12 and 24 Port SIP Handset Gateway

Installation and Configuration Guide

Document Number: G-SIP3D-RUC **Version: AB**

Copyright Information

Trademark Information

Citel plc, the Citel logo, Citel SIP Handset Gateway™, and The VoIP Migration Company are trademarks or registered trademarks of Citel plc or its wholly-owned subsidiaries in the United States and other jurisdictions.

All other trademarks, registered trademarks, and service marks are the property of their respective owners.

Accuracy Notice

Every effort was made to ensure that the information in this guide is complete and accurate. However, Citel plc makes no representations or warranties, whether expressed or implied, as to the accuracy or completeness of these materials and shall not be liable for any loss or damage suffered or incurred as a result of reliance upon or use of them.

Information in this publication is subject to change without notice. Citel plc reserves the right, without prior notice, to change the equipment, designs or documentation referred to herein as it considers necessary.

Symbols and Conventions

Important symbols and conventions used throughout this guide are shown below.

Icon	Description
	Important safety information. Ignoring this information may lead to physical danger to people.
	Information alerting you to potential loss of data or damage to an application, system or device.
	Highlights important information.

Contacting Citel Technologies

Mail

Citel Technologies
3131 Elliott Avenue
Suite 250
Seattle
WA 98121

Citel Technologies
4 Wheatcroft Business Park
Landmere Lane
Edwalton
Nottinghamshire
NG12 4DG UK

Email support@citel.com

Web www.citel.com

Telephone +1 888 454 5828 – select the support option

Product model numbers

The information contained within this document refers to the following products:

Part Number	Description
E-SIP3D-RUC12	Handset Gateway 12 port (digital only)
E-SIP3D-RUC1241	Handset Gateway 12 port (digital only)*
E-SIP3D-RUC24	Handset Gateway 24 port (digital only)
E-SIP3D-RUC2441	Handset Gateway 24 port (digital only)*
E-SIP3DZ-RUC12	Handset Gateway 12 port (digital) with FXO port
E-SIP3DZ-RUC1241	Handset Gateway 12 port (digital) with FXO port*
E-SIP3DZ-RUC24	Handset Gateway 24 port (digital) with FXO port
E-SIP3DZ-RUC2441	Handset Gateway 24 port (digital) with FXO port*
E-SIP3DY-RUC12	Handset Gateway 12 port (digital) with 2 FXO ports
E-SIP3DY-RUC1241	Handset Gateway 12 port (digital) with 2 FXO ports*
E-SIP3DY-RUC24	Handset Gateway 24 port (digital) with 2 FXO ports
E-SIP3DY-RUC2441	Handset Gateway 24 port (digital) with 2 FXO ports*
E-SIP3P-RUC24	Handset Gateway 24 port (Pphone/analog only)
E-SIP3P-RUC2441	Handset Gateway 24 port (Pphone/analog only)*
E-SIP3PZ-RUC24	Handset Gateway 24 port (Pphone/analog) FXO port
E-SIP3PZ-RUC2441	Handset Gateway 24 port (Pphone/analog) FXO port*
E-SIP3PY-RUC24	Handset Gateway 24 port (Pphone/analog) 2 FXO ports
E-SIP3PY-RUC2441	Handset Gateway 24 port (Pphone/analog) 2 FXO ports*

* European version

Safety Information

Important

This guide and warranty and liability details are published in the ‘downloads’ area at www.citel.com/service_support. Any questions regarding the use of this guide may be directed to support@citel.com.

Before you start to install the product, make sure you have read and complied with all instructions, including the Safety Information, in this guide. *Appendix B* contains the safety information.

You must communicate the safety information to the users and administrators of the telephone system in which a Citel SIP Handset Gateway is operating.

Only trained, qualified service personnel shall install or maintain this product.

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

Changes or modifications not expressly approved by Citel could void the user's authority to operate the equipment.

Power Surges

Sudden surges in electrical current can damage sensitive equipment. To reduce the risk of damage to your equipment, for example caused by lightening strikes, install a surge protector between your equipment and both the AC power outlet and the telephone line.

Contents

1 OVERVIEW

What is the Citel SIP Handset Gateway?

It is a highly-configurable piece of equipment that connects your existing telephones to a Service Provider's softswitch.

It is referred to as the 'Citel Gateway' in this document.

Different models of the Citel Gateway are available for the US and UK/EU markets.

What does it do?

The Citel Gateway acts as an interface between your existing handsets and the softswitch, making the features of the softswitch available to end users. It is a rack-mountable unit that replaces your PBX and is usually connected to your handsets using existing telephone wiring, punchdown blocks and connectors.

Depending on the model you have purchased, the Citel Gateway supports:

- A maximum of 12 or 24 handsets
- Digital handsets or a mixture of P-Phone and analog handsets.
- A connection to a single analog telephone line or to two analog telephone lines

See *Product model numbers* on page *3* for a full list of models associated with this documentation.

You must not connect digital handsets to a model of the Citel Gateway that is designed to support P-Phone or analog handsets. You must not connect P-Phone or analog handsets to a model designed to support digital handsets. Damage to the handsets may result.

Telephones connected to the Citel Gateway are either powered from it, through an integral power source, or use existing external power supplies.

The same unit is used for all supported telephones but each unit can only support telephones of one type. A full list of all supported telephones is provided in *Appendix D*.

Telephones connected to the Citel Gateway are normally powered from the Gateway using an internal power source. If, however, you are connecting telephones that already use an external power supply (for example, some Definity phones and some P-Phones), they will continue to need their external supply when connected to the Gateway.

How does it do that?

The Citel Gateway is configured to interface specifically with your Service Provider's softswitch.

Each handset is connected to a port on the Citel Gateway. The port is configured for that particular handset and features are assigned to the available keys. It is possible to configure each port individually, enabling different models of phones to be connected to the ports, although the phones must all be of the same type.

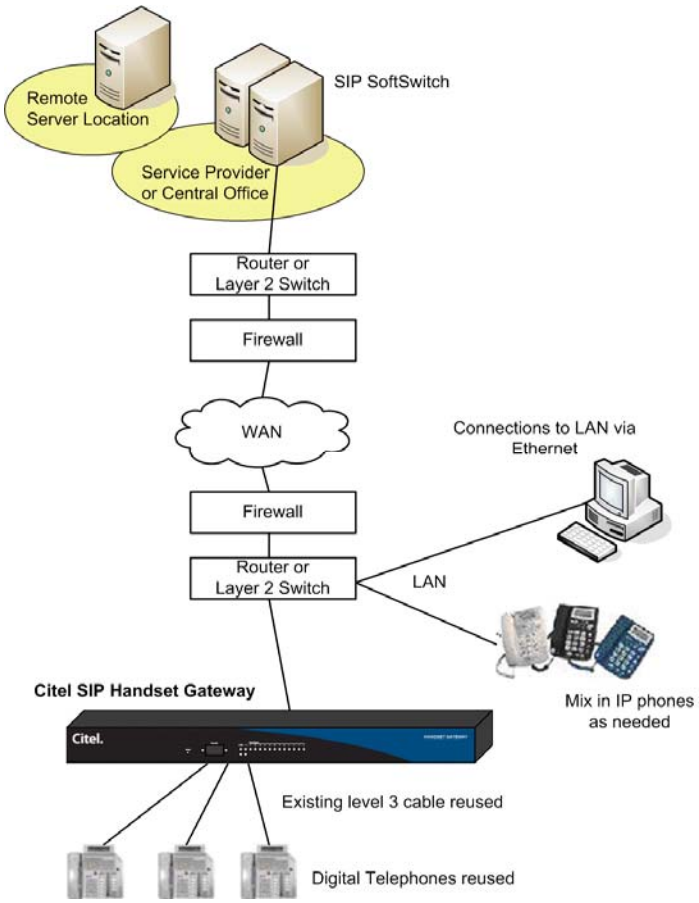


Figure 1 Example implementation of the Citel Handset Gateway

Figure 1 shows a digital Citel Gateway installed in an existing system. The P-Phone version of the Citel Gateway connects to P-Phone and analog handsets.

Compatible products

The Citel Gateway is compatible with a range of softswitches and telephones. Please check that your equipment is listed before attempting to install the Citel Gateway.

Softswitches

The Citel Gateway currently supports the following softswitches and provides appropriate documentation:

- Asterisk
- Broadsoft
- Sylantro

Support for additional softswitches is added on an ongoing basis. Please contact Citel if your particular softswitch is not listed.

Telephones

Digital version of the Citel Gateway

- Avaya Definity
- NEC Dterm
- Nortel Meridian 1
- Nortel Norstar
- Panasonic DBX
- Toshiba

P-Phone version of the Citel Gateway

- Nortel P-Phone
- Analog handsets

What's in the box?

The Gateway is supplied in one box containing five items:

- 12 or 24 port Citel SIP Handset Gateway unit, either digital or P-Phone model

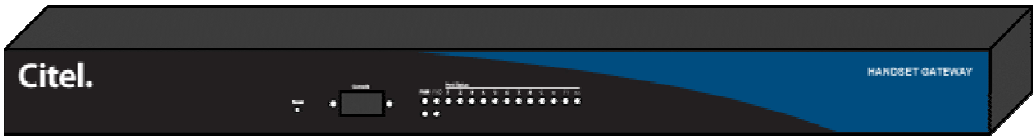


Figure 2: The 12 port Citel SIP Handset Gateway

- Rack mounting brackets and fasteners
- Power supply lead

  The power supply lead provided depends on whether you have purchased the US or European version of the product.
- RS-232 straight-through D-type 9-pin (DB-9) serial cable
- CAT 5 straight-through LAN cable (6 foot)
- Documentation

  Installation and Configuration Guide (this document), SoftSwitch Guide and Phone User Guide. These are provided on CD.
- End user license agreement.

About this guide

This guide provides installation and configuration instructions, necessary for the proper and safe functioning of the 12 or 24 port Citel SIP Handset Gateway (the Citel Gateway).

You should read the information in the *Planning and Prerequisites* chapter (starting on page) before starting the installation process, as you may need to obtain some information or make some changes that could be difficult when on site.

More information

A Phone User Guide is provided, which contains brief instructions in using the various softswitch systems and the default button mapping guide.

Those responsible for installing and managing the Citel Gateway should ensure that the actual button mappings configured are documented using the appropriate button mapping outline.

A Technical Document Pack for the Gateways can be obtained from the download area of the www.citel.com website. It covers setting customer expectations, pre-installation checklists and Gateway configuration advice.

Information on training can be obtained from training@citel.com

2 PLANNING AND PREREQUISITES

This chapter provides details of planning considerations and requirements prior to installation.

You need to check

- All of the telephones are models supported by the Citel Gateway – see *Appendix D* for a list
- Appropriate softswitch software has been installed by your Service Provider and is functioning correctly
- There is an AC power source within 5 feet (1.5m) of the Citel Gateway – see *Appendix A* for details
- The location of the previous PBX in relation to the proposed location of the Citel Gateway as you may need to extend or move cables

  You may be able to use the cable that was used to connect the legacy PBX to the punchdown blocks or you may need to obtain a new one – see *Telephony Interface (RJ-21x)* on page *15* for details
- A connection to the LAN is available, within reach of the provided CAT 5 cable
- The station wiring for each telephone is within the maximum loop length of 1600ft (500m)
- The wiring for each telephone to be connected to the Citel Gateway is appropriate quality for telephone operation (CAT 3 minimum)
- Telephone users have access to a copy of the document that describes how buttons have been mapped for their own type of handset

You need to know

- Configuration details: the Citel Gateway IP address, subnet mask, default router, softswitch server IP addresses and authorization details and the dial plan for each port
- How you will access the Citel Gateway from the web interface if you do not set a static IP address
- The allocated extension range (AORs) from your Service Provider
- How you or your SIP Service Provider are to configure the softswitch to support the features provided by your SIP Service Provider
- The models of telephones that are in use in the location you are installing the Citel Gateway and which model is connected to which port
- How you are to map the buttons on the users' handsets to the functions they require
- The passwords that you are to set for the terminal and web based configuration utilities, if you intend to replace the defaults

You need to have

- One Citel Gateway for every 12 or 24 telephones

  Bear in mind the restrictions of loop length, as you may need more Citel Gateways to ensure you do not exceed this
- All of the items provided in the box with the Citel Gateway (see *What's in the box?* on page *for* a list)
- The correct power cord for the country of installation
- A copy of the latest version of software for the Citel Gateway, in case you need to upgrade
- A PC or laptop to connect to the Citel Gateway to configure it, with:
  - A serial port
  - A network port
  - Hyperterminal or a similar application for accessing the Citel Gateway via the serial port
  - A browser for connecting to the web interface for configuring the Citel Gateway
- This document

You need to point out

- All of the telephones may have to be relabeled to show the new functions provided by your SIP Service Provider
- Telephone users may need to be trained to use the new functions
- The button mappings that have been configured should be documented and given to system administrators for distribution to end users

3 INSTALLING THE CITEL GATEWAY

Before handling or operating the Citel Gateway, make sure the cover is correctly secured to the base of the unit – hazardous voltages are present inside.

Read and comply with all safety instructions in this guide and on the product. Ensure you communicate all safety information to the users and administrators of the system in which the unit is operating.

Do not attempt to modify the Citel Gateway.

You may find it more convenient to run the setup wizard and complete preliminary configuration before physically installing the Citel Gateway in its final location. This may be especially useful if you need to update the firmware on the unit.

See *Console UI* on page *17* in the chapter called *Connecting to the Citel Gateway* and then *Initial configuration* on page .

Physical installation

Depending on how easy it is to reach the back of the Citel Gateway unit after it has been mounted in the rack, you may need to attach the cables before fixing the unit in place. Do **NOT** connect the other ends of any of the cables until you are told to do so.

Please refer to *Ports and LEDs*, below, when following the instructions.

1. Place the unit in the destination location, which must conform to the environmental requirements specified in *Appendix A*.

   If mounting it in a 19-inch rack, use the mounting brackets supplied. These fasten to the sides of the rack.

2. Connect a CAT 5 cable to the LAN port on the Citel Gateway. Connect the other end of this cable to a layer 2 switch on the LAN where it is to be installed – see *Figure 3* in the section called *Ports and LEDs*.

3. Connect the RJ-21x 50-way extension cable to the telephony interface on the rear of the unit (see *Figure 3*.

   AFTER you have run the setup wizard and set the correct PBX type, you can connect the other end of the cable to the punchdown block. The telephones will terminate on this block. For wiring details, see *Telephony Interface (RJ-21x)* on page *15.*

Ports and LEDs

Back of Citel Gateway Unit

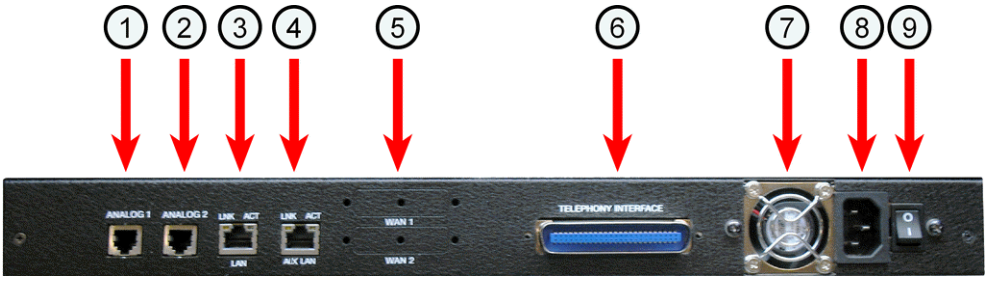


Figure 3: Back of Citel SIP Handset Gateway

Table 1: Citel Gateway Connections and LEDs

	Label	Cable Type	Description
1	ANALOG FXO 1	RJ-11 CAT3 cable	Connect to an analog line for local dialing.
2	ANALOG FXO 2		
3	LAN	RJ-45 CAT 5 Ethernet cable.	Connects the Citel Gateway to your designated voice LAN.
4	AUX LAN	Not used.	Not used.
5	WAN1 WAN2	Not used.	Not used.
6	TELEPHONY INTERFACE	RJ-21x 50-way extension cable with 25-pair/50-way Amphenol-type connectors	Wire to a punchdown block and then to the PBX (see *Telephony Interface (RJ-21x)* on page).
7	-	-	Fan.
8	-	Euromain / IEC Cold Connector	Power – connect to a 100 - 240 VAC outlet.
9	-	-	Power switch.

Gateway Front Panel

Figure 4 and *Figure 5* show the front panels of a 12-port and a 24-port Citel Gateway. The only difference is the double row of Port Status indicators on the 24-port version.

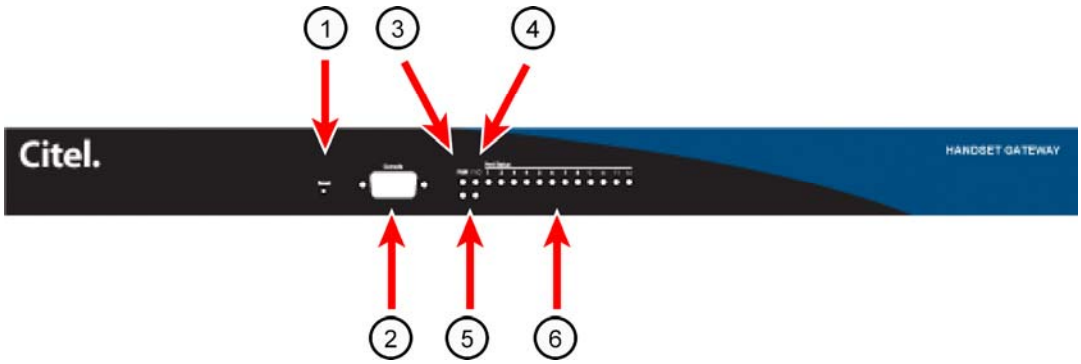


Figure 4: 12-port Citel Gateway connections

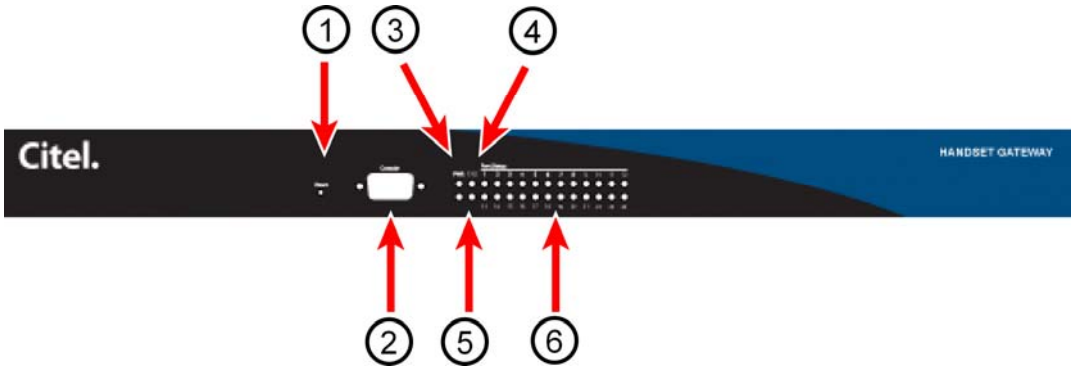


Figure 5: 24-port Citel Gateway connections

Table 2: Key to diagram

	Label	Brief description
1	Reset	Insert a narrow-tipped screwdriver, or similar tool, into the opening and then remove to activate a system cold-boot.
2	Console	The serial port.
3	PWR	The power indicator (see *Table 7* on page and *Table 3* on page).
4	FXO	An indicator of the FXO port – whether it is enabled or not.
5		Not used in this model.
6	Port Status	LEDs indicating port status (see *Table 7* on page and *Table 3* on page).

Telephony Interface (RJ-21x)

The Citel Gateway's RJ-21x 50-way Telephony Interface, located on the back of the unit and shown in *Figure 6*, is used to connect the telephones to the Citel Gateway (via a female RJ-21x connector).

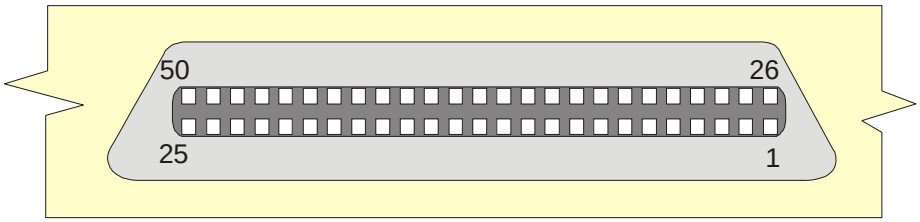


Figure 6: Telephony Interface (RJ-21x)

The pins are paired vertically on the connector: port 1 is connected to pins 26 and 1, port 2 to pins 27 and 2, and so on. The connector is supplied with a fastener to hold the RJ-21x cable in position, when connected.

