - Verify that the configuration file is not corrupted.

## DbInsertFail

- Description:** An insert operation on the Directory cache file pathname failed.
- Parameters:** *pathname*: the pathname of the Directory cache file.
- Cause:**
- Out of disk space.
  - The Directory cache file is corrupted.
- Effect:** This error is of minor severity. The Directory cache may not contain the most recent updates from the Directory database, so new accounts may be inaccessible and existing accounts may not reflect the most recent administrative changes.
- Action(s):** Verify that the file system is healthy, then delete the Directory cache file and rebuild it.

## DbMsgIDMismatch

**Description:** The message-ID for message *msgnum* did not match the message-ID found in the message's file-based storage.

**Parameters:** *msgNum*: the database serial number for the message.

**Cause:**

- The file system is corrupted.
- The database is corrupted.

**Effect:** This error is of minor severity. The message will be moved to a “.ERROR” folder in the customer's mailbox and the customer will be unable to retrieve it until the problem is corrected. POP clients will usually abort the current session when this error occurs, but future sessions will not see the problem message.

**Action(s):**

- Run `imbadmsglist` to get a list of all messages that currently require administrator attention.
- Recover the associated message files using file system backups and, if necessary, journal files.
- Run `imbadmsgfix` on the subset of files that have been recovered.

If the error occurs again, delete the message from the user's “.ERROR” folder and inform the user that a message was lost. If this occurs frequently, verify the integrity of the database.

## DbNameTooLong

**Description:** The name specified for a mailbox property was longer than the maximum length supported by this MSS schema.

**Parameters:** None.

**Cause:**

**Effect:** The current database operation will fail.

**Action(s):** Contact Software.com.

## DbNoMessageFileStorage

- Description:** Unable to find adequate storage for a new message with message-ID *msgid* in the message file system.
- Parameters:** *msgid*: the message-ID of a message.
- Cause:**
- The `mssMessageFileDir` configuration value is incorrect.
  - Disk storage is exhausted, or some volumes are not mounted.
  - `imbucketscreate` has not been run recently.
  - The message is larger than any single volume can currently contain.
- Effect:** This error is of critical severity. The message will be deferred until space becomes available, but the chances are that if one message cannot be stored, then there is a critical shortage of disk space that will prevent most other messages from being stored as well.
- Action(s):**
- Verify that the value of `mssMessageFileDir` is correct and that the permissions for all files under this directory are correct.
  - Verify that the crontab entry for `imbucketscreate` is correct and that the job has been run recently. Check the date and examine the contents of the `buckets` file in the `mssMessageFileDir` directory.
  - Verify that all appropriate message file systems are mounted and writable. If this is not the case, mount the file systems and run `imbucketscreate`.
  - Check the size of the incoming message to see if it is reasonable. If it is not, check the configuration value for the MTA's maximum acceptable message size.

## DbNoConnect

- Description:** An InterMail application, e.g. `MSS`, `imdbcontrol`, or `imdircacheserv`, was unable to connect to the database server. The explanation will usually provide more details about the nature of the failure.
- Parameters:** *explanation*: details about why the connection failed.
- Cause:**
- Database server is not running.
  - InterMail configuration contains incorrect values for database access.
- Effect:** This error is of major severity. If the error occurs in `imdbcontrol`, then the requested changes to the Directory will not be made. If the error occurs in `imdircacheserv`, then the Directory cache may not contain the most recent updates from the Directory database, so new accounts may be inaccessible and existing accounts may not reflect the most recent administrative changes.
- However, the error is of critical severity if the error occurs in the `MSS`; then all mailboxes on that host will be inaccessible.
- Action(s):**
- Verify that the database server is up and running.
  - Check that the configuration values for `oracleUserPassword` and `oracleConnection` are correct. Attempt to connect to the database using these values with a standalone tool like `sqlplus`.

## DbNullPtr

- Description:** A null pointer was passed to an SQL function that does not allow it.
- Parameters:** None.
- Cause:**
- Effect:** This error is of minor severity. The current operation will be aborted, leaving the database unchanged. This usually affects a single object, such as a mailbox or a message.
- Action(s):** Restart the process. Contact Software.com.

## DbNumClientConnections

- Description:** Number of pool client connections specified is invalid.
- Parameters:** None.
- Cause:** Configuration error. Check the configuration key `imdircacheserv/dirCacheConnections`.
- Effect:** Minor, Critical. This will cause Directory authorization services to be unavailable.
- Action(s):** Contact Software.com.

## DbOpenFail

- Description:** Unable to open Directory cache file pathname.
- Parameters:** *pathname*: the pathname of the Directory cache file.
- Cause:**
- The Directory cache file or its directory does not exist, or the permissions are wrong.
  - The configuration value for `DBFilePath` is incorrect.
- Effect:** The Directory cache server will exit immediately, which may cause incoming mail to be deferred and POP access to be suspended.
- If other `imdircacheserv` processes are still running, and if the configuration on the current host is set up to fall back to these servers, then the effect will be minor.
- If no other `imdircacheserv` processes are running, or if fallback behavior has not been specified, the effect will be critical, since all Directory access will fail.
- Action(s):** Check the existence and permissions on the Directory cache file. Verify the configuration value for `DBFilePath`.

## DbOracleUpdateFail

- Description:** The full update of the Directory cache from the database server failed.
- Parameters:** *pathname*: the name of the Directory cache file.
- Cause:** A previously reported error in accessing the database or the cache file.
- Effect:** This error is of minor severity. The Directory cache may not contain the most recent updates from the Directory database, so new accounts may be inaccessible and existing accounts may not reflect the most recent administrative changes.
- Action(s):** See effects from preceding errors.

## DbReopenFail

- Description:** The Directory cache file was replaced with a new file, normally this is only done by `imdirsync`. The Directory cache server was unable to switch to the new cache file at runtime.
- Parameters:** *pathname*: the name of the Directory cache file.
- Cause:** The cache file is corrupted, or the permissions are wrong.
- Effect:** This error is of minor severity. The Directory cache may not contain the most recent updates from the Directory database, so new accounts may be inaccessible and existing accounts may not reflect the most recent administrative changes.
- Action(s):** Verify that the file system is healthy, then delete the Directory cache file and rebuild it.

## DbReopenOK

- Description:** The Directory cache server successfully switched to a new cache file at runtime.
- Parameters:** *pathname*: the name of the Directory cache file.
- Cause:** The Directory cache file was replaced with a new file, normally this is only done by `imdirsync`.
- Effect:** This error is informational.
- Action(s):** None.

## DbSchemaError

- Description:** The database object `schema_object` is not established properly in the InterMail Directory server's ("DIR") or Message Store Server's ("MSS") Oracle database.
- Parameters:** *schema\_object*: the database schema object (table, index, etc.) that is improperly defined.
- Cause:** The Oracle database was not installed or upgraded properly, or an operator erroneously dropped some critical aspect of the schema. The immediate cause of the error depends on the value of `schema_object:Fk_IM_FolderMessage_Messagenum`. The foreign key constraint of this name is missing or improperly configured. The message deletion implementation depends upon this constraint to work properly. Both the MSS and the `immssgc` command check for the existence of this constraint when they start up, and terminate immediately if it is missing. While the MSS is down, users will be unable to access their mailboxes. To repair,
- Effect:** This error is of major severity. The command or service that raises this event typically refuses to run. This event requires immediate attention.
- Action(s):** Run the SQL: `ALTER TABLE IM_FolderMessage ADD (CONSTRAINT fk_IM_FolderMessage_messageNum FOREIGN KEY (messageNum) REFERENCES IM_Message.`  
Restore the missing or incomplete schema object.

## DbTooManyDirClientPool

- Description:** Only one instance of `DirClientPool` is allowed.
- Parameters:** None.
- Cause:**
- Effect:** The severity level is minor to critical. This will cause the process to exit.
- Action(s):** Contact [Software.com](http://Software.com).

## DbToolsActionFailedDueToRDBMSError

- Description:** An attempt to perform the action on the database failed. The preceding event in the log file contains information about the error returned by Oracle.
- Parameters:** *database*: the ORACLE\_SID of the database.  
*action*: the attempted action that failed due to Oracle raising an error.
- Cause:** Should not occur under normal conditions. The database might be down.
- Effect:** The severity level is minor to critical. Typically, the command that logs this event will terminate without completing its stated mission.
- Action(s):** Examine the Oracle error message in the preceding log event to help determine the problem.

## DbToolsHistoryFileOpenFailure

- Description:** The history file could not be opened.
- Parameters:** *file*: the name of the history file that could not be opened.  
*errNo*: Unix error number.
- Cause:** Normally occurs the first time any command that maintains a history file runs. This should not happen on subsequent runs. If it does, it probably means that someone deleted the file.
- Effect:** This error is of minor severity. The command creates a fresh history file and continues.
- Action(s):** No action is necessary.

## DbToolsHistoryFileReadFailure

- Description:** An error occurred while reading the history file.
- Parameters:** *file name*: the name of the history file that could not be read successfully.
- Cause:** The history file might be corrupted.
- Effect:** The severity level is minor to critical. Typically, the command that logs this event will terminate without completing its stated mission.
- Action(s):** Rerun the command. Try renaming the corrupted file, which will cause the affected command to create a new one.

## DbToolsIndexReorganizationTimeLimitReached

- Description:** This event is logged by the `imdbindexreorg` command when it reaches its time limit, but it still has indexes to process.
- Parameters:** None.
- Cause:** `imdbindexreorg` used up its allocated amount of time without being able to process every index.
- Effect:** This error is of minor severity. It is only of concern if the database is running out of space in tablespaces containing indexes, perhaps indicating that index reorganization is not happening frequently enough.
- Action(s):** Increase the amount of time `imdbindexreorg` is permitted to run if you have had to add space to tablespaces containing indexes (but tablespaces containing tables have been fine).

## DbToolsIndexReorganized

- Description:** This event is logged by the `imdbindexreorg` command after it successfully reorganizes an index.
- Parameters:** *index name*: the name of the index that has been reorganized.  
*before block count*: number of blocks used by the index before reorganization.  
*after block count*: number of blocks used by the index after reorganization.
- Cause:** An index has been successfully reorganized.
- Effect:** This event is logged for informational purposes only, and does not indicate an error of any kind.
- Action(s):** None.

## DbToolsInsufficientSpaceToReorganizeIndex

- Description:** The `imdbindexreorg` command logs this event when it examines an index and discovers it to be sufficiently fragmented to justify a reorganization, but there is not enough free space available in the indicated tablespace to carry out the reorganization.
- Parameters:** *index*: the name of the index that could not be reorganized.  
*tablespace name*: the tablespace in which the index resides. extent size: number of blocks in an extent.  
*block size*: size of a block in bytes.  
*number of extents*: number of extents that need to be allocated to reorganize the index.
- Cause:** The amount of free space in the indicated tablespace is insufficient to contain a compacted copy of the index.  
 The `imdbindexreorg` command uses `ALTER INDEX REBUILD` to reorganize indexes. This is the fastest method provided by Oracle, but there needs to be sufficient space to store both the existing index and its new reorganized version.
- Effect:** This error is of major severity. Space is wasted in the fragmented, un-reorganized index. If the index is not reorganized, it will eventually consume all of the free space in the indicated tablespace.
- Action(s):** Use the `imdbspacegrow` command to add space to the indicated tablespace. Multiplying the event parameters extent size times block size times number of extents yields the number of bytes needed to hold the compacted index.

## **DbToolsInvalidUsage**

- Description:** An invalid argument was passed to the command.
- Parameters:** *program name*: the name of the command.  
*usage*: valid command line arguments.
- Cause:** A command line argument does not conform to what is expected.
- Effect:** The effect of this error is minor to critical. Typically, the command that logs this event will terminate without completing its stated mission.
- Action(s):** See Chapter 12 of the *InterMail Reference Guide* for the command usage and use the proper command line arguments.

## **DbToolsNewHistoryFileRenameFailure**

- Description:** An error occurred while renaming the history file.
- Parameters:** *present name*: the present name of the history file that could not be renamed.  
*desired name*: the desired name of the history file.  
*errno*: Unix error number.
- Cause:** Probably a problem with file permissions.
- Effect:** This error is of minor severity. The command that logs this event will be unable to update the history file at the conclusion of its run.
- Action(s):** Check file permissions.

## **DbToolsNewReorganizationHistoryFileRenameFailure**

- Description:** An error occurred while renaming the history file.
- Parameters:** *present name*: the present name of the history file that could not be renamed.  
*desired name*: the desired name of the history file.  
*errno*: Unix error number.
- Cause:** Probably a problem with file permissions.
- Effect:** This error is of minor severity. The `imdbindexreorg` command will be unable to update the history file at the conclusion of its run. The next time the command is run it will not process indexes in the most efficient order.
- Action(s):** Check file permissions.

## DbToolsNoDbName

- Description:** The appropriate ORACLE\_SID required to access the database could not be determined.
- Parameters:** None.
- Cause:** Should not occur under normal conditions.
- Effect:** The effect of this error is minor to critical. The command that logs this event will typically immediately terminate without completing its stated mission.
- Action(s):** Check the `mss/oracleConnection` and `imdircacheserv/primaryDBconnection` parameters in the configuration database.

## DbToolsNoOracleUsernamePassword

- Description:** The appropriate Oracle username and password needed to access the database could not be determined.
- Parameters:** *database:* the ORACLE\_SID of the database.
- Cause:** Should not occur under normal conditions.
- Effect:** The effect of this error is minor to critical. The command that logs this event will typically immediately terminate without completing its stated mission.
- Action(s):** Check the `mss/oracleUserPassword` and `imdircacheserv/primaryDBuserInfo` parameters in the configuration database.

## DbToolsORACLE\_HOMEUnset

- Description:** The ORACLE\_HOME environment variable is not set.
- Parameters:** None.
- Cause:** The ORACLE\_HOME environment variable is not set.
- Effect:** The effect of this error is minor to critical. Typically, the command that logs this event will terminate without completing its stated mission.
- Action(s):** Set the ORACLE\_HOME environment variable to the pathname of the directory where the Oracle software is rooted, and try again. The `.cshrc` file of the imail user should contain a shell statement that sets ORACLE\_HOME to its proper value.

## DbToolsORACLE\_SIDUnset

- Description:** The command was unable to derive the name of the database to access.
- Parameters:** None.
- Cause:** The command that logs this event normally derives the name of the database to access from the `mss/oracleConnection` or `imdircacheserv/primaryDBconnection` configuration parameters. For some unknown reason, it was unable to do so.
- Effect:** The effect of this error is minor to critical. Typically, the command that logs this event will terminate without completing its stated mission.
- Action(s):** Check the setting of the `mss/oracleConnection` or `imdircacheserv/primaryDBconnection` configuration parameter as appropriate. Check that the INTERMAIL environment variable is set correctly.

## DbToolsPredictedSpaceCrisis

- Description:** This event is logged by the `imdbspacecheck` command when it predicts a space crisis in the monitored database. The `imdbspacegrow` command should promptly be used to add space to the indicated tablespace. The space in an Oracle database is partitioned into tablespaces.
- Parameters:** *database name:* the ORACLE\_SID of the database.  
*tablespace name:* the tablespace in which space is predicted to run low.  
*table or index name:* the name of the schema object that will have trouble growing.  
*type:* "INDEX" or "TABLE".  
*reason:* "PREDICTED SIZE" or "ABSOLUTE SIZE".  
*bytes used:* the number of bytes currently used by the table or index.  
*bytes unused:* the number of bytes allocated to the table or index that are free.  
*percent full:* the fullness of the last extent allocated to the table or index.  
*predicted extent size:* the number of bytes the table or index needs to grow.  
*growth:* the number of bytes the table or index is expected to grow.
- Cause:** The amount of data in the database has increased to the point where the existing allocation of space is getting dangerously low in the indicated tablespace.
- Effect:** The effect of this error is major to critical. If this log event is not heeded and the tablespace subsequently runs out of space, a crisis, probably concluding in a service outage, will occur.
- Action(s):** Use the `imdbspacegrow` command to add space to the indicated tablespace.

## DbToolsRDBMSAccessError

- Description:** An attempt to run a SQL statement failed with the indicated Oracle error.
- Parameters:** *database*: the ORACLE\_SID of the database.  
*task*: a terse version of the SQL statement that ran into trouble.  
*error code*: Oracle error code.  
*error message*: Oracle error message.
- Cause:** Should not occur under normal conditions. The database might be down.
- Effect:** The effect of this error is minor to critical. Typically, the command that logs this event will terminate without completing its stated mission..
- Action(s):** Get more information about the error by employing Oracle's oerr command: %\$ORACLE\_HOME/bin/oerr ORA error\_code.

## DbToolsReorganizationHistoryFileOpenFailure

- Description:** The imdbindexreorg command could not open its history file.
- Parameters:** *file*: the name of the history file that could not be opened.  
*errNo*: Unix error number.
- Cause:** This event is normal and expected the first time imdbindexreorg is run. If it happens on subsequent runs, it probably means someone deleted the history file.
- Effect:** This error is of minor severity. The command creates a fresh history file and continues.
- Action(s):** None.

## DbToolsReorganizationHistoryFileReadFailure

- Description:** The imdbindexreorg command encountered an error while reading the history file.
- Parameters:** *file name*: the name of the history file that could not be read successfully.
- Cause:** The history file might be corrupted.
- Effect:** The effect of this error is minor to critical. The imdbindexreorg command terminates without reorganizing any indexes.
- Action(s):** Try rerunning the command. Try renaming the corrupted file, which will cause the affected command to create a new one.

## DbToolsSpaceEmergencyCrisis

- Description:** This event is logged by the `imdbspacequickcheck` command when it predicts a space crisis in the monitored database.
- Parameters:** database name: the ORACLE\_SID of the database. tablespace name: the tablespace in which space is predicted to run low. table or index name: the name of the schema object that will have trouble growing. type: "INDEX" or "TABLE".
- Cause:** The amount of data in the database has increased to the point where the existing allocation of space is dangerously low in the indicated tablespace.
- Effect:** The effect of this error is major to critical. If this log event is not heeded and the tablespace subsequently runs out of space, a crisis probably resulting in a service outage will result.
- Action(s):** Use the `imdbspacegrow` command without delay to add space to the indicated tablespace. The space in an Oracle database is partitioned into tablespaces. The `imdbspacequickcheck` command does not give much advance warning of a impending space crisis, so prompt action is absolutely necessary.

## DbToolsStartingIndexReorg

- Description:** This event is logged by the `imdbindexreorg` command just before it starts to reorganize an index.
- Parameters:** *DDL*: ORACLE sql statement that will be used to reorganize the database.
- Cause:** An index is about to be reorganized.
- Effect:** This event is logged for informational purposes only, and does not indicate an error of any kind.
- Action(s):** None.

## DbToolsTablespacesTouchedFileOpenFailure

- Description:** This event is logged by the `imdbindexreorg` command. When it cannot open the file, it records the names of tablespaces that need hot backups after `imdbindexreorg` terminates.
- Parameters:** *file name*: the name of the file that could not be opened.  
*errno*: Unix error number.
- Cause:** Probably a problem with file permissions.
- Effect:** The effect of this error is minor to critical. The `imdbindexreorg` command quits prematurely, and might not reorganize any indexes.
- Action(s):** Check file permissions, and ensure that the file system is not full.

## DbToolsTempFileOpenFailure

- Description:** A temporary file could not be opened.
- Parameters:** *file*: the name of the temporary file that could not be opened.  
*errNo*: Unix error number.
- Cause:** This is not a normal event. The file system might be out of space.
- Effect:** The effect of this error is minor to critical. The command that logs this event will typically terminate immediately without completing its stated mission.
- Action(s):** Make sure there is space available in the directory specified by the tmpDir configuration database parameter.

## DbToolsUnexpectedSystemCallFailure

- Description:** A system call returned an unexpected error.
- Parameters:** *call*: the name of the system call.  
*errNo*: Unix error number.
- Cause:** This is not an expected event, and its cause is unknown.
- Effect:** The effect of this error is minor to critical. The command that logs this event will terminate without completing its stated mission.
- Action(s):** To find the problem, consider how the indicated system call might return the specified errno.

## DbTooManyDirClientPool

- Description:** Only one instance of DirClientPool is allowed.
- Parameters:** None.
- Cause:**
- Effect:** The effect of this error is minor to critical. This will cause the process to exit.
- Action(s):** Contact Software.com.

## DbUnknownError

- Description:** An internal error of type `errcode` occurred in the database library.
- Parameters:** *errCode*: the SQL error code.
- Cause:**
- Effect:** The effect of this error could be minor or major. The MTA may be unable to deliver new messages to one or more mailboxes, and the POP server may be unable to retrieve messages from the affected mailboxes. If the database error affects a large number of tables, or a large portion of any particular table, or one of the system-wide tables (`IM_Server`), the entire MSS may be effectively inoperative. Failure to determine the cause of this error and resolve it may lead to lost or corrupted messages.
- Action(s):** Restart the process. Contact Software.com.

## DbUnknownVersion

- Description:** The schema of the database is not compatible with the currently installed version of InterMail.
- Parameters:** None.
- Cause:** An InterMail package has been installed without taking the appropriate steps to upgrade the relevant database(s).
- Effect:** This error is of critical severity. The MSS will exit immediately, so no mailboxes on the current host will be accessible.
- Action(s):** Check the version of InterMail that is installed and the database schema version (in the `IM_Server` table). Re-install the correct version of InterMail, or upgrade the database schema as needed.

## DbUpdateSyncFailure

- Description:** An error occurred while updating the Directory cache file.
- Parameters:** *explanation*: description of failed operation.
- Cause:**
- Out of disk space.
  - The Directory cache file is corrupted, or out of sync with the database.
- Effect:** This error is of minor severity. The Directory cache may not contain the most recent updates from the Directory database, so new accounts may be inaccessible and existing accounts may not reflect the most recent administrative changes.
- Action(s):** Verify that the file system is healthy, then delete the Directory cache file and rebuild it.

## DbValueTooLong

- Description:** The value specified for a mailbox property was longer than the maximum length supported by this MSS schema.
- Parameters:** None.
- Cause:**
- Effect:** This error is of minor severity. The current database operation will fail.
- Action(s):** Contact Software.com.

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## 13.4 Filter Log Events

### FiltActionBounce

- Description:** A mail filter has processed a message and caused it to be bounced (using the “bounce” action).
- Parameters:** *filterName*: the name of the filter being executed.  
*message*: the bounce message.
- Cause:** The “bounce” action was used in the filter.
- Effect:** This message is for informational purposes only.
- Action(s):** None required.

### FiltActionBounceTwice

- Description:** A mail filter executed the “bounce” action twice, which is not allowed. Only the first “bounce” action will be honored.
- Parameters:** *filterName*: The name of the filter being executed.
- Cause:** The mail filter may have a bug which is causing the multiple bounces.
- Effect:** This message is of warning severity.
- Action(s):** Fix the filter so that only one “bounce” can be executed. It might be sufficient to put a “stop” action after one of the bounces.

## **FiltActionConflict**

- Description:** A mail filter executed two actions which conflict with each other. For example, the “toss”, “bounce”, and “reject” actions may not be used together, or with “sideline”, “keep”, or “forward”.
- Parameters:** *filterName*: the name of the filter being executed.  
*actionName*: the name of the action that caused the conflict.
- Cause:** The mail filter may have a bug which is causing the conflicting actions to be executed.
- Effect:** This message is of error severity.
- Action(s):** Fix the filter so that conflicting actions will not happen. It might be sufficient to put a “stop” action after one of the actions.

## **FiltActionForward**

- Description:** A mail filter has processed a message and caused it to be forwarded to another address (using the “forward” action).
- Parameters:** *filterName*: the name of the filter being executed.  
*address*: the forwarder address.
- Cause:** The “forward” action was used in the filter.
- Effect:** This message is for informational purposes only.
- Action(s):** None required.

## **FiltActionReject**

- Description:** A mail filter has processed a message and caused it to be rejected by the server (using the “reject” action). This will cause the message to be returned to the sender.
- Parameters:** *filterName*: the name of the filter being executed.  
*message*: the rejection message
- Cause:** The “reject” action was used in the filter.
- Effect:** This message is for informational purposes only.
- Action(s):** None required.

## FiltActionRejectTwice

- Description:** A mail filter executed the “reject” action twice, which is not allowed. Only the first “reject” action will be honored.
- Parameters:** *filterName*: The name of the filter being executed.
- Cause:** The mail filter may have a bug which is causing the multiple rejects.
- Effect:** This message is of warning severity.
- Action(s):** Fix the filter so that only one “reject” can be executed. It might be sufficient to put a “stop” action after one of the rejects.

## FiltActionSideline

- Description:** A mail filter has processed a message and caused it to be sidelined, so that it can be examined by an external program and either reintroduced or removed.
- Parameters:** *filterName*: the name of the filter being executed.  
*dir*: the sideline directory
- Cause:** The “sideline” action was used in the filter.
- Effect:** This message is for informational purposes only.
- Action(s):** None required.

## FiltActionSidelineTwice

- Description:** A mail filter executed the “sideline” action twice, which is not allowed. Only the first “sideline” action will be used.
- Parameters:** *filterName*: the name of the filter being executed.
- Cause:** The mail filter may have a bug which is causing the multiple sidelines.
- Effect:** This message is of warning severity.
- Action(s):** Fix the filter so that only one “sideline” can be executed. It might be sufficient to put a “stop” action after one of the sidelines.

## FiltActionToss

- Description:** A mail filter has processed a message and caused it to be dropped (using the “toss” action).
- Parameters:** *filterName*: the name of the filter being executed.
- Cause:** The “toss” action was used in the filter.
- Effect:** This message is for informational purposes only.
- Action(s):** None required, but you may want to make doubly sure that the filter is working properly. Since the “toss” action causes mail to be lost, extreme care should be taken.

## FiltParseFail

- Description:** An error occurred when trying to parse a filter specification.
- Parameters:** *lineNo*: the line number where the parse error occurred.  
*linePos*: the line position where the parse error occurred.  
*filterName*: the name of the filter being parsed.
- Cause:** The mail filter specification is illegal.
- Effect:** This message is of error severity.
- Action(s):** Correct the mistake in the filter specification. It makes sense to use the `imfiltercheck` utility to debug filters before installing them in a running system.

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## 13.5 File Input/Output Log Events

### FioBlockOnPipe

- Description:** A process is blocked trying to write to a named pipe.
- Parameters:** *namedPipe*: the pathname of the named pipe.
- Cause:** Named pipes are created by InterMail processes if the configuration parameter `logNamedPipeMode` is set to 1 or 2. If it is set to 2, then the process will block on the pipe if necessary until there is a process reading the pipe. If it blocks, it will write this entry to the logfile. A `logNamedPipeMode` value of 2 should only be used in testing, and not in production, because if there is no reader or the reader exits, the process will block and perform no useful work.
- Effect:** This error is of warning severity.
- Action(s):** None, unless blocking is not desired; in which case, change the configuration variable `logNamedPipeMode`.

## FioCloseFail

- Description:** The call to close with file *filename* failed with system error *systemerrstring*. This happens when trying to close a message file system file.
- Parameters:** *filename*: the name of the file.  
*systemErrString*: the system error string.
- Cause:**
- Signal was caught during the call to close.
  - Data not properly written out.
- Effect:** This error is of critical severity.
- Action(s):** Determine what caused this event.

## FioCopyFileFail

- Description:** Copying the file *srcfilename* to the destination *destfilename* failed with status *exitstat*. This is done by making a call to system.
- Parameters:** *srcfilename*: the name of source file.  
*destfilename*: the name of the destination file.  
*exitstat*: the exit status.
- Cause:** There could be several causes for this event.
- The permissions may not be right for the old file or for the destination or new file name.
  - There may not be enough space on the device for the new file.
  - The old file may no longer exist.
- Effect:** This error is of major severity. The occurrence of this error indicates that the machine which the server is running on is in a bad state. Memory is probably exhausted.
- Action(s):** Check the permissions of the *srcfile* and the destination directories. Check the quotas and size of the old file. Check the disk and memory usage on the host on which this server is running.

## **FioCreateFail**

- Description:** The creation of the file *filename* failed with system error *systemerrstring*.
- Parameters:** *filename*: the name of the file.  
*systemErrString*: the system error string.
- Cause:** The file being created could be a message file, a lock file or directory or files for journaling. The system calls which could cause this event are open, mkdir, and access.
- Effect:** This error is of major severity. The occurrence of this error indicates that the machine which the server is running on is in a bad state. Memory is probably exhausted.
- Action(s):** Verify that disk space and memory are not exhausted. Verify that the permissions for the directories and files are correct.

