

MITEL

3300 | Integrated Communications Platform

3300 CITELlink Gateway for Meridian 1 Phones

Installation and Configuration

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3300 CITELink Gateway Installation and Configuration Guide for Meridian 1 Phones

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Introduction

About this Guide

This guide provides instructions for installing, configuring, and troubleshooting the Mitel® 3300 CITELink Gateway. It is intended for qualified 3300 ICP technicians.

The guide contains the following sections:

- **Introduction**—provides an overview of the gateway and lists related documentation and safety notices.
- **Before You Begin**—sets out the steps for preparing the site for installation.
- **Installation**—describes how to install the gateway unit, register supported Nortel Networks™ Meridian 1 IP sets, as well as test and troubleshoot the installation.
- **Configuration**—describes how to configure the gateway for DHCP or static IP addressing and how to upgrade software.
- **Appendixes**—provide additional information such as technical specifications, wiring charts, phone key layouts, and configuration tool commands.

About the 3300 CITELink Gateway

The 3300 CITELink Gateway is a network interface that provides supported Meridian 1 sets with connectivity on the Mitel 3300 Integrated Communications Platform (ICP).

The unit connects to the 3300 ICP controller through a Layer 2 switch and to a maximum of 24 Meridian 1 sets through standard wiring, punchdown blocks, and connectors. (See FIGURE 1.) Meridian 1 sets are line powered from the gateway.

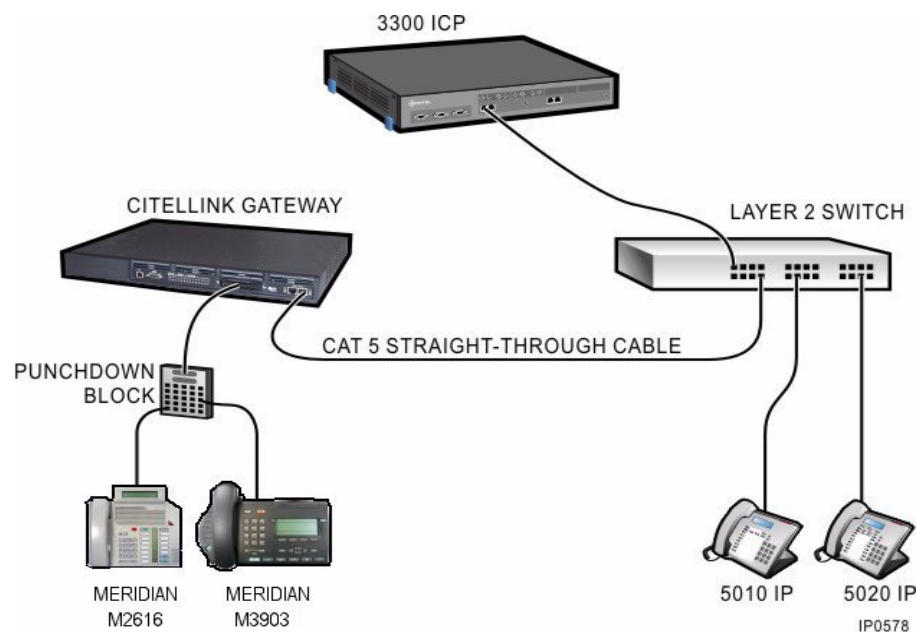


Figure 1: Standard CITELink Gateway Configuration

Once connected and programmed on the system, Meridian 1 sets—including displays, softkeys, and supported hardkeys—operate like Mitel phones.

By default, the gateway is configured to use DHCP IP addressing and to load software updates on startup. If required, these defaults can be changed using a command-line tool included with the gateway.

The 3300 ICP supports any combination of Mitel and CITELink-supported phones up to the maximum capacity of the 3300 ICP controller. A 700 -user controller, for example, supports a maximum of 29 gateways (700 limit ÷ 24 phones per gateway).

The gateway is supported on 3300 ICP systems with Release 5.2 software or higher.

Supported Meridian 1 Sets

The gateway supports the following Meridian 1 models:

- A2008
- M2006
- M2008
- M2616
- M3110
- M3310
- M3820
- M3901
- M3902
- M3903
- M3904



Note: The following Meridian 1 devices are NOT supported: Analog terminal adapter (ATA), M2616CT, Key expansion module, external alert interface, Meridian communications adapter (MCA), Meridian programmable data adapter (MPDA), attendant consoles.

Supporting Documentation

The following documentation is available on Mitel Online at <http://www.ebiz.mitel.com>:

- *3300 CITELink Start Here Guide*—identifies the documentation that you need, provides important safety instructions, and details regulatory approvals.
- *3300 ICP System Administration Tool Online help*—provides instructions on how to configure phones on the 3300 ICP system.
- *3300 CITELink Phone User Guides*—identifies the functions of the Meridian 1 phone keys and provides feature operation instructions.
- *3300 Integrated Communications Platform Technician's Handbook*—provides instructions on how to configure the 3300 ICP DHCP server and launch the System Administration tool.
- *LAN Design Guidelines for the Implementation of 3300 Platforms*—provides further details on setting up the LAN and Layer 2 switches.



Note: You require a Mitel Online username and password to access the site, and Adobe Acrobat Reader to view some online guides.

Important Safety Instructions

WARNING: Before attempting installation, read the Safety Instructions provided in the 3300 CITELink Gateway Start Here Guide. This guide is shipped with the gateway.

WARNING: Failure to follow all instructions may result in improper equipment operation and/or risk of electrical shock.

Before You Begin

This chapter lists the tools and information required for installation and describes how to

- Prepare the network, including testing existing sets and cabling, checking DHCP configuration (if required), and checking Layer 2 switch configuration.
- Program the 3300 ICP, including the DHCP server, licenses, feature access codes (FAC), Meridian 1 sets, and phone keys.
- Prepare users by distributing user guides, FAC reference cards, and phone key labels.

When planning the installation, note that the gateway:

- Supports a maximum of 24 sets
- Supports ONLY the Meridian 1 IP sets listed on page 2
- Must be connected to a properly-configured Layer 2 switch
- Must be installed within 1.4 m (5 feet) of an AC power source



Note: For more information, see TABLE 5: *Technical Specifications* on page 21.

Tools and Equipment Checklist

The 3300 CITELink Gateway unit ships with mounting hardware and the 3300 CITELink Gateway Start Here Guide.

In addition, you will require:

- ☐ Power supply cord.
Order the correct power cord for the country of installation from Mitel.
- ☐ CAT 5 straight-through cable with RJ-45 connectors
- ☐ A 25-pair extension line with Amphenol-type connectors for connecting the gateway to a punchdown block. A female connector is required to connect to the unit's front panel.
- ☐ A punchdown block and phone cables
- ☐ A PC with communications software (such as HyperTerminal) and an FTP utility
- ☐ An RS-232 straight-through cable for connecting the PC to the gateway or 3300 ICP controller
- ☐ 3300 ICP controller with Release 4.1 software or later
- ☐ 3300 ICP System Administration Tool username and password (for accessing the 3300 ICP System Administration Tool)
- ☐ 3300 ICP Device and User licenses for each Meridian 1 set
- ☐ 3300 CITELink Phone User guides for the Meridian 1 sets

Information Required

Before configuring the 3300 ICP and the gateway, record the following information:

- ☐ IP addresses for the 3300 ICP controller, external tftp server (if required), gateway unit, and network router. (Static IP addressing only)
- ☐ The directory number (DN), model number, and programming for each Meridian 1 IP set. Check the part number on the bottom of each set to verify the model number.
- ☐ Feature Access Codes programmed on the Meridian 1 phone system. (Optional)
It is recommended that you program the 3300 ICP with the same feature codes where possible.

Network Checklist

To avoid problems when installing the gateway, perform the following network check:

- ☐ Check existing network infrastructure before decommissioning the Meridian 1 phone system:
 - Test installed Meridian 1 IP sets including connections and handset cords
 - Tone and test existing cabling
 - Ensure the loop length does not exceed the maximum recommended (1600 feet/500 meters)
- ☐ Before installing new wall sockets, check existing phone plugs for non-standard wiring. For example, North American sets installed at a British site may require you to map pins 2 and 5 to 3 and 4 on the phone plug.
- ☐ If the network uses DHCP IP addressing, check DHCP server settings:
 - Ensure the DHCP server is programmed for the subnet where the gateway is located
 - Ensure the DHCP server has enough IP addresses
 - Ensure the tftp server referenced is storing the correct version of CITELink Gateway software
- ☐ Ensure the Layer 2 switch is programmed for 10-Base-T Ethernet 1/2 duplex

Program Meridian 1 IP Sets on the 3300 ICP

Before programming Meridian 1 sets

- Program the DHCP Server (if required)
- Enter IP device licenses
- Program Class of Service (COS), Interconnect Restriction, and Intercept Handling for each Meridian 1 set
- Program Set Registration and Set Replacement Access Codes
- Program Feature Access Codes



Tip: To minimize user frustration, program the 3300 ICP with the same feature access codes as used on the old Meridian 1 system.

