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# Digital Telephone IP Adapter Installation and Administration Guide

Product release 1.5

Standard 2.1

January 2005

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**NORTEL™**



# Digital Telephone IP Adapter

## Installation and Administration Guide

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# Publication history

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This is the Standard 2.1 issue of the *Digital Telephone IP Adapter Installation and Administration Guide* (NTP 555-8421-211). This document provides product descriptions, planning, installation, configuration, administration, and troubleshooting information for product release 1.5 of the Digital Telephone IP Adapter unit.

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# Contents

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<b>About this document</b>	<b>xv</b>
About this guide	xvi
<i>How to use this guide</i>	xvi
Product overview	xvii
Skills you need	xviii
<i>Nortel product knowledge</i>	xviii
<i>Telecommunications knowledge</i>	xviii
<i>Data networking knowledge</i>	xix
Conventions used in this guide	xx
<i>Precautionary messages</i>	xx
<i>Instructions for selecting menu options</i>	xx
<i>Instructions for displaying property sheets</i>	xx
<i>PBX terminology</i>	xxi
Related information products	xxii
<i>Printed documents</i>	xxii
<i>CD-ROM</i>	xxiii
<b>1 Digital Telephone IP Adapter description</b>	<b>25</b>
Product Introduction	26
<i>Digital Telephone Internal IP Adapter</i>	26
<i>Digital Telephone External IP Adapter</i>	27
<i>Reach Line Card</i>	27
<i>Voice over IP technology</i>	27
<i>Configuration - device and software</i>	28
Hardware description	29
<i>Digital Telephone IP Adapter unit LED indicators</i>	29
<i>Digital Telephone IP Adapter unit LED indicator display diagrams</i>	30
<i>Digital Telephone Internal IP Adapter</i>	31
<i>Digital Telephone External IP Adapter</i>	31
<i>Universal power supply support - Digital Telephone Internal IP Adapter</i>	32
<i>Universal power supply support - Digital Telephone External IP Adapter</i>	33
<i>Internet Access Device description</i>	34

Connection options . . . . .	35
<i>10BaseT Ethernet interface</i> . . . . .	35
How Digital Telephone IP Adapter units work . . . . .	36
<i>Outgoing call process</i> . . . . .	37
<i>Incoming call process</i> . . . . .	37
<i>Host-controlled call mode</i> . . . . .	37
<i>Call scenario 1: host-controlled—</i> <i>corporate internal call</i> . . . . .	38
<i>Call scenario 2: host-controlled—</i> <i>corporate external call</i> . . . . .	40
System security . . . . .	42
<i>No security</i> . . . . .	42
<i>Security identifier</i> . . . . .	42
Telephones . . . . .	43
<i>Supported digital telephones</i> . . . . .	43
<i>M2000 series (European models M3310 and M3820) and</i> <i>M39xx series digital telephone set model and</i> <i>accessory compatibility</i> . . . . .	45
<i>M39xx series digital telephone set accessory compatibility</i> . . . . .	46
<i>Required footstand for Digital Telephone Internal IP</i> <i>Adapter units</i> . . . . .	46
<i>Supported telephone modules</i> . . . . .	46
<i>Supported telephone features</i> . . . . .	47
<i>Computer telephony integration applications</i> . . . . .	47
<i>Automatic Call Distribution (ACD) applications</i> . . . . .	48
<i>Communications system and software requirements</i> . . . . .	49
<i>Supported Codecs</i> . . . . .	49
Online/Offline Table . . . . .	50
Emergency service number . . . . .	51
Remote Gateway 9100 Series Configuration Manager . . . . .	52
Power requirements . . . . .	53
<i>Input specifications</i> . . . . .	53
<i>Output specifications</i> . . . . .	53

## **2 Planning for installation 55**

Physical environment . . . . .	56
<i>Space</i> . . . . .	56
<i>Temperature</i> . . . . .	56
<i>Mounting options</i> . . . . .	58
<i>Cables included with the Digital Telephone Internal IP Adapter</i> . . . . .	58
<i>Cables included with the Digital Telephone External IP Adapter</i> . . . . .	58
<i>Cables you must supply yourself</i> . . . . .	58

Administration PC .....	59
<i>Connection options</i> .....	59
<i>Ethernet connection</i> .....	59
<i>Administering multiple nodes in the network</i> .....	60
<i>Windows PC requirements</i> .....	60
<i>Optivity Telephony Manager and Configuration Manager</i> .....	61
Network considerations .....	62
<i>IP addressing and routing</i> .....	62
<i>Determining DHCP assigned IP addresses</i> .....	62
Deployment .....	64
<i>Transport media</i> .....	64
<i>Network Address Translation (NAT)</i> .....	64
<i>IP deployment</i> .....	65

### **3 Installing the Digital Telephone IP Adapter unit 67**

Preparing for installation .....	68
<i>General Safety</i> .....	68
<i>Required hardware and software tools</i> .....	69
<i>Unpacking and inspecting the equipment</i> .....	69
Installing the Digital Telephone Internal IP Adapter circuit card .....	70
<i>Removing the footstand of the digital telephone set</i> .....	70
<i>Inserting the Digital Telephone Internal IP Adapter circuit card</i> .....	71
<i>Installing ferrite beads</i> .....	73
<i>Connecting the Digital Telephone Internal IP Adapter circuit card</i> .....	74
<i>Powering up the Digital Telephone Internal IP Adapter circuit card</i> .....	75
Installing the Digital Telephone External IP Adapter unit .....	76
<i>Installing the Digital Telephone External IP Adapter unit on a desk</i> .....	76
<i>Installing the Digital Telephone External IP Adapter unit on the wall</i> .....	76
<i>Connecting the Digital Telephone External IP Adapter unit</i> .....	79
<i>Connecting the Digital Telephone External IP Adapter unit to the network</i> .....	80
<i>Powering up the Digital Telephone External IP Adapter unit</i> .....	81
Testing the network connection .....	82

<b>4</b>	<b>Configuring the IP Adapter unit using the telephone menu</b>	<b>83</b>
	Before you begin . . . . .	84
	<i>Information you need to know before configuring</i> . . . . .	84
	<i>Accessing the telephone menu</i> . . . . .	85
	<i>Telephone menu key function</i> . . . . .	85
	<i>Backing up while in the telephone menu</i> . . . . .	85
	<i>Exiting the system using the Release key</i> . . . . .	86
	Running the telephone menu script . . . . .	87
<b>5</b>	<b>Changing configuration settings using Configuration Manager</b>	<b>113</b>
	Before you begin . . . . .	114
	Digital Telephone IP Adapter unit system configuration . . . . .	115
	<i>Emergency service programmability</i> . . . . .	116
	<i>Configuring the system settings</i> . . . . .	116
	IP configuration . . . . .	122
	<i>Configuring IP information</i> . . . . .	123
	RLC connection configuration . . . . .	129
	<i>Configuring the RLC connection information</i> . . . . .	130
	Auto upgrade configuration . . . . .	133
	<i>Configuring automatic upgrade</i> . . . . .	134
	Syslog configuration . . . . .	137
	<i>Configuring syslog functionality</i> . . . . .	138
<b>6</b>	<b>Using the digital telephone</b>	<b>141</b>
	Modes of operation . . . . .	142
	<i>Host-controlled modes</i> . . . . .	142
	<i>Online mode</i> . . . . .	142
	<i>Offline mode</i> . . . . .	142
	<i>What controls the online and offline modes</i> . . . . .	143
	Placing and receiving calls . . . . .	144
	<i>Receiving incoming calls</i> . . . . .	144
	<i>Methods for placing outgoing calls</i> . . . . .	144
	<i>Placing a host-controlled call</i> . . . . .	144
	<i>Calling another station at your site—host-controlled mode</i> . . . . .	145
	Indicator updates . . . . .	146
	<i>Host-controlled indicator updates</i> . . . . .	146
	Display messages . . . . .	147
	<i>Message descriptions</i> . . . . .	147

Telephone features operation . . . . .	150
<i>Emergency service calls</i> . . . . .	150
<i>Hold</i> . . . . .	150
<i>Call Waiting</i> . . . . .	150
<i>Call Transfer</i> . . . . .	151
Going online and offline . . . . .	152
<i>Using the SPRE code to place your unit in online mode</i> . . . . .	152
<i>Using the SPRE code to place your unit in offline mode</i> . . . . .	152
<i>Overriding an automatic offline event from the host PBX</i> . . . . .	153

## **7 Administration 155**

Changing the administration password . . . . .	156
<i>Changing the Configuration Manager password</i> . . . . .	157
<i>Changing the Digital Telephone IP Adapter unit's password</i> . . . . .	158
Creating a backup configuration file . . . . .	159
<i>Storing backup configuration files</i> . . . . .	159
<i>Creating the backup file</i> . . . . .	160
Restoring the configuration . . . . .	162
<i>Before you begin</i> . . . . .	162
<i>Uploading a configuration file over the IP network</i> . . . . .	163
Display logs . . . . .	167
<i>Viewing display logs</i> . . . . .	167
<i>Printing the display logs to a file</i> . . . . .	168
<i>Changing the number of display logs retained by the     Digital Telephone IP Adapter unit</i> . . . . .	169
<i>Clear logs</i> . . . . .	170
Statistics screens . . . . .	171
<i>Bandwidth Connection Statistics</i> . . . . .	171
<i>Caller Information Statistics</i> . . . . .	174
<i>Digital Signal Processor (DSP) Statistics</i> . . . . .	177
<i>Ethernet Interface Statistics</i> . . . . .	181
<i>Network Statistics</i> . . . . .	186
Verifying the firmware and software version . . . . .	191
<i>Verifying the software version</i> . . . . .	191
<i>Verifying the firmware version</i> . . . . .	192
<i>Determining the current firmware and software versions</i> . . . . .	192
Obtaining the latest upgrade file . . . . .	193
<i>Types of upgrades</i> . . . . .	193
<i>Downloading the upgrade file</i> . . . . .	193
Extracting upgrade files from the download file . . . . .	194
<i>Performing the extraction using Windows</i> . . . . .	194

Performing a firmware upgrade . . . . .	196
<i>Manual firmware upgrade</i> . . . . .	196
<i>When to perform a firmware upgrade</i> . . . . .	197
<i>About firmware upgrades and configuration files</i> . . . . .	197
<i>Before you begin</i> . . . . .	197
<i>Upgrading the Digital Telephone IP Adapter unit firmware</i> . . . . .	198
<i>Automatic or scheduled firmware upgrade</i> . . . . .	200
<i>Self-contained firmware upgrade</i> . . . . .	201
Restarting the system . . . . .	204
<i>When to perform a restart</i> . . . . .	204
Performing a software upgrade . . . . .	206
<i>Upgrading the Configuration Manager software</i> . . . . .	206

## **8 Troubleshooting 207**

Before you begin . . . . .	208
<i>Identifying why a problem occurred</i> . . . . .	208
Digital Telephone IP Adapter unit LED indicators . . . . .	210
Digital telephone set . . . . .	211
<i>Symptom descriptions</i> . . . . .	211
Network connectivity . . . . .	217
<i>System descriptions</i> . . . . .	217
Software problems . . . . .	220
<i>Symptom descriptions</i> . . . . .	220
<i>Display Logs definitions</i> . . . . .	220
Using Configuration Manager's PING . . . . .	221
<i>Performing a Configuration Manager PING</i> . . . . .	221
<i>Unsuccessful PING options</i> . . . . .	223
Syslog testing . . . . .	224
<i>Performing syslog testing</i> . . . . .	224
Alarms and alerts . . . . .	225
Recovering from a catastrophic failure . . . . .	226
Repair and warranty information . . . . .	227
<i>Canada</i> . . . . .	227
<i>United States</i> . . . . .	227
<i>Europe</i> . . . . .	227
<i>Asia/Pacific</i> . . . . .	228
<i>CALA</i> . . . . .	228

<b>A</b>	<b>Planning forms</b>	<b>229</b>
	IP Adapter Network Connections . . . . .	230
	IP Adapter Configuration Information—Dialing Plans . . . . .	231
	IP Adapter telephone menu— Configuration Values . . . . .	232
<b>B</b>	<b>Connection pin-out tables</b>	<b>235</b>
	RJ-45 Ethernet connector . . . . .	236
	Admin (serial) connector pin-out table . . . . .	237
	Power connector pin-out table . . . . .	238
<b>C</b>	<b>Equipment attachment notice</b>	<b>239</b>
	Industry Canada . . . . .	240
<b>D</b>	<b>Safety and regulatory information</b>	<b>241</b>
	International safety compliance . . . . .	242
	<i>Underwriters Laboratory (UL)</i> . . . . .	242
	<i>Canadian Standards Association (CSA)</i> . . . . .	242
	<i>Europe</i> . . . . .	242
	<i>Australia</i> . . . . .	242
	<i>Other Countries Deviations Assessed</i> . . . . .	242
	Electromagnetic compatibility . . . . .	243
	Electromagnetic immunity . . . . .	244
	Electrostatic discharge . . . . .	245
	FCC requirements . . . . .	246
	<i>Part 68</i> . . . . .	246
	<i>Telephone network plug and jack</i> . . . . .	247
	<i>Equipment harmful to the telephone network</i> . . . . .	247
	<i>Party lines</i> . . . . .	247
	<b>Fields Index</b>	<b>249</b>
	<b>Index</b>	<b>253</b>



# Preface

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## About this document

### In this preface

About this guide	xvi
Product overview	xvii
Skills you need	xviii
Conventions used in this guide	xx
Related information products	xxii

# About this guide

The *Digital Telephone IP Adapter Installation and Administration Guide* (NTP 555-8421-211) is for telecom and data network managers and administrators who plan, install, and manage corporate telecommunications and data networks. This guide contains the following information:

- detailed descriptions of the Digital Telephone IP Adapter units
- procedures necessary to install, configure, and manage Digital Telephone IP Adapter units in a remote or branch office
- suggested troubleshooting procedures for addressing possible problems

This guide assumes that you are familiar with the following:

- basic telecommunications terminology
- basic networking terminology
- PC terminology and operation (specifically, Windows 95, 98, NT Workstation 4.0, Millennium Edition (ME), 2000 Professional, XP [Professional and Home Edition])
- Nortel PBX terminology, functionality, and administration

## How to use this guide

This guide provides step by step procedures for installing, configuring, and managing the Digital Telephone IP Adapter unit as a part of your remote services network. Review this guide before beginning Digital Telephone IP Adapter unit installation and configuration.

When you are ready to begin, follow the steps for planning, installing, and configuring your hardware in the order that they are presented in this guide. This helps you to achieve a successful, trouble-free installation.

## Product overview

Nortel proudly presents Digital Telephone IP Adapter remote telecommunications equipment. The *Digital Telephone IP Adapter Installation and Administration Guide* (NTP 555-8421-211) provides information on configuring and maintaining your Digital Telephone IP Adapter unit.

The Digital Telephone IP Adapter unit allows your remote site to access a Reach Line Card (RLC) installed in the host PBX. A properly completed installation supplies your remote location with the full host PBX and.

To identify and locate documentation for the other elements of your Remote Gateway 9100 Series network, refer to “Related information products” on page xxii.

## Skills you need

Knowledge of, or experience with, the following PC concepts as appropriate to your network is helpful when administering a Digital Telephone IP Adapter unit:

- Microsoft Windows
- software installation
- network configuration

### Nortel product knowledge

Knowledge of, or experience with, the following Nortel products and concepts:

- basic administration of a Meridian 1, Communication Server 1000S (CS 1000S), or Communication Server 2100 (CS 2100) PBX (telephone set and XDLC configuration)
- characteristics and principles of XDLC operation
- PBX data calls

### Telecommunications knowledge

Knowledge of, or experience with, the following aspects of telecommunications:

- digital telephone set configuration
- ISDN PRI configuration
- trunk configuration
- PBX configuration
- PBX maintenance (SDI operation)
- knowledge of RS-232 signaling

## Data networking knowledge

Knowledge of, or experience with, the following aspects of data networking:

- data link (Layer 2 of the OSI model)
  - IP protocol
  - routing
- network (Layer 3 of the OSI model)
  - addressing
  - traffic analysis and provisioning
  - configuration
- Voice over IP concepts

# Conventions used in this guide

This section describes the symbols and text conventions used in this guide.

## Precautionary messages

**Note:** A “Note” describes the secondary results of procedures or commands, or special conditions that require you to use a procedure or command.

**ATTENTION!** \_\_\_\_\_  
Provides information essential to the completion of a task.



### CAUTION

#### **Risk of data loss or equipment damage**

\_\_\_\_\_

Cautions you against unsafe practices or potential hazards, such as equipment damage, service interruption, or loss of data.

## Instructions for selecting menu options

To simplify the instructions for selecting menu options, this guide abbreviates the selection path. For example, if you must choose Telnet from the Logon Unit menu, under the Connect menu, this guide uses the following style:

From the menu, choose Connect → Logon Unit → Telnet.

## Instructions for displaying property sheets

To simplify the procedures for accessing property sheets throughout this guide, the instructions for displaying a particular property sheet are summarized in a “Getting there” statement.

The procedure for displaying the screen that you need depends on if you are:

- performing an online configuration (connected to a node by Telnet)
- performing an offline configuration (not connected to a node)

## Example

**Getting there** 911x → Configuration Manager → IP Configuration

The long instruction for this example is shown below.

- 1 Do the following:

IF	THEN
you are performing an offline configuration,	select the device type as described in “Selecting the device type for offline configuration” on page 125.
you are performing an online configuration,	connect to, and then log on to the node as described in “Logging on to a unit” on page 126.

- 2 In the left pane, click on the plus sign (+) beside Configuration Manager to expand the node list.
- 3 Click on **IP Configuration**.

**Result:** The IP Configuration property sheet for the Digital Telephone IP Adapter unit displays in the right pane.

## PBX terminology

Throughout this guide, the term “host PBX” refers to any of the following Nortel PBX platforms:

- Meridian 1 PBX
- CS 1000
- CS 2100

## Related information products

This section lists sources for additional information related to the Digital Telephone IP Adapter unit. You can order printed documentation and the CD-ROM from your Nortel distributor.

You can also download the documentation in Portable Document Format (PDF) from the Nortel website. To locate these documents, click on the **Technical Documentation** link at the following website:

**www.nortel.com**

**Note:** The information available on the website may supersede the information provided on the CD-ROM.

For further details, refer to *Remote Gateway 9100 Series and RLC Release Notes* (NTP 555-8421-102).

### Printed documents

The following documents provide additional information on Digital Telephone IP Adapter units and other elements of a Remote Gateway 9100 Series system:

#### ***Remote Gateway 9100 Series Network Engineering Guidelines*** **(NTP 555-8421-103)**

The Engineering Guidelines, written for the installer/administrator, describe how a Remote Gateway 9100 Series system integrates with existing telecommunications and data networks. This document helps you to ensure that your networks are prepared for Remote Gateway 9100 Series.

#### ***Remote Gateway 9100 Series and RLC Release Notes*** **(NTP 555-8421-102)**

The *Release Notes*, written for the installer/administrator, describe the features and known problems for the Reach Line Card (RLC), the Remote Gateway 9150 unit, Remote Gateway 911x series units, and Digital Telephone IP Adapter units.

***Reach Line Card Installation and Administration Guide  
(NTP 555-8421-210)***

The *Reach Line Card Installation and Administration Guide*, written for the installer/administrator, describes how to install, configure, and manage the Reach Line Card on the host PBX.

***Remote Gateway 9150 Installation and Administration Guide  
(NTP 555-8421-215)***

The *Remote Gateway 9150 Installation and Administration Guide*, written for the installer/administrator, describes how to install, configure, and manage the Remote Gateway 9150 unit.

***Remote Gateway 911x Series Installation and Administration Guide  
(NTP 555-8421-220)***

The *Remote Gateway 911x Series Installation and Administration Guide* written for the installer/administrator, describes how to install, configure, and manage Remote Gateway 911x series units.

**CD-ROM**

A Remote Gateway 9100 Series Product CD-ROM is available containing the documentation in Portable Document Format (PDF), firmware, and Remote Gateway 9100 Series Configuration Manager software.



# Chapter 1

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## Digital Telephone IP Adapter description

### In this chapter

Product Introduction	26
Hardware description	29
Connection options	35
How Digital Telephone IP Adapter units work	36
System security	42
Telephones	43
Online/Offline Table	50
Emergency service number	51
Remote Gateway 9100 Series Configuration Manager	52
Power requirements	53

# Product Introduction

Digital Telephone IP Adapter units provide full-featured host Private Branch Exchange (PBX) services to single users in small remote or home offices.

Digital Telephone IP Adapter units require each of the following components:

- a Digital Telephone Internal or External IP Adapter unit
- a Reach Line Card (RLC)
- a 10BaseT Ethernet interface to an Internet Access Device (IAD)

This section provides a brief description of each component used to provide Digital Telephone IP Adapter functionality.

## Digital Telephone Internal IP Adapter

The Digital Telephone Internal IP Adapter is a circuit card that fits in the base of a Meridian digital telephone set. The circuit card relays voice and signaling information between the digital telephone connected at your office and the RLC installed on the host PBX using the Internet Protocol (IP) network.

Refer to the following chapters for additional information:

- Chapter 3, “Installing the Digital Telephone IP Adapter unit”
- Chapter 4, “Configuring the IP Adapter unit using the telephone menu”, or Chapter 5, “Changing configuration settings using Configuration Manager”

## Digital Telephone External IP Adapter

The Digital Telephone External IP Adapter connects to the telephone set line cord of the digital telephone with a standard RJ-11 connector. The unit relays voice and signaling information between your digital telephone at a remote location and the RLC installed in the host PBX over the IP network. Refer to the following chapters for additional information:

- Chapter 3, “Installing the Digital Telephone IP Adapter unit”
- Chapter 4, “Configuring the IP Adapter unit using the telephone menu”, or Chapter 5, “Changing configuration settings using Configuration Manager”

## Reach Line Card

The Reach Line Card (RLC), installed in the host PBX, provides service for up to 16 ports on a single-slot card or 32 ports on a double-slot card. The RLC emulates a standard digital line card (XDLC), providing PBX functionality for telephones at remote locations (including sites using the Digital Telephone IP Adapter unit).

The RLC relays voice and signaling information between the remote digital telephone and the host PBX over the IP network.

For a more detailed description, refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210).

## Voice over IP technology

The Digital Telephone IP Adapter unit uses Nortel proprietary Voice over IP technology to send voice and data signals between your office and the host PBX through the existing IP data network.

## Configuration - device and software

To make the Digital Telephone IP Adapter unit operational, some configuration is required. You can use the following tools to configure the Digital Telephone IP Adapter unit:

- telephone menu

You must use the telephone menu to configure the Digital Telephone IP Adapter unit initially.

For detailed instructions on using the telephone menu, refer to Chapter 4, “Configuring the IP Adapter unit using the telephone menu”.

- Remote Gateway 9100 Series Configuration Manager

Remote Gateway 9100 Series Configuration Manager is a Windows-based application for accessing the Digital Telephone IP Adapter unit configuration settings. Once you have configured the Digital Telephone IP Adapter unit, you can use Configuration Manager to make configuration changes and perform ongoing administration.

For more details, refer to Chapter 5, “Changing configuration settings using Configuration Manager”, and Chapter 7, “Administration”.

# Hardware description

This section describes the LED indicator displays, power supply, cables, connectors, and Internet Access Devices (IAD) for the Digital Telephone IP Adapter units.

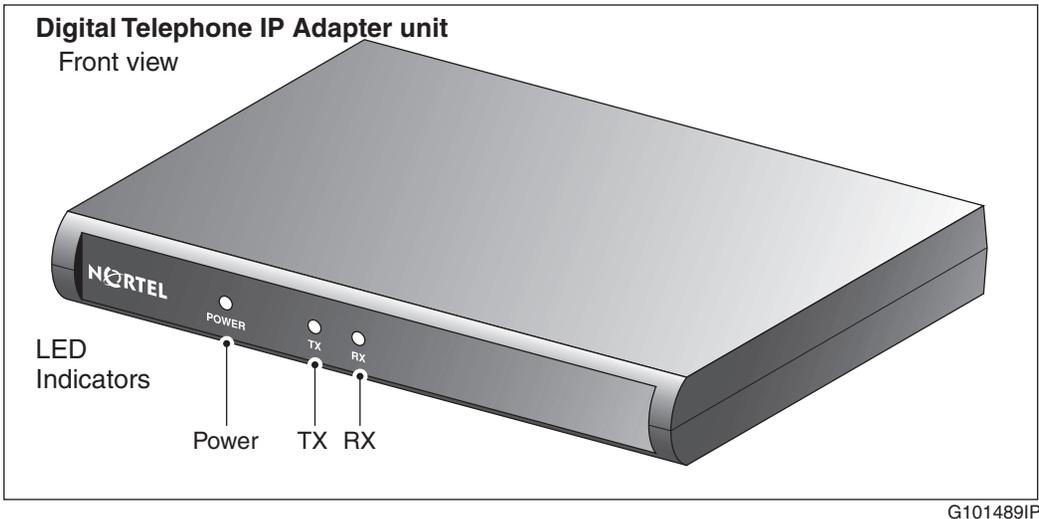
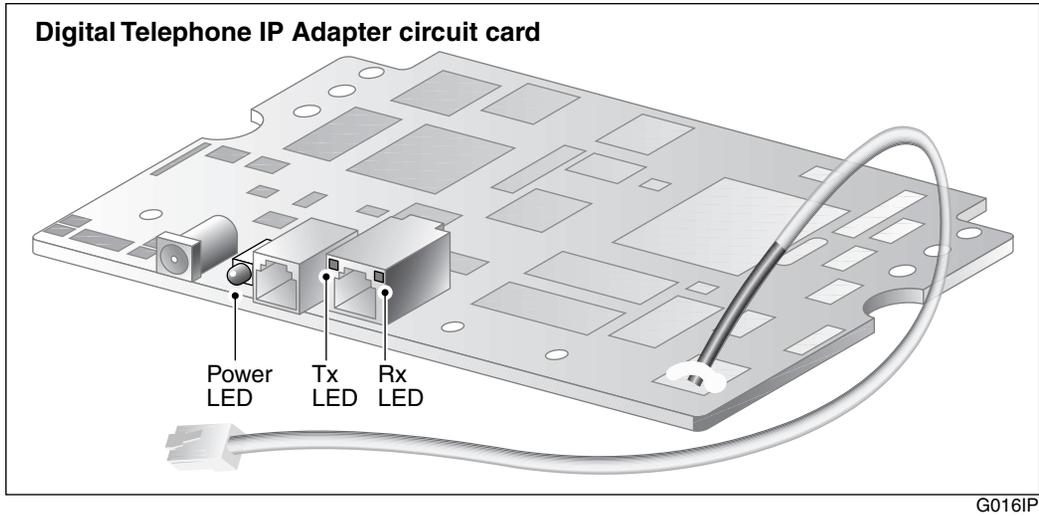
## Digital Telephone IP Adapter unit LED indicators

The operational status of the Digital Telephone IP Adapter unit is indicated by LEDs mounted on the following:

- telephone set footstand for the Digital Telephone Internal IP Adapter
- front panel of the Digital Telephone External IP Adapter

<b>LED Indicator Type</b>	<b>LED Indicator Name</b>	<b>Description</b>
Power	On	When lit, this LED indicates that power is present.
IP network	TX	When flashing, this LED indicates that data is being transmitted over the Ethernet network.
	RX	When flashing, this LED indicates that data is being presented to the Digital Telephone IP Adapter unit over the Ethernet network.

## Digital Telephone IP Adapter unit LED indicator display diagrams



## Digital Telephone Internal IP Adapter

The Digital Telephone Internal IP Adapter provides the connections listed below:

- a female RJ-45 connector (labeled ETHERNET) for a 10BaseT Ethernet connection to an Internet Access Device
- a female RJ-11 connector (labeled LINE) for an analog connection to the PSTN

This connector is not used for the Digital Telephone Internal IP Adapter circuit card.

- a male RJ-11 connector on an approximately six-inch TCM cable for the connection between the circuit card and the digital telephone.

## Digital Telephone External IP Adapter

The Digital Telephone External IP Adapter provides the connections listed below:

- a female RJ-45 connector (labeled ETHERNET) for a 10BaseT Ethernet connection to an Internet Access Device
- a female RJ-11 connector (labeled LINE) for an analog connection to the PSTN

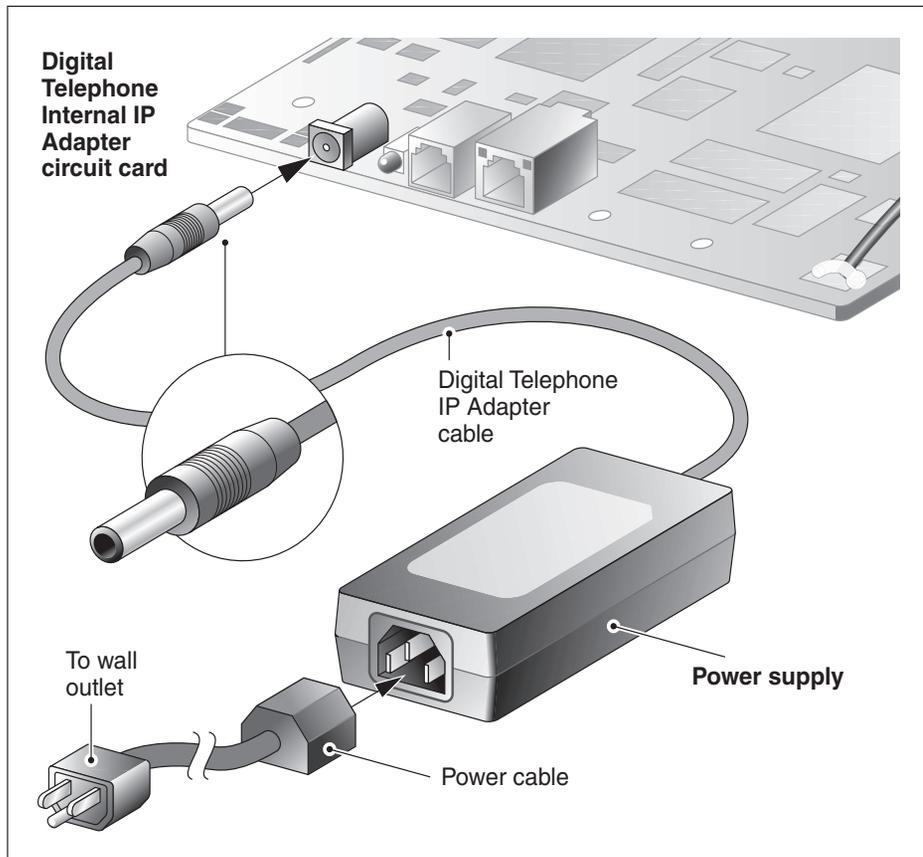
This connector is not used for the Digital Telephone External IP Adapter unit.