## **FioCreatePortFileFail**

- Description:** The system call to open with filename *filename* failed with system error *systemerrstring*.
- Parameters:** *filename*: the name of the file.  
*systemErrString*: the system error string.
- Cause:**
- The file already exists.
  - The listener process does not have adequate permissions to create the file.
  - The system file table is full.
- Effect:** This error is of major severity.
- Action(s):** Determine which of the causes are responsible for this event. If the file already exists, delete it and restart the server. If the permissions are not right, the process was probably not started correctly with the right user.

## FioDirMissing

- Description:** The call to access with directory name *dirname* failed with system error *systemerrstring*. This happens when the MTA is creating the spool subdirectories.
- Parameters:** *dirName*: the name of the directory.  
*systemErrString*: the system error string.
- Cause:**
- The process does not have adequate permissions to access the directory.
  - The directory name is too long.
  - A signal was caught during the access function call.
- Effect:** This error is of major severity.
- Action(s):** Check to make sure the process is started with the right user. Make sure that the directory name is the correct one for access. Verify that the permissions for the destination directory are correct.

## FioFcntlFail

- Description:** The call to `fcntl()` on file *filename* failed with error *systemerrstring*. Specifically, there was a problem making the named pipe have non-blocking i/o.
- Parameters:** *filename*: the name of the file.  
*systemErrString*: the system error string.
- Cause:** The named pipe file had no readers. In order to avoid a block `fcntl()` was called to make the file have non-blocking i/o.
- Effect:** This error is of minor severity.
- Action(s):** NA.

## FioFsyncFail

- Description:** Performing a file synchronization ( `fsync` ) on the file *filename* resulted in system error *systemErrString*. This is done on a message file.
- Parameters:** *filename*: the filename.  
*systemErrString*: the system error string.
- Cause:**
- File was moved or removed before the `fsync` call.
  - A signal was caught during the `fsync` call
- Effect:** This error is of minor severity.
- However, if this event occurs frequently then the severity should be upgraded to major. This indicates that there is a problem with the message file space files.
- Action(s):** Using the information from `systemErrString` determine the cause for this event. The message file directories may have to be cleaned out and the MSS restarted.

## FioKeyFileUnreadable

- Description:** The shared memory key file was corrupted.
- Parameters:** *keyFilename*: the name of the key file
- Cause:** The key file contains textual representation of the number that must be used to attach to the shared memory segment used by multiple instances of the MSS on the same machine. The number is written to the file just before `imcontrol` starts the MSSes; `immssshare` is called, which creates the shared memory segment and writes its number into the file in `spool/tmp/MSSTable` so that the MSSes can attach to it.
- Effect:** This error is of critical severity.
- Action(s):** This file is human-readable, and it should be easy to see what is wrong. Restart the MSSes using `imservctrl`.

## FioLinkFail

- Description:** The attempt to link *oldfilename* to *newfilename* failed with error *systemErrorString*. This could happen when mail is in the process of being bounced, deferred, or forwarded and an error occurs. It also could occur when there are problems saving bad mail.
- Parameters:** *oldFilename*: the old file name.  
*newFilename*: the new file name.  
*systemErrorString*: the system error string.
- Cause:** Could be one or more of the following:
- The new file already exists.
  - A signal was caught during the link call.
  - Too many symbolic links were encountered.
  - Existing or new file name is a null path name.
  - The read/write permissions for the existing and/or new file do not allow the link.
- Effect:** This error is of minor severity if it occurs because mail is in the process of being bounced, deferred, or forwarded.  
It is major if this error occurs frequently when mail is in the process of being bounced, deferred or forwarded..  
If the error occurs because there is a problem saving bad mail, then this is of warning severity.
- Action(s):** Using the information from the *systemErrorString*, determine the cause of the error. Investigate the log for higher level operations to determine what actions to take.

## FioMakeDirFail

- Description:** The call to `mkdir` with filename *dirname* failed with error *systemerrstring*. This happens when the MTA is attempting to create the error directory.
- Parameters:** *dirname*: the directory name.  
*systemErrString*: the system error string.
- Cause:**
- The user running this server does not have adequate permissions.
  - The server was not started with the correct user.
  - System resources have been exhausted.
  - The filename is too long.
- Effect:** This error is of critical severity. The MTA will stop running when this event occurs.
- Action(s):** Using the information from *systemErrString* determine which of the causes are responsible for this event. Fix the problem and restart the MTA.

## FioMknodFail

- Description:** An attempt to create a named pipe has failed. This was done with a system call to `mknod`.
- Parameters:** *namedPipe*: the name of the pipe.  
*systemErrorString*: the system error string.
- Cause:**
- Memory could be exhausted.
  - Bad filename or path.
  - Signal caught while attempting to create the pipe file.
- Effect:** This error is of warning severity if the cause is a bad filename or signal caught.  
It is critical if the cause is there's no memory left. This is an indication of more serious problems.  
This event is minor on impact of service, but the impact on the system is critical in that there may be no pipe for this server.
- Action(s):** Using the *filename* and *systemErrorString* determine the cause of this event.

## **FioMmapFailed**

- Description:** An attempt to memory-map a file failed.
- Parameters:** *filename*: the file name.  
*systemErrorString*: the system error string.
- Cause:** The system call to `mmap(2)` failed with the error given.
- Effect:** The effect on service is minor in that customers will not be affected. But the severity of this event on the system is critical in that journaling will not work.
- Action(s):** Verify that the permissions for the server and destination of journal files are correct. If these are right, contact Software.com.

## **FioMmapFileNotOpen**

- Description:** An attempt was made to write to a memory-mapped file but it was either not opened or opened and then closed.
- Parameters:** *filename*: the name of the memory-mapped file.
- Cause:**
- Effect:** The severity of this event is minor on the users. The severity of this event on the system is critical in that journaling will not work.
- Action(s):** Contact Software.com.

## **FioNoReaders**

- Description:** Named pipe “%s” has no readers.
- Parameters:** *namedPipePath*: The full path of the named pipe.
- Cause:**
- Effect:**
- Action(s):**

## FioOpenDirFail

- Description:** The call to opendir with directory name *dirname* failed with system error *systemErrString*. This happens when trying to open the directory which holds the MTA control files.
- Parameters:** *dirname*: the name of the directory.  
*systemErrString*: the system error string.
- Cause:**
- The directory cannot be accessed.
  - Memory exhausted.
- Effect:** The severity of this error is warning for customers as service will not be affected, but this event is critical for the system in that it is not possible to scan the control files
- Action(s):** If the directory cannot be accessed, it could be because the process was not started with the right user. Verify that the process logging this event has been started with the correct user. Verify that the directory being opened exists and has the appropriate permissions. If everything looks correct, restart the MTA. If the MTA still signals this event, contact Software.com.

## FioOpenFail

- Description:** The call to open with file *filename* failed with system error *systemErrorMessage*. The context of the open call is provided through the *opcontext*.
- Parameters:** *filename*: the name of the file.  
*opContext*: text explanation of attempted operation.  
*systemErrorMessage*: the system error string.
- Cause:**
- The server performing the open does not have adequate permissions.
  - The file does not exist.
  - The server has too many open files.
  - The system file is full.
- Effect:** The severity of this event is major when one of the servers is affected.
- Action(s):** Using the information from *systemErrorMessage* determine the cause of the event.

## FioPipeHndlr

- Description:** The named pipe could not be used because to do so requires that the SIGPIPE signal be ignored and a non-default signal handler for that signal has already been installed.
- Parameters:** *namedPipePath*: the full path to the named pipe.
- Cause:**
- Effect:**
- Action(s):** Contact Software.com.

## FioPipeOpenFail

- Description:** An attempt to open a named pipe for writing failed. This happens when creating the logfile.
- Parameters:** *namedPipePath*: the full path to the named pipe.  
*systemErrorString*: the system error string.
- Cause:** The permissions could be wrong for the directory. The process could have been started with a user who does not have the appropriate permissions to create the named pipe.
- Effect:** The impact on service is minor. No customers are affected, but the impact on the system is critical in that there may be no pipe for this server.
- Action(s):** Check existence, ownership, and permissions of the directory. If the named pipe does exist, the program would have created it using `mknod()`.

## FioPipeWrite

- Description:** An attempt to write to a named pipe failed. This happens when writing to a logfile.
- Parameters:** *namedPipePath*: the full path to the named pipe.  
*systemErrorString*: the system error string.
- Cause:** The named pipe may no longer exist, the named pipe have access permissions which deny the process to write to it.
- Effect:** The severity of this event is warning. The effect on service is that this process is unable to write to its log file.
- Action(s):** Verify that the named pipe exists and has the appropriate permissions. Verify that the process has been started with the correct user. If the system error string indicates that a resource has been exhausted, check the general health of this host and the disk usage.

## FioPipeWrtFail

- Description:** A write to the named pipe *pipeName* of line *lineNumber* only wrote *numBytes*. The error was *systemErrorString*. This happens when writing to a logfile.
- Parameters:** *pipeName*: the name of pipe.  
*lineNumber*: the line number of the named pipe.  
*numBytes*: the line number of bytes.  
*systemErrorString*: the system error string.
- Cause:** The named pipe may no longer exist, or the named pipe does not have permissions for the process to write to it.
- Effect:** The severity of this event is warning.  
The effect on service is that this process is unable to write to its log file.
- Action(s):** Verify that the named pipe exists and has the appropriate permissions. Verify that the process has been started with the correct user. If the system error string indicates that a resource has been exhausted, check the general health of this host and the disk usage.

## FioPrematureEOF

- Description:** The call to read resulted in end of file.
- Parameters:** None.
- Cause:** System error.
- Effect:** The severity of this event depends on the higher level operations being performed by this process. The severity can range from warning to critical. The effect on service must be investigated by looking at the log files for other events which are more specific to each process.
- Action(s):** This event alone has no context on what operation was being performed. The log file for the process should be looked at to determine the higher level operation and then the recovery procedure should be followed for that event.

## FioReadFail

- Description:** Performing a read resulted in system error *systemErrorString*. This is a low level operating system type event.
- Parameters:** *systemErrorString*: the system error string.
- Cause:**
- Physical I/O error occurred.
  - Total amount of system memory available is insufficient.
- Effect:** The severity of this event depends on the higher level operations being performed by this process. The severity can range from warning to critical. A hardware error may have occurred which would make this event have a severity of critical.
- Action(s):** Investigate the effect on service by looking at the log files for other events which are more specific to each process. Determine which cause is responsible for this event. Depending on the cause, perform the appropriate recovery action.

## FioRenameFileFail

- Description:** Renaming file *oldfilename* to *newfilename* failed with system error *systemErrorstring*.
- Parameters:** *oldFilename*: the old filename.  
*newFilename*: the new filename.  
*systemErrorString*: the system error string.
- Cause:** There could be several causes for this event. The permissions may not be right for the old file or for the destination or new file name. There may not be enough space on the device for the new file.
- Effect:** The severity of this event is minor if one of the servers have signaled the error.
- Action(s):** Verify that the permissions are correct for the old file and the destination. Verify that memory has not been exhausted. Verify the general health of the host machine.

## FioRmdirFail

- Description:** The system call to `rmdir` with filename *dir* failed with system error *systemErrorString*.
- Parameters:** *dir*: the name of the directory.  
*systemErrorString*: the system error string.
- Cause:**
- The server performing the `rmdir` does not have adequate permissions.
  - The name of the file is too long.
- Effect:** If this event is signaled by the Queue Server, the severity is minor.
- Action(s):** Determine the cause responsible for this event. It may be the case that directories that are expected to exist have been removed.

## FioSeekFail

- Description:** Performing an `lseek` results in the error *systemErrorString*.
- Parameters:** *systemErrorString*: the system error string.
- Cause:** System error.
- Effect:** The severity is major if it is signaled by the MSS, POP Server or MTA. The effect on service must be investigated by looking at the log files for other events which are more specific to each process.
- Action(s):** Determine which cause is responsible for this event. Depending on the cause perform the appropriate recovery action.

## FioSharedAttachFail

- Description:** The system call to `shmat(2)` failed. Currently, only one shared memory table is used, the `MSSTable`.
- Parameters:** *segmentName*: the name of the shared segment.  
*systemErrorString*: the system error string.
- Cause:** System resources may be exhausted.
- Effect:** The severity of this event is critical if running more than one MSS. None of the MSS processes will function properly which would result in none of the users being able to retrieve their mail.
- Action(s):** Using the *systemErrorString*, determine what the cause was for this event. Cat the contents of `spool/tmp/MSSTable`, which will show the shared memory id of the `MSSTable` shared memory segment. Type “`ipcs -m`” to see a listing of all shared memory segments. If necessary, restart the servers using `imcontrol`.

## FioShmatWrongSize

- Description:** The system call to `shmctl` returned a memory segment of size which is smaller than size requested.
- Parameters:** *expectedSize*: the size expected for the shared memory segment.  
*sizeReceived*: the size the segment actually was.
- Cause:** The shared memory table was successfully attached, but it was not the size that this program expected. This would result if the `immssshare` program and the `mss` program were not from the same package.
- Effect:** The severity of this event is critical if more than one MSS is running. None of the users will be able to retrieve their mail.
- Action(s):** Check the configuration for corruption. Ensure that all executables are as originally installed.

## FioShmctlGetFail

- Description:** The system call to `shmctl()` failed.
- Parameters:** *segmentName*: the name of the shared segment.  
*systemErrorString*: the system error string.
- Cause:** The call to `shmctl(2)` failed with the error given.
- Effect:** The severity of this event is critical. If more than one MSS is running, none of the users will be able to retrieve their mail.
- Action(s):** Determine the cause of the error from the information given. You may have to restart the MSS process(es).

## FioShmctlRemoveFail

- Description:** The system call to `shmctl()` failed with error *systemErrorString*. An attempt to remove a shared memory segment failed.
- Parameters:** *segmentName*: the name of the shared memory segment.  
*systemErrorString*: the system error string.
- Cause:** System resources may be exhausted.
- Effect:** The severity of this event is critical. If more than one MSS is running, users will be unable to retrieve their mail.
- Action(s):** Using the *systemErrorString*, determine the cause for this event. Cat the contents of `spool/tmp/MSSTable`, which will show the shared memory id of the MSSTable shared memory segment. Type “`ipcs -m`” to see a listing of all shared memory segment. If necessary, restart the servers using `imcontrol`.

## FioShmctlSetFail

- Description:** Could not set permissions on shared memory segment *segmentName*. The call to `shmctl` returned system error *systemErrorString*.
- Parameters:** *segmentName*: the name of the shared memory segment.  
*systemErrorString*: the system error string.
- Cause:** System resources may be exhausted.
- Effect:** The severity of this event is critical. If more than one MSS is running, users will be unable to retrieve their mail.
- Action(s):** Check the manual page for `shmctl(2)` and for `ipcs(1)`. Using the *systemErrorString*, determine the cause for this event. Cat the contents of `spool/tmp/MSSTable`, which will show the shared memory id of the MSSTable shared memory segment. Type “`ipcs -m`” to see a listing of all shared memory segments.

## FioShmctlStatFail

- Description:** An attempt to get status on a shared memory segment failed. Could not stat the shared memory segment *segmentName*.
- Parameters:** *segmentName*: the name of the shared memory segment.  
*systemErrorString*: the system error string
- Cause:**
- Memory exhausted.
  - Hardware error.
- Effect:** The severity of this event is critical. If more than one MSS is running, users will be unable to retrieve their mail.
- Action(s):** See man pages for `shmctl(2)` and `ipcs(1)`. Using the *systemErrorString*, determine the cause for this event. Cat the contents of `spool/tmp/MSSTable`, which will show the shared memory id of the MSSTable shared memory segment. Type “`ipcs -m`” to see a listing of all shared memory segments.

## FioShmdtFail

- Description:** Could not detach from shared memory segment with filename *segmentName*.
- Parameters:** *segmentName*: the name of the shared memory segment.  
*systemErrorString*: the system error string.
- Cause:**
- Memory exhausted.
  - Hardware error.
- Effect:** The severity of this event is critical. If more than one MSS is running, users will be unable to retrieve their mail.
- Action(s):** Use the manual pages for `shmdt(2)`, `ipcs(1)`, and `ipcrm(1)`. Using the *systemErrorString*, determine the cause for this event. Cat the contents of `spool/tmp/MSSTable`, which will show the shared memory id of the MSSTable shared memory segment. Type “`ipcs -m`” to see a listing of all shared memory segment.

## FioShmgetFail

- Description:** An attempt to get a shared memory identifier failed. The call to `shmget` failed on file *segmentName* with system error *systemErrorString*.
- Parameters:** *segmentName*: the name of the shared memory segment.  
*systemErrorString*: the system error string.
- Cause:**
- Memory may be exhausted.
  - It could be a hardware error.
- Effect:** The severity of this event is critical. If more than one MSS is running, users will be unable to retrieve their mail.
- Action(s):** Use the manual page for `shmget (2)`. Using the *systemErrorString*, determine the cause for this event. Cat the contents of `spool/tmp/MSSTable`, which will show the shared memory id of the MSSTable shared memory segment. Type “`ipcs -m`” to see a listing of all shared memory segments.

## FioStatFail

- Description:** The `{l,f,}stat` command failed on file *filename* with *systemErrorString*. The context is either in the MSS or the directory server.
- Parameters:** *filename*: the filename.  
*systemErrorString*: the system error string.
- Cause:**
- The server does not have adequate permissions.
  - The file does not exist.
  - A signal was caught during the stat call.
  - The length of the filename is too long.
- Effect:** The severity of this event is critical. The effect on service is that updating the DB database probably failed or that the MSS had a problem with the file containing the list of buckets.
- Action(s):** Using the information from *systemerrstring* determine the cause of this event. If it looks like a problem updating the DB database the directory server may have to be restarted. If this is a problem with the file containing the list of buckets, there are probably more severe problems with the MSS.

## FioUnlinkFail

- Description:** The system call to unlink with file *filename* failed with system error *systemErrorString*.
- Parameters:** *filename*: the name of the file.  
*systemErrorString*: the system error string.
- Cause:**
- The server performing the unlink does not have adequate permissions.
  - The name of the file is too long.
- Effect:** The severity is warning if this event is signaled by the MTA or this event is related to journaling. It is minor if this event is signaled by the MSS. Service is only adversely affected in the case of the MSS signaling this event. There will be small customer impact for this case.
- Action(s):** Determine which cause is responsible for this event. The files which are expected to exist may have been removed.

## FioWriteFail

- Description:** The call to write with file *filename* failed with system error *systemErrorString*. The context of the write is provided through the *opcontext*.
- Parameters:** *filename*: the name of the file.  
*Filname*: text explanation of attempted operation.  
*systemErrorString*: the system error string.
- Cause:**
- The server performing the write does not have adequate permissions.
  - The file does not exist.
  - The server has too many open files.
  - The system file is full.
- Effect:** The severity of this event depends on the higher level operations being performed by this process.  
The severity is major if the MSS, POPSERV, IMDIRCACHESERV, or the MTA signal this error.
- Action(s):** Investigate the effect on service by checking the log files. Look for other events which are more specific to each process.  
Using the information from *systemErrorString* determine the cause of the event. If the server does not have adequate permissions, the server may not have been started with the right user. If the system file is full or the file does not exist, check the general health of the host machine. If everything looks OK, investigate the log for information on higher level operations to determine whether or not a server must be restarted.

## 13.6 IMAP Log Events

### ImapBadMsgNum

- Description:** A bad message number was specified with one of the IMAP commands from the IMAP client.
- Parameters:** *msgnum*: The message sequence number.
- Cause:** The IMAP client sent an IMAP command with a bad message number to the IMAP Server.
- Effect:** Not serious, this is a problem with the IMAP client.
- Action(s):**

### ImapCommandFailed

- Description:** An error occurred while processing an IMAP command.
- Parameters:** None.
- Cause:** The error may be due to an internal problem with the IMAP Server or may result from a client error.
- Effect:** Usually has no significant effect. In some cases, a user may not be able to access his mail via the IMAP Server.
- Action(s):** Look in the IMAP Server log files for other log events relating to this client - there should be other log events with more specific information. Often no action is required because the error reflects a client mistake.

### ImapCommandFailedReason

- Description:** An error occurred while processing an IMAP command.
- Parameters:** *explanation*: explanation of the error. This is the same explanation that was sent to the client in the command response.
- Cause:** The error may be due to an internal problem with the IMAP Server or may result from a client error. The cause is indicated by the *explanation*.
- Effect:** Depends on the explanation parameter, usually has no significant effect. In some cases, a user may not be able to access his mail via the IMAP Server.
- Action(s):** Depends on the explanation parameter. Often no action is required because the error reflects a client mistake.

## **ImapConnBroken**

**Description:** The connection between the IMAP Server and the IMAP client which is running on host *host* has been broken.

**Parameters:** *host*: the host the IMAP client is running on.

**Cause:**

- The IMAP client could have broken the connection intentionally or unintentionally.
- The host machine *host* could be in a strange state or could have been rebooted.

**Effect:**

**Action(s):** None.

## **ImapConnMade**

**Description:** The IMAP Server successfully validated the user.

**Parameters:** None.

**Cause:** The user is being successfully validated by the IMAP Server.

**Effect:** This is a notification.

**Action(s):** None.

## **ImapConnTimedOut**

**Description:** Connection with the IMAP client has been terminated because the connection was idle for too long.

**Parameters:** None.

**Cause:** The user's connection was idle.

**Effect:** This is a notification.

**Action(s):** None.

## **ImapDisconnected**

**Description:** Connection with the IMAP client has been terminated.

**Parameters:** None.

**Cause:** The user's connection has terminated.

**Effect:** This is a notification.

**Action(s):** None.

## **ImapMaxSessions**

- Description:** The IMAP Server has hit the maximum number of connections configured by the system administrator, and will not accept additional connections until other clients are disconnected.
- Parameters:** *count*: The maximum number of connections.
- Cause:** There are too many incoming connections
- Effect:** Clients are not being allowed to login.
- Action(s):** If these messages persist, consider raising the connection limit, or add additional servers if the server is already overloaded.

## **ImapMSSError**

- Description:** An error was reported by the MSS and the IMAP Server unable to continue the current operation. The client is disconnected.
- Parameters:** None.
- Cause:** The MSS reported an error to the IMAP Server. There may be a problem with the user's mailbox.
- Effect:** Client is disconnected.
- Action(s):** Check the MSS log files for problems occurring at about the same time.

## **ImapMSSTooOld**

- Description:** This event occurs when the IMAP server looks up a user name and discovers that the user's mailbox is stored in an older version of the message store.
- Parameters:** None.
- Cause:** The message store containing the user's mailbox is an older version that does not support features necessary for the IMAP server.
- Effect:** Message store is stored on an MSS that is too old to be used with the IMAP server. Client connection dropped.
- Action(s):** The MSS containing the user's mailbox must be upgraded, or the user's mailbox must be moved to a newer MSS that supports the IMAP server.

## ImapProtocolErr

- Description:** The IMAP client sent an invalid command that could not be understood by the IMAP Server.
- Parameters:** *explanation*: explanation of the protocol error. This is the same explanation that was sent to the client in the error response.
- Cause:** The IMAP client sent an invalid command.
- Effect:** This is an informational message only.
- Action(s):** None.

## ImapSyncError

- Description:** Synchronization error with Message Store Server; got “*reply*” reply in state “*state*”.
- Parameters:** *reply*: name of the unexpected reply received.  
  
*state*: state of the IMAP connection when the reply was received.
- Cause:** The Message Store Server could be in a strange state. The IMAP Server could be in a strange state.
- Effect:** May indicate a problem with the MSS or the IMAP Server. Clients may not be able to access mail via IMAP.
- Action(s):**

## ImapUIDOutOfOrder

- Description:** This event occurs when an MSS notifies the IMAP Server that a new message has arrived with a UID lower than that of the last message in the mailbox.
- Parameters:** *newuid*: the UID of the newly arrived message.  
*olduid*: the UID of the last message in the mailbox.
- Cause:** An MSS is notifying the IMAP server of new message arrivals in the wrong order.
- Effect:** IMAP clients expect messages in a mailbox to have strictly increasing UIDs. Some IMAP client software may become confused if messages are presented in the wrong order.
- Action(s):** None needed. Closing and reopening the mailbox from within the IMAP client will cause the messages to be sorted correctly.

## 13.7 Journal Log Events

### JrnBadFormat

- Description:** A formatting error was found in a journal file while it was being examined or played back.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** The file was either written incorrectly or subsequently corrupted.
- Effect:** This error is of minor severity. All message data in the journal file following the point where the format error occurs will be ignored. If this command is being run as part of a restore process, some messages will be inaccessible until the journal file is fixed.
- Action(s):** Check that the file is really a journal file. If necessary, restore the journal file from a backup.

### JrnBadMagicNumber

- Description:** The header section of the file did not have the right “magic number” to be a journal file.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** The file is not a journal file or it is severely damaged.
- Effect:** This error is of minor severity. All message data in the journal file will be ignored. If this command is being run as part of a restore process, some messages will be inaccessible until the journal file is fixed.
- Action(s):** Check that the file is really a journal file. If necessary, restore the journal file from a backup.

### JrnCreateFileFail

- Description:** An attempt to create a journal file failed.
- Parameters:** *journalFilename*: the name of the journal file.  
*systemErrorString*: the system error string.
- Cause:** A call to `open()` failed with the error *systemErrorString*.
- Effect:** This error is of critical severity. Message creation and deletion will fail, causing new messages to be deferred and garbage collection to fail.
- Action(s):** Check existence, ownership, available space, and permissions of the directory in which the file could not be created.

## JrnDirDeleted

- Description:** The directory *dir* was successfully deleted by the *imjrnplay* command, as specified in the journal.
- Parameters:** *dir*: the directory that was deleted.
- Cause:** This filename matched all the criteria specified to *imjrnplay* and the “-x” switch was used (as when running *imjrnrecover*).
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnDirNotSpecified

- Description:** The *journalDir* configuration variable was not set.
- Parameters:** None.
- Cause:** The configuration parameter *journalDir* was not specified in the configuration database.
- Effect:** This error is of critical severity. The MSS will not run if this configuration value is missing.
- Action(s):** If possible, recover the configuration from a backup. If no backup is available, use *imconfedit* to add the configuration parameter.

## JrnFileCreateBegin

- Description:** A new journal file named *journalFileName* was created successfully and is now accumulating journal data.
- Parameters:** *journalFileName*: the name of the journal file.
- Cause:** Journal files routinely rollover when they reach a configured size (default 100 Mb), or when a configured time boundary is reached (default one hour).
- Effect:** This message is of informational severity.
- Action(s):** NA.

## JrnFileCreateEnd

- Description:** Writing to the journal file *journalFilename* has completed successfully and the file was closed.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** Journal files routinely rollover when they reach a configured size (default 100 Mb), or when a configured time boundary is reached (default one hour).
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileDeleted

- Description:** A message file was successfully deleted.
- Parameters:** *filename*: the pathname of a message file in the message file system.
- Cause:** The `imjrnplay` command executed a journal entry that specified the deletion of a message file that had been previously garbage-collected.
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileDone

- Description:** All entries in journal file *journalFilename* have been successfully read and executed.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** The `imjrnplay` command finished processing a journal file.
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileEmpty

- Description:** The journal file *journalFilename* contained no entries.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** The journal file is corrupted or truncated.
- Effect:** This error is of minor severity. All message data in the journal file following the point where the format error occurs will be ignored. If this command is being run as part of a restore process, some messages will be inaccessible until the journal file is fixed.
- Action(s):** Check that the file is really a journal file. If necessary, restore the journal file from a backup.

## JrnFileIgnored

- Description:** The action specified in a journal entry referring to message file *filename* was not performed.
- Parameters:** *filename*: the name of a message file.
- Cause:** This filename did not match the prefix specified to the `imjrnplay` command with the “-r” switch.
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileLinked

- Description:** The link *filename2* was successfully restored by the `imjrnplay` command.
- Parameters:** *filename1*: the name of the file that was linked from.  
*filename2*: the name of the file that was linked to.
- Cause:** This filename matched all the criteria specified to `imjrnplay` and the “-x” switch was used (as when running `imjrnrecover`).
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileRenamed

- Description:** The file *filename1* was successfully renamed by the `imjrnplay` command.
- Parameters:** *filename1*: the name of the file that was renamed.  
*filename2*: the new name of the file.
- Cause:** This filename matched all the criteria specified to `imjrnplay` and the “-x” switch was used (as when running `imjrnrecover`).
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileRestored

- Description:** The message file *filename* was successfully restored by the `imjrnplay` command.
- Parameters:** *filename*: the name of a message file.
- Cause:** This filename matched all the criteria specified to `imjrnplay` and the “-x” switch was used (as when running `imjrnrecover`).
- Effect:** This message is of informational severity.
- Action(s):** None.