For more information, see the System Administrator tool Online help.

For each Meridian 1 IP set, you'll need to:

- Provide the directory number, device type (CITELink Type 1 or 2), and interconnect restriction.
- Assign a COS
- Program phone keys



Note: IP sets may be programmed using the System Administration tool or OPS Manager. For more information on programming Multiline IP sets, see the System Administration tool or the OPS Manager Online Help.

To program a Meridian 1 set (System Administration tool):

1. Launch the 3300 ICP System Administration Tool. For instructions, refer to the Technician's Handbook.
2. Choose **System Configuration** from the **Selection** menu.
3. Open the **Multiline IP Set Configuration** form and click **Add**.
4. Program the set as required. Click **Help** for more information.
 - Set the Device Type as indicated:

For Meridian 1 model:	Use device type:	For Meridian 1 model:	Use device type:
M2006	CITELink Type1	A2008	CITELink Type2
M2008		M2616	
M3110		M3820	
M3310			
M3901			
M3902			
M3903			
M3904			

- Enter the internal directory number (1 to 7 digits in length) for the phone.
 - Enter the Interconnect Number for the phone.
 - Click Save.
5. Open the **Station Service Assignment** form and assign a class of service.
 6. Open the **Multiline Set Key Assignment** form. Refer to "Appendix E: Phone Keys" on page 27 to identify the number and locations of the personal keys. Note that the M3903 only has personal keys which have been preallocated to be the SuperKey and Down Arrow.
 - Select the directory number of the phone from the Multiline Set Key Assignment list.
 - From the Softkeys list, select the button number of the key that you want to program. Click Change Member.
 - Program the function of the key in the form.
 - Click Save.

Preparing Meridian 1 Users for Changes

Even if you are not installing new phones at the site, installation of the gateway will still have an impact on users. After installation, the Meridian 1 phones will operate like Mitel phones and users will have to reprogram personal keys such as personal speed dial buttons.

To minimize the impact on users, it is recommended that you:

- Inform Meridian 1 users of changes in phone functionality as well as on the full range of Mitel features supported on Meridian 1 sets
- Re-label the Meridian 1 phone keys—Superkey, Trans/Conf, Redial, Message, Cancel, Prime Line, Up Arrow, Down Arrow and Personal keys—as required. See Appendix C: Phone Keys (pg. 25 through pg. 31) for the location of the keys.
- Replace the old feature access card on each Meridian 1 phone with a new one. (Record the feature access codes on the sample cards in “Appendix I: Sample feature cards” on page 53 and then, photocopy, cut out, and distribute the cards.)
- Refer users to the CITELink phone user guides for operating instructions. You can print these guides from Mitel Online at <http://www.ebiz.mitel.com>.

Changes in Phone Functionality

To help Meridian 1 phone users adjust to changes in functionality, ensure they are aware of the following differences:

- Sets without HOLD keys can still be placed on temporary hold.
- Users program speed call numbers, personal keys as well as enable/disable features using the SuperKey. The M3110 and M3901 sets do not have a SuperKey mapped, as there is no way of seeing the prompts that the SuperKey invokes.
- On some sets, users must navigate SuperKey menus using * and # on the keypad.
- Some features require the user to dial a feature access code.
- Sets display "Message" when the user has a message (including new voice mail messages).
- The user does not need to select a line before dialing a number.
- Ring types and volume control settings are different. The 'Down Arrow' key mapped for various sets is not used to alter audio volume levels or LCD contrast unlike the Mitel 5010/5020 sets to alter the LCD contrast on Meridian sets, use the local Program key to get to the contrast adjustment menu.
- The M2xxx series of phones have optional displays. If a display is attached to an M2xxx set then the top right key is used for local control rather than being available as a program-mable key.
- Sets that do not have a display are supported, but must be configured using the ICP web interface (e.g. entering their MAC address and port number in the “Multiline IP Set Configuration screen”).

Supported Mitel Features

Most Mitel features are now available to Meridian 1 phone users. For a list of supported features, refer to “*Appendix F: Supported Features*” on page 35.

Users should note that the following Mitel features are NOT supported:

- Resiliency
- Hot Desking
- Compression
- Desktop User Tool
(for programming phone keys)
- Headset Operation
- Programmable Key Module support
- Automatic Call Distribution support
- Mitel 5700 support

Installing the 3300 CITELink Gateway

WARNINGS:

- Before attempting installation, read the safety instructions provided in the 3300 CITELink Gateway Start Here Guide. This guide is shipped with the gateway.
 - Failure to follow all instructions may result in improper equipment operation and/or risk of electrical shock.
-

Caution! After you plug in the unit, Do NOT unplug or otherwise interrupt the 3300 CITELink Gateway unit until it has finished the boot up procedure. A power interruption may result in the gateway failing to boot properly.

Important! Read all sections of this chapter before installing. The steps must be followed in the order presented.

This chapter describes how to install the 3300 CITELink Gateway unit and register supported Meridian 1 phones.

Before you install the gateway unit, ensure the proposed location

- Is within 1.4 meters (5 feet) of an AC power supply (preferably UPS-protected)
- Can access the punchdown block used by up to 24 supported Meridian 1 phones. Refer to “Supported Meridian 1 Sets” on page 2 for supported models.

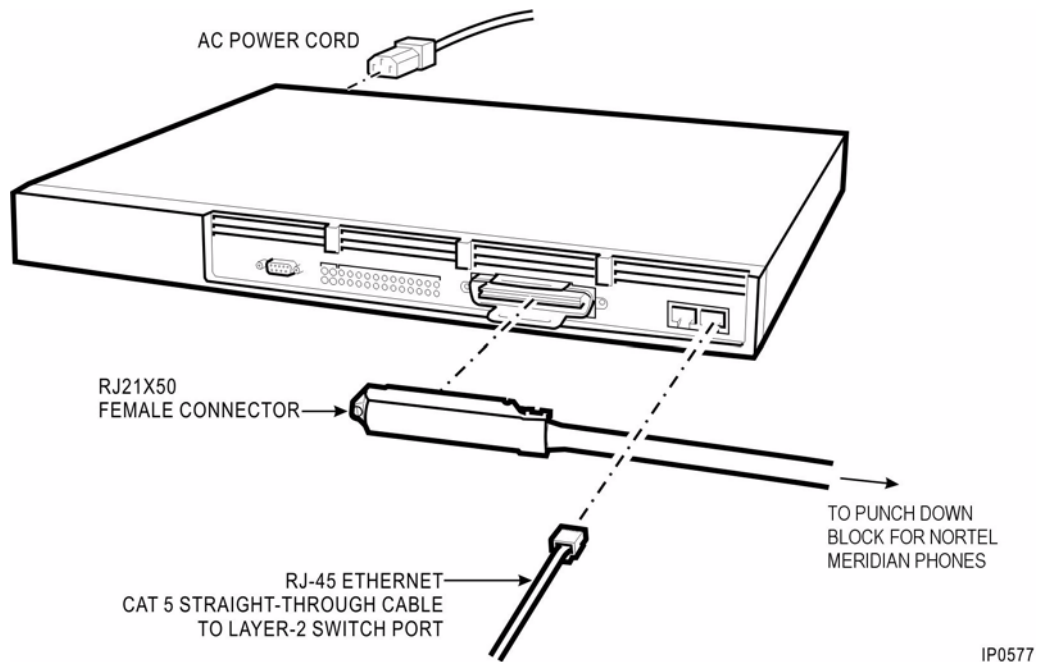
The following steps are required to set up Meridian 1 phones on the 3300 ICP:

1. Connect the gateway to the voice LAN and to the Meridian 1 phones
2. Power up the gateway
3. Register the phones with the 3300 ICP
4. Verify phone operation and system programming

Connect the Gateway

1. Place the unit on a desk, or install it in a 19-inch rack using the supplied mounting brackets. The mounting brackets fasten to the sides of the rack.
2. Connect a CAT 5 straight-through cable from the MDI-II ethernet port on the gateway to an ethernet port on a layer 2 switch (see FIGURE 2).
Note: The port on the Layer 2 switch should be configured as an “access” port (for the voice LAN only) and not a “trunk” port. (Recommended)
3. Connect the 21-pair extension line from the male Amphenol-type connector on the gateway front panel to a punchdown block near the gateway. Preserve the existing polarity as Meridian 1 phone wiring is polarity sensitive.
Refer to “Appendix D: Phone Wiring Chart for Meridian 1 Phones” on page 25 for wiring details.

