EXP1240 SIP DECT System:

Installation Guide

Revision 06, July 7, 2013

Contents

Table of Figures

List of Tables

Introduction

Important Safety Instructions!

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- This unit is NOT **waterproof. DO NOT** expose this unit to rain or moisture.
- Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Use only the power cord and batteries indicated in this manual.
- Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
- Do not place the handset in any charging cradle without the battery installed and the battery cover securely in place.

SAVE THESE INSTRUCTIONS!
CAUTION! Risk of explosion if battery is replaced by an incorrect type! Dispose of used batteries according to the instructions. Do not open or mutilate the battery. Disconnect the battery before shipping this product.

For more details, see the *Important Information* section.

Check the Box Contents

If any items are missing or damaged, contact Customer Service immediately. Never use damaged components!

Base station box

- Base station
- Desk stand (attached)
- Wall mount hardware
- Important Safety Information
- Regulatory Information

Handset box

- Handset
- Charger and AC adapter
- Charger wall mount hardware
- Handset battery
- Belt clip
- Important Safety Information
- Regulatory Information

About This Document

Purpose and Audience

- This document describes the configuration, customization, management, operation, maintenance and trouble shooting of the EXP1240 VoIP System.
- It is intended for use by system installers or integrators who have a background in TCP/IP and SIP networks.
- Most of the procedures described in this document require administrator level access to the EXP1240 base station.
- Each section of this document defines for only those fields necessary for that section. Appendix A contains a complete list of screens and definitions of every field on each screen.

Manual Conventions

This manual uses several different type styles to help you distinguish between different parts of the system:

- **Bold underlined text** indicates a key on the unit itself or a button on a configuration screen.
- *Italicized type* indicates text on the display, such as menu options, hyperlinks, prompts, confirmation messages.
- ALL CAPS BOLD TYPE indicates a status light on the unit.

Terms used in this manual

This document uses the following terms and abbreviations:

Table 1: Terms

Base station	The primary component of the system. The base station manages connections with the SIP server or VoIP PBX and handles call control and audio routing for handsets.
Handset	The end user's main interface. The handset provides the user interface and allows the end user to make and receive calls.
Charger	The handset cradle. The charger provides a slot to charge the handset battery along with a slot for charging a spare battery.

Table 2: Abbreviations

CSV	Comma Separated Values
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
HTTP(S)	Hyper Text Transfer Protocol (Secure)
(T)FTP	(Trivial) File Transfer Protocol
IP address	All IP addresses in this document are assumed to be IPv4 (i.e., in the form *XXX*.*XXX*.*XXX*.*XXX*).
IPEI	International Portable Equipment Identity
G.711A	A-law Pulse Code Modulation
G.711U	mu-law Pulse Code Modulation
NTP	Network Time Protocol
PBX	SIP Server or VOIP PBX
PoE	Power over Ethernet
RFPI	Radio Fixed Part Identity
RPN	Radio Part Number
RSSI	Received Signal Strength Indication
RTP	Real-time Transport Protocol
RPORT	Response Port (Refer to RFC3581 for details)
SIP	Session Initiation Protocol
SME	Small and Medium scale Enterprise

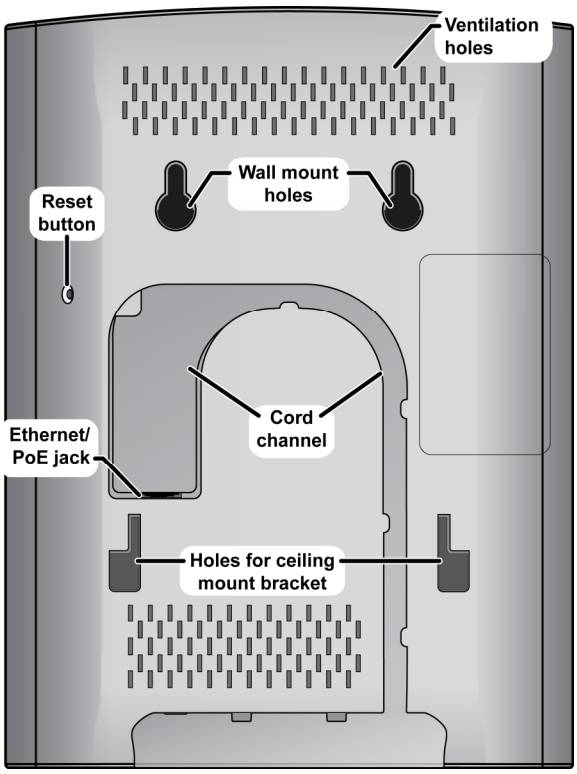
VLAN	Virtual Local Access Network
VOIP	Voice Over Internet Protocol
TOS	Type of Service (policy based routing)
URL	Uniform Resource Locator
UA	User Agent

Hardware Setup

Base Station

Figure 1 Base station front view

Figure 2 Base station rear view

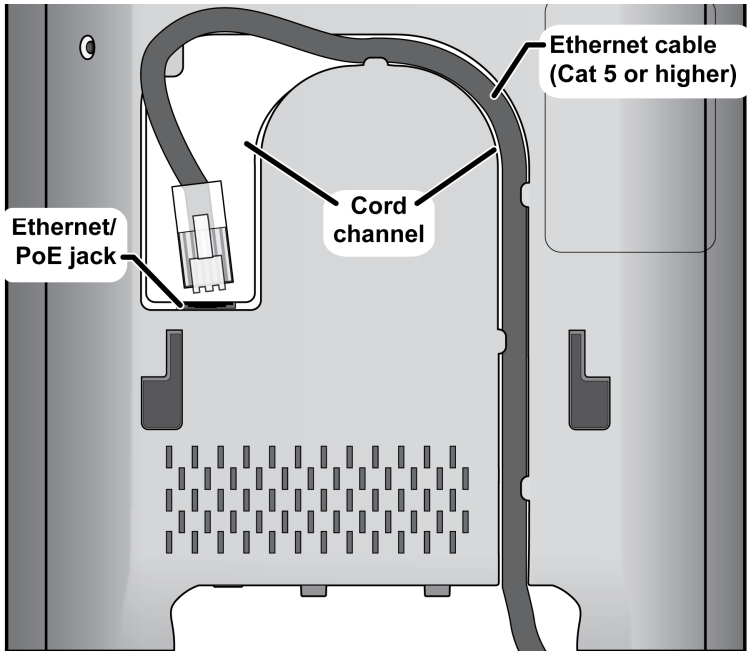


Connecting the Base Station

If your network connection does not provide Power Over Ethernet, you will need to order a standard Ethernet-to-PoE adapter. Contact customer service.

1) Connect a standard Ethernet cable (Cat 5 or higher) to the Ethernet/PoE jack on the rear of the base station. Route the cable through the channel as shown below.

Figure 3 Connecting the base station



2) Connect the other end of the cable to your TCP/IP network.

When the base station powers on, the STATUS LED on the front briefly lights orange and then turns off while it initializes and connects to the network. After the base station successfully initializes and connects to the network, the LED lights green and remains steady on.