The maximum loop length of 1600ft (500m) must not be exceeded.

NEC ETW telephones use the outer pair of their RJ-11 connector.

Wiring for Nortel Meridian 1 telephones is known to be polarity-sensitive. Check the requirements of your own telephones if you are unsure.

RJ-21x wiring pairs are shown in *Figure 7* on page . Note that the center pair only is used on the RJ-11 connector for each telephone.

CAT 3 or greater cable is recommended.

For the 24 port Citel Gateway, do not connect anything to pins 25 and 50.

For the 12 port Citel Gateway, do not connect anything to pins 13-25 or 38-50.

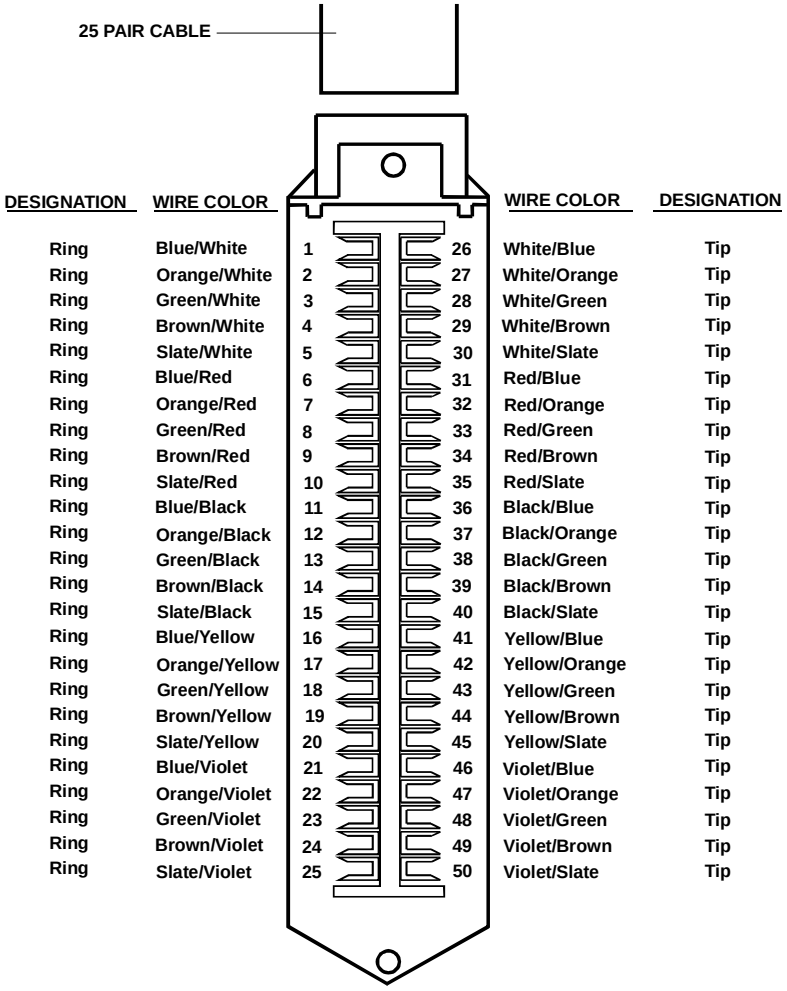


Figure 7: RJ-21x Connector Wiring

Removal

To remove the Citel Gateway:

1. Power down the unit.
2. Disconnect the RJ-21x 50-way extension cable
3. Remove power and LAN connections from the unit.
4. Remove the Citel Gateway from the rack.

4 CONNECTING TO THE CITEL GATEWAY

Two interfaces are available for configuring the Citel Gateway.

- A terminal-based interface, referred to as the Console UI.

  You can connect to using either a direct serial connection or via telnet.

- A browser-based interface, referred to as the Web UI.

The first time that you connect to the Citel Gateway, you must connect to the Console UI using the provided serial cable. *The Setup Wizard* (see page) will run automatically.

Console UI

The Console UI provides access to a full diagnostic and configuration command structure.

Instructions for the two connection methods are provided in *Direct serial connection* (below) and *Telnet connection* (on page).

Direct serial connection

This section describes connecting to the Console UI using Microsoft HyperTerminal. You may use a different terminal application if you are familiar with its use.

Only use the commands listed and described in this document, unless otherwise instructed by Citel. Incorrect command use may prevent use of the Citel Gateway.

1. Start a HyperTerminal session.

   On a default installation of Windows, from the **Start** menu select **Programs**, **Accessories**, **Communications** and finally **HyperTerminal**.

2. Enter a name for the new connection in the **Name** box: for example, Citel Gateway.
3. Select the COM port you are using from the options in the **Connect using** drop-down list.
4. Check the configuration of the port and make sure the following settings are specified, changing them if necessary:

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	Xon/Xoff

5. Switch on the power supply to the Citel Gateway and allow it to complete the boot sequence.

   See *Table 3* for an explanation of the LED display on the front of the unit.

Table 3: LED States – System Boot Mode

Name	LED State with Definition
PWR	Flashes (amber) once, then on (green) = system warm-boot has started and power input is normal. Flashes amber once then flickers (green), then on (green) = system cold-boot has started and power input is normal. Off = system power supply is switched off or mains power supply is disconnected or has failed.
FXO	Flashes (amber) once then off = system boot has started
Port Status	All flash (green) once, then off, then 1 flickers (green) briefly, then 1 to 8 flash (green) once briefly.

6. Wait a few seconds and the `Press 'Enter' to start the shell...` prompt is displayed.
7. Press **Enter**. A **Password**: prompt is displayed if a password is set.

If the Citel Gateway software is running but you do not see these prompts, the serial connection between your computer and the Citel Gateway may be at fault. You must correct this problem before you can use the HyperTerminal connection successfully. See *Hints for Making a Successful Connection*.

8. Type your password, if one is set, and press **Enter**.

   The Console UI welcome screen is displayed.
9. To be sure that you can see all the information displayed, you must set the screen size to 24 lines x 80 columns.

   The screen size is correctly set when the Welcome screen is displayed with the # border, as shown in *Figure 8*.

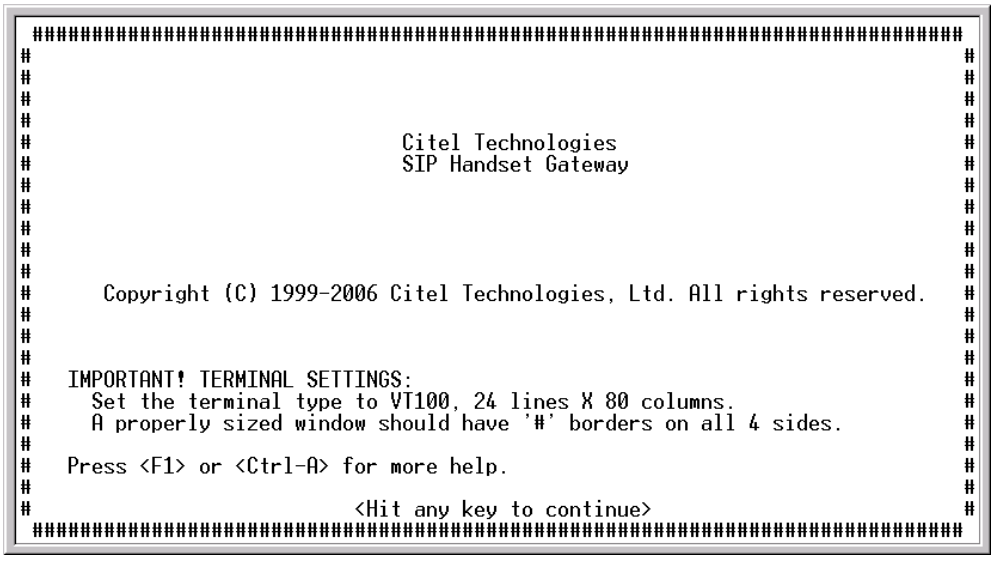


Figure 8: The Citel Gateway Console UI – Welcome Screen

Using your mouse, click, hold and drag the corner of the screen until you can see the # border, then release your mouse button.

Hints for Making a Successful Connection

- Check your cable is a straight-through cable, as supplied with the Citel Gateway.
- Exit and then restart HyperTerminal.
- Connect using a different COM port on your computer.
- Reboot your computer and then restart HyperTerminal.

The Citel Gateway Console password is not set by default.

We strongly recommend that you set a password for security reasons. See *Console Password* on page *25* for instructions.

Make a note of the password and pass it to the system administrator.

Telnet connection

You can connect to the Citel Gateway using a telnet session. You must know the IP address of the Citel Gateway.

Using the Console UI

The Welcome screen is displayed automatically when you connect to the Citel Gateway using a serial cable. You must make sure that your terminal window is sized so that you can see the border of # symbols around the contents.

From the Welcome screen, press any key to enter the console menu system. Menu options are selected using the arrow keys: use the up and down keys to move within a menu or list of options, use the left and right keys to return to a higher level menu or to access sub-menus.

The Console Interface

A typical screen from the console interface is shown in *Figure 9* and a key to the numbered elements follows.

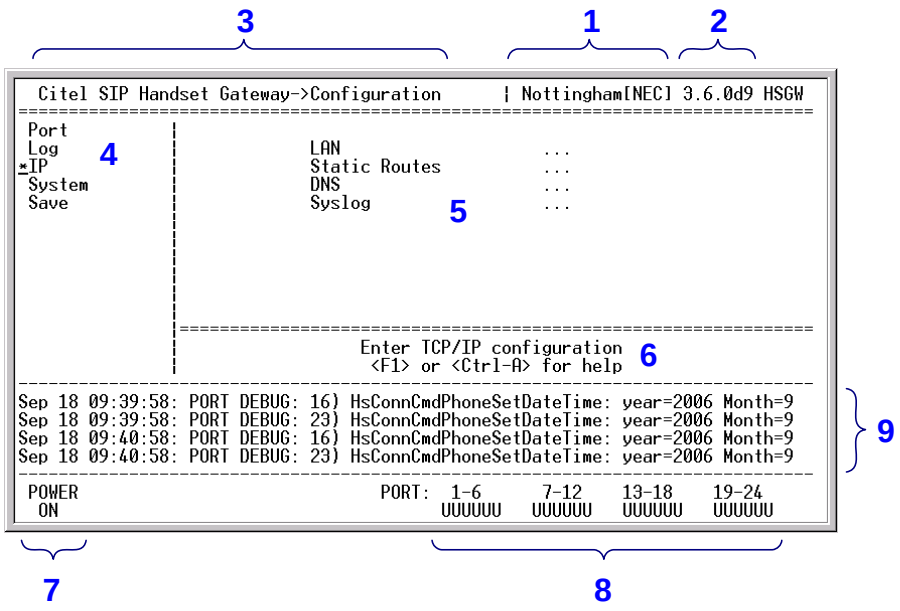
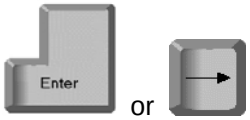
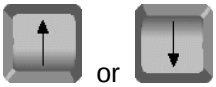
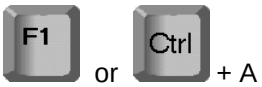
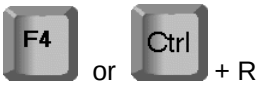


Figure 9: The Console Interface

1. The name of the Citel Gateway.
2. The version of software currently installed.
3. Your current location within the menu system – in the example, you are in the Configuration menu.
4. The options available within the current menu. The asterisk indicates your current location (IP).
5. The area of the screen where configuration details are entered. In this example, this is the IP information for the Citel Gateway.
6. A short instruction and an indication of where to obtain further help.
7. Power indication message.
8. Port status messages. On the 12-port version of the Citel Gateway, these are: **UP** – port enabled, phone detected and registered with SIP registrars; **RF** – port enabled and phone detected but SIP registration failed on at least one line; **DN** – port enabled but no phone detected. On the 24-port version, only the first letter of each pair is shown because of space constraints (**U**, **R** or **D**).
9. An area that displays the four most recent lines from the log. In the example, the log level is set to **DEBUG**, so a lot of information is displayed.

Command Keys

Key	Description
	Cancel, leaving values at their previous settings.
	Accepts the change you have entered or exits the current menu option.
	Access the currently selected menu item.
	Go to an item in a menu. You can also select a menu item by typing the first character in its name.
	Help screen.
	Refreshes the current screen.

Saving Changes

You will be prompted to save any changes if you attempt to log out of the Console UI without saving them. You will also be asked to confirm that you want to save changes if you select the Save option. You may need to reboot the Citel Gateway for your changes to take effect.

Logging Out

When you have finished working on the Console UI, remember to logout.

- If you have left FTP enabled, a warning message is displayed reminding you to disable FTP access. You can choose to logout anyway, but leaving FTP access enabled is not recommended.
- If FTP is disabled, a message is displayed asking you to confirm that you want to log out of the Console UI.

Web UI

Connecting to the Web UI

Once the initial Setup Wizard configuration is completed and the Gateway has rebooted, you must configure the phone ports using the Gateway Web UI.

After making any changes, you must either reset the Citel Gateway or the telephone for your change to take effect, depending on the change you have made.

You can connect to the Citel Gateway Web UI using your preferred web browser. The Citel Gateway is tested using Microsoft Internet Explorer, Mozilla Firefox, Netscape and Opera.

The Citel Gateway Web UI uses JavaScript and Cascading Style Sheets (CSS). You must enable JavaScript to obtain all the functions described in this document. If you disable Cascading Style Sheets, the functions will still work, although the appearance will differ.

To connect to the Citel Gateway Web UI, enter its IP address into your browser. You will be asked for a user name and password – the default user name is citel and the default password is **password**.

You should change this after you have connected for the first time.

Figure 10: Citel Gateway Web UI Login

Using the Web UI

The Web UI home page contains six areas, used to configure and manage the system, as shown in *Figure 11*.

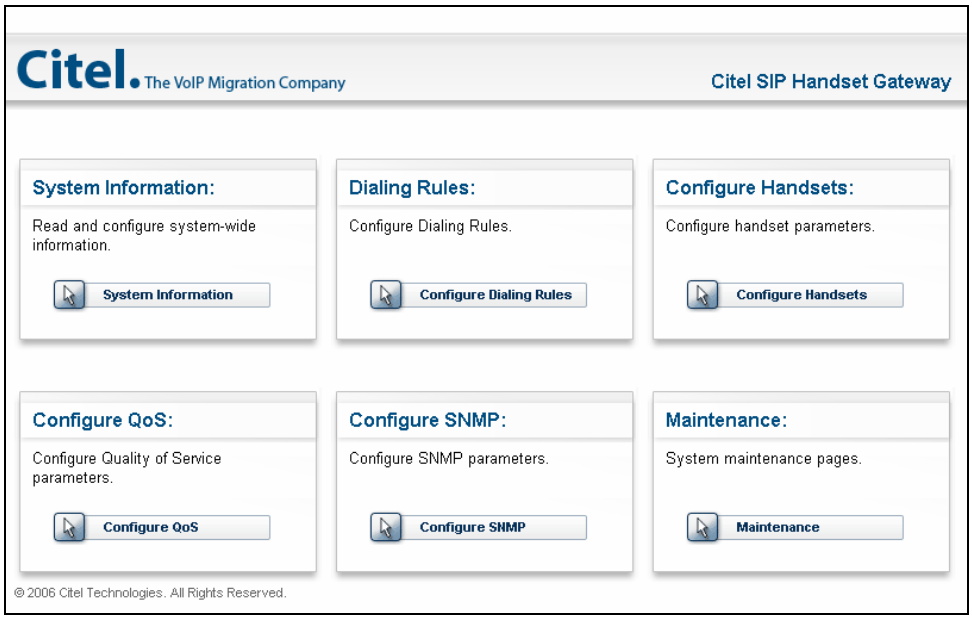


Figure 11: Citel Gateway Web UI – Home Page

Every page in the Web UI contains a **Home** button, which will bring you back to this page. Many pages also contain a **Back** button, which will return you to the page immediately before the current page.

Saving changes

Changes that you make to items on the web page are not saved until you actively choose to save them. A red banner is displayed towards the top of the page, containing the words: **Configuration changed – click here to save changes to non-volatile memory.**

Closing the web interface before saving your changes will lose them. You may need to reboot the Citel Gateway or reset the phones for your changes to take effect.

5 CONFIGURING THE CITEL GATEWAY

The Citel Gateway is configured in two stages and both must be completed before the telephones can be used.

- The Gateway Setup Wizard is run on the Citel Gateway Console User Interface (Console UI).
- The Line Appearances and Handset Configuration are specified for the individual ports using the Citel Gateway Web User Interface (Web UI), which is accessed using a web browser.

Record details of each Citel Gateway unit, including its basic configuration and how the extensions are allocated to the ports. Record wiring details for the telephones, specifying the connections to the switch-room panels.

Initial configuration

The Setup Wizard

When you login to the Console UI for the first time, the Setup Wizard runs automatically. If you want to run the Setup Wizard again, use your computer's cursor keys to select Utilities, then Setup Wizard. Existing information is shown when you re-run the Setup Wizard, which you can confirm or change.

The Setup Wizard will guide you through the essential configuration options. Follow the prompts on screen and the information provided in the rest of this section.

Other configuration options are available from the Console UI but are not included in the wizard. These are described in *Configuring the Gateway* on page .

```
************************************************************
**  First, let's configure a unique name for this device  **
************************************************************
The name must be 20 characters or fewer, and should
uniquely label the device by location and/or usage.

Currently configured name is 'GW3 [Norstar]'
Do you want to enter a new name? [y/n] n

************************************************************
********  Next we need to specify the Region Code  *********
************************************************************
Currently configured Region is 'United States'
Do you want to select a new Region? [y/n] y

Enter your country code (? to list):?

<Country Code>:<Country>
 43:Austria         358:Finland          39:Italy            46:Sweden
 32:Belgium          33:France           31:Netherlands      41:Switzerland
  1:Canada           49:Germany         351:Portugal         44:United Kingdom
 45:Denmark          30:Greece           34:Spain             1:United States
Enter your country code (? to list):_
```

1. Type **y** to use the Setup Wizard.

2. Give the Citel Gateway a name, which will be displayed at the top of the console screen and is used to identify the particular gateway to which you are currently connected.
   - The default name is shown – type **y** to change it.
   - The name can be up to 20 characters long.
3. You must specify the region in which you are installing the Citel Gateway.

   Type **?** to display a list of country codes in alphabetical order.
4. Type the number of the country in which you are installing the Citel Gateway.

   The list of countries available on your model of the Citel Gateway may vary from those shown above.

   The name of the country is displayed for you to confirm that you have entered the correct number. If it is not correct, type **n** and repeat from step 3.

   The regional code that corresponds to the country you selected is displayed. This is not the same number as the country code.
5. A list of supported PBX types is displayed, one at a time.

   Type **n** for every option displayed until the one you are replacing is shown, then type **y**.

   If you accidentally type **n** for the PBX type you want to select, continue to enter **n** for each option until it is displayed again.

   Specifying the wrong PBX type can cause damage to the unit or damage to the digital telephone sets.
6. Type y to enable all ports or n to specify the number of ports to enable.
7. The Citel Gateway must be allocated an IP address.
   - Type **y** to manually set the unit's IP details
   - Type **n** if you are going to use DHCP to allocate unit's IP details.

   If you are manually entering IP address details, you need to type the IP address of the Citel Gateway, the Subnet mask and the IP address of the Default Router.
8. A list of the changes you have made is displayed: type **y** to save them or **n** to re-run the wizard.
9. If you have saved your changes, you will be prompted to reboot the Citel Gateway. Type **y** to reboot.

Before you disconnect from the Console UI, enable the FXO ports if you intend to use them. To do this, select **`Configuration`**, then **`Port`**, **`Default`**, **`More`** and finally **`Analog_Port`** from the menu system.

After the unit has rebooted, the Welcome message is displayed again. Optional parameters can be configured, various trouble shooting utilities can be accessed, minor adjustments can be made to enhance system performance and software upgrades can also be performed.

Changing Passwords

Two different passwords can be set for the Citel Gateway. One is used when connecting to the Citel Gateway using the Web UI (the web password) and the other when connecting to it using a terminal session, such as HyperTerminal (the console password).