4. Connect the Meridian 1 phones (24 maximum) to the punchdown block using RJ-11 phone cables.



Caution! Do not connect Mitel phones to the gateway.

Figure 2: Connecting the cables

Power Up the Gateway

1. Connect the power cord to the power input connector on the rear panel of the gateway.
2. Plug the power cord into the AC power source. The gateway begins its Boot up procedure.

Caution! Do NOT unplug or otherwise interrupt the 3300 CITELink Gateway unit while it is starting up. A power interruption may result in the gateway failing to boot properly. If a power interruption occurs during an update, allow the unit 10 minutes to recover.

Check the indicators on the front panel of the gateway to ensure the unit is starting properly. For a description of the expected behavior, refer to TABLE 6: *Indicator Functions During 3300 CITELink Gateway Startup* on page 22.



Note: When the gateway has finished startup, the Meridian 1 sets should display link status information followed by "PIN then Feature". If nothing is displayed, refer to "Troubleshooting the Installation" on page 16.

Register Meridian 1 phones with the Gateway

1. Using the Meridian 1 phone keypad, enter the “Set Registration Access code” (programmed in the **System Options Assignment** form) followed by the directory number of the phone.
2. Press the **Feature** (SuperKey) key. The time and date appears in the set display. The phone is now operational.

Some Meridian 1 sets, for example the M3901, do not have a display. You can register phones that do not have a display using either of the following methods

Method 1

1. Identify the MAC Address of the CITELink Gateway plane that the phone is connected to. The MAC addresses of the planes are labelled on the rear panel of the gateway.
2. Enter the MAC Address of the plane in the Multiline IP Phone Configuration form of the 3300 ICP System Administration Tool
3. Adjust the first octet of the MAC Address to correspond to the port that the phone is connected to. For example:
Set added to port 3 (plane #2)
Change octet to 03:xx:xx:xx:xx:xx

Method 2

Use a similar model (with display) to register the phone. Then, replace the display phone with the non-display phone.

Verify Phone Operation and System Programming

1. Place calls from the Meridian 1 phones to
 - other Meridian 1 phones on the gateway
 - Mitel phones on the 3300 ICP system
 - external numbers.
2. Place calls to the Meridian 1 phones from
 - Mitel phones on the 3300 ICP system
 - external numbers.
3. Test the feature keys and ensure that they are programmed and working correctly.

Connect a Phone after the 3300 CITELink Gateway is Powered Up

1. Program the phone on the 3300 ICP as required. See the section “Program Meridian 1 IP Sets on the 3300 ICP” on page 4.
2. Connect the Meridian 1 phone to the punchdown block. “PIN then Feature” will appear in the phone display.
3. Register the phone. See the section “Register Meridian 1 phones with the Gateway” on page 10.

Configuring the 3300 CITELink Gateway

The 3300 CITELink Gateway can be installed and operated without any configuration required. By default, it uses DHCP IP addressing and will load updated firmware automatically on startup.

The CITELink gateway contains two Network Layer Processors (NLPs) referred to as NLPA and NLPB. Each processor supports 12 phones and requires its own unique IP address. When using DHCP, the DHCP server must have at least two spare IP addresses (one for each NLP). When editing settings manually, you must enter a unique IP address in the myIpAddress field of both the NLPA and the NLPB forms.

In addition, we recommend that you connect the CITELink gateway to the ACCESS PORT of the Layer2 switch for the associated VLAN.

If required, you can configure the gateway by connecting a Maintenance PC (or “console”) and then issuing commands or entering settings at the prompt.

When changing some settings, you are prompted to enter your settings twice: once for each “side” of the gateway. The two sides are:

- NLPA (Network Layer Processor “A”)—supports 12 phones on channels 1 to 12
- NLPB (Network Layer Processor “B”)—supports 12 phones on channels 13 to 24

Important! Set “configAddress”(TFTP server IP address) on ONE SIDE ONLY. Do this to prevent problems caused by mismatched IP addresses in the two configAddress fields. Different IP addresses may result in the gateway trying to load software from two different locations.

The command-line user interface uses a menu system which groups together commands which are intended for similar purposes or are intended to be used together. Each menu and sub-menu is termed a 'scope'; a scope can contain further scopes (providing a tree-like structure to the menu system) and commands of its own.

When the interface starts it begins in the 'support' scope. From here commands are available to assist support personnel and for use when setting the initial configuration for the gateway. Normally, commands outside the support scope cannot be accessed without privileged access to the system. This access is protected by a password set by the system administrator.

TABLE 1 lists the common gateway commands and settings with descriptions.

Table 1: Commands and Settings

Command	Description
[support]ifconfig	Displays current gateway settings
[sys]setconfig	Allows user to edit gateway settings
[support]ver	Displays firmware version
[boot]nupdatef	Loads firmware upgrade
[boot]reboot	Reboots the gateway
[support]su	Changes to privileged access
Ctrl-D	Exits from privileged access
IP Address settings:	Note: To use DHCP, set all IP addresses to "0.0.0.0".
• myIpAddress	IP address of the 3300 CITELink Gateway
• myIpNetMask	The net mask
• defaultRouter	IP address of the default router
• configAddress	IP address of the TFTP server
• pbxIpAddress	IP address of the 3300 ICP
• sysLogAddress	Leave set to "0.0.0.0"
dhcpEnabled	Enables or disables DHCP IP addressing. Set to "TRUE" (to enable) or "FALSE" (to disable). (Default is TRUE.)
autoUpdate	Enable or disable automatic upgrades. Set to "TRUE" (to enable) or "FALSE" (to disable). (Default is TRUE.)

For a description of gateway commands, refer to *"Appendix G: Menu Structure"* on page 41.

To configure the gateway, you require

- A PC with a communications program such as "HyperTerminal"
- An RS-232 straight-through cable

Connect a Maintenance PC to the 3300 CITELink Gateway

1. Connect an RS-232 straight-through cable from the gateway's serial port to the serial port on a PC.
2. From the PC, launch a communication program and configure the PC's serial port to use the following settings:

Table 2: PC-to-3300 CITELink Gateway Serial Settings

Baud Rate	115200	Stop Bits	1
Data bits	8	Flow Control	None
Parity	None		

Change Configuration Settings

1. From the communication program, press Enter to display the default prompt, **DCP[support]\$**
2. Type **su** <ENTER> and supply the password (default is **citel**), to allow changes to the configuration settings. The new prompt is **DCP*[support]\$**.
3. Type **../sys/setcfg** <ENTER> to edit gateway settings. The gateway displays the settings for NLPA and NLPB one at a time.
4. Enter a new value or press **ENTER** to keep the current value.
5. To save changes, set **"WriteToFlash"** to **"TRUE"**.
6. Type **../boot/reboot** <ENTER> to restart the gateway and have the new settings take effect.

Upgrading 3300 CITELink Gateway Software

Software upgrades for the 3300 CITELink Gateway are announced through a 3300 ICP product bulletin and made available on Mitel Online at <http://www.ebiz.mitel.com>. To download the software load, follow the instructions in the product bulletin.

If you upgrade the 3300 ICP controller, check the new software load for a newer version of 3300 CITELink Gateway software and upgrade if required.

To upgrade 3300 CITELink Gateway software:

1. Connect to the 3300 ICP controller and transfer the software load to the TFTP server.
2. From the gateway console, load the software (if required) and then reboot the gateway.

It is recommended that you store updates on the TFTP server included with the 3300 ICP.

To upgrade the gateway, you require

- A Maintenance PC with
 - A communications program such as "HyperTerminal"
 - An FTP utility
 - The software load downloaded from Mitel Online
- An RS-232 straight-through cable

Connect a Maintenance PC to the 3300 ICP Controller

1. Connect an RS-232 straight-through cable from the 3300 ICP Maintenance port to the serial port of the PC with the upgrade software.
2. Launch a communication program (such as HyperTerminal) and configure the PC's serial port to use the following settings:

Table 3: PC-to-3300 ICP Serial Settings

Baud Rate	9600	Stop Bits	1
Data bits	8	Flow Control	None
Parity	None		

Transfer the Software Load to the 3300 ICP Controller (Internal TFTP Server)

1. From the communications program, type **tftpdShutDown** <ENTER> to shut down the 3300 ICP TFTP server.
2. Using File Transfer Protocol software, connect to the 3300 ICP and log in using the administrator level username and password.
3. Change to the tftp directory (/sysro/tftp) and set the transfer type to binary.
4. Transfer the file (for example, "tig_minet_meridian.bin") from your local directory to the TFTP server.
5. When the program indicates the transfer is complete, list the contents of the directory to verify that the software has been transferred.
6. From the communication program, type **tftpdStart** <ENTER> to restart the TFTP server.