Table 3: Base station LEDs and their meanings

Color	State	Meaning
Green	Flickering	Firmware update in progress
Green	Steady on	All operations normal.
(NA)	Off	No power in unit OR Initializing and connecting to the network.
Orange	Briefly on	Powering on
Orange	Flickering	Firmware update in progress

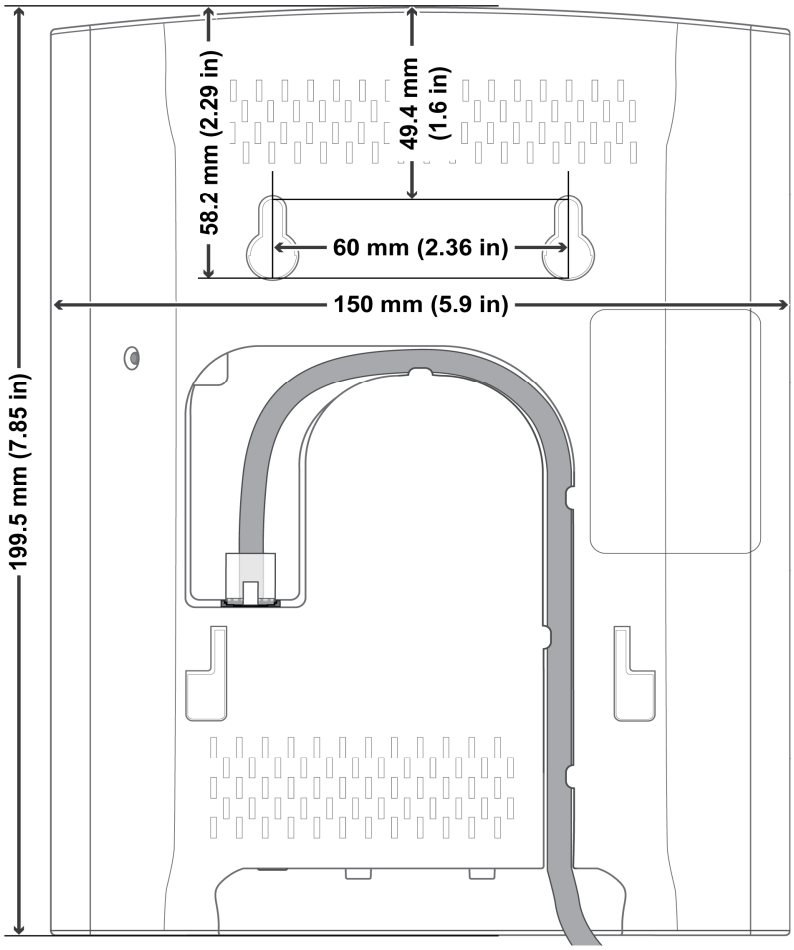
Color	State	Meaning
Red	Blinking	Factory reset warning. A factory reset has been initiated or is in progress.
Red	Blinking	No Ethernet connection available OR Handset registration failed.
Red	Briefly on	Reboot to start after firmware update.
Red	Flickering	Firmware update in progress.
Red	Steady on	Critical error. Contact technical support.

Wall mounting the base station

Be sure the wall material can hold the weight of the base.

1) Hold the base in its final location and mark the screw location based on the measurements shown.
2) Insert the appropriate anchors for the wall material.
3) Insert the mounting screws into the anchors, leaving about ¼ inch of space between the screw head and the wall.
4) Connect the Ethernet cable and route the cord as shown.
5) Place the base over the screw heads and slide it down into place.

Figure 4: Base mounting dimensions



Handset and Charger

Figure 5: Handset front view

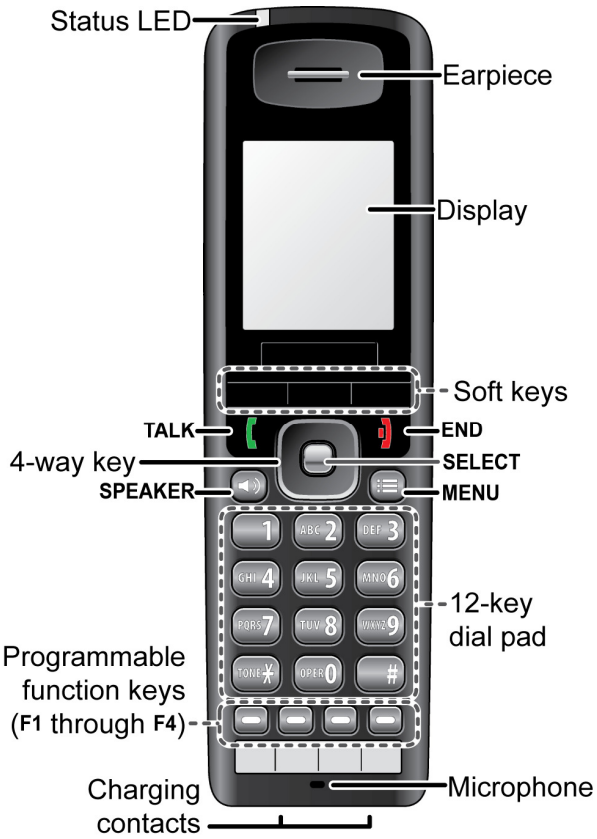
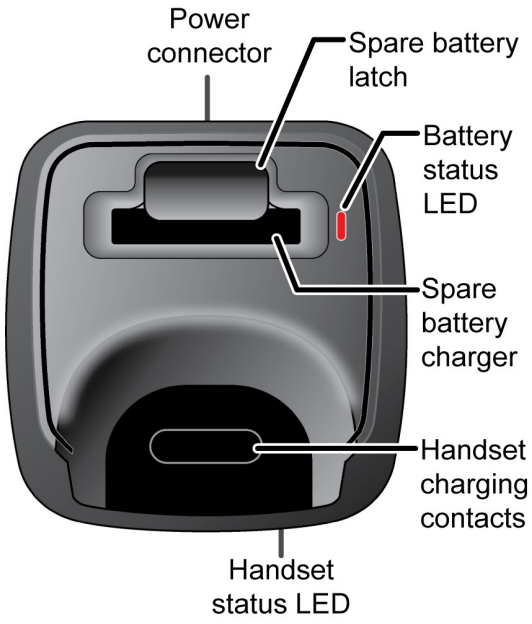


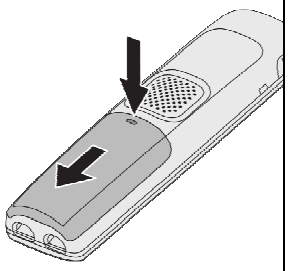
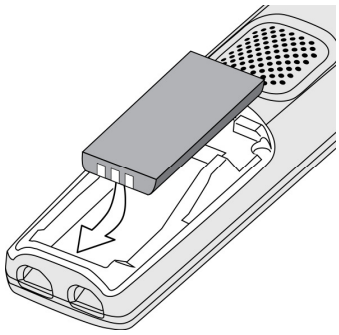
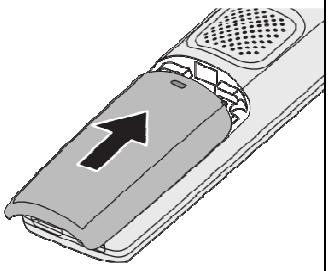
Figure 6: Charger top view



Charging the battery

1) Install the handset battery as shown below. (For more detailed instructions, see the End User's Guide.)

Figure 7: Installing the handset battery

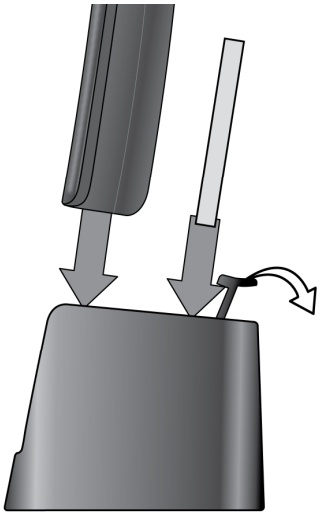
Remove the battery cover from the back of the handset.	Insert the bottom of the battery into the compartment. Lay the battery down and push it gently until it snaps into place.	Replace the battery cover and slide it up into place.
		

2) Use the charger AC adapter to connect the charger's AC jack to a standard 120V AC power outlet.

3) Place the handset in the charger with the display facing forward. The HANDSET STATUS LED should turn on; if it doesn't, reseat the handset or try plugging the AC adapter into a different outlet.

4) Place the spare battery (if available) in the back section of the charger; the BATTERY STATUS LED should turn on. (Pull the battery latch back slightly to fit the battery in the slot.)

