Remote Office and RLC
1.3.1 Release Notes

Product release 1.3.1   Standard 1.0   October 2001

NORTEL NETWORKS™

Publication history

October 2001   This is the Standard 1.0 issue of the Remote Office and RLC
Release Notes for Remote Office Product release 1.3.1. This
release includes support for the Remote Office 911x series units,
Meridian Digital Telephone IP Adapter units (Internal and External),
Bridge Port, and Differentiated Services (DiffServ) along with
updated Known Problems and Issues Corrected sections.

Contents

In this document

About this document

This document applies to the following firmware:

- Release 1.3.1 firmware for the RLC, Remote Office 9150 unit, Remote Office 911x series units, and Meridian Digital Telephone IP Adapter units

- Release 1.3.1 software for Configuration Manager

- Version 30d firmware for ISDN U-interface and ISDN ST-interface

Document purpose

This document describes the features, known problems, and workarounds for the Remote Office 9150 unit, Remote Office 911x series units, Meridian Digital Telephone IP Adapter units, and the Reach Line Card (RLC). It also provides:

- information that is not provided in the:
  - *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210)
  - *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215)
  - *Remote Office 911x series Installation and Administration Guide* (NTP 555-8421-220)
  - *Meridian Digital Telephone IP Adapter Installation and Administration Guide* (NTP 555-8421-211)

- clarification for items that can prevent the system from operating correctly if they are not configured correctly (refer to "How to achieve a successful implementation" on page 5 for more details.)

Who should read this document

This document is written for individuals who are responsible for the installation, configuration, and day-to-day management of the Remote Office 9150 unit, 911x series unit, Meridian Digital Telephone IP Adapter unit, and RLC.

How to achieve a successful implementation

The instructions provided in the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) help you achieve a successful implementation. Specifically, pay close attention to the instructions for configuring the following:

- PBX configuration for ports, DN Discovery, and Caller ID security
- PSTN numbers used to contact Remote Office units
- Prefix configuration in PSTN numbers on the RLC
- BRI trunk configuration on the Remote Office 9150 unit

Remote Office Naming Convention

Unless otherwise specified, the term "Remote Office units" refer to the following products:

- Remote Office 9110 unit
- Remote Office 9115 unit
- Remote Office 9150 unit
- Meridian Digital IP Adapter unit (Internal and External)

PBX Terminology

Throughout this document, the term "host PBX" refers to any of the following Nortel Networks PBX platforms:

- Meridian 1
- MSL-100
- Succession Communication Server for Enterprise 1000

What's new in this release?

The following major and minor feature enhancements are now supported by the Remote Office units and RLC:

Major feature enhancements

- **911x series unit support:** This release contains all of the necessary features to support up to 20 Remote Office 9110 unit(s) and Remote Office 9115 unit(s) per RLC.

   This includes Digital Signal Processors (DSPs) that you can configure and the ability to place PSTN calls over an internal DSP based 14.4 modem on both the RLC and the Remote Office 911x series unit. Each RLC DSP supports four modem channels.

- **G.711 support for 911x series units:** The Remote Office 911x series unit supports the G.711 compression algorithm over IP. The Remote Office 911x series unit automatically adjusts to G.729 for QoS transition to the PSTN. This is because the Remote Office system uses a 14.4K modem for QoS transition and cannot support the 64K G.711 algorithm.

- **Meridian Digital Telephone IP Adapter (Internal and External) support:** This release contains all of the necessary features to support up to 20 Meridian Digital Telephone IP Adapters (Internal and External) per RLC.

- **Bridge port:** This feature allows local incoming PSTN calls to be handled by the Remote Office 9150 unit in a manner that allows access to the following PBX features: Transfer, Call Forward, and Conference.

   Note: Since the Remote Office 911x series unit are single-port devices, they do not support the Bridge Port feature.

- **Enhanced statistics:** New statistical information is offered through the "Network statistics" screen that provides details on packet loss and other parameters related to the IP network. This screen also displays QoS transitioning information in a 24-hour window for each Remote Office unit. The PORTINFO and ISDNINFO fields provide statistical information on the active ports and links.

- **PSTN connectivity tests:** Allows you to verify the PSTN connection between the RLC and the Remote Office 9150 unit. Refer to "PSTN testing" on page 21.

- **Differentiated Services (DiffServ):** If enabled, this feature allows the Remote Office units to set the DiffServ code-point to Nortel Networks' standard for Voice over IP. This standard is EF (Expedited Forwarding). It also adds and maps the 802.1p priority header to the appropriate priority. Refer to the *Remote Office Network Engineering Guidelines* (NTP 555-8421-103), *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210), and *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) for further details.

- **Permanent IP signaling connection:** This connection allows network administrators to set the IP signaling connection to permanent mode on the Remote Office units. This is required for environments that use Network Address Translation (NAT). Refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for further information.

Minor feature enhancements

- **IP bandwidth:** This feature allows you to configure the maximum amount of bandwidth for the IP connection between the RLC and the Remote Office units. The RLC places calls exceeding this bandwidth over the PSTN, if PSTN is enabled. If there is insufficient PSTN bandwidth, the RLC sends a "Bandwidth Limit:" message to the digital telephone display.

- **PSTN permanent configuration moved to RLC:** The PSTN permanent configuration is now accomplished on the RLC. If there is more than one Remote Office 9150 unit on the RLC, only primary trunks need to be configured as permanent.

- **Multiple Subscriber Numbering (MSN) support:** This feature is used when each B-channel is given a separate DN numbers by the Central Office. If both DNs for the B-channels are the same, then the configuration of the first B-channel defines both B-channels.

- **Trunk support:** Due to the variations in PSTN, Remote Office provides the following capabilities:
  - **56K call establishment:** This feature has the ability to place and receive 56K calls to support data calls that carry compressed voice over the Remote Office units.
  - **56/64K dynamic adaptation:** In some carriers, 64K calls routed over a 56K infrastructure can cause errors. The dynamic adaptation feature allows the Remote Office unit and RLC to dynamically detect the limitation of the bandwidth. It is then possible to downgrade the call from 64K to 56K when routing over the 56K infrastructure.

- **Configuration Manager restart alert:** This feature alerts you to restart Configuration Manager when you have made a change to the configuration.

- **Trunk group changes:** When the Local DNs to Alert: Not Configured checkbox is selected, all telephone sets configured with Local Calling keys ring on incoming local BRI calls.