Load the Software Upgrade

Before you continue, check the following settings from the gateway console:

- configAddress—IP address of the TFTP server
- appFileName—filename of the software load
- autoUpdate—automatic upgrade setting (either TRUE or FALSE)

For more information on configuring the gateway, see "Configuring the 3300 CITELink Gateway" on page 11.

Caution! Do NOT unplug or otherwise interrupt the 3300 CITELink Gateway unit while it is loading the software. A power interruption may result in the gateway failing to boot properly. If a power interruption occurs during an update, allow the unit 10 minutes to recover.

To load the software

1. If "autoUpdate" is set to "FALSE", type **U** <ENTER> to load the software.
If "autoUpdate" is set to "TRUE", proceed to step 2.

When the software has finished loading, the screen displays "INFO: dcpSwUpdateRx: Software update complete".

2. Type **^** <ENTER> to restart the gateway.

Troubleshooting the Installation

This chapter provides standard procedures to troubleshoot the most common problems.

Important! It is assumed that the network and the 3300 CITELink Gateway are configured to use DHCP.

Before You Contact Technical Support

If you cannot find the source of the problem in this chapter, please collect the required information listed in the applicable section(s) *before* calling Mitel Technical Support.

You will also need the additional information:

- ☐ Serial number(s) of your equipment.
- ☐ Firmware version loaded on the gateway.
- ☐ Nature of the problem.
- ☐ What you were doing when the problem occurred.
- ☐ Troubleshooting steps taken.
- ☐ Troubleshooting results.
- ☐ Your network diagram.
- ☐ Equipment LED status.
- ☐ DHCP server configuration and settings.
- ☐ IP address scheme.
- ☐ Layer 2 switch configuration and settings (for connections to the 3300 ICP controller, 3300 CITELink Gateway, and the DHCP server).
- ☐ 3300 CITELink Gateway configuration and settings.

To help Technical Support investigate your problem, please capture the boot sequence if possible.



Note: To view or capture 3300 CITELink Gateway information—including firmware version, IP address settings, and bootup error messages—access the configuration tool available through the gateway console. For information on setting up a console and using the configuration tool, refer to “Configuring the 3300 CITELink Gateway” on page 11.

General Troubleshooting Steps

Follow the steps below if you can't find the problem when using the troubleshooting table in this chapter.

1. Verify the status of the LEDs (see "Indicators" on page 22 for more information).
2. For IP Phone and physical network connectivity problems:
 - Verify that the device has power.
 - Verify the status of the port link integrity LEDs at each end of the cable.
 - Verify that each device transmits a link integrity pulse (LINK LED on).
 - If the link is down, try with another port. Verify that proper cabling is installed between the end devices.
 - Verify that a crossover cable was not installed instead of a straight-through cable.
 - Verify that the straight-through cable is connected to ethernet port "MDI-II" (not "MD-X") on the gateway.
3. For network media problems:
 - If there is excessive noise, check for cabling problems.
4. For network connectivity problems:
 - PING devices on your network.
5. For feature-related problems:
 - Test the same feature (with identical COS) on Mitel IP or DNI sets. This test can help identify (or rule out) 3300 ICP controller problems.
 - Verify that the feature is supported. Refer to "Appendix F: Supported Features" on page 35.
 - Verify feature key assignments. Refer to "Appendix E: Phone Keys" on page 27.
6. For audio-related issues:
 - Check if the problem only occurs between Meridian 1 sets on the same gateway.
 - Check if there is a broadcast storm or multicast (Ghost) application running at the time of the audio problem. (Sniffer with Network diagram may be required.)

Table 4: Troubleshooting

Problem	Possible cause	Corrective action
Unit LEDS		
System and Phone Power LEDs are OFF	Faulty power supply or gateway unit	Replace power supply or unit.
Unit Function LED is not flashing	Unit has failed	Replace unit.
Page 1 of 4		

Table 4: Troubleshooting (continued)

Problem	Possible cause	Corrective action
Service Required LED is ON	FLASH has been corrupted	<p>Reboot the gateway and check the console for the following error messages:</p> <p>ERROR: Header parse error ERROR: Application corrupt or not found.</p> <p>If found, follow the reflashing procedure provided on the 3300 ICP Release 4.1 software CD.</p> <p>If the problem persists, replace the unit.</p>
Startup		
On startup, the console displays: Info:nodeconfig : invalid	Static IP addresses are conflicting with DHCP options	Check the DHCP server and gateway configuration settings to ensure that your DHCP settings do not conflict with your Static IP settings.
Phone Displays		
Phone displays are blank after you power up the gateway	Faulty connections to telephone	Ensure Amphenol connector is firmly seated. Check connections to the punch-down block and sets.
	Line connector (RJ11) is loose.	Ensure connector is firmly seated.
	Wiring is incorrect.	Check wiring. Refer to "Appendix D: Phone Wiring Chart for Meridian 1 Phones" on page 25
	Phone model is not supported by the gateway.	See "Supported Meridian 1 Sets" on page 2 to determine which Meridian 1 models are supported.
	The gateway is not running the correct version of firmware	<p>Check the firmware version</p> <ul style="list-style-type: none"> From the console, switch to Expert mode and press "F" to display the firmware version; or Reboot the gateway and check the console for the firmware version. <p>If the gateway is not running version 1.0.2.3, upgrade the firmware. See "Troubleshooting the Installation" on page 16.</p>
	Set is locked out (some sets)	Refer to "SET LOCKED OUT" action.
Page 2 of 4		

Table 4: Troubleshooting (continued)

Problem	Possible cause	Corrective action
Phone remains in DHCP discovery	No IP addresses are assigned to the CITELink Gateway.	<p>Check the DHCP server</p> <ul style="list-style-type: none"> • Option 128,129 and 130 are programmed for the subnet where the gateway is located • Ensure that the DHCP server has enough IP addresses to give out • Ensure that DHCP server is active and functional • Ensure that Layer 2 switch port for the gateway has network connectivity.
	No Network connectivity	<p>Check to ensure you have a Cat 5 straight-through cable connected from the MDI-II port on the gateway to a Layer 2 switch port.</p> <p>Check the Layer 2 switch port</p> <ul style="list-style-type: none"> • Ensure the port is not shut down and that there are link activity • Ensure the port is properly configured to allow access to the DHCP server and the 3300 ICP controller. It is recommended that you connect the gateway to an access port rather than a trunk port. • Ensure the port auto negotiates to 10 M half duplex
"PIN then FEATURE" appears on the display	Set has not registered	<p>Register the phone</p> <p>If registration fails</p> <ul style="list-style-type: none"> • Check that Option 129 on the DHCP server is pointing to the 3300 ICP controller • Ensure the extension number has not been registered. If it has, register the phone using the Set Replacement code. <p>Refer to "Register Meridian 1 phones with the Gateway" on page 10.</p>
"SET LOCKED OUT" appears on the display	The device type of the DN entered does not match the phone	<p>1Clear the "Lockout" condition by repowering the phone and pressing * when prompted to erase the PIN.</p> <p>2Do one of the following</p> <ul style="list-style-type: none"> • Correct the device type and then register the phone; or • Register the phone using a different DN with the right device type
Display shows PBX xxxxxxxx SET xxxxxxxxxxxx	Set has lost network connectivity to the 3300 ICP	<p>Check LAN cable</p> <p>Check Layer 2 switch port</p> <p>Check network</p>
Page 3 of 4		

Table 4: Troubleshooting (continued)

Problem	Possible cause	Corrective action
Upgrading		
CITELink Gateway does not load latest version of firmware (tftpSendRequest fails)	TFTP server IP address is incorrect	<p>Ensure there is network connectivity.</p> <p>If using DHCP (with internal DHCP)</p> <ul style="list-style-type: none"> • Ensure that option 128 on the DHCP server is pointing to the 3300 ICP controller (internal TFTP) or an external TFTP server. • Ensure the gateway is properly configured <ul style="list-style-type: none"> - “autoUpdate” is set to True (default =true) - “dhcpEnabled” is set to True (default =true) - “configAddress” appears as “0.0.0.0”. “0.0.0.0” indicates that the gateway uses DHCP addressing. Note that a static setting on the gateway will override DHCP options programmed on the 3300 ICP. <p>Note: If you are using an external DHCP server, refer to the product documentation.</p>
Page 4 of 4		

Appendix C: Hardware Description

Technical Specifications

Table 5: Technical Specifications

Physical	
Dimensions (height x width x depth)	4.45 x 48.3 x 39.4 cm (1.75 x 19 x 15.5 inches)
Weight	4.27 kg (9.3 lbs)
Environment	
Storage	Temperature: - 40 to + 60 °C Humidity: 15 to 95%, relative humidity, non-condensing
Operating	Temperature: 5 to 40 °C Humidity: 34 to 95%, relative humidity, non-condensing
Electrical	
Voltage input	Auto-ranging 100–240 Vac, 50–60 Hz
Telephone ports	24 ports in any combination
Supported phones	Refer to “Supported Meridian 1 Sets” on page 2 for the supported phones.
Maximum loop-length station cabling to Nortel phones	1600 feet (500 meters)
Indicators	24 channel status indicators Gateway functioning indicator System power indicator Phone power indicator Service required indicator
Connectors	RJ21x50-way male for phone connection D-type 9-pin female RS-232 diagnostic port RJ-45 Ethernet connectors
LAN/WAN protocol support	3300 ICP Release 4.1 software or later 10-Base-T Ethernet (1/2 duplex with no auto-negotiation)

3300 CITELink Gateway Front Panel

FIGURE 3 shows the front panel connectors and indicators.