Figure 8: Inserting the handset into the charger



Charge each battery completely (about 10 hours) before using it.

Powering on the Handset

To power up the handset, press **End**. The handset searches for the base station or multi-cell chain it is registered to and connects to the unit with the strongest signal.

To power down the handset, press and hold **End** until the display turns off (about 4 seconds).

Initial System Configuration

This guide assumes that the EXP1240 system will be installed in a network environment where the following servers are already installed and functioning:

- SIP server/VoIP PBX
- DHCP server
- NTP server
- TFTP server. This server must contain the following folders:
    - *LOG:* for SIP log files. Base stations must be able to write to this folder which should be created in the TFTP server's working directory.
    - *{firmware path}*: for firmware update files (see Setting Up Firmware Folders, page 41)
- Syslog server. Base stations must be able to write to this server.
- DNS server Only required if you are using host names to access network nodes

There are some general server and base station requirements:

- The SIP server/VoIP PBX, NTP, and Syslog servers must be available at all times.
- If the base stations acquire their IP addresses dynamically (rather than being statically assigned), then the DHCP server must be available at all times.
- The TFTP server must be available for firmware updates and SIP log uploads.
- All base stations must be on the same subnet.
- Servers can reside on the same machine.

Table 4 shows a top-level summary of the steps needed to configure the base station to operate in a single-cell system. You will use these same steps to configure the first base station in a multi-cell system.

Table 4: Summary: Basic system configuration

Step	Screens used	Notes
General System Settings		
1. Change the name that appears at the top of the configuration screens, specify a configuration server, and enable SIP and system logs.	Management	Required
2. Change the default user name and password.	Web Security	Recommended
3. Change the PSTN tones and emergency dialing format.	Country	Required for countries other than the US and Canada
4. Configure basic network settings.	Network	Required
5. Specify time server address and DST settings.	Time Settings	Required (If you are updating Server information, you must reboot the base station for changes to take effect.)
SIP Server Settings		
6. Program the SIP server(s).	Network Servers	Required (You must reboot the base station for changes to take effect).
7. Program extensions on each SIP server.	Extensions	Required
8. Register a handset to each extension.	Extensions	Required

Using the Base Station Interface

Each base station has a built-in HTTP server that controls the configuration interface. To open the web page:

1) Open a web browser window and type the IP address of the base station in the address bar. If you don't know the base station's IP address, try one of the following:
   - Use the IP Search function on the handsets. On any handset, press **Menu** ( ), then enter **47* (*IP*)*. After several seconds, the handset displays the MAC and IP addresses of all base stations within range. Find the MAC address of the base station in the list to determine its IP address. To exit IP Search, press **End** ( ) twice.

- If your network supports Dynamic DNS, then type *ipdect<{MAC}>* in the address bar of your browser (just insert the MAC address of the base station in place of *{MAC}*).

2) Enter the user ID and password. The default user ID and password are both ***admin*** (all lower case). The base station opens the *Home*/*Status* screen.

Figure 9: *Home*/*Status* screen

- You can open any configuration screen by clicking its name on the left side of the screen; the screen name links appear on every screen.

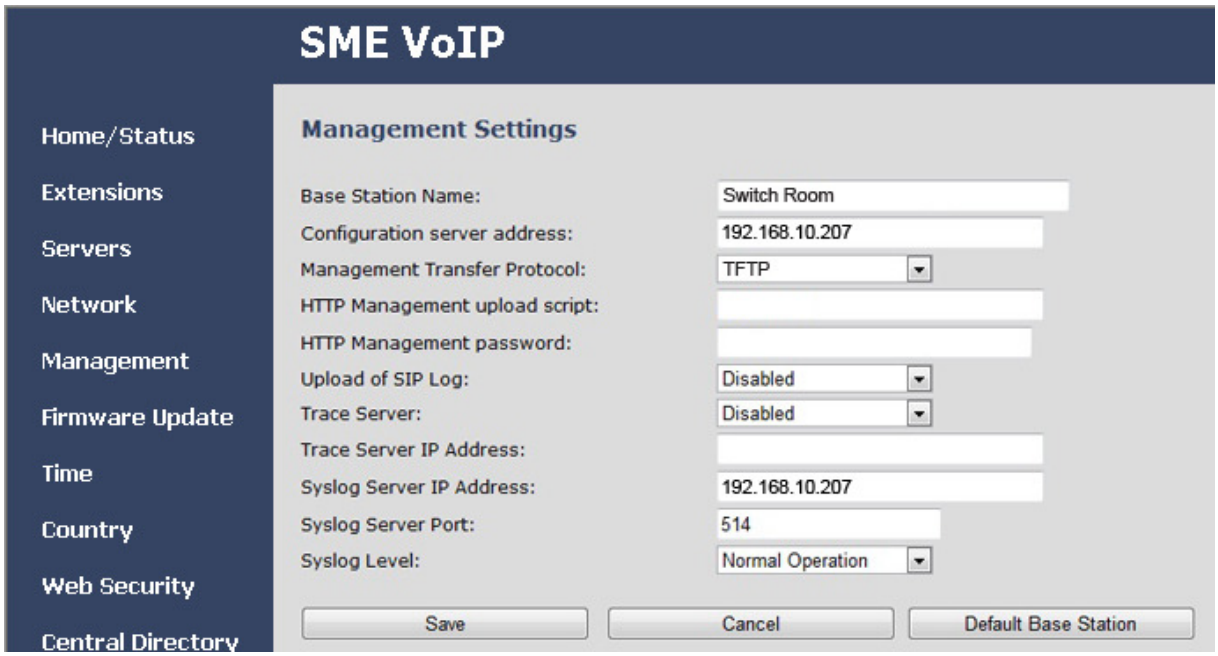
Configuring General System Settings

This document does not cover general IP and SIP network setup. If you need more information on the necessary settings for your servers, contact your network administrator.

Change Configuration and Management Settings

1) In the left panel of the screen, select *Management*. This opens the *Management* screen.

Figure 10: *Management* screen



2) In the *Base Station Name* field, enter the title you want to appear in the configuration screens for this base station. (This will help you verify that you have logged into the correct base station in the future.) The title can be any HTML-readable text string.
3) In the *Configuration server address* field, enter the IP address or URL of the server that hosts SIP log files (this is usually your TFTP server). The base station will also copy its debug files to this sever. **The TFTP Server must be running for SIP log file uploads.**
4) Under *Management Transfer Protocol*, select *TFTP*.
5) HTTP management is reserved for system development; just ignore these fields.
6) If you want to have this base station copy SIP messages onto the configuration server, select *Enabled* in the *Upload of SIP Log* field. SIP logs are named in the format of *{MAC_address}_SIP_{timestamp}.log* (Unless you're troubleshooting a specific problem, you should leave this disabled.)
7) Trace server information is reserved for system development; just ignore these fields.
8) To have this base station copy system log messages onto a system log server, enter the IP address of the server in the *Syslog Server IP Address* field. (If your syslog server is listening to a port other than the default, enter that port number in *System Syslog Port*.) Then, in the *Syslog Level* field, select one of the following:
    - *Off*: no system events are logged.

- *Normal Operation*: This will output normal operation event logs targeted for an administrative audience. Event logs included are incoming call, outgoing call, handset registration, DECT location, firmware updates, call lost due to busy, critical system errors, and general system information. Select this level during system configuration unless requested by a technician to select one of the other levels.
- *System Analyze*: This will output normal operation event logs plus more technical logs. This level of logging is targeted for a level 1 or 2 tech support.
- *Debug*: This will output the previous two types of logs plus lower level logs whose audience are system developers. Please be aware that enabling this level of logging will degrade system performance.

9) Click **Save** when you're finished.

Change the Default Password

In the left panel of the *Home/Status* screen, select *Web Security*. This opens the *Web Security* screen. Enter a new username and password, then click **Save**.