- **KBA/DBA:** Support is now available for local calling and the display of DNs for local keys defined on the Key-based Adapter (KBA) or Display-based Adapter (DBA).

- **Local Telephone (Local TCM) support for a 32-port (double-slot) RLC:** This feature allows the 32-port (double-slot) RLC to be used to support 32 local TCMs.

- **DHCP support for Remote Office 9110 unit and Remote Office 9115 unit:** Dynamic Host Control Protocol (DHCP) is now supported on the Remote Office 9110 unit and Remote Office 9115 unit.

- **ISDN line trace:** This feature is used to trace (from debug) the ISDN line in a format similar to that found in a protocol analyzer.

- **The Device information and ISDN Module information options**: These options are now available in Configuration Manager.

- **Voice Activity Detection (VAD):** This feature prevents packet transmission during periods when there is no voice data present. This can help you save bandwidth.

- **Jitter buffer target depth configuration:** The RLC's dynamic voice jitter attenuation buffer compensates for the uneven arrival of voice packets across data networks. Support is now available for configuring the size of the jitter buffer. Refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for further details.

Hardware, software, and documentation requirements

This section identifies the following items that are required to support this release:

- supported PBX platforms and software releases

- current hardware, firmware, and software versions

- administration PC requirements

- documentation requirements

Meridian 1 software and platforms

The following Meridian 1 platforms are supported using software release 23 (or later), or are using the Enterprise Business Package:

- Options 11, 11(C) Mini, 11(E), 51(C), 61(C), 71(C), and 81(C)

Please note the platform restrictions shown in the following table:

Option 11c Mini Slot Restrictions

16-port (single-slot) RLC NTDR68xx	supported in slots 1, 2, 3 in the main chassis and 7, 8, 9, 10 in the expander chassis.
32-port (double-slot) RLC NTDR71xx	slot 1 or 2 in the main chassis (maximum of 1) and 7, 8, or 9 in the expander chassis (maximum of 2).

Since the 32-port RLC requires two backplane connections, it cannot be provisioned in slot 10 as it has only one backplane connection.

Package requirements

The following five packages are required in the X11 system software for the proper functioning of Remote Office with all Meridian 1 systems:

package# 0   BASIC (Basic Call Processing)
package# 19   DDSP (Digit Display)
package# 95   CPND (Caller Party Name Display)
package# 99   BGD (Background Terminal)
package# 170   ARIE (Meridian Modular Sets)

Currently, all five packages are available in the Basic software bundles for all Meridian 1 systems.

MSL-100 software and platforms

The following MSL-100 platforms (using software release MSL12 or later) are supported:

- SuperNode (with series 70 Processor)
- SuperNode SE (with series 70 Processor)

Note: MSL-100 platforms require a patch to support M39xx telephones with QoS transitioning. Refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for more information.

Hardware, software, and firmware

The following table identifies the hardware, software, and firmware supported by the Meridian 1 release.

Product	Current Nortel Product #	Minimum Nortel Product #	Current Firmware Available
RLC 16-port NA	NTDR68AC	NTDR68AA	1.3.1
RLC 32-port IPE-NA	NTDR70AC	NTDR70AA	1.3.1
RLC 32-port Opt 11-NA	NTDR71AC	NTDR71AA	1.3.1
9150-North American	NTDR69AC	NTDR69AA	1.3.1

Product	Current Nortel Product #	Minimum Nortel Product #	Current Firmware Available
9150-CALA and Asia-Pac	NTDR92AC	NTDR92AA	1.3.1
9150-Australia/New Zealand	NTDR92BC	NTDR92BA	1.3.1
RLC 16-port-Euro	NTDR68BC	NTDR68BA	1.3.1
RLC 32-port IPE-Euro	NTDR70BC	NTDR70BA	1.3.1
RLC 32-port Opt 11-Euro	NTDR71BC	NTDR71BA	1.3.1
9150-European	NTDR92CC	NTDR92CA	1.3.1
9110-Global	NTDR76BA		1.3.1
9115-Global	NTDR77BA		1.3.1
Meridian Digital Telephone Internal IP Adapter	NTDE01BA		1.3.1
Meridian Digital Telephone External IP Adapter	NTDE02BA		1.3.1
DSP Module	NTDR73AA	NTDR73AA	N/A
ISDN BRI U-interface module	NTDR74AB	NTDR74AB	30d
ISDN BRI ST-interface module	NTDR75AA	NTDR75AA	30d

	Version	Minimum Compatible Firmware	Maximum Compatible Firmware
Configuration Manager	1.3.1	1.0.1	1.3.1

Note: If you are running version 1.3.1 of Configuration Manager, you can log on to a unit with an earlier version to upgrade to the current firmware.

Remote Office 9150 ISDN BRI Interface information— for Norway and Sweden only

EN 60950:1992 Annex ZB, Special National conditions, Clause 6.2.1.2 states that in Norway and Sweden, supplementary insulation for a primary circuit is required between a Telecommunications Network Voltage (TNV) circuit and any circuit that has a connection to a protective earthing terminal.

The Remote Office 9150 unit has the ability to support up to a maximum of four ISDN BRI circuits. To comply with the specification for supplemental insulation, an isolation adapter must be placed between each of the Remote Office 9150 unit BRI inputs and the BRI lines from the service provider.

Isolation adapters are available from local vendors. You can also order the adapters from Nortel Networks as a merchandise item. The Nortel Networks part number is P0935714.

Documentation

To ensure a successful, trouble-free implementation of the RLC, Remote Office 9150 unit, Remote Office 911x series unit, and Meridian Digital Telephone IP Adapter unit into your network, have the following items on hand before you proceed:

- core documentation (confirm that you have the most up-to-date documents by checking the Nortel Networks website, as noted below under "Obtaining the documentation and training").
  - this document
  - *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210)
  - *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215)
  - *Remote Office 911x Series Installation and Administration Guide* (NTP 555-8421-220)
  - *Meridian Digital Telephone IP Adapter Installation and Administration Guide* (NTP 555-8421-211)

— *Remote Office Network Engineering Guidelines* (NTP 555-8421-103)

— *Remote Office Product CD-ROM* (NTDR81AE)

The *Remote Office Product CD-ROM* contains firmware and software as well as documentation in Portable Document Format (PDF).