Console Password

The Citel Gateway is shipped without a console password. To assign one or to change an existing password:

1. Select the **Utilities** menu, then **Set Password**.
2. You will be prompted to enter the existing password, if there is one. If there is no existing password, press **Enter**.
   a) Type the new password at the **Enter** new password and **Confirm new password** prompts.

      The password can contain a maximum of 16 characters.

Web Password

The Citel Gateway is shipped with a username of **`citel`** and default password of **`password`** for access using the Web UI.

To change the password:

1. Select System Information and then Configure Password.

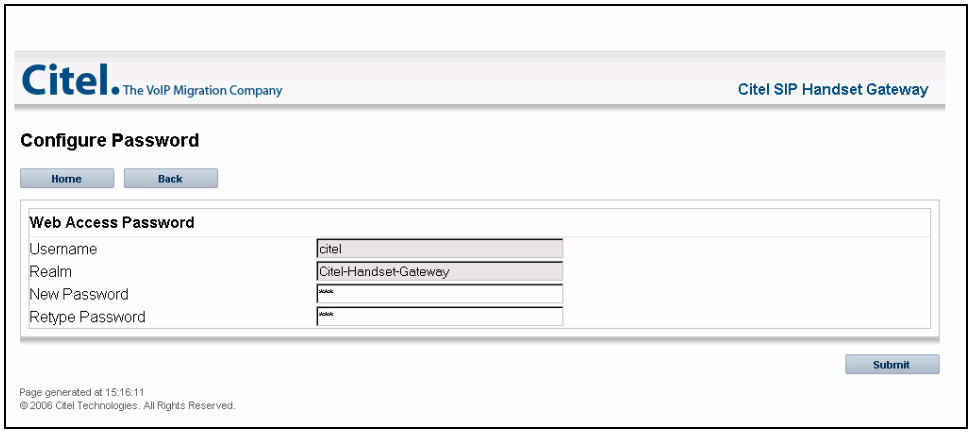


Figure 12: Changing the password for the Web UI

2. Enter the new password in **New Password**.

   Your password can contain a maximum of 33 characters and the case in which you enter is important (password is not the same as Password)
3. Type the new password in **Retype Password** to confirm it.
4. Click **Submit**. You are redirected to the **Reboot** option: your new password will not take effect until the Citel Gateway is rebooted.

Forgotten Web UI Password

If you forget your Citel Gateway Web UI password, it cannot be recovered. You must reset the configuration of the Citel Gateway Web UI to factory defaults, which will reset the password to **`password`** (the original default).

Resetting the Citel Gateway to factory defaults removes all the configuration details, including all line and handset configuration.

To reset the Citel Gateway:

1. Log in to the Console UI
2. Select **`Utilities`**, **`File`** then **`Delete`** from the menus.

3. Select the **`Flash.dat`** file and press **`Enter`**.
4. Select **`System`**, then **`Reboot`** from the **`Utilities`** menu.
5. Press **`y`** in response to the prompt asking if you want to reboot.

Reboot the Citel Gateway

You may be asked to reboot the Citel Gateway after making some configuration changes or applying an update. The Citel Gateway can be rebooted using both the Web UI and the Console UI.

From the Web UI

To reboot the Citel Gateway, select **Maintenance** from the **Home** page. The **REBOOT** option is the last item on the page.

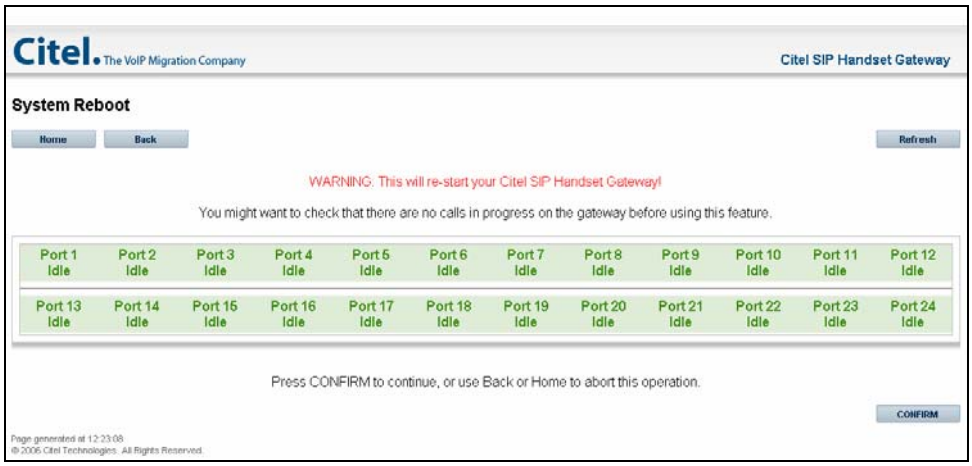


Figure 13: Rebooting the Citel Gateway using the Web UI

The System Reboot page (see *Figure 13*) shows the status of each of the ports. These may be:

- Idle – no active calls
- Active – call in progress
- Not Fitted – there is no phone on this port

Click **CONFIRM** to reboot the Citel Gateway. A message similar to the one shown in *Figure 14* is displayed.

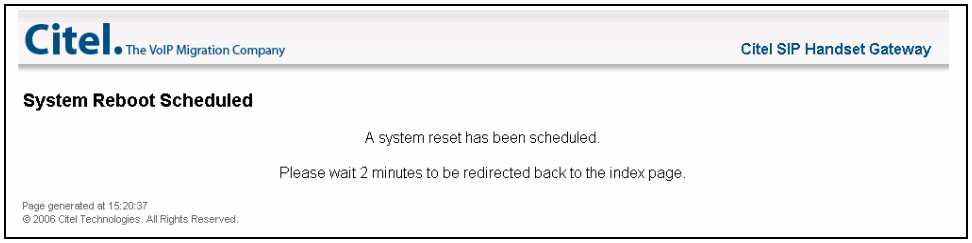


Figure 14: System Reboot Scheduled

From the Console UI

To reboot the system from the Console UI, select the **Utilities** menu, then **System** and finally **Reboot**.

A warning message is displayed, as shown in *Figure 15*, and you are asked to confirm the reboot: type **y** to continue or **n** to cancel.

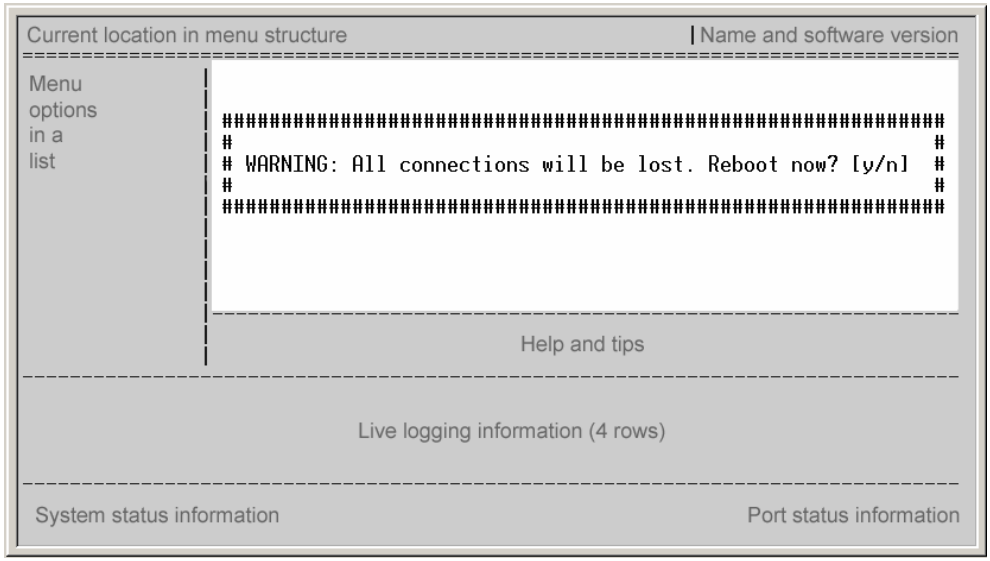


Figure 15: Rebooting from the Console UI

This is a software reboot and will not reset all functionality as would a power cycle (hard reboot).

Configuring the Gateway

Once the initial Setup Wizard configuration is completed and the Gateway has rebooted, you must configure the phone ports using the Gateway Web UI.

After making any changes, you must either reset the Citel Gateway or the telephone for your change to take effect, depending on the change you have made.

You can connect to the Citel Gateway Web UI using your preferred web browser. The Citel Gateway is tested using Microsoft Internet Explorer, Mozilla Firefox, Netscape and Opera.

The Citel Gateway Web UI uses JavaScript and Cascading Style Sheets (CSS). You must enable JavaScript to obtain all the functions described in this document. If you disable Cascading Style Sheets, the functions will still work, although the appearance will differ.

To connect to the Citel Gateway Web UI, enter its IP address into your browser. You will be asked for a user name and password – the default user name is **citel** and the default password is **password**.

You should change this after you have connected for the first time.

Figure 16: Citel Gateway Web UI Login

Configuring the Lines

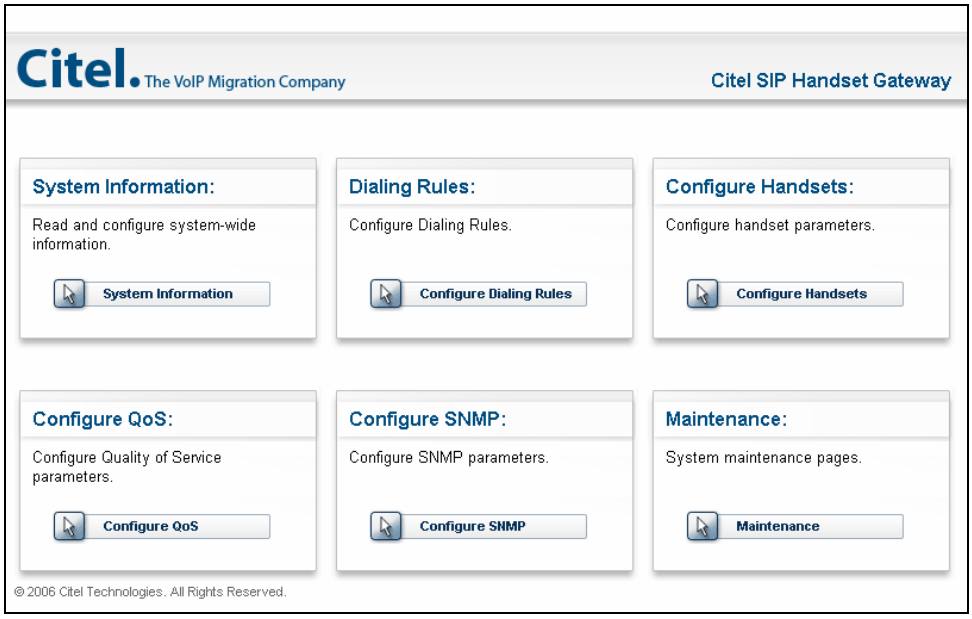


Figure 17: Citel Gateway Web UI – Home Page

Each port on the Citel Gateway can be associated with a telephone. To configure the ports, click the **Configure Handsets** option on the home page, as shown in *Figure 17*.

The **Configure Handsets** page is displayed as shown in *Figure 18* on page .

This page is used to enter information about each of the ports and provides links to other configuration pages. It also displays the current **Handset Status** and **SIP Status** for each port.

The **Handset Status** is one of:

Not Fitted	no handset connected to Citel Gateway or wrong PBX type handset fitted (for example, Norstar connected when configured for Meridian)
Idle	handset connected and on-hook (idle)
Active	handset connected and off-hook or on a call
Error	handset type not recognized

The **SIP Status** is one of:

Active	handset connected to Citel Gateway and registered with the softswitch
Idle	no handset connected to Citel Gateway, so not registered with the softswitch
Error	handset connected and either one or more lines are configured incorrectly, so are not registered with the softswitch, or there is a network problem, in which case contact the network administrator

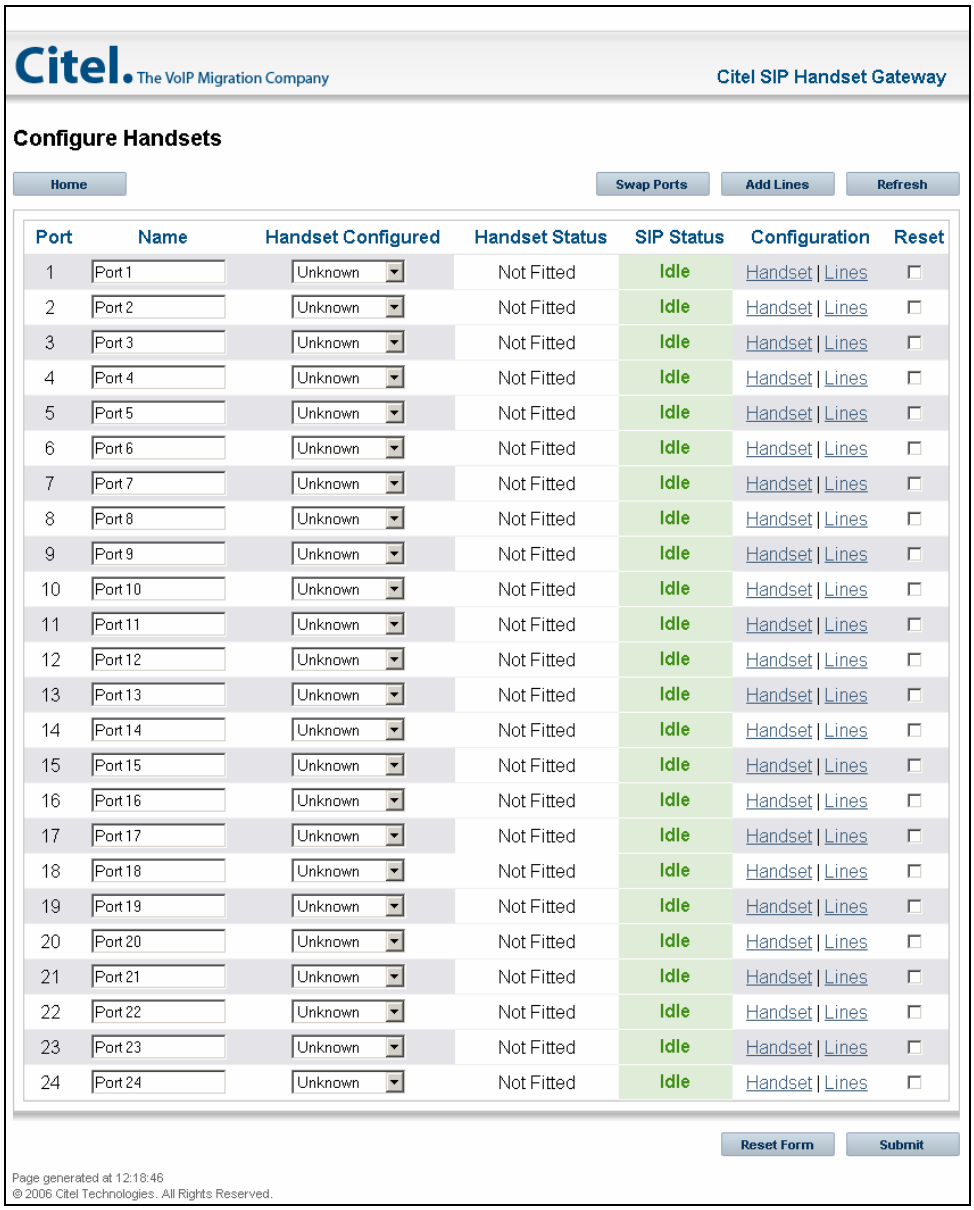


Figure 18: Configure Handsets Page

For each port:

- You can optionally assign a name to help in identifying this port and the telephone attached to it

- You must select the telephone type that is connected to the port from the drop-down list

To configure the lines for each port, you can:

- Enter details for a range of ports, which you can base on the configuration of an existing port (see *Configuring Multiple Lines Simultaneously*, below)
- Enter details for each port separately (see *Configuring an Individual Port* on page)

If you choose to configure a range of ports, you will still have to specify information that is specific to an individual port separately.

Configuring Multiple Lines Simultaneously

Click the **Add Lines** button at the top of the page. The **Add Lines** page, shown in *Figure 19*, is displayed.

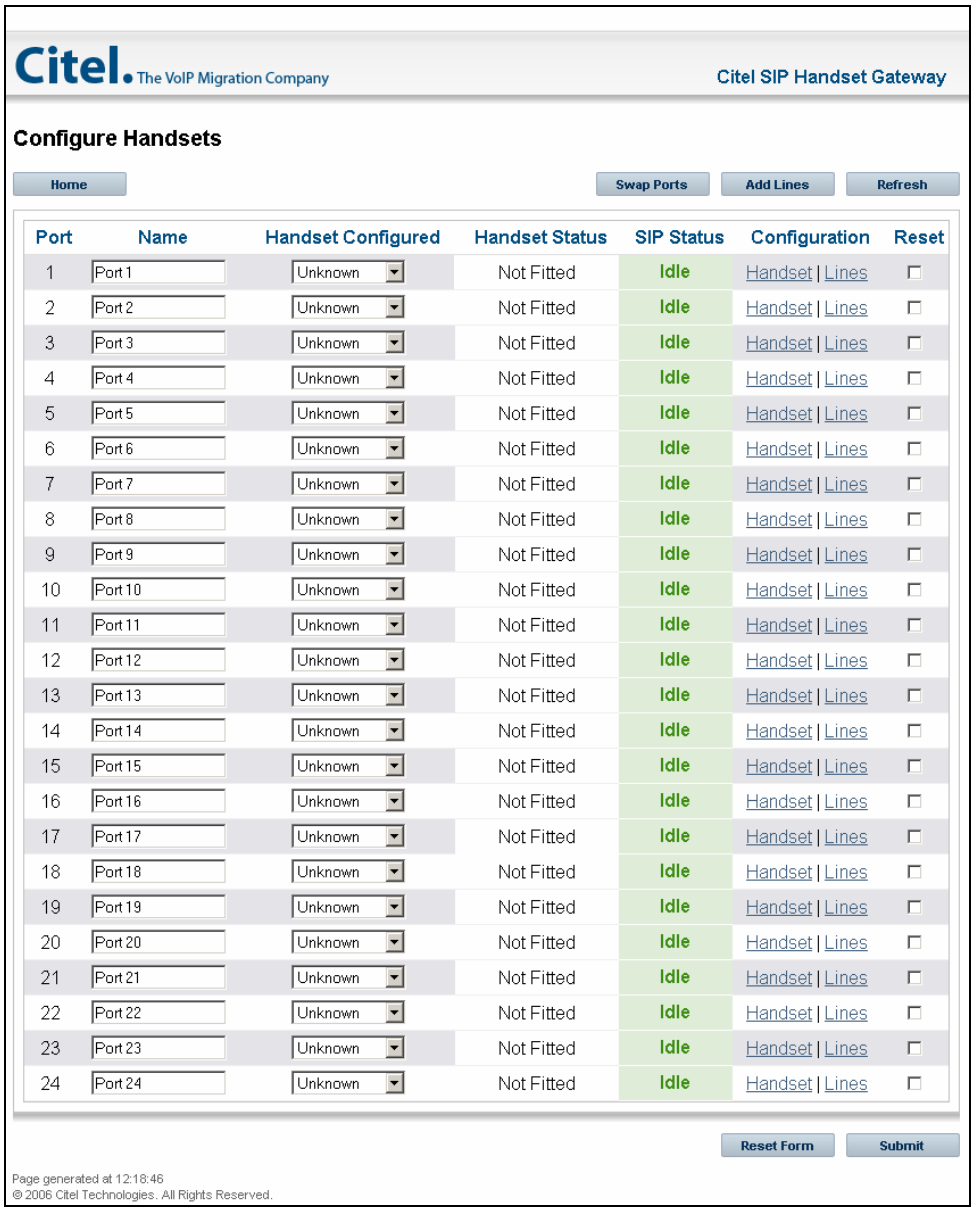


Figure 19: Configuring multiple lines simultaneously

Basing your Settings on Existing Configuration

To base your configuration on information that has already been recorded for particular line, in the **Re-use existing line settings** section at the top of the page:

1. Select the **Port** and **Line** that you want to copy
2. Click **Re-Use**

Information recorded for that port and line is displayed on screen. Review and amend as necessary, using the information in *Table 4* as a guide.

Entering and Applying the Settings

Information entered into the **Add Lines** page will be applied to the same line across a range of ports.