Figure 11: *Web Security* screen

Be sure to keep track of the new user name and password according to your organization's procedures.

Change the PSTN Tones and Emergency Dialing

If the system connects to the PSTN in the US or Canada, skip this section.

1) In the left panel of the *Home/Status* screen, select *Country*. This opens the *Country* screen.

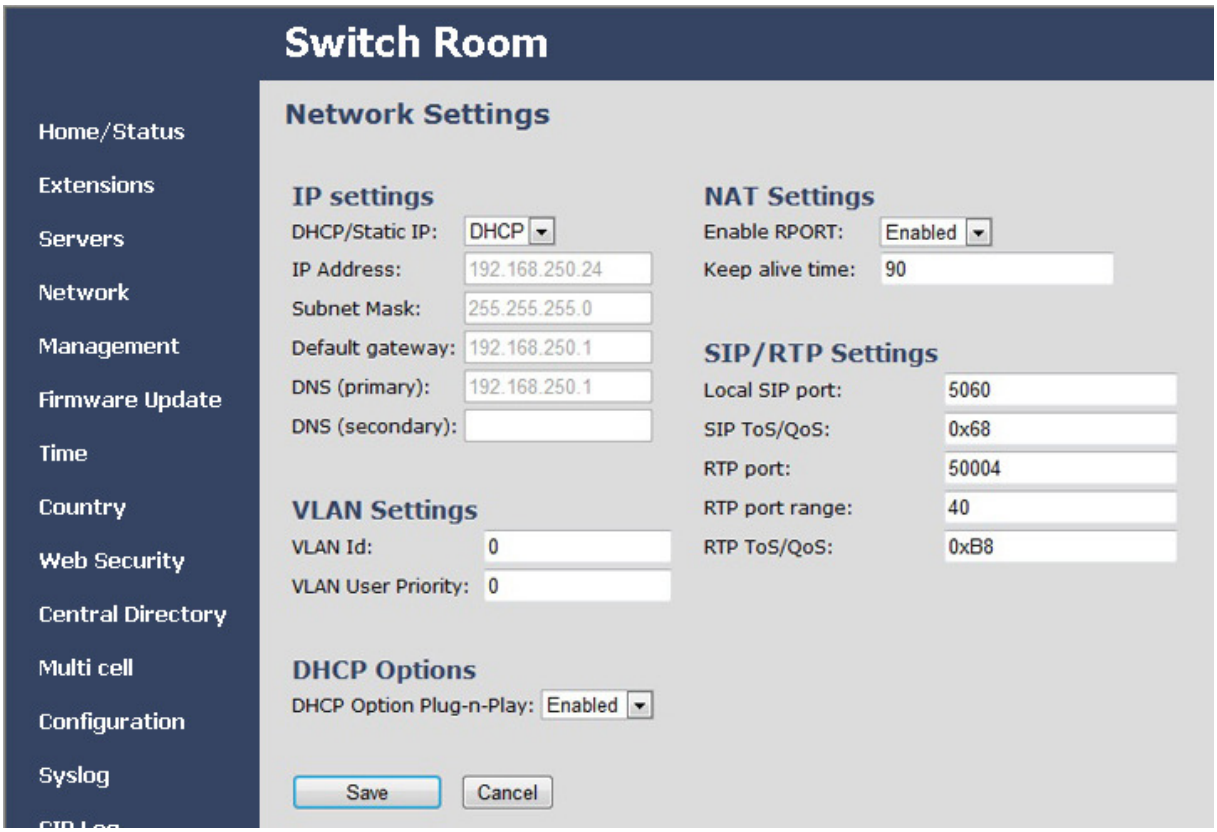
Figure 12: *Country* screen

2) Select the country that best represents the PSTN standards the system should use.
3) Click **Save & Reboot**. When the base station finishes rebooting, the interface will use the new language.

Configure the Network Settings Screen

1) In the left hand panel, select *Network*. This opens the *Network* screen.

Figure 13: *Network* screen



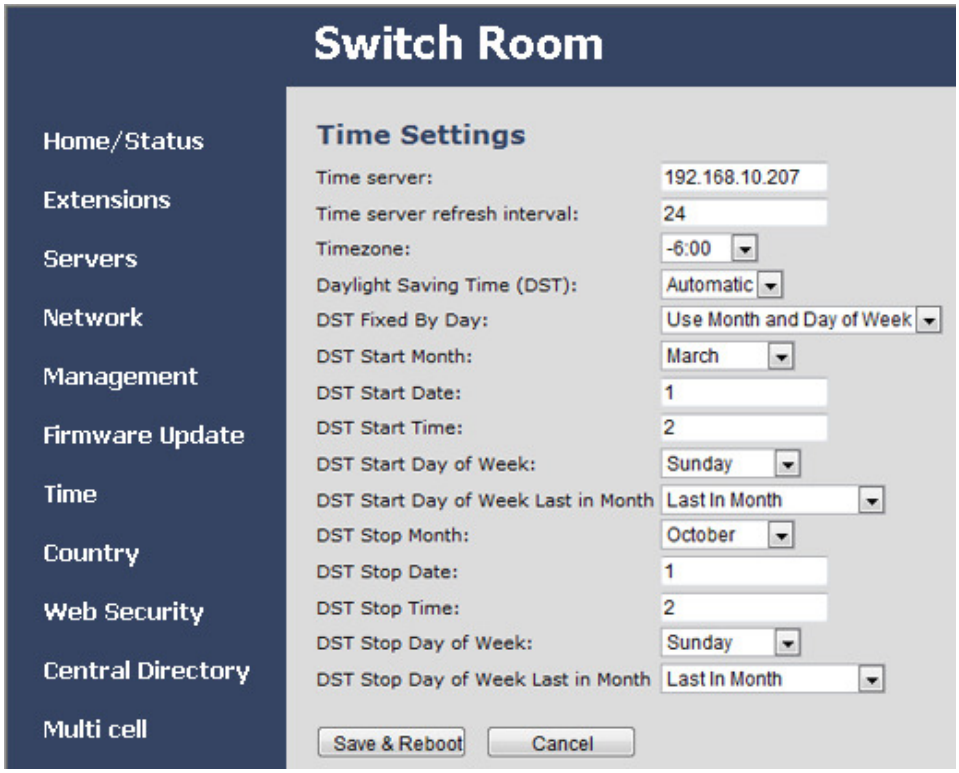
2) Enter the correct settings for your network and click **Save**. Refer to Appendix A: Software Reference on page 46 if you need more information on these fields.

   Normally, you need to reboot the base station to activate new network settings. However, during initial configuration, wait until you configure the rest of the screens before rebooting. (Changing the *Time Settings*, for instance, will force a reboot.)

Configure Time Settings

1) In the left hand panel, select *Time*. This opens the *Time Settings* screen.

Figure 14: *Time Settings* screen



2) In the *Time Server* field, enter the IP address or URL of the server that distributes reference clock information for your network. **This server must be visible to the base stations at all times.**

3) In the *Time server refresh interval* field, change the number of hours the base should wait before it checks the time server again (if necessary).

4) In the *Timezone* field, select the number of hours the local time zone differs from GMT/UTC time. For example, US Central Standard Time (CST) is 6 hours behind UTC, so you would set the *Timezone* field to *–6:00*.

5) Enter any necessary settings for Daylight Savings Time, then click **Save & Reboot**. (If you need more information on these fields, refer to Appendix A: Software Reference on page 46.)