- a female RJ-11 connector (labeled D PHONE) for a connection to the digital telephone
- a DB-9 connector (labeled ADMIN) provides an RS-232 connection to the serial port of a PC

**Note:** The ADMIN port on the Digital Telephone External IP Adapter is for field service use only.

## Universal power supply support - Digital Telephone Internal IP Adapter

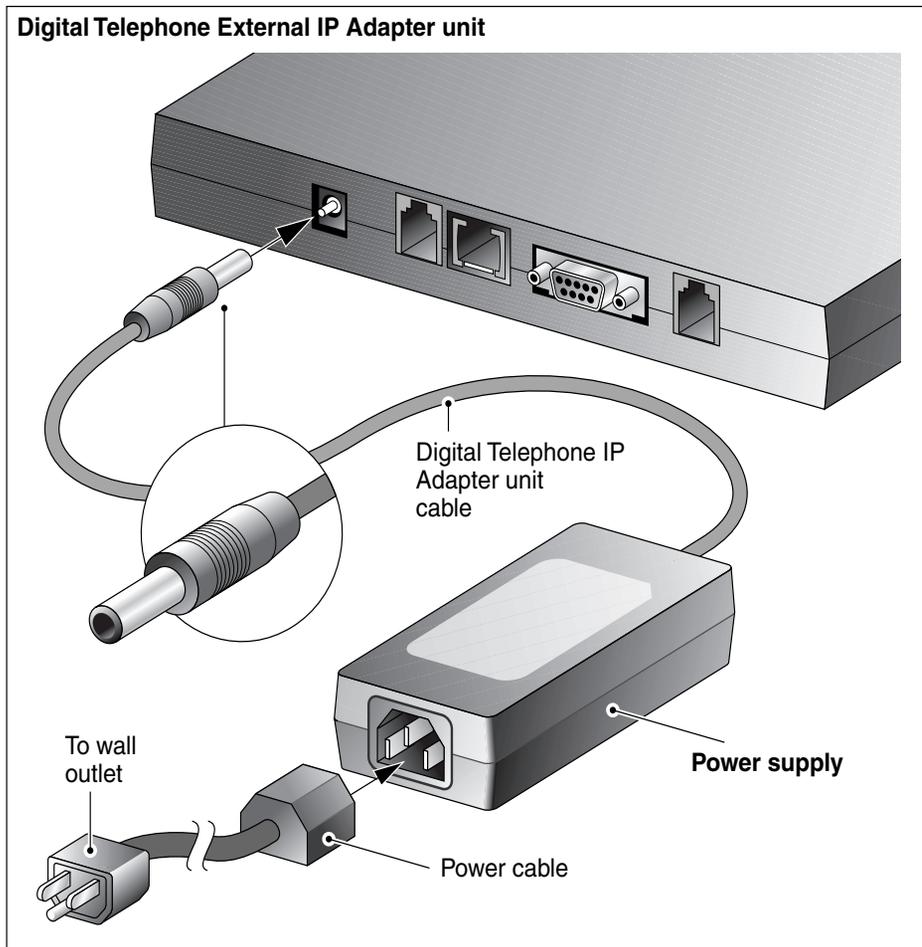
The Digital Telephone Internal IP Adapter requires a 0.5A/24V power supply. To order the power supply from your Nortel distributor, request part number NTDR91xx. (The “xx” represents the vintage and can vary.) The design of this power supply, shown in the following illustration, accommodates North American, British (U.K.), and European standards.



G017

## Universal power supply support - Digital Telephone External IP Adapter

The Digital Telephone External IP Adapter requires a 0.5A/24V power supply. To order the power supply from your Nortel distributor, request part number NTDR91xx. (The “xx” represents the vintage and can vary.) The design of this power supply, shown in the following illustration, accommodates North American, British (U.K.), and European standards.



G101532IP

## Internet Access Device description

If you are using a 10BaseT Ethernet LAN at the remote site, you can connect the Digital Telephone IP Adapter unit to any high-speed Internet Access device. The following are some commonly-used devices:

- ISDN Basic Rate Interface (BRI) router  
A BRI router is designed to send voice and data traffic across an ISDN line.
- digital subscriber line (xDSL) modem  
An xDSL modem transmits digital information at high bandwidth on existing phone lines. The xDSL modem can send and receive data at a rate of 512 Kbps to 6 Mbps. An example, is the 1-meg modem.
- cable modem  
A cable modem is used on cable TV lines so that customers can dial up to their Internet service providers over a cable line, instead of a telephone line.

Refer to the *Remote Gateway 9100 Series Network Engineering Guidelines* (NTP 555-8421-103) for detailed information on the interaction of the Digital Telephone IP Adapter unit with the IP Network.

## Connection options

Communications between the Digital Telephone IP Adapter unit in your office and the host PBX takes place using 10BaseT Ethernet interface to an Internet Access Device (IAD) on a corporate wide area network (WAN). This section provides a description of this connection.

### 10BaseT Ethernet interface

The Digital Telephone IP Adapter unit uses Nortel proprietary Voice over IP (VoIP) technology over the IP network to the host PBX. Voice data is forwarded as UDP/IP packets and the signalling data as TCP/IP packets. You can connect the Ethernet interface to an Internet Access Device such as a BRI router, an xDSL modem, or cable modem. For more information, refer to the “Internet Access Device description” on page 34.

**Note:** The Digital Telephone IP Adapter uses a half-duplex 10BaseT Ethernet connection.

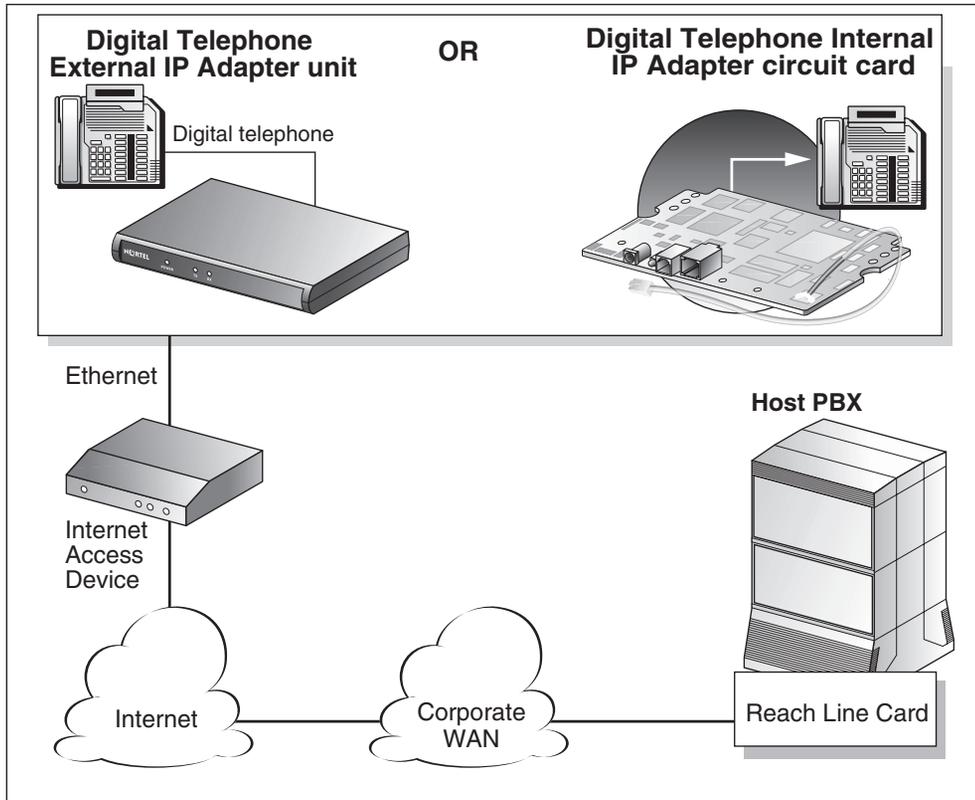
# How Digital Telephone IP Adapter units work

There are two major components to the Digital Telephone IP Adapter units. They are:

1. the Digital Telephone Internal or External IP Adapter unit located at the remote location
2. the RLC located on the host PBX

These two components, along with the connection options described on page 35, extend the host PBX services to a remote user.

## IP network diagram



G018

## Outgoing call process

To place outgoing calls, users can either pick up the handset on the telephone or press the line key. For a detailed description of the outgoing call process, refer to the sample illustrations beginning on page 38.

## Incoming call process

When someone places a call through the host PBX to a Digital Telephone IP Adapter unit, the RLC connects to the remote unit. The host PBX then completes the call normally. If the RLC cannot establish a connection, the call rings until the host PBX forwards the call to voice mail. Refer to Chapter 6, “Using the digital telephone”, for a more detailed description of the incoming call process.

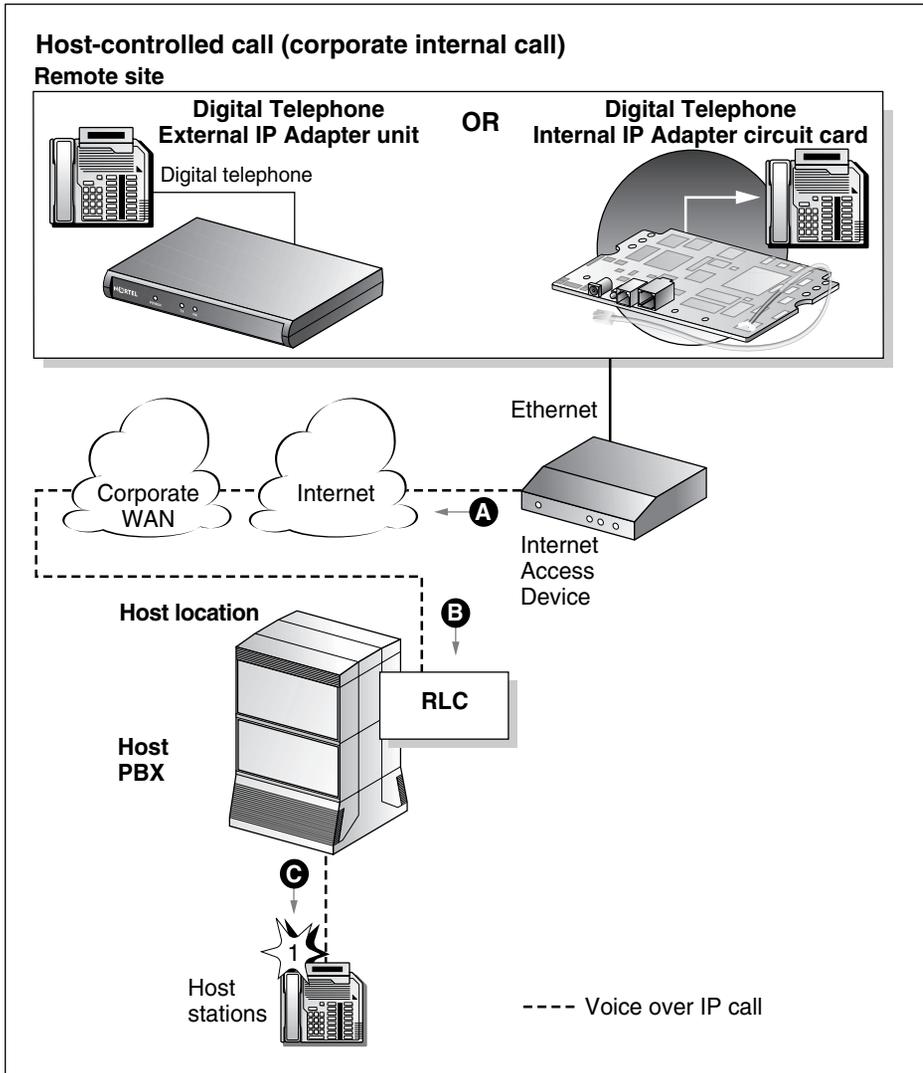
**Note:** After a power failure, a Digital Telephone Internal or External IP Adapter unit comes back online and answers all incoming calls. To prevent the unit from staying online indefinitely after a power outage, enter a single Offline command in the unit's Online/Offline table for the week. Use SPRE codes to go online and offline. For more information on the Online/Offline table, refer to “Online/Offline Table” on page 50. For more information on SPRE codes, refer to “Going online and offline” on page 152.

## Host-controlled call mode

When you place a call to someone at the host site, or when someone from the host site calls you, the call is in host-controlled call mode. Calls in host-controlled mode are routed through the host PBX. Refer to the sample illustrations beginning on page 38.

### Call scenario 1: host-controlled—corporate internal call

The following diagram shows how a call is routed when placing a host-controlled call over the IP network to the corporate office:



G019IP

Calls work the same in reverse, from the host PBX site to the Digital Telephone IP Adapter unit site.

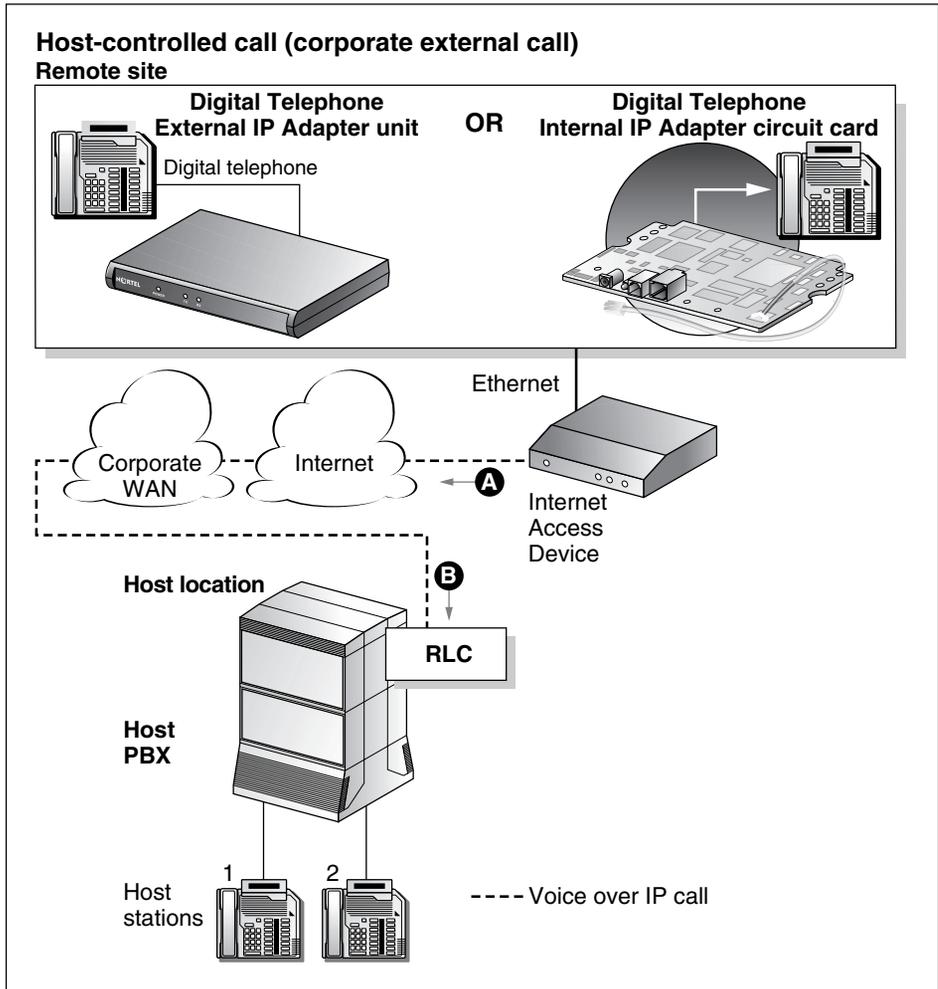
### **Voice over IP network call**

- 1** The Digital Telephone IP Adapter user lifts the handset (item A).  
**Result:** The Digital Telephone IP Adapter user hears a dial tone. This indicates a successful connection to the RLC over the IP network (item B).
- 2** The Digital Telephone IP Adapter user dials a telephone number, such as the extension number of host station 1.  
**Result:** The Digital Telephone IP Adapter unit sends the dialed digits as packets through the IP network to the Ethernet network or Corporate WAN to the RLC. The RLC converts the packets to the format required by the host PBX.
- 3** The host PBX then converts the data to voice and routes the call to host station 1 (item C).

**Note:** Item notations in parentheses refer to circled markers in the diagram on page 38.

## Call scenario 2: host-controlled—corporate external call

The following diagram shows how a call is routed when placing a host-controlled call to a party outside the organization using a Digital Telephone IP Adapter unit. Calls work the same in reverse, from the host PBX site to the Digital Telephone IP Adapter unit site.



G0201P

## Voice over IP network call

- 1 The Digital Telephone IP Adapter user lifts the handset (item A).  
**Result:** The Digital Telephone IP Adapter user hears a dial tone. This indicates a successful connection to the RLC over the IP network and the corporate WAN (item B).
- 2 The Digital Telephone IP Adapter user dials the external telephone number.  
**Result:** The Digital Telephone IP Adapter unit sends the dialed digits as packets across the Ethernet network. The packets go through the IP network and the corporate WAN, to the RLC. The RLC converts the packets to the format required by the host PBX. The host PBX then converts the data to voice and routes the call to the called party (host stations 1 and 2).

**Note:** Item notations in parentheses refer to circled markers in the diagram on page 40.

# System security

There are two levels of security that you can set to control access from Digital Telephone IP Adapter units to the RLC on the host PBX. This section describes these security levels and how you can manage them using Remote Gateway 9100 Series Configuration Manager.

## No security

When no security measures are used, the RLC accepts incoming calls from all Digital Telephone IP Adapter units.

Use this level with caution as it exposes the RLC to unauthorized use. For example, No security allows a user from an unauthorized remote site can accidentally, or intentionally, connect to the RLC. With this connection made, the unauthorized user can now place long distance phone calls through the RLC and the host PBX.

## Security identifier

When you choose the security identifier level of security, the Digital Telephone IP Adapter automatically sends its configured security identifier (password) for each connection request. The RLC compares the identifier configured to the RLC port with the identifier assigned to the Digital Telephone IP Adapter. If the identifiers match, then the RLC grants the requested connection.

If the identifiers do not match, then the RLC records an event in the Digital Telephone IP Adapter system log. You can view the system log in Remote Gateway 9100 Series Configuration Manager. The telephone displays `HOSTLESS MODE`, indicating that communications with the host PBX are down.

# Telephones

This section lists the telephones, features, and modules supported by the Digital Telephone IP Adapter unit.

## Supported digital telephones

Digital Telephone IP Adapter units support the following digital telephone sets with display:

- M2008D
- M2008HFD
- M2216D
- M2616D
- M3310
- M3820
- M3902
- M3903
- M3904
- M3905

Your digital telephone must have a one or two-line display in order to configure the Digital Telephone IP Adapter unit with the telephone display menu.

### Notes:

1. Because it is a discontinued model, the M2616CT cordless digital telephone set is no longer supported.
2. When you update the message on the host PBX that displays when the digital telephone set is idle, you must unplug the digital telephone set and plug it back for the change to take effect.
3. You must re-boot a Digital Telephone IP Adapter unit after unplugging and re-plugging the telephone cord of its associated digital telephone set.
4. Auto Answer Back (AAB) activation on M26xx series digital telephone sets on Remote Gateway 9100 Series units connected to CS 2100 PBXs does not produce a dial tone. The digital telephone sets operate properly, but no dial tone is present. To produce dial tone in this situation, configure the port on the RLC as a TAPI port.

**Notes for M39xx series digital telephone sets:**

1. To label the Local Keys on M3902 digital telephone sets, use the options key on the digital telephone set itself.
2. If you downgrade the host PBX to a release prior to X11 release 25.40, you must also downgrade any new or upgraded M39xx digital telephone sets so that the Meridian 1 PBX can support them. This applies to digital telephone sets attached to Remote Gateway 9100 Series units and Extended Digital Line Cards.
3. The M3904 digital telephone set Key Map fails using Virtual Office on Remote Gateway 9100 Series. Upgrade the digital telephone set's firmware to version 8.3 to resolve this problem.
4. Uploading and downloading M3904 and M3905 firmware requires the most recent digital telephone set hardware. To resolve problems following firmware uploads and downloads, including missing functionality, refer to the User Guide and Release Notes for your particular digital telephone set.
5. Flash upgrade download times to remote M39xx digital telephone sets over an IP network with low delay and packet loss are comparable to PBX wired downloads.

## M2000 series (European models M3310 and M3820) and M39xx series digital telephone set model and accessory compatibility

The following tables show Digital Telephone IP Adapter compatibility with M2000 series (M3310 and M3820 European models) and M39xx digital telephone set models and accessories:

<b>Digital Telephone Set Models<sup>i</sup></b>	<b>Digital Telephone Internal IP Adapter</b>	<b>Digital Telephone External IP Adapter</b>
M2008D, M2008HFD	✓	✓
M2616D	✓	✓
M2216D-ACD	✓	✓
M2616CT Cordless	Discontinued	Discontinued
M3310, M3820 (Europe only)	✓	✓
M3902, M3903		✓
M3904		✓
M3905 (ACD)		✓
<b>M2000 series (M3310 &amp; M3820 European models) Add-on Modules</b>		
Headsets	✓	✓
External alert	✓	✓
Key-based expansion module	✓	✓
ATA (Analog Terminal Adapter)		
MCA (Meridian Communications Adapter)		

- i. The host PBX must be running software capable of supporting each digital telephone set model used.

## M39xx series digital telephone set accessory compatibility

The following table shows Remote Gateway 9150 unit compatibility with M39xx series digital telephone set accessories.

M39xx series Digital Telephone Set Accessories and Add-on Modules	Digital Telephone IP Adapter units
Headsets	✓
External alert & recording interface	✓
Key-based expansion module (22-button, up to two for each 3904/05)	✓
Display-based expansion module	✓
ATA (Analog Terminal Adapter)	
Personal Directory PC utility	✓
Full-duplex Speakerphone	✓
CTI (Computer Telephony Integration) Adapter	✓

## Required footstand for Digital Telephone Internal IP Adapter units

The Digital Telephone Internal IP Adapter unit installs in the footstand of the Meridian Digital Telephone. The required ATA/MCA footstand is standard on Meridian Modular Telephones (M2000 series) with a date code of May 6, 1998 or later. Contact your Nortel distributor to obtain the required footstand if your telephone has an earlier date code.

## Supported telephone modules

Digital Telephone IP Adapter units support the following telephone modules:

- add-on modules to add more keys to the digital telephone
- application modules to provide more functionality to the digital telephone

**Note:** Digital Telephone Internal IP Adapter units do not support Meridian Communication Adapters (MCAs) or Analog Telephone Adapters (ATAs).

## Supported telephone features

The Digital Telephone IP Adapter units support all features provided by the host PBX for host-controlled calls. The following are some examples:

- ACD features
- call forward
- conference
- call waiting
- hold
- transfer

**Note:** Dial tone for conference and transfer can be very rough. A stutter can be heard during a remote dial tone. This is a normal occurrence and is caused by the DSP activating a dial tone relay.

Refer to Chapter 6, “Using the digital telephone”, for a detailed description of the features listed above.

## Computer telephony integration applications

You can use the following two types of computer telephony integration (CTI) applications:

1. first-party CTI applications that use the Symposium Desktop Telephone Application Programming Interface (TAPI) Service Provider
2. third-party CTI applications that use Symposium TAPI Service Provider for M1

You can use both types with the Digital Telephone IP Adapter unit.

## Automatic Call Distribution (ACD) applications

The Digital Telephone IP Adapter supports all Nortel Automatic Call Distribution (ACD) applications.

If an ACD agent loses communication to the Digital Telephone IP Adapter unit, or the unit goes offline, the agent is placed in Make Set Busy (MSB) mode. This mode logs the agent out of the ACD queue so that calls can be routed to other ACD agents. Once you re-establish communication between the agent and the Digital Telephone IP Adapter, the digital telephone set display shows “Set Busy Activated”.

In addition, when an ACD agent is on a call using a Local Calling key, the Digital Telephone IP Adapter unit sends a transparent Not Ready key press to the host PBX and places the ACD agent’s digital telephone set in Not Ready mode. This feature prevents the ACD agent from receiving ACD calls when active on a local call. The Digital Telephone IP Adapter unit removes the digital telephone set from the Not Ready mode when the agent terminates the local call.

If you are having trouble with ACD agents being logged off unexpectedly or calls that terminate prematurely, try the following:

- Set the User On Demand Idle Timer to 90 seconds and the User On Demand Minimum Call Timer to 1 second.

**Note:** You can configure these settings on the RLC’s Remote Connection Configuration property sheet in Configuration Manager.

- Allocate a permanent connection for the ACD agents.
  - On the RLC Port Configuration property sheet, click on the **Configure** button for the Network Port in question.
  - In the Network Port Configuration dialog box, select Permanent Allocation.

## Communications system and software requirements

The following table shows the software versions necessary to run Digital Telephone IP Adapter units on compatible Nortel's communications systems.

### Digital Telephone IP Adapter units

Communications system <sup>i</sup>	System software version
Meridian 1 PBX	X11 release 23 or higher
CS 1000	Release 2 or higher
CS 2100	Release MSL12 or higher

i. Requires Remote Gateway 9100 Series software version 1.5 or higher.

## Supported Codecs

The following tables show the Codecs supported by the Digital Telephone IP Adapter unit, as well as the data stream, and approximate peak bandwidth required by each.

### Digital Telephone IP Adapters

CODEC	Data stream only	Approximate peak bandwidth, including IP overhead (30 ms voice packets)
G.711	64 Kbps	78 Kbps
G.729A	8 Kbps	22 Kbps

## Online/Offline Table

Configure the Online/Offline table on the RLC to schedule the times that you want to make the host PBX available to the Digital Telephone IP Adapter unit.

**Note:** When the Digital Telephone IP Adapter unit is in offline mode, you cannot use it to place or receive calls.

You can define up to eight entries per day, every day of the week for each Digital Telephone IP Adapter unit site. You can define each entry as online, offline, or undefined for each time period entered.

You can override the settings of the Online/Offline table if the table attempts to suspend access to the connection in the middle of a business call. You are alerted by a tone and a display message 30, 20, and 10 seconds before the connection is terminated. To override connection termination, you must enter the online SPRE (Special Prefix) code on the telephone.

You can configure an online/offline table for each remote site on the RLC. Refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for configuration information.

## Emergency service number

To make an emergency service call, you must use a PSTN telephone. The Digital Telephone IP Adapter unit does not support emergency service calls.

**ATTENTION!**

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You must place emergency service calls on a telephone that is directly connected to a PSTN line. If you place an emergency service call from a station that is connected to a Digital Telephone IP Adapter unit, the RLC routes the call through the host PBX. (The host PBX could be in a different city.)

# Remote Gateway 9100 Series Configuration Manager

After the initial configuration is complete, you can use Remote Gateway 9100 Series Configuration Manager administration software to make configuration changes and administer the Digital Telephone IP Adapter unit. Refer to Chapter 5, “Changing configuration settings using Configuration Manager”. The software is a Windows-based application that is installed on your PC.

Administration tasks include the following:

- viewing the system status
- performing upgrades, backups, or restores
- making configuration changes
- changing the administration password

**Note:** You must use the telephone set menu to configure the Digital Telephone IP Adapter unit for the first time. Refer to “Before you begin” on page 84 for a detailed telephone menu description.

## Power requirements

This section lists characteristics of the recommended power supplies for the Digital Telephone IP Adapter units.

### Input specifications

Input specifications for the Digital Telephone IP Adapter units are as follows:

<b>Characteristic</b>	<b>Rating</b>
voltage	90 - 264 VAC
frequency	47 - 63 Hz
current	0.4A maximum

### Output specifications

Output specifications for the Digital Telephone IP Adapter units are as follows:

<b>Characteristic</b>	<b>Rating</b>
voltage	24 VDC +/-5%
current	0.62A maximum
power	15W maximum



# Chapter 2

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## Planning for installation

### In this chapter

Physical environment	56
Administration PC	59
Network considerations	62
Deployment	64

# Physical environment

This section provides the space, temperature, cabling, and mounting information you need to know before you install Digital Telephone IP Adapter units.

## Space

Insert the Digital Telephone IP Adapter into the base of a digital telephone set. The dimensions for the circuit card are as follows:

- 16.5 cm (6.5 inches) wide
- 8.8 cm (3.5 inches) deep

Place the Digital Telephone IP Adapter on a desk, or mount it on the wall. The dimensions for the unit are as follows:

- 18.2 cm (7.2 inches) wide
- 9.9 cm (3.9 inches) deep

## Temperature

The table on the following page describes the temperature and humidity conditions that the Digital Telephone IP Adapter unit can withstand without any performance degradation or damage.

<b>Specification</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Normal operation</b>		
Recommended:		
■ Temperature (Ambient)	■ 0°C (32°F)	■ 40°C (104°F)
■ Relative humidity	■ 10%	■ 95% (non-condensing)
<b>Storage</b>		
Recommended temperature	-40°C (-40°F)	70°C (158°F)
Relative humidity	5%	95% RH (non-condensing)
<b>Power consumption</b>		
Voltage		24VDC
Current		0.3A

## Mounting options

Place the Digital Telephone External IP Adapter on a desk, or mount the unit on the wall. If mounting on the wall, make sure that the chosen location allows you to easily view the LED indicators on the front panel.

**ATTENTION!** Installation on the wall must be completed using standard telephony installation practices.

## Cables included with the Digital Telephone Internal IP Adapter

The Digital Telephone Internal IP Adapter package includes a power cord and power supply.

## Cables included with the Digital Telephone External IP Adapter

The Digital Telephone Internal IP Adapter package includes the following cables:

- 1.83 meter (6-foot) RJ-11 telephone cord
- a power cord and power supply

## Cables you must supply yourself

The following cables used to establish the network connections are industry-standard cables and are not provided in the Digital Telephone External IP Adapter package.

- Ethernet cable (CAT 5)
- telephone cable
- serial cable for the Digital Telephone External IP Adapter

You must obtain these cables from your local cable supplier.

# Administration PC

This section describes the way that you can connect an administration terminal to the Digital Telephone IP Adapter unit. It also describes the hardware and software requirements for using the Configuration Manager administration software.

## Connection options

The Digital Telephone IP Adapter system includes the Configuration Manager software that enables you to configure, administer, and upgrade the Digital Telephone IP Adapter unit. You can connect to Digital Telephone IP Adapter unit with Telnet to use Configuration Manager, or using the digital telephone set menu.

You can access Configuration Manager using a 10BaseT Ethernet connection for ongoing administration and upgrade of Digital Telephone IP Adapter units.

**Note:** Use the telephone set menu for first-time configuration of Digital Telephone IP Adapter units.

## Ethernet connection

Once you configure the Digital Telephone IP Adapter unit with its IP interface information, the following can occur:

- You can establish communication between the Digital Telephone IP Adapter unit and the RLC (that is, calls can be routed over the data link between the two).
- You can administer the Digital Telephone IP Adapter unit over the data link between the unit and the RLC. For more information, refer to Appendix , “Administering multiple nodes in the network,”.

## Administering multiple nodes in the network

If you are responsible for administering one or more Digital Telephone IP Adapter units and the RLC on the host PBX, you can access them and the RLC from anywhere on the network.

**Note:** You do not have to install separate administration PCs for the RLC and the Digital Telephone IP Adapter unit(s). You can use one administration PC to administer all units in the Remote Gateway 9100 Series network.