1. Enter configuration settings using the information provided in *Table 4* as a guide
2. In the **Apply to** section at the bottom of the page, specify the range of points that you want to change by selecting the **Start Port** and the **End Port** from the list.
3. Select the **Line** to which you want to apply the changes. The changes will be applied to the same line for each port in the range.
4. When you are happy with your changes, click **Submit**.
5. If you need to make changes for individual lines, follow the instructions in *Configuring an Individual Port* on page and reboot the Citel Gateway.

Configuration Settings

The examples of the configuration in this document use IP addresses to identify the Citel Gateway and other network components. Unless otherwise stated, you can also use an FQDN (fully qualified domain name).

The configuration settings listed in *Table 4* can be set whether you are configuring an individual port or a range of ports.

The settings that are only available when configuring individual ports are specified in *Table 5* on page .

Table 4: Port and Line Configuration Settings

Option	Purpose
Addressing	
SIP Address-of-Record (AOR)	Represents an identity for the user. For example: **`sip:5001@10.10.1.10`**
Extension Numbers	
Start Extension Number	The line programming starts at this extension number.
Increment	The extension is incremented by this number for the next extension to change. For example, if 1 is entered and the extensions start at 5001 the next DN changed would be 5002.
Registrar Server	
Domain	The location of the IP Telephony Server. Typical use would be the address of the server (10.10.1.10, for example).
Expiration (seconds)	Connect timeout in seconds. Default = 3600

Option	Purpose
3rd Part Registrant: When req'd	Only necessary when a user (identified here by their own AOR) is registering as another AOR, given in the AOR field, above. A 3rd party registrant may be required when configuring for some implementations of shared line
Server Address: When req'd	The host name or IP address of the registrar server. This is only required when the registrar server address differs to that of the proxy server address. Usually proxy and registrar addresses are the same and therefore the registrar server address can be left blank
Authorization	
Realm	This is provided by your SIP Service Provider.
Use extension number as username/password	For authentication
Leave username/password field blank	For authentication
Use the following username/ password for each line	For authentication
Proxy Server	
Server Address	The server that will receive requests intended for another server and will act on the behalf of the client (as the client proxy) to obtain the requested service
Conferencing	
Conference URI	The URI of the Conference Server (if required)
Call Park	
Park Call URI	The URI of the Call Park Server (if required)
Retrieve Call URI	The URI of the Call Retrieve Server (if required)
Services	
Message Waiting URI	The URI of the MWI Server (if required)
Voice Mail Retrieval URI	The URI of the Voice Mail Server (if required)
Shared Line URI	The URI of the Shared Line Server (if required)
Automatic Call Distribution URI	The URI of the ACD Server (if required)
Monitoring Line	By “checking” this box, all calls will appear at the set but no audible ring will be presented
Default Display	
Set default display	This describes what will be shown on a phone’s display. For example: **%T%N%U** **%T** Time and Date **%N** New Line (go to next display line) **%U** User (normally the DN)

Reboot the Citel Gateway

You must reboot the Citel Gateway for your changes to take effect. You can do this from the Web UI.

1. Click **Home**
2. Select **Maintenance**
3. Select **Reboot**
4. Select **Confirm**

Configuring an Individual Port

To configure the lines for an individual port, click the **Lines** hyperlink on the **Configure Handsets** page – see *Figure 18* on page .

A page is displayed, shown in *Figure 20*, listing the configured lines for the selected port, plus one that has not been configured. To show all available lines for a port, click **Show Hidden**. A maximum of 25 lines are available for each port.

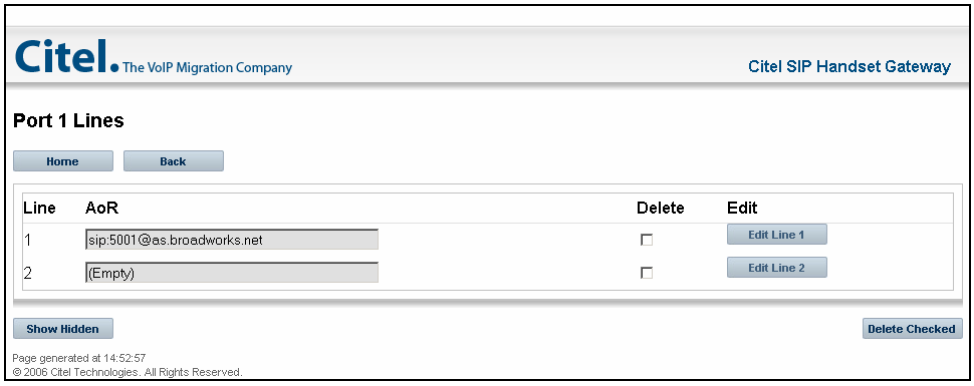


Figure 20: Lines for a Selected Port

To change or set information for a line, click the button in the **Edit** column. A page similar to the one shown in *Figure 21* appears, containing any information that has already been set. Make any necessary changes, referring to *Table 4* on page for details of the options available.

Some additional options are available when configuring a line on an individual basis that could not be recorded for a set of lines. These are listed in *Table 5*.

Table 5: Configuration Settings for an Individual Line

Option	Purpose
Addressing	
Display-Name	The name of the line (see *Figure 20*).
Authorization	
Update Authorization	The other fields in the Authorization section are disabled until this box is selected
Username	The username associated with the line
Password	The password associated with this line
Retype Password	Retype the password to make sure no mistakes have been made in typing

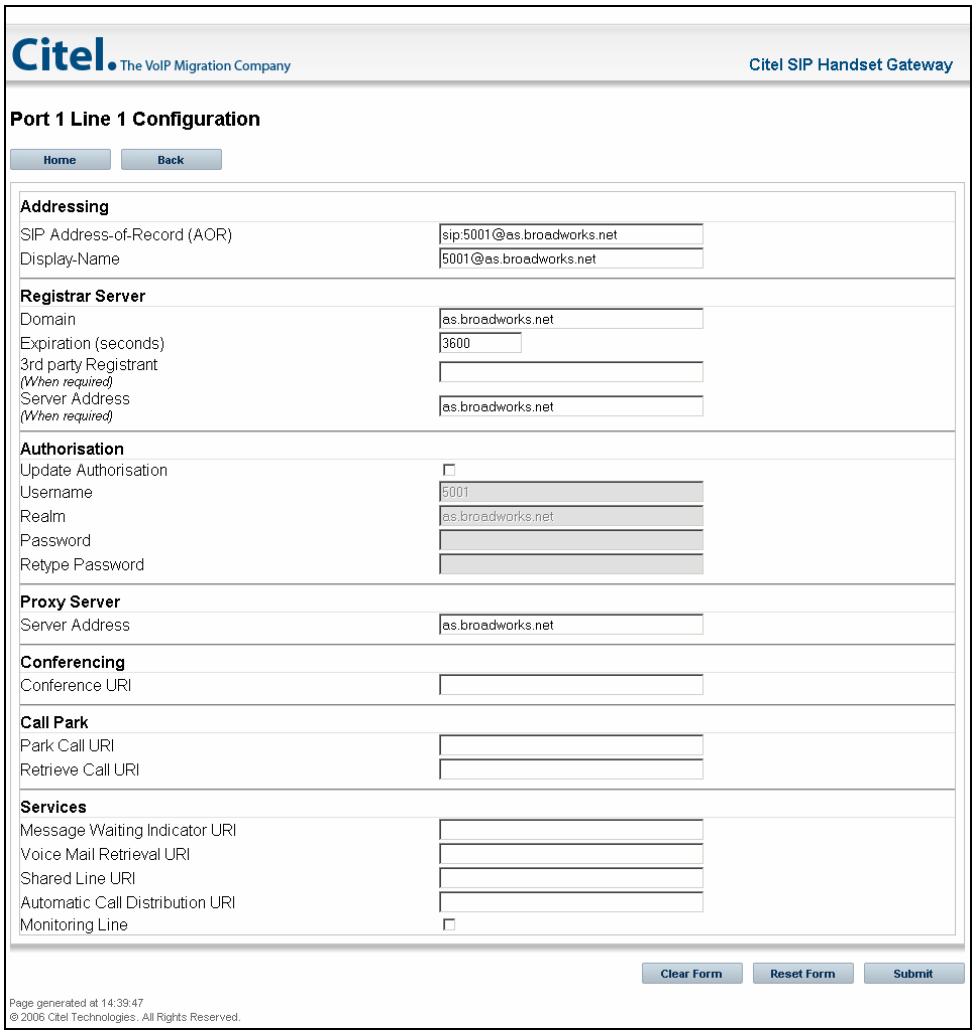


Figure 21: Individual Line Configuration

Dialing Rules

Dialing rules enable keys pressed by the person using a phone to be interpreted and possibly translated. For example, you can specify a dialing rule that enables a phone to use the backup analog line to make a call (if one is available) or to convert a short sequence of numbers into a much longer international dialing code.

To specify dialing rules for the Citel Gateway, click the **Configure Dialing Rules** option from the Citel Gateway **Home** page.

If you are in North America, you can use the **Setup Wizard** to configure your dialing rules. The wizard asks you a number of questions about the way your telephone system was set up and creates the rules for you based on your answers.

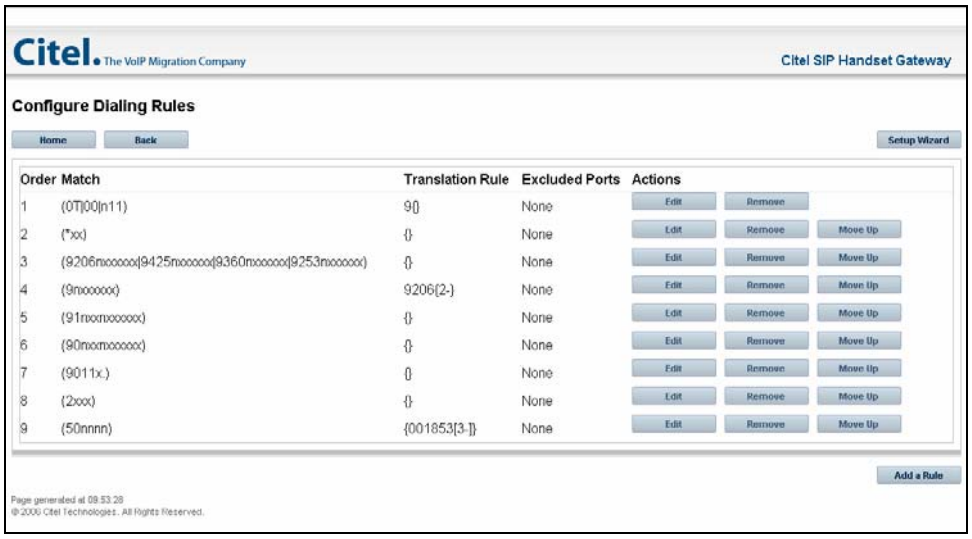


Figure 22: Existing Dialing Rules

Adding a Dialing Rule

Click **Add a Rule**. Your new rule is shown below the list of existing rules, with default Match and Translation Rule entries.

The new rule can then be edited in the same way as any other existing rule.

Editing a Dialing Rule

For further details about dialing rules and translation rules, see *Appendix E*.

Click **Edit** to the right of the rule you want to change. The current information for the rule is displayed, as shown in *Figure 23*.

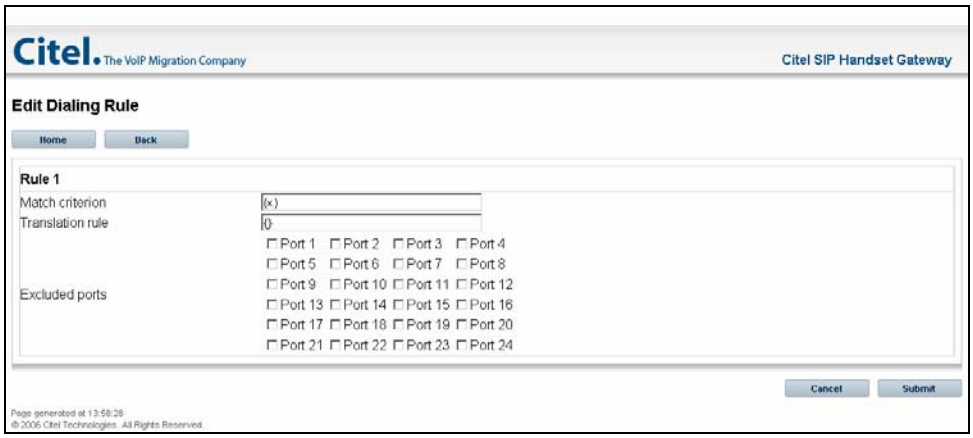


Figure 23: Editing a Dialing Rule

1. Enter the **Match criterion** following the examples shown below:

(2xxx)	Matches a four-digit number beginning with 2
(n11)	Matches a North American Service Access Code (211, 311, 411, 511,

	611, 711, 811 or 911).

2. Enter the **Translation rule** used to convert the key presses into an alternative sequence.

   For example:

{}	All digits are copied to the final dialing string.
555{2-}	Adds all digits from the second digit onwards to 555. For example, user dials 9123456, dialing string becomes 555123456.

3. By default, the dialing rule applies to all ports on the Citel Gateway. Select ports to from the list in **Excluded ports** if you do not want the dialing rule to apply to them.
4. Click **Submit** to save your changes.

Handset Configuration

You must specify the handset type and key mappings for each telephone. You can also configure the default display for the individual handset here – the information that is shown when the handset is idle.

Port Name and Handset Type

You may have already specified the handset model and named the port. These are both specified on the **Configure Handsets** page (shown in full in *Figure 18* on page): the **Name** is typed into the field and the handset model is selected from the list available. The list of handsets shown depends on the type of system you selected during the Console Setup Wizard. The relevant portion of the page is shown in *Figure 24*.

Click **Submit** to confirm your changes. The phone is reset automatically.

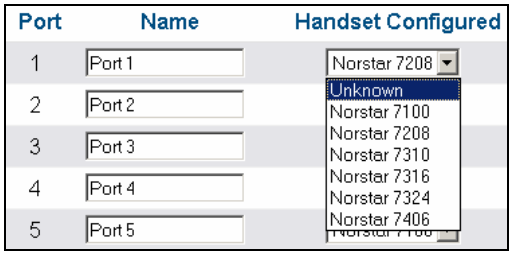


Figure 24: Specifying the Handset Type

Default Display and Key Mappings

To access the **Handset Configuration** page for a specific port, click the **Handset** hyperlink on the main **Handset Configuration** page.

The appearance of the page used to enter key mappings and the default display details differs depending on the type of model of handset connected to the port. Photographs of the various telephones and the associated web pages are shown in the Phone Guides.

The top portion of the page is similar for all models, showing the name of the port (if one has been applied) and a field for entering the default display information for the handset. An extract of the top portion of the page is shown in *Figure 25*.

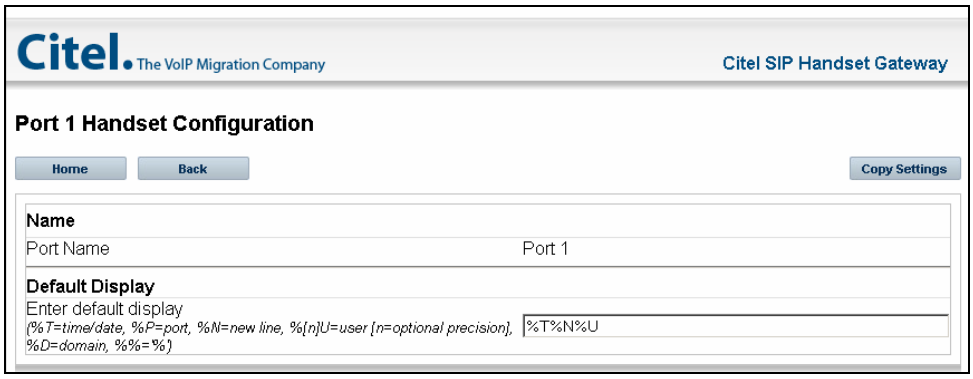


Figure 25: Top Portion of the Handset Configuration Page for a Specific Port

If you have given the port a name, it will be displayed where the example shows the text 'Port Name'.

You can enter details of the information to be displayed on the handset when it is idle using a combination of plain text and variables. The available variables are listed on screen and the example of **%T%N%U** will display the current time and date on one line, and the name of the person allocated the handset on the line below.

Key mappings enable an implementation to assign specific features to the available programmable feature keys for each phone. The list of features available for selection is specific to those supported by the handset type.

Make changes to the key mappings using the images in the Phone User Guide and the options listed in the Softswitch Integration Guide to help you.

Table 6: Features available for selection when mapping keys

Feature	Description
ACD Avail./Unavail*.	ACD agent taking calls or temporarily not taking calls.
ACD Available*	ACD agent ready to take calls.
ACD Login*	Login an ACD agent.
ACD Login/Logout*	Login or logout an ACD agent.
ACD Logout*	Logout and ACD agent
ACD Unavailable*	ACD agent unavailable to take calls
Analog FXO 1	Incoming and outgoing calls can be invoked (FXO port).
Analog Pool	Only outgoing calls can be invoked on the FXO port.
Auto Answer	Automatically answers an incoming call.
Conference	Allow more than 2 parties to converse on a call.
Conference/Transfer	Transfer a caller or add another user to the conversation.
Do Not Disturb	No incoming calls will ring at the set.
Flash	Simulates a quick offhook / onhook cycle.
Handsfree/Mute	Allows the user to mute a call or switch to Handsfree mode.
Headset	Switches the phone to use the headset instead of the handset.
Hold	Temporarily places a call on Hold.
Lines 1- 25	Up to 25 lines can be assigned to each phone.
Message Waiting	Indication and access to user voice mail.
Mic	Turns the phone's microphone on and off.
On/Off Hook	Takes the phone off or on hook without lifting the receiver.

Feature	Description
Park/Retrieve	Park a call and retrieve it from another phone.
Pickup	Answer a call that is coming in to another phone.
Redial	Redials the last number dialed from this phone.
Release	Releases the call (set goes back onhook).
Speed-Dial	Dial a pre-defined number using a single key.
Transfer	Transfer a caller to another user.
Unassigned	No feature or line assigned.

*currently supported for Sylantro SoftSwitch only

Click **Submit** when you have finished making changes. A screen is displayed prompting you to reset the telephone.

Some of the features supported by the Citel Gateway may not be applicable to a particular manufacturer's equipment. Check the PBX manufacturer's documentation to confirm that the feature you want to use is supported. For example, hands-free operation requires a phone to be fitted with a speaker and a microphone.

6 FURTHER CONFIGURATION

Setting the Date and Time

Using the Web UI, you can set a source that the Citel Gateway will use to automatically synchronize date and time information.

From the Web UI home page, select **System Information** and then the **Set Date and Time** option. The page shown in *Figure 26* is shown.

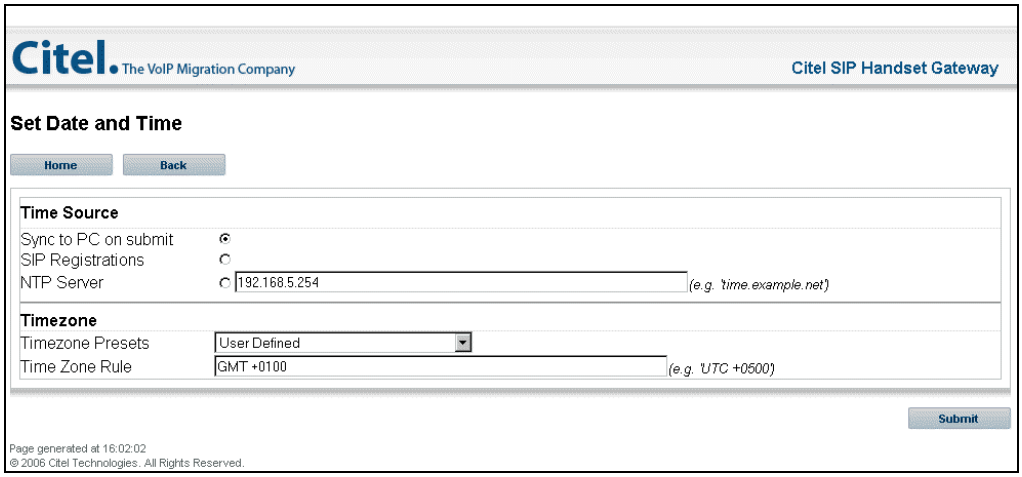


Figure 26: Set the Date and Time

1. Choose the **Time Source** from the options available:
   - **Sync to PC** on submit – the date and time are taken from the computer you are using to display the Web UI.
   - **SIP Registrations** – the date and time are taken from the SIP server (Asterisk or Sylantro only)

     If you select this option, you may need to reboot the Citel Gateway for it to get the date and time from the SIP Server.
   - **NTP Server** – the date and time are taken from an NTP (Network Time Protocol) server

     You must enter either an IP address or an FQDN if you are using this method.
2. Select the **Timezone**

   In **Timezone Presets**, select either a defined time zone or **User Defined**.
   - If you choose a pre-defined time zone, the rule it uses is displayed in **Time Zone Rule**.
   - If you choose **User Defined**, you can specify your own rule in Time Zone Rule.