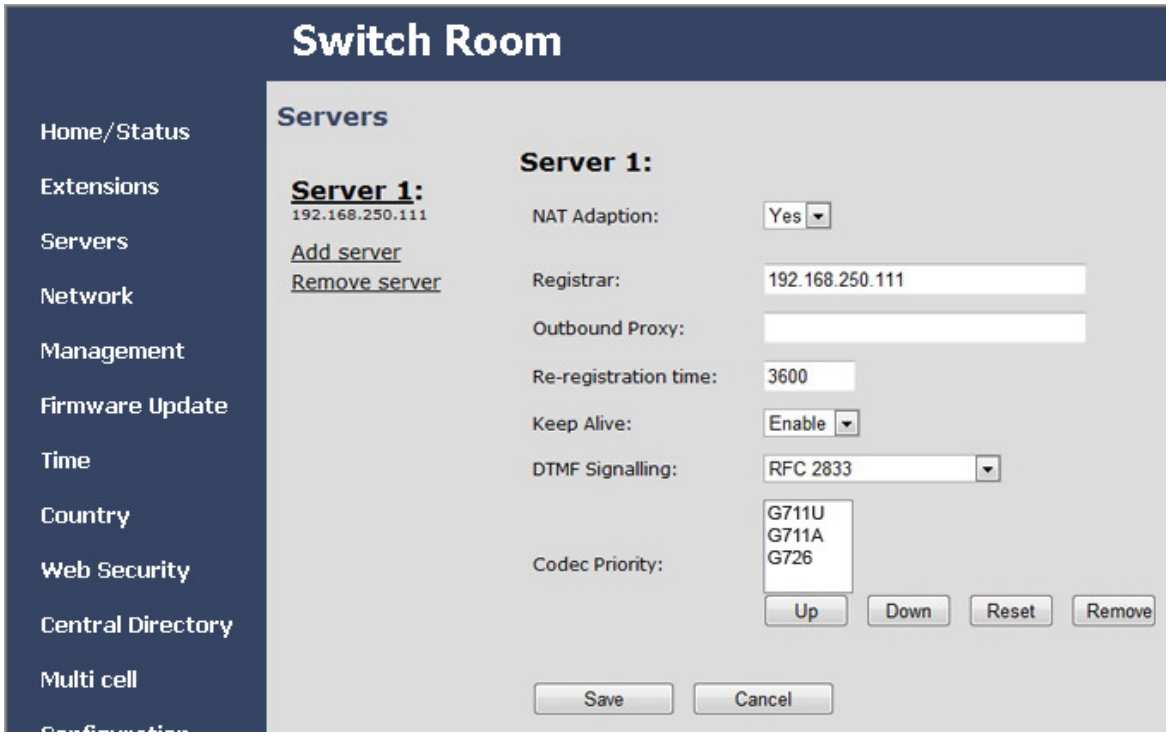
6) After the base station reboots, verify the time settings updates.
   - Check the *Home*/*Status* screen to be sure the time has updated correctly.
   - Check the *Time* screen to verify that the time server IP address is still correct.

Figure 15: Checking time settings updates

Configuring the SIP Server Settings

1) If necessary, go to the *Network* screen (Figure 13) and verify that the parameters under the *SIP*/*RTP Settings* are correct.
2) In the left panel of the screen, select *Servers*. This opens the *Servers* screen.

Figure 16: *Servers* screen



3) Click *Add Server*, then enter the necessary information for the first SIP server.

NATAdaption	Selecting YES indicates If information in “rport” and “received” parameters is different from local information. Base will perform new SIP registration with the new information in “Contact” header. If information in “rport and “received” parameters is not different from local information then no action is performed. Selecting NO means the Base Station disregards information from the “rport” and “received” parameters.
SIP Server	Enter the IP address of the SIP server. If desired, you can add the port number after the IP address using the format *{IPaddress}:{port}* (e.g., *192.168.250.111:5080*).
Outbound Proxy	If there is a SIP Proxy, between the base station and the SIP server, enter the IP address of the SIP Proxy. If desired, you can add the port number after the IP address using the format *{IPaddress}:{port}* (e.g., *192.168.250.111:5060*).
Re-registration time	Enter the number of seconds that will determine the frequency of handset re-registrations with the SIP Server. If the number of seconds is less than 600, then the frequency will be half of the number of seconds. If the number of seconds is 600 or greater, then the frequency will be the value minus 300 seconds. As examples, if the entered number of seconds is 500, then the re-registration frequency will be 500/2 = 250 seconds. If the number of seconds is 700, then the re-registration frequency will be 700 – 300 = 400 seconds.
DTMF Signalling	Select the type of DTMF signalling used by the SIP server: – *SIP INFO*: DTMF tones are sent out of band along the SIP signalling path. – *RFC 2833*: DTMF tones are sent via data packets in a different internet layer than the voice stream. – *Both*: DTMF tones are sent both in the SIP signalling path (*SIP INFO* mode) and via data packets (*RFC 2833* mode).
Codec Priority	Set the priority order of the voice codecs in use by the SIP server. The base station will use the codecs in the order they appear in the list. To change the priority of the codecs, select a codec and click one of the following: – **Up**: move the selected codec up the priority list. – **Down**: move the selected codec down the priority list. – **Reset**: restore the default codec list. – **Remove**: remove the selected codec from the list (the base station will not use this codec).

4) When you're finished, click **Save**. The new server and its IP address are added to the list on the left.
5) Repeat this process for each SIP server you want to configure for this system.

To edit an existing server

1) In the list of servers, click on server you want to edit. The parameters for that server are loaded into the screen.
2) Edit the parameters you want to change, then click **Save**,
   OR click **Cancel** to leave the server parameters unchanged.
3) Reboot the base station for the edits to take effect.

To delete a server

1) In the list of servers, click on the server you want to delete. The parameters for that server are loaded into the screen.
2) Click *Remove Server*.

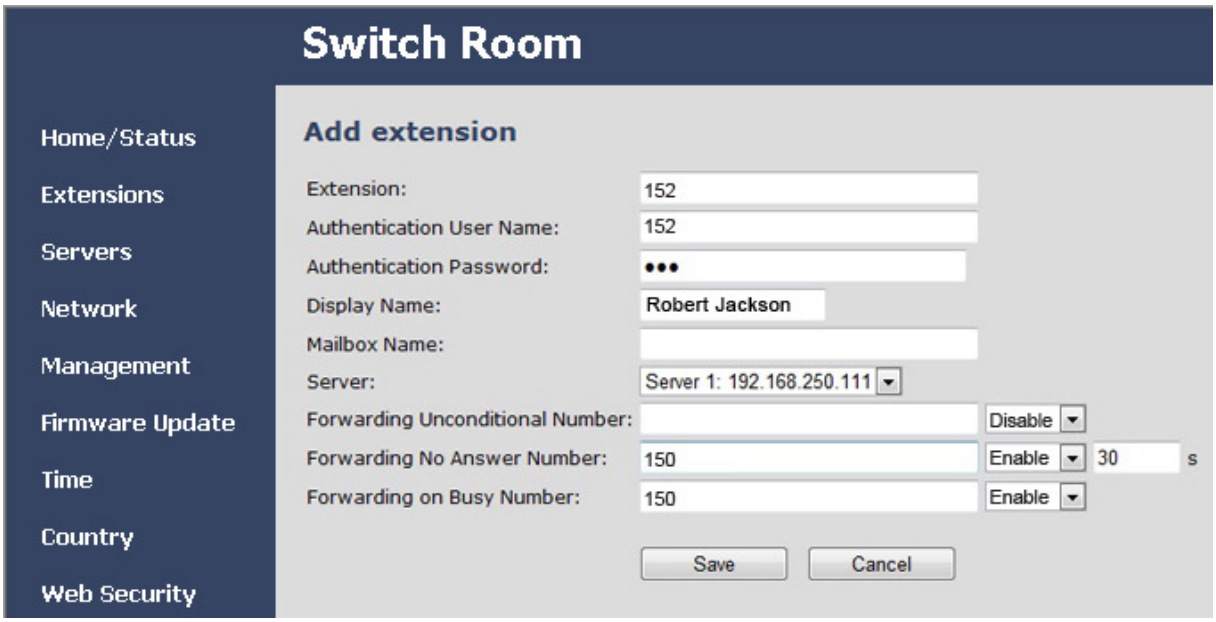
Deleting a SIP server will delete any extensions associated with the server, deregistering them from the server if necessary.