## JrnFileTruncated

- Description:** The journal file *journalFilename* did not end with a proper terminal entry, which may indicate that the file has been truncated.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** The journal file has been unintentionally truncated, or the file was in use when the MSS was shut down.
- Effect:** This error is of minor severity. If the file is really truncated, some messages will be inaccessible until the journal file is recovered and replayed. It is much more likely that the file was simply not properly closed by the MSS.
- Action(s):** If it is clear that messages are missing that should have been created in this journal file, restore the journal file from a backup.

## JrnMapDataFileFail

- Description:** The contents of a message file could not be journaled due to the error *systemError*.
- Parameters:** *filename*: the name of a message file.  
*systemError*: the system error string.
- Cause:** The `mmap()` system call failed.
- Effect:** This error is of critical severity. Message creation and deletion will fail, causing new messages to be deferred and garbage collection to fail.
- Action(s):** Check the existence, ownership, available space, and permissions of the journal directory.

## JrnProcessingFile

- Description:** The journal file *journalFilename* has been successfully opened and entries will now be read and executed.
- Parameters:** *journalFilename*: the name of the journal file.
- Cause:** The `imjrnplay` command started processing a journal file.
- Effect:** This message is of informational severity.
- Action(s):** None.

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## 13.8 LDAP Messages

### LDAPCacheVerifyFailed

- Description:** The verification of LDAP cache consistency with the Oracle tables failed.
- Parameters:** None.
- Cause:** The most likely explanation is that the data in the LDAP cache database is too old to be properly updated from the Oracle database
- Effect:** The severity of the error ranges from minor to critical.
- Action(s):** Re-build the LDAP cache database using `imldaupdate -f filename` and `ldif2ldb -i filename`, and then restart the LDAP server.

### LDAPConfigError

- Description:** An error in the configuration (`config.db`) for LDAP was found. The specific error is described by *ldaperror*.
- Parameters:** *application*: the LDAP application reporting the error.  
*ldaperror*: a description of the error.
- Cause:** Improper or conflicting configuration parameters were entered into the `config.db`
- Effect:** This message is of major severity.  
The application or server identified by *application* will not perform its task until the configuration is repaired.
- Action(s):** Identify the configuration variables causing the problem (they should be identified in the error message). Edit the variables to correct values.

### LDAPFailedLDAPConnect

- Description:** Unable to open an LDAP connection to *hostname:port*.
- Parameters:** *hostname*: the hostname of the LDAP server.  
*port*: the port number of the LDAP server on *hostname*
- Cause:**
- The hostname is wrong. (config value for `LDAPHost` is incorrect.)
  - The LDAP server is not running on *hostname*.
  - The LDAP server is not running with the specified port.
- Effect:** The severity of the error ranges from minor to critical.  
The `imldapupdate` server will terminate immediately. Changes to the Oracle LDAP directory database will not be propagated to the intended LDAP server.
- Action(s):** Verify the configuration value for `LDAPHost` and `LDAPPort`.  
Verify that the server is running and configured with the proper port

## LDAPInitNoHost

- Description:** Getting the value of *config-key* failed.
- Parameters:** *config-key*: Configuration key where hostname of the LDAP server is registered.
- Cause:**
- Effect:** The severity of the error ranges from minor to major.  
The LDAP server will not be updated until the `imldapupdate` process is operating properly
- Action(s):** Enter the appropriate hostname for the LDAP server under *config-key*.

## LDAPLogsExpiredTime

- Description:** A notification that the LDAP update logs have been expired.
- Parameters:** *time*: The time of the latest log expiration.
- Cause:** This is normal LDAP operation.
- Effect:** None.
- Action(s):** None.

## LDAPNoServerPassword

- Description:** Getting the value of `LDAPPassword` failed.
- Parameters:** *config-key*: Configuration key where the server update password is stored.
- Cause:**
- Effect:** The severity of the error ranges from minor to major. The LDAP server will not be updated until the `imldapupdate` process is operating properly
- Action(s):** Enter the appropriate password (for the root user DN) for the LDAP server under `LDAPPassword`.

## LDAPNoServerUsername

- Description:** Getting the value of `LDAPUpdateUser` failed.
- Parameters:** *config-key*: Configuration key where the server update DN is stored.
- Cause:**
- Effect:** The severity of the error ranges from minor to major. The LDAP server will not be updated until the `imldapupdate` process is operating properly
- Action(s):** Enter the appropriate DN (the root user DN) for the LDAP server under `LDAPUpdateUser`.

## LDAPNoUpdateServerDN

- Description:** Getting the value of *config-key* failed.
- Parameters:** *config-key*: configuration key where the `imldapupdate` server entry DN is stored.
- Cause:**
- Effect:** The severity of the error ranges from minor to major. The LDAP server will not be updated until the `imldapupdate` process is operating properly
- Action(s):** Enter the appropriate DN for the `imldapupdate` LDAP entry. This entry stores information about `imldapupdate` and its relationship with an LDAP server. The main criteria is that it must be editable by the `imldapupdate` process and preferably is not readable by any other logins (or at least not by the general populace). It must not be editable by any other process.

## LDAPOracleUpdateFail

- Description:** The database operation requested by the InterMail LDAP updater (“`imldapupdate`”) failed with error *dberr*. The *dberr* will usually contain more detailed information about the database error.
- The *dberr* is an error message provided by Oracle. Oracle will typically include a list of error messages in *dberr*. The first message is the most general, identifying the overall database operation that failed. The last message is the most specific, often identifying the Unix system call that failed. When diagnosing problems, it is usually a good practice to start diagnosing the most general Oracle error first.
- Parameters:** *dberr*: details about the error from the database server.
- Cause:** This error arises anytime the database (Oracle) returns an error in response to a query, data manipulation, or any other request made by InterMail. There are a wide range of causes for these errors:
- Database configuration error.
  - Database storage failure.
  - Database corruption.
  - Insufficient rollback resources.
- Some of the more common errors returned by Oracle:
1. ERROR: ORA-01034: ORACLE not available
- ORA-07429: smsgsg: shmget() failed to get segment.
- SVR4 Error: 2: No such file or directory
- Likely causes: the database is not up, or the `oracleConnection` configuration database parameter is set wrong. Oracle is looking for a shared memory segment that contains the in-memory data cache and can't find it. The most likely reason for its not being there is that the database is down.

2. ERROR: ORA-12203: TNS: unable to connect to destination.

Likely cause: the Oracle SQL\*Net listener process is not running on the host with the database. InterMail is trying to connect to the database using SQL\*Net, and the listener process is a necessary ingredient for this to happen successfully.

3. ERROR: ORA-12154: TNS: could not resolve service name

Likely cause: the Oracle SQL\*Net installation is mis-configured. InterMail is trying to connect to the database using SQL\*Net, but the `$ORACLE_HOME/network/admin/tnsnames.ora` file is not set up properly.

**Effect:** The severity is minor if the LDAP updater (`imldapupdate`) may be unable to deliver new changes to one or more `slapd` servers.

The event is major if the error occurs more than once; the entire LDAP system or Directory may be effectively inoperative.

Failure to determine the cause of this error and resolve it may lead to loss of data for LDAP.

**Action(s):** More information about Oracle errors can be obtained from Oracle via the `oerr` command. For this command to work properly, the `ORACLE_HOME` environment variable must first be properly set.

Check the alert log

(`$ORACLE_HOME/.. /admin/$ORACLE_SID/dump_dest/bdump/alert_$$ORACLE_SID.log`) for any alarming messages.

## LDAPServerError

**Description:** A failure was reported by the LDAP server while it was performing operation. The specific error is specified by `ldaperror`.

**Parameters:** `ldaperror`: the error reported by the LDAP server.  
`operation`: the operation being performed.

**Cause:** There are a wide range of causes for these errors:

- LDAP server configuration error.
- `imldapupdate` configuration error.
- transient resource deficiency.
- LDAP / Oracle Synchronization problem

**Effect:** This message is of major severity.

Even if the error does not repeat, it may indicate that an update failed to get processed. This will essentially stall all further updates until the problem is resolved.

Failure to determine the cause of this error and resolve it may lead to lost or corrupted LDAP entries.

**Action(s):** Attempt to determine the cause.

If a configuration problem, correct the appropriate configuration file.

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## 13.9 Message Store Log Events

### MsAlreadyExists

- Description:** While attempting to create a message store, a message store with name *msname* was found to already exist.
- Parameters:** *msName*: the message store name.
- Cause:** This is likely to happen when creating message stores. When creating message stores on demand, another thread may have created the message store first.
- Effect:** This message is of informational severity.
- Action(s):** Verify that the message store *msname* exists.

### MsAlreadyPopLocked

- Description:** A message store could not be opened because it is POP locked in exclusive mode.
- Parameters:** None.
- Cause:** A POP session on the message store was already active at the time, or the message store was briefly locked for a maintenance activity.
- Effect:** The message store cannot be accessed until it is unlocked.
- Action(s):** No action needs to be taken. This condition occurs during the course of normal operation as a consequence of the POP3 specification requiring exclusive locks on message stores. This notification is not normally logged.

### MsBadBounceNoticeParm

- Description:** When the MSS is about to deliver a bounce notification, not enough information has been passed to the internal code to generate a bounce notification.
- Parameters:** None.
- Cause:** This is an internal error caused by the code which passes invalid information to the function for delivering a bounce notification.
- Effect:** This really should not happen very often. An internal error is of major severity. Affects all the message stores: missing bounce notifications.
- Action(s):** Contact Software.com Technical Support.

## MsBadDbname

- Description:** The database name *dbName* provided when starting up the MSS is not valid.
- Parameters:** *dbName*: the database name.
- Cause:** The script to start the MSS is incorrect.
- Effect:** This error is of critical severity. No access to any message stores served by this database.
- Action(s):** Verify that the message store server is being started correctly with the right arguments.

## MsBadMS

- Description:** A message store of an unknown type was identified user *user*. This error should never occur with database message stores.
- Parameters:** *user*: the user name for the mail account.
- Cause:** A client program and an entry in the directory service specified an invalid message store.
- Effect:** This error is of minor severity. Affects a single message store only: no access.
- Action(s):** Check the directory service to verify that the user points to a valid message store.

## MsBadMssStatistic

- Description:** When fetching statistics about a message store server, an invalid statistic was encountered.
- Parameters:** None.
- Cause:** A client program specified invalid an statistic, likely a statistic meant to apply to message stores only (rather than to the message store server).
- Effect:** This error is of minor severity. Affects a single message store only.
- Action(s):** Contact Software.com Customer Support.

## MsBadQuery

- Description:** The message store server received a query with an invalid type.
- Parameters:** None.
- Cause:**
- Effect:** This error is of minor severity. Affects a single message store only.
- Action(s):** Contact Software.com Customer Support.

## MsBadStatistic

- Description:** When fetching statistics about a message store *msName*, an invalid statistic was encountered.
- Parameters:** *msName*: the name of the message store.
- Cause:** A client program specified an invalid statistic.
- Effect:** This error is of minor severity. Affects a single message store only.
- Action(s):** Contact Software.com.

## MsBadURL

- Description:** When accessing a message store for mailbox *mailboxname*, the type of message store was not recognized. This error is unlikely to happen with database message stores.
- Parameters:** *mailboxname*: the mailbox name.
- Cause:** A client program and an entry in the directory service specified an invalid message store.
- Effect:** This message is of minor severity. It affects a single message store only: no access.
- Action(s):** Using the *mailboxname*, check the directory service to verify that the user points to a valid message store.

## MsBroadcastFail

- Description:** The message broadcast failed because message store *msname* among *numberms* was not available for more than two hours.
- Parameters:** *msName*: the name of the message store.  
*numberms*: the number of message store.
- Cause:** Message store *msname* may be in use by another Message Store Server.
- Effect:** This error is of minor severity. Affected message stores will not receive the broadcast message.
- Action(s):** Verify the state of message store *msname*.

## MsCorruptStoresDict

- Description:** The message store server has detected an internal inconsistency in message store *msName*. This has been determined after either finding a loaded message store, loading an existing message store or creating a new message store.
- Parameters:** *msName*: the name of the message store.
- Cause:** System or hardware.
- Effect:** The severity of this event ranges from major to critical. If the error is repeating for multiple message stores, all message store access for this machine may be affected.
- Action(s):** Check for database errors. Verify database validity (if error is repeated). Check for system errors. Restart the message store servers. Restart Oracle database. Restart system.

## MsDeleteMSFail

- Description:** The attempt to delete the message store failed because it is in use.
- Parameters:** None.
- Cause:** The administrator is attempting to delete a message store that is currently in use. The message store will not be deleted.
- Effect:** This error is of minor severity. Affects a single message store only: the message store was not deleted.
- Action(s):** Check that the correct message store is specified, especially if using a generated list. If the message store is correct, wait until the message store is closed before deleting it.

## MsDuplicateName

- Description:** An attempt was made to create a folder *folderName* but the folder *folderName* already exists.
- Parameters:** *folderName*: the name of the folder.
- Cause:** A client of the message store server tried to create a folder with the same name as one which already exists.
- Effect:** This error is of warning severity.
- Action(s):** This is a likely user error, there is no action required. If the error is seen with only POP clients, contact Software.com.

## **MsEmpty**

- Description:** A message store was determined to be empty.
- Parameters:** None.
- Cause:** A message store has no messages in its inbox.
- Effect:** The processing of an empty message store was speeded up.
- Action(s):** No action needs to be taken. This condition occurs during the course of normal operation when the system optimizes the processing of an empty message store. This notification is not normally logged.

## **MsEmptyFolderNotSupp**

- Description:** Older servers cannot empty any folder other than the Trash folder.
- Parameters:** None.
- Cause:** This error could only occur with differing versions of InterMail servers and the InterMail message store.
- Effect:** This error is of minor severity. Message stores served by the server cannot empty folders other than Trash.
- Action(s):** The message store server is an old version and should be updated. Check revisions of InterMail software. Upgrade the software or re-install as required. “pkginfo -l InterMail” will tell you the version number of the installed package on any host.

## **MsEmptyMSName**

- Description:** Attempt to create a message store using an empty name.
- Parameters:** None.
- Cause:** The mailbox for a user was specified incorrectly in the directory service.
- Effect:** This error is of minor severity. Affects an individual user only: message store was not properly identified.
- Action(s):** Verify that the mailbox names for the mail accounts being created are valid.

## **MsFolderLoop**

- Description:** Folder “folderName1” cannot contain folder “folderName2” because “folderName1” is already contained by “folderName2.”
- Parameters:** *folderName1*: the name of the containee folder.  
*folderName2*: the name of the container folder.
- Cause:** A client of the message store server requested an improper move of a folder.
- Effect:** This message is of informational severity. Affects a single message store only.
- Action(s):** None. This is a user error.

## **MsFolderNotInFolder**

- Description:** The folder “folderName2” is no longer in folder “folderName1.”
- Parameters:** *folderName1*: the name of the container folder.  
*folderName2*: the name of the containee folder.
- Cause:** This event happens when the message store server is requested to move a folder to a new container folder, or if a rename of a subfolder occurs. A message store is being accessed by multiple clients either performing folder actions simultaneously (e.g. a shared message store) or a client has not updated the result of a previous folder action and has out of date information.
- Effect:** This message is of informational severity. Affects a single message store only.
- Action(s):** None. This is a user error.

## **MsFolderNotMovable**

- Description:** A client of the message store server attempted to move folder *folderName*, which is not movable. This folder is probably the trash folder.
- Parameters:** *folderName*: the name of the folder.
- Cause:** An attempt to move either the trash folder or any other folder by a client of the message store server.
- Effect:** This message is of informational severity. Affects a single message store only.
- Action(s):** None. This is a user error.

## **MsFolderNotRenamable**

- Description:** A client of the message store server attempted to rename folder *folderName* which cannot be renamed. This folder is probably the trash folder.
- Parameters:** *folderName*: the name of the folder.
- Cause:** An attempt to rename either the trash folder or any other folder by a client of the message store server.
- Effect:** This message is of informational severity. Affects a single message store only.
- Action(s):** None. This is a user error.

## **MsInvalidMsgFlag**

- Description:** The message store server received a query for message flags where invalid message flags was specified.
- Parameters:** None.
- Cause:**
- Effect:** This error is of minor severity. Affects a single message store only.
- Action(s):** If the error repeats frequently, contact Software.com customer support.

## **MsInvalidObjRef**

- Description:** An internal id does not refer to an object.
- Parameters:** None.
- Cause:**
- Effect:** The severity of this event is major (possibly critical). The effect on service depends on the object that caused the alarm. This alarm usually affects a single user. However, if it floods, the entire MSS process could be affected.
- Action(s):** Reboot the server taking the error if the alarm is repeating several times a minute. If problem is not cleared, contact Software.com customer support.

## **MsLimitMsgSize**

- Description:** The size of the message *msgsize* exceeded the maximum allowed per message for message store *msname*. The message will not be created.
- Parameters:** *msgSize*: the size of the message in bytes.  
*msName*: the message store name.
- Cause:** The message store *msname* has been configured to disallow message creation for messages of a maximum size.
- Effect:** This error is of warning severity. Affects individual message store only: mail cannot be delivered to this message store until the number of messages is reduced or the limit is raised.
- Action(s):** Verify that the message store *msname* has been configured correctly. Request that customers download their mail.

## **MsLimitNumMsgs**

- Description:** The number of messages in message store *msname* is at limit *maxnummsgs*. The new message was not created.
- Parameters:** *msName*: the message store name.  
*maxNumMsgs*: the maximum number of messages allowed for this message store.
- Cause:** The message store *msname* has been configured to allow a maximum of *maxnummsgs*.
- Effect:** This error is of warning severity. Affects an individual message store only: no more mail may be delivered to this message store until the number of messages is reduced or the limit is raised.
- Action(s):** Verify that the message store *msname* has been configured correctly. Request that customers download their mail.

## MsLimitTotalSize

- Description:** The size of the message store *msname* is near enough to the quota for maximum size (*maxsize*), such that the message cannot be created because this would exceed the quota.
- Parameters:** *msName*: the message store name.  
*currentsize*: the current number of bytes stored for this message store.  
*msgsize*: the size of the message in bytes.  
*maxsize*: the maximum number of bytes which can be stored for this message store.
- Cause:** The message store *msname* has been configured to allow a maximum of *maxsize* bytes stored.
- Effect:** This error is of warning severity. Affects individual message store only: no more mail can be delivered to this message store until the size of the message store is reduced (or the limit is raised).
- Action(s):** Verify that the message store *msname* has been configured correctly. Request customers to download their mail.

## MsLoadedByOtherMSS

- Description:** When attempting to access the message store for the specified user, it was found to be loaded by another MSS, on the given port number. See Shared Memory Table.
- Parameters:** *portNumber*: the port number the other MSS is listening on.
- Cause:** A message store was open by one MSS when another attempt was made to open it by another MSS.
- Effect:** This message is of informational severity.
- Action(s):** None. This is expected behavior.

## MsMailboxCreated

- Description:** An attempt was made to deliver mail to or read mail from a mailbox *mailboxname* which is authorized, but not yet created. This mailbox was created on-the-fly.
- Parameters:** *mailboxname*: the name of the mailbox which has been created.
- Cause:** The mailbox is created on-the-fly and this log entry notes that. It is not an error event.
- Effect:** This message is of informational severity.
- Action(s):** None. This is expected behavior.

## MsMissingDbname

- Description:** No database name was specified when starting the message store server.
- Parameters:** None.
- Cause:** The script to start the MSS may not be correct.
- Effect:** This error is of critical severity. No message stores on the machine served by this database may be accessed.
- Action(s):** Verify that the message store server is being started correctly with the right arguments.

## MsMissingObject

- Description:** The object *objectType* does not exist. The last RME operation on the message store server was *rmeOp*.
- Parameters:** *objectType*: the object type.  
*rmeOp*: the rme operation.
- Cause:** This is a programming or system error.
- Effect:** This message is of major severity. The effect on service depends on the circumstances that lead to the alarm.
- Action(s):** If the error is repeating more than once every few minutes, restart the server reporting the error. Check for system errors. If the error continues, contact Software.com.

## MsMsgBadFormat

- Description:** Message msgid in message store *msname* in folder *foldername* is stored in an obsolete format. The message store is not able to complete the request to fetch a range of text from the message body. This error may occur after upgrading from an earlier version of InterMail.
- Parameters:** *msgid*: the message id.  
*msname*: the name of the message store.  
*foldername*: the name of the folder.
- Cause:** The message was stored in the message store in an obsolete format, perhaps by an older installation of InterMail.
- Effect:** This error is of minor severity. It affects a single message only: no access.
- Action(s):**

## MsMsgCreated

- Description:** A message with message id *msgid* was added to message store *msname*.
- Parameters:** *msgid*: the message id.  
*msName*: the name of the message store.
- Cause:** This is not an exception or error. It is strictly a notification.
- Effect:** This message is of informational severity.
- Action(s):**

## MsMsgDeleted

- Description:** A message with message id *msgid* was deleted from message store *msname*.
- Parameters:** *msgId*: the message id.  
*msName*: the name of the message store.
- Cause:** This is not an exception or error. It is strictly a notification.
- Effect:** This message is of informational severity.
- Action(s):** None. This is expected behavior.

## MsMsgIDNotFound

- Description:** A client of the message store server attempted to retrieve a message with message id *msgId*. This ID was not found.
- Parameters:** *msgId*: the message id.
- Cause:** While doing account creation or broadcast, the welcome message or broadcast message was not found or an incorrect message id was given.
- Effect:** This error is of minor severity. Affects an individual message store.
- Action(s):**
- Check for the welcome message in the sysadmin account.
  - Check the welcome message ID in the directory cache.
  - Check for the broadcast message.

## MsMsgLocked

- Description:** The message *msgId* is currently locked.
- Parameters:** *msgId*: The message id.
- Cause:** A message being referenced is locked by another client.
- Effect:** This error is of informational severity. It affects an individual message store.
- Action(s):** None. User should retry operation later.

## MsMsgNotInFolder

- Description:** The message *msgid* is no longer in folder *foldername*.
- Parameters:** *msgid*: the message id.  
*folderName*: the name of the folder.
- Cause:** The message in question may have been moved or deleted by another client, or this client did not update its state correctly for a previous operation.
- Effect:** This error is of warning severity. It affects an individual message store only.
- Action(s):** Probably none. If the error is repeated, this may be an indication of other more serious error with the folder *foldername*. Look in the log file for the MSS for other more serious events.

## MsMsgNotLocked

- Description:** The message *msgid* to be unlocked is not locked. This functionality is becoming obsolete.
- Parameters:** *msgid*: the message id.
- Cause:** A message was already unlocked. Operation was likely repeated.
- Effect:** This error is of informational severity. Affects a single message store only.
- Action(s):** None.

## MsMsgRangeRead

- Description:** *length* bytes starting at byte offset were read from message id *msgid* in message store *msname* in folder *foldername* by user *username*.
- Parameters:** *length*: the number of bytes read.  
*offset*: offset of the first byte read.  
*msgid*: the message id.  
*msname*: the name of the message store.  
*foldername*: the name of the folder.  
*username*: the name of the user who read the message.
- Cause:** Expected behavior.
- Effect:** None. This error is of informational severity.
- Action(s):** None, this is a notification of expected behavior.

## MsMsgRead

- Description:** A message with message id *msgid* was read in message store *msname* in folder *foldername* by user *username*.
- Parameters:** *msgId*: the message id.  
*msName*: the name of the message store.  
*folderName*: the name of the folder.  
*userName*: the name of the user who read the message.
- Cause:** This is expected behavior.
- Effect:** This message is of informational severity.
- Action(s):** None. This is expected behavior.

## MsNoAllowDeliver

- Description:** The message store is not currently allowing delivery of new messages, no new messages will be stored in the message store.
- Parameters:** None.
- Cause:** The message store has been configured to disallow delivery of new messages.
- Effect:** This error is of warning severity. It affects an individual message store only: cannot receive mail.
- Action(s):** Verify that this is the correct configuration for the message store.

## MsNoRight

- Description:** The user *username* does not have permission to perform the requested operation on the message store.
- Parameters:** *userName*: the user name.
- Cause:** The process which requested the operation is not running as the correct user or a message store was created by a process running under an incorrect user name.
- Effect:** The severity of this error is minor (possibly major). Affects a single message store only: user may not be able to fetch mail.
- Action(s):** Verify that each of the servers is being run as the correct user: check configuration data and restart servers as necessary.

## MsNoUnlockedMsgs

- Description:** All the messages in folder *folderName* are currently locked. This functionality is becoming obsolete.
- Parameters:** *folderName*: the name of the folder.
- Cause:** User error.
- Effect:** This error is of minor severity. It affects a single message store only.
- Action(s):** None.

## MsNoWelcomeMsg

- Description:** The welcome message (message id *msgid*), was not found when attempting to add it to a newly created message store for mailbox *mailboxname*.
- Parameters:** *msgid*: the message id for the welcome message.  
*mailboxname*: the name of the mailbox.
- Cause:** The welcome message may have been inadvertently deleted from the sysadmin account or the welcome message ID is incorrect in the directory service.
- Effect:** This error is of minor severity. It affects individual newly created message stores.
- Action(s):** Check for the welcome message in the sysadmin account.  
Check the welcome message ID in the directory cache.

## MsNotAFolderRef

- Description:** The folder *folderName* was already deleted.
- Parameters:** *folderName*: the name of the folder
- Cause:** A subfolder in a search folder was already deleted.
- Effect:** This error is of warning severity. It affects a single message store only.
- Action(s):** Contact Software.com.

## MsNotAMsgRef

- Description:** The message *msgId* was already deleted.
- Parameters:** *msgId*: the message id.
- Cause:** A message in a search folder was already deleted.
- Effect:** This error is of warning severity. It affects a single message store only.
- Action(s):** Contact Software.com.

## **MsNotASearchRef**

- Description:** The search container *searchContainer* was already deleted.
- Parameters:** *searchContainer*: the search container.
- Cause:** A search folder was already deleted.
- Effect:** This error is of warning severity. It affects a single message store only.
- Action(s):** Contact Software.com.

## **MsNotFound**

- Description:** When attempting to retrieve the specified message store for mailbox *mailbox*, the message store was not found.
- Parameters:** *mailbox*: the mailbox name.
- Cause:** An entry in the directory service is incorrect.
- Effect:** This error is of minor severity. It affects a single message store only: no access to this message store will be allowed.
- Action(s):**
- Verify that the directory cache is up-to-date.
  - Check and correct the entry for mailbox in the directory service.
  - Verify that on-the-fly account creation is turned on when expected.

## **MsNullFolderName**

- Description:** A client requested an operation of the message store server with a null or empty string folder name.
- Parameters:** None.
- Cause:** This is probably a client error.
- Effect:** This error is of minor severity. It affects a single message store only.
- Action(s):** Check InterMail and system logs for other serious errors. If error repeats frequently, reboot InterMail servers. If error continues, contact Software.com Customer Support.

## MsObjectLocked

- Description:** A message or folder is currently being viewed by user *username* on machine *host* while another client was attempting to move, remove, or replace it.
- Parameters:** *userName*: the name of the user.  
*host*: the name of the machine the user is on.
- Cause:** Multiple clients are viewing a message store.
- Effect:** This error is of minor severity. It affects a single message store only.
- Action(s):** Client should try the action again later. If error continually repeats, reboot InterMail servers.

## MsObjectLockedByServer

- Description:** A message or folder is temporarily locked by the message store server.
- Parameters:** None.
- Cause:** The MSS is performing an action for another client.
- Effect:** This error is of minor severity. It affects a single message store only.
- Action(s):** Client should try the action again later. If the error continually repeats, reboot the MSS process.

## MsOpNotSupported

- Description:** The attempted operation is not supported for message store *msname*. This error should not occur for database message stores.
- Parameters:** *operation*: the attempted operation.  
*msName*: the message store name.
- Cause:** An operation designed for a database message store was attempted on a non-database message store.
- Effect:** This error is of minor severity. The impact on service depends on what the client requested of the MSS. Likely to affect a single message store only.
- Action(s):**
- Check directory service information for this message store.
  - Check revisions of InterMail software. Upgrade the software or re-install as required. `pkginfo -l InterMail` will tell you the version number of the installed package on any host.
  - Contact Software.com.

## MsPropertyNotSupported

- Description:** An invalid property type was requested of the message store.
- Parameters:** *msName*: the message store name.
- Cause:** An administration property designed for non-database message stores was accessed on a database message store.
- Effect:** This error is of minor severity. It affects a single message store only.
- Action(s):**
- Check revisions of InterMail software.
  - Contact Software.com.