■   supplementary documents and job aids:

— *Remote Office 911x series Quick Start Guide*

— *Meridian Digital Telephone IP Adapter Quick Start Guide*

— *Installer's Notes* for your hardware component (provided in the box)

— *Remote Office and RLC Planning Forms* (available on the web)

Obtaining the documentation

To download the documentation from the web, click on the Customer Support, Documentation, and North America links at the following website:

www.nortelnetworks.com

Note: Remote Office 1.3 is a Global release.

Upgrade file names for this release

Firmware and software files are initially provided on the *Remote Office Product CD-ROM*. Upgrade files that are downloaded from the Nortel Networks website are provided in self-extracting executable files.

The following table identifies the upgrade files supported by this document for the Meridian 1 release.

Notes:

■ If you are using an MSL-100 PBX, contact your Nortel Networks support representative to determine the MSL-100 upgrade file names.

■ To check the current firmware follow the procedure at the bottom of page 16.

Component	Nortel Networks delivery file name	Upgrade file name
RLC	rlc1_3_1.exe	rlc-1_3_1.upg
Remote Office 9150 unit	91501_3_1.exe	9150-1_3_1.upg
Remote Office 911x series units	911x1_3_1.exe	911x-1_3_1.upg
Meridian Digital Telephone IP Adapter (Internal and External)	IPadapter1_3_1.exe	IPAdapter1_3_1.upg
ISDN BRI U-interface module	isdn30du.exe	ubri-30d.upg
ISDN BRI ST-interface module	isdn30ds.exe	sbri-30d.upg
Configuration Manager	cm1_3_1.exe	not applicable
	Note: The setup.exe file provided within the cm1_3_1.exe file is used to perform the Configuration Manager upgrade.	

Obtaining the latest upgrade files

If you need to upgrade the firmware or software, you can obtain the latest upgrade files from your Nortel Networks distributor or, click on the Customer Support and Software Distribution links at the following website:

www.nortelnetworks.com

Note: Remote Office 1.3 is a Global release.

Performing upgrades

WARNING

To eliminate any confusion in board numbering, the RLC automatically sets its Unit ID to 254 with this release when upgrading from releases prior to 1.2.0.

The RLC now identifies the Remote Office units by their Unit ID, not by their Unit Number or Node Name. If the Unit ID is not the same as the Unit Number in the Remote Connection Configuration on the RLC, the Unit ID in the 9150 or 911x System Configuration sheet must be changed to match the Unit Number or Node Name.

To maintain compatibility with all installations that support a single Remote Office unit, the upgrade process assigns the default Unit ID of "1" to each unit to match the default at the RLC. Following an upgrade, administrators responsible for multiple Remote Office units on a single RLC must configure the correct Unit ID at each Remote Office unit.

For complete details on performing upgrades, refer to the appropriate Installation and Administration Guide for the specific product.

ATTENTION

The protocol for communication between the RLC and the Remote Office units requires that they be running the same version in order for them to communicate with each other.

You should perform a firmware upgrade if you are using older versions of firmware (Release 1.2.x.x or earlier). To check the version of firmware you are using, do one of the following:

- If you are not connected to the device, open Configuration Manager and connect to the Remote Office unit. A window displays the RLC or Remote Office unit firmware version.

- If you are already connected to the device, choose System Information → System Data. The unit firmware version displays.

Each time you perform a firmware upgrade, the configuration database is converted (if necessary) to a format that is compatible with the new firmware. The conversion does not affect configuration settings.

To ensure that the RLC and Remote Office units do not experience communication problems during, or after the firmware upgrade, Nortel Networks recommends that you perform the upgrades as follows:

1 Create backup files for the Remote Office 9150, 911x, and IP Adapter units and RLC configurations. Refer to "Creating a backup configuration file" in the Nortel Networks Installation and Administration Guide for the specific product.

2 Upgrade the Configuration Manager software on the administration PC.

3 Disable the PBX slot where the RLC is installed.

4 Upgrade the RLC firmware.

5 Upgrade the Remote Office units - 9150, 911x, and IP Adapter firmware.

6 Remote Office 9150 units only - Upgrade the BRI module firmware for each BRI module.

7 Restart the RLC.

8 Restart all units.

9 Re-enable the RLC slot.

   Note: The Remote Office 9150 unit's BRI module firmware must only be upgraded after the Remote Office 9150 unit's firmware is at the desired compatible level.

Important installation notes

This section provides important information about the installation of the Remote Office 9150 unit, Remote Office 911x series unit, Meridian Digital Telephone IP Adapter unit, and RLC.

Free-standing key system

Nortel Networks DOES NOT support a Remote Office system as a free-standing key system.

Automatic TEIs (terminal endpoint identifiers)

BRI modules must be used in a point-to-point configuration if using automatic TEI assignments. They cannot be used in a multi-point configuration. You should also make sure that no other ISDN devices are on the line.

Flash downloads to M39xx telephone sets

Flash downloads to remote M39xx telephones can take twice as long compared to when these telephones are connected directly to a standard Nortel Networks digital line card (XDLC).

PBX and Local Feature Keys

When assigning a Local Calling key to a telephone on the Remote Office unit, ensure that the selected key does not have a feature programmed against it on the host PBX.

Multiple Appearance DNs (MADN)

Any active SCR/SCN key causes the Remote Office unit to allocate DSP and WAN bandwidth for that port. This is necessary to support a privacy over-ride feature available with the SCR/SCN key. To avoid unnecessary bandwidth from being utilized, it is recommended that MCR/MCN keys be used for MADN appearances at remote sites.

QoS transition recovery

Due to the requirement to support on-demand routers, the IP network is not continually tested during QoS transition situations. It is tested only when there are active voice calls over ISDN. As a result, transitioning needs active calls for the user-configured recovery period in order to switch back to IP.

If you are testing QoS transition by disconnecting the Ethernet cable from the Remote Office unit, or RLC, expect up to a 20 second delay before the Remote Office unit can place or receive a call. You do not encounter this delay when the network degrades and the QoS switches to BRI as designed.

Local trunk calls

Local trunk numbers cannot be pre-dialed. You must wait for the local trunk dial tone before dialing the number.

M39xx call log

When an incoming local call is answered, it is recorded in the Call Log. However, you cannot dial directly from the Call Log as the Trunk Access code and country code may not be displayed. For example, the Call Log for an ISDN number may be displayed as 4445551212, but a National code prefix (for example, 0) may also be required to dial the number and it is not shown.

Power requirement

If you want to connect the Remote Office 9150 unit to an uninterruptible power supply (UPS), ensure the UPS has a minimum of 100 Watts available.