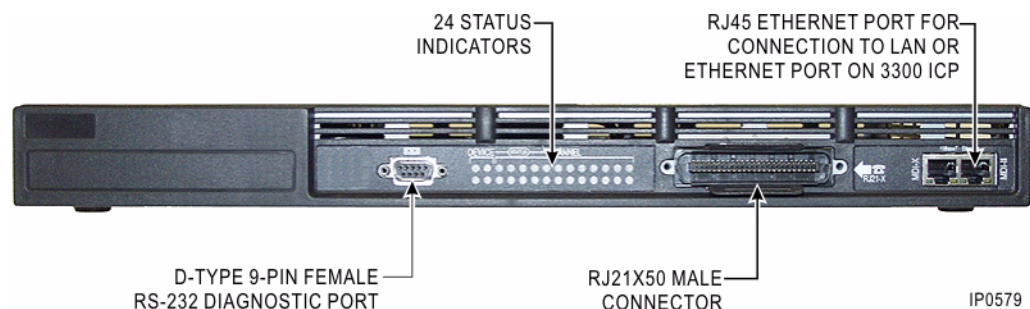


Figure 3: Front Panel

Indicators

The front panel displays four unit and 24 channel indicators as shown in FIGURE 4.

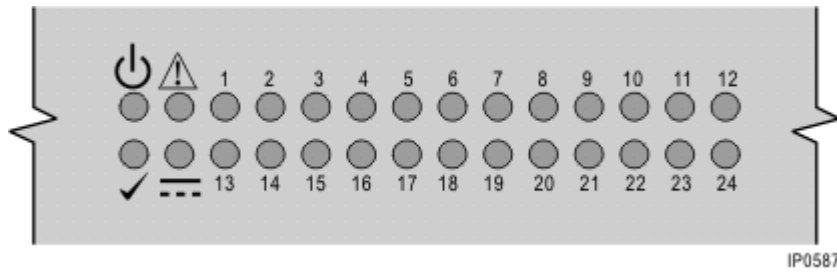






Figure 4: Unit and Channel Indicators

The following tables list the indicator functions during startup and normal operation.

Table 6: Indicator Functions During 3300 CITELink Gateway Startup

Indicator	Name	Status	Description
	System power	ON	Power input is normal.
		OFF	Power supply failure.
	Unit function	FLASHING	If channel indicators 1 to 8 are counting down from right to left, the software is loading.
		NOT FLASHING (May be on or off)	Unit has failed.
	Service required	ON	Unit requires service. Contact your dealer.
		OFF	Normal operation
	Phone power	ON	Inline power to phone is normal
		OFF	Inline power to phone has failed
1 to 8	Channel status	ON	Indicates the progress of the software boot process. (Lit LEDs indicate components yet to be loaded)
		OFF	
13 to 20	Channel status	ON	Indicates the progress of each stage in the software boot process. (Lit LEDS indicate software yet to be loaded for the component.)
		OFF	

Table 7: Indicator Functions During Normal Operation

Indicator	Name	State	Description
	System power	ON	Power input is normal.
		OFF	Power supply failure. If phone power indicator (see below) is ON, the power supply may have failed. Contact your dealer.
	Unit function	FLASHING	Unit is functioning correctly.
		NOT FLASHING (May be on or off)	Unit has failed.
	Service required	ON	Unit requires service. Contact your dealer.
		OFF	Normal operation
	Phone power	ON	Phone power normal
		OFF	Phone power has failed.
1 to 24	Channels	ON	Phone is connected and communicating with 3300 ICP.
		OFF	Phone is not connected. Check wiring.
		FLASHING	Phone is connected but link to 3300 ICP is not established.

Connectors

RS-232 Connector

The 9-pin D-type straight-through connector shown in FIGURE 5 allows Mitel Product Support to connect to the 9-pin RS-232 Diagnostic Port on the gateway and perform diagnostic tests.

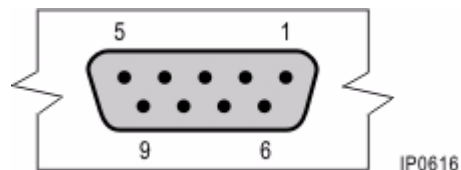
**Figure 5: Diagnostic connector (RS-232)**

TABLE 8 shows the function of each pin on the connector.

Table 8: Diagnostic port pin allocation

Pin	Function
2	TX OUT
3	Rx IN
5	GND
9	Not connected
1, 4, 6	Shorted together
7, 8	Shorted together

RJ21x Line Connector

RJ21x line connector (shown in FIGURE 6) plugs into the 50-way male connector on the gateway front panel and allows up to 24 Meridian 1 phones access to the 3300 ICP through the 3300 CITELink Gateway.

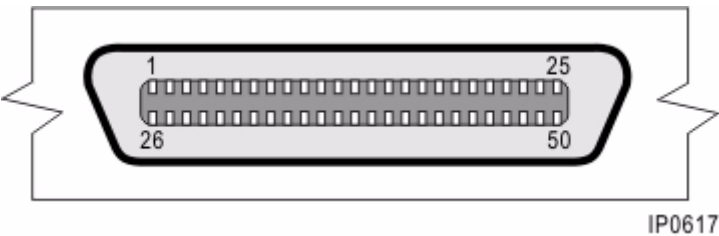


Figure 6: Line Connector (RJ21x)

The wire color code for each pin on the connector is listed in FIGURE 7.

DESIGNATION	WIRE COLOR			WIRE COLOR	DESIGNATION
Ring	Blue/White	1	26	White/Blue	Tip
Ring	Orange/White	2	27	White/Orange	Tip
Ring	Green/White	3	28	White/Green	Tip
Ring	Brown/White	4	29	White/Brown	Tip
Ring	Slate/White	5	30	White/Slate	Tip
Ring	Blue/Red	6	31	Red/Blue	Tip
Ring	Orange/Red	7	32	Red/Orange	Tip
Ring	Green/Red	8	33	Red/Green	Tip
Ring	Brown/Red	9	34	Red/Brown	Tip
Ring	Slate/Red	10	35	Red/Slate	Tip
Ring	Blue/Black	11	36	Black/Blue	Tip
Ring	Orange/Black	12	37	Black/Orange	Tip
Ring	Green/Black	13	38	Black/Green	Tip
Ring	Brown/Black	14	39	Black/Brown	Tip
Ring	Slate/Black	15	40	Black/Slate	Tip
Ring	Blue/Yellow	16	41	Yellow/Blue	Tip
Ring	Orange/Yellow	17	42	Yellow/Orange	Tip
Ring	Green/Yellow	18	43	Yellow/Green	Tip
Ring	Brown/Yellow	19	44	Yellow/Brown	Tip
Ring	Slate/Yellow	20	45	Yellow/Slate	Tip
Ring	Blue/Violet	21	46	Violet/Blue	Tip
Ring	Orange/Violet	22	47	Violet/Orange	Tip
Ring	Green/Violet	23	48	Violet/Green	Tip
Ring	Brown/Violet	24	49	Violet/Brown	Tip
Ring	Slate/Violet	25	50	Violet/Slate	Tip

Figure 7: Line Connector (RJ21x) Wiring

Appendix D: Phone Wiring Chart for Meridian 1 Phones

Table 9: Phone wiring chart

RJ21x 50-way line connector pins	Wire color	Gateway Channel/Phone	RJ21x 50-way line connector pins	Wire color	Gateway Channel/Phone
26	White-Blue	1	39	Black-Brown	14
1	Blue-White		14	Brown-Black	
27	White-Orange	2	40	Black-Slate	15
2	Orange-White		15	Slate-Black	
28	White-Green	3	41	Yellow-Blue	16
3	Green-White		16	Blue-Yellow	
29	White-Brown	4	42	Yellow-Orange	17
4	Brown-White		17	Orange-Yellow	
30	White-Slate	5	43	Yellow-Green	18
5	Slate-White		18	Green-Yellow	
31	Red-Blue	6	44	Yellow-Brown	19
6	Blue-Red		19	Brown-Yellow	
32	Red-Orange	7	45	Yellow- Slate	20
7	Orange-Red		20	Slate-Yellow	
33	Red-Green	8	46	Violet-Blue	21
8	Green-Red		21	Blue-Violet	
34	Red-Brown	9	47	Violet-Orange	22
9	Brown-Red		22	Orange-Violet	
35	Red-Slate	10	48	Violet-Green	23
10	Slate-Red		23	Green-Violet	
36	Black-Blue	11	49	Violet-Brown	24
11	Blue-Black		24	Brown-Violet	
37	Black-Orange	12	50	Violet-Slate	unused
12	Orange-Black		25	Slate-Violet	
38	Black-Green	13			
13	Green-Black				

Appendix E: Phone Keys

This appendix shows the functions of keys on supported Meridian 1 phones when programmed for use on the 3300 ICP. Personal Key numbers refer to the button numbers in the Multiline Set Key Assignment form of the 3300 System Administration Tool interface.