Program the SIP Extensions

- Before you program the extensions, you must have at least one SIP server assigned to this base station.
- An extension will not become active until the extension is programmed in the SIP Server and you register a handset to the extension.

1) In the left panel of the *Home*/*Status* screen, select *Extensions*. The base station opens the *Extensions* screen and displays the extension information for Server 1.
2) If you have more than one SIP server, click the name of the server you want to program extensions for.
3) Click *Add Extension*, then enter the parameters for this extension.

Figure 17: *Add Extension* screen



Extension	Enter the handset phone number or SIP username as configured on the SIP server or VoIP PBX.
Authentication User Name and *Password*	Enter the name and password you use to register with the selected SIP server.
Display Name	Enter the name of this extension (up to 10 characters). This name is used for reference on the web interface.
Mailbox Name	Enter the name of the voice mailbox this extension should use.
Server	Select the SIP server this extension is programmed on.
Forwarding Unconditional Number	Forward all calls: Enter the number the system should forward calls to. Select *Enable* to turn call forwarding on or *Disable* to leave it off.
Forwarding No Answer Number	Forward on no answer: Enter the number the system should forward calls to when this extension does not answer, then enter the number of seconds you want the system to wait in the field to the right. Select *Enable* to turn call forwarding on or *Disable* to leave it off.
Forwarding on Busy Number	Forward on busy: Enter the number the system should forward calls to when this extension is busy. Select *Enable* to turn call forwarding on or *Disable* to leave it off.

4) Click **Save** when you're finished.
5) Repeat the process for each extension you want to program for this server. To program extensions for a different server, select the new server on the main *Extensions* screen.

To edit an extension

1) Click on the name of the extension in the list. The parameters for that extension are loaded into the screen.
2) Edit the parameters you want to change, then click **Save**,
   OR click **Cancel** to leave the extension parameters unchanged.

To delete extensions

3) Click the check box beside the extensions you want to delete.
4) Click *Delete Extension(s)*. When the base station asks you to confirm, click *OK*,
   OR click **Cancel** to leave the extension information in the base station.

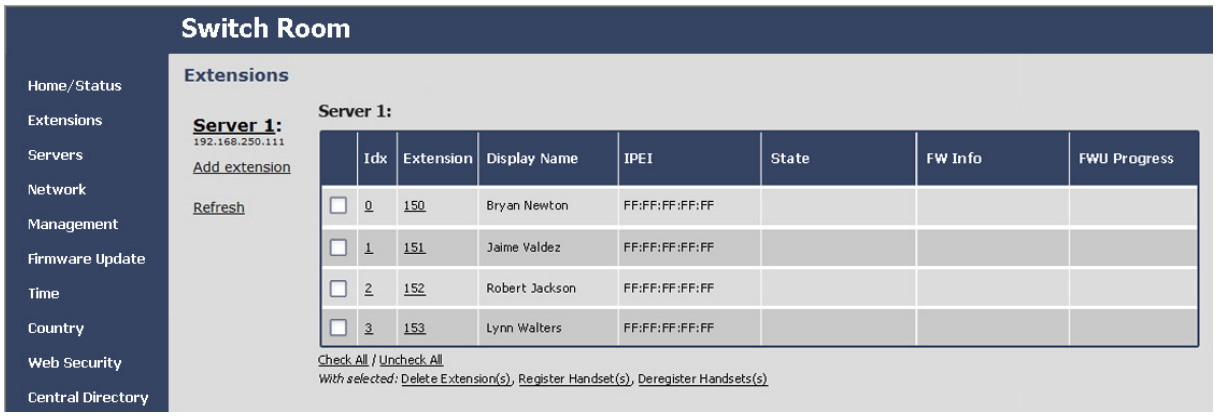
When you delete an extension, any handset(s) registered to that extension will be deregistered automatically.

Register Handsets to Extensions

In a multi-cell system, you can register the handsets to extensions from any base station. When a handset is moved into another base station's range, it will automatically update its registration to the new base station after 5 to 7 minutes.

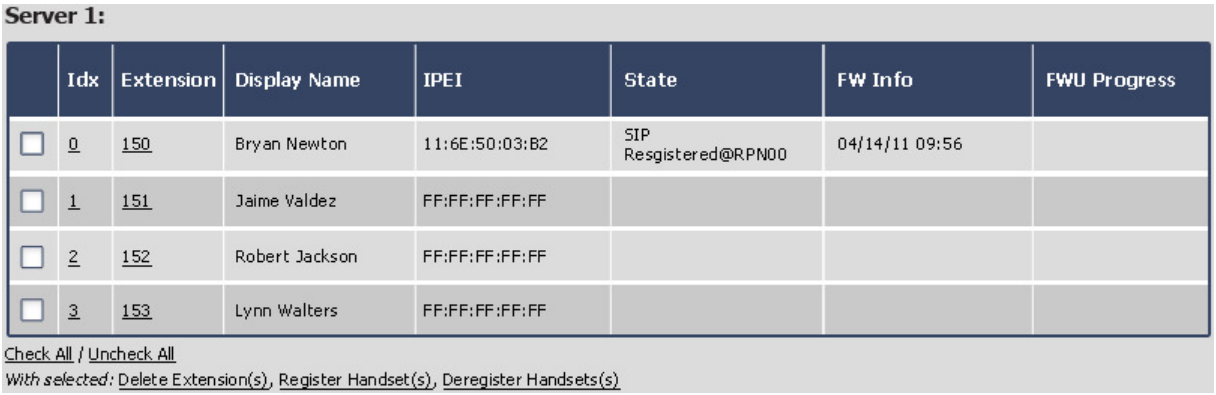
1) On the *Extensions* screen, click the box beside the extension you want to register. (You can only register one extension at a time.)

Figure 18: *Extensions* screen, no handsets registered



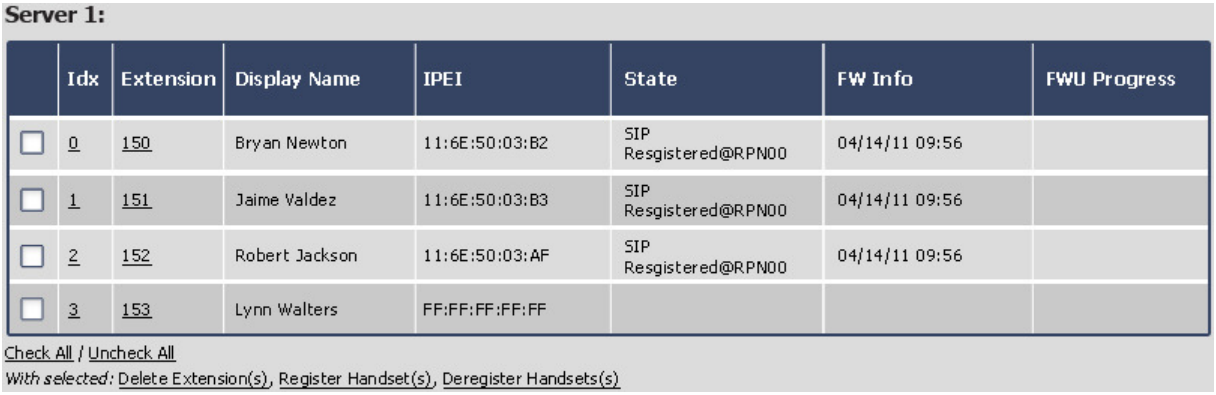
2) Click *Register Handset(s)* to put the base station into registration mode. The base station will remain in registration mode for 5 minutes.
3) On the handset, press **Menu** to open the menu screen.
4) Select *Connectivity* and then select *Register*.
5) When prompted, enter the base station registration Access Code. (The Access Code is 0000.)
6) Press the **OK** soft key to confirm.
7) Within a minute, the base station configuration screen will update with the new information.