Class of Service RNGI

Class of Service RNGI permits digital telephones to ring rather than buzz when they are offhook. Local TCM ports on the RLC support this feature, but this feature is not supported by telephone sets connected to the Remote Office units.

Local DN does not support MARP DN on the same Remote Office unit

Local calling at the Remote Office 9150 unit always results in a call being placed to the first port with the dialed number. Multiple DN appearances are not supported for local calling on the Remote Office 9150 unit.

Refer to "DN Discovery" in the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for further details.

MSL-100 - Telephone diagnostics on 2nd slot fails

On the MSL-100, the second slot of a double-wide card fails during diagnostic tests. You should simply ignore the diagnostic test.

Trunk to Trunk transfer gives silence

If an incoming call appears on a Local Calling key, and is transferred using the Trunk Access code to dial an outbound local call, the corresponding voice path is not established. This function is not supported.

Connecting Telephone to a port reserved for Bridge Port invalidates Bridge Port operation

Do not connect a telephone to the port that is going to be used as a Bridge Port. This can cause the Bridge Port to fail.

DN discovery cannot be configured to second slot of double-wide RLC

DN Discovery cannot be configured to use a port on the second slot of a double wide card. To solve the problem, configure the DN Discovery port on the first slot. Refer to "DN Discovery" in the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for further details.

PSTN testing

This is a new feature that has been developed to assist you in testing your PSTN connections.

To avoid common configuration mistakes, Nortel Networks recommends that you test the PSTN operation after you have finished configuring the PSTN numbers. In addition, you should only do PSTN testing during periods when the Remote Office unit is NOT in use.

PSTN connectivity tests work in two modes:

- Disruptive mode
- Non-disruptive mode

In both cases, you can perform the tests on a specified Remote Office unit for a specified range of data ports on the RLC. When using the disruptive mode, Nortel Networks recommends that you wait two or three minutes between tests to give the Remote Office system time to recover.

You can abort the PSTN tests at any time and the system returns to normal operation mode. The start and end of PSTN tests are recorded as display logs. To view these display logs, access Configuration Manager → Alarms/Logs/Stats → Display Logs.

WARNING	During PSTN testing, do not make any configuration changes or perform a Save to Flash on the RLC or Remote Office unit involved in the PSTN testing.

If the system reports that it cannot perform PSTN tests, determine the following:

1. Is PSTN enabled on the Remote Office unit?

2. Is the Remote Office unit enabled?

Note: You cannot perform PSTN testing on Remote Office 911x series units with both IP and PSTN enabled. During the testing, the system reports the status of the test on each port on the RLC. The meaning of the status messages are shown in the table on the following page.

No	Status Message	Comments
1	Trunk up	Link was brought up successfully to the specified number and port on the Remote Office unit side.
2	Attempt Failed	Attempt made to call specified number failed.
3	Port Busy	The specified port is in use; so, it cannot be tested.
4	No Remote Port Available	There is no Remote Office unit port available to bring up trunk on specified port.
5	Security Failed	There was a security failure while bringing up the trunk. Check security configuration settings.
6	Abnormal Failure	There is an abnormal failure on this connection due to errors on the line, or due to an emergency call on the Remote Office 9150 unit.
8	Not Closed	In non-disruptive mode, this trunk bandwidth is being used for the voice calls and so could not be freed.
9	Primary not up	If the primary trunk could not be brought up, all additional trunks show this status.
10	Primary Abnormal Fail	All additional trunks show this message if the primary trunk experiences an abnormal failure during testing.
11	Not data port	The specified port is not configured as data port.
12	Attempt by Remote Failed	Attempt by the Remote Office unit to bring up trunks from remote side failed.
13	Closed	During normal testing process, this message indicates that a trunk brought up for testing purpose is closed normally.
14	No Number to Dial	Displayed for primary if there is no PSTN number configured to dial Remote Office 9150 unit, or if the primary port is in use. Try to do test at a later time and check PSTN number configuration.
15	Primary to another unit	The specified port is primary to another Remote Office unit. No test can be performed on this port

Disruptive mode testing

If any voice calls are present on the PSTN when the testing starts, Disruptive mode testing causes all existing PSTN lines to the specified Remote Office unit to close abruptly. Before the test starts, however, the system displays a warning message indicating the number of voice calls present. You must specify that you want to go ahead with the tests.

In addition, on the Remote Office 9150 unit:

- Local trunk calls that have occupied Local and Remote configured B-channels drop.

- Remote calls occupying Remote configured B-channel calls drop.

- Local calls occupying Remote configured B-channel calls and Emergency 911 calls do not drop.

- You cannot place any local outgoing trunk calls on trunk groups that use Local and Remote B-channels.

- Similarly, no incoming local trunk calls are allowed on Local and Remote B- channels.

During disruptive mode testing, the following occurs:

- A primary channel is brought up from the RLC side.

- Other channels are tested from the:
  — RLC to the Remote Office 9150 unit
  — Remote Office 9150 unit to RLC in the given range of data ports of the RLC

- QoS transition is not allowed to happen.

- No voice calls are allowed to go on the PSTN.

- The start and end of PSTN tests are recorded as display logs. To view these display logs, access Configuration Manager → Alarms/Logs/Stats → Display Logs.

- The user can abort the PSTN tests at any time and system returns to normal operation mode.

Non-disruptive mode testing

Non-disruptive mode tests do not disturb the operation of your system. The system functions normally in that:

- calls from Remote Office units on PSTN can be made

- QoS transition occurs

- Remote Office 9150 unit local trunks calls (both incoming and outgoing) are allowed (including emergency calls)

In addition:

- You may observe that some PSTN lines brought up during the testing process do not drop automatically.

- Sometimes ports that have not been brought up during testing, but were closed due to the release of PSTN bandwidth are shown as released if they are in the given range. This depends on how many calls are placed on PSTN while the test is in progress.

- It may not be possible to test some trunks by bringing them up from the RLC or Remote Office 9150 unit and vice versa if they are in use already.

Troubleshooting

If after running the PSTN tests you encounter any PSTN failures, review the following:

- Chapter 4, "Configuring the host PBX for the RLC" in the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210)

- "Operation (Remote Office units)" on page 31

Bridge Ports

Bridge Ports provide integration between the host PBX dialing plan and the Remote Office 9150 unit local dialing plan. To determine the correct Bridge Port configuration for your particular Remote Office network, you must first consider the resource usage of both the Remote Office 9150 unit and RLC. The configuration examples below illustrate the most common resource usage scenarios in a Remote Office network. Configure a Bridge Port TN on the host PBX as a voice port. For further information, refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210). For Remote Office 9150 Bridge Port configuration, refer to the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215).