## Windows PC requirements

To use Configuration Manager, the administration PC must:

- be an IBM-compatible PC
- use a Windows 95, 98, NT Workstation 4.0, Millennium Edition (ME), 2000 Professional, or XP (Professional and Home Edition) operating system with the Microsoft TCP/IP networking component installed
- be equipped with a CD-ROM drive
- be equipped with a 10BaseT Ethernet interface card (this provides access to the Ethernet network)
- have an available COM port if you wish to use the RS-232 serial port to establish a direct serial connection
- be equipped with a pointing device, such as a mouse
- have 32 Mbytes of RAM for Windows 95, 98, and ME, or 64 Mbytes of RAM for Windows NT Workstation 4.0, 2000 Professional, and XP (Professional and Home Edition)
- have 48 Mbytes of available storage for Windows 95, 98 and ME, or 64 Mbytes of available storage for Windows NT Workstation 4.0, 2000 Professional, and XP (Professional and Home Edition)

**Note:** Configuration Manager does not support any of the Win32 Server versions of Microsoft Windows.

### **Trivial File Transfer Protocol (TFTP) server**

A TFTP server is required for performing firmware upgrades and configuration uploads. You can use any TFTP server application. TFTP server applications are available from the Internet.

### **Year 2000 compliance**

The Digital Telephone IP Adapter unit and Configuration Manager software are Year 2000 compliant. However, you must ensure that the administration PC is Year 2000 compliant by verifying that the Windows operating system is shown in this table:

<b>Operating system</b>	<b>Year 2000 compliance requirement</b>
Windows 95	Version 95b
Windows 98	OK as is
Windows NT Workstation 4.0	Service Pack 5 or higher
Windows 2000	Ok as is
Windows ME	Ok as is
Windows XP	OK as is

### **Optivity Telephony Manager and Configuration Manager**

Nortel does not guarantee that Optivity Telephony Manager (OTM) and the Configuration Manager can operate simultaneously on the same administration PC. Simultaneous running of these two applications has not been tested and is, therefore, not supported.

# Network considerations

Refer to the *Remote Gateway 9100 Series Network Engineering Guidelines* (NTP 555-8421-103) for detailed information on planning and preparing your network for the addition of IP Adapter units. The Digital Telephone IP Adapter unit communicates with the host PBX using the IP network. To use the Digital Telephone IP Adapter unit in these networks, you must consider the issues described in this section.

## IP addressing and routing

To place and receive calls over the IP network, you must:

- physically connect the Digital Telephone IP Adapter unit to the IP network
- assign a unique IP address and a subnet mask to the Digital Telephone IP Adapter unit, unless using Dynamic Host Configuration Protocol (DHCP)  
**Note:** Similarly, you must assign a subnet mask, gateway, and unique IP address to the RLC on the host PBX.
- have the ability to send and receive traffic to and from the RLC on the host PBX

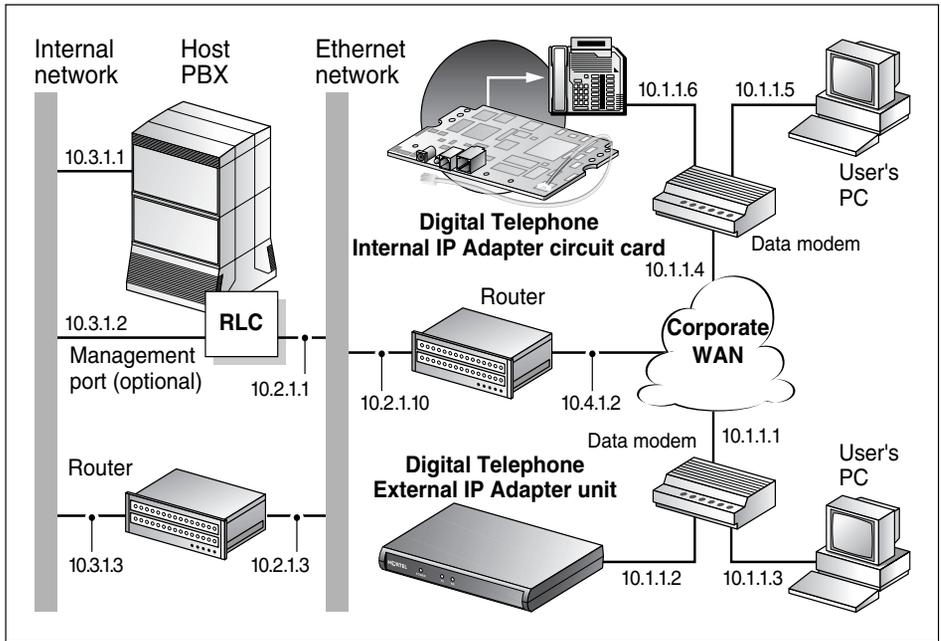
## Determining DHCP assigned IP addresses

If you use DHCP at the remote location, determine the Remote Gateway 9100 Series unit's IP address by checking the Network statistics for the RLC through Configuration Manager. Log onto Configuration Manager, choose the RLC as the Device Type, and then access Alarms/Stats/Logs → Network Statistics. Enter the Unit ID of the Remote Gateway 9100 Series unit that you want to review the statistics for. The DHCP assigned IP address displays at the top of the window.

**Note:** If you are using a Network Address Translation (NAT) router at the remote location, the IP address provided is a NAT address. To access the Remote Gateway 9100 Series unit using Telnet, ensure that the NAT router allows Telnet access to TCP port 23, and for upgrades, TCP port 69.

### Network diagram

The following diagram shows the Digital Telephone IP Adapter unit's position in an IP network.



G101520IP

# Deployment

This section presents the Digital Telephone IP Adapter unit deployment models (options) that are supported by Nortel.

## Transport media

You can only configure the Digital Telephone IP Adapter unit on the RLC to use the IP network. For further details on this configuration, refer to Priority under Remote Port Configuration in the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210).

## Network Address Translation (NAT)

Some network routers run the NAT protocol that allows multiple devices in the IP network to share the same broadband IP address. An alternative to running the NAT protocol is to have the network administrator provide each device with its own broadband IP address.

Digital Telephone IP Adapter units support NAT functionality, if this functionality is enabled on your network. You can only connect a single Digital Telephone IP Adapter unit behind a NAT router. You can connect multiple Digital Telephone IP Adapter units behind a Network Address and Port Translation (NAPT) router. If you are not sure whether yours is a NAT router or a NAPT router, check with your vendor.

You must configure your Digital Telephone IP Adapter unit for IP permanent allocation if it is connected behind a NAT router. You can assign a static IP address to your Digital Telephone IP Adapter unit, or you can use DHCP to obtain its IP address.

Translation tables within NAT routers control the communication path from the private network to the public network. Most NAT devices contain timers that monitor the translation table entries. Each time the device uses a translation table entry, 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 Digital Telephone IP Adapter 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 is a remote user listening to a conference call with the user's digital telephone set on mute. After five minutes (the default NAT translation table timer on many NAT routers) the router drops the voice path. The remote user is no longer able to hear the conference. To restore the NAT table entry and recover the audio path, the remote user can go off mute and speak into the digital telephone set.

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

## IP deployment

Before deploying your Digital Telephone IP Adapter unit, ensure that you engineer the IP network properly. You can configure a permanent (Model 1) or on-demand (Model 2) IP connection. The following guidelines describe requirements, conditions, and characteristics of each supported IP deployment option:

### Model 1: IP permanent

If using DSL or a cable modem, configure an IP permanent connection.

- The Digital Telephone IP Adapter unit re-establishes its TCP/IP signaling session to the RLC once per minute.
- The Digital Telephone IP Adapter unit supports both static IP and, through DHCP, dynamic IP addressing
- Do not configure a remote IP address on the RLC.
- One virtual private network (VPN) supports multiple Digital Telephone IP Adapter units.
- One Network Address Translation (NAT) router supports only one Digital Telephone IP Adapter unit.
- One Port number and Network Address Translation (PNAT) router supports multiple Digital Telephone IP Adapter units.

- The RLC requires an IP address that the Digital Telephone IP Adapter unit can access.

### **Model 2: IP on-demand**

If your BRI routers incur toll charges, configure an IP on-demand connection.

- TCP/IP signaling sessions between the RLC and the Digital Telephone IP Adapter unit close when calls end.
- Configure a static IP address for the Digital Telephone IP Adapter unit on the RLC for best service.
- IP on-demand configuration supports VPNs.
- IP on-demand configuration does not support NAT or PNAT routers.
- Both the RLC and Digital Telephone IP Adapter unit require IP addresses that are accessible from the other unit.

# Chapter 3

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## Installing the Digital Telephone IP Adapter unit

### In this chapter

Preparing for installation	68
Installing the Digital Telephone Internal IP Adapter circuit card	70
Installing the Digital Telephone External IP Adapter unit	76
Testing the network connection	82

# Preparing for installation

This section shows you how to prepare for the installation of the Digital Telephone IP Adapter unit.

## General Safety

The following is a list of general safety measures to be considered when installing the Digital Telephone IP Adapter unit.

- Do not ignore the warnings, in the guide, about the risks related to installing and handling hardware. For a description of the types of warnings this guide provides, refer to “Conventions used in this guide” on page xx in the Preface.
- Follow these safety precautions at all times to avoid damage or injury:
  - Plug the Digital Telephone IP Adapter unit into a properly grounded power source to reduce the possibility of electric shock and damage to the unit or network.
  - Ensure that nothing rests on connection cables, and that cables cannot be tripped over or stepped on.
- Protect the equipment against Electrostatic discharge (ESD). ESD affects the performance and decreases the useful life of system components. ESD can seriously damage component parts such as circuit cards. Implement the following precautions that are recommended by computer and telephone equipment manufacturers:
  - Remove items that generate static charge from the installation site.
  - Use antistatic spray if the site is carpeted.
  - Ground yourself before handling any equipment.

## Required hardware and software tools

You need the following tools for hardware and software installation:

- antistatic ESD wrist strap (recommended)
- Phillips-head screwdriver and two number eight wood screws (if you want to mount the Digital Telephone External IP Adapter on the wall)
- *Remote Gateway 9100 Series Product CD-ROM*
- PC with a CD-ROM drive or an Internet connection for obtaining software, firmware, and documentation updates
- TFTP server application installed on the PC

The TFTP server is required for performing firmware upgrades. If a TFTP server is currently not installed, you can obtain one from the Internet.

## Unpacking and inspecting the equipment

Before you install the Digital Telephone IP Adapter unit, ensure that the following package contents are all present and are not damaged:

- one Digital Telephone Internal IP Adapter or Digital Telephone External IP Adapter
- one power cord and power supply for each Digital Telephone IP Adapter unit
- one six-foot RJ-11 telephone cable for each Digital Telephone External IP Adapter unit
- one installation kit for each Digital Telephone Internal IP Adapter circuit card. Each installation kit includes the following:
  - two ferrite beads
  - one overlay
  - two mounting screws (used to attach the circuit card to the foot stand)
- *Remote Gateway 9100 Series and RLC Release Notes* (NTP 555-8421-102)
- *Digital Telephone IP Adapter Quick Start Guide*

# Installing the Digital Telephone Internal IP Adapter circuit card

Before you can install the Digital Telephone Internal IP Adapter circuit card, you must first remove the footstand of the digital telephone. For more information about supported telephone footstands, refer to “Required footstand for Digital Telephone Internal IP Adapter units” on page 46.

**Note:** You can only add the Digital Telephone Internal IP Adapter circuit card to digital telephones that have an ATA/MCA footstand. To obtain an ATA/MCA footstand, contact your Nortel distributor.

## Removing the footstand of the digital telephone set

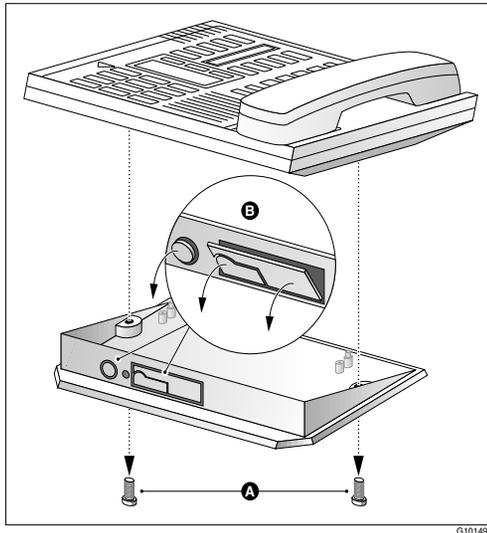
To remove the footstand of the digital telephone set:

- 1 Disconnect the telephone-side connection of the RJ-11 TCM telephone cable. The other end of this cable connects to the wall jack.
- 2 Place the telephone on a flat surface with the keypad facing downward.

**Note:** Ensure that you are grounded with an approved ESD strap.

- 3 Unscrew and remove the footstand of the digital telephone.

**Note:** Refer to “A” in the following diagram.



- 4 Punch out the front panels in the footstand of the telephone to make the connections accessible when you install the Digital Telephone Internal IP Adapter circuit card.

**Note:** Refer to “B” in the preceding diagram.

## Inserting the Digital Telephone Internal IP Adapter circuit card

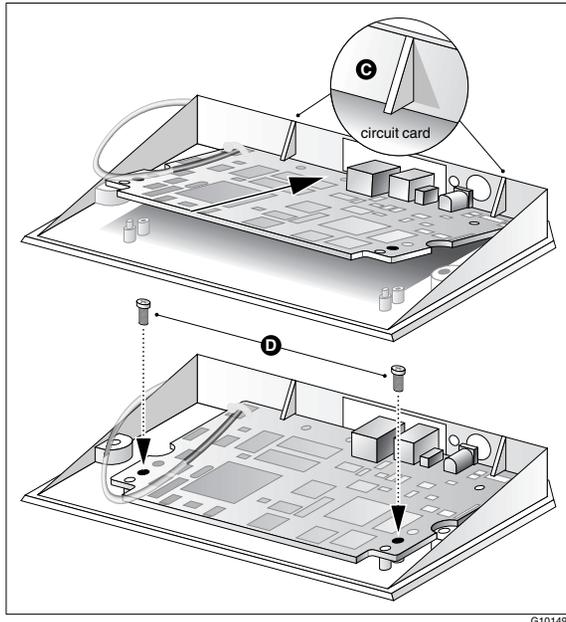
To insert the Digital Telephone Internal IP Adapter circuit card into your digital telephone:

- 1 Remove the Digital Telephone Internal IP Adapter circuit card from the antistatic bag.
- 2 Insert the leading edge of the Digital Telephone Internal IP Adapter circuit card under the two brackets on the footstand.

**Note:** Refer to “C” in the following diagram for the location of the brackets.

- 3 Use both hands to push forward until the circuit card snaps into place under the brackets.

**Note:** Two holes on either side of the circuit card are now aligned with the corresponding holes on the footstand.



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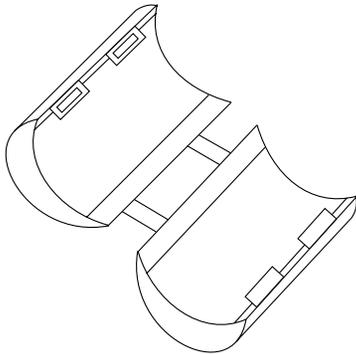
- 4 Attach the Digital Telephone Internal IP Adapter circuit card to the footstand with the screws supplied in the Installation Kit.

**Note:** Refer to "D" in the diagram on page 72.

- 5 Plug the male RJ-11 connector on the loose end of the Meridian Line Cord attached to the Digital Telephone Internal IP Adapter circuit card into the jack on the telephone.
- 6 Re-attach the footstand to the bottom of the telephone.
- 7 Apply the overlay identifying the power connection and the jack connecting your Ethernet for IP network connectivity.

## Installing ferrite beads

The Digital Telephone Internal IP Adapter circuit card installation kit contains two ferrite beads. Ferrite beads protect the Ethernet and power supply cable from electromagnetic interference (EMI). The two heavy pieces of ferrite come in a plastic-hinged cover that forms a block and has a hole in the middle for the cable to pass through. You must install the ferrite bead close to the plug that connects to the Digital Telephone Internal IP Adapter circuit card.



To install the ferrite beads for both the Ethernet cable and the power supply cable:

**1** Open the plastic latch at the side of the ferrite bead.

**2** Lay a cable across the middle of the ferrite bead.

The ferrite bead must be close to the cable connector.

**3** Loop the cable **tightly** around the ferrite bead.

There must be 2 loops of Ethernet cable around the ferrite bead (the Ethernet cable lays across the ferrite bead 3 times).

There must be 3 loops of power supply cable around the ferrite bead (the power supply cable lays across the ferrite bead 4 times).

**4** Close and latch the ferrite bead.

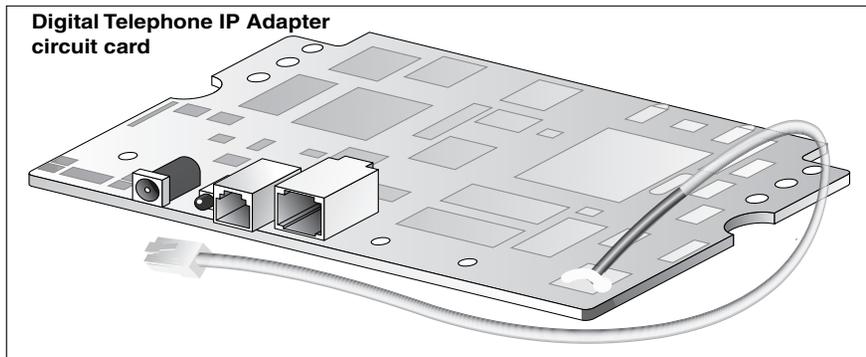
**Note:** You may need to adjust the cable loops to make them as tight as possible.

## Connecting the Digital Telephone Internal IP Adapter circuit card

Ensure that you have obtained the following telephone and Ethernet cables for your network:

- Ethernet cable

If you are connecting the Digital Telephone Internal IP Adapter circuit card to a hub, you need a standard CAT5 unshielded twisted-pair (UTP) straight-through Ethernet cable. The cable must be no longer than 100 meters (325 feet).



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**Note:** These cables are not supplied in the Digital Telephone Internal IP Adapter package.

Complete the following procedure:

- 1 If you want to route calls over the IP network or administer the Digital Telephone Internal IP Adapter circuit card with Configuration Manager, connect the circuit card to the Ethernet network by making the following connections:
  - a. Connect one end of the RJ-45 Ethernet cable to the ETHERNET connector on the Digital Telephone Internal IP Adapter circuit card.
  - b. Connect the other end to either an Ethernet hub or network router.
- 2 Connect the Digital Telephone Internal IP Adapter circuit card to the power source as follows:
  - a. Connect the appropriate cord on the power transformer to the power connector on the Digital Telephone Internal IP Adapter circuit card.
  - b. Plug the power connector into an uninterruptible power supply (UPS) or wall outlet.

## Powering up the Digital Telephone Internal IP Adapter circuit card

As soon as you connect the Digital Telephone Internal IP Adapter circuit card to the power source, the circuit card begins to power up.

During power-up, the Digital Telephone Internal IP Adapter circuit card performs a self-test. The power LED flashes three times to verify all critical functionality.

If the Digital Telephone Internal IP Adapter circuit card completes a successful self-test, the telephone display shows one of the following messages:

- A time and date, if connected to a PBX.
- HOSTLESS MODE, if not connected to a PBX.

**Note:** The ETHERNET TX and RX LEDs flash only in response to transmit and receive activity.

# Installing the Digital Telephone External IP Adapter unit

You can install the Digital Telephone External IP Adapter unit on a desk or on the wall. The unit has the following dimensions:

- 18.2 cm (7.2 inches) wide
- 9.9 cm (3.9 inches) deep
- 2.544 cm (1 inch) high

**Note:** If you want to mount the Digital Telephone External IP Adapter unit on the wall, you must provide your own mounting hardware.

## Installing the Digital Telephone External IP Adapter unit on a desk

To install the Digital Telephone External IP Adapter unit on a desk:

- 1 Turn the Digital Telephone External IP Adapter unit upside down.
- 2 Affix the rubber feet to the bottom of the Digital Telephone External IP Adapter unit.

**Note:** Ensure the rubber feet are securely fastened.

- 3 Place the Digital Telephone External IP Adapter unit in the desired location.

## Installing the Digital Telephone External IP Adapter unit on the wall

You need the following tools:

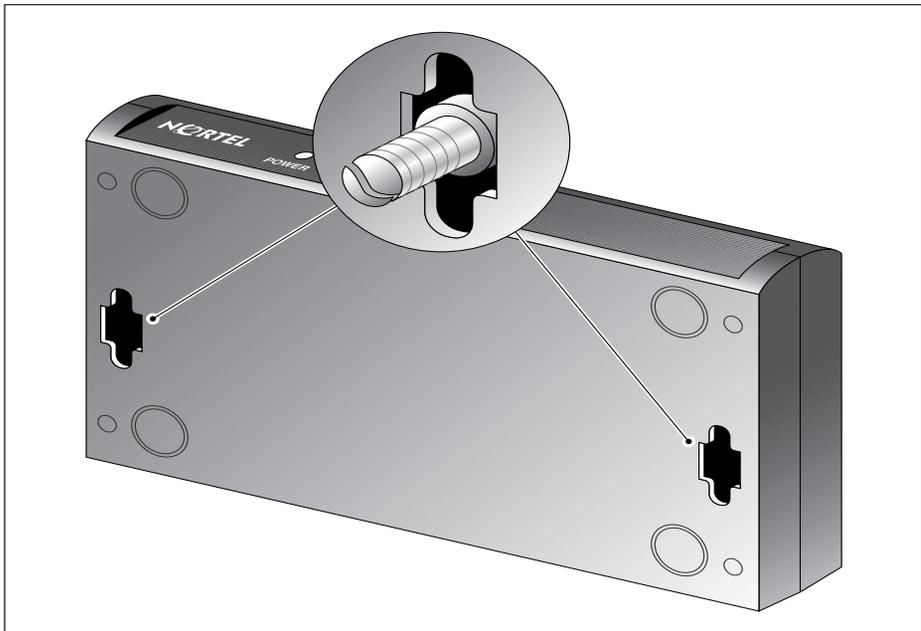
- a tape measure
- a screwdriver
- two long screws (to ensure the unit is securely mounted)

**Note:** Do not affix the rubber feet to the bottom of the Digital Telephone External IP Adapter unit. Otherwise, the unit cannot be mounted flush against the wall.

Ensure that your chosen location meets the following criteria:

- The LED indicators on the front panel must be easily viewed.
- There must be enough space to accommodate the cables when they are connected to the Digital Telephone External IP Adapter unit.

Refer to the following diagram.



G0231P

Complete the following procedure:

- 1 Choose the location on the wall where you want to mount the Digital Telephone External IP Adapter unit.
- 2 Use the pre-drilled screw slots on the bottom of the Digital Telephone External IP Adapter unit as a guide to measure and mark the location on the wall for each mounting screw.

The measurements between the screw slots are as follows:

- from front to back panels: 2.54 cm (1 in.)
- from side to side: 15.8 cm (6.25 in.)

- 3 Mount the screws.

**Note:** Do not screw the screws all the way in. Stop when the heads are about 5 mm (1/8 inch) from the wall.

- 4 Mount the Digital Telephone External IP Adapter unit on the screws, then gently pull it down so the screws slide into the narrow portion of the screw slots.

**Note:** Do not let go yet.

- 5 Make sure that the Digital Telephone External IP Adapter unit is securely mounted.



### **WARNING**

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#### **Risk of equipment damage**

Ensure that you fasten the Digital Telephone External IP Adapter unit securely to the wall. Falls can damage the unit.

## Connecting the Digital Telephone External IP Adapter unit

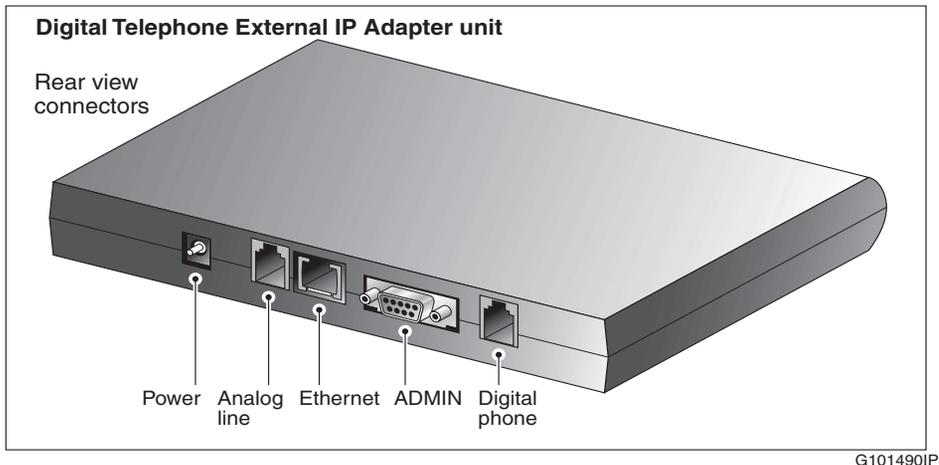
Obtain the following cables for your network. These cables are not supplied.

- Ethernet cable

If you are connecting the Digital Telephone External IP Adapter unit to a hub, you need a standard CAT5 unshielded twisted-pair (UTP), straight-through Ethernet cable. Ensure that this cable is no longer than 100 meters (325 feet) in length.

**Note:** Place digital telephones no farther than 1230.7 meters (4000 feet) from the Digital Telephone External IP Adapter unit.

The following diagram shows the connections on the back panel of the Digital Telephone External IP Adapter unit.



## Connecting the Digital Telephone External IP Adapter unit to the network

To connect the Digital Telephone External IP Adapter unit to the network:



### **WARNING**

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#### **Risk of equipment damage**

To prevent damage to the Digital Telephone External IP Adapter unit, ensure that the power source to the unit is turned off until you complete all connections.

- 1** Add the Digital Telephone External IP Adapter unit to your Ethernet network by making the following connections:
  - a.** Connect one end of the Ethernet cable to the ETHERNET connector on the Digital Telephone External IP Adapter unit.
  - b.** Connect the other end to either an Ethernet hub or a network router.
- 2** Connect the Digital Telephone External IP Adapter unit to the power source as follows:
  - a.** Connect the appropriate plug on the power transformer to the power connector on the Digital Telephone External IP Adapter unit.
  - b.** Plug the power connector into an uninterruptible power supply (UPS) or wall outlet.
- 3** Connect the Digital Telephone External IP Adapter unit to the digital telephone as follows:
  - a.** Connect one plug of the telephone cable supplied with the Digital Telephone External IP Adapter unit to the jack marked DIGITAL PHONE on the rear panel of the Digital Telephone External IP Adapter unit.
  - b.** Plug the other end of this cable to the jack on the digital telephone.

## Powering up the Digital Telephone External IP Adapter unit

As soon as you connect the Digital Telephone External IP Adapter unit to the power source, the unit begins to power up.

During power-up, the Digital Telephone External IP Adapter unit performs a self-test. The power LED flashes three times to verify all critical functionality, including:

- RAM memory test
- Flash checksum validation

If the Digital Telephone External IP Adapter unit completes a successful self-test, the telephone display shows one of the following messages:

- A time and date, if connected to a PBX.
- `HOSTLESS MODE`, if not connected to a PBX.

**Note:** The ETHERNET TX and RX LEDs flash only in response to transmit and receive activity.

## Testing the network connection

After you have installed the hardware and performed initial configuration, use the following methods to test the network connectivity:

- Perform a PING test. To perform this test, the following must be true:
  - You must be physically connected to the network.
  - You must be logged on to Configuration Manager.  
Refer to “Using Configuration Manager’s PING” on page 221 for complete details on performing a Configuration Manager PING.
- Perform a syslog test.  
Refer to “Syslog testing” on page 224 for complete details on performing a syslog test.

# Chapter 4

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## Configuring the IP Adapter unit using the telephone menu

### In this chapter

Before you begin	84
Running the telephone menu script	87

## Before you begin

To complete initial configuration of the Digital Telephone IP Adapter unit, you must use the telephone menu. After initial configuration, you can use Configuration Manager for changes, administration, and firmware upgrades. For a more detailed description of Configuration Manager, refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210).

**Note:** You cannot access the telephone menu and Configuration Manager at the same time. You must use one or the other. If you want to use Configuration Manager to configure the Digital Telephone IP Adapter unit, refer to Chapter 5, “Changing configuration settings using Configuration Manager”.

### Information you need to know before configuring

Before you start configuring the Digital Telephone IP Adapter unit, have the following information available:

- the unit ID for the Digital Telephone IP Adapter unit
- the online and offline SPRE codes
- the registration and deregistration SPRE codes
- an IP address, including subnet mask and the IP address of the IP Gateway, if applicable

The network administrator can provide the above information to the end-user by filling out and delivering the Telephone Menu - Configuration Values form in Appendix A, “Planning forms.”

## Accessing the telephone menu

You can access the telephone menu by quickly pressing the **Release** key four times within a three second time span. Refer to “Running the telephone menu script” on page 87.

## Telephone menu key function

Key name	Key label	Digital Telephone IP Adapter telephone menu key function
DIGIT	1, 2, 3, 4, 5, 6, 7, 8, 9, 0	user name/password entry, numeric entry
ALPHA	2, 3, 4, 5, 6, 7, 8, 9	user name/password entry
YES	1	request menu, enable feature
NO	2	skip menu, disable feature
RELEASE	Rls, R, Goodbye (depending on your telephone set)	enter configuration mode, return to previous menu, exit system
ENTER	Hold	accept selection, move to next menu prompt
PERIOD	*	period (.), delimiter for IP addresses
BACKSPACE	#	backspace with delete

## Backing up while in the telephone menu

If, at any time while working with the telephone set menu, you make a mistake, you can return to the previous level in the menu system by pressing the **Release** (Rls, R, or Goodbye depending on your telephone set) key once.

## Exiting the system using the Release key

To exit the system at any time using the release key:

- 1 Press the **Release** key to move up in the menu one level at a time until you reach the top level.

**Note:** The `Confirm Exit?` message indicates that you have reached the top level of the menu.

- 2 The telephone display asks you to confirm your request to exit the configuration menu, similar to the following:

```
Confirm Exit?  
[1-Yes 2-No]
```

---

**IF you wish to THEN do the following:**

continue working, a. Press **2**.

b. Press the **Hold** key.

The telephone display continues, as though you had entered a “No” response to the most recent option you had on the menu.

stop working with a. Press **1**.

the telephone menu, b. Press the **Hold** key.

The following screen confirms that you have left Remote Gateway 9100 Series configuration.

You are logged out.

---

**Note:** If you exit the system without saving any changes you have made, your changes will stay in active memory until the next system restart/reboot. After this, your changes are lost.

## Running the telephone menu script

After installing and powering up the Digital Telephone IP Adapter unit:

- 1 Press the release key four times within three seconds to access the telephone menu.

**Result:** The telephone display prompts you for a user name, similar to the following:

```
Enter User Name  
Press the Rls key to exit.
```

- 2 Enter the digits **48378 (GUEST)** and then press the **Hold** key.

**Result:** The telephone display prompts you for a password, similar to the following:

```
Enter Password  
Press the Rls key to exit.
```

- 3 Enter the digits **48378123 (GUEST123)**, the default password, or the current password, if you have customized the password, and then press the **Hold** key.