## MsRemoteMS

- Description:** Message store does not reside on a local volume of the InterMail servers, but is probably NFS-mounted instead.
- Parameters:** *msName*: the message store name.
- Cause:** For non-database message stores only, the MSS may be restricted to access files on the local file system only. This message store in question is not located on the local file system.
- Effect:** This error is of minor severity. Affects all message stores located on a file system remote from the MSS.
- Action(s):** Contact Software.com.

## MsRestrictedToRoot

- Description:** An attempt was made by a client of the message store server to make the designated inbox folder be contained in the folder *folderName*. The folder designated as the InBox folder cannot be created under a sub-folder. It must be a child of the root folder.
- Parameters:** *folderName*: the name of the folder
- Cause:** An client attempted to create an invalid INBOX folder.
- Effect:** This error is of minor severity. Affects a single message store only.
- Action(s):** Contact Software.com.

## **MsSearchOpNotSupported**

- Description:** A non-supported search operation *searchop* was invoked.
- Parameters:** *searchOp*: the searching operation.
- Cause:** An older version of InterMail server is being used against a newer Message Store server.
- Effect:** This error is of minor severity. Affects a single message store only.
- Action(s):** Check revisions of InterMail software. Upgrade the software or re-install as required. `pkginfo -l Intermail` will tell you the version number of the installed package on any host.

## **MsUnknownObjType**

- Description:** An internal id refers to an object of an unknown type.
- Parameters:** None.
- Cause:**
- Effect:** This error is of minor severity. The effect on service depends on the circumstances that led up to the alarm.
- Action(s):** Check for other InterMail and system errors. Restart InterMail servers if error repeats more than every few minutes. If the error continues, contact Software.com.

## **MsUnknownProperty**

- Description:** The MSS was given a property which is not recognized. This was done either while attempting to set a property value, or during a request for a the value of a property.
- Parameters:** None.
- Cause:**
- Effect:** This error is of minor severity. It affects a single message store only.
- Action(s):** Check for other InterMail and system errors. Restart the InterMail servers if the error repeats more than every few minutes. If the error continues, contact Software.com.

## MsUnsupportedQuery

- Description:** The version of the message store server does not support the requested query.
- Parameters:** None.
- Cause:** The version of the message store server is out of sync with some of the other servers.
- Effect:** This error is of minor severity.
- Action(s):** Check revisions of InterMail software. Upgrade the software or re-install as required. `pkginfo -l Intermail` will tell you the version number of the installed package on any host.

## MsWrongMS

- Description:** An object from one message store was given to another message store.
- Parameters:** None.
- Cause:** Probably memory corruption.
- Effect:** This error is of critical severity. It affects all message stores served by this MSS.
- Action(s):** The continued viability of the MSS is seriously in question. We recommend restarting the MSSes. Check for other InterMail and system errors. If error continues, contact Software.com Customer Support.

## MsWrongObjectType

- Description:** A handle to an MSS object was resolved but produced an object of the wrong type. The object name consists of `messageStoreName : refNumber : typeName`.
- Parameters:** *objectName*: the name of the MSS object.  
*realTypeName*: the real type name of the object.  
*rmeOp*: the most recent RME operation performed in this thread.
- Cause:** Probably memory corruption.
- Effect:** This error is of critical severity. Affects all message stores served by this MSS.
- Action(s):**
- The continued viability of the MSS is seriously in question. We recommend restarting the MSSes.
  - Check for other InterMail and system errors. If error continues, contact Software.com Customer Support.

## 13.10 Message (Mail) Log Events

### MsgAttrGFS

- Description:** `Attribute::getFromSrc()` function was called.
- Parameters:** None.
- Cause:** A class derived from the `Attribute` class without implementing a `getFromSrc()` member function.
- Effect:** This message is of major severity. It affects a group of message stores served by the erroneous server.
- Action(s):** If the error is repeated more than every few minutes, restart the affected server. Contact [Software.com](http://Software.com).

### MsgBadContentLength

- Description:** The header in the message had a content length field that was invalid. The current message will be expanded to include all content to the next From-line in the message input stream.
- Parameters:** *char \* context*: the program context in which this error occurred.  
*int messageNumber*: the number of the message in the mailboxFilename that was being moved when this error occurred.  
*char \* mailboxFilename*: the filename of the mailbox that was being moved.
- Cause:** Some message (either the current one or the next one) has been corrupted in some way. The file itself may have been corrupted or this happened during writing the message. Stored messages may be lost. There is no way to recover what was lost, except possibly by reviewing archived files.
- Effect:** This error is of minor severity. However, it is only being reported, not raised, so that mailbox processing may continue.
- Action(s):** Review the file and compare with backups around the time that the message before and after the corrupted message was received. Check for filesystem errors. If a mailbox for the user is being migrated, it may be necessary to re-initialize the mailbox and re-migrate, if the problem was due to a correctable filesystem error.

## MsgBadEnclEncode

- Description:** A message received was not properly encoded in uuencode() format.
- Parameters:** *lineNumber*: line number of ASCII message.
- Cause:** An enclosure was not encoded properly by uuencode. Uuencoding is only done for RFC1154 messages. By default RFC1154 parsing is turned off, and under those circumstances this error should never be generated. RFC1154 parsing can be turned on via the configuration parameter `convert1154ToMIME`.
- Effect:** This error is of minor severity. Affects an individual message only.
- Action(s):** No action is necessary. The message will be re-interpreted as a text enclosure, packaged in a MIME multipart enclosure along with some explanatory text, and delivered to all recipients.

## MsgBadHeaderAttr

- Description:** A date header or enum type of header could not be parsed.
- Parameters:** *headerLine*: the header line from the original message.  
*lineNumber*: the line number where the header was found.
- Cause:** The date header or enum-type header was improperly formatted
- Effect:** This error is of warning severity. Affects an individual message only.
- Action(s):** No action is necessary. The message will be re-interpreted as a text enclosure, packaged in a MIME multipart enclosure along with some explanatory text, and delivered to all recipients.

## MsgBadHexOid

- Description:** A bad object id in ASCII form for an enclosure type was processed. The remainder of file will be ignored.
- Parameters:** *hexOIDRep*: the hexadecimal representation of an object id (OID).
- Cause:** The enclosure file is corrupt.
- Effect:** This error is of minor severity.
- Action(s):** Contact Software.com.

## MsgCloseEnclFail

- Description:** Could not write an enclosure while writing a message to disk.
- Parameters:** *pathName*: the pathname to the tmp file.  
*systemErrString*: the system error string.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of minor severity (possibly major). It affects an individual message only if it happens occasionally. If the error is repeated, it indicates a serious disk problem and the effect on service could become more serious.
- Action(s):**
- Check system error status reported.
  - Check to see if file system has run out of space.
  - Check ownership and permissions of the tmp directory.

## MsgCreateEnclFail

- Description:** The `open(2)` system call returned an error when an attempt was made to create an enclosure file.
- Parameters:** *enclosureFilename*: the filename of the enclosure.  
*functionName*: `open(2)`.  
*systemErrString*: the system error string.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of minor severity (possibly major). If this happens only occasionally, it will probably affect only individual messages. If error is frequent, it indicates a serious disk problem and the effect on overall service could become more serious.
- Action(s):**
- Check system error status.
  - Check to see the file system has not run out of space.
  - Check ownership and permissions of the tmp directory.

## MsgEnclBadCharSeq

- Description:** An enclosure received in quoted-printable or base-64 encoding had an invalid character sequence.
- Parameters:** *encoding*: the encoding format.  
*badCharSeq*: the bad character  
*sequence.lineNumber*: the line number where the error occurred.
- Cause:** An improper character sequence was read in a MIME enclosure encoded in quoted-printable or base-64 format.
- Effect:** This error is of warning severity. Affects only a particular message.
- Action(s):** No action is necessary. The message will be re-interpreted as a text enclosure, packaged in a MIME multipart enclosure along with some explanatory text, and delivered to all recipients.

## MsgEnclGFS

- Description:** Call to getFromSrc was made to the base class BodyType.
- Parameters:** None.
- Cause:**
- Effect:** This error is of major severity. Affects all users of the concerned server.
- Action(s):** Contact Software.com. Restart the affected server if the error occurs repeatedly.

## MsgEnclReadOnly

- Description:** An attempt was made to write to a read-only tmp file.
- Parameters:** *fileName*: the name of the temporary file.
- Cause:** This is probably a filesystem or hardware error, or an operator error in changing permissions of InterMail tmp files.
- Effect:** This error is of minor severity. Affects a particular message, unless the filesystem or operator error impacts the entire tmp directory.
- Action(s):** Check permissions on files in tmp to verify that InterMail has access. Check for file system errors.

## **MsgImpConnLost**

- Description:** A connection to the message store server closed while importing messages.
- Parameters:** None.
- Cause:** The connection closed because of a network error.
- Effect:** None.
- Action(s):** Contact Software.com.

## **MsgImpNotaMsg**

- Description:** The file could not be imported because it does not contain any recognizable mail messages.
- Parameters:** None.
- Cause:** This is probably a user error.
- Effect:** None.
- Action(s):** Contact Software.com.

## **MsgImpOpenDir**

- Description:** An attempt to import a file has failed.
- Parameters:** None.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** None.
- Action(s):** Contact Software.com

## **MsgImpOpenFail**

- Description:** An attempt to open a file for importing failed.
- Parameters:** None.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** None.
- Action(s):** Contact Software.com

## **MsgImpRemoteErr**

- Description:** The file could not be imported because the message store server reported an error.
- Parameters:** None.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** None.
- Action(s):** Contact Software.com.

## **MsgImpStatFail**

- Description:** An attempt to stat a file to be imported failed
- Parameters:** None.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** None.
- Action(s):** Contact Software.com.

## **MsgMPSI**

- Description:** MultiPart::swapIn() was called.
- Parameters:** None.
- Cause:**
- Effect:** This error is of major severity. It affects all users of the concerned server.
- Action(s):** Contact Software.com. Restart the effected server if the error occurs repeatedly.

## **MsgMPSO**

- Description:** MultiPart::swapOut() was called.
- Parameters:** None.
- Cause:**
- Effect:** This error is of major severity. Affects all users of the concerned server.
- Action(s):** Contact Software.com.

## **MsgMoveFail**

- Description:** Failed to move the message specified by the `messageNumber` in the specified `mailBox_name`.
- Parameters:** *int messageNumber*: the number of the message in the mailbox.  
*char \*userId*: the id (or account name) of the user.  
*char \*mailBox\_name*: the filename of the mailbox that was moved.
- Cause:** The message move failed for some unknown reason. Review the preceding log entries as well as any console messages for this mailbox and the `.fail` file.
- Effect:** This message is of informational severity. It is a notice of unexpected behavior.
- Action(s):** Review the events preceding this message as well as the `.fail` file generated by the application to determine appropriate action.

## **MsgMoveSuccess**

- Description:** Succeeded in moving the message specified by the `messageNumber` in the specified `mailBox_name`.
- Parameters:** *int messageNumber*: the number of the message in the mailbox.  
*char \*userId*: the id (or account name) of the user.  
*char \*mailBox\_name*: the filename of the mailbox that was moved.
- Cause:** This is expected behavior.
- Effect:** This message is of informational severity.
- Action(s):** None.

## **MsgMultiPartNoBoundary**

- Description:** A MIME header indicating a multipart was encountered but it did not specify the boundary parameter. See RFC1521 -- MIME (MultiPurpose Internet Mail Extensions).
- Parameters:** None.
- Cause:** A bad MIME message was read in.
- Effect:** This error is of warning severity. It affects a particular message only.
- Action(s):** No action is necessary. The message will be re-interpreted as a text enclosure, packaged in a MIME multipart enclosure along with some explanatory text, and delivered to all recipients.

## MsgNullMsg

- Description:** An empty file was found instead of an Internet message.
- Parameters:** None.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of warning severity. It affects a particular message only.
- Action(s):** None. The message will be handled correctly. Check for filesystem errors.

## MsgOidTooLong

- Description:** An object id for an enclosure type is too long. The remainder of file will be ignored.
- Parameters:** *objectId*: the object id.
- Cause:** An object id was too long in the enclosure file.
- Effect:** None.
- Action(s):** Contact Software.com.

## MsgOpenEnclFail

- Description:** Could not open an enclosure of a message.
- Parameters:** *enclosureFilename*: the pathname to the tmp file.  
*function*: open(2)  
*systemErrString*: the system error string.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of minor severity (possibly major). It affects an individual message only if it occurs occasionally. If the error is repeated, it indicates a serious disk problem and the effect on service could become more serious.
- Action(s):**
- Check system error status reported.
  - Check ownership and permissions of the tmp directory
  - Check to see that the file system has not run out of space.

## MsgPartialNold

- Description:** A MIME partial message specified no id (e.g. 1 of 4).  
For more information, see MIME Spec RFC1521 (see section on Message/Partial subtype).
- Parameters:** None.
- Cause:** An improperly specified partial message was received.
- Effect:** None.
- Action(s):** Contact Software.com.

## MsgPrematureEndOfFile

- Description:** An improperly-encoded message was received.
- Parameters:** *encodingFormat*: the encoding format.  
*lineNumber*: the line number where the ASCII message ended prematurely.
- Cause:** In the message id, there was an enclosure which was encoded in Base64 or Quoted-Printable or RFC-1154 format, but an EOF was encountered prematurely while processing it. See RFC1154 and RFC1521.
- Effect:** This error is of warning severity. Affects a particular message only.
- Action(s):** No action is necessary. The message will be re-interpreted as a text enclosure, packaged in a MIME multipart enclosure along with some explanatory text, and delivered to all recipients.

## MsgReadEnclFail

- Description:** Doing a read on the enclosure file resulted in a system error.
- Parameters:** *enclosureFilename*: the pathname to the tmp file.  
*systemErrString*: the system error string.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of minor severity (possibly major): Affects an individual message only if it occurs occasionally. If the error is repeated, it indicates a serious disk problem and the effect on service could become more serious.
- Action(s):**
- Check system error status reported.
  - Check ownership and permissions of the tmp directory.
  - Check to see that the file system has not run out of space.

## MsgSeekEnclFail

- Description:** Could not seek an enclosure of a message.
- Parameters:** *enclosureFilename*: the pathname to the tmp file.  
*function*: lseek(2)  
*systemErrString*: the system error string.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of minor severity (possibly major). It affects an individual message only if it happens occasionally. If the error is repeated, it indicates a serious disk problem and the effect on service could become more serious.
- Action(s):**
- Check system error status reported.
  - Check existence, ownership, and permission of the file named.
  - Check to see that the file system has not run out of space.

## MsgStatEnclFail

- Description:** The stat system call returned an error when call on the enclosure file.
- Parameters:** *enclosureFilename*: the pathname to the tmp file.  
*systemErrString*: the system error string.
- Cause:** This is probably a filesystem or hardware error.
- Effect:** This error is of minor severity (possibly major). It affects an individual message only if it happens occasionally. If the error is repeated, it indicates a serious disk problem and the effect on service could become more serious.
- Action(s):**
- Check system error status reported.
  - Check existence, ownership, and permission of the file named.
  - Check to see that the file system has not run out of space.

## MsgTrace

- Description:** The action specified by *actionPerformed* was performed on the message indicated by the tagged arguments in the logfile.
- Parameters:** *actionPerformed*: the action performed.
- Cause:** Expected behavior: These log entries are always at the Notification level, and are used to enable tracing messages through the system.
- Effect:** This message is of informational severity. This is expected behavior.
- Action(s):** None.

## **MsgWriteToInetCalled**

- Description:** A subclass of Attribute failed to implement writeToInet().
- Parameters:** None.
- Cause:**
- Effect:** Affects all users of the afflicted server.
- Action(s):** Contact Software.com. Restart the effected server if the error occurs repeatedly.

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## **13.11 MTA Log Events**

### **MtaAuthFailBadPswd**

- Description:** A client attempted to authenticate itself to the MTA using an invalid password.
- Parameters:** None.
- Cause:**
- The password could have been sent incorrectly by the client.
  - Not as likely, but the user's mail account could have been setup incorrectly.
- Effect:** The severity of this error is informational.
- If this error occurs many times for a single connection it probably means that the account was not set up properly for that user. In this case the severity is minor.
- Action(s):** Verify the user mail account information including password.

### **MtaAuthFailBadUser**

- Description:** A client attempted to authenticate itself to the MTA using an invalid username.
- Parameters:** None.
- Cause:**
- The user name could have been sent incorrectly by the client.
  - The user's account information may not have been added to the mail service.
- Effect:** The severity of this error is informational.
- Action(s):** Verify that the user's account information is correct.

## **MtaAutoReplySuppressedAlreadySent**

- Description:** Mail was sent to an account that has vacation enabled, but no autoreply message was sent because the MTA has already sent one to this sender.
- Parameters:** None.
- Cause:** The “vacation” autoreply mode requires that only one vacation message is sent to each user that sends mail to the autoreply account.
- Effect:** This message is for informational purposes only.
- Action(s):** None.

## **MtaAutoReplySuppressedNotInHeader**

- Description:** Mail was sent to an account that has autoreply enabled, but no autoreply message was sent because the recipient address was not found in the To: or Cc: headers.
- Parameters:** None.
- Cause:** This most likely means that the mail came from a mailing list, so InterMail does not do the autoreply in this case to prevent sending unnecessary autoreplies to mailing list posters.
- Effect:** This message is for informational purposes only.
- Action(s):** None.

## **MtaAutoReplySuppressedSender**

- Description:** Mail was sent to an account that has autoreply enabled, but no autoreply message was sent.
- Parameters:** None.
- Cause:** Autoreply was not sent for one of the following reasons:
- the sender address is null.
  - the sender address is in the `autoReplySuppressList`.
  - the local part of the sender's address ends in “-request” or starts with “owner-”. This most likely means that the mail came from
  - a mailing list.
  - the message has “Auto-Forward:” in the header.
  - the message has “Precedence: bulk” or “Precedence: junk” in the header.
- Effect:** This message is for informational purposes only.
- Action(s):** None.

## MtaBadControlFile

- Description:** A control file lacks the pathnames to its header and body files. The control file contains this information so that the MTA can find the message contents. If this information is missing the message cannot be delivered.
- Parameters:** *controlFileName*: the name of the control file.
- Cause:** A control file was read by the MTA which either had missing or empty “Header-File:” or “Body-File:” attributes.
- This should not happen in isolation. It is most likely the result of some other error.
- Effect:** Severity of this message is minor.
- Action(s):** The issue should be investigated to determine how this control file became corrupt. If this error is frequent, the primary cause of the error should be determined, since it is possibly causing other errors. Contact Software.com.

## MtaBodyFileMoveFailed

- Description:** The file containing a message body could not be moved to a different location.
- Parameters:** *oldMsgBodyFile*: the name of the old message body file.  
*newMsgBodyFile*: the name of the new message body file.  
*systemErrString*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This message is of major severity.
- Action(s):** Check the permissions on the directories containing the current file and the destination (and also the directories leading up to them) to ensure that the MTA is able to perform the move.

## MtaBodyFileReadFailed

- Description:** The MTA was unable to read a message body file.
- Parameters:** *msgBodyFilename*: the name of the message body file.  
*systemErrString*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This error is of minor severity. An individual message is affected. The message in question is deferred.
- Action(s):** Check the permissions on the directory that would contain the file (and the directories leading to the file) to ensure that the MTA is able to create it. Recover the message file from backups or from journal file entries. If the error is occurring with multiple files, check the filesystem health.

## MtaBodyFileWriteFailed

- Description:** A new message was not created since the file containing the message body could not be written by the MTA.
- Parameters:** *msgBodyFilename*: the name of the message body file.  
*systemErrString*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This message is of major severity.
- Action(s):** Check the permissions on the directory that would contain the file (and the directories leading to the file) to ensure that the MTA is able to create it. Also make sure the disk is not out of space.

## MtaControlFileBadValue

- Description:** The control file for the message contains a parameter with an improper value.
- Parameters:** *messageId*: the message ID  
*controlFileParam*: control file parameter.  
*controlFileParamValue*: the value for control file parameter
- Cause:**
  - The control file may have become corrupted by some event external to the MTA (such as a disk error or manually editing the file).
  - The permissions on the file (or any directory leading up to the file) prevent the MTA from reading the file.
- Effect:** This error is of minor severity.
- Action(s):** Check the permissions on the file to ensure that the MTA is able to read it. Inspect the file for obvious tampering or corruption.

## MtaControlFileMoveFailed

- Description:** The control file for a message could not be moved to a different location.
- Parameters:** *oldControlFileName*: the old control filename.  
*newControlFileName*: the new control filename.  
*systemErrString*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This message is of major severity.
- Action(s):** Check the permissions on the directories containing the current file and the destination (and also the directories leading up to them) to ensure that the MTA is able to perform the move.

## MtaControlFileReadFailed

- Description:** The control file for the message could not be read by the MTA.
- Parameters:** *controlFileName*: the control file name.  
*sysErrorMessage*: the system error string.
- Cause:** The control file may have become unreadable because of some event external to the MTA, such as a disk error or an unintended changing of the file's permissions.
- Effect:** This error is of minor severity.
- Action(s):** Check the permissions on the file to ensure that the MTA is able to read it.

## MtaControlFileWriteFailed

- Description:** A new copy of the control file for a message could not be written by the MTA.
- Parameters:** *controlFileName*: the name of the control file.  
*systemErrorMessage*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This error is of critical severity.
- Action(s):** Check the permissions on the control directory containing the file (and the directories leading to the file) to ensure that the MTA is able to create a new file and remove the original.

## MTADeferDirReadFail

- Description:** The MTA was unable to read the defer/MTA directory. This means that the MTA will be unable to process deferred mail. The MTA will continue to attempt to read the directory every defer cycle.
- Parameters:** *deferDirectoryName*: the name of the control file.  
*systemErrorMessage*: the system error string.
- Cause:** This is most likely due to permissions problems, but the actual reason will be listed in the *systemErrorMessage*.
- Effect:** The deferred mail will not be processed. If mail is continuing to be deferred, then the defer directory will grow and the free space on the filesystem should be monitored. It is very likely that deferrals are also failing.  
  
This error is of major severity. No mail that has been deferred for delivery will be processed until the MTA can read this directory.
- Action(s):** Check the permissions on the defer directory. If the directory exists, and is readable/executable by the commonUser, then contact Software.Com.

## MTADeferredFileMoveFail

- Description:** When the MTA is attempting to deliver previously deferred messages, they are moved out of the defer directory. If the MTA is unable to move the message it will not reprocess the mail and the message will never be delivered or bounced.
- Parameters:** *controlFileName*: the name of the control file associated with the message that cannot be reprocessed.  
*reprocessDirectoryName*: the directory into which deferred message control files are placed while being reprocessed.  
*systemErrorString*: the system error message.
- Cause:** This error can be the result of a configuration problem, permission error, full file system, or other system problem.
- Effect:** In isolation, the severity of this error is minor. However, this error can be the result of a configuration problem, permission error, full file system, or other system problem. If any of these are the issue, it is likely that many of these errors will result along with others. If this is the case, the severity is critical.
- Action(s):** Determine if the permissions on the directory allow the MTA (commonUser) write permission and then ensure that the file system and operating system are functioning properly.

## MTADirCacheDown

- Description:** This is not a log message. It is only used in the MTA as a deferral status.
- Parameters:** None.
- Cause:** The MTA is unable to communicate with the directory cache for some reason.
- Effect:** This error does not affect service.
- Action(s):** None.

## MtaDomainTableLoadFailed

- Description:** An attempt to load the domain table from the directory failed.
- Parameters:** None.
- Cause:** The MTA can't reach any directory cache servers, or the directory cache servers aren't working properly.
- Effect:** This error is of major severity. Mail cannot be processed until the directory cache servers can be reached to retrieve the domain list.
- Action(s):** See if the directory cache server is up, and make sure the MTA can reach it. See if any related errors are in the MTA or directory cache server logs.

## MtaDomainTableNotLoaded

- Description:** A message was deferred because the domain table isn't loaded.
- Parameters:** None.
- Cause:** The MTA can't reach any directory cache servers. This only happens on startup.
- Effect:** This error is of major severity. Mail cannot be processed until the directory cache servers can be reached to retrieve the domain list.
- Action(s):** See if the directory cache server is up, and make sure the MTA can reach it. Then wait for the MTA to notice that the directory cache server is up (this takes up to one minute by default).

## MtaDomainTableUpdateFailed

- Description:** An attempt to update the domain table from the directory failed.
- Parameters:** None.
- Cause:** The MTA can't reach any directory cache servers, or the directory cache servers aren't working properly.
- Effect:** This message is of minor severity. If any new domains are added to the directory cache servers, the MTA will not be notified and so will not begin accepting mail for these domains, until the problem is fixed. Also, if the directory cache servers can't be reached, the MTA will not be able to process mail; if this is true, other errors will be reported in the log.
- Action(s):** See if the directory cache server is up, and make sure the MTA can reach it. See if any related errors are in the MTA or directory cache server logs.

## MtaErrorTrace

- Description:** A message that encountered an error could not be returned to its sender, so it was moved to the error directory. The contents of the control file are included to show what state the message was in.
- Parameters:** *msgFileName*: the file name of the message.  
*controlFileContents*: the contents of the control file.
- Cause:** The error specified in the control file should indicate the reason the message could not be returned to its sender.
- Effect:** This error is of warning severity.
- Action(s):** Check the control file to see why it could not be returned.

## MtaHeaderFileMoveFailed

- Description:** The file containing a message header could not be moved to a different location.
- Parameters:** *oldMsgHeaderFilename*: the old name of the message header file.  
*newMsgHeaderFilename*: the new name of the message header file.  
*systemErrString*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This message is of major severity.
- Action(s):** Check the permissions on the directories containing the current file and the destination (and also the directories leading up to them) to ensure that the MTA is able to perform the move.

## MtaHeaderFileReadFailed

- Description:** The MTA was unable to read a message header file.
- Parameters:** *msgHeaderFilename*: the name of the message header file.  
*sysErrorMessage*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This error is of minor severity. An individual message is affected. The message in question is deferred.
- Action(s):** Check the permissions on the directory that contains the file (and the directories leading to the file) to ensure that the MTA is able to access it. Recover the message file from backups or from journal file entries. If the error is occurring with multiple files, check the filesystem health.

## MtaHeaderFileWriteFailed

- Description:** The MTA was unable to create a new message because the header file could not be written.
- Parameters:** *msgHeaderFilename*: the name of the message header file.  
*sysErrorMessage*: the system error string.
- Cause:** The system error should indicate the condition that caused the failure.
- Effect:** This error is of critical severity.
- Action(s):** Check the permissions on the directory that would contain the file (and the directories leading to the file) to ensure that the MTA is able to create it. Also make sure the disk is not out of space.

## MtaHostInvalid

- Description:** A message was returned because the host it was relayed to doesn't exist.
- Parameters:** None.
- Cause:** Someone attempted to use the server to send a message to a remote server, but that server was not found in the DNS.
- Effect:** This error is of informational severity.
- Action(s):** Check the host to see if it exists. If so, there may be a problem with the DNS. If not, then the message was simply misaddressed.

## MtaMaxMTAHopCountExceeded

- Description:** A message came into the MTA with more Received: lines than is allowed by the `MaximumMTAHops` configuration variable. This means that the message has passed through too many hops on its way to this server, which probably means that a mail loop has occurred.
- Parameters:** *maxHopCount*: The maximum number of hops allowed.
- Cause:** A mail loop is most likely responsible. This could be caused by a forwarding loop. The cause of the problem may exist on another server, at least in part.
- Effect:** This error is of informational severity.
- Action(s):** Check the Received: lines of the message to figure out which other server is routing mail back to this site, and which account is responsible. Contact the postmaster of the remote site, turn off forwarding on the local user's account, or warn the local user that the forwarding is causing problems.

## MtaMessageQueueDirMismatch

- Description:** A message queued for outbound delivery was found in the wrong queue directory. The name of the directory did not match the Host-To: line in the control file.
- Parameters:** *oldQueueDir*: The name of the queue directory the control file was found in.  
*newQueueDir*: The name of the queue directory the control file was moved to.
- Cause:** Perhaps control files were moved around manually without changing the Host-To: line.
- Effect:** This error is of informational severity.
- Action(s):** If control files must be moved to a different queue directory, make sure to modify the Host-To: line.