Terminology

In the following configuration examples, a local call is defined as a call that terminates on a Local Calling key of a telephone connected to a Remote Office 9150 unit. This call can be from another local user, or an inbound call from the PSTN through the BRI circuits on the Remote Office 9150 unit. The primary DN is the first key on the Remote Office telephone set that has a DN provided by the host PBX.

Note: Bridge ports use the primary DNs of Local and Remote telephone sets connected to Remote Office 9150 units to transfer local calls to the host PBX or to conference PBX calls to local calls. The primary line key must be idle for the Bridge Port to function properly. When transferring and conferencing local calls, Bridge Port connections are established from the primary DN on the telephone set of the local call. If the DN of the telephone set connected to the Remote Office 9150 unit is in use, then the Bridge Port cannot be established.

Configuration 1
Local inbound calls ring on Remote Office telephone sets and can be forwarded or conferenced to the host PBX.

1   Configure and enable DN Discovery on the RLC.

Note: DN Discovery replaces the DN configured on the Local Calling key of each telephone set connected to a Remote Office 9150 unit with the same DN configured for that key on the host PBX.

2 Configure the Local Calling keys of each telephone set connected to a Remote Office 9150 unit as required.

3 Configure the BRI trunk groups to alert the required local DNs when inbound calls are received on the BRI lines.

4 Configure enough Bridge Ports to provide the level of call blocking desired. For example, if four inbound BRI calls are forwarded to the host PBX then you require four Bridge Ports.

5 Review the DSP channel requirements. Each Bridge Port call requires a DSP channel and the associated bandwidth.

When a local call is presented and answered on a Remote Office 9150 unit telephone set, you can then press the Transfer (or Conference) key. The call indicator then bounces to the primary DN key, you hear a host PBX dialtone, and you can proceed to dial.

Note: Your primary DN is used to conference a local call. The Bridge Port connects the local user to the host PBX, the Remote Office 9150 unit connects your primary DN to the host PBX, and the Conference feature on the host PBX ties it all together.

Configuration 2

Local inbound calls ring on telephone sets connected to a Remote Office 9150 unit and are forwarded to the host PBX voicemail if not answered.

1 Configure all items as outlined in Configuration 1 above.

2 Configure the telephone sets connected to the Remote Office 9150 units with Forward No Answer. Set the appropriate number of rings and enter the DN of the voicemail or voice menu service on the host PBX.

When a local call is not answered on a telephone set connected to a Remote Office 9150 unit, the Bridge Port passes the call to the host PBX voicemail. The voicemail system does NOT forward the message to the voice mailbox of the Remote Office 9150 unit user since the voicemail system and host PBX have no idea who was the original recipient of the local call. For example, the call could terminate in a corporate directory voice service, or general "after hours" voicemail box. During regular business hours, the Forward No Answer calls can reach a receptionist at the host location.

Configuration 3

All local inbound calls pass immediately to the host PBX voicemail for call treatment.

1 Configure and enable DN Discovery.

2 Configure the required number of Bridge Ports to handle the call traffic expected.

3 Configure the BRI trunk groups with the Local DNs to Alert fields configured to the host PBX voicemail service DN.

When placing an inbound BRI call, the bridge port connects the call to the host PBX voicemail service.

Note: If the PSTN caller uses the voicemail service to redirect the call to a Remote Office 9150 unit user, a tromboning situation occurs that uses double DSP and bandwidth resources. Ensure that the DSP and bandwidth engineering allow for this situation.

Configuration 4

All local inbound calls pass immediately to the host PBX and then redirect to the Remote Office 9150 unit user's primary DN.

1 Disable DN Discovery. This forces the Remote Office 9150 unit to use local DNs and does not replace the local DN with the primary DN.

2 Configure the required number of Bridge Ports to handle the call traffic expected.

3 Configure the BRI trunk groups with the Local DN to Alert fields configured to the Remote Office 9150 unit user's primary DN.

This configuration provides a local presence for a Remote Office 9150 unit user while maintaining full usage of the host PBX voicemail resources. For example, a law office could publish one of the a BRI DNs (for example, 555-1212) as a direct number. The call passes from the Bridge Port, to the host PBX and then to the primary DN on the users telephone set. If the telephone set is busy, regular call treatment occurs, including directing the call to the user's voice mailbox.

Note: This configuration creates tromboning on every call and uses double DSP and bandwidth resources. Ensure that the DSP and bandwidth engineering allow for this situation. Also, since DN Discovery is disabled, Local Switchover cannot be used and therefore all calls within the Local Office require DSP and bandwidth resources.

9150 BRI Configuration sheet

This topic provides important information about the BRI Configuration sheet. To access, go to Configuration Manager → 9150 → BRI Configuration.

Disabling Multiple Subscriber Number (MSN)

Remote Office requires the ISDN numbers to be unique per module for PSTN connections between the RLC and Remote Office 9150 unit.

Do not configure B-channels as Local and Remote if MSN is disabled.

For Remote Office 9150 units with multiple BRI modules:

- Configure a maximum of one BRI module as Remote Only if PSTN connections are required.
- Configure all other BRI modules as Local only.

For Remote Office 9150 units with just one BRI module the BRI module can be configured as Local only or Remote only.   If local ISDN calls and remote calls over PSTN are required, then MSN must be enabled.

Permanent PSTN connection

When using multiple Remote Office units, you must only configure the permanent PSTN connections for the RLC's primary network ports. If you only use one Remote Office unit, you can use additional permanent PSTN connections.

Local Remote Office 9150 unit dialing plan

The Remote Office 9150 unit discovers the DN numbers of the local telephones either through DN Discovery or configuration. The Bridge Ports, Local Calling, and Local SwitchOver features depend on this knowledge as follows:

- If a call has an appearance on a Local Calling key, the Remote Office 9150 unit first attempts to complete the operation (for example, call, transfer, forward) using the local dialing plan.

- If a call is placed from a Local Calling key to a number not found in the Remote Office 9150 unit's local list, then a Bridge Port is used to place the intended call to the PBX.