Note: Feature Keys marked with an asterisk do not have a key indicator. Do not program features that need an indicator (such as Do Not Disturb) on these keys.

Meridian 1 A2008 / M2616

Device Type: CITELink Type 2



Button Label	Function
1	Cancel
2	Hold
3	Superkey
4	Transfer
5	Down Arrow
6	Menu right
7	Menu mid
8	Menu left
9	Personal Key with indicator
10	Prime Line
11 - 16	Personal Keys with indicators
17	Program (or unused if no display on phone)
18	Handsfree

Meridian 1 M2006



Device Type: CITELink Type1

Button Label	Function
1	Cancel
2	Hold
3	Prime Line
4	Personal Key with indicator
5	Down Arrow
6	Transfer
7	Superkey
8	Program (or Personal Key if no display on phone)

Meridian 1 M2008



Device Type: CITELink Type1

Button Label	Function
1	Cancel
2	Hold
3	Prime Line
4	Personal Keys with indicators
5	Down Arrow
6	Transfer
7	Personal Key with indicator *
8	Superkey2
9	Program (or Personal Key if no display on phone)

Meridian 1 M3310

Device Type: CITELink Type1



Button Label	Function	Button Label	Function	Button Label	Function
1	Cancel	5	Prime Line	11	Superkey
2	Hold	6 - 8	Personal Keys with indicators	12	Program
3	Handsfree	9	Down Arrow		
4	Mute	10	Transfer		

Meridian 1 M3820

Device Type: CITELink Type2



Button Label	Function	Button Label	Function	Button Label	Function
1	Cancel	8	Prime Line	15	Down Arrow
2	Hold	9	Menu left	16	Personal Key with indicator
3	Mute	10	Personal Key with indicator	17	Transfer
4	Handsfree	11	Menu middle	18	Personal Key with indicator
5	Personal Key 1	12	Personal Key with indicator	19	Superkey
6	Local keys	13	Menu right	20	Program
7	Personal Key with indicator	14	Personal Key with indicator		

Meridian 1 M3902



Device Type: CITELink Type1

Button Label	Function
1	Personal Keys with indicators
2	Handsfree
3	Mute
4	Cancel
5	Hold
6	Transfer
7	Message
8	Program
9	Superkey
10	Down Arrow
11	Prime Line

Meridian 1 M3903



Device Type: CITELink Type1

Button Label	Function
1	Cancel
2	Hold
3	Handsfree
4	Mute
5	Headset
6	Program
7	Message
8	Directory
9	Transfer
10	Shift
11	Copy
12	Quit
13	Down Arrow / Prime Line
14	Superkey / Personal Key with indicator

Meridian 1 M3904

Device Type: CITELink Type1



Button Label	Function	Button Label	Function	Button Label	Function
1	Cancel	7	Message	13	Prime Line / Personal key with indicator
2	Hold	8	Local key	14	Personal key with indicator
3	Handsfree	9	Transfer	15	Personal key with indicator
4	Mute	10	Shift	16	Personal key with indicator
5	Headset	11	Copy	17	Personal key with indicator / Superkey
6	Program	12	Quit	18	Personal key with indicator / Down Arrow

Meridian 1 M3901



Device Type: CITELink Type1

Button Label	Function
1	Fx
2	Cancel
3	Prime Line
4	Hold
Fx and 1	Personal Key
Fx and 2	Personal Key
Fx and 3	Personal Key
Fx and 4	Personal Key
Fx and 5	Transfer

Meridian 1 M3110



Device Type: CITELink Type1

Button Label	Function
1	Cancel
2	Hold
3	Handsfree
4	Mute
5	Prime Line
6 - 11	Personal Keys with indicators
12	Transfer

Appendix F: Supported Features

This section lists the 3300 ICP features supported on CITELink Type 1 and 2 phones. Refer to the 3300 ICP System Administration Tool online help for more information on these features.

Table 10: Mitel Features Supported on CITELink Phones

Feature	CITELink Type1	CITELink Type2
E-911 Support	Yes	Yes
Account Codes–Default	Yes	Yes
Account Codes–Verified and Non-Verified	Yes	Yes
Account Code Reporting for Internal SMDR	Yes	Yes
Account Codes–System	Yes	Yes
ACD Dial out of Queue	Yes	Yes
ACD Hold Retrieve/Abandon Event	No	No
ACD Make Busy Reason Codes	No	No
ANI Display on Non-prime Lines	Yes	Yes
Add Held	Yes	Yes
Advice of Charge	Yes	Yes
Attendant Directory Number	Yes	Yes
Attendant Messaging	Yes	Yes
Attendant Recall	Yes	Yes
Attendant Serial Call	Yes	Yes
Attendant Setup and Cancellation of Station Features	Yes	Yes
Auto-Answer	No	Yes
Auto-Hold	Yes	Yes
Automatic Route Selection (ARS)	Yes	Yes
Automatic – Record a Call Outgoing Automatically	Yes	Yes
Autovon	Yes	Yes
Broadcast Groups	Yes	Yes
Broker's Call	Yes	Yes
Busy Dial Through	Yes	Yes
Calculator	No	No
Callback	Yes	Yes
Callback–System Programmable	Yes	Yes
Call By Name (see Phonebook)	Yes	Yes
Call Coverage	Yes	Yes
Call Duration Display	Yes	Yes

Table 10: Mitel Features Supported on CITELink Phones (continued)

Feature	CITELink Type1	CITELink Type2
Call Forward	Yes	Yes
Call Forward–Cancel All	Yes	Yes
Call forward Delay	Yes	Yes
Call Forward–Follow Me–End Chaining	Yes	Yes
Call Forward–Follow Me–Reroute When Busy	Yes	Yes
Call Forward–Forced	Yes	Yes
Call Forward Group	Yes	Yes
Call Forward Out of Service	Yes	Yes
Call Forward Override	Yes	Yes
Call Hold	Yes	Yes
Call Line Identification	Yes	Yes
Call Park	Yes	Yes
Call Pickup	Yes	Yes
Call Privacy	Yes	Yes
Call Release	Yes	Yes
Call Rerouting	Yes	Yes
Call Split (Conference Split)	Yes	Yes
Call Swap	Yes	Yes
Call Transfer	Yes	Yes
Call Waiting Swap	Yes (with flash hook)	Yes (with flash hook)
Camp-on (Call Waiting)	Yes	Yes
Camp-on Tone Security	Yes	Yes
Centrex (Flash and Double Flash over Trunk)	Yes (with flash hook)	Yes (with flash hook)
Class of Restriction	Yes	Yes
Class of Service	Yes	Yes
Clear All Features	Yes	Yes
CLI Substitution	Yes	Yes
Compression	No	No
Conference	Yes	Yes
Conference Split	Yes	Yes
Day/Night Service Control	Yes	Yes
Dial Tone	Yes	Yes
Dial Tone–Outgoing Calls	Yes	Yes
Dialed Number Editing	Yes	Yes
Page 2 of 5		

Table 10: Mitel Features Supported on CITELink Phones (continued)