Figure 19: *Extensions* screen, one handset registered



8) Verify that the *Extension* and *Display Name* are correct and that the *State* shows *SIP Registered*.
9) Make a quick test call to verify the handset is correctly registered.
10) Repeat the process for each extension.

Figure 20: *Extensions* screen, three handsets registered



To deregister a handset

1) Click the check box beside the handset(s) you want to deregister.
2) Click *Deregister Handset(s)*. When the base station asks you to confirm, click ***OK***, OR click **Cancel** to leave the handset registered to this extension.

Multiple Base (Multi-cell) Systems

Introduction

To install a EXP1240 system with more than one base, you must configure it as a *multi-cell* system. This section explains how to configure multi-cell systems. For detailed information on multi-cell operation and the difference between single and multi-cell systems, see the Network Planning Guide.

Timing Levels

- In multi-cell systems, one base station serves as the primary synchronization source for all the other base stations. This base station is considered at timing Level 0.
- Base stations at Level 1 get their timing directly from the primary base station. (These must be in range of the primary base station.)
- Base stations at Level 2 get their timing from base stations at Level 1. Base stations at Level 3 get their timing from base stations at Level 2, and so on.
- Level 6 is the maximum timing level.

System Chain ID and RPN

To enable base stations to recognize members of the same system, each multi-cell system requires a separate *system chain ID number*. All base stations that share a system chain ID will function as part of the same multi-cell system.

Within the system chain, each base station is automatically assigned an ***RPN*** identification number. When you select a synchronization source for each base station, you will use the source's RPN to identify it.

- The system assigns the RPN based on the order in which the base stations are added to the chain. For example, the first base station added to the chain (usually the primary) is assigned an RPN of 00, the second base is assigned an RPN of 04.
- If you want the base stations to appear in a particular sequence, add the stations to the chain in that order.

Figure 21 shows an example of a multi-cell system, and Table 5 summarizes the parameters for this example. This information is used throughout the instructions.

Figure 21: Sample multi-cell system

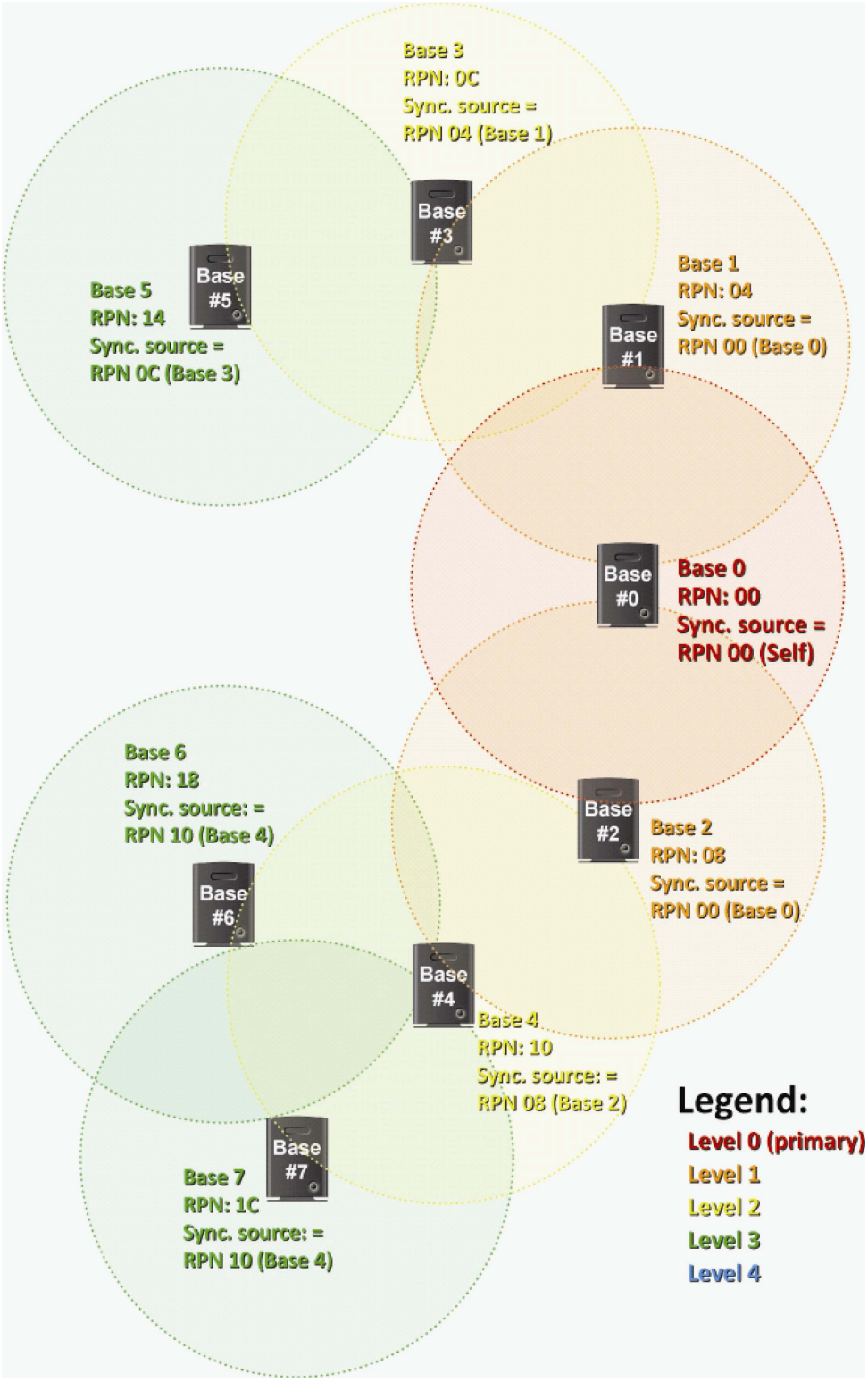


Table 5: Sample multi-cell system information

Base Station	RPN (assigned by system)	Synchronization Source
Base #0	00	RPN 00 (self)
Base #1	04	RPN 00 (Base #0)
Base #2	08	RPN 00 (Base #0)
Base #3	0C	RPN 04 (Base #1)
Base #4	10	RPN 08 (Base #2)
Base #5	14	RPN 0C (Base #3)
Base #6	18	RPN 10 (Base #4)
Base #7	1C	RPN 10 (Base #4)

Setting Up a Multi-cell System

The table below shows a top-level summary of the steps needed to set up a multi-cell system.