## **MtaMessageQueuedTooLong**

- Description:** A message queued for outbound delivery was returned because it was in the queue too long.
- Parameters:** None.
- Cause:** A remote server has been unreachable for too long. The maximum queue time is determined by the `Dispatch/Config/MaxQueueTime` configuration key.
- Effect:** This error is of informational severity.
- Action(s):** Determine if the remote site still exists and is reachable. If not, then contact that site to determine the problem.

## **MtaMessageSecureFailed**

- Description:** Attempts to secure a message on one of the queue servers were unsuccessful. (An attempt was made to secure the message on each of the queue servers, but all attempts failed.) As a result, the message was rejected.
- Parameters:** None.
- Cause:** The queue server(s) are all down, or are not working properly.
- Effect:** This error is of urgent severity. If messages cannot be secured, the MTA cannot properly process mail. Any mail that cannot be delivered immediately will be rejected.
- Action(s):** Check the queue servers to see if they are up. Check the Queue Server and MTA logs for related messages.

## **MtaMessageSecureLocal**

- Description:** Attempts to secure a message on one of the Queue Servers were unsuccessful. (An attempt was made to secure the message on each of the queue servers, but all attempts failed.) As a result, the message was deferred on the local filesystem.
- Parameters:** None.
- Cause:** The Queue Server(s) are all down, or are not working properly.
- Effect:** This error is of warning severity. If messages cannot be secured on a Queue Server, the MTA still properly processes mail, but it is no longer stateless. If the MTA has stored data on the local disk and the disk fails, messages would be lost.
- Action(s):** Check the Queue Servers to see if they are up. Check the Queue Server and MTA logs for related messages.

## MtaMessageSenderNotAuth

- Description:** A client attempted to send mail through the MTA using a sender address that requires authentication, but the client did not authenticate itself first.
- Parameters:** None.
- Cause:**
- The user's client may be incorrectly configured.
  - The user's account information may not have been added to the mail service properly.
  - The user may be using a client that does not support SMTP authentication.
- Effect:** The severity of this error is informational.
- Action(s):**
- Verify that the user's account information is correct.
  - Change the `/*/mta/checkAuthorization` key to false.

## MtaMessageTooLarge

- Description:** A message was rejected by a remote server because it was too large.
- Parameters:** *msgSize*: the size of the message in bytes.  
*allowedSize*: the max size allowed by the remote server.
- Cause:** Someone attempted to use the server to send a message to a remote server, but the server rejected it as being too large.
- Effect:** This error is of informational severity.
- Action(s):** Send smaller messages, or contact the remote site and tell them to increase their size limit.

## MTAMsgNoRecipients

- Description:** The validator thread processed a message to find out what types of delivery it requires, but no deliveries resulted.
- Parameters:** *msgId*: the message ID of the message being processed.
- Cause:** This could be caused by a forwarding loop, or by an account with neither POP delivery nor forwarding turned on. The MTA moves the message aside into the errors directory so that it does not get lost.
- Effect:** This message is of minor severity. The mail will be held in the errors directory and will not be processed until it is moved back into the defer directory. The recipient accounts may not be able to receive mail until they are fixed.
- Action(s):** The recipient accounts should be checked for forwarding loops or all delivery flags turned off, and this condition should be fixed so that mail can be delivered to them properly.

## **MtaPathPrefixInvalid**

- Description:** When trying to send a file to the queue server, the MTA was unable to remove the local filename prefix because it was not present.
- Parameters:** *fileName*: the filename that has the invalid prefix.  
*prefix*: the prefix that the MTA was attempting to remove
- Cause:** This is an internal error caused by an abnormal filename and should not happen in normal operation.
- Effect:** This error is of major severity.
- Action(s):** Notify Software.com of the problem.

## **MtaQueueDirRemoved**

- Description:** A queue directory was removed after the messages in it were processed.
- Parameters:** *dirName*: the name of the queue directory that was removed.
- Cause:**
- Effect:** This message is for informational purposes only.
- Action(s):** None.

## **MtaQueueServerListEmpty**

- Description:** The MTA is in stateless mode, and the list of queue servers in the config database (*mta/queueServer*) is empty.
- Parameters:** None.
- Cause:** The MTA configuration is not correct.
- Effect:** This message is fatal. The MTA can't start in stateless mode without having one or more queue servers listed in the configuration.
- Action(s):** Either change the MTA to stateful mode (by setting *mta/stateless* to “false”) or set up one or more queue servers and place their hostnames in the *mta/queueServer* configuration key.

## MtaRecipientsRejected

- Description:** A message was rejected by a remote server because one or more recipients were refused.
- Parameters:** None.
- Cause:** Someone attempted to use the server to send a message to a remote server, but the server rejected it (or at least rejected some of the recipients) because the recipients were refused.
- Effect:** This error is of informational severity.
- Action(s):** Check the message reported by the server, and see if there's anything obvious wrong with the recipients. Most likely this is a problem with the remote server, though, since the MTA validates recipient addresses before accepting mail.

## MtaReturnSuppressed

- Description:** An error occurred that would normally cause the message to be returned to the sender. However, when submitting the message, the sender specified that failure notifications should not be generated. So, no notification will be given to the sender.
- Parameters:** *errorType* : the name of the error that would have caused the bounce.
- Cause:** The sender required no failure notifications.
- Effect:** This error is of informational severity.
- Action(s):** None.

## MtaRouteTableEntryError

- Description:** An error occurred when trying to parse a line in the mail routing table.
- Parameters:** *entry*: The entry that caused the problem.
- Cause:** The line is malformed or otherwise invalid.
- Effect:** This error is of minor severity. The invalid line will be ignored.
- Action(s):** Fix the invalid line in the mail routing table and update the MTA configuration.

## **MtaSenderRejected**

- Description:** A message was rejected by a remote server because the sender was refused.
- Parameters:** None.
- Cause:** Someone attempted to use the server to send a message to a remote server, but the server rejected it because the sender was refused.
- Effect:** This error is of informational severity.
- Action(s):** Check the message reported by the server, and see if there's anything obviously wrong with the sender. Most likely this event is caused by the remote server, since the MTA validates sender addresses before accepting mail.

## **MtaServerBadReply**

- Description:** A message was deferred because the remote server gave an unexpected response.
- Parameters:** None.
- Cause:** Some sort of problem on remote server. Check the server response in the log message, if any, to try to determine the cause.
- Effect:** This error is of informational severity.
- Action(s):** Wait for the queue to be reprocessed and the mail to be redelivered. If the condition persists, and the host is reachable, try sending a simple message to that host to see if any mail is getting through.

## **MtaServerConnectFailed**

- Description:** A message was deferred because the MTA could not connect to a remote server.
- Parameters:** None.
- Cause:** Some sort of problem on remote server, possibly temporary.
- Effect:** This error is of informational severity.
- Action(s):** Wait for the queue to be reprocessed and the mail to be redelivered. If the condition persists, and the host is reachable.

## **MtaServerDNSALookupFailed**

- Description:** A message was deferred because the MTA could not retrieve a DNS A record for the server.
- Parameters:** None.
- Cause:** A problem on the remote DNS server, possibly temporary.
- Effect:** This error is of informational severity.
- Action(s):** Make sure the MTA's DNS server is working properly. Then check to see if DNS lookups can be done on the remote host. If not, wait for the queue to be reprocessed and the mail to be redelivered.

## **MtaServerDNSMXLookupFailed**

- Description:** A message was deferred because the MTA could not retrieve a DNS MX record for the server.
- Parameters:** None.
- Cause:** Some sort of problem on the remote DNS server, possibly temporary.
- Effect:** This error is of informational severity.
- Action(s):** Make sure the MTA's DNS server is working properly. Then check to see if DNS lookups can be done on the remote host. If not, wait for the queue to be reprocessed and the mail to be redelivered.

## **MtaServerFailed**

- Description:** A message was deferred because the remote server gave a 4xx response, or otherwise failed to accept the message.
- Parameters:** None.
- Cause:** A problem on remote server, possibly temporary. Check the server response in the log message, if any, to try to determine the cause.
- Effect:** This error is of informational severity.
- Action(s):** Wait for the queue to be reprocessed and the mail to be redelivered. If the condition persists, and the host is reachable, try sending a simple message to that host to see if any mail is getting through.

## **MtaServerTimedOut**

- Description:** A message was deferred because the connection to the remote server timed out.
- Parameters:** None.
- Cause:** The remote server most likely went down, or the network connection to it was broken.
- Effect:** This error is of informational severity.
- Action(s):** Wait for the queue to be reprocessed and the mail to be redelivered. If the condition persists, and the host is reachable, try sending a simple message to that host to see if any mail is getting through.

## **MtaServerSocketClosed**

- Description:** A message was deferred because the connection to the remote server was closed.
- Parameters:** None.
- Cause:** The remote server most likely went down.
- Effect:** This error is of informational severity.
- Action(s):** Wait for the queue to be reprocessed and the mail to be redelivered. If the condition persists, and the host is reachable, try sending a simple message to that host to see if any mail is getting through.

## **MtaServiceNotAllowed**

- Description:** A user attempted to send mail through the MTA, but that user's account does not have SMTP service enabled.
- Parameters:** None.
- Cause:** The user's account information may not have been added to the mail service properly. Or, maybe the client is just using SMTP when he shouldn't be.
- Effect:** The severity of this error is informational.
- Action(s):** Verify that the user's account information is correct.

## **MtaServiceNotAllowedSSL**

- Description:** A user attempted to send mail through the MTA in SSL mode, but that user's account does not have SMTP SSL service enabled.
- Parameters:** None.
- Cause:** The user's account information may not have been added to the mail service properly. Or, maybe the client is just using SSL when he shouldn't be.
- Effect:** The severity of this error is informational.
- Action(s):** Verify that the user's account information is correct.

## **MtaSideLineNullToMany**

- Description:** The message was sidelined because it was sent from the null address <> and is addressed to more than one recipient.
- Parameters:** None.
- Cause:** This warning appears when `SidelineNullToMany` is turned on via the configuration database and a message comes in from <> to more than one recipient.
- Effect:** This error is of warning severity.
- Action(s):** This is a frequent warning message. One option is to change the value of the `SidelineNullToMany` configuration key to false in the configuration database.

## **MtaSideLineTooManyRCPTs**

- Description:** The message was sidelined because it has too many recipients
- Parameters:** None.
- Cause:** The maximum number of sideline recipients is defined in the configuration database. This warning appears when a message is addressed to more than the maximum number of recipients.
- Effect:** This error is of warning severity.
- Action(s):** This is a frequent warning. One option is to increase the maximum number of recipients in the configuration database.

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## 13.12 Network Input/Output Log Events

### NioAcceptFail

**Description:** When attempting a connection to a socket, the accept system call returns the error *systemErrorString*.

**Parameters:** *systemErrorString*: the system error string.

**Cause:**

- Insufficient memory to complete the accept.
- Insufficient STREAM resources to complete the accept.

**Effect:** This error is of warning severity.

**Action(s):** Use the *systemerrstring* to determine the cause of this event.

### NioBadPortNumber

**Description:** The server program attempted to get from the configuration database the number of the port that it should listen on, but the entry is not a valid port number.

**Parameters:** *paramName*: the name of the configuration parameter holding the port number.

**Cause:** Invalid entry for the configuration parameter.

**Effect:** The server will not run.

**Action(s):** Use *imconfedit* and edit the appropriate configuration parameter.

### NioBadQueryCode

**Description:** A bad encoded query type *querytype* was received.

**Parameters:** *queryType*: the query type.

**Cause:**

**Effect:** This error is of minor severity. It is major if it occurs frequently.

**Action(s):** Contact Software.com.

## **NioBindFail**

- Description:** Attempted to bind to a socket which failed with system error *systemErrorString*. The port number is *portnum*. The system call was to bind.
- Parameters:** *portNum*: the port number.  
*systemErrorString*: the system error string.
- Cause:** This event occurs at startup of a server when the server attempts to bind to a TCP/IP port and either that port is in use or the server was not started properly. It could also be that the system has insufficient stream resources.
- Effect:** This error is of critical severity. If the MSS process signals this event, the users cannot fetch existing mail.
- Action(s):** Verify that the program was started by the correct user, (usually root). This would be the reason why the program does not have adequate permissions.

## **NioBindLocalFail**

- Description:** The system call to bind failed with *systemErrorString*. This bind socket connection was between a client and a server both running on the machine *localhost*.
- Parameters:** *localhost*: the name of the local host.  
*systemErrorString*: the system error string.
- Cause:**
- Program does not have adequate permissions to access address.
  - Insufficient STREAM resources.
- Effect:** This error is of critical severity. If the MSS process signals this event, users cannot fetch existing mail.
- Action(s):** Verify that the program was started by the correct user, (usually root). If not, that might explain the inadequate permissions.

## NioBindNameFail

- Description:** Attempted to bind to a socket which failed with system error *systemErrorString*. This happens in the MTA.
- Parameters:** *pgmName*: the program name.  
*systemErrorString*: the system error string.
- Cause:**
- Program does not have adequate permissions to access address.
  - Insufficient STREAM resources.
- Effect:** The error is minor in that mail is deferred because the MTA is not running. It is critical from the system viewpoint because the MTA is probably not running.
- Action(s):** Verify that the program was started by the correct user, (usually root). If not, that might explain the inadequate permissions.

## NioCloseSockFail

- Description:** The call to close the socket to host failed with system error *systemerrstring*.
- Parameters:** *host*: the name of the host machine.  
*systemErrString*: the system error string.
- Cause:**
- The server which manages the connection could have died.
  - The socket is on a remote machine and the remote machine is not behaving as expected.
- Effect:** This error is of warning severity.
- Action(s):** Verify that the server in question and the remote machine are OK.

## NioConnectReadFail

- Description:** A connection could not be established to the server which is on host. The *read()* system call returned with *systemErrorString*.
- Parameters:** *server*: the name of the server.  
*host*: the name of the host machine.  
*systemErrorString*: the system error string.
- Cause:**
- Host which server should be running on, is in a strange state.
  - Server may not be running or could be in a strange state.
- Effect:** The severity of the error is major in the context of one of the servers.
- Action(s):** Use the system error information *systemErrorString* to determine the cause of this event. If the server is in a strange state or has gone down, restart it.

## NioConnServerFail

- Description:** This program could not connect to the server *servername* on host *hostname* with port *portnum*.
- Parameters:** *serverName* : the name of the server  
*hostName*: the name of the host on which the server was running.  
*portNum*: the port number which the server was using.
- Cause:**
- The server may be down or in a strange state.
  - The port number may be incorrect for communication with the server.
  - The host machine for the server may be in a strange state.
  - Could be caused by a heavy loaded system.
  - Could be caused by network problem between host machine and the machine on which this program is running.
- Effect:** The severity level is major in the context of one of the servers.
- Action(s):** Verify that the server and host machine are OK and running. Verify that the port number *portnum* is correct. These may be incorrect due to configurations out of sync on different hosts. Correct the problem and restart the appropriate servers.

## NioConnTimeout

- Description:** The call to connect to the server running on host timed out. The process could not establish a connection with the server on machine host.
- Parameters:** *server*: the name of the server.  
*host*: the name of host on which the server is running.
- Cause:** The server or host machine host could be in a strange state. This could indicate that the server cannot connect to the MSS.
- Effect:** The severity level is major in the context of one of the servers.
- Action(s):** Check the log file for the server to verify that it is OK. Verify that the host machine host is up and running. If the server which was being connected to is in a strange state, restart that server.

## NioCreateSocketFail

- Description:** Attempted to create a socket calling socket with the arguments format PF\_INET, and type SOCK\_STREAM returned system error *systemErrorString*.
- Parameters:** *prgm*: the name of the program.  
*systemErrorString*: the system error string.
- Cause:**
- The program does not have the proper permissions to create sockets.
  - Insufficient user memory available.
  - Insufficient system resources available.
- Effect:** The severity of this event is minor if this event occurs infrequently. It does not affect users being able to retrieve mail. If this event occurs more often it is an indication that there is something seriously wrong with the host machine.
- Action(s):** Verify that the program was started with the correct permissions and with the correct user. If system and memory resources are exhausted, work to free up allocated resources.

## NioEventNotSupported

- Description:** An event mask *eventmask* was specified for file descriptor *filedesc* which is not supported.
- Parameters:** *eventmask*: the event mask.  
*filedesc*: the file descriptor.
- Cause:**
- Effect:** The severity of this event is minor.
- Action(s):** Contact Software.com.

## NioFileNameTooLong

- Description:** The filename exceeds the length of maximum *filename* for internal storage in the InterMail system.
- Parameters:** *filename*: the file name.  
*length*: maximum length of file name.
- Cause:**
- Effect:** The severity of this event is minor in all contexts. It does not have any effect on retrieving mail.
- Action(s):** Verify that the system is correctly configured and that the data files are in the correct locations.

## NioFillQuit

- Description:** While waiting for input on a socket on host an unexpected value was returned (*systemErrorString* ). The process received a Quit request while waiting for input on a socket to host.
- Parameters:** *host*: the name of the host.  
*systemErrorString*: the system error string.
- Cause:**
- Not enough memory for poll to complete.
  - Signal caught while performing poll.
- Effect:** The severity of this event is minor when in the context of the MSS, POP Server and other servers.
- Action(s):** Use the system error *systemErrorString* to determine the cause of the event.

## NioFindHostNameFail

- Description:** Getting the host name failed for *host*, The system call was *systemcall* which returned *systemErrorString*. The process could not find a hostname for the particular address.
- Parameters:** *host*: the host name.  
*systemcall*: the name of the system call.  
*systemErrorString*: the system error string.
- Cause:** The cause depends on the system call.
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Use the *systemcall* and the error information *systemErrorString* as a string point to determine what is wrong.

## NioGetPortNumberFail

- Description:** Attempted to get the socket name with the call to *getsockname* which failed with system error *systemErrorString*. This happens when the MTA is getting the socket name which it is bound to.
- Parameters:** *pgmName*: the program name.  
*systemErrorString*: the system error string.
- Cause:**
- Insufficient memory for operation to complete.
  - Insufficient STREAMS resources.
- Effect:** The severity of this event is major for the MTA.
- Action(s):** Using the system error information *systemErrorString* determine which condition caused this error.

## NioListenFail

- Description:** The system call to listen failed with system error *systemErrorString* , when the process was establishing a connection with a client.
- Parameters:** *systemErrorString*: the system error string.
- Cause:** Network problems.
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Using the error information, determine the cause of the error. If this error occurs repeatedly, investigate network problems.

## NioMaxConnections

- Description:** The server has hit the maximum number of connections, and will not accept additional connections until other clients are disconnected.
- Parameters:** *count*: the maximum number of connections.
- Cause:** There are too many incoming connections.
- Effect:** This error is of informational severity.
- Action(s):** If these messages persist, consider raising the connection limit, or add additional servers if the server is already overloaded.

## NioNoPortNumberFound

- Description:** The server program attempted to get from the configuration database the number of the port that it should listen on, but either the entry was missing in the database or its value was explicitly zero.
- Parameters:** *paramName*: The name of the configuration parameter holding the port number.
- Cause:** Missing or invalid entry for the configuration parameter.
- Effect:** The server will not run.
- Action(s):** Use *imconfedit* to add the appropriate configuration parameter.

## NioPermissionErr

- Description:** The file has either read/write permissions by group or no read/write permissions by owner.
- Parameters:** *file*: the file name.
- Cause:**
- The server may not have been started with the correct user.
  - The system may not have been configured correctly.
  - The file may be in the wrong location or could have the wrong permissions.
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Verify that the process was started with the right user. Verify that the system is configured correctly and that the file being accessed is in the right location and has the correct permissions.

## NioPollBadReturn

- Description:** The value returned from the system call to `poll()` where `poll` was called `pollCallInfo` returned the following error `pollCallRes`. `poll` returned a value other than 0 or -1.
- Parameters:** *pollCallInfo*: how `poll` was called with arguments.  
*pollCallRes*: the results from `poll`.
- Cause:** The file descriptor returned by `poll` is not the expected file descriptor.
- Effect:** The severity of this event is critical in the context of the MSS or the POP Server. The severity is major in the context of the MTA. servers.
- Action(s):** Use the information from *pollcallinfo* and *pollcallres* to determine what caused the event.

## NioPollErr

- Description:** The system call to `poll()` failed. Note that this information was determined from the error set by `poll()`. After encountering this event, the socket was closed.
- Parameters:** *reason*: explanation of why `poll` failed.
- Cause:**
- Error occurred on device or stream
  - Hang up on the stream.
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Determine the cause of the event. Check the general health of the host machine that this process is running on.

## NioPollFail

- Description:** While waiting for input on a socket, the system call to `poll()` failed with system error *systemErrorString*. A network connection closed or a system error occurred.
- Parameters:** *systemErrorString*: the system error string.
- Cause:**
- Not enough memory for poll to complete.
  - Signal caught while performing poll.
- Effect:** This error is of minor severity.
- Action(s):** Use the system error *systemErrorString* to determine the cause of the event.

## NioPrivilegedPortNumber

- Description:** The server program attempted to get the number of the port that it should listen on. But the entry is a number that is not appropriate for this server.
- Parameters:** *paramName*: the name of the configuration parameter holding the port number.
- Cause:** Invalid entry for the configuration parameter.
- Effect:** The server will not run.
- Action(s):** Use `imconfedit` to edit the appropriate configuration parameter.

## NioReadSocketFail

- Description:** The attempt to read from the socket failed. Specifically, the call to `recvfrom` returned the system error *systemErrorString*. This happens in the context of the MTA only.
- Parameters:** *systemErrorString*: the system error string.
- Cause:** Probably insufficient user memory.
- Effect:** The severity of this event is major in the context of the MTA.
- Action(s):** Use the *systemErrorString* to determine the cause of this event. Check the general health of the system and the host machine on which this process is running.

## **NioRecvError**

- Description:** The system call to `recv` failed. This is due to either a system error or a network connection problem.
- Parameters:** None.
- Cause:** System error or network connection problem.
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Look in the logs for events which would indicate either a system error or network connection problem.

## **NioSelectTimeOut**

- Description:** A network connection closed.
- Parameters:** *sockdes*: the socket descriptor.
- Cause:** The host machine is in a strange state, or there are other network problems.
- Effect:** The severity of this event is minor in the context of one of the servers.
- Action(s):** Verify that the host machine is OK. Verify and fix network problems.

## **NioServerGoneDown**

- Description:** A server that this program was connected to has gone down. The MTA believes that the MSS which it is communicating with has terminated.
- Parameters:** *serverName*: the name of the server.  
*hostName*: the name of the host which the server was running on.  
*portNum*: the port number which the server was using.
- Cause:** There could be a number of causes for this event. The underlying problem is that a server went down when it should not have.
- Effect:** The severity of this event is critical in the context of the MTA.
- Action(s):** Verify the state of the MSS which this process was connected to. If the MSS is not running, determine the cause and restart.

## NioSetBufferSizeFail

- Description:** The attempt to set the buffer size for input on the socket failed. This is done with a call to `setsockopt`. This is only done in the MTA. The size of the buffer was 64k, a maximum under Solaris 2.4 .
- Parameters:** *bufSize*: the buffer size in bytes.  
*pgmName*: the program name.  
*systemErrorString*: the system error string.
- Cause:**
- Incorrect software configuration.
  - Insufficient memory available.
  - Insufficient STREAMS resources.
- Effect:** The severity of this event is major in the context of the MTA.
- Action(s):** Using the information from *systemErrorString* , determine the source of the problem. If it is not insufficient memory or STREAMS, contact Software.com.

## NioSetMaxFdsFail

- Description:** When starting up a server the number of requested file descriptors exceeds either the soft or hard limit. This is done by calling `setrlimit`.
- Parameters:** *curNumDesc*: the current number of file descriptors.  
*softDescLimit*: the soft limit on the number of file descriptors.  
*hardDescLimit*: the hard limit on the number of file descriptors.  
*user*: the user running this process.
- Cause:** The server may not have been started by root, in which case it will not be able to get the requested number of file descriptors. The number of file descriptors may be wrong.
- Effect:** The severity of this event is critical in the context of one of the servers.
- Action(s):** Verify that the server was started by root. Verify that the requested number of file descriptors is correct.

## **NioSetNoDelay**

- Description:** The attempt to set socket to non-blocking mode failed with system error *systemErrorString*. The system call is `fcntl`.
- Parameters:** *systemErrorString*: the system error string.
- Cause:**
- Permissions problems due to server started up with wrong user.
  - Configuration
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Verify that the process was started with the correct server. Verify that the system configuration is correct.

## **NioSetsockoptError**

- Description:** The call to `setsockopt ( )` failed with system error *systemErrorString*. This only happens in the context of the MSS.
- Parameters:** *systemErrorString*: the system error string.
- Cause:** Probably insufficient memory or insufficient STREAMS resources available.
- Effect:** The severity of this event is major in the context of the MSS.
- Action(s):** Using the *systemErrorString* determine if the cause is insufficient resources or programming error.

## **NioSocketClosed**

- Description:** The network connection to a client or server on *host* has been lost.
- Parameters:** *host*: the name of the host machine.
- Cause:** A network connection closed, or a system error occurred.
- Effect:** The severity of this event is minor in the context of one of the servers.
- Action(s):** This is a lower level signal. Investigate the logs for more serious events. Troubleshoot that event.

## NioSocketFail

- Description:** The system call to socket failed with error *systemErrorMessage*.
- Parameters:** *systemErrorMessage*: the system error string.
- Cause:**
- The program does not have the proper permissions to create sockets.
  - Insufficient user memory available.
  - Insufficient system resources available
- Effect:** The severity of this event is critical in the context of one of the servers.
- Action(s):** Verify that the program was started with the correct permissions and with the correct user. If there is no obvious problem with system or memory resources, work with Software.com to free up allocated resources.

## NioSocketOpen

- Description:** A network connection to host could not be terminated properly because of a problem with closing the socket.
- Parameters:** *host*: the name of the host machine.
- Cause:**
- Effect:** The severity of this event is minor in the context of one of the servers.
- Action(s):** Contact Software.com.

## NioStaleFileErr

- Description:** After doing a stat on the file it was determined that it was stale. This was deduced by determining that the file access time, modification time and status change happened earlier than 30 seconds before the stat on the file.
- Parameters:** *file*: the file name.
- Cause:** The file has been removed while being accessed.
- Effect:** The severity of this event is critical in the context of one of the servers.
- Action(s):** Verify that the file exists.

## NioStatFail

- Description:** The attempt to get stats on the file failed. Specifically, the system call stat failed with error *systemErrorString*.
- Parameters:** *file*: the file name.  
*systemErrorString*: the system error string.
- Cause:**
- Permissions may not be right for process and/or file.
  - The file may no longer exist.
- Effect:** The severity of this event is major in the context of one of the servers.
- Action(s):** Use the *systemErrorString* to determine the cause of this event.

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## 13.13 Message Expiration Log Events

### OldDelAdminMSEmpty

- Description:** Pertinent to the `imoldmsgdel` command.
- Parameters:** *name*: name of admin message store.
- Cause:** The administrative message store contained no messages. The presumption is that the administrative message store should always contain at least the “welcome” message for new accounts, and therefore something is amiss.
- Effect:** The command quits; no old mail is deleted.
- Action(s):** Make sure the value of the `/mss/adminMessageStoreName` configuration parameter is the correct name of the administrative message store. (This parameter defaults to “admin.”) Check the configuration parameter `/mss/welcomMsgId` (default is `<Welcome>`) to verify the welcome message, and re-instate the welcome message if necessary.

## OldDelAdminMSNotFound

- Description:** Pertinent to the `imoldmsgdel` and `imoldretrmsgdel` commands.
- Parameters:** *name*: Name of admin message store.  
*parameter*: Relevant configuration parameter.
- Cause:** No administrative message store was found with the given name. The name of the administrative message store was obtained from the `/mss/adminMessageStoreName` configuration parameter. The presumption is that the configuration parameter has a typo.
- Effect:** The command quits; no old mail is deleted.
- Action(s):** Make sure the `/mss/adminMessageStoreName` configuration parameter is set correctly, because an administrative message store is always expected to exist. This parameter defaults to “admin.”

## OldDelConfigParamFalse

- Description:** Pertinent to the `imoldretrmsgdel` or `imoldmsgdel` commands.
- Parameters:** *parameter name*: the offending configuration parameter.
- Cause:** A configuration parameter required to be true was false.
- Effect:** The command refuses to run; no old mail is deleted.
- Action(s):** Change the value of the configuration parameter indicated in the event parameters.

## OldDelConfigParamNegative

- Description:** Pertinent to the `imoldretrmsgdel` or `imoldmsgdel` commands.
- Parameters:** *parameter name*: the offending configuration parameter.
- Cause:** A configuration parameter required to be positive was negative.
- Effect:** The command refuses to run; no old mail is deleted.
- Action(s):** Change the value of the configuration parameter indicated by the event parameter.