Feature	CITELink Type1	CITELink Type2
Dialing—Conflicting Numbers	Yes	Yes
Direct-In Lines (DIL)	Yes	Yes
Direct Inward Dialing (DID)	Yes	Yes
Direct Page	Yes	Yes
Direct Station Select/Busy Lamp Field (DSS/BLF)	Yes	Yes
Disable Send Message	Yes	Yes
Display Caller ID on all Lines	Yes	Yes
Display Contrast Control	Yes	Yes
Display Identity of Ringing Non-Prime Line Keys	Yes	Yes
Display of Name and Number	Yes	Yes
Do Not Disturb	Yes	Yes
PKM Support	No	No
Emergency Services (Customer Emergency Services ID)	Yes	Yes
Feature Keys	Yes	Yes
Flash—Switch hook	Yes	Yes
Flexible Answer Point	Yes	Yes
Group Page	Yes	Yes
Group Silent Monitor	No	No
Groups—Key System and Multicall	Yes	Yes
Handset Receiver Volume Control	Yes	Yes
Handsfree Operation	M2008HF/D, M2616, M3310, M3902, M3903	Yes
Headset Operation (not a feature but local to phone)	M3310 and M3903 only	M3820 and M3904 only
Hold	Yes	Yes
Hold on Hold	Yes	Yes
Hot Desking	No	No
Hotline	Yes	Yes
Hunt Groups	Yes	Yes
Intercept Handling	Yes	Yes
Interconnect Restrictions	Yes	Yes
Interconnect Restriction Override	Yes	Yes
IP Networking	Yes	Yes
Keep TelDir Entry on Checkout	Yes	Yes
Key System Groups	Yes	Yes
Page 3 of 5		

Table 10: Mitel Features Supported on CITELink Phones (continued)

Feature	CITELink Type1	CITELink Type2
Language Change	Yes	Yes
Line Types and Appearances	Yes	Yes
Line Appearance Ring Types	Yes	Yes
Meet Me Answer	Yes	Yes
Messaging Advisory	Yes	Yes
Messaging-Callback	Yes	Yes
Messaging-Dialed	Yes	Yes
Message Waiting Display (displays MSG on phone)	Yes	Yes
Multicall Groups	Yes	Yes
Multiple Message Waiting Indications	Yes	Yes
Music	Yes	Yes
Music On Hold	Yes	Yes
Networked ACD	No	No
Networked Group Page	Yes	Yes
Night Service	Yes	Yes
Non-Busy Station	Yes	Yes
Non-DID Extension	Yes	Yes
Off-Hook Detection to Display Phones	Yes	Yes
Off-Hook Voice Announce	No	No
Override	Yes	Yes
Override Security	Yes	Yes
Paging	Yes	Yes
Permanent Do Not Disturb	Yes	Yes
Phonebook	Yes	Yes
Privacy Release	Yes	Yes
Recall	Yes	Yes
Record a Call Option	Yes	Yes
Redial	Yes	Yes
Redial-Saved Number	Yes	Yes
Release	Yes	Yes
Reminder	Yes	Yes
Remote Wake-up Calls	Yes	Yes
Reroute after Call Forward Follow Me to Busy Destination	Yes	Yes
Resiliency	No	No
Page 4 of 5		

Table 10: Mitel Features Supported on CITELink Phones (continued)

Feature	CITELink Type1	CITELink Type2
Ringer Control	Yes	Yes
Ringing–Discriminating	Yes	Yes
Ringing Line Select	Yes	Yes
Speak@Ease Softkey Support	No	Yes
Speaker Volume Control	Yes	Yes
Speed Call Keys	Yes	Yes
Speed Call–Pause	Yes	Yes
Speed Call–System	Yes	Yes
Station-To-Station Dialing	Yes	Yes
Swap	Yes	Yes
Switchhook Flash	Yes	Yes
Tag Call	Yes	Yes
Telephone Directory–Privacy Option	Yes	Yes
Telephone Usage Restriction (Curfew Control)	Yes	Yes
Timed Reminder	Yes	Yes
Tone Demonstration	Yes	Yes
Transfer	Yes	Yes
Trunk Answer from any Station (TAFAS)	Yes	Yes
Trunk Select–Direct	Yes	Yes
Voice Mail Softkeys	No	Yes
Page 5 of 5		

Appendix G: Menu Structure

The Command Prompt

When the user interface first starts the command prompt will be in the 'support' scope, and will look like this:

DCP [support]\$ _

This tells us which processor we are currently running (in this case the DCP - the number and types of processors present depend on the gateway board) and that we are in the 'support' scope.

Once privileged access has been granted (see the 'su' command, below) there will be a star between the processor name and the scope field:

DCP*[support]\$ _

Privilege mode prevents unauthorised access to commands which can potentially stop the Gateway board working correctly. If you need access to commands outside the 'support' scope, then use the 'su' command to grant access to privileged user mode. Always make sure you leave privileged user mode when you are done. Use CTRL-D to log-off from privileged user mode.

Executing Commands

To execute a command, type its name and any parameters at the command prompt and press Enter. To find out about a command, either use the 'help' command to list all commands with simple description available in the current scope, or use type the command name followed by '-h' as a parameter. For most commands this shows in-depth help. You can also use the 'ls' command to show a simple list of all the commands and scopes available with no help text.

In addition to the commands in each scope, additional commands are available globally. These are mostly commands to manipulate the command prompt and current scope, such as 'pwd' and 'cd'. These commands always appear when a scope contents are listed with 'ls' or 'help'.

Commands can also be executed from another scope, see 'Changing Scope', below.

Changing Scope

Changing scope is straightforward, either type the scope name directly or use the 'cd' command (see the 'cd' command, below). Beginning a scope name with '/' will tell the user interface to look for that scope from the top level (root) scope. If the '/' is omitted, the scope is resolved relative to the current position. The '..' and '.' are special scope names; they are used to access the 'parent' scope and the 'current' scope respectively. When changing scope, always use a '/' to separate each scope, e.g.:

```
DCP*[support]$ cd ../module/test/
```

```
DCP*[support]$ ../module/test/
```

will change the scope relative to the current position, while

```
DCP*[support]$ cd /module/test/
```

```
DCP*[support]$ /module/test/
```

will change relative to the top level.

If a command is preceded by a scope, either relative to the current position, or to the top level (as in this example), it is executed if access can be granted to the scope it is in. For example:

```
DCP*[support]$ /boot/reboot
```

will execute the reboot command from the /boot scope, which will carry out a software reset of the card, provided privilege to access the /boot scope has been granted.

Command History

Each command used is stored to make it easy to issue repetitive commands. The User Interface stores several of the last commands; the actual number depends on the platform running on and the amount of system memory available. To access the last command that was typed, use CTRL-J. Repeatedly pressing CTRL-J steps backwards through the last few commands in the history list until the end of the stored commands is reached. To step forward again use CTRL-K.

Tab-Completion

When typing commands that are part-complete, pressing the TAB key will ask the user interface to find the best match for what has been typed so far. If there is only one match, then the command name is completed entirely, if there are several potential matches, the command name is partially completed as far as the match allows. If there are no matches, then nothing is added to the command line.

Menu Structure Overview

Top Level Scopes

The system provides the following top level scopes:

/boot - contains the start-up and shutdown control commands

/sys - commands in here control the running system

/support - unprotected - access to all the information gathering and system configuration tools needed to install and support the gateway card.

/module - software module testing tools can be found in here. Each module has a sub-scope from here, and the contents change depending of the software version running on the handset gateway board.

/debug - the command line debugger is in here.

/global - the 'built-in' commands are stored in this scope, and are always accessible.

Complete Menu Tree Summary

These are the commands available in each scope for reference. Most of these commands are detailed later in the document, except for commands in the 'module' and 'debug' scopes. The contents of 'module' are likely to change depending on the hardware fitted to the gateway boards and the software driver modules loaded to support it. The 'debug' scope gives access to the system debugger and qualifies for its own documentation.

boot	glue
	nbupdate
	nupdate
	nupdatef
	rcpprog
	rcpwipe
	reboot
	setboot
debug	add
	clear
	clrwatch
	del
	dis
	fi
	mb
	mi
	ml
	norcp
	pstack
	reg
	sb
	sd
	setwatch
	si
	sl
	stack
	sym
	test
	watch
	wb
	wi
	wl

global	cd
	help
	ls
	pwd
	su
	ver
support	cr
	board
	ifconfig
	log
	manuf
	rcp
	restart
	route
	setcfg
	stats
	temp
sys	mac
	passwd
	trace
	wdog
sys/trace	flags

Command Descriptions

The 'module' and 'debug' commands are not covered here. Commands in the 'module' scope are likely to change depending on which software modules are present in the Handset Gateway software system, while the debugger is intended for engineering and advanced support use only, and is a large enough subject to command its own documentation.

Global Scope

Commands in the 'global' scope are always available and can be used from anywhere. There is no security restriction over these commands.

cd

Usage:

cd -h
cd path

This changes the scope to that specified. The 'path' argument can be relative to the current position or absolute. Absolute paths begin with the '/' character. The path can contain the special scope names '..', meaning 'parent scope', and '.', meaning 'current scope'. Each scope listed in the path should be separated by a '/' character.

*help**Usage:***help [-h]**

Shows a list of the sub-scopes and commands available in the current scope, complete with a short reminder of the purpose of each command or scope.

*ls**Usage:***ls -h****ls****ls <path>**

This lists a scope contents. With no arguments, the contents of the current scope are displayed; otherwise the specified scope contents are shown. The scope parameter may be specified either as relative to the current scope or by an absolute scope path beginning with '/'. See the `cd` command (above) for details about path naming conventions.