**Result:** The telephone display asks if you want to display local IP parameters:

```
Display Local IP?  
[1-Yes 2-No]
```

---

**IF you want to THEN do the following:**

---

display read-only  
IP parameters,

1 Press **1**.

2 Press the **Hold** key.

**Result:** The telephone display shows the remote site's current IP address, similar to the following:

```
IP Address  
192.168.142.102
```

3 Press the **Hold** key.

**Result:** The telephone display shows the remote site's current IP subnet mask, similar to the following:

```
IP Subnet Mask  
255.255.255.0
```

4 Press the **Hold** key.

**Result:** The telephone display shows the remote site's current IP gateway, similar to the following:

```
IP Gateway  
192.168.142.254
```

5 Press the **Hold** key.

6 Proceed to step 4 on page 89.

not display IP  
parameters,

1 Press **2**.

2 Press the **Hold** key.

---

- 4 The telephone display asks if you want to restore default values, similar to the following:

```
Restore Default Values?
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**

retain current configuration settings for this Digital Telephone IP Adapter unit,	1 Press <b>2</b> . 2 Press the <b>Hold</b> key. 3 Proceed to step 5 on page 90.
---	---

revert Digital Telephone IP Adapter unit configuration settings to their factory-set default values,	1 Press <b>1</b> . 2 Press the <b>Hold</b> key. <b>Result:</b> The telephone display asks you to confirm your decision, similar to the following: Confirm? [1-Yes 2- No] 3 Press <b>1</b> to confirm your decision, or press <b>2</b> to retain current settings. 4 Press the <b>Hold</b> key.
--	--

---

- 5 The telephone display asks if you want to modify the unit ID of the Digital Telephone IP Adapter unit, similar to the following:

```
Modify Unit ID?
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**

---

modify the Unit  
ID of the Digital  
Telephone IP  
Adapter unit,

- 1 Press **1**.
- 2 Press the **Hold** key.  
**Result:** The telephone display prompts you for the new Unit ID and displays the current Unit ID, similar to the following:  
Enter Unit ID of 911x  
1
- 3 Press the digit(s) of the new Unit ID.
- 4 Press the **Hold** key.
- 5 Proceed to step 6 on page 90.

retain current Unit  
ID of the Digital  
Telephone IP  
Adapter unit,

- 1 Press **2**.
  - 2 Press the **Hold** key.
- 

- 6 The telephone display asks if you want to modify the Digital Telephone IP Adapter unit's setting for the difference in the time at the local site and the remote site, similar to the following:

```
Modify Time Offset?
[1-Yes 2 - No]
```

**Note:** The Digital Telephone IP Adapter unit derives the time on its telephone display from the time maintained by the host PBX. The *time offset* is the number of minutes that the Digital Telephone IP Adapter unit must add to, or subtract from the host-site time (to account for different time zones, for example) to calculate the remote-site time.

**IF you want to      THEN do the following:**

---

modify the Digital Telephone IP Adapter unit's current time offset between the host site and the remote site,

- 1 Press **1**.
- 2 Press the **Hold** key.  
**Result:** The telephone display prompts you to indicate if the time at the remote site is later or earlier than the time at the host site, similar to the following:  
Enter Sign [1-Add 2 -Sub]
- 3 Press **1** if the time at the remote site is later than the time at the host site. This is the case when the remote site is located east of the host site.
- 4 Press **2** if the time at the remote site is earlier than the time at the host site. This is the case when the remote site is located west of the host site.
- 5 Press the **Hold** key.  
**Result:** The telephone display prompts you for the number of minutes in the time offset. The telephone display also shows the current time offset, similar to the following:  
Enter Offset in Minutes  
0
- 6 Enter the number of minutes of the time offset. For example, if the time offset is 2 hours, press **1**, **2**, and **0** (for 120 minutes).
- 7 Press the **Hold** key.
- 8 Proceed to step 8 on page 93.

**IF you want to      THEN do the following:**

---

retain the current time offset between the PBX at the host site and the Digital Telephone IP Adapter unit at the remote site,

1 Press **2**.  
2 Press the **Hold** key.

---

- 7** The telephone display asks if you want to modify the emergency code, similar to the following:

Modify Emergency Code?  
[1-Yes 2-No]

This step does not apply to Digital Telephone IP Adapter units. Press **2** and continue to step 8 on page 93.

- 8 The telephone display asks if you want to modify the SPRE code that you must dial to go online manually, similar to the following:

```
Modify Online SPRE?
[1-Yes 2-No]
```

---

**IF you want to**      **THEN do the following:**

modify the number that you must dial to go online with the Digital Telephone IP Adapter unit in the absence of an online command in the Online/Offline Table,	<ol style="list-style-type: none"> <li>1 Press <b>1</b>.</li> <li>2 Press the <b>Hold</b> key.</li> </ol> <p><b>Result:</b> The telephone display prompts you for a new online SPRE code. The telephone display also shows the current online SPRE code, similar to the following:</p> <pre>Enter Online SPRE #99</pre> <ol style="list-style-type: none"> <li>3 Press the digits of the new online SPRE code.</li> </ol> <p><b>Note:</b> All SPRE codes begin with a pound sign (#). It is not necessary to press the # key when modifying a SPRE code. However, when you actually use a SPRE code, you <i>must</i> press the # key for the host PBX to recognize the digits as a SPRE code.</p> <ol style="list-style-type: none"> <li>4 Press the <b>Hold</b> key.</li> <li>5 Proceed to step 9 on page 94.</li> </ol>
retain the current online SPRE code,	<ol style="list-style-type: none"> <li>1 Press <b>2</b>.</li> <li>2 Press the <b>Hold</b> key.</li> </ol>

---

- 9 The telephone display asks if you want to modify the SPRE code that you must dial to go offline manually, similar to the following:

```
Modify Offline SPRE?  
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**

---

modify the  
number that you  
must dial to go  
offline with the  
Digital Telephone  
IP Adapter unit in  
the absence of an  
offline command  
in the Online/  
Offline Table,

1 Press **1**.

2 Press the **Hold** key.

**Result:** The telephone display prompts you for a new offline SPRE code. The telephone display also shows the current offline SPRE code, similar to the following:

```
Enter Offline SPRE  
#98
```

3 Press the digits of the new offline SPRE code.

**Note:** Refer to the Note on page 93 for information on pound signs (#) in SPRE codes.

4 Press the **Hold** key.

5 Proceed to step 10 on page 95.

retain the current  
offline SPRE  
code,

1 Press **2**.

2 Press the **Hold** key.

---

- 10** The telephone display asks if you want to modify the SPRE code that you must dial to register for, or begin a work session, the registration SPRE code, similar to the following:

```
Modify Reg. SPRE?
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**

modify the number that you must dial to begin a work session (in an ACD environment, for example),

1 Press **1**.

2 Press the **Hold** key.

**Result:** The telephone display prompts you for a new registration SPRE code. The telephone display also shows the current registration SPRE code, similar to the following:

```
Enter Reg. SPRE Code
#97
```

3 Press the digits of the new registration SPRE code.

**Note:** Refer to the Note on page 93 for information on pound signs (#) in SPRE codes.

4 Press the **Hold** key.

5 Proceed to step 11 on page 96.

retain the current registration SPRE code,

1 Press **2**.

2 Press the **Hold** key.

---

- 11** The telephone display asks if you want to modify the SPRE code that you must dial to deregister from, or end a work session, the Deregistration SPRE code, similar to the following:

```
Modify Dereg. SPRE?
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**

modify the number that you must dial to end a work session (in an ACD environment, for example),

- 1 Press **1**.
- 2 Press the **Hold** key.

**Result:** The telephone display prompts you to enter a new deregistration SPRE code. The telephone display also shows the current deregistration SPRE code, similar to the following:

```
Enter Dereg. SPRE Code
#96
```

- 3 Press the digits of the new deregistration SPRE code.

**Note:** Refer to the Note on page 93 for information on pound signs (#) in SPRE codes.

- 4 Press the **Hold** key.
- 5 Proceed to step 12 on page 97.

retain the current deregistration SPRE code,

- 1 Press **2**.
  - 2 Press the **Hold** key.
-

- 12** The telephone display asks if you want to modify the IP parameters, similar to the following:

Modify IP Parameters?  
[1-Yes 2-No]

---

**IF you want to      THEN do the following:**

retain the current IP parameters configured for this Digital Telephone IP Adapter unit,

- 1 Press **2**.
- 2 Press the **Hold** key.
- 3 Proceed to step 13 on page 101.

modify the IP parameters configured for this Digital Telephone IP Adapter unit,

- 1 Press **1**.
- 2 Press the **Hold** key.

**Result:** The telephone display asks if you want to enable Dynamic Host Configuration Protocol (DHCP), similar to the following:

Enable DHCP?  
[1-Yes 2-No]

allow a DHCP server to dynamically assign an IP address to this Digital Telephone IP Adapter unit each time someone logs on with this unit,

- 1 Press **1**.
- 2 Press the **Hold** key.
- 3 Proceed to “Enable DiffServ? [1-Yes 2-No]” on page 99.

**Note:** Refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210) for more information on DiffServ CodePoint and 802.1Q Mapping.

<b>IF you want to</b>	<b>THEN do the following:</b>
manually enter static IP information for this Digital Telephone IP Adapter unit,	<ol style="list-style-type: none"><li>1 Press <b>2</b>.</li><li>2 Press the <b>Hold</b> key. <b>Result:</b> The telephone display prompts you for the Digital Telephone IP Adapter unit's new, permanent IP address. The telephone display also shows the current setting, similar to the following: Enter IP Address 0.0.0.0</li><li>3 Press the digits of the Digital Telephone IP Adapter unit's permanent IP address. Use the * key for the IP address delimiter. (Refer to the table on page 85.)</li><li>4 Press the <b>Hold</b> key. <b>Result:</b> The telephone display prompts you for the Digital Telephone IP Adapter unit's new, permanent IP subnet mask. The telephone display also shows the current setting, similar to the following: Enter IP Subnet Mask 255.0.0.0</li><li>5 Press the digits of the Digital Telephone IP Adapter unit's permanent IP subnet mask.</li><li>6 Press the <b>Hold</b> key. <b>Result:</b> The telephone display asks if you want to modify the Digital Telephone IP Adapter unit's IP gateway, similar to the following: Modify IP Gateway? [1-Yes 2-No]</li></ol>

**Note:** Assigning static IP addressing to a Digital Telephone IP Adapter unit allows you to use the address information to identify the unit on the IP network. This makes the unit more accessible for online administration and maintenance.

IF you want to	THEN do the following:
manually enter static IP information for this Digital Telephone IP Adapter unit, (continued)	<p>7 Press <b>2</b> and proceed to <code>Enable DiffServ? [1-Yes 2-No]</code>, below, to leave the Digital Telephone IP Adapter unit's IP gateway as it is. Press <b>1</b> to modify the Digital Telephone IP Adapter unit's IP gateway.</p> <p>8 Press the <b>Hold</b> key.</p> <p><b>Result:</b> The telephone display prompts you for the Digital Telephone IP Adapter unit's new, permanent IP gateway. The telephone display also shows the current setting, similar to the following:</p> <pre>Enter IP Gateway 0.0.0.0</pre> <p>9 Press the digits of the Digital Telephone IP Adapter unit's permanent IP gateway. Use the * key for the IP address delimiter. (Refer to the table on page 85.)</p> <p>10 Press the <b>Hold</b> key.</p> <p><b>Result:</b> The telephone display asks if you want to enable DiffServ, similar to the following:</p> <pre>Enable DiffServ? [1-Yes 2-No]</pre> <p><b>Note:</b> The Remote Gateway 9100 Series family of products does not support Classless Inter-Domain Routing (CIDR).</p>
enable prioritizing of voice packets in the IP header (DiffServ),	<p>1 Press <b>1</b>.</p> <p>2 Press the <b>Hold</b> key.</p> <p>3 Proceed to "Enable 802.1Q Mapping? [1-Yes 2-No]" on page 100.</p> <p><b>Note:</b> Refer to the <i>Reach Line Card Installation and Administration Guide</i> for information on DiffServ CodePoint and 802.1Q Mapping.</p>

<b>IF you want to</b>	<b>THEN do the following:</b>
not enable prioritizing of voice packets in the IP header,	<ol style="list-style-type: none"><li>1 Press <b>2</b>.</li><li>2 Press the <b>Hold</b> key. <b>Result:</b> The telephone display asks if you want to enable 802.1Q Mapping, similar to the following: Enable 802.1Q Mapping? [1-Yes 2-No]</li></ol>
enable prioritizing of voice packets in the IEEE Media Access Control layer (802.1Q),	<ol style="list-style-type: none"><li>1 Press <b>1</b>.</li><li>2 Press the <b>Hold</b> key. <b>Result:</b> The telephone display prompts you for the VLAN ID, similar to the following: VLAN ID [0-4094] 0=NC: 0</li><li>3 Enter the Virtual Local Area Network (VLAN) ID for 802.1Q Mapping. Valid entries are 0 (0 = Not Configured) through 4094 (0xFFE). The default is 0.</li><li>4 Press the <b>Hold</b> key. <b>Result:</b> The telephone display prompts you for the 802.1Q priority value, similar to the following: 802.1Q Priority [0-7] 5</li><li>5 Enter the priority value for 802.1Q Mapping. Valid entries are 0 through 7. The default is 6.</li><li>6 Press the <b>Hold</b> key. <b>Result:</b> The telephone display prompts you for the DiffServ CodePoint value, similar to the following: DiffServ CodePoint Val: EF</li></ol>

---

**IF you want to      THEN do the following:**


---

- |  |  |
|--|--|
| enable prioritizing of voice packets in the IEEE Media Access Control layer (802.1Q),<br>(continued) | 7 Enter the DiffServ CodePoint value.<br>Valid entries are 0 (CS7), 1 (CS6), 2 (EF), 3 (AF41), 4 (AF31), 5 (AF21), 6 (AF11), and 7 (DE). The default is 7 (EF). Refer to “DiffServ CodePoint: Value” on page -127 for details on the definitions for these entries.<br><br>8 Press the <b>Hold</b> key.<br>9 Proceed to step 13. |
| not enable prioritizing of voice packets in the IEEE Media Access Control layer,                     | 1 Press <b>2</b> .<br>2 Press the <b>Hold</b> key.   |
- 

- 13** The telephone display asks if you want to modify RLC Parameters, similar to the following:

```
Modify RLC Parameters?
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**


---

- |                                  |   |
|----------------------------------|---|
| retain the current RLC settings, | 1 Press <b>2</b> .<br>2 Press the <b>Hold</b> key.<br>3 Proceed to step 18 on page 107. |
|----------------------------------|---|

**IF you want to THEN do the following:**

---

modify the current 1 Press **1**.

RLC settings, 2 Press the **Hold** key.

**Result:** The telephone display prompts you to enter the RLC port number that you want to process this Digital Telephone IP Adapter unit's traffic. The telephone display also shows the RLC port number currently configured to handle this traffic, similar to the following:

```
Enter Port # of RLC
7
```

3 Press the digit(s) of the new port number.

4 Press the **Hold** key.

**Result:** The telephone display prompts you to enter the security level that you want to assign to this Digital Telephone IP Adapter unit. The telephone display also shows the current security level, similar to the following:

```
Enter Security Level
1
```

allow unrestricted 1 Press **1** to select No security.

access to the 2 Press the **Hold** key.

Digital Telephone

IP Adapter unit

and the RLC,

3 Proceed to "Enable IP? [1-Yes 2-No]" on page 103.

**IF you want to      THEN do the following:**

---

- restrict access to the Digital Telephone IP Adapter unit according to a ten digit security code maintained by the security ID of the qualified callers,
- 1 Press **2** to select Provisioned Security.
  - 2 Press the **Hold** key.  
**Result:** The telephone display prompts you for the RLC's Inbound Security ID, similar to the following:  
Inbound Security ID
  - 3 Enter the Digital Telephone IP Adapter unit's 10-digit inbound security ID.
  - 4 Press the **Hold** key.  
**Result:** The telephone display prompts you for the RLC's outbound security ID, similar to the following:  
Outbound Security ID
  - 5 Enter the Digital Telephone IP Adapter unit's 10-digit outbound security ID.
  - 6 Press the **Hold** key.  
**Result:** The telephone display asks if you want to enable the IP connection to the RLC from this Digital Telephone IP Adapter unit, similar to the following:  
Enable IP?  
[1-Yes 2-No]

---

**IF you want to      THEN do the following:**


---

enable IP  
connection to the  
RLC from this  
Digital Telephone  
IP Adapter unit,

- 1 Press **1**.
- 2 Press the **Hold** key.  
**Result:** The telephone display prompts you to enter an IP address for the RLC and shows the current value it has for this address, similar to the following:  
  
Enter RLC IP Address  
192.68.243.254
- 3 Press the digits of the new RLC IP address.
- 4 Press the **Hold** key.  
**Result:** The telephone display prompts you for the IP Signaling setting for this Digital Telephone IP Adapter unit and displays the current setting, similar to the following:  
  
IP Signaling  
1-Permanent 2-OnDemand:2
- 5 Choose from the options presented.
- 6 Press the **Hold** key.
- 7 Proceed to step 14, below.

disable IP  
connection to the  
RLC from this  
Digital Telephone  
IP Adapter unit,

- 1 Press **2**.
  - 2 Press the **Hold** key.  
**Result:** Proceed to step 19 on page 108.
- 

- 14** The telephone display asks if you want to modify the local calling settings on this Digital Telephone IP Adapter unit, similar to the following:

```
Modify Local Calling?
[1-Yes 2-No]
```

This step does not apply to Digital Telephone IP Adapter units. Press **2** and continue to step 15 on page 105.

- 15** The telephone display asks if you want to modify the current analog localization setting for this Digital Telephone IP Adapter unit, similar to the following:

```
Modify Localization?  
[1-Yes 2-No]
```

This step does not apply to Digital Telephone IP Adapter units. Press **2** and continue to step 16.

- 16** The telephone display asks if you want to modify the current modem tones setting for this Digital Telephone IP Adapter unit, similar to the following:

```
Modify Modem Tones?  
[1-Yes 2-No]
```

This step does not apply to Digital Telephone IP Adapter units. Press **2** and continue to step 17.

- 17** The telephone display asks if you want to configure the type of telephone set attached to this Digital Telephone IP Adapter unit, similar to the following:

Configure Set Type?  
[1-Yes 2-No]

---

**IF you want to      THEN do the following:**

- |   |  |
|---|--|
| modify the current telephone set type configuration for this Digital Telephone IP Adapter unit, | <ol style="list-style-type: none"> <li>1 Press <b>1</b>.</li> <li>2 Press the <b>Hold</b> key.</li> </ol> <p><b>Result:</b> The telephone display asks what type of telephone set is connected to the Digital Telephone IP Adapter unit, similar to the following:</p> <p>Is this a M2006?<br/>[1-Yes 2-No]</p> <ol style="list-style-type: none"> <li>3 If the telephone display does not show the model of your telephone set, press <b>2</b>.</li> <li>4 Press the <b>Hold</b> key.</li> </ol> <p><b>Note:</b> The telephone display repeats this question until it receives an affirmative answer with the following set types: M2008, M2216, M2616, M2616CT, M3310, M3820, M3902, M3903, M3904, M3905, or OTHER. Choose OTHER if you are using a Nortel digital telephone set with a display that is not included in the preceding list.</p> <ol style="list-style-type: none"> <li>5 When the telephone display shows the model of your telephone set, press <b>1</b> and the <b>Hold</b> key.</li> </ol> <p><b>Result:</b> The telephone display asks you to confirm your identification of your telephone set type, similar to the following:</p> <p>Are you sure?<br/>M2616? - [1-Yes 2-No]</p> |
|---|--|

---

**IF you want to      THEN do the following:**

modify the current telephone set type configuration for this Digital Telephone IP Adapter unit, (continued)	6 If this is not the correct model number of your telephone set, press <b>2</b> and return to step 5, above. 7 If this is the correct model number of your telephone set, press <b>1</b> . 8 Press the <b>Hold</b> key. 9 Proceed to step 18, below.
not modify the current telephone set type configuration for this Digital Telephone IP Adapter unit,	1 Press <b>1</b> . 2 Press the <b>Hold</b> key.

---

- 18** The telephone display asks if you want to save the configuration you have just entered, similar to the following:

```
Save Configuration?
[1-Yes 2-No]
```

---

**IF you want to      THEN do the following:**

discard your most recent configuration changes,	1 Press <b>2</b> . 2 Press the <b>Hold</b> key.  <b>Result:</b> The telephone display asks if you want to reboot the Digital Telephone IP Adapter unit, similar to the following: <pre>Reboot Unit? [1-Yes 2-No]</pre> 3 Proceed to step 19 on page 108.
--	--

---

**IF you want to      THEN do the following:**


---

retain your most recent configuration changes,	<ol style="list-style-type: none"> <li>1 Press <b>1</b>.</li> <li>2 Press the <b>Hold</b> key.</li> </ol> <p><b>Result:</b> The telephone display asks you to confirm your instruction to overwrite current configuration settings with your latest configuration changes, similar to the following:</p> <p style="margin-left: 40px;">Confirm? [1-Yes 2-No]</p>
revert to the previous configuration settings,	<ol style="list-style-type: none"> <li>1 Press <b>2</b>.</li> <li>2 Proceed to step 19, below.</li> </ol>
keep your most recent configuration changes as system settings,	<ol style="list-style-type: none"> <li>1 Press <b>1</b>.</li> <li>2 Proceed to step 19, below.</li> </ol>

---

**Note:** Do not interrupt the power to the Digital Telephone IP Adapter unit during the save process.

- 19** The telephone display asks if you want to reboot the Digital Telephone IP Adapter unit, similar to the following:

Reboot Unit?  
[1-Yes 2-No]

---

**IF you want to      THEN do the following:**


---

not reboot the Digital Telephone IP Adapter unit,	<ol style="list-style-type: none"> <li>1 Press <b>2</b>.</li> <li>2 Press the <b>Hold</b> key.</li> </ol> <p><b>Result:</b> Return to “Display Local IP? [1-Yes 2-No]” on page 88.</p>
---	--

**IF you want to      THEN do the following:**

---

reboot the Digital  
Telephone IP  
Adapter unit,

- 1 Press **1**.
- 2 Press the **Hold** key.

**Result:** The telephone display asks if you want to shut the system down or restart the system, similar to the following:

0-Shut Down 1-Restart

restart the Digital  
Telephone IP  
Adapter unit,

- 1 Press **1**.
- 2 Press the **Hold** key.

**Result:** The telephone display asks you to confirm your decision to restart the system, similar to the following:

Confirm?  
[1-Yes 2-No]

abort your  
instruction to  
restart the Digital  
Telephone IP  
Adapter unit,

- 1 Press **2**.
- 2 Press the **Hold** key.

**Result:** Return to “Display Local IP? [1-Yes 2-No]” on page 88.

<b>IF you want to</b>	<b>THEN do the following:</b>
confirm your instruction to restart the Digital Telephone IP Adapter unit,	<ol style="list-style-type: none"><li>3 Press <b>1</b> to restart the Digital Telephone IP Adapter unit.</li><li>4 Press the <b>Hold</b> key. <b>Result:</b> The telephone display informs you that it is restarting the system, similar to the following: Restarting the System Please Wait...</li><li>5 When the system restarts, the telephone display returns to its normal state, showing the time and date, similar to the following: JAN 01 12:13 P</li><li>6 If the telephone is connected to a PBX, it is ready to send and receive telephone calls as normal.</li><li>7 If the telephone is not connected to a PBX, the telephone display shows a message similar to the following: HOSTLESS MODE</li></ol>
shut down the Digital Telephone IP Adapter unit, thereby disabling all functionality on the unit,	<ol style="list-style-type: none"><li>1 Press <b>0</b>.</li><li>2 Press the <b>Hold</b> key. <b>Result:</b> The telephone display asks you to confirm your instruction to shut down the Digital Telephone IP Adapter unit, similar to the following: Confirm? [1-Yes 2-No] <b>Note:</b> Only choose the shut down option when you have physical access to the remote unit. You must be able to disconnect then reconnect power to the Digital Telephone IP Adapter unit to be able to access the unit again.</li></ol>

**IF you want to      THEN do the following:**

---

- |  |  |
|--|--|
| abort your instruction to shut down the Digital Telephone IP Adapter unit,   | 1 Press <b>2</b> .<br>2 Press the <b>Hold</b> key.<br><b>Result:</b> Return to “Display Local IP? [1-Yes 2-No]” on page 88.  |
| confirm your instruction to shut down the Digital Telephone IP Adapter unit, | 1 Press <b>1</b> .<br>2 Press the <b>Hold</b> key.<br><b>Result:</b> The telephone display prompts you to turn off the Digital Telephone IP Adapter unit, similar to the following:<br><br>Please remove System Power. |
-



# Chapter 5

---

## Changing configuration settings using Configuration Manager

### In this chapter

Before you begin	114
Digital Telephone IP Adapter unit system configuration	115
IP configuration	122
RLC connection configuration	129
Auto upgrade configuration	133
Syslog configuration	137

## Before you begin

This section describes the configuration settings that apply to Digital Telephone IP Adapter units. If you need remote serial access to Configuration Manager, use a remote management software application.

**Note:** Nortel recommends that you use the telephone set menu to perform the initial configuration for the Digital Telephone IP Adapter unit. Refer to Chapter 4, “Configuring the IP Adapter unit using the telephone menu.” Once configured, you can then use the Configuration Manager for changes, administration, and firmware upgrades. For a more detailed description of Configuration Manager, refer to the *Reach Line Card Installation and Administration Guide* (NTP 555-8421-210).

### **ATTENTION!**

---

After initial configuration with the telephone set menu, complete all Digital Telephone IP Adapter configuration using Configuration Manager. Use the man-machine interface (MMI) only with the assistance of technical support personnel for troubleshooting and diagnostic testing.

# Digital Telephone IP Adapter unit system configuration

This section describes the settings that apply to the Digital Telephone IP Adapter unit system.

**Note:** The Digital Telephone IP Adapter unit configuration uses the same configuration property sheets in Configuration Manager as the Remote Gateway 911x unit. To configure the Digital Telephone IP Adapter unit, choose View → Device Type → 911x. Help information for Remote Gateway 911x series units applies to Digital Telephone IP Adapter units, unless otherwise stated.

**Getting there** 911x → Configuration Manager → 911x System Configuration

911x System Configuration property sheet

The screenshot displays the '911x SYSTEM CONFIGURATION' property sheet. The title bar reads '911x SYSTEM CONFIGURATION'. The form contains the following fields and controls:

- Unit ID:** Text box containing '1'.
- Node Name:** Text box containing '911x'.
- DSP Gain:** Dropdown menu set to '0' followed by 'dB'.
- Time Offset:** Spin box set to '0'.
- Emergency Feature...:** Button.
- Enable PBX Alarms:** Unchecked checkbox.
- SPRE Codes:** A table with four columns: Online, Offline, Registration, and DeRegistration.

Online	Offline	Registration	DeRegistration
# 99	# 98	# 97	# 96
- Local Call:** A section with:
  - Status:** Radio buttons for 'Enable' and 'Disable' (selected).
  - Autohold:** Radio buttons for 'Enable' (selected) and 'Disable'.
  - Local Calling Key Position:** Text box containing '13'.
  - Local DN:** Text box containing 'NC'.
- Phone Type:** Dropdown menu set to 'M2616'.
- Modem Tones:** Radio buttons for 'Enable' and 'Disable' (selected).
- Analog Localization:** Dropdown menu set to 'FCC'.
- Add on Module Type:** Dropdown menu set to 'Not Configured'.

At the bottom of the form are five buttons: 'OK', 'Default', 'Send', 'Retrieve', and 'Help'.

## Emergency service programmability

There can be multiple emergency services at any one Digital Telephone IP Adapter unit location, such as police, fire, and poison control. Click on the **Emergency Feature** button to configure as many up to three different emergency activation codes for one Digital Telephone IP Adapter unit. The particular emergency activation code dialed by the user determines the digits sent to the host PBX and the telephone number sent to the Central Office (CO).

Also, in their haste to reach an emergency service, some users can forget to dial trunk access digits. You can configure your Digital Telephone IP Adapter unit to send the emergency telephone number to the CO whether or not the user dials trunk access digits.

**Note:** If you must contact emergency personnel with consecutive calls, you must press the digits of the Emergency Access Code each time. Do not use last number re-dial or the autodial keys.

## Configuring the system settings

To configure the system settings:

- 1 Complete the fields as described in the “911x System Configuration field descriptions” on page 118.
- 2 Click on the **OK** button to save the information in the temporary work file.

- 3 Click on the **Send** button to update the Digital Telephone IP Adapter unit with the new information.

**IF you are****THEN**

logged on to the Digital Telephone IP Adapter unit,

the changes are written into the Digital Telephone IP Adapter unit's buffer.

To save the changes in Flash memory, choose Upload/Download → Save to Flash from the Menu Bar.

not logged on to the Digital Telephone IP Adapter unit,

the Confirmation Manager dialog box displays, similar to the following:



Do one of the following:

- a. Log on to the Digital Telephone IP Adapter unit and then click on the **Send** button.
- b. Save the changes to a file on your administration PC using the File → Save As command.

---

**Note:** When you change System Configuration parameters and Save to Flash, calls can be dropped. Ensure that there are no active calls when you make changes to these parameters.

## 911x System Configuration field descriptions

Field	Description
<b>Unit ID</b>	<p>Enter a unique number from 1 through 20 to identify the Digital Telephone IP Adapter unit that you are configuring and differentiate it between the RLC, Remote Gateway 9150 unit, and all other remote units connected to the same RLC. This number:</p> <ul style="list-style-type: none"><li>■ must be different from numbers assigned to other units connected to the same RLC</li><li>■ must be consistent with the configuration on the RLC for this unit ID</li></ul> <p>The default is 1.</p>
<b>Node Name</b>	<p>Enter your site name.</p> <p>The node name identifies this Digital Telephone IP Adapter unit in the remote network.</p> <p>The default is 911x.</p>
<b>DSP Gain</b>	<p>Select the number of decibels (dB) that you want to add to, or subtract from, the strength of the transmitted signal before the DSP processes it.</p> <p>Valid options are 9, 6, 3, 0, -3, -6, -9, -12, and -15.</p> <p>The default is 0 dB.</p> <p><b>Note:</b> Change this setting at the remote site to address a problem with signal strength at the host site.</p>
<b>Time Offset</b>	<p>Click on the up or down arrows to change the time zone difference from the host PBX.</p> <p>The default is 0:00 (0 hours and 0 minutes).</p> <p><b>Note:</b> The time can be changed in 15-minute intervals only.</p>
<b>Emergency Feature</b>	<p>This setting does not apply to Digital Telephone IP Adapters.</p>

Field	Description
<b>Enable PBX Alarms</b>	<p>Click on the <b>Enable PBX Alarms</b> checkbox if you want the Digital Telephone IP Adapter unit to notify the host PBX to produce alarms and alerts. If you don't want the Digital Telephone IP Adapter unit to notify the host PBX to produce alarms and alerts, ensure that the Enable PBX Alarms checkbox is not selected.</p> <p>Refer to “Display Logs” in Configuration Manager online Help to determine which alarms and alerts the PBX generates.</p>
<b>SPRE Codes: Online</b>	<p>Enter the SPRE code (maximum seven digits) that is used to place your site into online mode, or accept the default. The default is #99.</p> <p><b>Note:</b> The SPRE code is automatically prefixed with the pound sign (#). This means users must dial # before the SPRE code when going into online mode.</p>
<b>SPRE Codes: Offline</b>	<p>Enter the SPRE code (maximum seven digits) that is used to put your site into offline mode, or accept the default code. The default is #98.</p> <p><b>Note:</b> The SPRE code is automatically prefixed with the pound sign (#). This means users must dial # before the SPRE code when going into offline mode.</p>
<b>SPRE Codes: Registration</b>	<p>Enter the SPRE code (maximum seven digits) that engages the user's telephone with a multi-user or dynamic port, or accept the default code. The default is #97.</p> <p><b>Note:</b> The SPRE code is automatically prefixed with a pound sign (#). This means users must dial # before the SPRE code when registering for a port.</p>

Field	Description
<b>SPRE Codes: DeRegistration</b>	<p>Enter the SPRE code (maximum seven digits) that disengages the user from a multi-user or dynamic port, or accept the default code. The default is #96.</p> <p><b>Note:</b> The SPRE code is automatically prefixed with a pound sign (#). This means users must dial # before the SPRE code when disengaging from a port.</p>
<b>Local Call: Status</b>	This setting does not apply to Digital Telephone IP Adapters.
<b>Local Call: Local Calling Key Position</b>	This setting does not apply to Digital Telephone IP Adapters.
<b>Local DN</b>	This setting does not apply to Digital Telephone IP Adapters.
<b>Local Call: Autohold</b>	This setting does not apply to Digital Telephone IP Adapters.
<b>Phone Type</b>	<p>Select the type of digital telephone that the Digital Telephone IP Adapter unit attaches to, using the drop down list box.</p> <p>Valid options are M2008, M2216, M2616, M2616CT, M3310, M3820, M3902, M3903, M3904, M3905, and OTHER.</p> <p>The default is M2616.</p>
<b>Modem Tones</b>	This setting does not apply to Digital Telephone IP Adapters.
<b>Analog Localization</b>	This setting does not apply to Digital Telephone IP Adapters.