## OldDelConfigParamNonPositive

- Description:** Pertinent to the `imoldretrmsgdel` or `imoldmsgdel` commands.
- Parameters:** *parameter name*: the affected configuration parameter.
- Cause:** A configuration parameter was required to be greater than zero, but wasn't.
- Effect:** The command refuses to run; no old mail is deleted.
- Action(s):** Change the value of the configuration parameter indicated by the event parameter.

## OldDelExceptionEncountered

- Description:** Pertinent to the `imoldmsgdel` and `imoldretrmsgdel` commands.
- Parameters:** *context*: the context in which the exception occurred.
- Cause:** An unexpected exception was raised, typically as a result of the command invoking an RME method on the Message Store Server.
- Effect:** The thread quits.
- Action(s):** Look for a subsequent event that indicates the exception the command received, and take the action recommended for that event.

## OldDelInsufficientPermission

- Description:** Pertinent to the `imoldretrmsgdel` or `imoldmsgdel` commands.
- Parameters:** *command name*: the name of the command  
*message store name*: the message store that could not be accessed.
- Cause:** The command unexpectedly didn't have permission to access a message store.
- Effect:** The thread trying to access the message store quits, causing some old mail to not be deleted.
- Action(s):** This error is never expected to occur, and probably indicates a bug or installation problem.

## OldDelInternalError

- Description:** Pertinent to the `imoldmsgdel` and `imoldretrmsgdel` commands.
- Parameters:** *expression*: expression expected to be true that wasn't.
- Cause:** A programming error.
- Effect:** The command quits. Some old mail might have been deleted.
- Action(s):** Contact Software.com.

## OldDelInvalidOption

- Description:** Pertinent to the `imoldmsgdel` and `imoldretrmsgdel` commands.
- Parameters:** *option name*: the name of the command option used improperly.
- Cause:** Invalid command line option detected.
- Effect:** The command does not run; no old mail is deleted.
- Action(s):** Fix the offending syntax.

## OldDelInvalidUsage

- Description:** Pertinent to the `imoldmsgdel` and `imoldretrmsgdel` commands.
- Parameters:** *command name*: the name of the command used improperly.  
*usage*: the correct usage for the command.
- Cause:** Invalid command line argument detected.
- Effect:** The command does not run; no old mail is deleted.
- Action(s):** Fix the invalid syntax.

## OldDelLockFileLockFailure

- Description:** Pertinent to the `imoldretrmsgdel` or `imoldmsgdel` commands.
- Parameters:** *name*: command name.  
*file name*: name of lock file.  
*errno*: Unix errno.  
*process*: string indicating process id of locker.
- Cause:** An attempt to lock a temporary lock file failed. Usually caused by trying to run the command twice.
- Effect:** The command does not run; no old mail is deleted.
- Action(s):** Check if the command is already running. See if the process id included in the event parameters still exists. If there is no other command running, delete the lock file and retry the command. Otherwise, wait for the first command to finish before running it again.

## **OldDelLockFileOpenFailure**

- Description:** Pertinent to the `imoldretmsgdel` or `imoldmsgdel` commands.
- Parameters:** *name*: Command name.  
*file name*: Name of lock file.  
*errno*: Unix errno.
- Cause:** An attempt to open a temporary lock file failed.
- Effect:** The command quits without deleting any old mail.
- Action(s):** Look in the *errno* man page to reference the error code passed in the *errno* parameter.

## **OldDelLockFileTruncateFailure**

- Description:** Pertinent to the `imoldretmsgdel` or `imoldmsgdel` commands.
- Parameters:** *name*: command name.  
*file name*: name of lock file.  
*errno*: Unix errno.
- Cause:** An attempt to truncate a temporary lock file failed.
- Effect:** The command quits without deleting any old mail.
- Action(s):** Check the permissions on the lock file and check the *errno* parameter.

## **OldDelMemorizerTempFileDeleteFailure**

- Description:** Pertinent to the `imoldretmsgdel` or `imoldmsgdel` commands.
- Parameters:** *file name*: name of the tmp file.  
*errno*: Unix errno.
- Cause:** An attempt to delete a temporary file failed.
- Effect:** None, except that a temporary file will be left around after the command finishes.
- Action(s):** Check the permissions on the temporary file and check the *errno* parameter.

## OldDelMemorizerTempFileOpenFailure

- Description:** Pertinent to the `imoldretmsgdel` or `imoldmsgdel` commands.
- Parameters:** *file name*: name of the file.  
*errno*: Unix errno.
- Cause:** An attempt to open a temporary file failed.
- Effect:** The command quits. Depending on when it quits, the command might have deleted some old mail.
- Action(s):** Check if the file system is full. Check the *errno* parameter and look it up in the `errno` man page.

## OldDelMemorizerTempFileWriteFailure

- Description:** Pertinent to the `imoldretmsgdel` or `imoldmsgdel` commands.
- Parameters:** *file name*: name of the file.  
*errno*: Unix errno.
- Cause:** An attempt to write to a temporary file failed.
- Effect:** The command quits. Some old mail might have been deleted.
- Action(s):** Check if the file system is full. Check the *errno* parameter and look it up in the `errno` man page.

## OldDelRDBMSAccessError

- Description:** Pertinent to the `imoldretmsgdel` or `imoldmsgdel` commands.
- Parameters:** *error number*: error number returned by Oracle.  
*context*: what the command was trying to accomplish.
- Cause:** An error was returned by the database when the command attempted to process an SQL statement. A subsequent `DbDatabaseError` event will be logged detailing the exact problem the database encountered. Correlate the two log messages by employing the error number event parameter.
- Effect:** The thread that encounters the error typically quits, causing some old mail to not be deleted.
- Action(s):** This event should not normally occur. Take the action recommended for the ensuing `DbDatabaseError`.

## OldDelRollbackSegment

- Description:** Pertinent to the `imoldmsgdel` command.
- Parameters:** *context*: the context in which the error occurred.
- Cause:** An ORA-1555 error occurred. This is symptomatic of running the command during a peak period, or of Oracle rollback segments being sized too small.
- Effect:** The command neglects to delete some expired mail.
- Action(s):** If this event occurs often, run the command at a less busy time, or increase the size of rollback segments. If it occurs rarely, no action needs to be taken.

## OldDelTooManyRBSPblems

- Description:** Pertinent to the `imoldretrmsgdel` command.
- Parameters:** *count*: the number of ORA-1555 errors that were encountered.
- Cause:** A number of ORA-1555 errors occurred. This is symptomatic of running the command during a peak period, or of Oracle rollback segments being sized too small.
- Effect:** The command quits prematurely. Some old mail may not be deleted.
- Action(s):** If this event happens often, run the command at a less busy time, or increase the size of rollback segments. If this event happens rarely, no action needs to be taken.

## OldDelUnexpectedDeleteError

- Description:** Pertinent to the `imoldretrmsgdel` command.
- Parameters:** *command name*: the name of the command.  
*count*: the number of rows that could not be deleted.
- Cause:** The command unexpectedly couldn't delete rows from the `Im_RetrievedByPop` table.
- Effect:** Old mail was deleted properly, but the command will waste time pointlessly trying to delete it again the next time it is run. This is completely harmless, except for the wasted time, and the wasted space in the `Im_RetrievedByPop` table.
- Action(s):** This error should never occur, and probably indicates an error in Oracle or a programming error in the command. Contact Software.com.

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## 13.14 Parameter Log Events

### ParmNotOption

- Description:** A command line argument that was specified for starting the MSS is not recognized. Displays “The command line option “%s” does not start with “-” and is too short (only one character).”
- Parameters:** *cmdlineopt*: the command line option.
- Cause:** The command line argument for starting the MSS doesn't start with a “-” or it is not of the form “-c”, where c is a single character.
- Effect:** This error is of warning severity.
- Action(s):** Verify the script or command which started the MSS to determine the valid and invalid command line arguments.

### ParmUnknownOption

- Description:** A command line argument that was specified for starting the MSS is not recognized. Displays “The command line option “%s” is not recognized by this program.”
- Parameters:** *cmdlineopt*: the command line option.
- Cause:** The command line argument is the right form but is not recognized.
- Effect:** This error is of warning severity.
- Action(s):** Verify the script or command which started the MSS to determine the valid and invalid command line arguments.

## 13.15 POP Server Log Events

### PopCommunicationErr

- Description:** The POP Server encountered an error when trying to communicate with the MSS. Displays “Pop communications failure with message store server, disconnecting user.”
- Parameters:** None.
- Cause:** Typically caused by a problem with the MSS. The MSS could be in a strange state. The machine which the MSS is running on, which this POP Server is communicating, could be in a strange state.
- Effect:** This error is of warning severity.
- Action(s):** Check the log file for the MSS which this POP Server is communicating. There are probably other errors which are a better indication of what is wrong with the MSS.

### PopConnMade

- Description:** The POP Server successfully validated the user. This is a notification in the logfile. It is not an error event.
- Parameters:** None.
- Cause:** The user being successfully validated by the POP Server.
- Effect:** This error is informational.
- Action(s):** None.

### PopConnTimedOut

- Description:** A pop communication with a client has timed out and subsequently disconnected.
- Parameters:** None.
- Cause:** A connection between a client and the pop server has been established, but the client has not sent command data to the server within the configurable timeout period (`popClientTimeout`).
- Effect:** If this occurs, the pop server thread terminates the client connection and exits.
- Action(s):** If the time out period is not long enough, modify parameter `popClientTimeout` in the configuration database appropriately. Otherwise, reconnect to the popserver and continue where you left off.

## PopLockTimeoutTooAggressive

**Description:** Indicates the `popLockTimeout` configuration parameter might be too low.

**Parameters:** None.

**Cause:** A POP user's exclusive POP lock was timed out, but the user was subsequently active.

**Effect:** When a pop client successfully logs on to the pop server, it is granted an exclusive lock on its mailbox. If there is an attempt to log on to the same mailbox while the exclusive lock is held, the attempt is refused with an error message. A pop client normally holds the lock until it Quits. Exclusive locking is demanded by the POP3 specification.

Unfortunately, a user can end up locked out of his own mailbox, causing calls to customer support. This parameter is intended to control a common cause of these complaints. A communications transport implementation weakness (not part of InterMail) can cause the pop server to believe a connection with a pop client is still open, when in reality the pop client got hung up on. When the user redials and attempts to access his mailbox, he gets rejected with a message that his mailbox is exclusively locked --- a message he is probably not used to seeing. The `popClientTimeout` will eventually cause the connection to be closed, but many users will lose patience and call customer support before it kicks in.

If a pop client is idle for the `popLockTimeout`, it loses its exclusive rights to the lock, and shares it with the next client that requests it.

If a user is hung up on, the default `popLockTimeout` value will take away the exclusive right to the lock from the dead connection before the user has the time to dial back in. Once the user is connected, she will be able to successfully log on and access her mailbox, because the new session will be able to share the lock with the dead one. The dead connection will subsequently be killed off for good by the `popClientTimeout`.

Software pop clients access a mailbox in a rapid fashion; it should be very rare in practice to see a `popLockTimeout` kick in when the pop client is still interested in the connection. When this rare case does occur, the `PopLockTimeoutTooAggressive` notification log message is recorded by the pop server.

When a `popLockTimeout` does occur to an active session, ill can come of it only if another session grabs the lock. The original session and the new session will both share the lock. The worst that can happen is for one session to delete a message that the other session subsequently tries to retrieve, causing the retriever to get an error.

More typically, an active session that suffers a `popLockTimeout` will send a command to the pop server before another session tries to access the mailbox. In this case, the pop server grants the exclusive lock to the session once again, and the session continues just as if the `popLockTimeout` never occurred.

**Action(s):** Lots of these events being logged is a symptom of the `popLockTimeout` configuration parameter being too low. Adjust it up.

## PopNoMSS

- Description:** While verifying the user and password the MSS was unavailable. Displays “User's MSS is currently inactive.”
- Parameters:** None.
- Cause:** Something is either wrong with the MSS or the machine on which the MSS is running. Note that the event that caused this is `AcctInactive`.
- Effect:** This error is of minor severity.
- Action(s):** This is not typically a problem with the POP Server. Check the status of the MSS with which this POP Server was communicating. Check the machine on which the MSS is running.

## PopProtocolErr

- Description:** This event occurs when the POP Server receives a command from a POP client which is not part of the Pop protocol, (from the server's point of view). It is not a serious error.
- Parameters:** *cmd*: the POP command.
- Cause:** The pop client sends a command which is not in the POP set of commands.
- Effect:** This error is of warning severity. This is not serious and indicates a problem with the client software.
- Action(s):** None. See man page on POP Server and Post Office Protocol and Post Office Protocol extensions.

## PopSyncError

- Description:** Synchronization error with MSS; got *reply* reply in state “*state*.”
- Parameters:** *reply*: name of the unexpected reply received.  
*state*: state of the POP connection when the reply was received.
- Cause:** The MSS or POP Server could be in a strange state.
- Effect:** May indicate a problem with the MSS or the POP Server. Clients may not be able to access mail via POP. .
- Action(s):** .

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## 13.16 Process Log Events

### ProcAssertFail

- Description:** An assertion in the source code failed.
- Parameters:** *assertion*: the assertion that failed.  
*fileName*: name of the source file.  
*lineNumber*: line number in the source file
- Cause:** An assertion failed at run-time.
- Effect:** Depends on the assertion.
- Action(s):** Contact Software.com for help in assessing impact and determining a solution.

### ProcBadStateCode

- Description:** This event should not occur in normal operation. While this is suspect, it should not cause any problems. This error indicates that the MTA and the MSS are out of sync.
- Parameters:** *stateCode*: the state code of the Deliverer thread.  
*lineNumber*: the line number of the source file.
- Cause:** A Deliverer thread in the MTA received a response from the MSS that it did not expect in its current state.
- Effect:** This error is of warning severity. The message currently being delivered will be temporarily deferred.
- Action(s):** In isolation this error is harmless. If the error occurs regularly it may indicate problems with the MSS, MTA, one particular mailbox, or one particular host. If the error is isolated to one of these components, that component should be restarted or repaired as appropriate.

### ProcBail

- Description:** A section of code was entered that should never happen.
- Parameters:** *fileName*: name of the source file.  
*lineNumber*: line number in the source file
- Cause:** Must be determined from source code.
- Effect:** Must be determined from source code.
- Action(s):** Contact Software.com for help in assessing impact and determining solution.

## ProcBroadcastingCond

- Description:** Broadcasting of condition resulted in an error. The current release of the product does not broadcast conditions, so this should never happen.
- Parameters:** *conditionName*: the name of the condition.  
*systemErrorString*: the system error string.
- Cause:** There is no known cause for this error.
- Effect:** The effects are unknown. This should be considered a major or critical error.
- Action(s):** The server reporting this error should be restarted.

## ProcCantKillProcess

- Description:** The process could not be killed.
- Parameters:** *process*: the name of the process program.  
*pid*: the process id.  
*systemErrorString*: The system error string.
- Cause:** The call to *kill(2)* failed. Check the man page for the exact meaning of the *systemErrorString* for this function.
- Effect:** None, except that the process was not killed.
- Action(s):** Make sure that `imservcall` is run as root or as the "commonUser".

## ProcCantReadPidFile

- Description:** The contents of the pid file did not translate to a valid process id.
- Parameters:** *pidFileName*: the name of the pid file.
- Cause:** The program `imservcall` found a pid file, but the contents of the file could not be converted to a valid, non-zero process id.
- Effect:** None, except that the program `imservcall` will not be able to stop the server.
- Action(s):** Without a pid file, the process must be killed manually by determining its process id using `ps(1)` and issuing a `kill(1)` command.

## **ProcCatNoName**

- Description:** No basename was provided for the message catalog.
- Parameters:** None.
- Cause:** A program attempted to open a message catalog but the message catalog name provided was NULL.
- Effect:** This error is of major severity. The effect on service is unpredictable. Logging, error, and other output may not be presented in typical format.
- Action(s):** Rerun commands or restart servers and contact Software.com.

## **ProcCondMutexNotLocked**

- Description:** An attempt was made to unlock a mutex which is not locked by this thread (and may not have been locked by any thread.)
- Parameters:** *mutexName*: the name of the mutex.
- Cause:** There are no known cases where it would happen.
- Effect:** The severity of this error ranges from major to critical. The effect on service is unpredictable. The thread reporting this error may not continue to provide service. If it is a main thread of a server that server may not continue to accept connections. A server logging this error is likely to display other unusual behavior.
- Action(s):** Restart the server. If the error recurs, you'll need to find the problem and correct it. Some possibilities:
- If the error appears in the MTA, it is most likely a problem with a message.
  - If the error involves the POP server, it is most likely a bad POP client, or else a network component, such as a router or hub.
  - If the error appears in the MSS, it could be due to either a message or a bad POP client, router or hub.

## ProcConfigChange

- Description:** A new set of parameters was received from the configuration server, but some of the changes could not be accommodated.
- Parameters:** *parmName*: the name of the configuration parameter.  
*hostName*: the name of host for looking up the configuration parameter.  
*programName*: the name of program for looking up the configuration parameter.  
*impact*: impact of the change on the program.
- Cause:** The program first read the config.db file for its values for all the configuration parameters; then it contacted the configuration server, which had a different version of the parameters and instructed the program to install the different version. However, the program had already acted upon some of these parameters and could not accommodate the changes without being re-started.  
*Note: This could also occur when a server is re-connecting to the configuration server.*
- Effect:** The program will continue to execute, but with the original values for the configuration parameters.
- Action(s):** If necessary, re-run the program to get the newer version of parameters.

## ProcDeleteLockedMutex

- Description:** An attempt was made to delete a Mutex which had not been unlocked first.
- Parameters:** *mutexName*: the name of the mutex.
- Cause:** There are no known cases where it would happen.
- Effect:** The severity level ranges from major to critical. The effect on service is unpredictable. The thread reporting this error may not continue to provide service. If it is a main thread of a server that server may not continue to accept connections. A server logging this error is likely to display other unusual behavior.
- Action(s):** Restart the server. If the error recurs, you'll need to find the problem and correct it. Some possibilities:  
If the error appears in the MTA, it is most likely a problem with a message.  
If the error involves the POP server, it is most likely a bad POP client, or else a network component, such as a router or hub.  
If the error appears in the MSS, it could be due to either a message or a bad POP client, router or hub.

## ProcDestroyCondFail

- Description:** An attempt to destroy the Condition named *conditionName* failed with the system error given.
- Parameters:** *conditionName*: the name of the condition.  
*systemErrorString*: the system error string.
- Cause:** Call to `cond_destroy(3T)` failed with the error code given. See the man page for `cond_destroy(3T)`.
- Effect:** The severity level ranges from major to critical. The effect on service is unpredictable. The thread reporting this error may not continue to provide service. If it is a main thread of a server that server may not continue to accept connections. A server logging this error is likely to display other unusual behavior.
- Action(s):** Restart the server. If the error recurs, you'll need to find the problem and correct it. Some possibilities:  
If the error appears in the MTA, it is most likely a problem with a message.  
If the error involves the POP server, it is most likely a bad POP client, or else a network component, such as a router or hub.  
If the error appears in the MSS, it could be due to either a message or a bad POP client, router or hub.

## ProcDestroyMutexFail

- Description:** Destroying the mutex *mutexName* failed. The system error is *systemErrorString*.
- Parameters:** *mutexName*: the name of the Mutex.  
*systemErrorString*: the system error string.
- Cause:** Call to `mutex_destroy(3T)` failed. See the man page for `mutex_destroy(3T)`.
- Effect:** The severity level ranges from major to critical. The effect on service is unpredictable. The thread reporting this error may not continue to provide service. If it is a main thread of a server that server may not continue to accept connections. A server logging this error is likely to display other unusual behavior.
- Action(s):** Restart the process. If the error recurs, you'll need to find the problem and correct it. Some possibilities:  
If the error appears in the MTA, it is most likely a problem with a message.  
If the error involves the POP server, it is most likely a bad POP client, or else a network component, such as a router or hub.  
If the error appears in the MSS, it could be due to either a message or a bad POP client, router or hub.

## **ProcExcStackOvfl**

- Description:** The nesting of exception handlers has become excessive.
- Parameters:** None.
- Cause:** The depth of the exception handling stack has exceeded 10,000. This generally indicates an infinite loop.
- Effect:** This error is of critical severity (mostly): This error is generally accompanied by another error that is the true source of the error. It is not possible to categorize the severity of this error in isolation.
- Action(s):** Restart the affected server and work with Software.com to resolve this problem.

## **ProcExit**

- Description:** A process exited with an error status.
- Parameters:** *exitStatus*: the exit status of the process.
- Cause:** An InterMail process exited with *exitStatus*.
- Effect:** The effect of this error on the system cannot be determined. This is usually merely a notification; however, it may be preceded in the log file by more serious entries in the case of an untimely demise.
- Action(s):** None.

## **ProcExitCode**

- Description:** A sub-process exited with an error status.
- Parameters:** *exitStatus*: The exit status of the child process.
- Cause:** This error should not happen with the current release of InterMail, as no forking/execing is done. This error can be generated only by older versions of the InterMail software.
- Effect:** The effect of this error on the system can not be determined. It should be treated as a critical alarm.
- Action(s):** Restart the process that was affected and work with Software.com to resolve this problem.

## ProcFatalSignal

- Description:** One of the following UNIX signals was received by the process:
- SIGILL: Illegal instruction (not reset when caught).
  - SIGABRT: Compatibility (same as SIGIOT)
  - SIGEMT: EMT instruction.
  - SIGFPE: Floating point exception.
  - SIGBUS: Bus error.
  - SIGSEGV: Segmentation violation.
  - SIGSYS: Bad argument to system call.
- Parameters:** *signalName*: the name of the UNIX signal received.
- Cause:**
- Effect:** This error sometimes appears along with another error indicating the processing that was going on at the time. The severity of this error depends on what thread received the signal and the processing that it was doing at the time. This error can range in severity from critical to warning.
- Action(s):** Restart the process if necessary. Work with Software.com to resolve this problem.

## ProcFchownFail

- Description:** An attempt to change the ownership of a file with `fchown(2)` failed.
- Parameters:** *filename*: the name of the file.  
*userId*: the (numeric) value of the user id.  
*groupId*: the (numeric) value of the group id.  
*systemErrorString*: the system error string.
- Cause:** Refer to the system error for the exact cause. This error is probably the result of a permissions problem.
- Effect:** This error is of warning severity. The effect on service currently is minimal. The only files which you `fchown()` are log files.
- Action(s):** Check that user and group ids are correct for the configuration parameter named `commonUser`.

## **ProcGetgrnamFail**

- Description:** The system call to retrieve a group name failed. The system error string provides details on the cause.
- Parameters:** *groupName*: the name of the group being looked up.  
*systemError*: the system error string describing the error.
- Cause:** This is either a programming or configuration error.
- Effect:** This error could result in servers failing to communicate or users unable to either receive or download their mail. The severity of this error is major or possibly critical, if it affects all connections.
- Action(s):** Validate that the user and group information on the hosts is identical and restart the servers.

## **ProcGetpwnamFail**

- Description:** An attempt to get password file information about the user failed.
- Parameters:** *userName*: the user name  
*systemErrorString*: the system error string.
- Cause:** A call to `getpwnam_r(3C)` failed with the system error given. This could be from a programming or system configuration issue.
- Effect:** This error may affect entire servers or individual mailboxes, so the error may be major or critical, if no servers can communicate.
- Action(s):** Verify that the user information on each of the hosts is identical.

## **ProcGetpwuidFail**

- Description:** An attempt to get the password file information about the user with a user id failed.
- Parameters:** *userName*: the UNIX user name.  
*systemErrorString*: the system error string.
- Cause:** A call to `getpwuid_r(3C)` failed. The system error string should provide the reason for this failure.
- Effect:** This error is of critical severity. It can cause servers to fail to connect.
- Action(s):** Verify that the password information is the same on all the hosts running InterMail.

## ProcGetThrdPriFail

- Description:** An attempt to determine the thread's priority failed.
- Parameters:** *threadName*: the name of the Thread.  
*systemErrorString*: the system error string.
- Cause:** A call to `thr_getpriority(3T)` failed with the system error given.
- Effect:** The severity level is major to critical. The effect on service is unpredictable. It is likely that the process is not able to continue providing service.
- Action(s):** The server should be restarted. Work with Software.com to resolve the problem.

## ProcGetThrdSpecFail

- Description:** An attempt to get per-thread data failed. This will result in the thread exiting without performing the task it was assigned. This may result in mail not being delivered or retrieved.
- Parameters:** *systemErrorString*: the system error string.
- Cause:** The call to `thr_getspecific(3T)` failed.
- Effect:** The severity level is major to critical. The effect on service is unpredictable. The server experiencing this error may behave erratically.
- Action(s):** Restart the server and work with Software.com to resolve the problem.

## ProclnitCondFail

- Description:** An attempt to initialize a condition has failed. This is one of several multi-threading synchronization techniques used.
- Parameters:** *conditionName*: the name of the Condition  
*systemErrorString*: the system error string.
- Cause:** A call to `cond_init(3C)` failed with the system error given. This is probably a problem with the system programming library.
- Effect:** The severity level is major to critical. A condition variable that the process needs is not available. The results of this are not predictable. The server will not perform as expected.
- Action(s):** Restart the server and contact Software.com.

## ProxInitMutexFail

- Description:** An attempt to initialize a mutex has failed. This is one of several multi-threading synchronization techniques used.
- Parameters:** *mutexName*: the name of the Mutex.  
*systemErrorString*: the system error string.
- Cause:** A call to `mutex_init(3T)` to initialize the condition name `conditionName` has failed with the system error given. This is probably a problem with the system programming library.
- Effect:** The severity level is major to critical. A mutex that the process needs is not available. The results of this are not predictable. The server will not perform as expected.
- Action(s):** Restart the server and contact Software.com.

## ProcJoinThrdFail

- Description:** A call to `thr_join(3T)` failed with the given system error string. This error cannot happen in the current revision of InterMail.
- Parameters:** *threadName*: the name of the Thread.  
*systemErrorString*: the system error string.
- Cause:** This can only be the result of a programming error, since no calls to `thr_join(3T)` are made.
- Effect:** The effects on service are not predictable. The server displaying this error will not behave as expected. This is a major or critical event.
- Action(s):** The restart the server and contact Software.com.

## ProcKillThrdFail

- Description:** An attempt to send a signal to this thread failed.
- Parameters:** *threadName*: the name of the thread could not be signaled.  
*systemErrorString*: the system error string.
- Cause:** A call to `thr_kill(3T)` returned the error code given.
- Effect:** The effect on service is unpredictable. This is a major or critical error. It is likely that there is another thread waiting on the condition, that may never resume execution.
- Action(s):** Restart the server and contact Software.com.

## ProcLaunchReport

- Description:** This is a notification which is written to the log file as soon as an InterMail program is initialized and “ready to provide service”. It logs the name of the user that is running the server, which is usually common User.
- Parameters:** *user*: the user name of the process which is running the server.
- Cause:** Server start up will cause this event. It is not an error.
- Effect:** This error is informational.
- Action(s):** None.

## ProcLockAcqOrder

- Description:** In order to prevent deadlocks in the system, locks must be set in prescribed orders. This error states that that ordering convention has not been met.
- Parameters:** *mutexName*: the name of the Mutex.  
*listOfMutexes*: a list of higher-priority Mutexes already locked.
- Cause:**
- Effect:** The severity level is major to critical. The effects on service are not predictable.
- Action(s):** Restart the server and contact Software.com.

## ProcLockMutexFail

- Description:** Locking the mutex *mutexName* failed. The system error is *systemErrorString*.
- Parameters:** *mutexName*: the mutex name.  
*systemErrorString*: the system error information.
- Cause:**
- Effect:** The severity level is major to critical. The effects on service are unpredictable.
- Action(s):** Restart the server and contact Software.com.

## ProcMTNotSupported

- Description:** An attempt was made to utilize more than one thread, but this program was not built to support multi-threading..
- Parameters:** None.
- Cause:** The program was compiled without the necessary support for multi-threading.
- Effect:** The effects on service are unpredictable. This is a critical error.
- Action(s):** Restart the server and contact Software.com.

## ProcMutexWasntLocked

**Description:** An attempt was made by thread *threadName* to unlock the Mutex named *mutexName*, but that Mutex wasn't locked to begin with.

**Parameters:** *mutexName*: the name of the Mutex.  
*threadName*: the name of the Thread.

**Cause:**

**Effect:** The severity level is major to critical. The effect on service of this error is unpredictable.

**Action(s):** Restart the server and contact Software.com.

## ProcNoCHFnd

**Description:** When an unexpected event occurs, an exception can be raised to handle the condition. In this case, an exception was raised but there were no exception handlers to catch it.