     The rule is based on UTC/GMT (Universal Time Coordinated/Greenwich Mean Time). This is then adjusted depending on geographical location. For example, a rule of “GMT + 0500” is GMT plus 5 hours.
3. Click **Submit** to set your changes.

SNMP configuration (optional)

Simple Network Management Protocol (SNMP) is a way of managing and monitoring network devices. The Citel Gateway supports SNMPv2c (see RFC1907 MIB for details).

1. Select **SNMP Configuration** from the Web UI **Home** page.

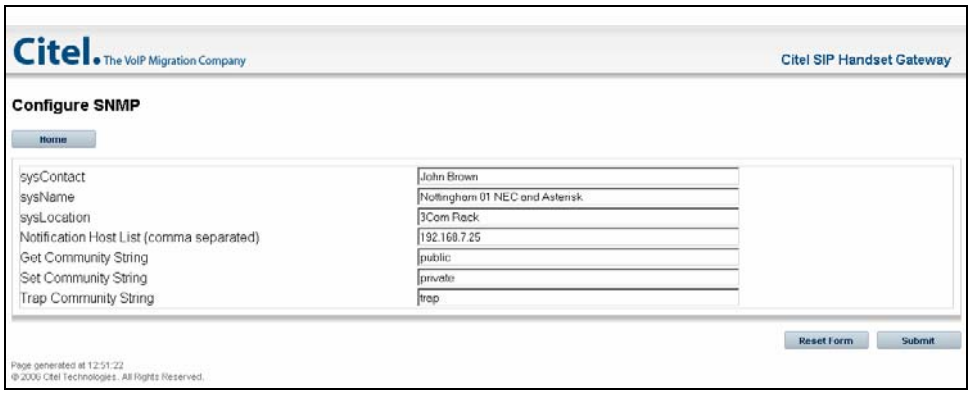


Figure 27: Configuring SNMP

2. Enter appropriate values for your SNMP system, as described below:
   - **sysContact** – enter the name of the person to contact with any queries
   - **sysName** – the name of the Citel Gateway unit, by convention the FQDN
   - **sysLocation** – the physical location of the Citel Gateway unit
   - **Notification Host List** – a comma separated list (no spaces) of the IP addresses or DNS names of all hosts to receive notification messages
   - **Get Community String** – a Community String for Get operations in your SNMP system: the default is **`public`**
   - **Set Community String** – a Community String for Set operations in your SNMP system: the default is private
   - **Trap Community String** – a Community String for Trap operations in your SNMP system: the default is **`trap`**
3. Click **Submit** to implement your changes or **Reset Form** to return settings to their previous values.

General system information

System name

The Setup Wizard is used to assign a unique **`Name`** to the Citel Gateway for your reference. This name appears on the Console UI, which makes it easier to confirm to which unit you are connected. The **`Name`** text field holds a maximum of 20 characters.

To access this area, select **`Configuration`** and then **`System`** from the menu system. Name is the top option on the screen displayed, as shown in *Figure 28*.

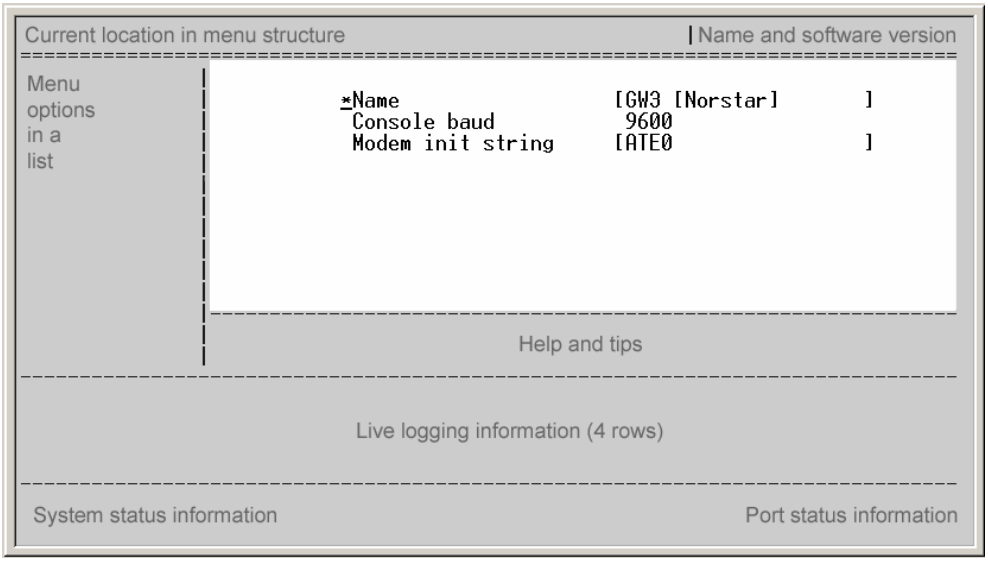


Figure 28: Setting the system name

Console baud rate and modem init string

You can change the **Console baud** rate from the screen shown in *Figure 28* (access by selecting **Configuration** and then **System** from the menu. The default baud rate is 9600 and the available choices are 38400, 19200, 9600, 4800, 2400.

The **Modem init string** is the command to configure the modem. The initialization string, typically Hayes commands, configures the modem's options for things like error correction, data compression and flow control (as well as other parameters). The default is ATE0 which turns on echoing of commands and long result codes and also selects blind dialing (does not check for dial tone before dialing). (Maximum 20 characters)

Configuring the Citel Gateway Ports

Configuring the Default Port

The settings recorded for the default port are used for all of the Citel Gateway ports unless they have been specifically programmed otherwise.

To specify the default settings, select **Configuration**, then **Port** and finally **Default** from the menu system.

The option to enable or disable all ports is available from this utility – the default setting is **Yes** (enabled).

Line Signaling is only present if you are using Norstar digital phones. It takes a numeric value in the range of 0 – 7 (default 2). You can change this to try to improve the audio quality of a crackling line.

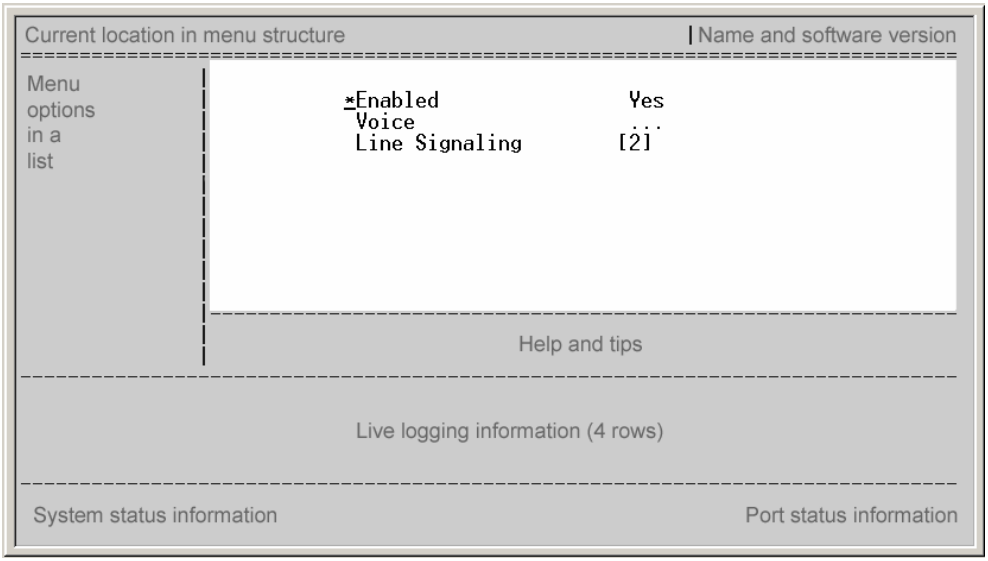
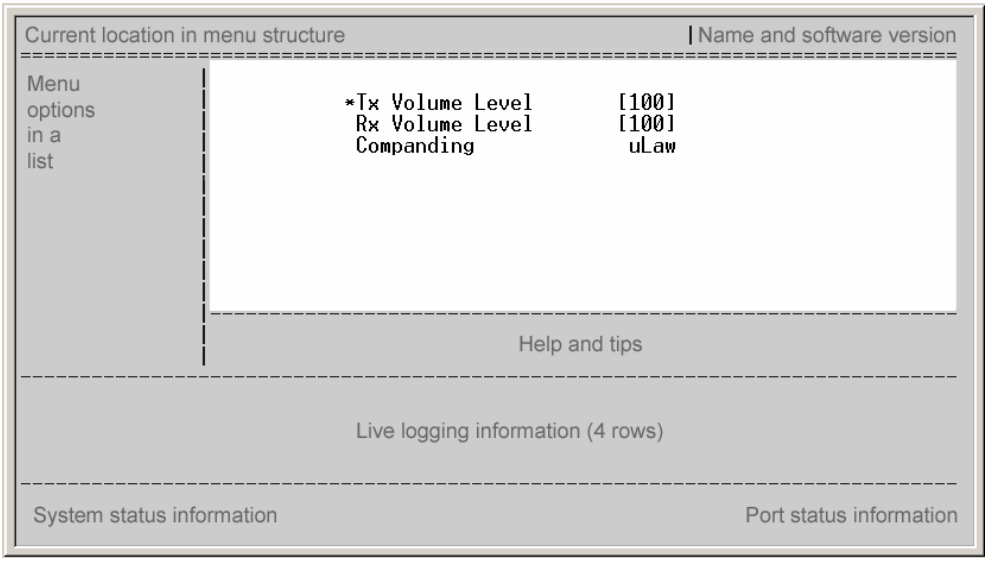


Figure 29: Configuring the default port

Configuring the Default Voice Settings

The voice setting is used to adjust the Transmit (**Tx**) and Receive (**Rx**) voice levels. Normally this would be used to assist with the reduction of echo in the voice path which may occur in certain installed environments. Both the Transmit level and the Receive level default to 100% and the field range is 25% - 150%.

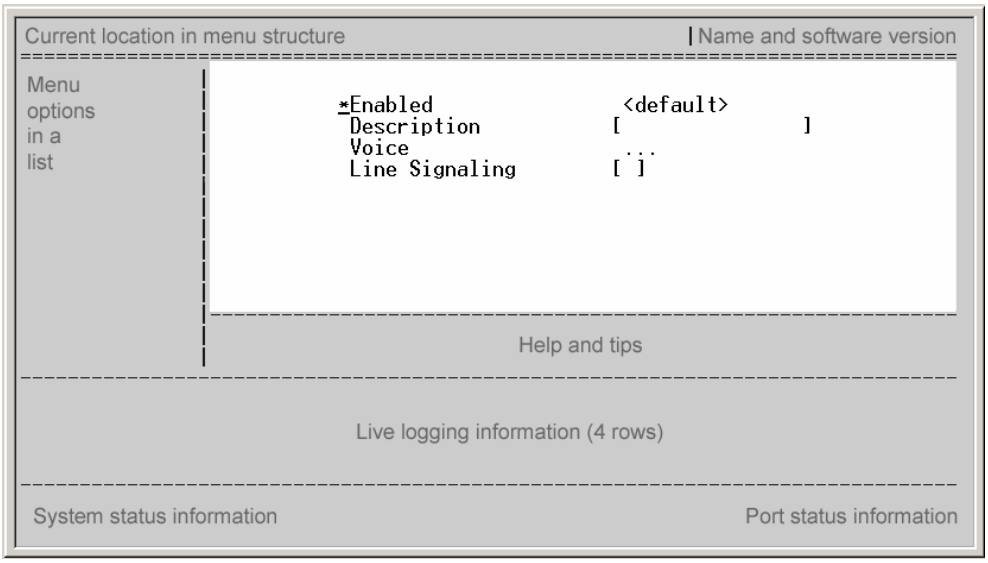
- Decreasing the level below 100% will result in lower transmit and receive voice levels on all ports.
- Increasing the level above 100% will result in higher transmit and receive voice levels on all ports.



1. Select **Configuration**, then **Port**, **Default** and finally **Voice** from the menu system.
2. Enter new values for either the **Tx Volume Level** or **Rx Volume Level**.

Configuring Individual Ports

All ports do not have to follow the default port settings. They can be specified individually if required, by selecting **Configuration**, then **Port**, **Ports**, then the range of ports and finally the port number from the menu system.



- **Enabled** – this is initially set to <default>, which means it will follow the programming of the Default port.

  The other options available are:

  - **no** – disables the individual port and no incoming or outgoing calls will be processed.
  - **yes** – this specific port will process incoming and outgoing calls.

- The **Description** is a text field that allows the administrator to label the different ports. This is useful when identifying the port for routine administration. Usually the port user's name is used (for example, John Smith). This information is not displayed on the digital set. The field maximum is 15 characters.
- The **Voice** settings are exactly the same as discussed in the previous section. Port 1 is used for example purposes only – all the remaining ports use the exact same menu structure.
- **Line Signaling** is only present if you are using Norstar digital phones. It takes a numeric value in the range of 0 – 7. You can change this to try to improve the audio quality of a crackling line.

TCP/IP Configuration

IP Address

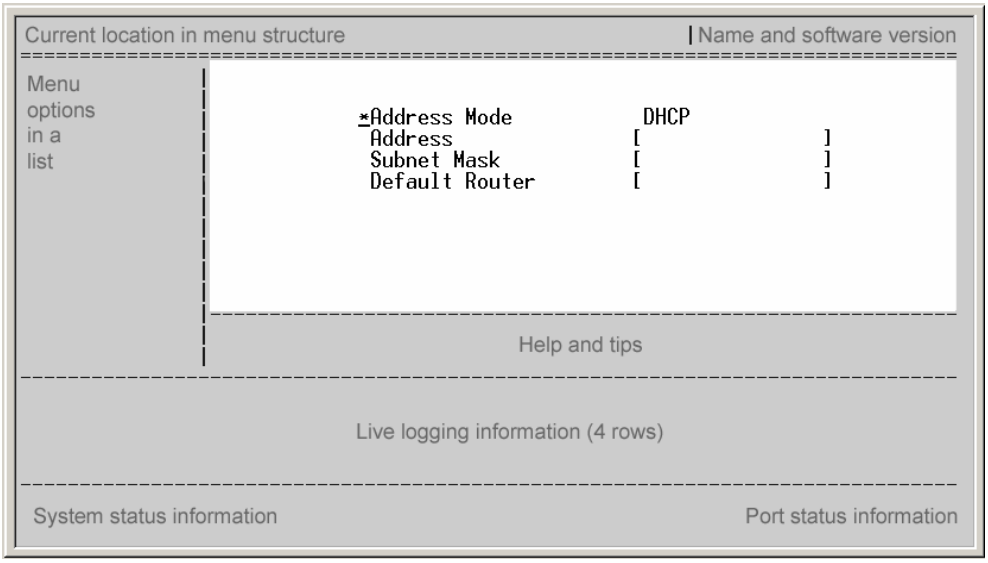
This section describes the menus for configuring the tools used when accessing and monitoring the Citel Gateway.

Select **Configuration**, then **IP** and finally **Address** from the menu system.

First, the unit must be assigned a valid IP address.

- If **Address Mode** is set to **Static**, you must enter a valid **IP Address**, **Subnet Mask** and **Default Router**. Each field takes a maximum of 15 characters.

- If **Address Mode** is set to **DHCP**, the unit is assigned an IP address by a DHCP server.



Telnet and FTP

To access the settings for Telnet and FTP, select **Configuration** and then **IP** from the menu system.

- **Telnet** is a standard internet protocol, which you can use to remotely administer the Gateway over IP.

  Setting this to Disabled prevents you from using Telnet. The default setting is Enabled.

- **FTP** (File Transfer Protocol) is another standard internet protocol. It allows files to be transferred to and from the unit. Normally, this is used for upgrading software.

  Enabled allows you to transfer files to and from the unit. The default setting is **Disabled**.

You are prompted to disable the FTP feature if you attempt to log out while FTP is enabled. For security reasons the FTP feature should always be disabled when not in use.

```
The FTP server is still enabled! The FTP server
should only be enabled while upgrading. If you
are not upgrading please disable the FTP server.
```

DNS (Domain Name Server)

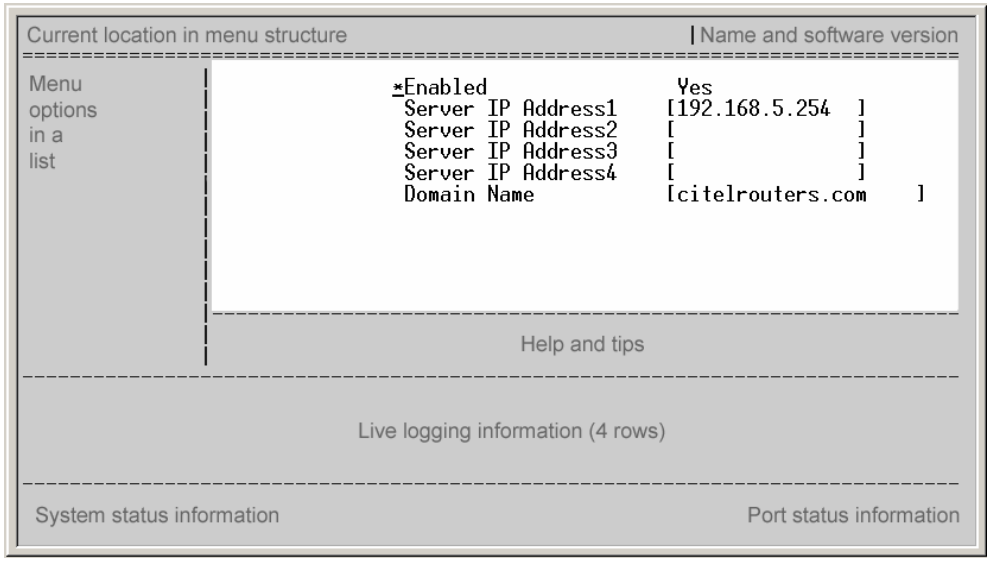
The DNS (Domain Name Server) translates the domain name, such as citel.com, into the actual IP address (10.10.1.20).

To access DNS configuration, select **Configuration**, then **IP** and finally **DNS** from the menu system.

Entering **No** in **Enabled** disables DNS. In this case, you will have to enter a static IP address for the Citel Gateway.

Record the IP addresses of your DNS servers in the four **Server IP Address** fields. Each field takes a maximum of 15 characters.

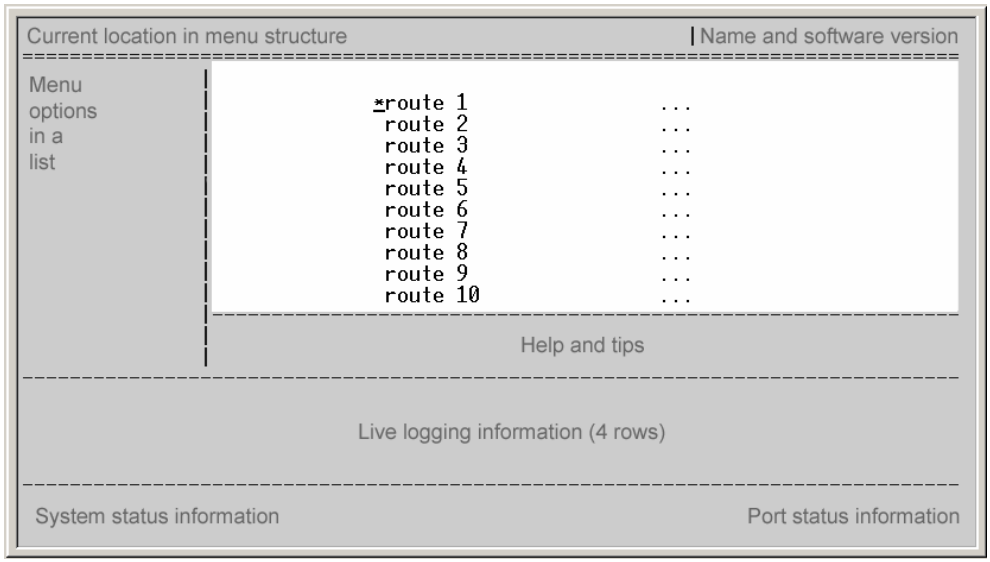
The default domain name is CITEL.