Field	Description
<b>Addon Module Type</b>	Select the type of addon module attached to the Digital Telephone IP Adapter unit's telephone, if the telephone is an M3904 or M3905 telephone. Valid options are DBA, KBA, and Not Configured. The default is Not Configured.

---

# IP configuration

This section explains how to change the IP address, subnet mask, and default gateway for the Digital Telephone IP Adapter unit.

**Getting there** 911x → Configuration Manager → IP Configuration

IP Configuration property sheet

The screenshot shows the 'IP CONFIGURATION' dialog box. At the top, it has the title 'IP CONFIGURATION'. Below the title bar, there is a section for 'Automatic DHCP Configuration' with two radio buttons: 'Obtain IP Address from Server' (unselected) and 'Configure IP Address' (selected). The main area contains several input fields: 'IP Address' (0 . 0 . 0 . 0), 'IP Network Mask' (255 . 0 . 0 . 0), and 'IP Gateway' (0 . 0 . 0 . 0). Below these are two sections: 'DiffServ CodePoint' with 'Enable' (unselected) and 'Disable' (selected) radio buttons, and a 'Value' dropdown menu set to 'EF'; and '802.1Q Mapping' with 'Enable' (unselected) and 'Disable' (selected) radio buttons, a 'VLAN ID' text box containing 'NC', and a 'Priority' spinner box set to '5'. At the bottom of the dialog are five buttons: 'OK', 'Default', 'Send', 'Retrieve', and 'Help'.

## Configuring IP information

To change the IP information:

- 1 Complete the fields of the IP Configuration property sheet as described in “IP Configuration field descriptions” on page 125.
- 2 Click on the **OK** button to save the information in the temporary work file.
- 3 Click on the **Send** button to update the **Digital Telephone IP Adapter unit with** the new information.

### IF you are

### THEN

logged on to the Digital Telephone IP Adapter unit,

the changes are written into the Digital Telephone IP Adapter unit’s buffer.  
To save the changes in Flash memory, choose Upload/Download → Save to Flash from the Menu Bar.

**Note:** When you change System or IP Configuration parameters and Save to Flash, calls can be dropped. Ensure that there are no active calls when you make changes to these configuration parameters.

not logged on to the Digital Telephone IP Adapter unit,

the Configuration Manager dialog box displays, similar to the following:



Do one of the following:

- a. Log on to the Digital Telephone IP Adapter unit, then click on the **Send** button again.
- b. Save the changes to a file on your administration PC.

#### 4 Restart the Digital Telephone IP Adapter unit.

**Notes:**

- a. To restart a Digital Telephone IP Adapter unit, use the procedure found under “Restarting the system” on page 204.
- b. When you change IP configuration parameters and Save to Flash, calls can be dropped. Ensure that there are no active calls when you make changes to these parameters.
- c. The Remote Gateway 9100 Series family of products does not support Classless Inter-Domain Routing (CIDR), that is, a Class C address with a Class B mask.

## IP Configuration field descriptions

Field	Description
<b>Automatic DHCP Configuration</b>	<ul style="list-style-type: none"> <li data-bbox="542 289 1125 521">■ Click on the <b>Obtain IP Address from Server</b> option button to allow the Digital Telephone IP Adapter unit to use an IP address dynamically assigned by a DHCP server on the IP network. <b>Result:</b> Configuration Manager disables the IP Address, IP Network Mask, and IP Gateway fields.</li> <li data-bbox="542 545 1125 740">■ Click on the <b>Configure IP Address</b> option button to manually configure a static IP address for the Digital Telephone IP Adapter unit. <b>Result:</b> Configuration Manager enables the IP Address, IP Network Mask, and IP Gateway fields.</li> </ul>
<b>Address Information—IP Address, IP Network Mask, IP Gateway</b>	<p data-bbox="533 764 960 789">The default is Configure IP Address.</p> <p data-bbox="533 829 1121 927">If you clicked on the Configure IP Address option button, enter the IP address, IP network mask, and IP gateway in the appropriate fields as follows:</p>
<b>IP Address</b>	<p data-bbox="533 967 1089 1024">Enter the IP address of the Digital Telephone IP Adapter unit.</p>
<b>IP Network Mask</b>	<p data-bbox="533 1065 1132 1200">Enter the subnet mask of the unit. The subnet mask identifies to the Digital Telephone IP Adapter unit which portion of the IP address represents the network and which portion represents the host.</p>

Field	Description
<b>IP Gateway</b>	Enter the IP address of the IP gateway serving the Digital Telephone IP Adapter unit. A gateway is a device that functions as a node on two networks, forwarding packets from one network to addresses on the other networks. In Remote Gateway 9100 Series context, the gateway is the device on the network that directs traffic to and from the Digital Telephone IP Adapter unit.
<b>DiffServ CodePoint</b>	<p>This setting modifies the IP Header and is applicable across the entire WAN. If enabled, this feature allows you to set the DiffServ CodePoint value. Refer to the "DiffServ CodePoint: Value" for a list of values.</p> <ul style="list-style-type: none"><li data-bbox="542 732 1138 862">■ Click on the <b>Enable</b> option button if you want to allow prioritization of voice packets sent from this Digital Telephone IP Adapter unit over WAN portions of the network.</li><li data-bbox="542 881 1138 1013">■ Click on the <b>Disable</b> option button if you do not want to allow prioritization of voice packets sent from this Digital Telephone IP Adapter unit over WAN portions of the network.</li></ul> <p>The default is Disable.</p>

Field	Description
<b>DiffServ CodePoint: Value</b>	<p>Select the DiffServ CodePoint value from the drop down box.</p> <p>Valid options and their value (in hexadecimal) are:</p> <ul style="list-style-type: none"><li>■ CS7 (Precedence 7 - Network Control) - 0x38</li><li>■ CS6 (Precedence 6 - Inter-network Control) - 0x30</li><li>■ EF (Expedited Forwarding) - 0x2E</li><li>■ AF41 (Assured Forwarding Class 4, Delay = Normal, Throughput = High, Reliability = Normal) - 0x22</li><li>■ AF31 (Assured Forwarding Class 3, Delay = Normal, Throughput = High, Reliability = Normal) - 0x1A</li><li>■ AF21 (Assured Forwarding Class 2, Delay = Normal, Throughput = High, Reliability = Normal) - 0x12</li><li>■ AF11 (Assured Forwarding Class 1, Delay = Normal, Throughput = High, Reliability = Normal) - 0x0A</li><li>■ DE (Default) - 0x00</li></ul> <p>The default is EF.</p>

Field	Description
<b>802.1Q Mapping</b>	<p>This setting inserts an additional tag at the Media Access Control (MAC) layer of IEEE 802.3 and therefore ends at the first router. Refer to RFC 2474.</p> <ul style="list-style-type: none"><li>■ Click on the <b>Enable</b> option button if you want to allow prioritization of voice packets sent from this Digital Telephone IP Adapter unit over LAN portions of the network.</li><li>■ Click on the <b>Disable</b> option button if you do not want to allow prioritization of voice packets sent from this Digital Telephone IP Adapter unit over LAN portions of the network.</li></ul> <p>The default is Disable.</p>
<b>802.1Q Mapping: VLAN ID</b>	<p>Enter the Virtual Local Area Network (VLAN) ID for 802.1Q Mapping.</p> <p>Valid entries are 0 through 4094 (0xFFFE) and NC (Not Configured).</p> <p>The default is NC.</p>
<b>802.1Q Mapping: Priority</b>	<p>Select the priority value for 802.1Q Mapping from the Priority scroll box.</p> <p>Valid options are 0 through 7.</p> <p>The default is 6.</p>

---

# RLC connection configuration

This section shows you how to change the RLC connection information needed by the Digital Telephone IP Adapter unit to establish connections with the RLC on the host PBX.

**Getting there** 911x → Configuration Manager → RLC Connection Configuration

RLC Connection Configuration property sheet

**RLC CONNECTION CONFIGURATION**

Unit ID:  RLC Port Number:

**IP Connection**

Enable  Disable

IP Address:  .  .  .

IP Signaling:  Permanent  On Demand

**PSTN Connection**

Enable  Disable

PSTN Number to Connect to RLC:

**Security Level**

Security Level:

**Security Id**

Outbound Security ID:

Inbound Security ID:

## Configuring the RLC connection information

To change the RLC connection information:

- 1 Complete the fields of the RLC Connection property sheet as described in “RLC connection configuration” on page 129.
- 2 Click on the **OK** button to save the information in the temporary work file.
- 3 Click on the **Send** button to update the Digital Telephone IP Adapter unit with the new information.

### IF you are

### THEN

logged on to the Digital Telephone IP Adapter unit,

the changes are written into the Digital Telephone IP Adapter unit's buffer.

To save the changes in Flash memory, choose Upload/Download → Save to Flash.

not logged on to the Digital Telephone IP Adapter unit,

the Configuration Manager dialog box displays, similar to the following:



Do one of the following:

- a. Log on to the Digital Telephone IP Adapter unit, then click on the **Send** button again.
- b. Save the changes to a file on your administration PC.

## RLC Connection configuration field descriptions

Field	Description
<b>Unit ID</b>	The RLC's non-configurable unit ID of 254.
<b>RLC Port Number</b>	Enter the RLC voice port number designated for the Digital Telephone IP Adapter unit on the RLC Remote connection configuration property sheet. The default is 0.
<b>IP Connection</b>	<ul style="list-style-type: none"> <li>■ Click on the <b>Enable</b> option button, if you want to route calls over your IP network.</li> <li>■ Click on the <b>Disable</b> option button, if you do not want to route calls over your IP network.</li> </ul> <p>The default is Disable.</p>
<b>IP Connection: IP Address</b>	Enter the RLC's IP address. The Digital Telephone IP Adapter unit uses this IP address to connect to the RLC over the IP network.
<b>IP Connection: IP Signaling</b>	<ul style="list-style-type: none"> <li>■ Click on the <b>Permanent</b> option button to configure this port's IP connection to be up at all times.</li> <li>■ Click on the <b>On Demand</b> option button to configure this port's IP connection to be up only when needed.</li> </ul> <p>The default is Permanent.</p> <p>Refer to "Deployment" on page 64 for help in determining which setting to configure.</p>
<b>PSTN Connection</b>	This setting does not apply to Digital Telephone IP Adapters.
<b>PSTN Connection: PSTN Number to Connect to RLC</b>	This setting does not apply to Digital Telephone IP Adapters.

Field	Description
<b>Security Level</b>	<ul style="list-style-type: none"><li>■ Select <b>No Security</b> from the drop down list box if you do not want the RLC to perform a security check.</li><li>■ Select <b>Provision ID</b> from the drop down list box to require the RLC to perform a security check every time a user tries to log on to a remote unit. This action enables the Security ID fields.</li></ul> <p>The default is No Security.</p>
<b>Security Id: Outbound Security ID</b>	<p>If you selected Provision ID as the security level, enter the Security ID for outgoing calls.</p> <p>This ID must be a 10-digit password. The Digital Telephone IP Adapter unit sends the outbound security ID to the RLC. The RLC compares this ID to the Outbound Security ID that is configured on the RLC for this Digital Telephone IP Adapter unit. If the security IDs do not match, the RLC rejects the call.</p>
<b>Security Id: Inbound Security ID</b>	<p>If you selected Provision ID as the security level, enter the Security ID for incoming calls.</p> <p>This ID must be a 10-digit password. The Digital Telephone IP Adapter unit compares the security ID of the incoming call to the Inbound Security ID configured in this field. If the security IDs do not match, the Digital Telephone IP Adapter unit rejects the call.</p>
<b>iDVR Feature Keys</b>	<p>The integrated Digital Voice Recorder (iDVR) is a TelStrat product. For information on configuring iDVR functionality, contact your TelStrat representative.</p>

# Auto upgrade configuration

Use the Auto Upgrade Configuration property sheet to automatically or on a scheduled basis query a predefined TFTP server and upgrade the firmware for Remote Gateway 9100 Series units.

**Getting there** RLC → Configuration Manager → Auto Upgrade Configuration

Auto Upgrade Configuration property sheet

The screenshot shows a dialog box titled "AUTO UPGRADE CONFIGURATION". It contains several sections:

- Status:** A group box containing two radio buttons: "Enable" (unselected) and "Disable" (selected).
- TFTP Server:** A group box containing an "IP Address" field with four input boxes (each containing "0") separated by dots, and a "Start Auto Upgrade" button to its right.
- Frequency:** A group box containing three radio buttons: "Once a Day" (selected), "Once a Week" (unselected), and "Once a Month" (unselected).
- Time:** A group box containing three fields: "Time" (set to "00:00"), "Day" (a dropdown menu set to "Sunday"), and "Date" (a spinner box set to "1").

At the bottom of the dialog box, there are five buttons: "OK", "Default", "Send", "Retrieve", and "Help".

## Configuring automatic upgrade

To configure automatic upgrade of your Digital Telephone IP Adapter unit, complete the following steps:

- 1 Access the Auto Upgrade Configuration property sheet.
- 2 Complete the fields as described in “Auto Upgrade Configuration field descriptions” on page 135.
- 3 Click on the **OK** button.

**Result:** Configuration Manager writes the changes to a temporary file on the administration PC.

- 4 Click on the **Send** button to update the Digital Telephone IP Adapter unit with the new information.

**Note:** To save changes to the Digital Telephone IP Adapter unit's Flash memory, select Upload → Save to Flash from the Menu Bar.

## Auto Upgrade Configuration field descriptions

Field	Description
<b>Status</b>	<ul style="list-style-type: none"><li>■ Click on the <b>Enable</b> option button if you want to automatically or on a scheduled basis query a predefined TFTP server and upgrade the firmware for Remote Gateway 9100 Series units.</li><li>■ Click on the <b>Disable</b> option button if you do not want to automatically or on a scheduled basis upgrade the firmware for Remote Gateway 9100 Series units.</li></ul> <p>The default is Disable.</p>
<b>TFTP Server: IP Address</b>	Enter the IP address of the TFTP server you want to query for the upgrade.
<b>Start Auto Upgrade</b>	<p>Click on the <b>Start Auto Upgrade</b> button to force the auto upgrade process to begin regardless of the mode and time configuration in the auto upgrade configuration.</p> <p><b>Note:</b> Use caution when forcing the auto upgrade process as the system performs a self-reset on all units to make the new firmware active once the download of new firmware is complete.</p>
<b>Frequency</b>	<p>Click on the option button that identifies how often you want the unit to perform the auto upgrade process:</p> <ul style="list-style-type: none"><li>■ Once a Day</li><li>■ Once a Week</li><li>■ Once a Month</li></ul>
<b>Time</b>	Select the time of day that you want the unit to perform the auto upgrade process.
<b>Day</b>	Select the day when you want the auto upgrade process to be performed (if you selected “Once a Week” in the Frequency field).

---

<b>Field</b>	<b>Description</b>
<b>Date</b>	Select the date when you want the auto upgrade process to be performed (if you selected “Once a Month” in the Frequency field).

---

# Syslog configuration

Use the Syslog Configuration property sheet to enable syslog functionality and configure up to three syslog server IP addresses for logging all events (display logs) to the syslog server(s) you configure. This feature allows event logs (display logs) to be retained if you reboot or restart the Remote Gateway 9100 Series unit. Remote Gateway 9100 Series supports the following syslog collector software:

- Kiwi Syslog Daemon - [www.kiwisyslog.com](http://www.kiwisyslog.com)
- WinSyslog - [www.winsyslog.com](http://www.winsyslog.com)
- tftpd32 server - <http://tftpd32.jounin.net>

**Getting there** RLC → Configuration Manager → Syslog Configuration

Syslog Configuration property sheet

**SYSLOG CONFIGURATION**

Status

Enable  
 Disable

IP Address: 242 . 158 . 15 . 15 >

Syslog Servers (max. 3): [Empty List Box] Delete

Facility Indicator: Local Use 0

OK Default Send Retrieve Help

## Configuring syslog functionality

To configure syslog functionality on your RLC, complete the following steps:

- 1 Access the Syslog Configuration property sheet.
- 2 Complete the fields as described in “Syslog Configuration field descriptions” on page 139.
- 3 Click on the **OK** button.

**Result:** Configuration Manager writes the changes to a temporary file on the administration PC.

- 4 Click on the **Send** button to update the RLC with the new information.

**Note:** To save changes to the RLC’s Flash memory, select Upload → Save to Flash from the Menu Bar.

## Syslog Configuration field descriptions

Field	Description
<b>Status</b>	<ul style="list-style-type: none"><li>■ Click on the <b>Enable</b> option button if you want to enable the syslog functionality.</li><li>■ Click on the <b>Disable</b> option button if you do not want to enable the syslog functionality.</li></ul> <p>The default is Disable.</p>
<b>IP Address</b>	<p>Enter the IP Address of the syslog server. Then, press the Enter key or click on the -&gt; button to add the IP address to the Syslog Servers window. You can enter up to three syslog server IP addresses.</p> <p><b>Result:</b> The IP address of the syslog server displays in the Syslog Servers window.</p>
<b>Delete</b>	<p>To delete a syslog server IP address from the Syslog Servers window, click on the specific IP address that you want to delete and then click on the <b>Delete</b> button.</p>
<b>Facility Indicator</b>	<p>Select the facility indicator from the drop down box.</p> <p>Valid options are Local Use 0 through 7.</p>



# Chapter 6

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## Using the digital telephone

### In this chapter

Modes of operation	142
Placing and receiving calls	144
Indicator updates	146
Display messages	147
Telephone features operation	150
Going online and offline	152

# Modes of operation

Digital telephones at your Digital Telephone IP Adapter unit site can operate in the following modes:

- host-controlled
- online to host PBX
- offline from host PBX

## Host-controlled modes

Host-controlled mode means that the host PBX controls the following:

- some display messages that display on your telephone
- indicator updates such as the message waiting indicator
- calls that you receive from or place to someone at the host PBX site

In host-controlled mode, a voice path is established to the host PBX and signaling messages are passed between the host PBX and the Digital Telephone IP Adapter unit.

## Online mode

When in online mode, calls initiated on the host calling key are directed through the host PBX. The display on your digital telephone set shows `Online Mode`.

## Offline mode

When in offline mode, you cannot place or receive calls through the host PBX. The display on all digital telephone sets show `Offline Mode`.

## What controls the online and offline modes

The online and offline modes can be controlled by one or both of the following:

- online/offline schedule configured for your site on the RLC at the host PBX
- special prefix (SPRE) codes configured on the Digital Telephone IP Adapter unit at your site

For more information, refer to “SPRE Codes: Online” on page 119 and “SPRE Codes: Offline” on page 119.

# Placing and receiving calls

Place outgoing calls by pressing the calling key to receive an outgoing line.

## Receiving incoming calls

A Digital Telephone IP Adapter unit receives host-controlled incoming calls over the IP network.

## Methods for placing outgoing calls

You can place an outbound call from a Digital Telephone IP Adapter unit station in one of the following ways:

- method 1: Lift the telephone handset.  
This method automatically initiates a host-controlled call.
- method 2: Press the calling key.  
Pressing the host calling key initiates a host-controlled call.

## Placing a host-controlled call

To place a host-controlled call:

- 1 Lift the telephone handset or press the host calling key.

**Result:** You hear a dial tone over a connection with the host PBX.

**Note:** If a connection to the host PBX cannot be established within a time-out period or no resources are available to carry the call, you hear a reorder dial tone (fast busy signal), and one of the following messages appears on the telephone display:

- Release and Try Again
- Bandwidth Limit
- DSP Limit

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

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

- 2 Dial the number of the party you want to call.

**Result:** The host PBX receives and processes the dialed digits, and rings the called party.

## Calling another station at your site—host-controlled mode

Place station-to-station calls through the host PBX to allow all stations configured as multiple appearance DN (MADN) to ring and provide access to voice mail, if the call is not answered.

If a connection cannot be established through the host PBX, you can use the local calling key to place the station-to-station call.

- 1 Lift the telephone handset or press the host calling key.

**Result:** A connection is established with the host PBX and you hear a dial tone. The indicator beside the host calling key lights up.

- 2 Dial the extension of the party you wish to reach.

**Result:** The host PBX receives and processes the dialed digits, and rings the station as well as any other stations that include the dialed DN as an MADN key.

**Note:** The MADN stations could be located at another site (such as the host PBX site). If the call is answered by a MADN station at another site, a voice path to the host PBX is established and the call proceeds.

# Indicator updates

Digital telephone indicators reflect the current status of the telephone. For example, they identify when calls are waiting, active, on hold, or (if your office has voice mail) that messages are waiting.

The host PBX updates indicators when a connection between the host PBX and Digital Telephone IP Adapter unit is active.

## Host-controlled indicator updates

The host PBX automatically updates indicators for host-controlled features each time any of the following occur:

- the host PBX receives an incoming call from your site
- the host PBX processes an outgoing call from your site
- the host PBX sends a message waiting indicator (MWI) update

**Note:** When online with a permanent connection to the host PBX, a remote site receives constant telephone indicator updates.

# Display messages

This section describes the messages that can display on your digital telephone set.

## Message descriptions

Message	Description
Going Offline in 30 Secs	This message warns you that all digital telephones at this site are about to go offline in the number of seconds indicated.
Going Offline in 20 Secs	If any calls are active, they disconnect when the offline mode activates.
Going Offline in 10 Secs	To override, enter the online SPRE code.
Hostless Mode	The connection to the host PBX cannot be established. The host PBX may be temporarily unavailable. <b>Note:</b> If Hostless Mode persists, contact your system administrator.
Logged In	If this message appears on your station, your station participates in a multi-user or dynamic pool port on the RLC. Your station is logged on. <b>Note:</b> This message only displays for approximately 10 seconds.

Message	Description
Offline Mode	<p>This means you cannot place calls through the host PBX.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"><li>■ If you need to place a call through the host PBX while in offline mode, enter the online SPRE code. Refer to “SPRE Codes: Online” on page 119 for further details.</li><li>■ The <code>Offline Mode</code> message is not persistent on the M3903 telephone display. This message sometimes only displays for part of the Offline period.</li></ul>
Online Mode	<p>This means you can place and receive calls through the host PBX.</p>
Port Already in Use	<p>If this message appears on your station, your station participates in a multi-user or dynamic pool port on the RLC.</p> <p>This message appears if the port that you are attempting to log on to is already being used by someone else.</p>
Port Not Logged In	<p>If this message appears on your station, your station participates in a multi-user or dynamic pool port on the RLC. Your station is logged off.</p>
Release and Try Again	<p>There are not enough DSP resources to process the call. Try again at a later time.</p> <p><b>Note:</b> Ensure to initiate calls from the appropriate calling key according to the following parameters:</p> <ul style="list-style-type: none"><li>■ Use the host calling key to call someone at the host PBX site.</li></ul>
Bandwidth Limit	<p>There is not enough bandwidth to complete the requested action. Try again at a later time.</p>

<b>Message</b>	<b>Description</b>
DSP Limit	There were not enough DSP resources to complete the requested action. Try again at a later time.

---

# Telephone features operation

This section describes how to use the following digital telephone features in host-controlled modes:

- call forward
- call transfer
- call waiting
- conference
- emergency service calls
- hold

## Emergency service calls

Do not place an emergency service call, for instance a call for police, fire department, or ambulance help, using a telephone connected to a Digital Telephone IP Adapter unit.

## Hold

When you press the Hold key on a host-controlled call, the holding party receives the Hold treatment defined on the host PBX. For example, if the host PBX is configured to play music for the holding parties, then the holding party hears music. You can press the local calling key to place a new call.

## Call Waiting

Since the Digital Telephone IP Adapter unit does not use host-controlled indicators, there are never any indicator conflicts when a call is presented to the station.

The Digital Telephone IP Adapter unit always checks the status of your station before ringing it. If your station is busy with a call, the alert tone is sounded instead.

### **How Call Waiting works in host-controlled mode**

If you are busy with a host-controlled call, incoming calls are handled as follows:

- An incoming host-controlled call is directed to the call waiting key by the host PBX.
- An incoming locally controlled call flashes the local calling key indicator and sounds the alert tone.

### **Call Transfer**

To transfer a call:

- 1** Press the **Transfer** key.

**Result:** The active call is placed on hold and you hear dial tone.

- 2** Dial the number that you want to transfer the call to.

- 3** Press the **Transfer** key again to complete the transfer.

**Note:** You can press the Transfer key while the call is still ringing, or after the called party answers.

## Going online and offline

Your Digital Telephone IP Adapter unit site can operate in either online mode or offline mode. This is controlled by one or both of the following:

- SPRE codes to manually toggle between online and offline modes.
- An online/offline schedule on the host PBX to automatically toggle your site between online and offline modes.

For a description of the online and offline modes, refer to “Modes of operation” on page 142.

### Using the SPRE code to place your unit in online mode

To use the SPRE code to place your unit in online mode:

- 1 Lift the telephone handset, or press the local calling key.
- 2 Press the pound (#) key followed by the online SPRE code.

**Note:** Contact your system administrator for the online SPRE code.

**Result:** The connection to the host PBX is initiated and negotiated with the host PBX. During this negotiation period (up to five seconds), you cannot place host-controlled calls. When negotiation is completed and connection to the host PBX has been established, Online Mode appears on the telephone display and the system is ready to place and receive host calls.

### Using the SPRE code to place your unit in offline mode

To use the SPRE code to place your unit in offline mode, dial the pound (#) key followed by the offline SPRE code.

**Note:** Contact your system administrator for the online SPRE code.

**Result:** Offline Mode appears on the telephone display.

## **Overriding an automatic offline event from the host PBX**

If the host PBX attempts to process an offline event while you are on a host-controlled call, you are alerted by both an audible alert and a display message indicating that you are about to go offline in 30, 20, or 10 seconds. If you ignore this warning, your call disconnects.

To prevent your call from being disconnected, enter the online SPRE code. You can do this without putting your call on hold first. The online SPRE code cancels the offline event, leaving your telephone online until the next offline event occurs.



# Chapter 7

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## Administration

### In this chapter

Changing the administration password	156
Creating a backup configuration file	159
Restoring the configuration	162
Display logs	167
Statistics screens	171
Verifying the firmware and software version	191
Obtaining the latest upgrade file	193
Extracting upgrade files from the download file	194
Performing a firmware upgrade	196
Restarting the system	204
Performing a software upgrade	206

## Changing the administration password

Two layers of password security protect the Digital Telephone IP Adapter unit's configuration. If you want to secure the Digital Telephone IP Adapter unit's configuration, then change the following items:

- Configuration Manager password  
This password prevents unauthorized users from performing offline configuration changes.
- Digital Telephone IP Adapter unit's password  
This password prevents unauthorized users from performing online changes of the configuration residing in the Digital Telephone IP Adapter unit's Flash memory.

**Note:** Make sure that you record the password and store it in a safe, secure location. If you forget or lose the password, contact your Nortel customer support representative.

**Getting there** 911x → Configuration Manager

## Changing the Configuration Manager password

To change the Configuration Manager password:

- 1 From the Menu Bar, choose Connect → Change Password → Local.

**Result:** The Change Password -Local dialog displays, similar to the following:



The image shows a standard Windows-style dialog box titled "Change Password - Local". It features a blue title bar with a close button (X) on the right. The main area is light gray and contains three text input fields stacked vertically. The first field is labeled "Old Password", the second "New Password", and the third "Retype New Password". At the bottom of the dialog, there are two buttons: "OK" on the left and "Cancel" on the right.

- 2 Complete the fields in the Change Password - Local dialog box.
- 3 Click on the **OK** button.

## Changing the Digital Telephone IP Adapter unit's password

To change the Digital Telephone IP Adapter unit's password:

### ATTENTION

Do not change the Digital Telephone IP Adapter unit's password until the system is up and working.

- 1 From the Menu Bar, choose Connect → Change Password → Node.

**Result:** The Change Password - Node dialog box displays, similar to the following:



The image shows a dialog box titled "Change Password - Node". It contains three text input fields labeled "Old Password", "New Password", and "Retype New Password". At the bottom, there are two buttons: "OK" and "Cancel".

- 2 Complete the fields in the Change Password - Node dialog box.
- 3 Click on the **OK** button.

# Creating a backup configuration file

Create a backup copy of the Digital Telephone IP Adapter unit's configuration by downloading the configuration Flash memory to a text file on your administration PC. Nortel recommends that you create a backup of your configuration file whenever you make configuration changes or after you perform a firmware upgrade.

## Storing backup configuration files

The Digital Telephone IP Adapter unit is an extension of the telecommunications and data network. It is extremely important that you keep a backup copy of the Digital Telephone IP Adapter unit's configuration. If the Digital Telephone IP Adapter unit's Flash memory or configuration becomes corrupted or is lost, you can easily restore it.

Store the configuration file in a safe, secure location, such as on backup tape or other media that is stored offsite.

Nortel recommends that you keep the backup files indefinitely.

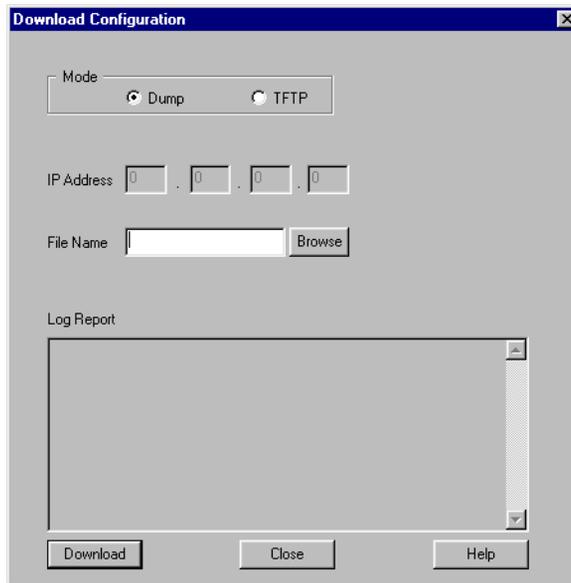
## Getting there 911x → Configuration Manager

## Creating the backup file

To create the backup file:

- 1 From the Menu Bar, choose Upload/Download → Download Config.