**Parameters:** None.

**Cause:**

**Effect:** This error will cause a program to exit. This may be a major or critical error, depending on the server affected.

**Action(s):** Restart the server and contact Software.com.

## ProcNoFrmwrk

**Description:** An attempt was made to call a function in the InterMail library without initializing the library.

**Parameters:** *serviceEntryName*: name of the service entry.

**Cause:**

**Effect:** The severity level is major. The effect on service depends on the component affected.

**Action(s):** Restart the server and contact Software.com.

## ProcNullMutex

**Description:** An attempt was made to lock a mutex which is null.

**Parameters:** None.

**Cause:** An attempt was made to lock a Mutex but the handle to the Mutex was NULL.

**Effect:** The severity level is major to critical. The effect on service is unpredictable.

**Action(s):** Restart the server and call Software.com.

## ProcPoolResourceLost

- Description:** An internal programming problem occurred during shutdown.
- Parameters:** *threadName*: name of the pool manager thread.  
*numOfResources*: the number of resources that had not been returned.
- Cause:** The thread indicated was managing a pool of resources. At shutdown time, some of the resources had not been returned to the pool. This is simply a bad programming practice, but could result in system resources, such as database connections, etc. not being released.
- Effect:** Effects on service are probably minimal, but in the case of non-returned resources, this could have a cumulative effect.
- Action(s):** Notify Software.com of the problem.

## ProcProcessNotRunning

- Description:** The process to be killed was not running.
- Parameters:** *processName*: the name of the process program.  
*pid*: the process id.
- Cause:** The process whose pid was found in the server's pid file is not currently running, and thus cannot be killed.
- Effect:** None, except that the process was not killed.
- Action(s):** The server exited as the result of some other cause, so you do not need to kill it anymore.

## ProcReAcqLockFail

- Description:** Attempt to reacquire the lock for mutex *mutexname* failed.
- Parameters:** *mutexName*: the name of the Mutex.  
*systemErrorString*: the system error string.
- Cause:** This only happens on platforms that do not properly support mutex locking while waiting on a condition. InterMail does not currently run on any such platform.
- Effect:** The severity level is major to critical. The effect on service is unpredictable.
- Action(s):** Restart the server and contact Software.com if this should happen.

## **ProcSemBadKey**

- Description:** The call to `semget` to get the semaphore id failed. The path to the key file is *keyPath*.
- Parameters:** *keyPath*: The path to the key.
- Cause:**
- Effect:** This event has severity major in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Contact Software.com.

## **ProcSemCreateFail**

- Description:** The call to `semget` to create semaphore *semaphoreName* failed with system error *systemErrorString*.
- Parameters:** *semaphoreName*: the name of the semaphore.  
*systemErrorString*: the system error string.
- Cause:**
- Effect:** This event has severity major in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Contact Software.com.

## **ProcSemSetStatFail**

- Description:** The call to `semctl` to set status of semaphore *semaphoreName* failed with system error *systemErrorString*.
- Parameters:** *semaphoreName*: The name of the semaphore.  
*systemErrorString*: The system error string.
- Cause:** Process does not have appropriate permissions or system resources are exhausted.
- Effect:** This event has severity major in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Verify that the process logging this event was started as the correct user to insure that it had the permissions to perform the `semctl` call. If system memory is exhausted, work with Software.com to free allocated blocks.

## ProcSemNoName

- Description:** When attempting to initialize a semaphore no name was given.
- Parameters:** None.
- Cause:**
- Effect:** This event has severity critical in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Call Software.com.

## ProcSemPostFail

- Description:** The call to `semop` to signal semaphore *semaphoreName* failed with system error *systemErrorString*.
- Parameters:** *semaphoreName*: the name of the semaphore.  
*systemErrorString*: the system error string.
- Cause:** The process does not have appropriate permissions.
- Effect:** This event has severity major in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Verify that the process logging this event was started with the correct user to insure that the process has the appropriate permissions.

## ProcSemUninitialized

- Description:** An attempt was made to use an uninitialized semaphore. This is done with a call to `semctl`.
- Parameters:** None.
- Cause:** The process does not have the required permissions. Or, system resources have been exhausted.
- Effect:** This event has severity major in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Verify that the process logging this event was started with the correct user to insure that the process has the appropriate permissions to perform the `semctl` call. If system memory is exhausted, work with Software.com to free allocated blocks.

## ProcSemWaitFail

- Description:** The call to semop to wait on semaphore *semaphoreName* failed with system error *systemErrorString*.
- Parameters:** *semaphoreName*: the name of the semaphore.  
*systemErrorString*: the system error string.
- Cause:** The process does not have appropriate permissions.
- Effect:** This event has severity major in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Verify that the process logging this event was started with the correct user to insure that the process has the appropriate permissions.

## ProcSetgidNum

- Description:** An attempt to set the group id of the process failed with the system error given.
- Parameters:** *groupId*: the (numeric) group id.  
*systemErrorString*: the system error string.
- Cause:** A call to `setgid(2)` failed with the system error given. This is likely due to a configuration problem with InterMail.
- Effect:** This error is of major severity. This error may cause components in the system not to gain access to resources with the proper identity.
- Action(s):** Validate the user and group information for the InterMail installation.

## ProcSetMaxPthreadsFail

- Description:** Could not increase the number of pthreads.
- Parameters:** None.
- Cause:**
- Effect:** This is of major severity.
- Action(s):** This error indicates that the number of threads defined by the configuration key `maxThreads` could not be created because the hardware either cannot support that many threads or the OS is not configured to support that many threads. Either lower the number of threads to be created or reconfigure the OS to handle more threads.

## ProcSetThrdPriFail

- Description:** A call to `thr_setpriority(3T)` failed with the system error given.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorString*: the system error string.
- Cause:**
- Effect:** The severity level is major to critical. The effect on service of this error is unpredictable.
- Action(s):** Restart the server and contact Software.com.

## ProcSetThrdSpecFail

- Description:** When creating a thread an error occurs when setting thread specific data.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorString*: the system error string.
- Cause:** A call to `thr_setspecific(3T)` failed with the system error given.
- Effect:** The severity level is major to critical. The effect on service is unpredictable.
- Action(s):** Restart the server and contact Software.com.

## ProcSetuidNum

- Description:** An attempt to set the user id of the process failed with the system error code given.
- Parameters:** *userName*: the name of the user.  
*systemErrorString*: the system error string.
- Cause:** This is caused by errors in the configuration of InterMail.
- Effect:** The severity level is major to critical. The user id of the various components of InterMail must match for the installation to behave properly. Mail may be being deferred and/or users may be unable to retrieve messages, depending on the components involved.
- Action(s):** Verify the user and group information on the hosts running InterMail.

## ProcShutdown

- Description:** This message is for notification only, and indicates the beginning of a graceful shutdown.
- Parameters:** *shutdownMode*: mode of shutdown requested.
- Cause:** The server has been requested (via `imservcall`) to shut down. The value of `shutdownMode` can be “stop,” “drain,” or a number (of undefined meaning).
- Effect:** The effect will be for the server to shut down. If the shutdown mode is “drain,” then all work in progress will be carried out to its conclusion. If the shutdown mode is “stop,” then all work in progress will be abandoned in an orderly fashion at the first opportunity and clients will be notified of the abrupt termination. When all work in progress has been finished or abandoned, the server will exit.
- Action(s):** None. If a “drain” shutdown is in progress and it is decided that this will not be fast enough, a shutdown can be escalated to “stop” by re-invoking `imservcall`.

## ProcShutdownInProgress

- Description:** An attempt to shutdown the server was denied.
- Parameters:** *currentShutdownMode*: current mode of shutdown in progress.  
*requestedShutdownMode*: mode of shutdown requested.
- Cause:** An attempt was made using `imservcall` to cause the server to shutdown, but a graceful shutdown mode was already in progress at that level or at a higher lever. The original shutdown will proceed uninterrupted.
- Effect:** None.
- Action(s):** None.

## ProcShutdownPreempted

- Description:** A shutdown was already in progress for level `shutdownMode`, but this process was abandoned when another request to shutdown at a higher level (more quickly) was received.
- Parameters:** *shutdownMode*: mode of shutdown requested.
- Cause:** The server has been requested (via `imservcall`) to shut down at a higher lever than the shutdown in progress.
- Effect:** The effect will be for the server to shut down even more quickly.
- Action(s):** None.

## ProcShutdownRequested

- Description:** The program has been requested to shutdown.
- Parameters:** None.
- Cause:** The process has been killed with a `SIGHUP` and is exiting gracefully.
- Effect:** This error is informational.
- Action(s):** None.

## ProcShutdownSequenceError

- Description:** This message indicates a programming error in InterMail code.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorString*: the system error string.
- Cause:** All the threads with sequence number *sequenceNumber* have already been shutdown, but an attempt is being made to create a new thread with this sequence number.
- Effect:** The thread will not be created, but ultimate effect is unpredictable. The server will probably be brought down successfully in spite of this.
- Action(s):** None.

## ProcShutdownStalled

- Description:** A significant amount of time (interval seconds) has elapsed with no reduction in the number of tasks executing on the server.
- Parameters:** *numTasks*: the number of tasks still in progress on the server.  
*ServerName*: the name of the server.
- Cause:** The program `imservcall` has been used to request a server to shutdown, but no progress has been made in `intervalEffects` on `Service`.  
The server is still running.
- Effect:** The thread will not be created, but the ultimate effect is unpredictable. The server will probably be brought down successfully in spite of this.
- Action(s):** The level of shutdown will have to be escalated to “exit” or “kill”.

## ProcSignalCondFail

- Description:** An attempt to signal the Condition *conditionName* resulted in a system error.
- Parameters:** *conditionName*: the name of the Condition.  
*systemErrorString*: the system error string.
- Cause:** A call to `cond_signal(3T)` returned the error code given.
- Effect:** The severity ranges from major to critical. The effect on service is unpredictable. It is likely that there is another thread waiting on the condition that may never resume execution.
- Action(s):** Restart the server and contact Software.com.

## ProcSignalled

- Description:** A child process exited because it was killed with a signal.
- Parameters:** *signalName*: the name of the signal.
- Cause:**
- Effect:** The effect on service is not predictable. This is a major or critical error.
- Action(s):** Restart the server and contact Software.com.

## ProcSuspThrdFail

- Description:** An attempt to suspend a thread has failed.
- Parameters:** *threadName*: the name of the Thread.  
*systemErrorString*: the system error string.
- Cause:**
- Effect:** The effect on service is not predictable. This is a major or critical error.
- Action(s):** Restart the server and contact Software.com.

## ProcThrdAttrDestroy

- Description:** When attempting to destroy the attribute data for thread *threadName* an error was encountered *systemErrorString*. This was as a result of calling `pthread_attr_destroy`.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorString*: the system error string.
- Cause:**
- Effect:** This event has severity critical in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Using the information from *systemErrorString* determine the cause of this event.

## ProcThrdAttrInitFail

- Description:** When creating a new per-thread data for thread *threadName* an error *systemErrorString* was encountered. This was as a result of calling `pthread_attr_init`.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorString*: the system error string.
- Cause:** Memory exhausted or programming error.
- Effect:** This event has severity critical in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Determine if the host that this server is running on is okay and that the system resources have not been exhausted. If this is the case, work with Software.com to free allocated resources. Otherwise, this is likely to be a programming error and you should call Software.com.

## ProcThrdKeyCreateFail

- Description:** When creating a new per-thread data key for thread *threadName* an error was encountered.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorString*: the system error string.
- Cause:** A call to `thr_keycreate(3T)` has failed with the error code given.
- Effect:** The severity ranges from major to critical. This is an important operation for multi-threaded applications. This failure will cause the thread creation to fail. The effect on service is unpredictable.
- Action(s):** Restart the server and contact Software.com.

## ProcThrdMainCalled

- Description:** A subclass of Thread failed to implement a `threadmain()` member function.
- Parameters:** None.
- Cause:** All subclasses of Thread must implement a `threadmain()` function which will be the main function of the Thread. Some class has failed to do this.
- Effect:** The severity ranges from major to critical. The effect on the service is unpredictable. The thread that is unable to execute `threadmain()` will not run and its work will not be done.
- Action(s):** Restart the server and contact Software.com.

## ProcThrdSchedFail

- Description:** When attempting to get the schedule policy and schedule parameters for thread *threadName* the system error *systemErrorMessage* occurred. The system call was `pthread_getschedparam`.
- Parameters:** *threadName*: the name of the thread.  
*systemErrorMessage*: the system error string.
- Cause:**
- Effect:** This event has severity critical in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Using the information from *systemErrorMessage* determine the cause of this event.

## ProcThrdSetStacksize

- Description:** When setting the size of the stack for a new thread *threadName* an error was encountered *systemErrorMessage*. This was as a result of calling `pthread_attr_setstacksize`.
- Parameters:** *stackSize*: the stack size.  
*threadName*: the name of the thread.  
*systemErrorMessage*: the system error string.
- Cause:** Memory exhausted or stack size exceeds system limit.
- Effect:** This event has severity critical in the context of one of the servers. The server which logs this event will not be able to run.
- Action(s):** Determine if the host that this server is running on is okay and that the system resources have not been exhausted. If this is the case, work with Software.com to free allocated resources. Verify the server has been started with the correct user. If these two cases are not true, this is likely to be a programming error and you should call Software.com.

## ProcTooManyFatals

- Description:** While exiting, a process encountered too many fatal errors to cleanly shutdown. It will exit.
- Parameters:** None.
- Cause:** This may be caused by operating system instability or hardware errors.
- Effect:** This error should have little effect on the service if it is encountered while shutting down the server. At other times it is a major or critical error.
- Action(s):** If this occurred while shutting down, check the other fatal InterMail errors that were reported. Otherwise, restart the server and contact Software.com.

## ProcUnlockMutexFail

- Description:** An attempt to unlock a Mutex has failed with the system error given.
- Parameters:** *mutexName*: the name of the Mutex.  
*systemErrorString*: the system error string.
- Cause:** A call to mutex\_unlock(3T) has failed with system error.
- Effect:** The severity ranges from major to critical. The effect on the service is unpredictable.
- Action(s):** Restart the server and contact Software.com.

## ProcWaitOnCondFail

- Description:** An attempt to wait on a Condition has failed with the system error given.
- Parameters:** *conditionName*: the name of the Condition.  
*systemErrorString*: the system error string.
- Cause:** A call to cond\_wait(3T) has failed with a system error.
- Effect:** The severity ranges from major to critical. The effect on service is not predictable. The server reporting this error will not continue to provide service reliably.
- Action(s):** Restart the server and contact Software.com.

## 13.17 Queue Server Log Events

### QsrvFileReqOpInvalid

- Description:** A client requested a file operation code that is invalid.
- Parameters:** *op*: the operation that the client requested.
- Cause:** The client may be newer version than the server. Or, the client may not be operating properly.
- Effect:** This message is of major severity. This should never happen in normal operation, and probably means that the client cannot communicate with the server.
- Action(s):** Report the error to Software.com.

### QsrvLockFailed

- Description:** In response to a client request, the server attempted to lock a file, but it was already locked.
- Parameters:** *filename*: the file that the server attempted to lock.
- Cause:** This should not happen in normal operation.
- Effect:** This message should not affect mail delivery, but it should be reported to Software.com.
- Action(s):** Report the error.

### QsrvQueueDirUnspecified

- Description:** The queue server could not start because the queue directory (imqueueserv/queueDir) was not specified in the configuration database.
- Parameters:** None.
- Cause:** The queue server configuration is not correct.
- Effect:** This message is fatal. The queue server cannot start.
- Action(s):** Make sure a queue directory is specified. Use the `/*/common/queueDir` configuration key.

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## 13.18 RME Log Events

### RmeBadClientRef

- Description:** An object reference from a remote client was invalid.
- Parameters:** None.
- Cause:** Possibly a client error or network error.
- Effect:** This error is of major severity. The effect on service depends on the object that caused the alarm. This alarm usually affects a single user. However, if it floods, the entire MSS process could be affected.
- Action(s):** Reboot the server experiencing the error if the alarm is repeating several times a minute. Check for other InterMail or network errors. If the problem is not cleared, contact Software.com.

### RmeBadDirCacheHost

- Description:** The configuration variable `DirCacheHost` was indecipherable, using "localhost". The value was `configLocalHost`.
- Parameters:** *configLocalHost*: The config entry for the local host.
- Cause:** The directory cache server is not responding. The process could have terminated unexpectedly, or may be configured incorrectly.
- Effect:** The effect on service for this event is warning. The directory cache server will be run using the default local host. If this is okay, additional event will occur and there will be no effect on service.
- Action(s):** Investigate if the configuration information is out of date or has been corrupted.

### RmeBufferOverrun

- Description:** A fixed-length buffer for `imdircacheserv` information has been overrun. The length of the buffer is *maxLength*, and the length of the string is *stringLength*.
- Parameters:** *maxLength*: The maximum length of the buffer.  
*stringLength*: The length of the string to be stored.
- Cause:**
- Effect:** This error is of critical severity.
- Action(s):** Contact Software.com.

## **RmeClientTimeout**

- Description:** While waiting for a response for an RME operation, the operation timed out.
- Parameters:** *host name:* the host name of the machine.
- Cause:** The host machine could have been restarted or processes on that machine could have been restarted. This could indicate a heavily loaded system.
- Effect:** This error is of minor severity. Likely to affect a single user or subset of users only.
- Action(s):** Check the status of the host machine. If the error is repeating several times a minute, check network status.

## **RmeClientTimeout2**

- Description:** While waiting for a response for an RME operation, the operation timed out.
- Parameters:** *server name:* The name of the server.
- Cause:** The host machine could have been restarted or processes on that machine could have been restarted. This could indicate a heavily loaded system.
- Effect:** This error is of minor severity. Likely to affect a single user or subset of users only.
- Action(s):** Check the status of the host machine. If the error is repeating several times a minute, check network status.

## **RmeCacheDown**

- Description:** The directory cache server is down.
- Parameters:** *hostname:* name of host that is down
- Cause:** The directory cache server on hostname is not responding. The process could have terminated unexpectedly, or maybe configured incorrectly.
- Effect:** The effect on service for this event is critical. The directory cache server needs to be running for customers to be authenticated to retrieve their mail.
- Action(s):** Verify that the directory cache server is not running. Investigate the log file for this process to determine the cause of this failure. If the directory cache server is running, verify that the configuration is correct for which port to use for the directory cache server.

## **RmeCacheUp**

- Description:** The directory cache server on *hostname* is up. This is not an error but an informational event.
- Parameters:** *hostname*: name of host that is down
- Cause:** NA
- Effect:** No effect on service. This is an informational event.
- Action(s):** No action required.

## **RmeFillError**

- Description:** An error occurred while filling the RME buffer.
- Parameters:** None.
- Cause:** Probably a network error.
- Effect:** This error is of minor severity. Likely to affect a single user only.
- Action(s):** If the error is repeating several times a minute, check network status and consider restarting InterMail servers.

## **RmeNoHostName**

- Description:** An attempt was made to attach to a server with an RME socket, but there was no host specified.
- Parameters:** *portname*: the name of the port.
- Cause:** If the port name does not make sense the problem could be memory corruption.
- Effect:** This error is of minor severity. Likely to affect a single user only. However, if it floods, the entire server will be affected.
- Action(s):** If the port name seems reasonable and the error is repeating, restart the InterMail server. If error continues, contact Software.com.

## RmeNullDest

- Description:** The destination for an RME operation is null.
- Parameters:** None.
- Cause:** This could happen if the network connection between the machine requesting the RME operation and the machine serving the RME operation is down, or if the server requesting the operation is no longer running.
- Effect:** This error is of minor severity. This is likely to affect just a single user; but if it floods, it probably means that a server crashed.
- Action(s):** Verify that the network between the RME requester and RME requestee is up. Verify that expected servers are up and running.

## RmeOpNotSupported

- Description:** The program logging this entry was requested to perform an RME operation which it does not support.
- Parameters:** *myProtocolLevel*: the protocol level of this program.  
*itsProtocolLevel*: the protocol level of the other program.  
*objectIAm*: the RME object that doesn't support the operation.  
*operationName*: the name of the operation.
- Cause:** One of the following may have happened:  
  
A program was copied to the installation instead of being installed by a package (which would have insured that all executables were at the same protocol level).  
  
A program is communicating with a peer on another host which is at a lower protocol level.  
  
Random memory corruption. (This is the least likely scenario.)
- Effect:** This error is of minor severity. At infrequent rates, it is likely affecting single message stores only. If repeating several times a minute, many users of a server are probably affected.
- Action(s):** Check the release notes for compatibility issues. Upgrade the software or re-install as required. “`pkginfo -l Intermail`” will tell you the version number of the installed package on any host. If versions seem correct and error is repeating at a high rate, restart the InterMail servers and check for other InterMail and system errors. If error continues, contact Software.com.

## RmeProtoBadDataFmt

- Description:** During an RME operation a protocol error occurred. This could be because there are incompatible versions of clients at either end of the connection or if the data passed is trashed.
- Parameters:** None.
- Cause:** This event could be caused by:  
 Wrong data format (which could be a result of incompatible clients at either end of a connection).  
 Or  
 Non null terminated string passed to an RME routine.
- Effect:** This error is of minor severity. However, if error floods, many users may be affected.
- Action(s):** Verify that the InterMail installation was done correctly. “`pkginfo -l Intermail`” will tell you the version number of the installed package on any host. Check the release notes for compatibility issues. Upgrade the software or re-install as required.

## RmeProtoBadLength

- Description:** RME detected that the size of a collection transmitted via the network or persistent object file is incorrect.
- Parameters:** *collection size:* the size of the collection being sent.  
*max collection size:* the maximum size for a collection being sent.
- Cause:** Some other problem, such as memory corruption or an unreliable network, is usually the reason for this type of failure.
- Effect:** This error is of minor severity if it happens occasionally, affecting only a specific message store. If the error floods, all users of the server will be affected.
- Action(s):** Look in logs for other events indicating memory corruption or network problems. If the error is repeating, restart InterMail servers. If error continues, contact Software.com.

## RmeProtocolErr

- Description:** A protocol error occurred, possibly because of incompatible versions of InterMail at either end of a connection.
- Parameters:** None.
- Cause:**
- An improperly done installation of InterMail.
  - Improperly configured system.
  - Either a program was copied to the installation (instead of being installed by a package, which would have insured that all executables were at the same protocol level), or a program is communicating with a peer on another host which is at a lower protocol level. It is possible for this event to be the result of random memory corruption, but this is much less likely.
- Effect:** This error is of minor severity. However, if error floods, many users may be affected.
- Action(s):** Verify that the InterMail installation was done correctly. “`pkginfo -l Intermail`” will tell you the version number of the installed package on any host. Check the release notes for compatibility issues. Upgrade the software or re-install as required.

## RmeProtocolMismatch

- Description:** The program logging this entry has a different protocol level than that of the program requesting the RME operation.
- Parameters:** *myProtocolLevel*: the protocol level of this program.  
*itsProtocolLevel*: the protocol level of the other program.
- Cause:** Either a program was copied to the installation (instead of being installed by a package, which would have insured that all executables were at the same protocol level), or a program is communicating with a peer on another host which is at a lower protocol level.
- Effect:** This error is of minor severity. However, if error floods, many users may be affected.
- Action(s):** Check the release notes for compatibility issues. Upgrade the software or re-install as required. “`pkginfo -l Intermail`” will tell you the version number of the installed package on any host.

## **RmeServerClosedSocket**

- Description:** In `imservcall`, while waiting for the server to respond with the number of tasks currently executing, the socket was unexpectedly closed by the server.
- Parameters:** `serverName`: the name of the server.
- Cause:** The server terminated unexpectedly while attempting to shut down gracefully.
- Effect:** This error is of minor severity.
- Action(s):** Check the log file for indications of other problems which may have possibly caused this.

## **RmeStaleRef**

- Description:** Attempted to perform an RME on an object (such as a folder or message) which has been deleted.
- Parameters:** None.
- Cause:** This may be the result of another user accessing the same (shared) message store, and the client not updating its state correctly. This could be caused by corrupted memory.
- Effect:** This error is of minor severity. However, if error floods, many users may be affected.
- Action(s):** None if the error is only occasional. If the error is repeating every few minutes, restart InterMail servers. If error continues, contact Software.com.

## **RmeUnbindWithNoBind**

- Description:** An attempt was made to unbind a client from the RME object where the client was not bound to the RME object.
- Parameters:** None.
- Cause:** This could be a client error.
- Effect:** This error is of warning severity. No effect on a user unless the error is flooding.
- Action(s):** None if error is occasional. If error occurs at a rate of several per minute, check for other InterMail errors and consider restarting InterMail servers. If error continues, contact Software.com.

## RmeUnexpectedReturn

- Description:** When waiting for a reply on synchronous RME call the input manager on host name returned unexpectedly with return value return value.
- Parameters:** *return value:* the return value from the input manager.  
*host name:* the host name.
- Cause:** The host machine could have been restarted or processes on that machine could have been restarted. This could indicate a heavily loaded system.
- Effect:** This error is of minor severity. Likely to affect a single user or subset of users only.
- Action(s):** Check the status of the host machine. If the error is repeating several times a minute, check the network status.

## RmeUnexpectedReturn2

- Description:** When waiting for a reply on synchronous RME call from *serverName* the input manager returned unexpectedly with *return value*.
- Parameters:** *return value:* The return value from the input manager.  
*serverName:* The server name.
- Cause:** The host machine could have been restarted or processes on that machine could have been restarted. This could indicate a heavily loaded system.
- Effect:** This error is of minor severity. Likely to affect a single user or subset of users only.
- Action(s):** Check the status of the host machine. If error is repeating several times a minute, check the network status.

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# 13.19 Remote Control Server Log Events

## RmtBadExitStatus

- Description:** The call to `imservctrl` failed with the exit status given.
- Parameters:** *exitStatus:* the child process's exit status.
- Cause:**
- Effect:** The actions requested of `immgrserv` may not have been carried out.
- Action(s):** Analyze reasons for failure.

## **RmtChildFstatFail**

- Description:** A call to fstat(2) failed.
- Parameters:** *systemError*: The system error after the failed call to fstat(2)
- Cause:**
- Effect:** The output from the child process may be lost.
- Action(s):** Analyze reasons for failure.

## **RmtCommandTrace**

- Description:** Shows the exact command-line invocation of *imctrl*.
- Parameters:** *invocation*: The exact command line invocation of *imctrl*.
- Cause:**
- Effect:** None.
- Action(s):** None.

## **RmtContradictoryVerbsError**

- Description:** The command line contains verbs that are contradictory for the same server.
- Parameters:** *oneVerb*: one of the verbs in conflict.  
*otherVerb*: the other of the verbs in conflict.  
*server*: the server with contradictory verbs  
*host*: the host of the server with contradictory verbs
- Cause:** The same server on the same host has been specified for two contradictory verbs. Correct the contradiction and re-issue the command.
- Effect:** The servers will not have been affected.
- Action(s):** Correct the contradiction and re-issue the command.

## RmtDidntDie

- Description:** The call to `imservctrl` should have terminated the `immgrserv` process, but after `secondsWaited` seconds, `immgrserv` was still alive.
- Parameters:** *secondsWaited*: the number of seconds waited for by `immgrserv` after having instructed `imservctrl` to kill it(`immgrserv`).
- outputOfImservctrl*: the stdout and stderr output of `imservctrl`.
- Cause:**
- Effect:** The `immgrserv` process will exit, since it has shutdown to a point, having expected its own imminent demise, that it cannot continue. This means `imctrl` will not be able to control servers on this host until `immgrserv` is re-started locally.
- Action(s):** Analyze reasons for failure.

## RmtDupFailed

- Description:** A call to `dup(2)` failed.
- Parameters:** *expectedFd*: the fd the call was expected to return
- systemError*: the system error after the failed call to `dup(2)`
- Cause:**
- Effect:** The actions requested of `immgrserv` will not be carried out.
- Action(s):** Analyze reasons for failure.

## RmtExecFailed

- Description:** A call to `exec(2)` failed.
- Parameters:** *systemError*: the system error after the failed call to `exec(2)`
- Cause:**
- Effect:** The actions requested of `immgrserv` will not be carried out.
- Action(s):** Analyze reasons for failure.

## RmtForkFailed

- Description:** A call to `fork1(2)` failed.
- Parameters:** *systemError*: the system error after the failed call to `fork1(2)`
- Cause:**
- Effect:** The actions requested of `immgrserv` will not be carried out.
- Action(s):** Analyze reasons for failure.