Static Routes

Typically, a router uses dynamic routes to learn how to reach network destinations. Dynamic routes are determined from the information exchanged by the routing protocols and, as the name implies, these may change as networks conditions change. **Static Routes** are used by the router when it does not have a route to a destination that has a better (lower) preference value, when it cannot determine the route to a destination, and/or when it is forwarding packets that cannot be routed.

There are a total of 10 Static Routes that can be configured.

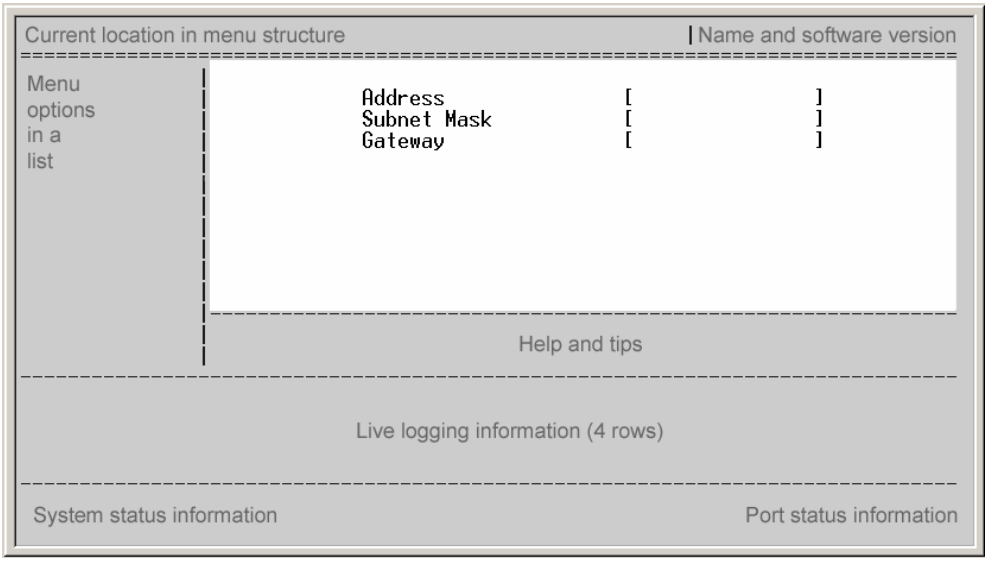


Select Configuration, IP, then Static Routes from the menu system.

Select the route.

Assign the **IP Address**, **Subnet Mask** and **Gateway Address** for each route.

Routes 1 – 10 all have the exact same menu items (Maximum 15 characters per field).



Set the Mode of the Ethernet Connection

Select **Utilities**, then **System** and finally **Set_Enet_Mode** from the menu system to set the Ethernet LAN mode. When first entering this menu item, you will see the following warning:

```
          Warning: Auto Mode is recommended.
  Full Duplex configurations may affect system performance.
              Hit <Enter> to continue
```

The unit will display the current Ethernet mode:

```
LAN: Auto sensing – currently at 100Mb-Half Duplex
         Hit <Enter> to continue
```

The Enet Mode can be set to Auto (default), 10M-Half Duplex, 10M-Full Duplex, 100M-Half Duplex, 100M-Full Duplex. Once changes are made, you will be prompted to reboot:

```
Need to reboot to take effect.
WARNING: All connections will be lost.
Reboot now? [y/n]
```


7 UPGRADING

To install a new version of software to your Citel Gateway:

1. Get the upgrade pack from the Citel website.
2. Backup your configuration details using the Web UI.
3. Prepare the Citel Gateway for the update (see below).
4. Upload the new file to the Citel Gateway, using FTP, IP or the Web UI.
5. Switch to using the new version of the software (see below).

Using the Web UI

To upgrade using the Web UI, select the **Maintenance** page and click **optimize** to optimize the flash file (see the instructions for using the Console UI for details).

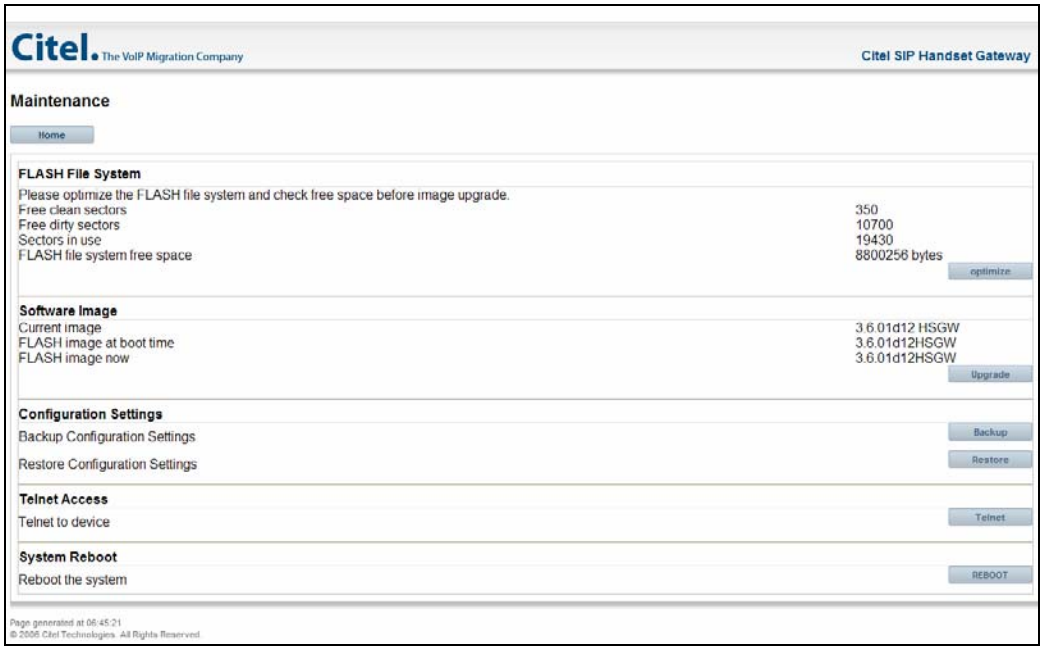


Figure 30: The Maintenance page

When this process is complete, click **Upgrade**. The page shown in *Figure 31* is displayed. Follow the instructions on screen.

Figure 31: The Software Upgrade screen.

Using the Console UI

Optimize the flash file system

If you optimize the flash file system, you will obtain the best performance. We recommend you run the optimization process before upgrading the software, as it should decrease the time required.

1. Select the **Utilities** menu, then **Upgrade** and finally **Optimize**.
2. The following message is displayed:

   ```
   This will optimize the flash file system performance.
   This process may take some time (minutes) and MUST NOT
   BE INTERRUPTED (rebooted) once started. Continue [y/n]?
   ```

   Type **y** to continue or **n** to abort.
3. If you type **y**, a warning is displayed, asking you to confirm that you want to continue.

   Type **y** to continue or **n** to abort.

It is very important that an optimization does not take place on an active system – this may corrupt the system software rendering the Citel Handset Gateway unusable. If this happens, please contact support@citel.com for advice.

4. If you choose to continue, the following message is displayed during the optimization process:

   ```
   Optimizing file system – DO NOT REBOOT!
   ```
5. When the process is complete, the following message is displayed:

   ```
   Flash file system optimization complete
   ```

Check the amount of free space

Before you continue with the upgrade process, you should check the amount of free space available and make sure it is enough for the new software.

Select **Utilities**, then **Upgrade** and finally **Free Space** from the menu system.

The amount of space available is displayed in bytes.

Upload the new software

Using FTP

Check the IP address that has been assigned to Citel Gateway, whether the FTP server has been enabled, and the username and password (if any) required to access it.

1. Select **Upgrade**, then **Upload File** and finally **FTP Upload** from the menu system.
2. If the FTP server is disabled, a message is displayed containing instructions for enabling it.

   ```
   FTP server on this system is not enabled. The FTP server
   must be enabled in the Configuration -> IP menu before
   files can be uploaded to this unit using FTP.
   ```
3. When FTP is enabled, you will see a message similar to the one shown below:


```
This system's FTP Server Address is 10.10.3.44
You may login to this FTP Server with empty username and
the admin password (if set) to begin binary upload now.
```

4. Now you need to access the FTP shell, so you can use the FTP commands to send and receive files.
5. To access the FTP client, select Utilities, then Upgrade, then Upload File and finally FTP Client from the menu system.

   The syntax of the commands is displayed on screen.
6. To check that the file you have uploaded is on the Citel Gateway, select Utilities, then Upgrade and finally Image List from the menu. A list of files, with their sizes, is displayed.

Copying from another Citel Gateway

Instead of downloading the file using FTP, you can copy an existing file from another Citel Gateway, as long as you know its IP address.

1. Select **`Utilities`**, then **`Upgrade`**, then **`Upload File`** and finally **`Copy From IP`** from the menu system.
2. Enter the IP address of the remote unit.
3. You will be prompted for a password for the remote Citel Gateway. Type the password and press Enter. Just press Enter if there is no password.

   `Connecting...` means an attempt is being made to connect to the remote unit.

   - If the connection fails, you will see `Unable to connect` and then `Operation failed`.
   - If the connection succeeds, you will be prompted to select a file to copy.
4. Select a file to copy. As this process is normally used to upgrade your system, you would normally select the **`DEFAULT.HCB`** file.

```
Select local file to copy:
---------------------------
*DEFAULT.HCB
 RUNTIME.REM
 FLASH.DAT
```

5. Enter the filename to be used for the file on the local (receiving) unit. Do not enter a file extension.

   A message is displayed during the transfer process:

```
Transferring DEFAULT.HCB to MyNewConfig.HCB – please wait
.....................................................
```

6. A `Copy succeeded` message is displayed when the process is complete.
7. To check that the file you have uploaded is on the Citel Gateway, select **`Utilities`**, then **`Upgrade`** and finally **`Image List`** from the menu. A list of files, with their sizes, is displayed.

Using the new version

After you have uploaded a new image file containing the latest version of the software to the Citel Gateway, you have to select it as the image file to be used by the system.

1. Select **`Utilities`**, then **`Upgrade`** and finally **`Image File`** from the menu system.
2. You will be prompted to confirm that you want to continue, after being reminded that the image file must already be on the Citel Gateway.

Type **y** to continue or **n** to cancel.

3. A list of images available on the Citel Gateway is displayed. Select the one that you want to use.

   The file named **DEFAULT.HCB** is usually the previous version of the software.

4. The file you select is verified and you will be asked to confirm that you want to change the image file in use.

   Type **y** to continue or **n** to cancel.

5. A final warning is displayed, as the system must be rebooted for the change to take effect.

   ```
   Upgrading the image requires a system reboot.
   WARNING: All connections will be lost.
   Upgrade and reboot now? [y/n]
   ```

Set the default image

After a new software release has been uploaded to the unit, you can rename the new file to default.hcb and then delete the unused file.

1. Select **Utilities**, then **Upgrade** and finally **Default Image** from the menu system.

   If you are currently using the default image file and no other file is available, a message is displayed and you cannot continue.

   To see a list of image files and their sizes, select **Utilities**, then **Upgrade** and finally **Image List** from the menu.

2. A message is displayed stating that if you continue, the existing **default.hcb** file will be deleted and the new file will be renamed as **default.hcb**. The Citel Gateway must be rebooted after this change.

   ```
   This will delete the existing /flash0/default.hcb,
   rename /flash0/V34ED4.HCB as the default image, and
   reboot the system. Change and reboot now?[y/n]
   ```

3. Type **n** to cancel or **y** to continue.

4. If you typed **y**, the Citel Gateway will verify the new file, delete the old file, rename the new file and then prompt you to reboot the system.

   ```
   System requires reboot for change to take effect.
   WARNING: All connections will be lost.
   Press enter to continue.
   ```

Delete unwanted files

You can delete unwanted files from the Citel Gateway when you have completed the upgrade process.

1. Select **Utilities**, then **Upgrade** and finally **Delete** from the menu system.

   If all files are in use, a message is displayed stating that none can be deleted.

2. If a file is found that can be deleted (is not in use), a message is displayed asking you to confirm that you want to delete the file:

   ```
   Permanently delete V34ED3.HCB?[y/n]
   ```

3. A message is briefly displayed during the deletion process. When it is complete, a message is displayed naming the file that has been deleted.

When you have finished working on the Console UI, remember to logout. If you have left FTP enabled, a warning message is displayed asking you to disable FTP access.

8 TROUBLESHOOTING

If you cannot connect to the Citel Gateway or problems are subsequently encountered, check the following:

1. Review the Citel Gateway log for indications of a problem.
2. Is the RJ-21x connector firmly seated into its socket on the Citel Gateway and at phone end (if applicable)?
3. Is the power indicator lit on the Citel Gateway?
4. Are the Citel Gateway LED indications correct?

   The appearance of the LEDs on the front panel of the Citel Gateway varies depending on whether the system is in normal operating mode or is in system boot mode. See *Table 6* for details.

Table 7: LED States – Normal Operating Mode

Name	LED State with Definition
PWR	On (green) = power input is normal Off = system power supply is switched off or mains power supply is disconnected or has failed
FXO	On (amber) = analog port enabled Off = analog port disabled
Port Status	On (green) = telephone connected and all lines registered with softswitch Flashing (green) = telephone connected but at least one line is not registered with the softswitch – check line configuration Off = port disabled or no telephone connected – check wiring

5. Consider basic telephone troubleshooting, for example swapping-out the telephone for a similar model, checking the telephone cable, handset cable.

   Note: Some keysets, for example Meridian, are polarity sensitive.
6. Check that the Citel Gateway has network connectivity to the softswitch – use pings to establish connectivity.
7. Check that the Citel Gateway configuration is correct.
8. Is the softswitch functioning properly? See your Service Provider's documentation.

If a problem still exists after working through the checklist, contact your supplier for advice and further support.

System Information

You can view system information in the Web UI by selecting the System Information option from the Home page. See *Figure 32* for an example of the type of information you can see.

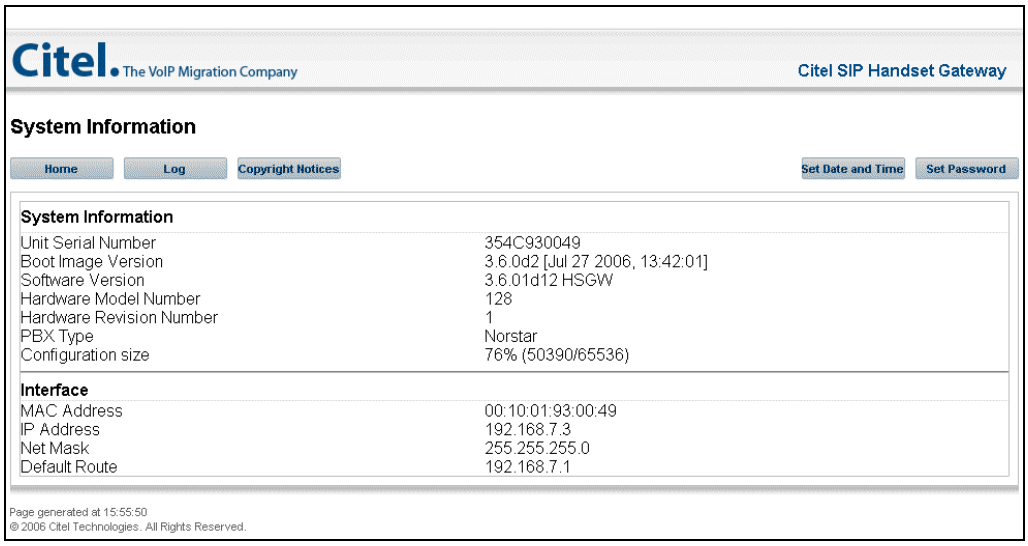


Figure 32: Example of the details shown on the System Information page

You can also see system information on every screen in the Console UI, except for the Welcome screen. An example is shown in *Figure 9* (page) in the section that describes the Console interface. You may be asked for this information if you raise a support call.

Logging

Configuring the Logs

The log (or log file) is used when troubleshooting and also to monitor the Citel Gateway, ensuring that everything is running smoothly. You may be asked to provide information from the logs if you request support for a problem you cannot resolve yourself.

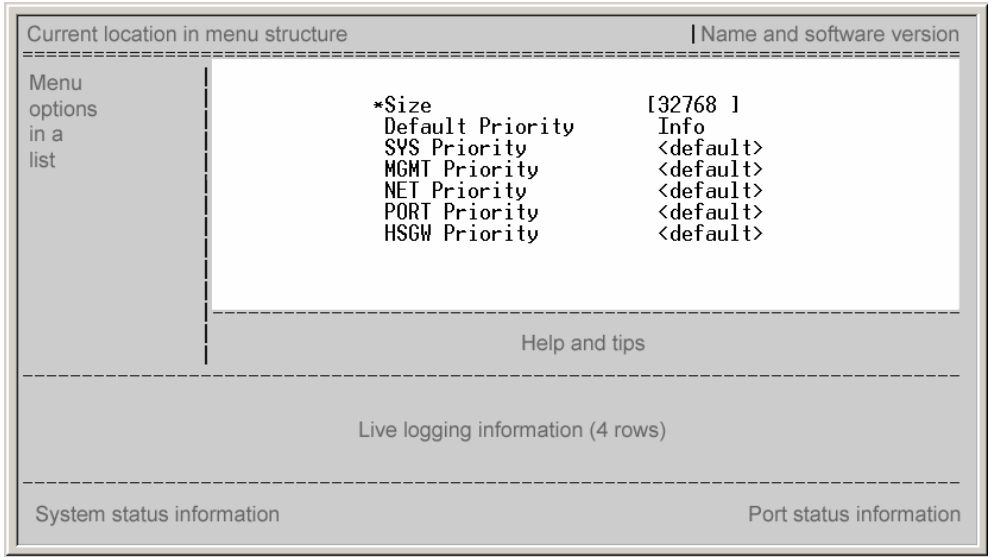


Figure 33: Configuring the system log.

The log **`Size`** is the maximum size to which the log can grow, in bytes. The default value is 32,768 and the range is from 4096 to 262,144 bytes.

A Customer Support representative may ask you to change this, depending on the nature of your problem.

The log categories, each of which can be assigned its own priority, are shown in *Table 8*.

Table 8: Log categories

SYS	These messages include information on the operating system and utilities related to the configuration files.
MGMT	These messages include information on configuration and diagnostic conditions of the unit.
NET	These messages include status information for both WAN ports and issues related to network connectivity.
PORT	These messages include status information for all phone ports and issues related to voice compression and connection details.
HWGW	Handset Gateway logging messages.

The possible log priority values are shown in *Table 9*.

Table 9: Log Priorities

Priority	Definition
Fatal	Unit failed. Contact customer service.
Error	Unit failed but may recover. Try rebooting the unit.
Warning	Unexpected error but unit should still function.
Info	Routine event occurred.
Debug	Details on every event only seen with priority set to “Debug” or “Trace”.
Trace	Details on each and every activity. Only seen with priority set to “Trace”.

Viewing the Log File

The system Log messages can be viewed at any time.

To access the system log, select **`Status`** and then **`Log`** from the menu system.

To navigate through the information, use the following keys:

Esc	Quit the log file
h (home)	Move cursor to start of file
e (end)	Move cursor to end of file
u (up)	Page up
d (down)	Page down
F4	Update (refresh screen)
Arrow keys	Scroll

Clearing the Log Buffer

To clear the log buffer, select System and then Clear Log from the menu system. You will be asked to confirm that you want to clear the log buffer:

```
Clear entire log buffer? [y/n]
```

- If you type **n**, the following message is displayed:

  ```
  The log buffer has not been cleared
  ```

- If you type **y**, you will see:


```
The log buffer has been cleared
```

Dump Log and System Configuration Details to Console Window

The dump the log file and system configuration to the console UI screen sends the contents of the log buffer and the configuration information to the Console UI. You can then use the terminal application (for example, Windows HyperTerminal) to capture this information.

To use this feature, select **System** and then **Dump All** from the menu system.

The following message is displayed:

```
This feature dumps all system information to
the screen so your terminal application can
capture the text. Continue? [Y/N]
```

If you type **y**, you will see:

```
Set your terminal application to
capture text or start logging.
Hit any key to start the dump.
```

If you are using HyperTerminal, select **Transfer**, then **Capture text** and follow the prompts.