**Result:** The Download Configuration dialog box displays, similar to the following:



- 2 Choose the mode you want to use for the file transfer according to the following table:

**IF you wish to save the configuration file to**      **THEN do the following:**

---

the administration PC,      Click on the **Dump** option button.

a different location on the IP network,      1 Click on the **TFTP** option button.

**Result:** This enables the IP Address fields.

- 2 Enter the IP address of the PC that you want to save the configuration file on.
-

- 3 Click on the **Browse** button and navigate to the folder where you want to keep the configuration text file.

- 4 Enter a name for the file in the File name field.

**Note:** This configuration file becomes your backup file, so ensure the file name is meaningful. The file name's extension must be .TXT.

- 5 Click on the **Download** button.

**Result:** The Download configuration dialog box closes, and the following message displays in the status bar at the bottom of the screen:

Downloading Config From Board

When the download is complete, the Downloaded Configuration Data dialog box displays, similar to the following:



- 6 Click on the **OK** button.

# Restoring the configuration

Restore the Digital Telephone IP Adapter unit's configuration in Flash memory by uploading a configuration text file from your administration PC.

Perform the upload over the IP network using the TFTP protocol. You must have a TFTP server application running on your administration PC. The TFTP server's base directory must point to the directory that contains the configuration file you want to upload.

## Before you begin

Before you can upload the configuration file to the Digital Telephone IP Adapter unit, you must complete the following steps:

- 1 Start the TFTP server application.
- 2 Ensure the TFTP base directory points to the location of the configuration file.

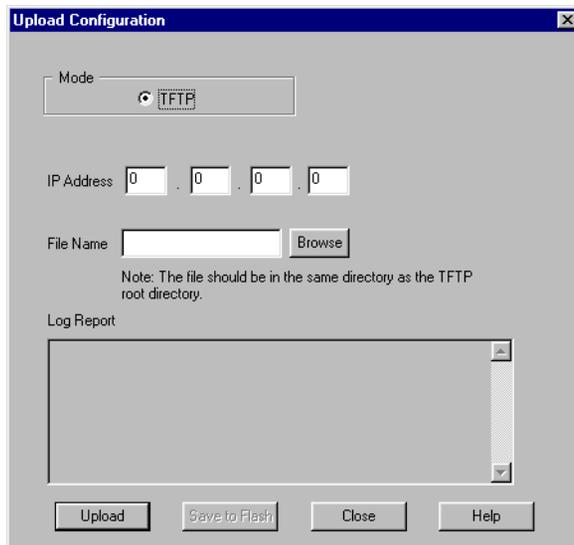
**Getting there** 911x → Configuration Manager

## Uploading a configuration file over the IP network

To upload a configuration file over the IP network:

- 1 Navigate to the location of the configuration file.
- 2 From the Menu Bar, choose → Upload/Download → Upload Config.

**Result:** The Upload Configuration dialog box displays, similar to the following:.

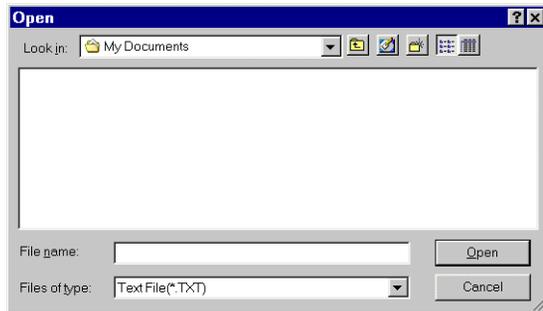


- 3 Enter the IP address of the TFTP server in the IP Address fields.

**Note:** Since the TFTP server application is running on your administration PC, this is the IP address of that PC.

- 4 Click on the **Browse** button.

**Result:** The Open dialog box displays, similar to the following:



- 5 Ensure the Files of type list drop down box shows Text File (\*.TXT)
- 6 Navigate to the folder containing the configuration file.
- 7 Select the file, then click on the **Open** button.

**Result:** The Upload Configuration dialog box displays with the file you selected shown in the File Name field.

- 8 Click on the **Upload** button.

**Result:** The middle of the Upload Configuration dialog box displays status messages relating to the upload. The following is an example.

Upload Configuration

Mode  TFTP

IP Address 192 . 168 . 142 . 133

File Name 911x\_unit3.tx: Browse

Note: The file should be in the same directory as the TFTP root directory.

Log Report

Processing command IPCFG ...  
Processing command SYSCFG ...  
Processing command ROUCFG ...  
Processing command RLCDETCFG ...  
Processing command ROUDEVCFG ...  
Processing command FKEYCFG ...  
Configuration File 911x\_unit3.tx uploaded  
Config upload successful.

Upload Save to Flash Close Help



## CAUTION

### Risk of incorrect operation due to partial configuration

Do not interrupt the configuration upload. If you interrupt the configuration upload, this results in an incomplete configuration in the Digital Telephone IP Adapter unit's database.

If the configuration upload is interrupted, repeat this procedure immediately.

IF the upload	THEN
is successful,	the following message displays: CONFIG UPLOAD SUCCESSFUL... USE SAVECFG TO UPDATE FLASH.
fails,	the following message displays in the middle of the Upload Configuration dialog box: CONFIG UPLOAD FAILED For further instructions, refer to Chapter 8, “Troubleshooting”.

**Note:** Do not ignore error messages in Save to Flash process. If Save to Flash fails, retry uploading and saving to Flash. If the problem persists, check the file being uploaded and report the problem to Nortel.

- From the Upload Configuration dialog box, click on the **Save to Flash** button.

**Result:** The FLASH CONFIG dialog box displays, similar to the following:



- Click on the **Yes** button.

**Result:** The following message displays in the status bar at the bottom of the screen:

Saving to Flash in Progress

When the save is finished, the following message displays in the middle of the Upload Configuration dialog box:

CONFIGURATION IS UPDATED INTO FLASH...

- Click on the **Close** button.
- Restart the RLC.

**Note:** For instructions, refer to “Restarting the system” on page 204.

## Display logs

The Digital Telephone IP Adapter unit keeps track of system performance through the maintenance of display logs. Each line, or display log, represents a separate action completed by the unit.

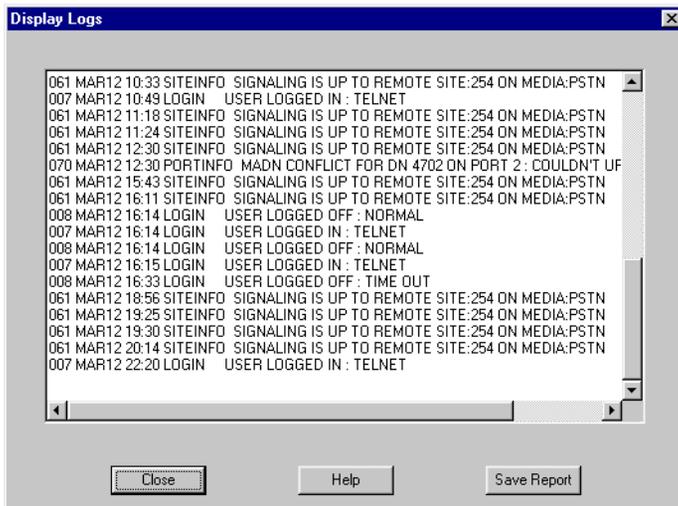
Use the display logs when troubleshooting system problems. Click on the **Save Report** button if you need to print the display logs to a text file. Refer to Configuration Manager Help for a complete listing of all display logs and the condition indicated by each.

**Getting there** 911x → Configuration Manager

### Viewing display logs

From the Menu Bar, choose Alarms/Stats/Logs → Display Logs.

**Result:** The Digital Telephone IP Adapter unit lists the display logs it maintains in a window similar to the following. You can use the scroll bar to browse through the display logs.

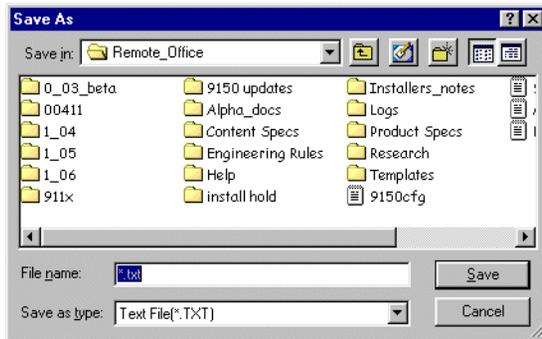


## Printing the display logs to a file

If you request technical support, your support representative can ask you to provide a copy of the display logs. To recreate the log in a file on your administration PC, use the following procedure:

- 1 After listing the display logs using the procedure explained under “Viewing display logs” on page 167, click on the **Save Report** button on the Display Logs window.

**Result:** The Save As dialog box displays, similar to the following:



- 2 Enter a name for the configuration in the File name field.

**Result:** Configuration Manager saves the display logs to a text file in the location indicated in the Save As dialog box.

## Changing the number of display logs retained by the Digital Telephone IP Adapter unit

A Digital Telephone IP Adapter unit retains a maximum of 1000 display logs, each requiring one line of text. When the unit's display logs reach 1000 lines, new display logs overwrite existing display logs on a first in, first out basis. If you want to change the number of display logs retained by the Digital Telephone IP Adapter unit, complete the following procedure:

- 1 From the Menu Bar, choose Alarms/Stats/Logs → Resize Logs.

**Result:** The Resize Log dialog box displays, similar to the following:



- Note:** “Maximum logs” refers to the number of text lines, or messages, maintained by the Digital Telephone IP Adapter unit. The Digital Telephone IP Adapter unit currently retains a maximum of 1000 text lines.
- 2 Enter the maximum number of text lines you want maintained by the Digital Telephone IP Adapter unit in the Maximum Logs field.
  - 3 Click on the **OK** button.

## Clear logs

The Digital Telephone IP Adapter unit allows you to delete unneeded information by clearing the display logs. To discard or clear display logs that are no longer useful:

- 1 From the Menu Bar, choose Alarms/Stats/Logs → Clear Logs.

**Result:** The Clear Logs dialog box displays, similar to the following:



IF you select	THEN
No,	the Clear logs dialog box closes and the retained display logs remain as they are.
Yes,	<ul style="list-style-type: none"><li>■ the Digital Telephone IP Adapter unit deletes its stored display logs.</li><li>■ the LOGS cleared dialog box displays, similar to the following:</li></ul>



Click on the **OK** button.



To display the Bandwidth Connection Statistics screen, refer to “Displaying the Bandwidth Connection Statistics screen”, as follows. To obtain the definitions for the statistics presented on the Bandwidth Connection Statistics screen, refer to “Bandwidth Connection Statistics field descriptions” on page 173.

### Displaying the Bandwidth Connection Statistics screen

Choose Alarms/Stats/Logs → BW Connection Statistics from the Menu Bar to display the Bandwidth Connection Statistics screen.

**Result:** Configuration Manager gathers statistics from the Digital Telephone IP Adapter unit and displays the Bandwidth Connection Statistics screen, similar to the example on page 171.

<b>IF you want to</b>	<b>THEN click</b>
update the statistics with the latest information,	on the <b>Refresh</b> button.
create a text file containing these statistics,	on the <b>Save to File</b> button.
close the Trunk Connection Statistics screen,	on the <b>Close</b> button.
obtain descriptions of the statistics in the Trunk Connection Statistics screen,	on the <b>Help</b> button.

### Bandwidth Connection Statistics field descriptions

The following table describes the statistics on the Bandwidth Connection Statistics screen:

Statistic	Description
<b>Remote Unit Number</b>	Identifies the remote unit that initiated the call.
<b>Signaling Status</b>	Identifies whether a connection is up on this unit. Valid values are Active and Idle.
<b>No of Voice Calls on IP</b>	Identifies the number of calls in progress on this unit's IP connection.
<b>No of Voice Calls on PSTN</b>	PSTN statistics do not apply to Digital Telephone IP Adapter units.
<b>Used IP BW</b>	Identifies the IP bandwidth in use on this unit.
<b>Used Trunk BW</b>	Trunk bandwidth statistics do not apply to Digital Telephone IP Adapter units.
<b>Total Up Trunk BW</b>	Trunk bandwidth statistics do not apply to Digital Telephone IP Adapter units.
<b>IP QoS Status</b>	QoS statistics do not apply to Digital Telephone IP Adapter units.



## Displaying the Caller Info Statistics screen

Choose Alarms/Stats/Logs → Caller Info Statistics from the Menu Bar to display the Caller Info Statistics screen.

**Result:** Configuration Manager gathers the statistics from the Digital Telephone IP Adapter unit and displays the Caller Info Statistics screen, similar to the example on page 174:

<b>IF you want to</b>	<b>THEN click</b>
update the statistics with the latest information,	on the <b>Refresh</b> button.
create a text file containing these statistics,	on the <b>Save to File</b> button.
close the Trunk Connection Statistics screen,	on the <b>Close</b> button.
obtain descriptions of the statistics in the Trunk Connection Statistics screen,	on the <b>Help</b> button.

## Caller Info Statistics field descriptions

The following table describes the statistics on the Caller Info Statistics screen:

Statistic	Description
<b>Connection ID</b>	Identifies the sequential number of the call processed by the remote unit in relation to all calls ever processed by that unit.
<b>Remote ID</b>	Identifies the Unit ID of the remote site that was involved in the call. Local calls on a Remote Gateway 9150 unit result in a 0 in this field.
<b>Current Media</b>	PSTN statistics do not apply to Digital Telephone IP Adapters.
<b>Type</b>	Identifies the type of call. Valid values are Signaling, Voice, and Local.
<b>Priority</b>	PSTN statistics do not apply to Digital Telephone IP Adapters.
<b>Call BW</b>	Identifies the amount of bandwidth used by the call.
<b>Start Time</b>	Identifies the time that the connection initiated.
<b>Transitions to PSTN</b>	Transition statistics do not apply to Digital Telephone IP Adapters.
<b>Transitions to IP</b>	Transition statistics do not apply to Digital Telephone IP Adapters.
<b>Last Transition to PSTN</b>	Transition statistics do not apply to Digital Telephone IP Adapters.
<b>Last Transition to IP</b>	Transition statistics do not apply to Digital Telephone IP Adapters.



## Displaying the DSP Statistics screen

Choose Alarms/Stats/Logs → DSP Statistics from the Menu Bar to display the DSP Statistics screen.

**Result:** Configuration Manager gathers statistics from the Digital Telephone IP Adapter unit and displays the DSP Statistics screen, similar to the example on page 177.

<b>IF you want to</b>	<b>THEN click</b>
update the statistics with the latest information,	on the <b>Refresh</b> button.
create a text file containing these statistics,	on the <b>Save to File</b> button.
close the Trunk Connection Statistics screen,	on the <b>Close</b> button.
obtain descriptions of the statistics in the Trunk Connection Statistics screen,	on the <b>Help</b> button.

## DSP Statistics field descriptions

The following table describes the statistics on the DSP Statistics screen:

<b>Statistic</b>	<b>Description</b>
<b>Single Digit Device ID</b>	Identifies an internal sequence number for indexing this DSP device among all others on the RLC.
<b>Module Number</b>	Identifies this DSP Application Module's module number on the RLC. Valid values are 0, 1, 2, 3, and 4.
<b>Device Number</b>	Identifies the DSP device that processed the call.
<b>In Service</b>	Identifies any voice channels operating on this DSP application module.
<b>Total MIPS</b>	Identifies the total millions of instructions per second (MIPS) capacity for this DSP device.
<b>Available Mips</b>	Identifies the millions of instructions per second (MIPS) currently available on this DSP device.
<b>Total Channels</b>	Identifies the total channel capacity for this DSP device.
<b>Total Voice Channels</b>	Identifies the total voice channel capacity for this DSP device.
<b>Available Voice Channels</b>	Identifies the number of unused voice channels on this DSP device.
<b>Total Modem Channels</b>	Identifies the number of channels on this DSP device that can transmit modem calls.

<b>Statistic</b>	<b>Description</b>
<b>Available Modem Channels</b>	Identifies the number of unused channels on this DSP that can transmit modem calls.
<b>Total Flex Channels</b>	Identifies the number of channels on this DSP that can provide multiple functionalities.
<b>Available Flex Channels</b>	Identifies the number of channels on this DSP currently available to provide multiple functionalities.
<b>Total Tones Channels</b>	Identifies the number of channels on this DSP that can transmit tones.
<b>Total Reserved Channels</b>	Identifies the number of special purpose channels on this DSP reserved for internal use.
<b>Name</b>	Identifies the name of the DSP load, that is, the combination of DSP algorithms, on the DSP application module.

---



## Displaying the Ethernet Interface Statistics screen

Choose Alarms/Stats/Logs → Ethernet Interface Statistics from the Menu Bar to display the Ethernet Interface Statistics screen.

**Result:** Configuration Manager gathers statistics from the Digital Telephone IP Adapter unit and displays the Ethernet Interface Statistics screen, similar to the example on page 181.

<b>IF you want to</b>	<b>THEN click</b>
update the statistics with the latest information,	on the <b>Refresh</b> button.
create a text file containing these statistics,	on the <b>Save to File</b> button.
close the Trunk Connection Statistics screen,	on the <b>Close</b> button.
obtain descriptions of the statistics in the Trunk Connection Statistics screen,	on the <b>Help</b> button.

## Ethernet Interface Statistics field descriptions

The following table describes the statistics on the Ethernet Interface Statistics screen:

<b>Statistic</b>	<b>Description</b>
<b>Channel</b>	Identifies the Ethernet device that the statistics on that line apply to. Valid value is 1.
<b>LAN Drv</b>	Identifies the LAN driver used by the call.
<b>Admin</b>	Identifies the administrative state of the port. Valid values are 1 (Enabled) and 0 (Disabled).
<b>Oper</b>	Identifies the operational state of the port. Valid values are 1 (Up) and 0 (Down).
<b>IfcType</b>	Identifies the interface type used by the call.
<b>IfcNo</b>	Identifies the Ethernet interface used by the call. Valid values are 0 (ELAN) and 1 (CLAN).
<b>MTUlen</b>	Identifies the Maximum Transmission Unit for this interface in bytes.
<b>Speed</b>	Identifies the data rate of this interface in Mbps.
<b>Rx - Octet</b>	Identifies the number of bytes received on the given channel since the statistics were last reset.
<b>UPkts</b>	Identifies the number of packets with a unicast Ethernet address that directly matches the Ethernet address of the identified unit. This statistic describes the period of time since the statistics were last reset.

<b>Statistic</b>	<b>Description</b>
<b>MPkts</b>	Identifies the number of multicast packets received. These packets can be broadcast MAC addresses for protocols such as ARP, as well as multicast packets for group-oriented transmissions such as IP Multicast. This statistic describes the period of time since the statistics were last reset.
<b>Disc</b>	Identifies the number of packets discarded on the channel since the statistics were last reset.
<b>Err</b>	Identifies the number of error packets received on the given channel since the statistics were last reset.
<b>Tx - Octet</b>	Identifies the number of outbound bytes transmitted on the given channel since the statistics were last reset.
<b>UPkts</b>	Identifies the number of outbound packets sent to a Unicast Address (single recipient) on the given channel since the statistics were last reset.
<b>MPkts</b>	Identifies the number of outbound packets sent to multiple recipients on the given channel since the statistics were last reset.
<b>Disc</b>	Identifies the number of outbound packets discarded due to resource problems on the given channel since the statistics were last reset.
<b>Err</b>	Identifies the number of outbound packets discarded due to errors on the given channel since the statistics were last reset.

---

<b>Statistic</b>	<b>Description</b>
<b>QLen</b>	Identifies the number of bytes currently in the interface's outbound queue.
<b>Collisions</b>	Identifies the number of collisions that have occurred on the Ethernet interface while attempting to transmit packets since the statistics were last reset.  <b>Note:</b> The Collisions statistic is only applicable in half-duplex mode.

---

## Network Statistics

Network Statistics allow you to see the performance of the Digital Telephone IP Adapter unit in terms of the transmission and reception of frames and packets during the last 24 hours. Use this log to identify periods when other network activity can adversely affect Remote Gateway 9100 Series system performance.

Hour	Tx Voice Samples	Rx Voice Samples	Rx Error	Rx Dropped	% Error	EthTx Mcast	EthTx Ucast	EthTx
0	396	282	0	0	0.00...	1	608	0
1	0	0	0	0	0.00...	1	184	0
2	0	0	0	0	0.00...	1	84	0
3	0	0	0	0	0.00...	0	0	0
4	0	0	0	0	0.00...	0	0	0
5	0	0	0	0	0.00...	0	7	0
6	0	0	0	0	0.00...	0	0	0
7	0	0	0	0	0.00...	0	0	0
8	0	0	0	0	0.00...	0	7	0
9	0	0	0	0	0.00...	0	0	0
10	0	0	0	0	0.00...	0	0	0
11	0	0	0	0	0.00...	0	0	0
12	0	0	0	0	0.00...	0	0	0
13	0	0	0	0	0.00...	0	10	0
14	0	0	0	0	0.00...	0	0	0
15	0	0	0	0	0.00...	0	0	0
16	0	0	0	0	0.00...	0	10	0
17	136482	145131	1	0	0.00...	0	31326	0
18	0	0	0	0	0.00...	0	0	0
19	0	0	0	0	0.00...	0	0	0
20	0	0	0	0	0.00...	0	0	0
21	0	0	0	0	0.00...	0	0	0

Refresh Save to File Close Reset Help

To display the Network Statistics screen, refer to “Displaying the Network Statistics screen” on page 187. To obtain the definitions for the statistics presented on the Network Statistics screen, refer to “Network Statistics field descriptions” on page 188.

## Displaying the Network Statistics screen

Choose Alarms/Stats/Logs → Network Statistics from the Menu Bar to display the Network Statistics screen.

**Result:** Configuration Manager gathers statistics from the Digital Telephone IP Adapter unit and displays the Network Statistics screen, similar to the example on page 186.

<b>IF you want to</b>	<b>THEN click</b>
update the statistics with the latest information,	on the <b>Refresh</b> button.
create a text file containing these statistics,	on the <b>Save to File</b> button.
close the Trunk Connection Statistics screen,	on the <b>Close</b> button.
obtain descriptions of the statistics in the Trunk Connection Statistics screen,	on the <b>Help</b> button.

## Network Statistics field descriptions

The following table describes the information on the Network Statistics screen:

**Note:** A *decoder packet* is a nominal DSP voice packet. The size of a decoder packet varies according to the compression algorithm used. Decoder packets can be added to a superpacket before the DSP forwards the superpacket to the host.

Statistic	Description
<b>Hour</b>	<p>Identifies the 60-minute period, within the most recent 24 hours, that the other statistics on this line apply to.</p> <p>The statistics on the line where "0" is in this column refer to activity that occurred within 60 minutes of the request for statistics. The statistics on the line where "1" is in this column refer to activity that occurred during the 60-minute period that ended 60 minutes, or one hour, before the request for statistics. The statistics on the line where "2" is in this column refer to activity that occurred during the 60-minute period that ended two hours before the request for statistics, and so on.</p>
<b>Tx Voice Samples</b>	<p>Identifies the number of decoder packets transmitted by the DSP during the given hour. This number corresponds to in-band signaling, such as DTMF or Fax Relay, and voice signaling transmitted by the DSP.</p> <p><b>Note:</b> This statistic formerly was expressed in superpackets rather than decoder packets.</p>
<b>Rx Voice Samples</b>	<p>Identifies the number of decoder packets received by the DSP during the given hour. This number corresponds to in-band signaling, such as DTMF or Fax Relay, and voice signaling received by the DSP.</p> <p><b>Note:</b> This statistic formerly was expressed in superpackets rather than decoder packets.</p>
<b>Rx Error</b>	<p>Identifies the number of decoder packet overruns and underruns during the given hour, as determined by the DSP.</p>

Statistic	Description
<b>Rx Dropped</b>	<p>Identifies the number of superpackets that were received out of sequence during the given hour.</p> <p>This can result from one or more superpacket's being lost or delivered out of order and, thus, discarded.</p>
<b>%Error</b>	<p>Identifies the packet error percentage that was received during the given hour.</p> <p>Remote Gateway 9100 Series begins calculating this statistic by adding the number out-of-sequence packets (Rx Dropped) to the number of overruns. After multiplying this sum by 100, Remote Gateway 9100 Series then divides the product by the number of received decoder packets (Rx Voice Samples) to produce the error percentage.</p> <p>This is an imprecise measurement due to the fact that multiple packet losses or overruns can be counted as a single error.</p>
<b>EthTx Mcast</b>	<p>Identifies the number of multicast packets transmitted during the given hour.</p> <p>Multicast packets are packets intended for multiple Ethernet addresses.</p>
<b>EthTX Ucast</b>	<p>Identifies the number of unicast packets transmitted during the given hour.</p> <p>Unicast packets are packets intended for a specific Ethernet address. Voice packets are always transmitted as unicast packets.</p>
<b>EthTx Disc</b>	<p>Identifies the number of packets discarded on the transmit side due to lack of resources, such as memory buffers, during the given hour.</p> <p>This can be an indirect result of excessive collisions in the transmit queue.</p>

Statistic	Description
<b>EthTx Err</b>	Identifies the number of packets that could not be transmitted because of errors within the packets.
<b>EthRx Mcast</b>	Identifies the number of multicast packets that were received during the given hour. This is inclusive of packets with broadcast MAC addresses for protocols such as ARP, and multicast packets for group-oriented transmissions, such as IP Multicast.  Multicast packets are packets intended for more than one Ethernet address.
<b>EthRx UCast</b>	Identifies the number of unicast packets that were received during the given hour with a unicast Ethernet address directly matching that of the specified unit.  Unicast packets are packets intended for only one Ethernet address.
<b>EthRx Disc</b>	Identifies the number of packets that were received during the given hour and discarded due to a lack of available receive buffers.
<b>EthRx Err</b>	Identifies the number of packets that were received during the given hour that contained errors that prevented them from being deliverable to a higher-layer protocol.
<b>Collisions</b>	Identifies the number of collisions that have occurred on the Ethernet interface when attempting to transmit packets since the statistics were last reset.  <b>Note:</b> The Collisions statistic is only applicable in half-duplex mode.

# Verifying the firmware and software version

This section describes how to determine the version of firmware and software currently installed.

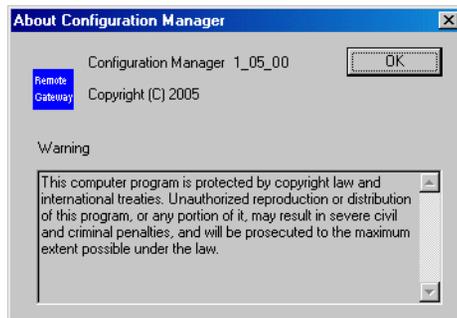
Before you perform a firmware or software upgrade, determine what version is currently installed. This ensures that you do not replace the installed firmware or software with an older version.

## Verifying the software version

To verify the software version on your Digital Telephone IP Adapter unit:

- 1 From the Menu Bar, choose Help → About Configuration Manager.

**Result:** The About Configuration Manager dialog box displays, similar to the following:



- 2 Review the About Configuration Manager dialog box. This identifies the version of software installed on the unit.
- 3 Click on the **OK** button.

## Verifying the firmware version

To verify the firmware version on your Digital Telephone IP Adapter unit:

- 1 From the Menu Bar, choose System Information → System Data.
- 2 The System Configuration Details dialog box displays, similar to the following:

Unit Id	20	Site Name	911X
Unit Type	911X	Unit Version	1_05_00 911X
Database Version	1.33	Date	JAN-12-2004
		Time	10:17
IP Address	192.168.143.32	Mac Address	00:50:D7:00:11:63

Application Module Information

Successfully Read System Configuration Data

Close Help

- 3 Review the Unit Version box. This identifies the version of firmware installed on the unit.
- 4 Click on the **Close** button.

## Determining the current firmware and software versions

To determine what the current firmware and software versions are, refer to the *Remote Gateway 9100 Series and RLC Release Notes* (NTP 555-8421-102).

## Obtaining the latest upgrade file

If you need to upgrade the firmware or software, you can obtain the latest upgrade files by clicking on the Software Downloads link at the following website:

**www.nortel.com**

Nortel provides upgrade files in self-extracting executable files. You must extract the upgrade files before you can perform the upgrade.

### Types of upgrades

There are two types of upgrades that can be performed for your Digital Telephone IP Adapter unit:

1. Configuration Manager software upgrade

You use the Configuration Manager software to configure or administer the Digital Telephone IP Adapter unit.

2. Digital Telephone IP Adapter unit firmware upgrades

The firmware contains the code necessary for operating the Digital Telephone IP Adapter unit.

### Downloading the upgrade file

To download the upgrade file:

- 1 With your web browser, connect to the Nortel website at:

**www.nortel.com**

- 2 Click on the **Software Downloads** link.
- 3 Locate the software and firmware you need.
- 4 Download the files to a temporary location on your PC.
- 5 Double-click on the **.exe** file to extract the files into a temporary location on your PC.
- 6 Continue with “Extracting upgrade files from the download file” on page 194.

# Extracting upgrade files from the download file

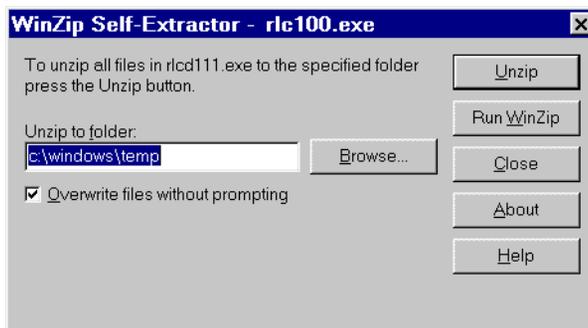
Before you perform an upgrade, ensure you have obtained the latest upgrade files from your Nortel distributor. The upgrade files are enclosed in self-extracting executable files. You must extract the upgrade files before you can perform the upgrade.

## Performing the extraction using Windows

To perform the extraction using Windows:

- 1 Navigate to the directory that contains the .exe file you received from Nortel.
- 2 Double-click on the .exe file.

**Result:** The WinZip Self-Extractor dialog box displays, similar to the following:



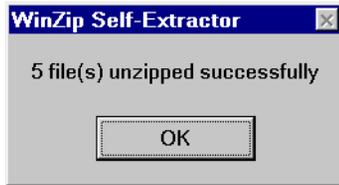
- 3 Review the information presented and make changes as necessary.

### Notes:

- Nortel recommends that you extract the files into a temporary directory.
- If you specify a directory that does not exist, the WinZip Self-Extractor creates it.

- 4 Click on the **Unzip** button.

**Result:** The file extraction begins. A status bar shows the extraction progress. When completed, an “unzipped successfully” message displays, similar to the following:



- 5 Click on the **OK** button.

**Result:** The WinZip Self-Extractor dialog box reappears.

- 6 Click on the **Close** button.

# Performing a firmware upgrade

This section describes how to perform a firmware upgrade on your Digital Telephone IP Adapter unit. You perform the upgrade over the IP network using the TFTP protocol. You can perform the Digital Telephone IP Adapter upgrade manually or configure the Digital Telephone IP Adapter unit to perform an automatic or scheduled firmware upgrade. Refer to “Auto upgrade configuration” on page 133 for further details.