Operation (Remote Office units)

This section provides important information about the operation of the Remote Office units off of a Meridian 1 or MSL-100 PBX.

ACD environments

If communication is lost to the Remote Office unit, or the unit goes offline, the ACD agent is put in Make Set Busy (MSB) mode. This mode logs the agent out of the ACD queue, so calls can be routed to other ACD agents. Once you re-establish communication, the telephone display shows "Set Busy Activated".

When an ACD agent is on a call using a Local Calling key, the Remote Office 9150 unit sends a transparent Not Ready key press to the host PBX and places the ACD agents telephone in Not Ready mode. This feature prevents the ACD agent from receiving calls when active on a local call. The Not Ready mode is removed from the telephone when the local call is terminated.

Echo cancellation

Due to the network delay introduced by the IP network, echo is more noticeable in VoIP networks than traditional networks. All echo cancellation algorithms need a small amount of time to adjust if the echo path changes. This results in the initial syllable, or word, of the first sentence having echo. After that, however, no echo is apparent.

This is a normal characteristic of the transition point between the VoIP network and traditional analog facilities. If echo is not cancelled after the beginning of the first sentence, a more serious problem (such as impedance mismatch) may be present. Also note that some environments, such as conference calls, may change the echo path. This also results in an adjustment period for Echo Cancellation.

Note: Nortel Networks Global Customer Care Services (GCCS) after investigation has discovered that the source of echo on the majority of installations is from incorrectly configured analog trunks. Please ensure that the trunks are configured correctly in the areas of trunk card type (EXUT/XUT), TIMP, and BIMP settings, and jumper settings on the actual trunk card itself. Also, measure the line loss and compensate using the trunk class of service NTC or TRC as required.

Nortel Networks recommends that the trunk card be an enhanced version (EXUT). An EXUT supports more complex impedance situations. Please refer to NTP 553-3001-106 for trunk cards and the NTP for your specific PBX for more information. Also, if you are connecting recording equipment, or Recorded Announcement (RAN) devices to an analog trunk, ensure that the trunk impedance matches the equipment impedance, or echo can occur.

Fax transmissions during Quality of Service transitions

If a QoS transition occurs while a fax is being sent or received, the packets lost prior to the transition can result in:

■ a fax that is not readable at the receiving end

■ error messages that appear on both the sending and receiving fax machines

If this occurs, send the fax again.

NAT routers

Translation tables within NAT routers control the communication path from the private network to the public network. Most NAT devices contain a timer that monitors the translation table entries. Each time a translation table entry is used, the timer restarts. Individual table entries are deleted if the communications path is not used and the timer expires.

It is possible, when using a Remote Office 9150 or 911x unit behind a NAT device, that prolonged periods of silence cause the NAT translation table entries to clear and drop the audio path. An example of this situation would be a remote user listening to a conference call with their telephone set on mute. After five

minutes (the default NAT translation table timer on many NAT routers) the remote user would not be able to hear the conference. The remote user can recover the audio path by going off mute and speaking into the telephone to restore the NAT table entry.

To prevent the NAT translation table from dropping the audio path:

- configure the translation tables on the NAT router with a large timer value (for example, two hours)
- configure a static translation table entry for UDP port 20480

Stutter dial tone

A stutter may be heard during a remote dial tone. This is a normal occurrence and is caused by the DSP activating a dial tone relay.

Voicemail messages and Quality of Service transitions

It can take several seconds of sustained errors to cause a Quality of Service (QoS) transition to the PSTN. During this time, voice quality may suffer due to errors. If a message to a voice mailbox is being recorded during these errors, portions of the message could be unintelligible.

When you should restart a unit

Each time you make a configuration change, you should perform a Save to Flash. Configuration Manager then prompts you to restart the unit. This ensures that all configuration changes are saved in flash memory and take effect.

Note: When you save configuration changes to Flash, the system suspends new call processing for approximately 30 seconds. Some configuration changes do not take effect until the unit has been re-started.

Issues corrected since 1.2

The following issues have been corrected since Release 1.2:

Faulty BRI module (MP08694) (PRS 1143)

When the Remote Office firmware detects a faulty BRI module, the Startup Information dialog box and Status field located on the Hardware Statistics screen now identify the module as "Faulty". The firmware also takes the module out of service.

Profile download fails for MCAs on the MSL-100 (MP09012) (PRS 1111)

The profile download is now supported for MCAs.

Call forward issue between host and virtual TNs (MP10353) (PRS 1100)

Call forwarding between host and virtual TNs now functions properly.

No ringback or busy tone when a call is placed from the corporate directory (MP10689) (PRS 694 and PRS 974)

You can now hear a busy or ringback tone that indicates the call status on the receiving side when placing a call from the corporate directory.

Permanent BRI connection not configurable on the RLC (MP10770) (PRS 709)

In Configuration Manager, permanent BRI connections are now configured from the RLC.

Time unavailable in the caller list of M3820 telephone (MP12501) (PRS 2052)

When Caller ID was displayed on the M3820 telephone, the time and date did not also display. This has been corrected.

Key labeling (MP12742/PRS 1875 and PRS 1456)

The key labeling is now stored in Flash memory. This change preserves key labeling even after system reset.

Default product configurations lead to errors (MP13659) (PRS 2141)

The default configurations were changed to reduce customer installation errors. For example, the Remote Office 9150 unit defaults with local telephones now instead of remote telephones. This was due to an installation issue where sites with multiple Remote Office 9150 units on a single RLC were conflicting with their port registrations.

BRI firmware upgrade causes module to become unusable (MP13932) (PRS 2202)

Remote Office Product release 1.3.1 allows corrupted BRI modules to be re-programmed.

Permanent PSTN Bandwidth should be non-permanent after QoS recovery (MP13934) (PRS 2210)

In previous versions of software, setting a trunk to Permanent would mean that the Remote Office 9150 unit and RLC would leave the trunk established independent of whether it was established due to QoS reasons or was circuit-only. The code has been changed to leave the trunk up during idle times while QoS is still inadequate, but when QoS recovers, to tear down the trunk.

No message shows DN discovery runs failed or success (MP14075) (PRS 2237)

A display log has been added that indicates the completion of DN discovery and whether or not it succeeded.

Set display message "Resource Limit (x)" is not user friendly (MP14229) (PRS 2270)

The display messages now indicates:

- Call Failure

  Call Failure indicates that an attempted call returned an error (such as, busy).