Writing the Log Data to a Remote Location

You can write “raw” log data to a remote location by assigning a host address and a location identifier. To do this, select **TCP/IP Configuration**, then **Syslog** from the menu system.

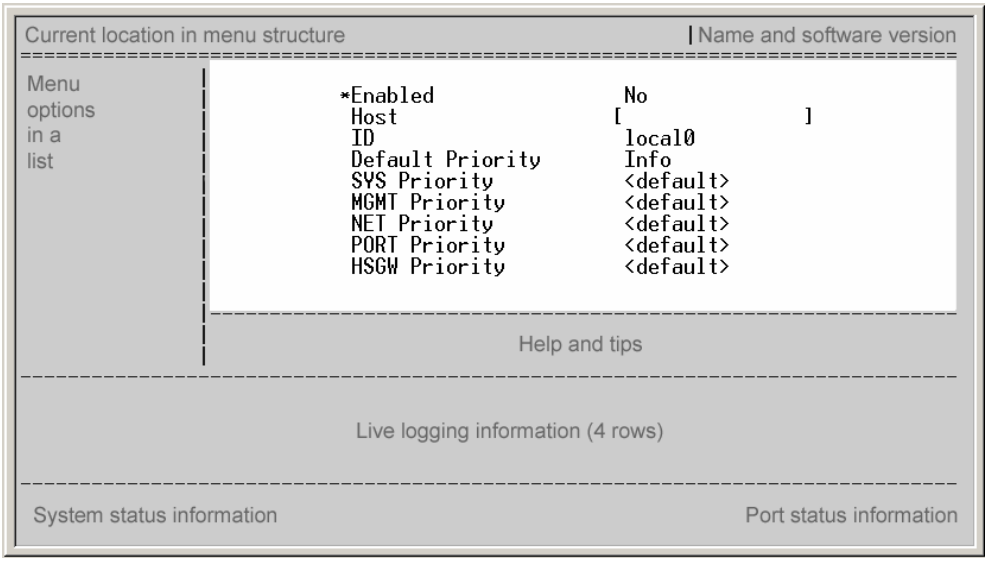


Figure 34: Capturing log information remotely

If **Enabled** is set to **No**, then log data is not written to the remote location.

Enter the address of the device that will be receiving the data in the **Host** field. Field maximum is 15 characters.

Assign 1 of 8 possible IDs to identify from which specific system the log files originated. The available choices are **Info**, **Debug**, **Trace**, **Fatal**, **Error**, and **Warning**.

The **Default**, **SYS**, **MGMT**, **NET**, **Port** and **HSGW Priorities** are the same as was discussed in the *Configuring the Logs* section on page .

System Status Information

Enet Interface

The Enet Interface lists all the information relevant to the NIC (Network Interface Card).

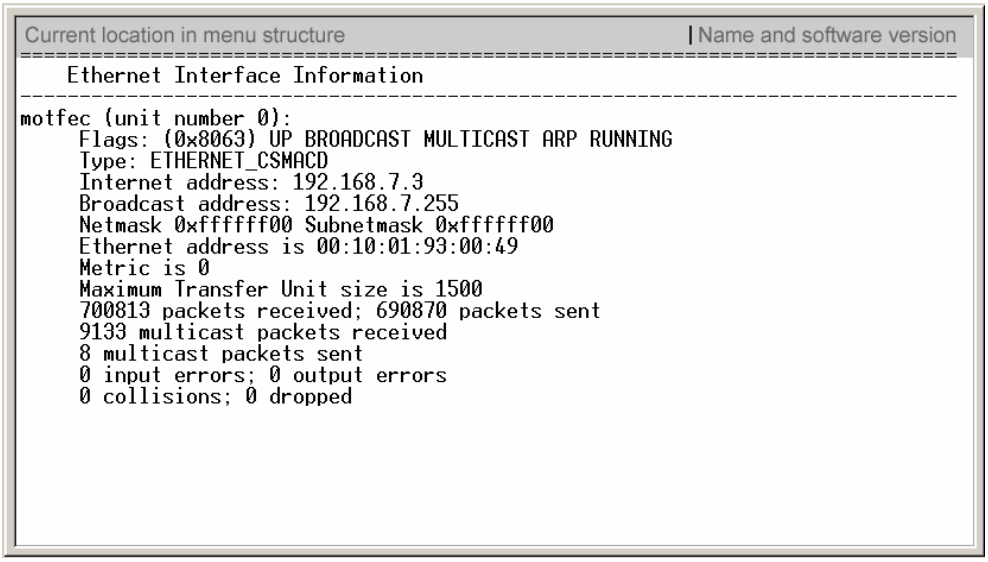


Figure 35: Details of the Ethernet interface.

RX Stats

This displays the statistics for the received IP packets.

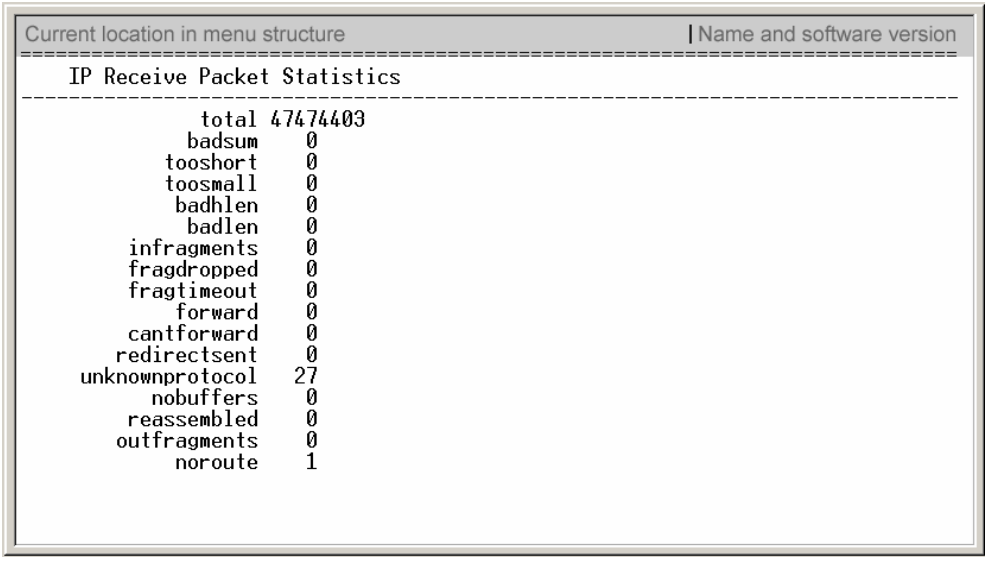


Figure 36: Information about received IP packets.

Active IP Connections

This displays all the active IP connections (including the servers).

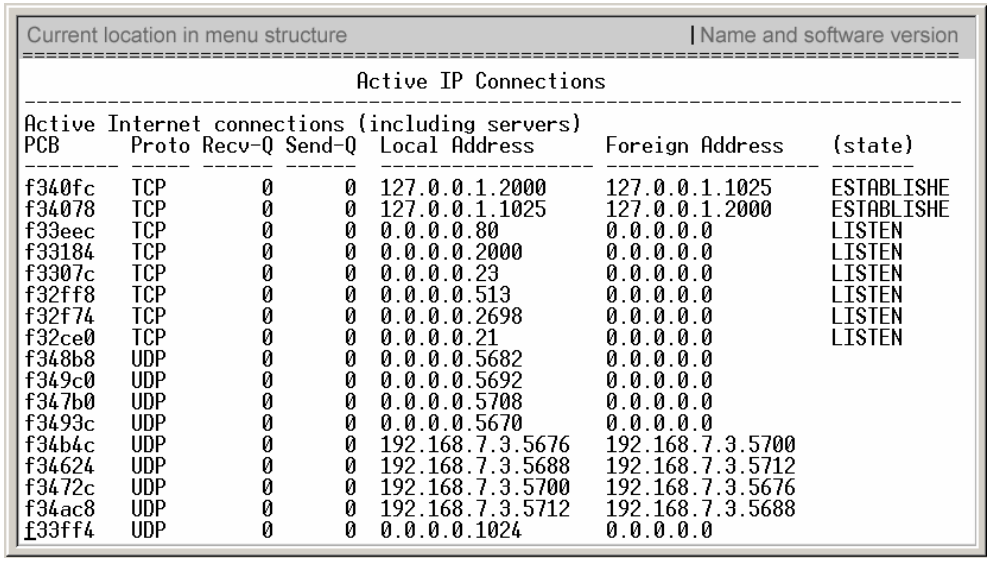


Figure 37: All active IP connections.

ARP Information

This displays the system's ARP (Address Resolution Protocol) table.

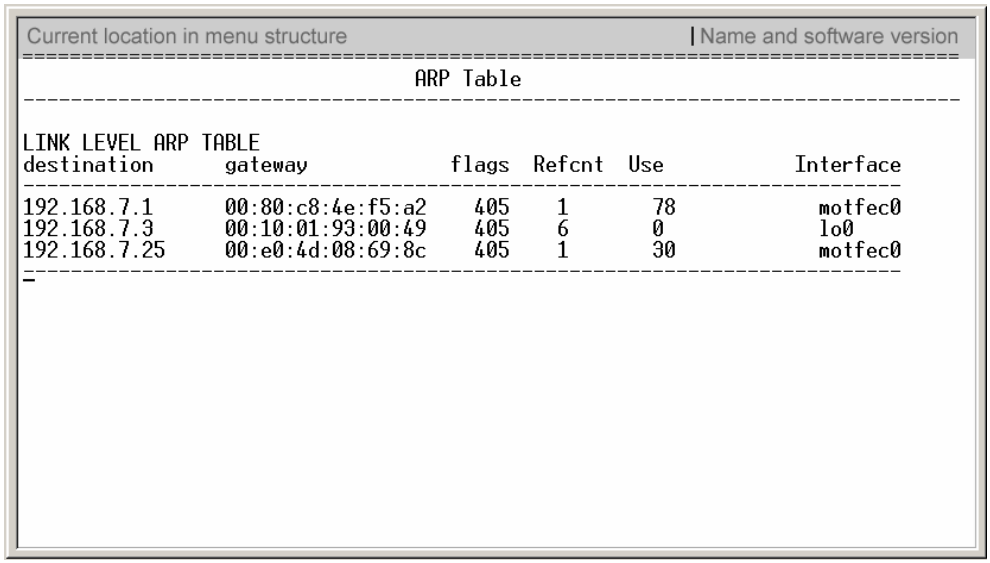


Figure 38: The ARP table.

IP Routes

This displays the system's Route Net Table and Route Host Table.

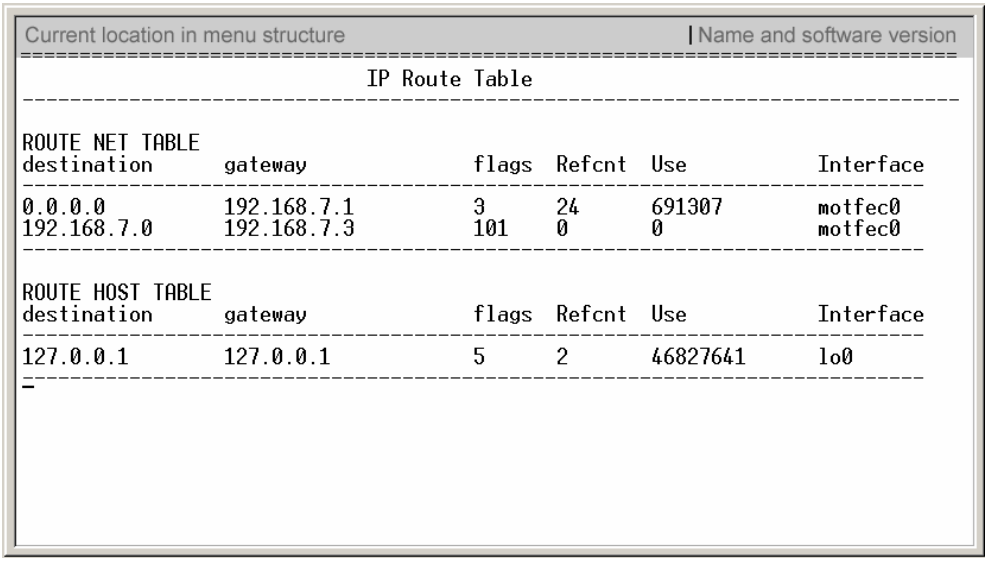


Figure 39: A list of IP routes.

DHCP Details

This displays the system's DHCP (Dynamic Host Configuration Protocol) information.

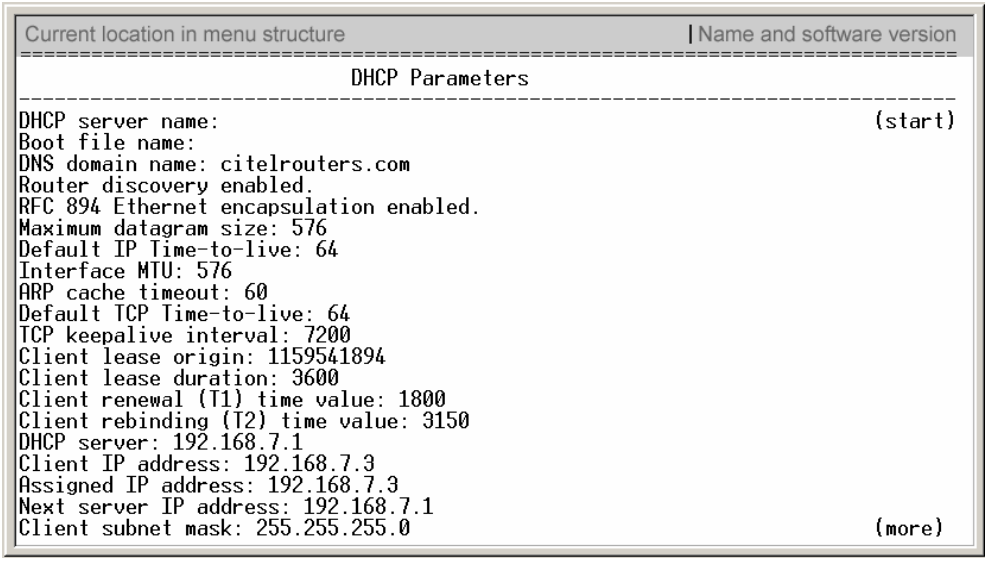


Figure 40: Details of the DHCP configuration.

No information is displayed on this screen if DHCP is not enabled.

General System Information

This displays all core system information.

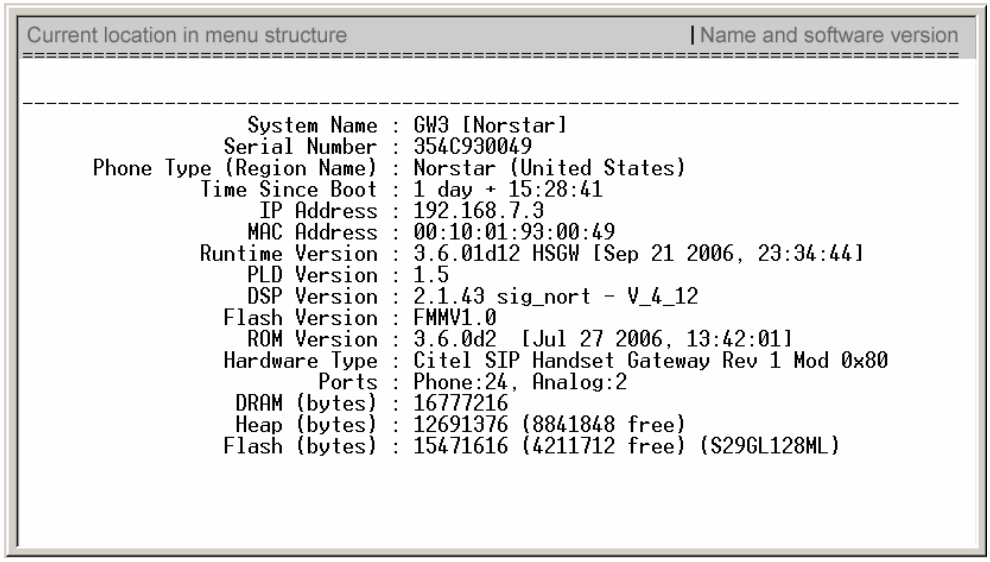


Figure 41: Basic system information (name, date, time, number of ports.

DSP Information

Select **`System Status`**, then **`Devices`** and finally **`DSP`** Info from the menu system.

This displays the version of the signaling DSP and the default VOX (voice) DSP.

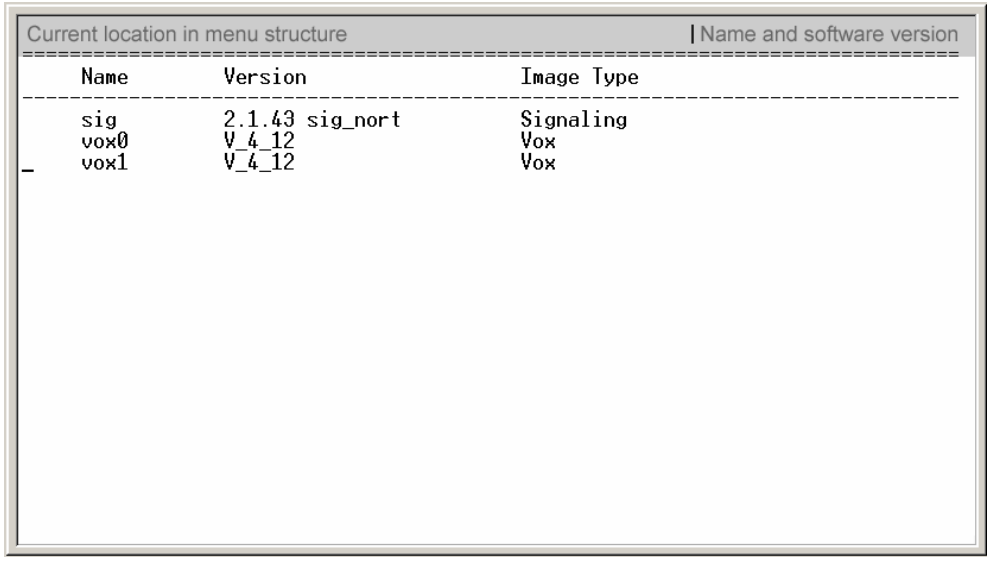
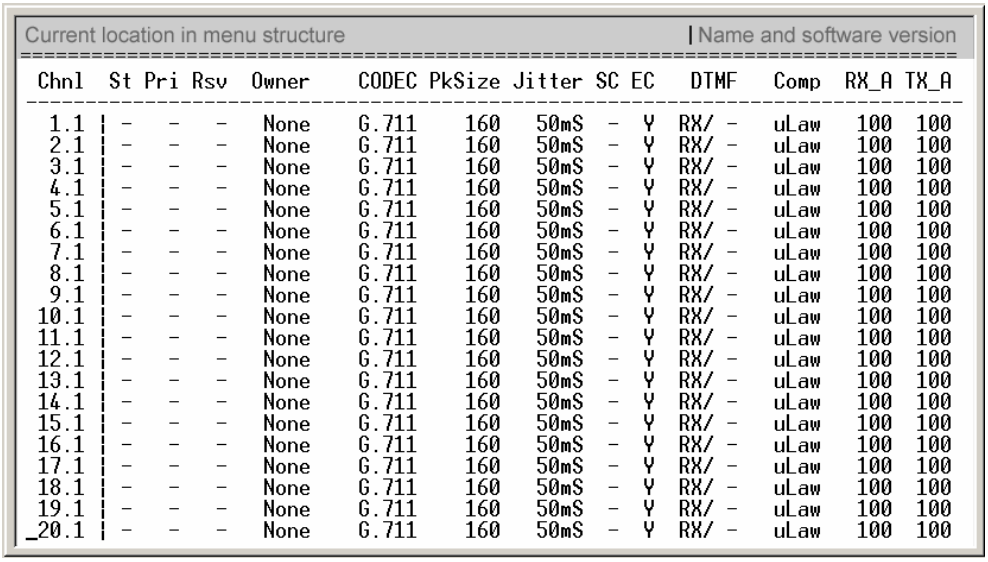


Figure 42: DSP information.

Port Summary

Select **System Status**, then **Devices** and finally **Port Summary** from the menu system.

This displays a summary of the port configuration on a per port basis.