You must have a TFTP server application running on the administration PC. The TFTP server’s base directory must point to the directory that contains the upgrade files.

## Manual firmware upgrade

To ensure trouble-free communication between the RLC and Digital Telephone IP Adapter units during and after the manual firmware upgrade, Nortel recommends that you perform the upgrades as follows:

- 1 Create backup configuration files for the Digital Telephone IP Adapter unit and RLC. Refer to “Creating a backup configuration file” on page 159.
- 2 Upgrade the Configuration Manager software on the administration PC.
- 3 Disable the PBX slot(s) where an RLC is installed.
- 4 Upgrade the RLC firmware.
- 5 Upgrade the Digital Telephone IP Adapter unit firmware.
- 6 Restart the RLC.
- 7 Restart all upgraded Remote Gateway 9100 Series units.
- 8 Re-enable the PBX slot(s) where an RLC is installed.

## When to perform a firmware upgrade

Perform a firmware upgrade if you have determined that you are using out-of-date firmware. For instructions on determining if you need to perform an upgrade, refer to “Verifying the firmware and software version” on page 191.

### **ATTENTION!**

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The protocol for communication between the RLC and the Remote Gateway 9100 Series units requires that they be running the same version in order for them to communicate with each other.

## About firmware upgrades and configuration files

Each time you perform a firmware upgrade, the configuration database is also converted (if necessary) to a format that is compatible with the new firmware. Configuration settings are not affected by the conversion.

Nortel recommends that, each time you perform a firmware upgrade, you create a backup copy of the converted configuration file, and store it in a safe secure location.

## Before you begin

It is important to complete the following steps before performing a firmware upgrade:

- 1 Obtain the firmware upgrade from Nortel.  
For instructions, refer to “Obtaining the latest upgrade file” on page 193.
- 2 Extract the upgrade files from the file you received from Nortel.
- 3 Start the TFTP server application.
- 4 Ensure the TFTP base directory reflects the directory where the firmware upgrade file you want to use resides.

## Getting there 911x → Configuration Manager

## Upgrading the Digital Telephone IP Adapter unit firmware

To upgrade the Digital Telephone IP Adapter unit firmware:

- 1 From the Menu Bar, choose Upload/Download → Upload S/W.

**Result:** The Software Upload dialog box displays, similar to the following:

The screenshot shows a dialog box titled "Software Upload". It has a title bar with a close button. The dialog is divided into several sections:

- Module:** Two radio buttons are present: "Application" (which is selected) and "BRI".
- Mode:** A radio button labeled "TFTP" is selected.
- Slot Number:** A dropdown menu.
- IP Address:** Four separate input fields for entering the IP address.
- Uploaded File:** A text input field followed by a "Browse" button.
- Note:** A text note below the file field: "Note: The file should be in the same directory as the TFTP root directory."
- Log Report:** A large rectangular area with a vertical scrollbar, currently empty.
- Buttons:** "Upload", "Close", and "Help" buttons are located at the bottom of the dialog.

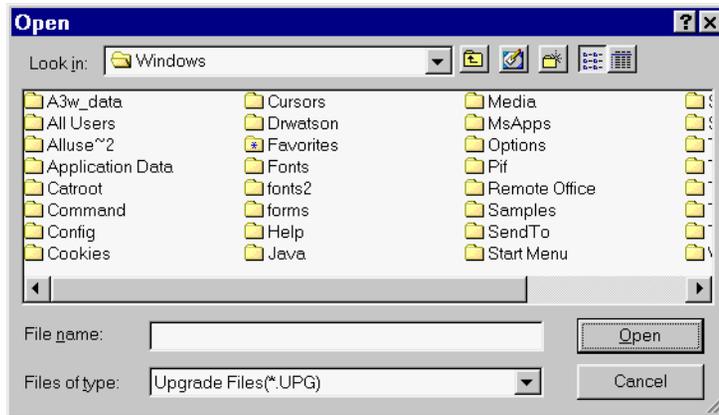
**Note:** In the Module section, the Application option button is the default selection.

- 2 Enter the IP address of the TFTP server into the IP Address fields.

**Note:** Since the TFTP server application is running on your administration PC, this is the IP address of the administration PC.

- 3 Click on the **Browse** button.

**Result:** The Open dialog box displays, similar to the following:



- 4 Ensure the Files of type drop down box shows Upgrade Files (\*.UPG).
- 5 Navigate to the folder where the firmware file is located.
- 6 Select the file, and then click on the **Open** button.

**Example:** For Digital Telephone IP Adapter unit firmware, select IPAdapter.upg, and click on the **Open** button.

**Result:** The Software Upload dialog box reappears. The file you selected is shown in the Uploaded File box.

- 7 Click on the **Upload** button.

Wait until the file uploads completely before entering any other commands. The Log Report window displays a confirmation message when the upgrade is completed.

**Note:** Configuration Manager prompts you to restart the Digital Telephone IP Adapter unit after upgrading the firmware. To do this, follow the procedure on page 204.

## Automatic or scheduled firmware upgrade

When you configure the Digital Telephone IP Adapter unit to perform an automatic or scheduled firmware upgrade using the Auto Upgrade Configuration property sheet, the Digital Telephone IP Adapter unit queries the predefined TFTP server and upgrades the firmware automatically. Refer to “Auto upgrade configuration” on page 133 for further details.



**USE CAUTION WHEN FORCING THE AUTO UPGRADE PROCESS AS THE SYSTEM PERFORMS A SELF-RESET ON ALL UNITS TO MAKE THE NEW FIRMWARE ACTIVE ONCE THE DOWNLOAD OF NEW FIRMWARE IS COMPLETE.**

Nortel recommends the following when performing an automatic or scheduled firmware upgrade:

- 1 Complete the procedures in “Before you begin” on page 197 prior to configuring the automatic or scheduled upgrade.
- 2 Complete the procedures in “Creating a backup configuration file” on page 159 before performing an automatic or scheduled firmware upgrade.

**Note:** The automatic or scheduled firmware upgrade only performs upgrades on the Remote Gateway 9100 Series units you configure on the Auto Upgrade Configuration property sheets. In order for the automatic or scheduled firmware upgrade to complete, place the ro-ver.txt file in the same TFTP server directory as you place the .upg file.

## Self-contained firmware upgrade

A self-contained firmware upgrade executable file is also available.

To perform this form of upgrade, both the administration PC and the Digital Telephone IP Adapter unit must be connected using a 10BaseT Ethernet connection. The self-contained firmware upgrade executable file can run on a Windows 98, NT Workstation 4.0, Millennium Edition (ME), 2000 Professional, or XP (Professional and Home Edition) operating system.

To obtain the self-contained firmware upgrade executable file, click on the **Software Downloads** link at the following website:

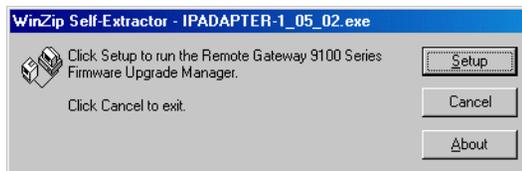
**www.nortel.com**

**Note:** You can also email this file to a remote user.

To perform the upgrade:

- 1 Double click on the .exe file.

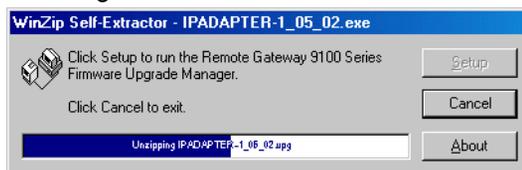
**Result:** The WinZip Self-Extractor dialog box displays, similar to the following:



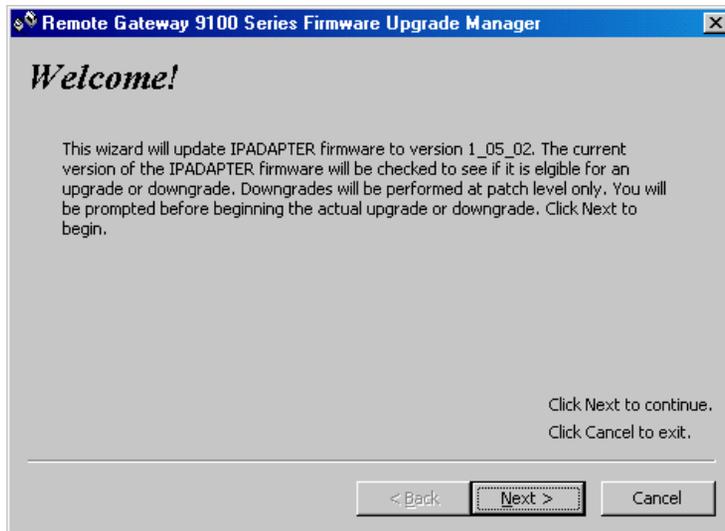
- 2 Click on the **Setup** button to run the Remote Gateway 9100 Series Firmware Upgrade Manager.

**Note:** You can cancel the upgrade at anytime by clicking on the Cancel button on any of the upcoming dialog boxes. You can find out information regarding this application by clicking on the About button on any of the upcoming dialog boxes.

**Result:** The WinZip Self-Extractor unzips the Digital Telephone IP Adapter unit upgrade file and displays an unzip progress bar, similar to the following:

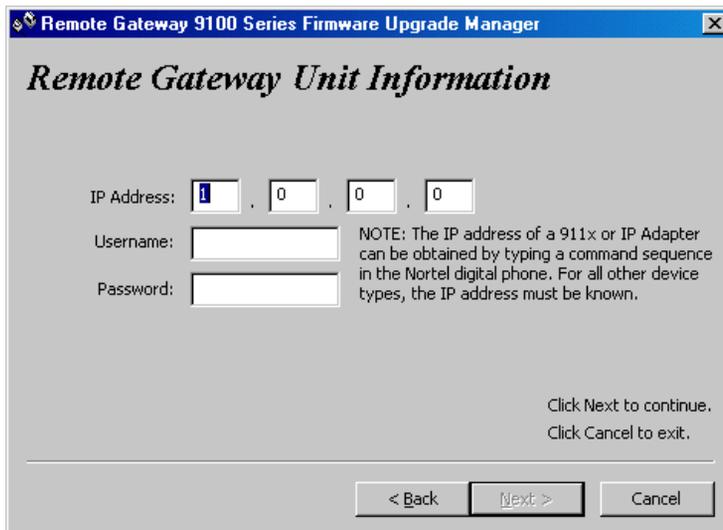


- 3 Once the unzip process is complete, the Welcome dialog box displays, similar to the following:



- 4 Click on the **Next** button.

**Result:** The Remote Gateway 9100 Series Unit Information dialog box displays, similar to the following:



- 5 Enter the IP address of the Digital Telephone IP Adapter unit that you want to upgrade.

**Note:** The Digital Telephone IP Adapter unit user can obtain this IP address by using the TUI on the digital telephone set.

- 6 Enter your logon name in the Username field.
- 7 Enter your password in the Password field.
- 8 Click on the **Next** button and follow the instructions on the upcoming dialog boxes to complete the upgrade process.

After successful installation, the executable file removes all residual files excepting the executable itself. The Digital Telephone IP Adapter unit resets automatically.

# Restarting the system

After a firmware upgrade or a configuration change, it is often necessary to restart the Digital Telephone IP Adapter unit. Use the following procedure to restart the unit using Configuration Manager.

**Note:** After you restart the system, wait 7–10 seconds before placing a call.

## Getting there 911x → Configuration Manager

### When to perform a restart

Each time that you make a configuration change, perform a Save to Flash. You must also restart the unit if Configuration Manager prompts you to do so.

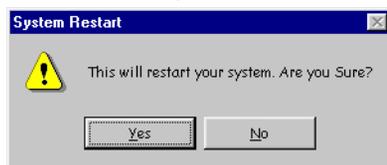
**Note:** When you save configuration changes to Flash, the system suspends new call processing for approximately 30 seconds. Some configuration changes do not take effect until the unit has been re-started.

### Restarting the unit

To restart the unit:

- 1 From the Menu Bar, choose Connect → System Reset → Restart.

**Result:** The System Restart dialog box displays, similar to the following:



- 2 Click the **Yes** button.

**Result:** The Restarting the System. Please Wait.....progress bar displays indicating that Configuration Manager is restarting the system, similar to the following:



- 3 When the restart is complete, the system logs off the user.

**Result:** The Configuration Manager dialog box displays notifying you of the successful restart, similar to the following:



- 4 Configuration Manager then displays the User Authentication dialog box, so that you can resume Configuration Manager activities.

# Performing a software upgrade

Perform a software upgrade if you have determined that you are using out-of-date software. For instructions on determining if you need to perform an upgrade, refer to “Verifying the firmware and software version” on page 191.

**Note:** Over an IP network with low delay and packet loss, Flash download times to remote M39xx digital telephone sets are comparable to PBX wired downloads.

## Upgrading the Configuration Manager software

To upgrade the Configuration Manager software:

- 1 Navigate to the directory that contains the upgrade files you extracted.
- 2 Double-click on the **setup.exe** file.
- 3 Follow the prompts on the screen.

### **ATTENTION!**

---

Do not ignore any warning messages that the InstallShield displays about versions of files (such as DLL files) that already exist on your PC. If you overwrite these files, you may inadvertently cause other applications on your PC to stop working.

**Result:** The InstallShield installs the software, overwriting the previous version.

# Chapter 8

---

## Troubleshooting

### In this chapter

Before you begin	208
Digital Telephone IP Adapter unit LED indicators	210
Digital telephone set	211
Network connectivity	217
Software problems	220
Using Configuration Manager's PING	221
Syslog testing	224
Alarms and alerts	225
Recovering from a catastrophic failure	226
Repair and warranty information	227

# Before you begin

If you experience problems in setting up or running your Digital Telephone IP Adapter unit, this chapter can help you to isolate and solve the problem.

## Identifying why a problem occurred

Before you begin, ask yourself the questions listed in the following table:

Question	IF you answered	THEN do the following
Is this a new installation?	yes	1 Perform troubleshooting in the sequence presented in this chapter. 2 PING the unit to confirm that it is accessible on the network. Refer to “Using Configuration Manager’s PING” on page 221.
	no	Answer the next question.
Did the Digital Telephone IP Adapter unit work, then suddenly stop working?	yes	Answer the next question.
	no	1 Perform troubleshooting in the sequence presented in this chapter. 2 PING the unit to confirm that it is accessible on the network. Refer to “Using Configuration Manager’s PING” on page 221.

<b>Question</b>	<b>IF you answered</b>	<b>THEN do the following</b>
Did you modify the configuration or change any hardware components?	yes	<ol style="list-style-type: none"><li>1 Verify that changes were completed correctly.</li><li>2 Check the hardware components to ensure they are in working order.</li><li>3 Perform troubleshooting for the specific component.</li></ol>
	no	Contact your telecom or data network administrator. There may be a problem with the network.

## Digital Telephone IP Adapter unit LED indicators

During the Digital Telephone IP Adapter power-up cycle, watch the front panel of the Digital Telephone External IP Adapter, or the rear panel of the digital telephone housing the Digital Telephone Internal IP Adapter. The LED indicators normally behave as follows:

- The Power LED lights up and remains lit.
- The remaining LED indicators flash whenever there is network activity.

If the LED indicators display incorrectly:

- Ensure that the Digital Telephone IP Adapter unit is connected to a power source.
- If you are using an uninterruptible power supply (UPS), ensure the UPS is powered on.
- Verify that the AC power source is operational.

# Digital telephone set

This section identifies some problems that can occur on the digital telephone, and describes what to do to resolve them.

## Symptom descriptions

If you are having trouble with digital telephones, perform troubleshooting as described in the following tables, according to whether this is a first-time installation.

Symptom	What to do
There is no dial tone when pressing either the host calling or local calling keys and this is a first-time installation	<ol style="list-style-type: none"><li>1 Ensure that the Digital Telephone IP Adapter unit completed its power-up cycle successfully. If it did, the Status LED remains lit.</li><li>2 Verify the connections between the telephone network and the Digital Telephone IP Adapter unit.</li><li>3 Use Configuration Manager to verify that the following configuration is correct on the Digital Telephone IP Adapter unit:<ul style="list-style-type: none"><li>■ IP address</li><li>■ subnet mask</li><li>■ IP gateway</li><li>■ RLC's IP address</li></ul></li><li>4 Verify the security IDs of both the Digital Telephone IP Adapter unit and the RLC, if a security ID is required to authenticate connection attempts.</li></ol>

---

Symptom	What to do
There is no dial tone when pressing either the host calling or local calling keys and this is a first-time installation. (continued)	<p data-bbox="619 220 1141 342"><b>5</b> Use Configuration Manager to verify that the following configuration is correct on the Digital Telephone IP Adapter unit, as appropriate:</p> <ul data-bbox="662 354 1141 573" style="list-style-type: none"><li data-bbox="662 354 1141 573">■ station configuration, to ensure that the telephone you are using has the calling capabilities needed to complete the tests (that is, verify that the station is correctly configured as local only, remote only, or both local and remote)</li></ul> <p data-bbox="649 581 1141 716"><b>Note:</b> For instructions on using Configuration Manager, refer to Chapter 5, “Changing configuration settings using Configuration Manager”.</p> <p data-bbox="619 727 1141 792"><b>6</b> Work with the administrator at the host PBX site to ensure the following:</p> <ul data-bbox="662 803 1141 1190" style="list-style-type: none"><li data-bbox="662 803 1141 894">■ The RLC is enabled and working in its PBX slot (restart the RLC, if necessary).</li><li data-bbox="662 906 1141 1040">■ The configuration of the IP address, telephone number, and security ID on the RLC port are correct (if these items are used).</li><li data-bbox="662 1052 1141 1190">■ Both the telecom and data networks are routing voice calls as expected (that is, calls are not being blocked in any way).</li></ul>

---

<b>Symptom</b>	<b>What to do</b>
There is no dial tone when pressing either the host calling or local calling keys.	<ol style="list-style-type: none"> <li>1 Check the IP network to ensure the following:               <ul style="list-style-type: none"> <li>■ The IP network is not down.</li> <li>■ Traffic is being routed between the Digital Telephone IP Adapter unit and RLC on the host PBX.</li> </ul> </li> <li>2 Contact your telecom administrator. There might be problems at the host PBX.</li> </ol>
A stutter is heard during a remote dial tone.	This is a normal occurrence and is caused by the DSP activating a dial tone relay. However, to eliminate stutter dial tone, disable Dialtone Relay. Dialtone Relay settings are in the Advanced Configuration dialog box, which is available on the RLC System Configuration Property sheet.
Lamps or indicators are not lit after completion of a Digital Telephone IP Adapter unit power cycle.	<ol style="list-style-type: none"> <li>1 Check all cable connections to and from the Digital Telephone IP Adapter unit to ensure that they are all securely connected.</li> <li>2 Check the IP network and ensure that:               <ul style="list-style-type: none"> <li>■ it is not down</li> <li>■ traffic is being routed between the Digital Telephone IP Adapter unit and RLC on the host PBX</li> </ul> </li> <li>3 PING the RLC from the Digital Telephone IP Adapter unit to verify IP network connectivity.</li> </ol>
Lamps or indicators do not reflect the true status of the telephone.	It is possible that there is a synchronization error between the Digital Telephone IP Adapter unit and the host PBX. Contact your telecom network administrator.

<b>Symptom</b>	<b>What to do</b>
The display is blank (that is, the time and date are not displayed).	<ol style="list-style-type: none"><li data-bbox="625 220 1138 407"><b>1</b> Take the digital telephone handset off hook and dial the online SPRE code. The Digital Telephone IP Adapter unit attempts to connect to the host PBX. When the connection is established, the time and date display.</li><li data-bbox="625 418 1138 605"><b>2</b> Check the IP network and ensure that:<ul style="list-style-type: none"><li data-bbox="671 464 860 492">■ it is not down</li><li data-bbox="671 508 1138 605">■ traffic is being routed between the Digital Telephone IP Adapter unit and RLC on the host PBX</li></ul></li><li data-bbox="625 617 1138 712"><b>3</b> PING the RLC from the Digital Telephone IP Adapter unit to verify IP network connectivity.</li><li data-bbox="625 724 1138 820"><b>4</b> Restart the RLC, wait one minute, and then restart the Digital Telephone IP Adapter unit.</li><li data-bbox="625 831 1138 997"><b>5</b> Ensure that the RLC is enabled in its host PBX slot.  In overlay 32 on the host PBX, check the status of the RLC, disable and enable it, or reseal it if necessary.</li><li data-bbox="625 1008 1138 1096"><b>6</b> Contact your telecom administrator. There might be problems at the host PBX.</li></ol>

<b>Symptom</b>	<b>What to do</b>
There are noticeable gaps or poor quality when a voice call is active on the IP network.	Contact your network administrator to conduct a traffic study on your voice and IP network traffic patterns as described in the <i>Remote Gateway Network Engineering Guidelines</i> (NTP 555-8421-103). (This NTP is available from your Nortel distributor.) It is possible that your IP network capacity cannot accommodate the additional voice data, especially during High Day Busy Hour (HDBH) periods. Make adjustments to your network as required.
Incoming calls are not being received from the host PBX.	<ol style="list-style-type: none"><li data-bbox="625 623 1096 678">1 Ensure your telephone is not on call forward.</li><li data-bbox="625 695 1102 816">2 Ensure that the Digital Telephone IP Adapter unit is not in offline mode by entering the online SPRE code at a digital telephone.</li><li data-bbox="625 833 1108 954">3 Ensure that the Digital Telephone IP Adapter unit is powered up. It cannot receive calls from the host PBX if it is not powered up.</li><li data-bbox="625 971 1139 1117">4 Ask the network administrator to ensure that the RLC is correctly configured with your Digital Telephone IP Adapter unit's IP address, telephone number, and security ID (if they are used).</li></ol>

<b>Symptom</b>	<b>What to do</b>
Incoming calls are not being received from the host PBX. (continued)	<ol style="list-style-type: none"><li><b>5</b> Ask the network administrator to check the IP network (if it is being used) and ensure that:<ul style="list-style-type: none"><li>■ it is not down</li><li>■ traffic is being routed between the Digital Telephone IP Adapter unit and RLC on the host PBX</li></ul></li><li><b>6</b> Ask the network administrator to PING the RLC from the Digital Telephone IP Adapter unit to verify IP network connectivity.</li><li><b>7</b> If the problem persists, contact your telecom administrator or Nortel distributor.</li></ol>
A call in progress was suddenly disconnected.	<ol style="list-style-type: none"><li><b>1</b> Does your telephone display “Offline Mode?” If so, enter the online SPRE code to go back online.</li><li><b>2</b> Contact your telecom and data network administrators. Perhaps network problems caused the call to disconnect.</li></ol>

# Network connectivity

This section identifies some problems that can occur on the data network, and describes what to do to resolve them.

## System descriptions

If you are not able to establish or maintain data network connectivity, perform troubleshooting as described in the following table:

Symptom	What to do
You cannot establish a connection from your administration PC to the Digital Telephone IP Adapter unit.	<ol style="list-style-type: none"><li>1 Ensure that you entered the IP address correctly when trying to establish the connection.</li><li>2 Ensure that you entered the logon ID and password correctly when trying to establish the connection.</li><li>3 Ensure the Digital Telephone IP Adapter unit's IP address, network mask, and default gateway are correctly configured in the Digital Telephone IP Adapter unit.</li><li>4 PING the Digital Telephone IP Adapter unit to see if it responds. Refer to "Using Configuration Manager's PING" on page 221 for proper procedure.</li><li>5 PING the gateway to see if it responds.</li><li>6 If the PING still does not work, contact your data network administrator.</li></ol>

<b>Symptom</b>	<b>What to do</b>
10060 TELNET CONNECTION FAILED appears when attempting to connect to the Digital Telephone IP Adapter unit.	<p>The Digital Telephone IP Adapter unit cannot be reached on the IP network.</p> <ol style="list-style-type: none"><li>1 Check the configuration of network devices and ensure that Digital Telephone IP Adapter unit can be reached.</li><li>2 Verify that the Ethernet cable is connected at both ends (Digital Telephone IP Adapter unit and Internet Access Device).</li><li>3 Check the Ethernet cable and ensure it is good.</li><li>4 Ensure the Digital Telephone IP Adapter unit is powered up.</li><li>5 Power the Digital Telephone IP Adapter unit off, then back on.</li><li>6 PING the Digital Telephone IP Adapter unit.</li><li>7 Contact your Nortel distributor. There may be a hardware problem.</li></ol>
The Digital Telephone IP Adapter unit does not send or receive Ethernet traffic.	<ol style="list-style-type: none"><li>1 Ensure the Digital Telephone IP Adapter unit is powered up. The Digital Telephone IP Adapter unit cannot send or receive traffic if it is not powered up.</li><li>2 Check the Ethernet cable between the Digital Telephone IP Adapter unit and the network and ensure it is good.</li><li>3 Ensure the Ethernet cable is connected.</li><li>4 If the Digital Telephone IP Adapter unit still does not send or receive traffic, contact your data network administrator.</li><li>5 Data network administrator: Ensure other network devices are configured to allow traffic to and from the Digital Telephone IP Adapter unit.</li></ol>

<b>Symptom</b>	<b>What to do</b>
An attempt to log out from the Digital Telephone IP Adapter unit does not work.	It is possible that communication has been lost between the administration PC and the Digital Telephone IP Adapter unit. Close the Configuration Manager, then restart it.
The Digital Telephone IP Adapter unit drops dialtone if a user attempts a call during registration.	Wait 7-10 seconds before attempting the call while the digital telephone set synchronizes between the Digital Telephone IP Adapter unit and the RLC.

## Software problems

This section identifies some problems that can occur with the Configuration Manager software, and describes what to do to resolve them.

### Symptom descriptions

If you are not able to complete a task with the Configuration Manager, perform troubleshooting as described in the following table.

<b>Symptom</b>	<b>What to do</b>
10060 TELNET CONNECTION FAILED appears when attempting to connect to the Digital Telephone IP Adapter unit.	It is possible that communication has been lost between the administration PC and the Digital Telephone IP Adapter unit. Close the Configuration Manager, then restart it.
The Digital Telephone IP Adapter unit does not send or receive Ethernet traffic.	It is possible that communication has been lost between the administration PC and the node you were logged on to. Close the Configuration Manager, then restart it.

### Display Logs definitions

You can locate Display Logs definitions in Configuration Manager Help.

# Using Configuration Manager's PING

PING, or Packet InterNet Groper, is a protocol and program to test that a device is accessible on a network. This section explains how to use the PING option provided in the Configuration Manager to verify network connectivity. Use this test as a troubleshooting tool to determine if you can reach the RLC, another remote unit, or any other device on the network.

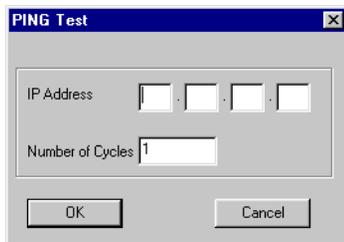
**Getting there** 911x → Configuration Manager

## Performing a Configuration Manager PING

To perform a Configuration Manager PING:

- 1 From the Menu Bar, choose Tests → Ping.

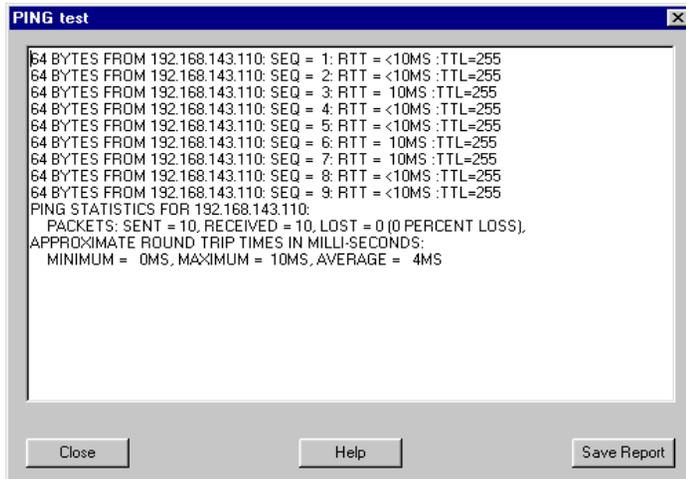
**Result:** The PING Test dialog box displays, similar to the following:



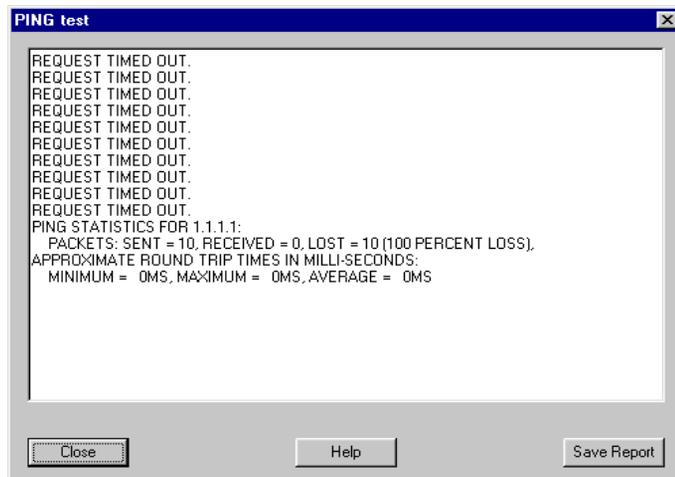
- 2 Enter the IP Address of the unit you want to PING in the IP Address field.
- 3 Enter the number of times you want to PING the unit in the Number of Cycles field (1 to 100).

- 4 Click on the **OK** button.

**Result:** The PING test window displays, showing the PING results. The following is an example of a successful PING.



The following is an example of an unsuccessful PING.



- 5 Click on the **Close** button.

**Result:** The PING test window closes.

**ATTENTION!**

It is possible to successfully PING a device on the network and still not be able to log on to that device. If you log on to a device (a Digital Telephone IP Adapter unit) using a serial connection and neglect to log off, you may be able to successfully PING the device but be unable to establish a Telnet connection to it. (The device believes itself to be busy.)

If you cannot log on to a device after a successful PING, access the serial port and ensure that you are not logged on to the device through this port.

**Unsuccessful PING options**

If the PING was unsuccessful:

- 1 Ensure you have entered the IP address, subnet mask, and default gateway correctly.
- 2 PING the gateway to see if it responds.
- 3 Contact your data network administrator if the PING still does not work.

# Syslog testing

Once you configure the syslog feature and save it to Flash, use the Syslog test command to test the configuration. The Remote Gateway 9100 Series system generates test syslog messages. This allows you to verify the syslog configuration as well as the syslog collector functionality on the syslog server(s).

**Getting there** 911x → Configuration Manager

## Performing syslog testing

To perform syslog testing:

- 1 From the Menu Bar, choose Tests → Syslog.

**Result:** A message displays, similar to the following:



- 2 Click on the **OK** button.
- 3 Examine the syslog server(s) to see if the test was successful.

## Alarms and alerts

For troubleshooting purposes, each Remote Gateway 9100 Series device transmits alarms and alerts to the host PBX. These alarms and alerts indicate to the host PBX that it is in a state of alarm or alert. The host PBX then produces an alarm or alert through its software. Refer to “Display Logs” in the *Remote Gateway 9150 Installation and Administration Guide* (NTP 555-8421-215) or Configuration Manager online Help to determine if the host PBX produces an alarm or alert when Remote Gateway 9100 Series Configuration Manager produces a display log.