- Bandwidth Limit

  Bandwidth limit indicates that there was not enough bandwidth available in the system to complete the requested task.

- DSP Limit

  DSP limit indicates that there were not enough available DSP resources in the system to complete the requested task.

Set rings but cannot be answered if bandwidth is unavailable with no indication to the user as to why (MP14249) (PRS 2268)

If PSTN or DSP resources cannot be allocated, the telephone set connected to the remote unit may ring but cannot be answered. A "Resource Limit" message and Log details why this call was blocked.

Voice saturation and clipping of words (MP14595) (PRS 2308)

Occasionally, double talk can be interpreted as echo and cause the incoming voice to be clipped. The Non-Linear Processor has been improved to distinguish between echo and received voice.

Some fax machines do not work with G.729/Fax (MP14683) (PRS 2316)

Some fax machines fail when configured for G.729/Fax. These fax machines work successfully if the port is re-configured for G.711.

Headset inactivation between calls may cause alert tones to be clipped (MP14751) (PRS 2349)

The headset is now kept active when calls are in Idle status.

Local features requiring DN Discovery fail after GUI changes (MP14939) (PRS 2321)

Prior to Product release 1.3.1, port configuration changes on the Remote Office 9150 unit require DN Discovery to be rerun for local calling features to work. This has been corrected.

Only the first 4 digits from an external call are in the caller list on the M3820 telephone set (MP15147) (PRS 2352)

In some configurations of the M3820 telephone set, the Caller List only displayed the first 4 digits. This has been resolved.

ACD forced answer calls interrupt local ISDN calls (MP15661) (PRS 2353)

Local calls are no longer interrupted by ACD calls if Forced Answer is enabled.

Packet Jitter Buffer too aggressive (MP15960) (PRS 2338)

The Jitter Buffer target depth default has been changed from 30 milliseconds to 90 milliseconds and can now be configured.

Save to Flash on Configuration Wizard fails (PRS 683)

The Save to Flash option in the Configuration Wizard now functions properly.

Local ISDN calls to unused numbers may not receive audible indication (PRS 994)

Audible indications are now generated for all types of failed ISDN local calls.

Unable to use IDU command from load 32 on RLC card (PRS 1022)

The IDU command is used to gather information about the actual set connected to the Remote Office 9150 unit. After registration with the remote unit, the RLC now responds with the correct IDU information.

Registration of M3900 Release 2 telephones after a conflict (PRS 1045)

If multiple M3900 Release 2 telephones are registered for the same RLC port, a conflict may occur and the telephones may not attempt to register. To solve the problem, use SPRE codes to register and de-register.

MCAs do not work correctly if the PBX is a different companding law than the Remote Office 9150 unit (PRS 1115)

MCAs switch to a transparent mode G.711 algorithm so that they work when the Remote Office 9150 unit and RLC are set for different companding laws.

Local DN synchronization (PRS 1127)

In prior releases, after performing DN Discovery, the local DN was synchronized with the first Remote DN configured. However, if the configuration on the port was changed, the local DN was updated with the originally configured value. With this release, the local DN is always synchronized with auto-discovered DN, even if the configuration changes.

Local SwitchOver and Handsfree with M39xx telephones (PRS 1171)

Local switchover now occurs when the called party answers with handsfree on M39xx telephones.

Terminated local calls (PRS 1450)

The active local call no longer terminates when a you place a second local call by dialing the Local Call SPRE code from the remote DN.

Local call signal (PRS 873 and PRS 1473)

When there is a local call and remote signaling goes down and comes up, the display status of local call details is not affected.

Configuration Manager timing out (PRS 1525)

The Configuration Manager GUI timeout timer is reset upon any activity on the GUI. After 15 minutes of inactivity, the log in session terminates.

Local TCM ports are not functional for ports 32-47 (PRS 914 and PRS 1734)

Local TCM ports are now fully supported on the double-slot RLC.

TCP connection to the Remote Office 9150 unit (PRS 1750)

The TCP session time-out is changed so that if the IP connection is lost for 30 seconds between the administration PC and the logged in unit, Configuration Manager does not have a problem re-connecting after 30 seconds.

Help content unavailable for some statistics (PRS 1751)

The Help content is now available for the Network Statistics menu. Configuration Manager provides Help information for the Network statistics, ISDN Module statistics, and Device Information statistics.

ITONE configuration is not active after TFTP upgrade from 1.0.1 release (PRS 1791)

An issue with the order of database conversion was discovered and corrected. This now functions correctly.

QoS Transitioning voice quality (PRS 1821)

A new configuration item is added to limit voice bandwidth on the IP network. This limits the number of voice calls on the IP network, thereby increasing voice quality.

GUI should only display COM port selection for Serial connection (PRS 2046)

GUI now only displays the COM port selection for Serial connection.

GUI crashes when loading a configuration file with text wrapped at 80 characters (PRS 2097)

If a configuration record were longer than 80 characters and the capture terminal had inserted carriage returns after 80 columns, then the GUI would crash trying to read in the partial records.The GUI no longer crashes when loading a configuration file with text wrapped at 80 characters.

Only five B-channels can be programmed per trunk group (PRS 2213)

The current version of software now allows eight B-channels per trunk group.

Permanent ISDN connections will not drop using the Offline SPRE code (PRS 2304)

Permanent PSTN connections should drop when the unit goes offline. This could be achieved using the Online/Offline but not when entering the Offline SPRE code.

Loss of sidetone to agent's telephones (PRS 2312)

The handset is turned off when all calls are idle so the sidetone is lost. Press the Release key to terminate the call off of the agent telephone. Side tone is removed when the Release key is depressed.

Switching between the Call Waiting key and Local Calling key causes loss of voice on the handset (PRS 2364, previously PRS 2429)

The handset is no longer turned off when releasing a local call if the handset is offhook, resolving the loss of voice path.

Unable to make local calls on ATA (PRS 2370, previously PRS 2412)

The ATA can now place local ISDN calls.

Known problems in this release

This section describes known problems with this release and suggests solutions to these problems, if solutions are available.

M2616CT cordless telephone Local Calling keys are always activated on the base station (MP14938) (PRS 2350)

Local Calling keys are not supported on the M2616CT cordless telephone.

First call to the Remote Office 9115 unit drops after the RLC is reset (MP15765) (PRS 2339)

Allow five minutes for the Remote Office 9115 unit to re-register after the RLC is re-set before placing calls.