Chnl	St	Pri	Rsv	Owner	CODEC	PkSize	Jitter	SC	EC	DTMF	Comp	RX_A	TX_A
1.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
2.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
3.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
4.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
5.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
6.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
7.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
8.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
9.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
10.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
11.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
12.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
13.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
14.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
15.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
16.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
17.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
18.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
19.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100
20.1	-	-	-	None	G.711	160	50mS	-	Y	RX/ -	uLaw	100	100

Figure 43: Summary of the configuration of each port.

System Status – HW Diagnostics

This displays the status of the DSP (Digital Signal Processor) and the PLD (Programmable Logic Device). **Passed** or **Failed** is displayed.

Reset the System Statistics

Select **Utilities**, then **System** and finally **Reset Stats** from the menu system.

You will see a message similar to:

```
Reset all system statistics? [y/n]
```

The system's statistical information can be reset which is useful during troubleshooting. Enter **y** to reset all the system stats to zero or none. Enter **n** to cancel.

Diagnostics

Select **Utilities**, then **Diagnostics** and finally **Test IP** from the menu system.

This is a utility that will send test packets over the IP network to test the IP connection (measured +/- 5ms).

Begin Test starts sending of the test packets.

The IP Address field is for the IP address of the remote device (normally this would be the communications server). The field range is 16 characters.

A prompt is presented confirming the start of the test:

```
Test in progress – please wait ….
```


If successful, you will see a message similar to:

```
10.10.1.254 is alive
```

If unsuccessful, you will see a message similar to:

```
No answer from 10.10.10.10
```

Reset Port

To reset ports, select **Utilities**, then **Diagnostics** and finally **Reset Ports** from the menu system.

You can **Reset** a specific port or all the ports on the Citel Gateway. You will see:

```
Enter a Port(1-12) to reset or 'all':
```

If you are using a 24-port Citel Gateway, then you will have the option to reset ports numbered from 1-24.

A warning message is shown prior to resetting the port(s):

```
Warning: All connections on
     all ports will be lost.
        Reset Now [y/n]
```

Enter **n** to abort the process. Enter **y** to reset the specified port or all the ports. When the unit begins resetting ports a status message is displayed:

```
Resetting port 1 …
```

Once complete a confirmation message is displayed:

```
Ports 1-12 were reset
```


APPENDIX A TECHNICAL SPECIFICATIONS

Interfaces	
LAN	Dual 10 / 100 Megabit Ethernet ports (one currently in use), RJ-45
Console	Serial RS-232 Console port, D-type 9-pin (DB-9)
Telephony Interface	Up to either 24 digital or 24 p-phone/analog line interfaces over a RJ-21x 50-way extension cable. Up to 2 analog (FXO) ports.
Voice	
Voice Compression	G.711u, G.711a, G.729 (Annex B negotiation supported).
Protocols and Services	
LAN	SIP
Softswitch Support	Asterisk, BroadSoft, Sylantro
Packet Size Support	20ms transmit, 10/20/30ms receive
Electrical	
Line Voltage	100-240 VAC
Frequency	50-60 Hz
Max Current Consumption	0.8 A
Protection	Over Current/Voltage and short circuit protection
Supported Telephones	See *Appendix D*.
Maximum Loop-length for Station Cabling to Connected Telephones	1600ft (500m). THIS MUST NOT BE EXCEEDED.
Indicators	System Power indicator LED 12 or 24 Port Status indicator LEDs Analog Port Status indicator LED Ethernet port Link and Activity indicator LEDs
Environment	
Temperature	32° - 104° F (0° - 40° C)
Relative Humidity	5 to 95%
Dimensions	
	17 in x 8 in 1 3/4 in (432 mm x 203 mm x 44 mm)
Weight	
	6 lbs 7 oz (3 kg)

Analog (FXO) Ports

The use of the analog ports is optional. These are located on the back of the Citel Gateway and are to be used primarily as a backup external line in the event of a softswitch outage. They connect to an analog line for local dialing.

The analog ports do not provide softswitch functionality or features.

Do not connect a handset to the analog (FXO) port – they are used to connect to an analog line.

APPENDIX B REGULATORY AND COMPLIANCE

Important Safety Instructions

Before attempting installation, ensure you have read and comply with all instructions including the Safety Information in this guide. Also ensure you communicate the same information to the users and administrators of the telephone system in which a Citel SIP Handset Gateway is operating.

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

These instructions provide basic installation information, necessary for the proper and safe functioning of this equipment. Persons installing or maintaining this product must read all of the safety instructions and the parts of system grounding which are applicable to the system being maintained. Only trained, qualified service personnel shall install or maintain this product.

- Do not install this product near water.

  Example: In a wet basement location.
- Do not overload wall outlets, as this can result in the risk of fire or electrical shock.
- Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord. Do not place this product where anyone can step on the cord.
- Do not operate the system if chemical gas leakage is suspected in the area. Use a telephone located in another, safe area to report the trouble.

General

- Read all instructions
- Keep these instructions with the equipment
- Do not attempt to install or service this equipment unless you are skilled in the installation and maintenance of electronic telecommunications equipment and have successfully completed specific training for this equipment
- This product must be installed and serviced in accordance with this document and the technical documentation
- Follow all procedures outlined in the technical documentation in the given sequence
- Configure this product with the specified assemblies only and in the locations stated in the technical documentation
- Do not connect telecommunications cabling to the system, service the system, or operate the system with the grounding conductor disconnected
- Install all wiring according to local, state, and federal electrical code requirements
- The socket shall be installed near the equipment and shall be easily accessible

Installation of Telecommunications Wiring

Telecommunications wiring to this product must conform to all applicable local safety and electrical wiring regulations.

Use caution when installing or modifying telephone lines.

Do not install telephone wiring during a lightning storm.

Do not install a telephone jack in wet locations unless the jack is specifically designed for wet locations.

Do not touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Any connection of the assemblies listed below to an outside plant lead, an off-premise application, or any other exposed plant application may result in one or more of the following: fire, shock hazard, defective operation and/or equipment damage.

- **Restricted peripheral interface circuit**
- **Nortel telephone circuits**
- **Ethernet circuits**

Symbols

These symbols appear on the product:

	This symbol indicates an uninsulated “dangerous voltage” within the product’s enclosure that may present a significant risk of electric shock.
	This symbol indicates that important operating and maintenance (servicing) instructions are included in the literature accompanying the product.

Installation Summary

AC Power Source	This product operates from an electrical source rated as indicated in *Appendix A*. Power each cabinet from a separate branch circuit wired in accordance with local electrical codes.
Equipment Location	Locate this product in a clean and dry environment only, according to environmental and other installation requirements specified in *Appendix A*.

Power Distribution Cables For a new installation, or to replace a damaged/defective power cord, provide a flexible, three-conductor power cord that:

- complies with local electrical codes;
- has a voltage and current rating not less than the rating marked on this product;
- has a polarized attachment plug with a current rating not less than 125 percent of the rating marked on this product;
- has a usage rating for floor mounted products (a typical example in the US would be an "S" or "SJ" rated cord);
- is not longer than 2.4 meters.

Fuse and Component Replacement

Unauthorized repair of this product may result in a fire, shock hazard, defective operation, and/or equipment damage. Do not repair or replace components on circuit card assemblies or other parts of this equipment unless there is a specific description of the procedure provided in the technical documentation. Return all inoperative assemblies to an authorized Citel agent for repair.

System Grounding (Earthing)

Ground all systems according to these instructions before you connect power leads and telecommunications wiring. Follow grounding instructions explicitly to ensure the safety of personnel.

General Grounding

Cabinets always require redundant and independent equipment grounding conductors between the cabinet and the wiring system ground: an insulated grounding conductor and a supplementary (protective) ground.

The system is not suitable for connection to IT power distribution systems and must be connected to a grounded power outlet.

Regulatory – Compliance and Agency Approval

[To be provided]

Regulatory Notices

[To be provided]

Electricity at Work Regulations 1989

This product, as manufactured by Citel Technologies Limited, is a SYSTEM as defined by the Electricity At Work Regulations 1989. All persons involved in the installation and repair should be aware of their duties and responsibilities under these regulations.

Protection of the Environment – The WEEE Directive

This equipment is marked according to the European directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.

This symbol on this equipment indicates that this appliance may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of Electrical and Electronic Equipment.

Disposal must be carried out in accordance with local environmental regulations for waste disposal.

For more detailed information about treatment, recovery and recycling of this product please contact your local city office or your household waste disposal service.

APPENDIX C SUPPORTED SIP SPECIFICATIONS AND FEATURES

For a list of supported SIP specifications, see the Citel website: www.citel.com

Supported SIP Features

Registration

As illustrated in section 24.1 of RFC 3261.

Call Setup

As per section 24.2 of RFC 3261 in conjunction with:

- RFC 2327 for audio session description
- RFC 3264 as a model to negotiate audio

End Call

As per section 15 of RFC 3261

Call Hold

As per section 14 of RFC 3261 in conjunction with:

- RFC 2327 for audio session description
- RFC 3264 as a model to negotiate audio

Consultation Transfer

As per section 6.3 of draft-ietf-sipping-cc-transfer.

Blind Transfer

As per section 6.3 of draft-ietf-sipping-cc-transfer- terminating the call-leg to the transfer target before it is answered, at which point the call proceeds as section 5 of draft-ietf-sipping-cc-transfer-. This is sometimes known as a semi-attended transfer, as described in 6.6 of draft-ietf-sipping-cc-transfer-.

Voice Mail Message Waiting

As per RFC 3842.

DTMF Events

DTMF events are encoded and issued by the gateway as per RFC 2833.

3-Party Conferencing

The SIP gateway fully manages multi-party conferences by emulating the legacy PBX model (i.e. the user experience is equivalent to that of a PBX managed phone).

Media mixing of conference audio is performed by a specialised media server. Establishment of sessions with the media server is achieved as per section 5 of draft-burger-sipping-netann-.

Bridged Line Appearances (BLA)

The state information required for BLA support is achieved using draft-ietf-sipping-dialog-package-.

Implementation details for BLA are contained in draft-anil-sipping-bla-.

Shared Call Appearances (SCA)

The state information required for SCA support is based upon RFC 3265. The associated event packages and the semantics are proprietary.

Implementation details for SCA are contained in proprietary 3rd party documentation.

Call Park

As per section 2.16 of draft-ietf-sipping-service-examples-.

Calls can also be parked using gateway phones where a park service is available on the application server through a feature code.

Call Pickup

Call Pickup in this context applies to both directed and group pickup, and any differences are identified in the detailed specifications. Call Pickup is based upon the SIP service examples given in section 2.17 of draft-ietf-sipping-service-examples-.

Call Pickup uses RFC 3265 to provide the event framework on which the feature is built and RFC 3087 defines the mechanism to communicate context information in order to infer application context (call pickup in this case). In addition draft-ietf-sipping-dialog-package- together with RFC 3265 provides the mechanism to communicate the call information that is required to pickup a call (INVITE-initiated dialog). Draft-ietf-sip-replaces- provides a description of how the SIP header, Replaces, is used to intercept and replace the original call (the "picked-up call").

Calls can also be picked up (directed and group) from phones where the call pickup service is available on the application server through feature codes.

Call Forwarding – Busy

As per section 2.7 of draft-ietf-sipping-service-examples-. Call Forwarding is a function of the application server.

Call Forwarding – No Answer

As per section 2.8 of draft-ietf-sipping-service-examples-. Call Forwarding is a function of the application server.

Incoming Call Screening

As per section 2.13 of draft-ietf-sipping-service-examples-. Maintenance of screening lists is a function of the application server.

Outgoing Call Screening

As per section 2.14 of draft-ietf-sipping-service-examples-. Maintenance of screening lists is a function of the application server.

Star / Feature Code Dialing

Star or feature codes are supported by their inclusion in the request URIs of INVITE messages. The application server should close down the resulting dialog once the star code action has been applied.

Directory Service

A directory service, providing a global list of system user numbers for dialling, is available to phones attached to the Gateway. Directory Service is a function of the application server.

Caller ID

Caller ID information is displayed on the gateway phones where available from the application server.

Direct Inward Dialing (DID)

DID is supported where available from the application server.

Direct Outward Dialing (DOD)

DOD is supported where available from the application server.

Digit Maps

As per section 2.1.5 of RFC 2705.

Digit Maps are supported which correspond with the dial plan for the network that the Gateway is connected to.

Alert-Info – Distinctive Ring

Distinctive ringing is currently not supported.

Monitor Only Lines

Lines can be configured to provide visual station alerting only, with no audio alerting, for inbound calls. Monitor only lines are not automatically selected when the user goes off-hook. This function is primarily designed for use with SCAs/BLAs to provide a line state monitoring function.

DNS and DNS SRV

In accordance with RFC 2782

Gateway Based Services

Services presented in this section are implemented entirely on the Gateway and do not require application server support.

Speaker phone

The speakerphone feature is available on the Gateway phones as it would be if the phones were connected to a legacy PBX.

Redial

A key can be mapped to provide a last call redial facility. On the Meridian keyset you can redial by pressing the line key of an already selected line

Mute

The mute feature is available on the Gateway phones as it would be if the phone were connected to the legacy PBX.

Call log for missed, answered and outgoing calls

Implementation of Call Logs is work in progress

Programmable Buttons

Buttons may be programmed to specific features or speed dials.

Phone Administration

General administration of The Gateway phone is available through the Gateway Web UI.

Speed Dial

Speed dial buttons can be mapped using the programmable buttons feature, mentioned above.

Handset Volume Control

Handset volume control is available on the Gateway phones as it would be if the phone were connected to the legacy PBX.

Syslog of SIP Errors

This is available at a Syslog location or on the Web UI of the Handset Gateway.

APPENDIX D SUPPORTED TELEPHONES

Telephone models supported are listed below. For each telephone model, button mappings are user-programmable via a web-based user interface.

Digital version of the Citel Gateway

Avaya Definity	
6402 and 6402D	8405, 8405B and 8405B+
6408, 6408D and 6408D+	8405D and 8405D+
6416D, 6416D+ and 6416D+M	8410, 8410B and 8410D
6424D, 6424D+, 6424D+M and 6424D+M with XM24 console	8411B and 8411D
8403 and 8403B	8434DX
NEC Dterm	
DTP-8 and DTU-8 (EE)	ETJ-8 and ETW-8 (EE)
DTP-8D and DTU-8D (EE)	ETJ 8-2 and ETW-8-2 (EE)
DTP-16 and DTU-16 (EE)	ETJ-16DC and ETW-16DC (EE)
DTP-16D and DTU-16D (EE)	ETJ-16DC-2
DTP-32D and DTU-32D (EE)	ETJ-16DD and ETW-16DD (EE)
DTR-32D	ETJ 16DD-2
	ETJ 24DA-2
	ETJ-24DS and ETW-24DS (EE)
Note: EE stands for Electra Elite.	
Nortel Meridian 1	
M2006 and M2006DTA	M3901
M2008 and M2008HF	M3902
M2616 and A2008	M3903
M3110	M3904
M3310	
M3820	
Nortel Norstar	
M7100 and M7100N	T7100
M7208 and M7208N	T7208
M7310 and M7310N	T7316
M7324 and M7324N	
Panasonic DBS	
VB41200	VB44224
VB44210	VB44225
VB44220	VB44230
VB44223	VB44233

Toshiba	
DKT2004	DKT2020-SD
DKT2010-SD	

P-Phone version of the Citel Gateway

Nortel P-Phone	
M5008	M5216
M5009	M5312
M5112	M5316
M5209	M6310
M5212	

This version of the Citel Gateway also supports analog telephones.

APPENDIX E DIALING RULES

When dialing, digits are compared against the match strings stored as part of a dialing rule, until a match is found. The dialed digits are then translated using the translation rule to form the final dial string, which is actually dialed by the system.

Match Criteria

The syntax of the match criteria specified in the dialing rules is based on RFC2705.

- **0**, **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, ***** and # match themselves
- **x** matches any single digit in the range 0-9
- **n** matches any single digit in the range 2-9
- **T** represents the timeout period (four seconds)
- Ranges are specified using **[ ]**
- **.** represents an optional repetition of the previous match
- Multiple strings can be combined using a **|** character, to represent 'or'
- The entire string is enclosed in parentheses **( )**

Examples

(2xxx)	Matches a four digit number beginning with 2.
(n11)	Matches a three digit number beginning with an number in the range 2-9 and ending in 11. For example, 211, 311, 411.
([2-5]xxxx)	Matches a five digit number beginning with 2, 3, 4 or 5.
(2xxxx|3xxxx|4xxxx|5xxxx)	Same result as ([2-5]xxxx)
(*x.)	Matches a * followed by one or more digits

Translation Rules

The sequence of dialed digits is translated using the specified translation rule. Translation rules are enclosed in braces {} and take the following forms:

{}	All digits are copied to the final string.
{3}	The third digit is copied to the final string.
{2-}	Start from the second digit and copy all subsequent digits to the dial string.
{-4}	Copy all digits up to and including the fourth digit to the dial string.
{2-4}	Copy the second, third and fourth digits.

Examples

Original Digits	Translation Rule	Final Dial String
4321	{3}	2
4321	{4}{3}{2}{1}	1234

Original Digits	Translation Rule	Final Dial String
9123	{2-}	123
9123456	555{2-}	555123456
0	sip:operator@example.com	sip:operator@example.com
001234	sip:{3-}@id-provider.net	sip:1234@id-provider.net
9123	fxo:{2-}	fxo:123

APPENDIX F GLOSSARY

A	
A.C. mains	Standard domestic electricity supply.
AOR	Address of Record, generally refers to the ‘telephone line’. Users might relate a DDI and/or extension to an AOR.
B	
BOCR	Branch Office Cost Reduced
C	
Centrex	A centralized PBX service provided by a telephone company, where a portion of the telephone exchange switches is used to provide the equivalent of a PBX service for the customer.
Citel Partner, Citel Authorized Partner	Citel authorizes partners upon completion of the Technical Authorization Training, and signing of a Partner Agreement.
D	
DDP	Default Dial Plan
DTMF	Dual Tone Multi Frequency
Dial Plan	Rules that govern the translation of dial strings into SIP URIs
F	
FXO	Foreign Exchange Office
G	
Gateway	12 Port Citel SIP Handset Gateway.
H	
HTML	HyperText markup language
I	
IETF	The Internet Engineering Task Force
ISP	Internet Service Provider, the ISP provides the IP Centrex telephone service.
IP	Internet Protocol, often-used abbreviation for TCP/IP.
IP Centrex Server	A telephony server which delivers telephony control and packetized audio over Ethernet and / or IP
L	
LED	Light emitting diode (status indicator).
Line (telephone line)	An incoming telephone line as provided by the ISP.
Line powered	Electrical power distributed over the LAN (twisted pair cabling).
Loop length	A complete electrical circuit; the distance along the pair of wires from the Gateway to the telephone, and back.
M	
MIB	Management Information Base When SNMP devices send SNMP messages to the management console, it stores information in thisfile or database. The MIB collects and contains information on managed objects.

P	
Patch Panel	Connects cabling to standard ports/connectors (e.g. RJ-45). Generally rack-mounted.
PBX	Private Branch Exchange (circuit switched telephony server). A telephone switch for use inside a corporation. It connects offices (internal extensions) with each other and provides access (typically by dialing an access number such as 9) to the public telephone network. PABX is the preferred term in Europe.
Protocol	Rules controlling data flow in a communications system.
PSU	Power supply unit.
R	
Release Notes	Citel issues Release Notes for each version of the 12/24 Port Citel SIP Handset Gateway – these notes include information about new features, and also about any known issues.
RF	Radio Frequency.
RFC	Request For Comment (IETF document)
RJ-21x	25-pair/50-way (male/female) Amphenol-type connector.
S	
SELV	Safety Extra Low Voltage A secondary circuit, which is designed and protected so that under normal and single-fault conditions, the voltage between any two accessible parts does not exceed a safe value (42.2 V peak or 60 V DC).
SIP	Session Initiation Protocol. Standard protocol used for setting up communications sessions on the internet.
SNMP	Simple Network Management Protocol. A protocol used to manage network devices, usually hubs and routers. It operates over UDP which is part of TCP/IP. Devices that support SNMP send messages to a management console. The management console then stores these messages in the MIB (Management Information Base). SNMP can be used with the 12/24 Port Citel SIP Handset Gateway to get traffic reports and check network utilization etc.
T	
TCP/IP	Transmission Control Protocol / Internet Protocol The open computer network communications standard upon which the internet, and internet telephony, is based. Often abbreviated to IP.
TNV	Telecoms Network Voltage A circuit, which under normal operating conditions carries telecommunication signals.
U	
UPS	Uninterruptible power supply.
URI	Uniform Resource Identifier The full internet address of a device.