## Recovering from a catastrophic failure

*Catastrophic failure* is defined as a failure of the equipment to operate after review of all troubleshooting information and implementation of appropriate procedures.

If your Digital Telephone IP Adapter unit fails to operate after thorough review of the troubleshooting information in this and related Guides, consult your Nortel distributor for hardware replacement.

## Repair and warranty information

The Digital Telephone IP Adapter unit contains no user-serviceable components. If the problem experienced with your Digital Telephone IP Adapter unit persists after you have used all the appropriate procedures in this chapter, refer to the following contact information for repair and warranty help, depending upon your location:

### Canada

Nortel Service Selection Center  
30 Norelco Drive  
Weston, ON  
M9L 2X6  
Canada

Telephone: 1-800-466-7835

### United States

Nortel  
Product Service Center  
640 Massman Drive  
Nashville, TN 37210  
USA

Telephone: 1-800-466-7835

### Europe

Nortel (NI) Ltd.  
FAO: Irish Express Cargo (IEC)  
Raheen Industrial Estate  
Raheen, Limerick  
Ireland

Telephone: 00 800 8008 9009 or +44 (0) 870 907 9009

Fax: +33 4 9296 1598

## Asia/Pacific

Nortel Distribution Center  
c/o ACCO Transport  
21 South St. Unit#2  
Rydalmere, NSW  
2116 Australia

## CALA

**Note:** When you need warranty and repair service in Central American and Latin American countries, you must first get an RR (repair and return) number from your Nortel distributor before shipping to the Nortel CALA Repair Center.

Nortel c/o Wesbell  
4019 S.W. 30th Avenue  
Fort Lauderdale, FL 33312  
USA  
Notify: Receiving Department  
RR no.:

Telephone:  
Normal Service Hours (Monday to Friday 8:00 a.m. to 5:00 p.m. Central Time)  
1-954-851-8841  
After Normal Hours (weekends and holidays)  
1-888-594-8474

# Appendix A

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## Planning forms

### In this appendix

IP Adapter Network Connections	230
IP Adapter Configuration Information—Dialing Plans	231
IP Adapter telephone menu— Configuration Values	232

**Note:** You can locate electronic Remote Gateway 9100 Series Planning forms on the Nortel website at:

**[www.nortel.com](http://www.nortel.com)**

# IP Adapter Network Connections

Security level: <span style="float: right;"> <input type="checkbox"/> No security    <input type="checkbox"/> Provisioned security                 </span>					
<b>Digital Telephone IP Adapter site identification</b>					
Node number: _____	Node name: _____				
IP address:	<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> </table>				
Subnet mask:	<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> </table>				
Default gateway:	<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> </table>				
If the security level is <i>provisioned security</i> , what is the Digital Telephone IP Adapter unit's security identifier?					
	Inbound _____ Outbound _____				
<b>Connection to RLC information</b>					
IP address to reach the host PBX (for IP network):					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> </table>					
If security level is <i>provisioned security</i> , what is the RLC's security code?	Inbound _____ Outbound _____				

# IP Adapter Configuration Information—Dialing Plans

**Notes:**

- The pound sign (#) is mandatory and is automatically preconfigured in Configuration Manager. The pound sign prevents conflicts with the dialing plan on the host PBX.

<b>Description</b>	<b>Default code</b>	<b>Your code (maximum of 3 digits)</b>
Online SPRE code	#99	#
Offline SPRE code	#98	#
Registration SPRE code (for multi-user or dynamic pool ports only)	#97	#
Deregistration SPRE code (for multi-user or dynamic pool ports only)	#96	#

# IP Adapter telephone menu— Configuration Values

Use the values shown below to configure the Digital Telephone IP Adapter unit using the telephone menu.

<b>Configuration Value Description</b>	<b>Value</b>
User Name	GUEST (48378)
Password	_____
Unit ID (Digital Telephone IP Adapter unit)	_____
Time Offset	_____
Emergency Code	_____
Online SPRE Code	_____
Offline SPRE Code	_____
Registration SPRE Code	_____
Deregistration SPRE Code	_____
Enable DHCP	Y / N (circle one)
IP Address	_____
IP Subnet Mask	_____
IP Gateway	_____
Enable Diffserve	Y / N (circle one)
Enable 802.1Q Mapping	Y / N (circle one)
VLAN ID	_____
802.1Q Priority	_____

DiffServ CodePoint Value \_\_\_\_\_

Port # (RLC) \_\_\_\_\_

<b>Configuration Value Description</b>	<b>Value</b>
--	--------------

Security Level (RLC)	_____
----------------------	-------

Enable IP (Voice over IP)	Y / N (circle one)
---------------------------	--------------------

RLC IP Address	_____
----------------	-------

IP Signaling	_____
--------------	-------

Modem Tones	_____
-------------	-------

Set Type	_____
----------	-------



# Appendix B

---

## Connection pin-out tables

### In this appendix

RJ-45 Ethernet connector	236
Admin (serial) connector pin-out table	237
Power connector pin-out table	238

## RJ-45 Ethernet connector

Pin #	Signal
1	RX+
2	RX-
3	TX+
4	NC
5	NC
6	TX-
7	NC
8	NC

## Admin (serial) connector pin-out table

Pin number	Signal name	I/O	Description
1			
2	MMI-RXD	I	MMI RS-232C Receive Data
3	MMI-TXD	O	MMI RS-232C Transmit Data
4			
5	Ground	I	Logic Ground
6			
7			
8			
9			

## Power connector pin-out table

Pin number	Signal name	I/O	Current	Description
1	Ground	I		Logic Ground
2	+24VAC	I	1.5 A	+24VAC

# Appendix C

---

## Equipment attachment notice

### In this appendix

Industry Canada

240

# Industry Canada

**NOTICE:** The Industry Canada label identifies certified equipment. This certification means only that the equipment meets telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment operates to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telephone company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected. This precaution may be particularly important in rural areas.

**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

# Appendix D

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## Safety and regulatory information

### In this appendix

International safety compliance	242
Electromagnetic compatibility	243
Electromagnetic immunity	244
Electrostatic discharge	245
FCC requirements	246

# International safety compliance

The Digital Telephone IP Adapter unit and the Remote Gateway 9100 Series system comply with international safety regulations as listed on this page.

## Underwriters Laboratory (UL)

The Digital Telephone IP Adapter units comply with and are listed under UL 1950, Third Edition, including revisions based on the Fourth Amendment to IEC 950, Second Edition.

## Canadian Standards Association (CSA)

The Digital Telephone IP Adapter units comply with and are listed under CSA C22.2, No. 950-95.

## Europe

The Digital Telephone IP Adapter units comply with and are listed under EN60950: 1992, incorporating amendments 1, 2, 3, 4 & 11.

## Australia

The Digital Telephone IP Adapter units comply with and are listed under TS001\AS 3260.

## Other Countries Deviations Assessed

Refer to Nemko Test Report # 2000 29173.

# Electromagnetic compatibility

The Digital Telephone IP Adapter units do not interfere with operation of other licensed communications systems according to the standards set forth by Australia, the United States, and Canada.

The Digital Telephone IP Adapter units do not adversely effect the compliance of the Meridian 1 PBX system to:

- AS 3548 Class B (Australia)
- Class A of FCC Part 15, Subpart J
- CSPR B requirements.

The margin is at least 2 dB better than the specified limit.

# Electromagnetic immunity

The Digital Telephone IP Adapter units resist electromagnetic interference.

The Digital Telephone IP Adapter units perform correctly when subjected to narrow band radiated fields in frequency range 500 kHz to 1 GHz (field strength up to 10 V/m, 1 kHz, 50% modulated AM signal) per IEC 1000-4-3.

## Electrostatic discharge

The Digital Telephone IP Adapter units are immune to electrostatic discharges typical for an office environment (carpeted floors, low humidity) according to the test method specified by IEC 1000-4-2.

No damage or malfunction occurs when the Digital Telephone IP Adapter units are exposed to up to +/-8kV of direct discharge. An indirect discharge of up to +/-16 kV does not result in malfunction of the system (to adjacent equipment or connected cabling).

The requirements for both “closed door” and “open door” have been met.

# FCC requirements

Information in the following paragraphs pertains to FCC-required information. These paragraphs describe where to locate details concerning the Digital Telephone IP Adapter units' compliance to FCC regulations, as well as these regulations' effects on the use of the Digital Telephone IP Adapter units.

## Part 68

The Digital Telephone IP Adapter units comply with Part 68 of the FCC rules. A label on the underside of the enclosure contains, among other information, the FCC certification number and ringer equivalence number (REN) for the Digital Telephone IP Adapter units. If requested, you must provide this information to the telephone company.

### Class B

This equipment passes tests for compliance with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, this equipment can cause harmful interference to radio communications. However, there is no guarantee against interference in a particular installation. You can determine whether this equipment causes harmful interference to radio or television reception by turning the equipment off and on. The user can try to correct the interference by one or more of the following measures:

- Re-orient or re-locate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from the outlet that the receiver connects to when producing the interference.
- Consult your Nortel dealer or an experienced radio/TV technician for help.

**Note:** Changes or modifications not expressly approved by Nortel can void your right to operate Digital Telephone IP Adapter unit equipment.

## **Telephone network plug and jack**

The Digital Telephone IP Adapter unit's package contains an FCC-compliant telephone cord and modular plug. The Digital Telephone IP Adapter unit's design calls for it to be connected to the telephone network or premises wiring using a Part 68-compliant modular jack. Refer to Chapter 3, "Installing the Digital Telephone IP Adapter unit," for complete details on proper installation of the Digital Telephone IP Adapter unit.

## **Equipment harmful to the telephone network**

If the Digital Telephone IP Adapter unit causes harm to the telephone network, the telephone company notifies the customer in advance that temporary discontinuance of service may be required. But, if advance notice isn't practical, the telephone company notifies the customer as soon as possible. The customer also receives notification of their right to file a complaint with the FCC if the customer believes a complaint is necessary.

## **Party lines**

Connection to party line service is subject to state tariffs. Contact the state public utility commission for information.



# Fields Index

---

## Numerics

- 802.1Q Mapping 128
  - Priority 128
  - VLAN ID 128

## A

- Addon Module Type 121
- Address Information
  - IP Address 125
  - IP Gateway 125
  - IP Network Mask 125
- Analog Localization 120
- Autohold 120
- Automatic DHCP Configuration 125
- Available Flex Channels 180
- Available MIPS 179
- Available Voice Channels 179, 180

## B

- Bandwidth (BW) Connection Statistics
  - IP QoS Status 173
  - No of Voice Calls on IP 173
  - No of Voice Calls on PSTN 173
  - Remote Unit Number 173
  - Signaling Status 173
  - Total Up Trunk BW 173
  - Used IP BW 173
  - Used Trunk BW 173
- Browse
  - Upload Configuration 164

- Browse (button)
  - Software Upload 199

## C

- Call BW 176
- Caller Info Statistics
  - Call BW 176
  - Connection ID 176
  - Current Media 176
  - Last Transition to IP 176
  - Last Transition to PSTN 176
  - Priority 176
  - Remote ID 176
  - Start Time 176
  - Transitions to IP 176
  - Transitions to PSTN 176
  - Type 176
- Connection ID 176
- Current Media 176

## D

- Date
  - Auto Upgrade 136
- Day
  - Auto Upgrade 135
- Delete
  - Syslog Configuration 139
- Device Number 179
- DiffServ CodePoint 126
  - Value 127
- DSP Gain 118

**DSP Statistics**

- Total Voice Channels 179

**DSP statistics**

- Available Flex Channels 180
- Available MIPS 179
- Available Voice Channels 179, 180
- Device Number 179
- In Service 179
- Module Number 179
- Name 180
- Single Dig Dev ID 179
- Total Channels 179
- Total Flex Channels 180
- Total MIPS 179
- Total Modem Channels 179
- Total Reserved Channels 180
- Total Tones Channels 180

**E**

- Emergency Activation Code 118
- Enable PBX Alarms 119
- Ethernet Interface Statistics
  - UPkts 184

**F**

- Facility Indicator 139
- Flash download
  - M39xx digital telephone sets 206
- Frequency 135

**I**

- In Service 179
- Inbound Security ID 132
- IP Address 125
  - Software Upload 198
  - Syslog Configuration 139
  - Upload Configuration 163

- IP Connection 131
  - IP Address 131
  - IP Signaling 131
- IP Gateway 125
- IP Network Mask 125
- IP QoS Status 173

**L**

- Last Transition to IP 176
- Last Transition to PSTN 176
- Local Call
  - Autohold 120
  - Local Calling Key Position 120
- Local DN 120

**M**

- M39xx digital telephone sets
  - Flash download
    - download time 206
    - software upgrade
      - download time 206
- Messages 169
- Modem Tones 120
- Module Number 179

**N**

- Name 180
- No of Voice Calls on IP 173
- No of Voice Calls on PSTN 173
- Node Name 118

**O**

- Outbound Security ID 132

**P**

Phone Type 120  
 Priority 176  
 PSTN Connection 131  
     PSTN Number to Connect to RLC 131

**R**

registration 119  
 Remote ID 176  
 Remote Unit Number 173  
 Resize Logs  
     Messages 169  
 RLC Port Number 131

**S**

Security ID  
     Inbound Security ID 132  
     Outbound Security ID 132  
 Security Level 132  
 Signaling Status 173  
 Single Dig Dev ID 179  
 software upgrade  
     M39xx digital telephone sets 206  
 SPRE Codes  
     DeRegistration 120  
     Offline 119  
     Online 119  
     registration 119  
 Start Auto Upgrade 135  
 Start Time 176  
 statistics  
     Bandwidth (BW) Connection Statistics  
         IP QoS Status 173  
         No of Voice Calls on IP 173  
         No of Voice Calls on PSTN 173  
         Remote Unit Number 173  
         Signaling Status 173

Total Up Trunk BW 173  
 Used IP BW 173  
 Used Trunk BW 173

Caller Info Statistics  
     Call BW 176  
     Connection ID 176  
     Current Media 176  
     Last Transition to IP 176  
     Last Transition to PSTN 176  
     Priority 176  
     Remote ID 176  
     Start Time 176  
     Transitions to IP 176  
     Transitions to PSTN 176  
     Type 176

Caller Info Statistics field descriptions 176

DSP statistics  
     Available Flex Channels 180  
     Available MIPS 179  
     Available Voice Channels 179, 180  
     Device Number 179  
     In Service 179  
     Module Number 179  
     Name 180  
     Single Dig Dev ID 179  
     Total Channels 179  
     Total Flex Channels 180  
     Total MIPS 179  
     Total Modem Channels 179  
     Total Reserved Channels 180  
     Total Tones Channels 180  
     Total Voice Channels 179

Ethernet Interface Statistics  
     UPkts 184

Resize Logs  
     Messages 169

Status  
     Auto Upgrade Configuration 135  
     Syslog Configuration 139

**T**

TFTP Server  
    IP Address 135  
Time  
    Auto Upgrade 135  
Time Offset 118  
Total Channels 179  
Total Flex Channels 180  
Total MIPS 179  
Total Modem Channels 179  
Total Reserved Channels 180  
Total Tones Channels 180  
Total Up Trunk BW 173  
Total Voice Channels 179  
Transitions to IP 176  
Transitions to PSTN 176  
Type 176

**U**

Unit ID 118, 131  
UPkts 184  
Used IP BW 173  
Used Trunk BW 173

# Index

---

## Numerics

- 10BaseT Ethernet
  - connection options 35
  - description 26
- 911x
  - configuration
  - Syslog 138

## A

- ACD
  - Local Calling key 48
  - Make Set Busy mode 48
  - Not Ready mode 48
  - Remote Connection Configuration property sheet 48
  - RLC Port Configuration property sheet 48
  - User On Demand Idle Timer 48
  - User On Demand Minimum Call Timer 48
- ACD agent 48
- ACD features
  - features
  - ACD features 47
- Admin 183
- Admin connector 237
- administration
  - PC
    - Optivity Telephony Manager and Configuration Manager 61
- Alarms and alerts 225
- Auto Answer Back
  - M26xx digital telephone sets 43
- Auto Upgrade
  - Auto Upgrade Configuration property sheet 133, 200
- Auto Upgrade configuration
  - procedure 134

- Automatic Call Distribution (ACD)
  - applications 48

## B

- backup
  - creating a backup configuration file 160
  - introduction 159
  - restoring the configuration 162
  - storing configuration files 159
- bandwidth
  - measuring with Bandwidth Connection Statistics 171
  - peak
    - according to Codec 49
- Bandwidth Connection Statistics screen 171
- bandwidth limit 144
  - display message 148

## C

- cable connectors
  - RJ-11 31
  - RJ-45 31
- cable modem 34
- cables
  - included 58
  - not included 58
- cabling
  - cables included with the Digital Telephone External IP Adapter 58
  - cables included with the External IP Adapter unit 58
  - cables you must supply 58
  - Internal IP Adapter
    - TCM 31
- call forward feature 47

- call modes
  - host-controlled 37
- call transfer 151
- call waiting 47, 150
  - host-controlled mode 151
- call waiting feature
  - features
    - call waiting 47
- Caller Information Statistics
  - displaying 175
- Caller Information Statistics screen 174
- QoS Transitioning Technology 174
- calls
  - call transfer feature 151
  - call waiting feature 150
  - conference feature 152
  - display messages 147
  - emergency service calls feature 150
  - hold feature 150
  - host-controlled indicator updates 146
  - host-controlled mode 142
  - incoming 37
  - methods for placing outgoing calls 144
  - offline mode 142
  - online mode 142
  - online/offline modes
    - putting unit in online mode 152
  - outgoing 37
  - placing a host-controlled call 144
    - bandwidth limit 144
    - DSP limit 144
- Canadian Standards Association
  - CSA C22.2, No 950 242
- Canadian Standards Association (CSA) 242
- Channel 183
- Codecs
  - supported 49
- communications system and software
  - requirements 46, 49
- communications system requirements 46, 49
- computer telephony integration applications 47
- conference 152
- conference feature 47
- configuration
  - Auto Upgrade 134
  - Auto Upgrade Configuration property sheet 133, 200
  - default values
    - restoring 88, 89
  - deregistration SPRE code 96
  - emergency code 92
  - IP addresses
    - saving to Flash 123
  - IP information 88
  - offline SPRE code 94
  - online SPRE code 93
  - registration SPRE code 95
  - Syslog 138
  - Syslog Configuration property sheet 137
  - telephone menu 83, 87
    - default password 88
    - display local IP 88
    - modify deregistration SPRE code 96
    - modify emergency code 92
    - modify offline SPRE code 94
    - modify online SPRE code 93
    - modify registration SPRE code 95
    - modify unit ID 90
    - restore default values 88, 89
    - time offset 90
    - user name 87
  - time offset 90
  - unit ID 90
- Configuration Manager
  - Help
    - Display Logs definitions 220
- configuring
  - key labels
    - M3902 digital telephone sets
      - Local keys 44
- configuring the unit using the telephone menu
  - accessing the telephone menu 85
  - before you begin 87
  - information you need 84
  - running the telephone menu script 87
  - telephone menu key function 85

- configuring the unit with Configuration Manager
  - IP addresses
    - configuring 122
  - RLC connection information
    - configuring 129
  - system settings
    - configuring 115
    - field descriptions 118
    - system identification information 114
- connection
  - what to do if the PING did not work 223
- connection options
  - administration PC 59
  - introduction 35
- connectivity
  - troubleshooting
    - PING failure 223
- CS 1000 xxi
- CS 2100 xxi
- CSA C22.2, No. 950 242

## D

- DB-9 connector
  - Digital Telephone External IP Adapter 31
- deployment
  - IP options 65
    - on-demand 66
    - permanent 65
  - media 64
  - NAT 64
- deployment options
  - Digital Telephone IP Adapter units 64
  - introduction 64
- deregistration 120
  - SPRE code 96
- digital telephone 141
- Digital Telephone External IP Adapter unit
  - included cables 58
  - universal power supply 33
- Digital Telephone Internal IP Adapter unit
  - universal power supply 32

- Digital Telephone IP Adapter
  - communications system requirements 46, 49
  - software requirements 46, 49
- Digital Telephone IP Adapter unit
  - cable connectors 31
  - cables you must supply 58
  - configuring using the telephone menu 83
  - deployment options 64
  - installing 68
  - IP addressing and routing 62
  - LEDs 210
  - network considerations 62
  - password 156
  - physical environment 56
  - power requirements 53
  - using the digital telephone 141
- Digital Telephone IP Adapter units
  - supported Codecs 49
- digital telephone sets
  - supported 43
- digital telephones
  - display messages
    - introduction 147
    - message descriptions 147
  - going online and offline
    - introduction 152
    - overriding an automatic offline event 153
    - using the SPRE code for online mode 152
- indicator updates
  - host-controlled indicator updates 146
  - introduction 146
- modes of operation
  - controlling online and offline modes 143
  - host-controlled mode 142
  - introduction 142
  - offline mode 142
  - online mode 142
- placing and receiving calls
  - methods for placing outgoing calls 144
  - placing host-controlled calls 144
- telephone features
  - introduction 150
  - troubleshooting 211

Disc 184

- Display Logs
    - definitions 220
  - display messages
    - bandwidth limit 148
    - going offline 147
    - hostless mode 147
    - offline mode 147
    - online mode 148
    - port already in use 148
    - port not logged in 148
    - release and try again 148
  - documents
    - related xxii
  - download
    - M3904 digital telephone sets
      - Flash upgrade 44
  - DSP
    - DSP Statistics screen 177
  - DSP application modules
    - Hardware Statistics 177, 181
  - DSP limit 144
    - display message
    - display messages
      - DSP limit 149
  - DSP Statistics screen 177
- ## E
- electromagnetic compatibility 243
    - AS 3548 Class B (Australia) 243
    - Class A of FCC Part 15, Subpart J 243
    - CSPR B requirements 243
    - margin 243
  - electromagnetic immunity 244
  - electrostatic discharge 245
  - emergency
    - service number description 51
  - emergency calls
    - placing 150
  - emergency code 92
  - emergency service calls 150
  - emergency service calls feature 150
  - EN90650 242
  - equipment
    - equipment attachment notices 239
      - Industry Canada 240
  - Err 184
  - Ethernet
    - Ethernet Interface Statistics screen 181
  - Ethernet Interface Statistics
    - Admin 183
    - Channel 183
    - Disc 184
    - Err 184
    - Ifc Type 183
    - IfcNo 183
    - LAN Drv 183
    - MPkts 184
    - MTU Len 183
    - Oper 183
    - QLen 185
    - Rx - Octet 183
    - Speed 183
    - Tx - Octet 184
    - UPkts 183
  - Ethernet Interface Statistics screen 181
  - extracting upgrade files from the download file
    - 194
- ## F
- features
    - call forward 47
    - call transfer 151
    - call waiting 47, 150
      - host-controlled mode 151
    - conference 47, 152
    - hold 47
    - transfer 47
  - firmware
    - extracting upgrade files 194
    - upgrade
      - downloading files 193
      - performing 196
  - Flash upgrade
    - M39xx digital telephone sets
      - download time 44

## G

going offline

display message 147

GUI

Auto Upgrade Configuration property sheet  
133, 200

Syslog Configuration property sheet 137

## H

Hardware Statistics

introduction 177, 181

Help

Display Logs definitions 220

hold 47, 150

hold feature 47

host-controlled calls

placing 144

bandwidth limit 144

DSP limit 144

host-controlled mode

indicator updates 146

overview 142

hostless mode

display message 147

## I

Ifc Type 183

IfcNo 183

incoming calls 37

Industry Canada notice 240

installation

Digital Telephone Internal IP Adapter unit

powering up 75

removing the base of the digital telephone  
set 70

Digital Telephone IP Adapter units 68

External IP Adapter unit

powering up 81

general safety 68

Internal IP Adapter unit

connecting 74

unpacking and inspecting the equipment 69

international safety compliance 242

Australia 242

Canadian Standards Association 242

EN90650 242

Underwriters Laboratory (UL) 242

Internet Access Device

description 34

IP

addressing and routing 62

PSTN and IP network diagram 36

remote unit 88

IP Adapter units

supported digital telephone sets 43

IP addressing and routing 62

IP configuration

saving to Flash 123

IP deployment 65

IP on-demand 66

IP permanent 65

IP on-demand 66

IP permanent 65

ISDN Basic Rate Interface (BRI) router 34

## K

key map

M3904 digital telephone sets 44

## L

LAN Drv 183

LEDs

description 29

Digital Telephone IP Adapter unit LED

display diagrams 30

Digital Telephone IP Adapter units 210

troubleshooting 210

Local Calling key 48  
Local keys  
    M3902 digital telephone sets  
        key labels 44  
logs  
    clearing  
        introduction 170  
    displaying  
        introduction 167  
    viewing 167

**M**

M2616CT digital telephone sets 43  
M26xx digital telephone sets  
    Auto Answer Back 43  
    CS 2100 43  
M3902 digital telephone sets  
    Local keys  
        key labels 44  
M3904 digital telephone sets  
    firmware  
        download 44  
        upload 44  
    key map  
        Virtual Office 44  
M3905 digital telephone sets  
    firmware  
        download 44  
        upload 44  
M39xx digital telephone sets  
    Flash upgrade  
        download time 44  
    PBX downgrade 44  
Make Set Busy (MSB) mode  
    ACD 48  
media 64  
Meridian 1 PBX xxi  
Meridian Administration Tools (MAT) 61  
mounting options  
    Digital Telephone External IP Adapter unit 58

MPkts 184  
MTU Len 183

## N

NAPT routers 64  
NAT routers 64  
    special configuration 65  
network  
    testing  
        Syslog 224  
network address translation  
    *refer to* NAT  
network considerations 62  
    introduction 62  
    IP addressing and routing 62  
no security 42  
Not Ready mode  
    ACD 48  
notices  
    equipment attachment 239  
    Industry Canada 240

## O

offline 119  
offline mode  
    display message 147  
offline SPRE code 94  
online 119  
online mode  
    display message 148  
online SPRE code 93  
online/offline table  
    configuration 50  
    how the table works 50  
    introduction 50  
    offline mode 142  
    online mode 142  
Oper 183  
outgoing calls 37

**P**

## password

- Configuration Manager password 156
- default 88
- Digital Telephone IP Adapter password 156

## PBX

- CS 1000 xxi
- CS 2100 xxi
- Meridian 1 PBX xxi

## PBX downgrade

- M39xx digital telephone sets 44

## PBX message

- idle
- updating 43

## PC

- Optivity Telephony Manager and Configuration Manager 61
- Windows PC requirements 60

## PC administration

- administering multiple nodes 60
- connection options 59
- Ethernet connection 59

## physical environment 56

## PING

- failure 223
- unsuccessful PING 223
- using 221

## pin-out tables

- connector
  - Admin 237
  - Power 238
- RJ-45 ethernet connector 236

## placing calls

- host-controlled 144
  - bandwidth limit 144
  - DSP limit 144

## port already in use

- display message 148

## port not logged in

- display message 148

## Power

- connector 238

## power requirements

- Digital Telephone IP Adapter units 53

## preinstallation preparation

- unpacking and inspection 69

## problems

- solving
  - connectivity
  - PING failure 223

**Q**

## QLen 185

## QoS Transitioning Technology

- Caller Information Statistics 174

**R**

## Reach Line Card (RLC)

- description 27

## registration

- registration SPRE code 95

## related documents xxii

## release and try again

- display message 148

## Remote Connection Configuration property

## sheet

- ACD 48

## Remote Gateway 9150 unit

## implementation

- NAPT routers 64
- NAT routers 64, 65

## restarting the system

- when to perform a restart 204

## restoring

- introduction 162
- uploading a configuration file 163

## RJ-11 connector 31

## RLC

- configuration
  - Auto Upgrade 134

RLC Port Configuration property sheet  
  ACD 48  
routers  
  NAT routers 64  
Rx - Octet 183

## S

safety and regulatory information 241  
  electromagnetic compatibility 243  
    AS 3548 Class B (Australia) 243  
    Class A of FCC Part 15, Subpart J 243  
    CSPR B requirements 243  
    margin 243  
  electromagnetic immunity 244  
  electrostatic discharge 245  
  international safety compliance 242  
    Australia  
      TS001AS 3260 242  
    CSA C22.2, No. 950 242  
    EN90650 242  
    UL 1950 242  
security  
  no security 42  
  security identifier 42  
security identifier 42  
Self-contained Firmware Upgrade 201  
software  
  upgrades  
    performing 206  
software requirements 46, 49  
Speed (statistic) 183  
SPRE code  
  deregistration  
    modifying 96  
  offline  
    modifying 94  
  online  
    modifying 93  
  registration  
    modifying 95

SPRE codes 93–96  
  deregistration 120  
  offline 119  
  online 119  
  registration 119  
statistics  
  Bandwidth Connection Statistics screen 171  
  Caller Information Statistics screen 174  
    QoS Transitioning Technology 174  
  DSP Statistics screen 177  
  Ethernet Interface Statistics  
    Admin 183  
    Channel 183  
    Disc 184  
    Err 184  
    Ifc Type 183  
    IfcNo 183  
    LAN Drv 183  
    MPkts 184  
    MTU Len 183  
    Oper 183  
    QLen 185  
    Rx - Octet 183  
    Speed 183  
    Tx - Octet 184  
    UPkts 183  
  Ethernet Interface Statistics screen 181  
supported digital telephone sets 43  
Syslog  
  Syslog Configuration property sheet 137  
  testing 224  
Syslog configuration  
  procedure 138  
Syslog testing 224  
system  
  restart 204

## T

TCM 31  
telephone features  
  emergency service calls 150  
  hold 150  
  introduction 150

- telephone menu 87
  - accessing 85
  - default password 88
  - IP 88
    - display local IP 88
  - modify deregistration SPRE code 96
  - modify emergency code 92
  - modify offline SPRE code 94
  - modify online SPRE code 93
  - modify registration SPRE code 95
  - modify unit ID 90
  - password
    - default 88
  - restore default values 88, 89
  - time offset 90
  - user name 87
- telephones
  - supported digital telephones 43
  - supported features 47
- tests
  - Syslog 224
- TFTP
  - and upgrades 196
  - defined 61
- time offset 90
- transfer 47
- transfer feature 47
- transport media 64
- troubleshooting
  - before you begin 208
  - connectivity
    - PING failure 223
  - recovering from a catastrophic failure 226
  - using PING 221
- TS001AS 3260 242
- Tx - Octet 184

## U

- UDP port 20480
  - NAT configuration 65
- UL 1950 242
- Underwriters Laboratory (UL) 242
  - UL 1950 242
- unit ID
  - modifying 90
- universal power supply
  - Digital Telephone External IP Adapter unit 33
  - Digital Telephone Internal IP Adapter 32
- unsupported digital telephone sets 43
- updating
  - PBX Idle message 43
- upgrades
  - performing 194
    - firmware upgrade 196
    - obtaining the latest file 193
    - software upgrade 206
    - upgrades and configuration files 197
    - verifying the firmware and software versions 191
    - when to perform 197
- UPkts 183
- user name 87
- User On Demand Idle Timer
  - ACD 48
- User On Demand Minimum Call Timer
  - ACD 48
- using the digital telephone 141

## X

- X11 release 25.40
  - M39xx digital telephone sets 44





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