## RmtIllegalHost

- Description:** The Remote Control Server (*immgrserv*) received an incoming request from an illegal host.
- Parameters:** *hostname*: The host name of the machine where *imctrl* was invoked.
- Cause:** The configuration parameter *legalHosts* is either not “all” or does not include the hostname mentioned. Therefore, this host is not allowed to communicate with *immgrserv*.
- Effect:** CRITICAL The *imctrl* application will not run.
- Action(s):** Change to a host that is allowed by the *legalHosts* parameter, or change the parameter.

## RmtPipeCreateFailed

- Description:** A call to pipe failed.
- Parameters:** *systemError*: the system error after the failed call to pipe(2)
- Cause:**
- Effect:** The actions requested of *immgrserv* will not be carried out.
- Action(s):** Analyze reasons for failure.

## RmtProcessSignalled

- Description:** The call to *imservectrl* was terminated due to a signal.
- Parameters:** *signalNumber*: the signal number that terminated the child process.  
*signalText*: the textual description of the signal that terminated the child process.
- Cause:**
- Effect:** The actions requested of *immgrserv* may not have been carried out.
- Action(s):** Analyze reasons for failure.

## RmtRMEFailed

- Description:** The RME command failed.
- Parameters:** *Rme*: The RME being performed.
- Cause:** Preceding log entries will indicate the exact nature of the failure.
- Effect:** The desired actions will not have been performed on the remote servers..
- Action(s):** Correct the problem and try again.

## **RmtRMESucceeded**

- Description:** The RME command succeeded.
- Parameters:** *Rme*: The RME being performed.
- Cause:**
- Effect:** None.
- Action(s):** None.

## **RmtStartingRME**

- Description:** Starting an RME command.
- Parameters:** *Rme*: the RME being performed.
- Cause:**
- Effect:** None. This message is of informational severity.
- Action(s):** None.

## **RmtWaitpidTimeout**

- Description:** A call to waitpid(2) was still not successful after a reasonable number of seconds.
- Parameters:** *secondwWaited*: the number of seconds waited for the child to finish.
- Cause:**
- Effect:** The actions requested of immgrserv may not have been carried out.
- Action(s):** Analyze reasons for failure.

## **RunPopLockedExclusive**

- Description:** Indicates an attempt to “pop” a locked mailbox (message store).
- Parameters:** None.
- Cause:** A user successfully authenticated a POP3 session via the POP USER and PASS commands, but the message store was exclusively locked by some other POP session.
- Effect:** There is no adverse effect on service. The user attempting to “pop” a locked message store receives an error response.
- Action(s):** This error is expected during the normal course of operation, and no action is usually necessary.
- If users are being locked out of their mailboxes often as a result of being hung up on, consider setting the `popLockTimeout` configuration key to a lower value.

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## 13.20 SMTP Log Events

### SmtAddressFixed

- Description:** An SMTP client sent a command to the server that contained an improper e-mail address. The address was fixed to conform to e-mail standards.
- Parameters:** *otherHost*: the other SMTP host.  
*SMTPCommand*: the SMTP command given by the other host.  
*newAddress*: the new address.
- Cause:** The connected SMTP client does not follow Internet standards, or is perhaps mis-configured.
- Effect:** This error is informational.
- Action(s):** No action is required. Contacting the remote site's postmaster may be a good idea if the improper addresses are excessively broken. It is possible that the resulting address will not refer to an actual mailbox, so delivery to it may fail.

### SmtClientGreetResponse

- Description:** The SMTP server on the named host sent a greeting message containing a status code that indicates it is unwilling or unable to accept mail.
- Parameters:** *hostName*: the host name.  
*statusCode*: the status code.  
*greetingType*: the greeting type.
- Cause:** The remote server is unwilling or unable to accept mail.
- Effect:** This error is informational. Mail is not being delivered to the named machine, so this condition may be causing mail to be queued locally (it may be delivered successfully to another mail server, though).
- Action(s):** Connect to the SMTP port of the machine referenced in the *hostName* key (using Telnet) to see the greeting message.

## SmtplibClientMailLoopDetected

**Description:** While attempting to deliver a message to the specified domain, it was determined (via DNS lookups) that the message would have to be delivered locally; however, the mail server is not properly configured to accept mail for the domain. If the message was delivered to the server, it would end up in a loop whereby the message is continually delivered to itself.

**Parameters:** *mailRecipient*: the recipient of this message.

**Cause:**

- The MX records for the domain indicate that there are no other servers with a higher preference than this server
- Upon connecting to the remote server, it was found to have the same name as this server (so it is assumed that the server connected to itself to deliver the mail).

**Effect:** This error is informational. While this condition exists, mail destined for the domain cannot be delivered.

**Action(s):** Look up the MX records for the domain (using 'nslookup'). Check the MTA configuration for the list of local mail domains. Fix the configuration of the MTA to accept mail for the domain and/or fix the configuration of the DNS for the domain.

## SmtplibClientNoGreeting

**Description:** The SMTP server running on *hostName* did not respond with a greeting within a reasonable amount of time, so the connection was closed.

**Parameters:** *hostName*: the name of the host.

**Cause:** The server is likely busy handling other network connections and does not have the resources to respond within the time-out period. A network connectivity problem may also be the cause, but this is less likely.

**Effect:** This error is informational. Mail that would have been delivered to the server may have been queued for a later attempt; however, it may have been successfully delivered to an alternate mail server. If this condition persists for several days and no other servers are available to receive the messages, they will be returned to their senders.

**Action(s):**

- Use trace route to verify network connectivity.
- Telnet to the remote host's MTA port.

## SmtplibClientNoResponse

- Description:** The SMTP server running *hostName* did not respond to the specified command within a reasonable amount of time, so the connection was closed.
- Parameters:** *hostName*: the host on which the other server is running.  
*command*: the command the other server did not respond to.
- Cause:** The server is likely busy handling other network connections and did not have the resources needed to respond within the time-out period. A network connectivity problem may also be to blame.
- Effect:** This error is informational.
- Action(s):** Mail that would have been delivered to the server may have been queued for a later attempt; however, it may have been successfully delivered to an alternate mail server. If this condition persists for several days and no other servers are available to receive the messages, they will be returned to their senders.

## SmtplibClientResponse

- Description:** The SMTP server on *hostName* responded to an SMTP command with the reply code indicated. Reply codes in the 400 range are used to indicate a temporary failure and those in the 500 range are for permanent errors.
- Parameters:** *hostName* the host on which the other server is running.  
*responst*: the response of the other server.  
*command*: the command issued to the other server.
- Cause:** The cause depends on the command issued and the conditions on the particular server and its configuration. Many of the possible failures and errors are normal and are no cause for alarm. However, they will show why a particular site is not able to receive mail, or why a particular message was bounced or queued for a later delivery attempt.
- Effect:** This error is informational.
- Action(s):** Check the logs for subsequent `SmtplibMessageDeferred` or `SmtplibMessageDelivered` entries to see which message is affected.

## SmtplibConnectionClosed

- Description:** This is a summary of the resources used by an SMTP client that just disconnected. The parameters indicate the length of time the client was connected to the server, how many messages it sent during that time, and the total number of bytes it sent to the server during the connection.
- Parameters:** *client*: the client's name.  
*time*: the number of seconds after connect time.  
*numMessages*: the number of messages the client sent.  
*numBytes*: the number of bytes the client sent.
- Cause:** This event is logged whenever a connection is closed.
- Effect:** This error is informational. SMTP clients that
- a) are connected for long periods of time
  - b) send many bytes to the server without sending many messages
- may indicate that a client is attempting to deny service to other users of the system.
- Action(s):** NA.

## SmtplibConnectionDropped

- Description:** A connection was dropped.
- Parameters:** None.
- Cause:** When this warning occurs, it indicates that the `dropConnections` configuration parameter is enabled, meaning that all connections made to this host will be dropped.
- Effect:** This message is of warning severity.
- Action(s):** If this is not the desired result, disable the `dropConnections` feature.

## SmtplibConnectionDroppedRCPT

- Description:** A connection was dropped because the message that was being sent had too many recipients.
- Parameters:** None.
- Cause:** This warning indicates that a message contained more than the maximum number of recipients, as defined in the configuration parameter `dropMaxMessageRCPTs`.
- Effect:** This message is of warning severity.
- Action(s):** If this behavior is correct, ignore this warning. Otherwise, modify the dropped configuration parameters appropriately.

## SmtplibConnectionReceived

- Description:** An SMTP client connected to the system.
- Parameters:** *otherHost*: the host of the client.
- Cause:** This message is logged whenever an SMTP connection is made to the system.
- Effect:** This error is informational.
- Action(s):** None.

## SmtplibConnectionTimeout

- Description:** An SMTP client had a long period of inactivity, so the server closed the connection.
- Parameters:** *hostName*: the host the client was connecting from.
- Cause:** The remote client may have crashed or otherwise stopped using the connection without properly closing it. A network outage may also cause this behavior since traffic between the two sites would be blocked.
- Effect:** None. If clients from the same or similar location repeatedly time out, it may be an indication that they are attempting to deny service to other users of the system by tying up all the available SMTP servers.
- Action(s):** None. This is a common occurrence, so it is usually not a cause for concern. Look for the subsequent `SmtplibConnectionClosed` message to see if the client successfully sent any mail to the system. If it did not, then it might be an indication that there is a network problem between the two sites. Clients which repeatedly time out may actually be having trouble sending mail to the server.

## SmtplibDnsBadConfig

- Description:** The domain doesn't have any MX records or address (A) records according to the DNS, so mail cannot be delivered to it.
- Parameters:** *domainName*: the domain name.
- Cause:** The DNS for the named domain is mis-configured.
- Effect:** This error is informational.
- Action(s):** Look up the MX and A records of the domain (using `nslookup`).

## **SmtpdnsLookupFailed**

- Description:** A DNS lookup of the domain failed.
- Parameters:** *domainName*: The domain name.
- Cause:** The local name server(s) failed to look up the domain.
- Effect:** This error is informational. Mail destined for users at the domain will be queued for a later delivery attempt.
- Action(s):** Attempt to look up the domain using `nslookup`.

## **SmtpdnsLookupTimedOut**

- Description:** A DNS lookup of the domain timed out.
- Parameters:** *domainName*: the domain name.
- Cause:** The local name server failed to look up the domain because the DNS servers they contacted failed to respond in a reasonable amount of time.
- Effect:** This error is informational. Mail destined for users at the domain will be queued for a later delivery attempt.
- Action(s):** Attempt to look up the domain using `nslookup`.

## **SmtpdomainNameUnknown**

- Description:** While attempting to deliver a message to the specified domain, the MTA was unable to determine if the domain was local or not, so it was scheduled for outbound delivery.
- Parameters:** *domainName*: the domain name.
- Cause:** The local domain list has an entry for the domain, but it does not correctly specify how to process it.
- Effect:** This error is of major severity. Mail destined for users at the domain will be queued for a later delivery attempt. If the domain is local or is redirected to an alternate domain, then mail cannot be delivered correctly while this condition persists.
- Action(s):** Check the MTA configuration for the list of local mail domains and correct any mistakes.

## Smtphostnotfound

- Description:** The specified host does not exist.
- Parameters:** *domainName*: the domain name.
- Cause:** The MTA looked up the domain and was told that it doesn't exist. Most likely someone tried to send a message to someone at the domain.
- Effect:** This error is informational.
- Action(s):** Look up the domain in the DNS (using 'nslookup').

## Smtpllegalusername

- Description:** A message was addressed to a user at a local domain, but the user name (everything before the '@' in the address) contains illegal characters.
- Parameters:** *userName*: the user name.
- Cause:** Somebody attempted to send a message to the user.
- Effect:** This error is informational. Since this is an illegal name, the user will not be able to receive any mail.
- Action(s):** Ignore, or check to make sure that such a user does not actually exist.

## Smtpmessagecommittodiskfailed

- Description:** After writing the message files to the disk, the system could not guarantee that the data was permanently stored.
- Parameters:** *hostName*: the host name of the client.  
*sender*: the sender of the message.  
*messageFilename*: the name of the message file.
- Cause:** The disk experienced an I/O error, so the integrity of the files could not be guaranteed.
- Effect:** This message is of critical severity. The SMTP client defers the message and tries to send it again later, so the message is not lost. However, there is probably a serious problem with the mail spool disk which could cause data loss in the future.
- Action(s):** Check for a previous error message detailing the failure, complete with the system-reported error message. Perform diagnostics on the disk to see if it needs to be replaced.

## SmtplibMessageDeferFileStuck

- Description:** A deferred message could not be pulled out of the queue, so it could not be delivered. The MTA moves the message's control file out of the deferred directory for the host and puts it in the control directory to begin delivery. This operation failed for the reason indicated by the system error.
- Parameters:** *filename*: the name of the file.  
*systemErrorString*: the system error string.
- Cause:** The system error should indicate the cause of the failure.
- Effect:** This error is of major severity. The message will not be delivered until the problem is fixed.
- Action(s):** Remedy the problem and the MTA will automatically deliver the message the next time it processes the queue.

## SmtplibMessageNoSpace

- Description:** The disk used to store messages while they are being handled by the mail server does not have enough space to store the message currently being sent by the client.
- Parameters:** *hostName*: the name of the client's host.  
*sender*: the sender of the message  
*filename*: the filename that was written, relative to "control" or "message".
- Cause:** The mail spool disk is full.
- Effect:** This message is of critical severity. The SMTP client will defer the message and try to send it again later, so the message is not lost. However, no mail can be delivered through the system while this condition persists.
- Action(s):** Reclaim space on the disk, or replace it with a bigger one.

## SmtplibMessageTooBig

- Description:** The remote SMTP client attempted to deliver a message to the server, but it was rejected because the message was larger than the maximum message size configuration parameter.
- Parameters:** *hostName*: the client's hostname.  
*sender*: the sender of the message.  
*size*: the size of the message in bytes.
- Cause:** Either the client told the server how big the message was prior to sending it, allowing it to be rejected immediately, or the size was unspecified, and upon receiving the message, the total number of bytes received was found to be larger than the maximum.
- Effect:** This error is informational.
- Action(s):** NA.

## **SmtplibNameTooLong**

- Description:** A message was addressed to a user at a local domain, but the user name (everything before the '@' in the address) is longer than 64 characters.
- Parameters:** *userName*: the user name.
- Cause:** Somebody attempted to send a message to the user.
- Effect:** This error is informational. If someone set up their e-mail address with this user name, they will not be able to receive any mail.
- Action(s):** Ignore, or verify that a local user with that name does not actually exist.

## **SmtplibProtocolNotSupported**

- Description:** The remote mail server was contacted in order to deliver a message to it, but it indicated that it does not accept SMTP mail.
- Parameters:** *hostName*: the name of the host.
- Cause:** Somebody sent a message addressed to a recipient on a machine that does not receive mail via SMTP. This is probably a mistake on the sender's part.
- Effect:** This error is informational.
- Action(s):** Ignore, or connect to the machine with telnet to verify that it doesn't accept mail (it will respond with a reply code of 521).

## **SmtplibQueueProcess**

- Description:** The MTA began an attempt to deliver mail to the listed domain.
- Parameters:** *domainName*: the name of the domain.
- Cause:** The MTA may be performing one of its regularly scheduled attempts at delivering all queued mail, or the queue run may have been started manually.
- Effect:** This error is informational.
- Action(s):** None.

## SmtprcipientRejectedSenderNull

- Description:** A message being sent from the null address, <>, was not delivered to the recipient indicated because the number of recipients would have exceeded the number specified in the `maxNullSenderRCPTs` configuration parameter. Messages from the null address usually only have one recipient since they should be either bounce messages or auto-replies. A message from <> with multiple recipients is often unsolicited junk mail.
- Parameters:** *address*: the recipient of the message.
- Cause:** Someone sent a message without a return address to several recipients.
- Effect:** The message will be delivered only to the first `maxNullSenderRCPTs` recipients; the sending client will be unable to return the message to its originator (since there is no return address).
- Action(s):** None.

## SmtprelayPrevented

- Description:** A message has recipients rejected because they would require relaying.
- Parameters:** None.
- Cause:** The message was rejected because it violated one of the relay restrictions defined in the configuration database.
- Effect:** This message is of warning severity.
- Action(s):** If this is not the intended behavior, modify the relay configuration parameters appropriately. Otherwise, ignore this warning.

## SmtpsenderBlocked

- Description:** A message sent had recipients rejected because the sender was blocked.
- Parameters:** None.
- Cause:** This message indicates that the configuration variable `blockLocalNoAcct` is set and the sender of this message is a local domain that does not have an account.
- Effect:** This error is informational.
- Action(s):** If this behavior is correct, ignore this message. Otherwise, modify the block configuration parameter(s) appropriately.

## SmtplibSenderDomainCantVerify

- Description:** A message was temporarily rejected because the domain in the sender's address could not be looked up in the domain name system (DNS).
- Parameters:** *sender*: the sender of the message.
- Cause:** The DNS failed to determine whether the domain from the sender's address exists or not.
- Effect:** The message was temporarily deferred at the sending site. When the client re-attempts the delivery, the message will be accepted if the DNS can resolve the domain name. Otherwise, it will remain queued.
- Action(s):** None.

## SmtplibSenderDomainIsIPAddress

- Description:** A message was rejected because the sender's address contains an IP address for a domain (e.g. <user@[10.20.30.40]>).
- Parameters:** *sender*: the sender of the message.
- Cause:** The original mail client that submitted the message may be mis-configured, or worse, the sender may be attempting to use the computer resources of this server to deliver unsolicited commercial e-mail (UCE, commonly known as spam).
- Effect:** Messages from senders with IP addresses for domains are rejected unless you set `*/mta/rejectSenderIPDomain` to false.
- Action(s):** None.

## SmtplibSenderDomainMissing

- Description:** A message was rejected because the sender's address does not have a domain.
- Parameters:** *sender*: the sender of the message.
- Cause:** The original mail client that submitted the message may be mis-configured, or worse, the sender may be attempting to use the computer resources of this server to deliver unsolicited commercial e-mail (UCE, commonly known as spam).
- Effect:** Messages from senders without domains are rejected.
- Action(s):** None.

## SmtplibSenderDomainNonexistent

- Description:** A message was rejected because the sender's address contains a domain that could not be found in the domain name system (DNS).
- Parameters:** *sender*: the sender of the message.
- Cause:** The original mail client that submitted the message may be mis-configured, or worse, the sender may be attempting to use the computer resources of this server to deliver unsolicited commercial e-mail (UCE, commonly known as spam).
- Effect:** Messages from senders with bad domains are rejected.
- Action(s):** None.

## SmtplibServerBadUsage

- Description:** The connected SMTP client issued a command with invalid or missing parameters.
- Parameters:** *hostName*: the name of the client's host.  
*invalidCommand*: the invalid command.
- Cause:** Either the client program does not correctly implement the SMTP protocol, or someone has connected to the SMTP port with Telnet and issued an invalid command.
- Effect:** This error is informational.
- Action(s):** Ignore.

## SmtplibServerCommandUnknown

- Description:** The connected SMTP client issued an unrecognized command, which was ignored.
- Parameters:** *domainName*: the domain name.  
*invalidCommand*: the invalid command.
- Cause:** Either the client program does not correctly implement the SMTP protocol, or someone has connected to the SMTP port with telnet and issued an invalid command.
- Effect:** This error is informational.
- Action(s):**

## SmtServerEtrnIssued

**Description:** The connected SMTP client (or person connected to the SMTP port with telnet) issued an `ETRN` command for the domain. `ETRN` causes the server to start delivering all queued mail for the domain.

**Parameters:** *domainName*: the client's domain name.  
*domainToSend*: the domain whose mail should be sent.

**Cause:**

**Effect:** This message is informational only. This is probably a harmless event, where the client simply wants the server to start delivering mail queued for the domain (presumably because it is acting on behalf of the domain). If the same site issues many unrelated `ETRN` requests, it may be attempting to deny service to other users whose mail will be delayed while the server attempts delivery to the domains.

**Action(s):**

## SmtServerExpnIssued

**Description:** The connected SMTP client (or person connected to the SMTP port with telnet) issued an `EXPN` command for the address. `EXPN` returns information that indicates if the address is valid.

**Parameters:** *domainName*: the name of the client's domain..  
*Address*: the name that the client attempted to expand.

**Cause:** NA.

**Effect:** This error is informational. This is probably a harmless event, but may indicate an attempt to determine a valid user id on the system for a subsequent attempt at breaching system security (by some means other than through the mail system)(reword sentence)If many unrelated `EXPN` commands are issued from the same site, it may be an indication that the connected user has bad intentions.

**Action(s):** Ignore.

## SmtServerHackerAlert

- Description:** The connected SMTP client (or person connected to the SMTP port with Telnet) issued an SMTP command that is known to cause security breaches in other MTAs. The command was ignored.
- Parameters:** *domainName*: the client's domain name.  
*command*: the command that was attempted.
- Cause:** Somebody is searching for vulnerabilities in the MTA based on known problems with other MTAs. (DEBUG and WIZ are two commands that allowed ordinary users to breach security of systems running early versions of sendmail.)
- Effect:** This message is of warning severity. May indicate an attempt to breach security of the MTA. The intentions of the client may be malicious, or they could just be checking for known problems that they intend to report and/or fix.
- Action(s):** Ignore.

## SmtServerQsndIssued

- Description:** The connected SMTP client (or person connected to the SMTP port with Telnet) issued a QSNL command for the domain. QSNL causes the server to start delivering all queued mail for the domain.
- Parameters:** *domainName*: the client's domain name.  
*domainToSend*: the domain whose mail should be sent.
- Cause:** NA.
- Effect:** This error is informational. This is probably a harmless event, where the client simply wants the server to start delivering mail queued for the domain (presumably because it is acting on behalf of the domain). If the same site issues many unrelated QSNL requests, it may be attempting to deny service to other users whose mail will be delayed while the server attempts delivery to the domains.
- Action(s):** You can turn off the QSNL command by modifying `*/mta/allowQSNL`.

## SmtplibServerTooManyBadCommands

- Description:** The SMTP client issued too many invalid commands, so the connection was closed.
- Parameters:** *domainName*: the client's domain name.
- Cause:** Either the client program does not correctly implement the SMTP protocol, or someone has connected to the SMTP port with Telnet and issued several invalid commands.
- Effect:** This error is informational.
- Action(s):** Ignore, or look for previously logged events for `SmtplibServerBadUsage` and `SmtplibServerCommandUnknown` to see what the bad commands were.

## SmtplibServerVrfyIssued

- Description:** The connected SMTP client (or person connected to the SMTP port with Telnet) issued a `VERFY` command for the address. `VERFY` returns information that indicates if the address is valid.
- Parameters:** *domainName*: the client's domain name.  
*address*: the address to be verified.
- Cause:** This is probably a harmless event, but may indicate an attempt to determine a valid user id on the system for a subsequent attempt at breaching system security (by some means other than through the mail system). If many unrelated `VERFY` commands are issued from the same site, it may be an indication that the connected user has bad intentions.
- Effect:** This error is informational.
- Action(s):** You can turn off the `VERFY` command by modifying the `*/mta/allowverfy` configuration key.

## SmtplidelineMaxRCPTsExceeded

- Description:** A message was moved to the sidelined area because it was addressed to more than `max_rcpts`.
- Parameters:** *message id*: the value of the Message-ID header.  
*num\_rcpts*: the total number of recipients.  
*max\_rcpts*: the number of recipients per connection that doesn't trigger sidelining.
- Cause:** Someone sent a message to `num_rcpts` recipients.
- Effect:** The message has been moved to an area where it will remain indefinitely. It will be delayed until it is manually resubmitted to the MTA.
- Action(s):** Inspect the message to determine if it should be allowed to be delivered. Use `immsgprocess` to resubmit it if desired; otherwise delete the header, body, and control files.

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## 13.21 SSL Log Events

### SslConfig

- Description:** An error occurred during the SSL configuration phase, at server startup.
- Parameters:** *sslErrorString*: a descriptive character string derived from the code defined by SSLPLUS, indicating the error condition.
- Cause:** SSL cannot be configured properly due to various configuration errors indicated by the error string.
- Effect:** This error is of critical severity for SSL functionality. This error has no effect on the server's non-SSL operations.
- Action(s):** Examine the error string, and take actions accordingly.

## SsIDBInit

- Description:** An error occurred during session cache database initialization.
- Parameters:** None.
- Cause:** This error happens when the server is trying to write/read the session cache data to/from a file, which can only happen when the server is initializing the session cache. The session information is only maintained in a data file when the application was built with the SSLDEBUG flag.
- Effect:** This error is of critical severity (for SSL operation, but no effect on non-SSL operations).
- Action(s):** A log entry is made when this error happens. The server will still operate in non-SSL mode. Check file permissions and available disk space in the file system from where the executable runs.

## SslHandshake

- Description:** The first SSL negotiation phase (handshake) between the client and server did not complete successfully.
- Parameters:** *sslErrorString*: a descriptive character string derived from the code defined by SSLPLUS, indicating the error condition.
- Cause:** There could be many reasons for this error condition; typical ones include:
- Client and server don't support compatible versions of SSL
  - Both sites do not agree on the cipher spec (e.g. client wants a strong cipher suite but server only supports weaker ones)
  - Server's certificate is not issued by any certificate authority trusted by the client.
- Effect:** This error is of warning severity, which means that the SSL operation is not initiated properly for the particular client/server session. This error has no effect on non-SSL operations, nor does it indicate that an SSL operation cannot start on other socket connections.
- Action(s):** Examine the error string and correct the error condition accordingly.

## SsITLSHandshake

- Description:** An error occurred during the SSL handshake phase when the client uses TLS command to initiate a secure session.
- Parameters:** *sslErrorString*: a descriptive character string derived from the code defined by SSLPLUS, indicating the error condition.
- Cause:** Errors occurred during the SSL handshake after client issues the 'STARTTLS' command. There could be many causes for this error. The most common ones are:
- Client and server support non-compatible versions of SSL
  - Client and server don't agree on a cipher spec that is supported by both
  - Server doesn't provide SSL functionality
  - Server's certificate is not recognized
- Effect:** This error is of critical severity for SSL operations, but the socket is still operational for non-SSL operations.
- Action(s):** Examine the error string description; take actions according to corresponding error conditions.

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## 13.22 System Log Events

### SysHeapCorrupted

- Description:** A request for heap storage using `operator new` failed. Using program heuristics, it appears that the heap is corrupted.
- Parameters:** *return*: current value from `sbrk(0)`.  
*soft*: soft limit on process heap size in bytes.  
*hard*: hard limit on process heap size in bytes.  
*soft*: soft limit on process virtual memory size in bytes.  
*hard*: hard limit on process virtual memory size in bytes.
- Cause:**
- Effect:** The severity ranges from major to critical. The process will be unable to perform properly. Depending on which process is reporting this error, the effect could have serious impact on the system.
- Action(s):**
- If the process is a server, restart it.
  - Contact Software.com.

## SysMallocFail

- Description:** A request for number bytes of heap storage using `malloc()` failed.
- Parameters:** *number*: number of bytes requested.
- Cause:**
- Out of virtual memory, i.e. too many large processes running on this machine.
  - Corruption of the heap.
- Effect:** This error is of major severity. The process will be unable to perform properly.
- Action(s):**
- Check the amount of virtual memory available on the machine.
  - If the process is a server, restart it.

## SysMSTableFull

- Description:** The MSS shared memory table is full. No additional message stores can be accessed until some are closed.
- Parameters:** *number*: number of currently open mailboxes
- Cause:**
- An extremely heavily loaded system.
  - The size configured for the shared memory table is too small.
  - Another system or InterMail error.
- Effect:** This message is of critical severity. New messages will be unnecessarily deferred and many customers will be unable to retrieve mail.
- Action(s):**
- Use `immssshare` to examine the size and contents of the shared memory table.
  - Check for other system and InterMail errors which would indicate heavy load on the system or configuration problems.

## **SysNoSpace**

- Description:** A request for heap storage using operator `new` failed.
- Parameters:** *return:* current value from `sbrk(0)`.  
*soft:* soft limit on process heap size in bytes.  
*hard:* hard limit on process heap size in bytes.  
*soft:* soft limit on process virtual memory size in bytes.  
*hard:* hard limit on process virtual memory size in bytes.
- Cause:** Using program heuristics, it appears that the heap is exhausted.
- Effect:** The severity ranges from major to critical. The process will be unable to perform properly. Depending on which process is reporting this error, the effect could have serious impact on the system.
- Action(s):**
- Check the amount of virtual memory available on the machine.
  - If the process is a server, restart it.

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