Some fax machines are not supported (MP15832) (PRS 2330)

Some fax machines do not support the 20Hz ring frequency of the Remote Office 9150 unit's analog port. Future releases will allow the ring frequency to be configured as 20Hz (NA standard) or 25Hz (EU standard).

M3905 telephone sets can lock up during Remote Office 9150 unit reboot (MP16241) (PRS 2457)

The M3905 telephone set receives false messages during a re-boot of the Remote Office 9150 unit and can lock up. Unplug and re-plug the telephone cord at the wall jack to recover.

Documentation additions and corrections

Supported telephone modules

Page 35 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) includes a note stating "You cannot dial directly from the Call Log of M3900 series telephones because the Trunk Access code and country code may not be displayed". This note is incorrect. The note should read as follows:

> **Note:** You cannot dial host PBX calls from the Call Log of the M3900 series telephones because the Trunk Access code and country code may not be displayed. You cannot dial local calls from the Call Log of the M3900 series telephones because the information contained in the Call Log does not contain trunk group information.

Fax support

Page 47 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) includes the following sentence:

> "Faxes are sent uncompressed (that is, you require 64 Kbps of bandwidth)".

This sentence is incorrect and should be disregarded.

Page 224 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) provides a table that includes the following sentence:

> "If G.729/Fax or G.711 compression is being used and the call is a fax call, then the fax call is sent as 64 Kbps".

This statement is incorrect. The correct information is as follows:

- If G.729/Fax is being used and the call is a fax call, then the fax call is sent as 9600 bps.
- If G.711 (uncompressed) is being used and the call is a fax call, then the fax call is sent as 64 Kbps.

To implement a Remote Office 9150 unit behind a NAT router

Page 85 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) describes how to implement a Remote Office 9150 unit behind a NAT router. There are several references to a "PNAT router" that should read "NAPT router". A NAPT router is a Network Address and Port Translation router.

What to do if the telephone connection tests do not work

On page 140 and 141 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) the section titled "What to do if the telephone connection tests do not work" does not include step 7. Step 7 should read as follows:

7 Use Configuration Manager to examine the display logs for errors.

Note: Refer to Configuration Manager Help for a complete listing of all display logs and the condition indicated by each.

Companding Algorithm

On page 189 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215), the field description for Companding Algorithm does not provide enough detail. The field description should read as follows:

A Companding Algorithm, or coding law, is a PCM standard by which an analog voice signal is encoded into a digital bit stream. There are two main coding laws in common use around the world, A-law and μ-law. A-law is the standard in Europe and most areas outside North American influence, while the North American and Japanese standard is μ-law (Mu-law).

In the Companding Algorithm drop down box, select the option for your Remote Office 9150 unit to override the Automatic default coding law. Select A-law or μ-law if you want the Remote Office 9150 unit to override the Automatic default coding law. Valid options are: Automatic, Mu-law, and A-law.

> **Note:** Automatic (coding law) is the default setting. When you choose Automatic, the Remote Office 9150 unit uses the coding law configured for the ISDN BRI module in use.

For a listing of line types and their respective default coding laws, refer to "ISDN Line Type" on page 46.

Multiple Subscriber Number

On page 189 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215), the field description for Multiple Subscriber Number does not provide the correct description. The field description should read as follows:

- Click on the **Enable** option button if the Central Office provided a unique DN for each B-channel.
- Click on the **Disable** option button if the Central Office provided only one DN for both B-channels.

Configuring the Remote Office 9150 unit's IP interface

Page 195 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) should include a reference to the QoS methods discussed in the *Remote Office Network Engineering Guidelines* (NTP 555-8421-103).

Unit ID

On Page 200 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215), the field description for Unit ID does not provide the correct description. The field description should read as follows:

The RLC's non-configurable unit ID of 254.

ISDN Line Type

On page 213 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215) the field description for ISDN Line Type does not provide enough detail. The field description should read as follows:

Select the type of ISDN line used in your country. The line type you select determines the options available in the Switch Type list box and the Automatic default coding law (Companding Algorithm) used by the ISDN BRI module being configured. To select a different coding law setting, click on the Coding Law on the 9150 System Configuration property sheet. Refer to "Companding Algorithm" on page 44 for further details.

Choose the ISDN line type according to the following table:

Line Type	Default Coding Law
Proprietary Switch	µ-law
National ISDN – 1	µ-law
National ISDN – 2	µ-law
National ISDN – 3	µ-law
National ISDN – 4	µ-law
Japan NTT	µ-law
France	A-law
Germany	A-law
ETSI EuroISDN	A-law
United Kingdom	A-law
Australia	A-law
DPNSS 1	µ-law
DASS 2	µ-law

Bridge Ports

On page 220 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215), the following incorrect paragraph appears:

> You must configure Bridge Port parameters on both the RLC and Remote Office 9150 unit. For information regarding Bridge Port configuration on the RLC, refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210).

The correct information is as follows:

> You must configure Bridge Port parameters on both the host PBX and the Remote Office 9150 unit. For every Bridge Port defined on the Remote Office 9150 unit you must configure an SCR key with voice capability on key 0 for that port on the host PBX. For more information on configuring SCR keys on a host PBX refer to your PBX documentation.

On page 228 of the *Remote Office 9150 Installation and Administration Guide (NTP 555-8421-215)* the field description for Bridge Port should include the following notes:

- If a Remote Office 9150 unit port is configured with Bridge Port enabled, do not attach a telephone to this port.
- For a telephone set connected to a Remote Office 9150 unit with Local and Remote capability, the Bridge Port does not need to be enabled to allow you to have access to Bridge Port features.

ATA- and MCA-equipped stations and bandwidth requirements

Page 224 of the *Remote Office 9150 Installation and Administration Guide (NTP 555-8421-215)* includes a note stating "The total number of digital telephones and ATAs cannot exceed 32.". This note is incorrect. The note should read as follows:

> **Note:** You can have up to 32 digital telephones, 1 fax machine, and 7 ATA/MCAs installed. However, only 32 simultaneous calls can be made.

Module Number

On page 290 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215), the field description for Module Number does not provide the correct field description for the Remote Office 9150 unit. The field description should read as follows:

Identifies this DSP Application Module's module number on the Remote Office 9150 unit. Valid options are: 0, 1, 2, and 3.

TELCO 2 connector pin-out table

On page 377 of the *Remote Office 9150 Installation and Administration Guide* (NTP 555-8421-215), "Fault Relay" should read "unused".