*pwd**Usage:***pwd [-h]**

Displays the absolute path of the current scope.

*su**Usage:***su [-h]**

Changes to supervisor/privileged user mode. This asks for a password, which can be changed once access in privilege mode is granted. The default password is 'citel', if you change this, take care to remember the password or your Gateway board may not be configurable in the future.

To leave privileged mode, use CTRL-D, which closes the current user interface session.

*ver**Usage:***ver [-h]**

This displays the version string contained in the running software. If the version string for the running software and the version string for the software version held in flash are different, both version strings are displayed clearly marked.

The 'support' Scope

These commands have unrestricted access. The user interface opens in the 'support' scope by default.

board

Usage:

board [-h]

This displays simple identification data for the hardware and the running software. The software version string and build date are displayed, along with the board type number and CPLD version.

cr

Usage:

cr [-h]

This displays the copyright information for the Gateway board. The text output from this command can be long.

ifconfig

Usage:

ifconfig [-h]

Used with no parameter, this command displays the current interface settings for the network connections. Each NLP has its own network connection, so if your system has two NLPs, there will be two blocks of configuration information shown. Also shown is the auto-update information - this is the file name to fetch from the IP address shown in the configAddress field.

log

Usage:

log -h

log -q

log <dest> <level>

This allows control of the tracing output. There are two output targets which can be controlled independently. The console logger outputs messages across the serial port, so they will appear on the same terminal as the user interface, while the syslogger writes events over the network to the syslog address defined in the network device configuration.

Flags:

-q Displays the log levels for each output target. Use no other parameters with this flag.

Valid parameters:

dest Can be either 'console' or 'syslog' depending on the output target to be modified.

level 'off' to turn off the logging, or the log level 0-7 where 0 is minimal and 7 is logging of everything.

*manuf**Usage:***manuf [-h]**

This displays tracking information which is logged after the board is manufactured.

*rcp**Usage:***rcp [-h]**

This command queries the RCP and displays the result. The information displayed includes the last restart reason and the version number of the software running on the RCP.

*restart**Usage:***restart [-h]**

This command shows the last logged restart reason for the Gateway board. It also shows the reason for any pending restart.

*route**Usage:***route -h****route [-t] <processor>**

This command allows the console to be routed to one of the other processors.

Flags:

-t Switches to the specified processor temporarily, the console will automatically return to the DCP after a short delay.

Valid arguments for processor:

a, nlpa Selects NLPA

b, nlpb Selects NLPB

Example:

route -t nlpa

will temporarily route the console to NLPA.

setcfg

Usage:

setcfg [-h]

This allows the network address information to be configured for the board. Invoking this command starts a series of interrogations by the board to set the IP address, netmask, default router, DNS IP address, the syslog IP address and the update/TFTP IP address. The board interfaces can also be set to use DHCP using this command.

At the end of this process, the Gateway asks for final confirmation to write the updated configuration to the flash memory. If the user says 'no' at this point, the new configuration is disregarded, and the settings are re-loaded from flash.

stats

Usage:

stats [-h]

This displays various counters which have been running since the last reboot.

temp

Usage:

temp [-h]

This command displays the current temperature of the Citel Handset Gateway board.

The 'boot' Scope

glue

Usage:

glue [-h]

This command reports the type of glue logic attached to the board.

nbupdate

Usage:

nbupdate [-h]

This forces an update of the node booter code. A suitable booter image is stored in the Handset Gateway software to allow this update to take place.

*nupdate**Usage:***nupdate [-h]**

Use this command to check for flash updates using TFTP. The configuration address from the network interface settings is queried for the file version that is stored. If that version is newer than the version currently stored in flash, then it is downloaded and written. To use the new version, you must reboot the card after the write to flash is complete.

*nupdatef**Usage:***nupdatef [-h]**

This command will force an update of the flash using the TFTP configuration address in the network interface settings. If a file exists on the TFTP server, it is downloaded and written to the flash memory without any version checks. To use the new version, you must reboot the card when the update is complete.

*rcpprog**Usage:***rcpprog [-h]**

This command reprograms the RCP.

*rcpwipe**Usage:***rcpwipe [-h]**

This command clears the RCP programming.

*reboot**Usage:***reboot [-h]**

This causes an immediate restart of the gateway card. WARNING: as you need privileged access operate this, it asks for no confirmation.

*setboot**Usage:***setboot -h****setboot <flash|bsl>**

Allows the method used by the Handset Gateway card to be changed. Setting to 'bsl' will cause the board to try and load a software image over the serial port after it starts, while setting to 'flash' will cause the software held in the on-board flash memory to be loaded and run at startup.

The 'sys' Scope

mac

Usage:

mac -h

mac <fixed|hw>

This can force the handset gateway to use a fixed test MAC address for its network interfaces, or instruct it to use its own unique, hardware-stored MAC address. Normally the fixed MAC address is only used during post-production tests.

Use the 'fixed' parameter to use the test address, or used the 'hw' parameter to use the unique address assigned to the Handset Gateway board.

passwd

Usage:

passwd [-h]

This allows the user interface administrator password to be set. Please note, this password is different to the web-interface password. When the user interface starts for the first time, this password is set to the default of 'citel'. You will be asked to enter the password twice, to confirm that it has been typed correctly. The password is case-sensitive, and we strongly recommend that you keep a record of the password in a safe place.

wdog

Usage:

wdog [-h]

This command toggles the state of the on-board watchdog. If you turn off the watchdog, there will be no automatic reboot of the card if a failure occurs, which is useful when investigating some types of failure. The new state of the watchdog is reported when this command completes.

Appendix H: Planning

This appendix includes forms you can use to capture site configuration details before decommissioning the Meridian 1 system.

Feature Access Codes

[illegible]

Meridian 1 Phone Information

[illegible]

Meridian 1 model	Device type:	Meridian 1 model	Device type:
M2006	CITELink Type1	A2008	CITELink Type2
M2008		M2616	
M3110		M3820	
M3310			
M3901			
M3902			
M3903			
M3904			

Appendix I: Sample feature cards

English

CITELink Features	Code
Speedcall—Store	
Speedcall—Invoke	
Speedcall—Clear	
Call Forwarding No Answer (Int & Ext)	
Cancel All Forwarding	
Do Not Disturb	
Do Not Disturb Cancel	
Save Last Number	
Redial Last Number	
Paging	
Campon Setup	
Campon Retrieve	
Cancel All Features	

Canadian French

Fonctions du CITELink	Code
Composition abrégée—Stocker	
Composition abrégée—Exécuter	
Composition abrégée—Effacer	
Renvoi automatique sur Pas de réponse (interne et externe)	
Annuler tous les renvois	
Ne pas déranger	
Ne pas déranger—Annuler	
Enregistrer le dernier numéro	
Recomposer le dernier numéro	
Recherche de personne	
Mise en attente—Définir	
Mise en attente—Reprendre	
Annuler toutes les fonctions	

Spanish (Latin America)

Funciones de CITELink	Código
Marcado rápido—Almacenar	
Marcado rápido—Llamar	
Marcado rápido—Borrar	
Reenvío de llamada No responde (Int. y Ext.)	
Cancelar todo reenvío	
No molestar	
Cancelar No molestar	
Guardar último número	
Remarcar el último número	
Localización	
Campon Setup (Configuración de acampado)	
Campon Retrieve (Recuperación de acampado)	
Cancelar Todas las funciones	

Appendix J: Glossary

CAT 5 cable—The highest grade of unshielded twisted-pair as defined by EIA/TIA 568. Category 5 UTP cable is required to run Fast Ethernet.

LEDs—Light emitting diodes (status indicators)

MAC address—Media Access Control address. Each IP phone has a MAC address. The system registers the phone's MAC address in the Multiline IP Set Configuration form after you enter the Set Registration Access code followed by the extension number.

Multiline IP Set Configuration form—a form in the 3300 ICP System Administration Tool that allows you to assign directory numbers to IP phones.

Multiline Set Key Assignment form—a form in the 3300 ICP System Administration Tool that allows you to assign functions to the programmable keys on a phone.

System Administration Tool—Internet Explorer-based programming interface for the 3300 ICP system.

CITELink Gateway Phone User Guides—Identify the functions of the keys on the Meridian 1 phones when they are connected to the Gateway and provide instructions on how to use the phones. These guides are available from the Mitel Customer Documentation site at <http://edocs.mitel.com>.

PSU—power supply unit

Punchdown block—allows you to connect the wires from the 25-pair/50-way cable to the telephone cables.

TFTP (Trivial File Transfer Protocol)—a simple file transfer protocol that enables devices such as Mitel IP phones to download software without user intervention.

UPS—Uninterruptible power supply.

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