Table 6: Summary: Multi-cell system configuration

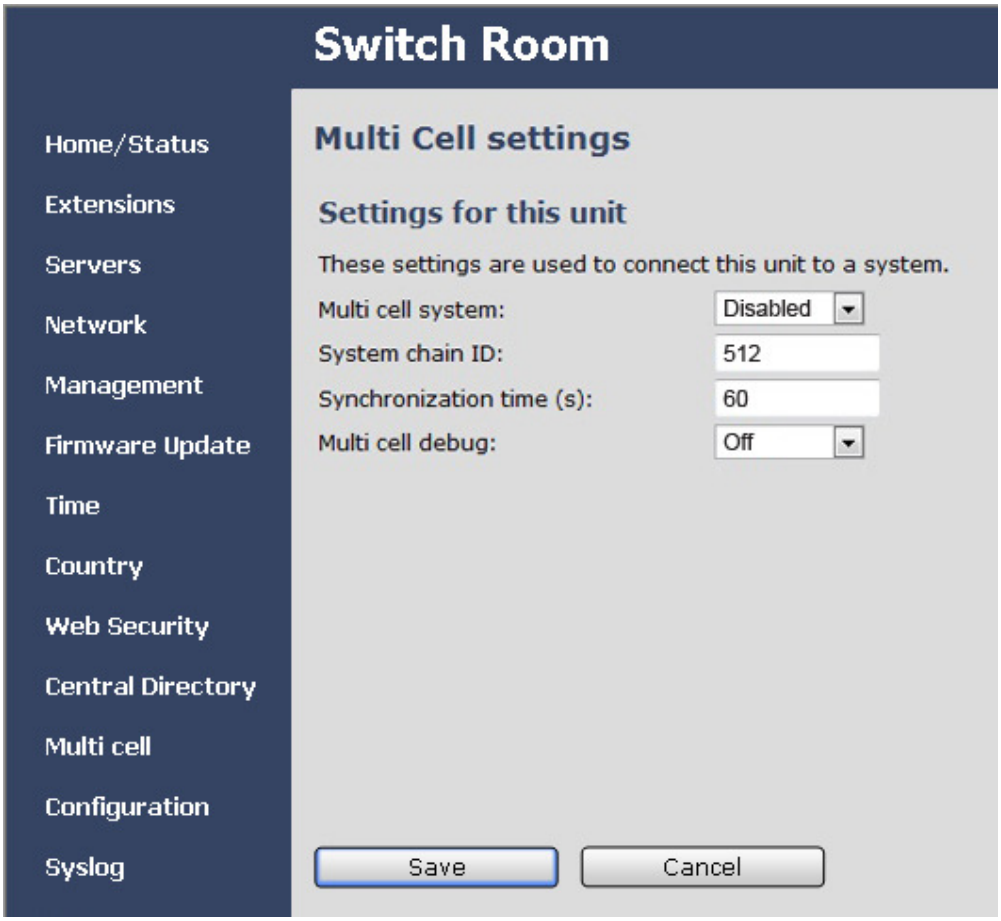
Step	Screens used
1. Place the primary base station at its final location.	NA
2. Configure the primary base station.	Multicell
3. Reboot the primary base station and verify the settings.	Home/Status
4. Place each Level 1 base station at its final location.	NA
5. Configure each Level 1 base station and reboot.	Multi-cell Home/Status
6. Synchronize each Level 1 base station.	Multi-cell
7. Repeat the process with each Level 2 base station.	Multi-cell Home/ Status
8. Repeat the process with any base stations at Level 3 through Level 6.	Multi-cell Home/Status

Configuring the Primary Base Station

You will need to perform the following steps on the primary base station only. See page 33 for information on all other base stations.

1) Place the primary base station at its final location. (See the *Network Planning Guide* for information on the proper placement of base stations.)
2) Login to the base station.
3) In the left hand panel, click on *Multi cell*. This opens the *Multi-cell* screen.

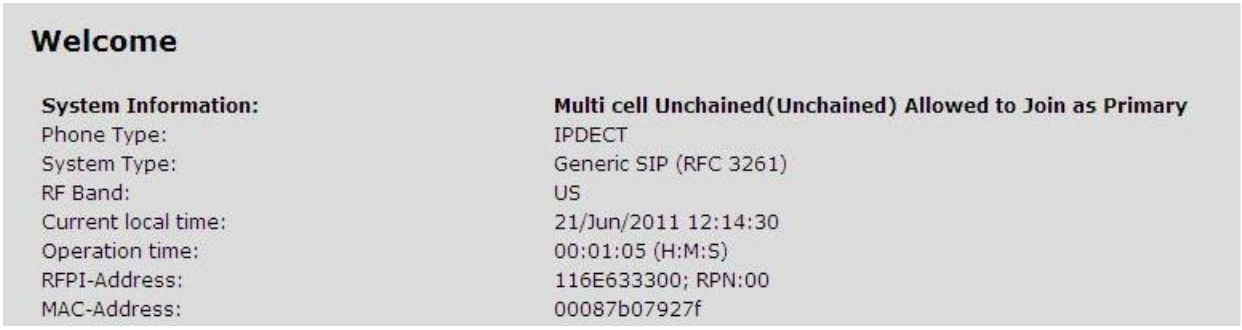
Figure 22: *Multi-cell* screen (default values)



4) Set the *Multi cell system* field to *Enable*.
5) In the *System chain ID* field, enter the unique identifier of the chain this base station should belong to. Acceptable ID values range from 0 to 99999.
6) In the *Synchronization time(s)*, change the number of seconds between each time this base station re-synchronizes with the other base stations in this chain (if necessary).

7) If you want the base station to log low level multi cell debug information in the System Log, set the *Multi cell debug field* to *Data Sync*, *Auto Tree*, or *Both*. (This log contains a large number of messages, so you should leave it disabled most of the time.)
8) Click **Save**, then reboot the base station (go back to the *Home*/*Status* screen and click **Reboot**).
9) When the base station finishes rebooting, verify that the *RFPI-Address* on the *Home*/*status* screen shows *RPN:00* at the end of the field. After a few minutes, the *System Information* field also updates to display the new status.

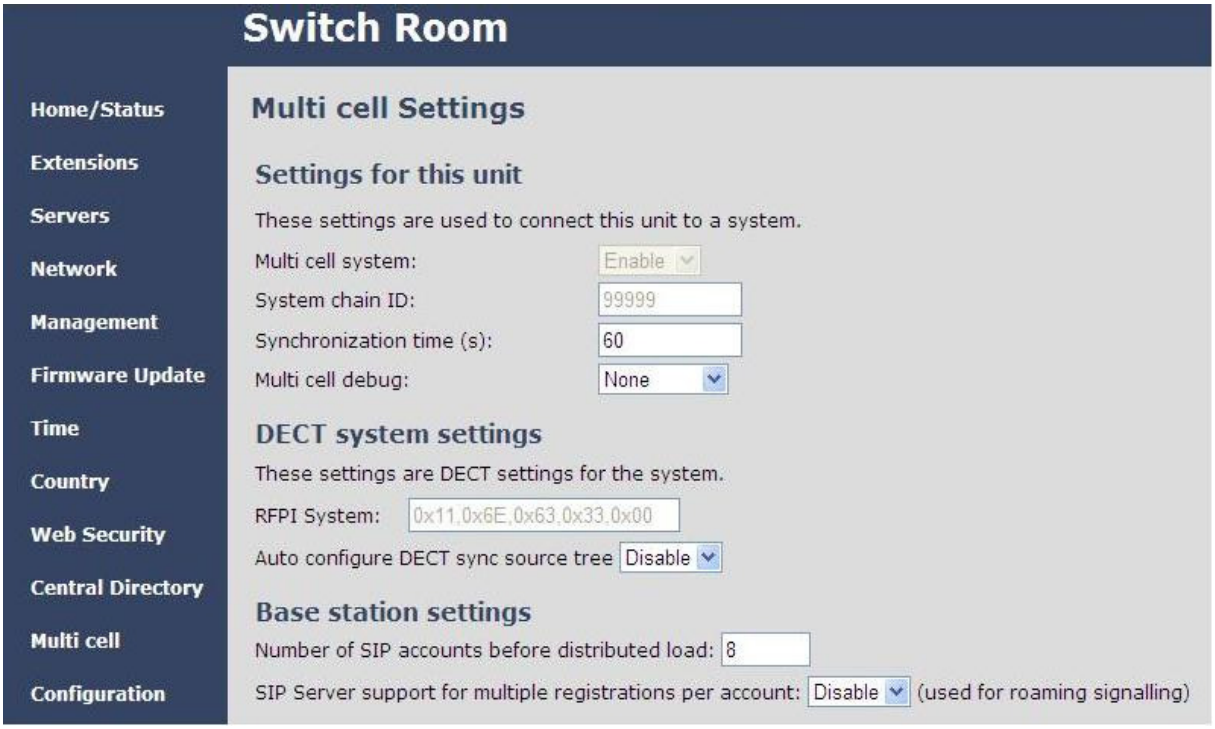
Figure 23: *Home*/*status* screen (primary base enabled)



Configuring Level 1 Base Stations

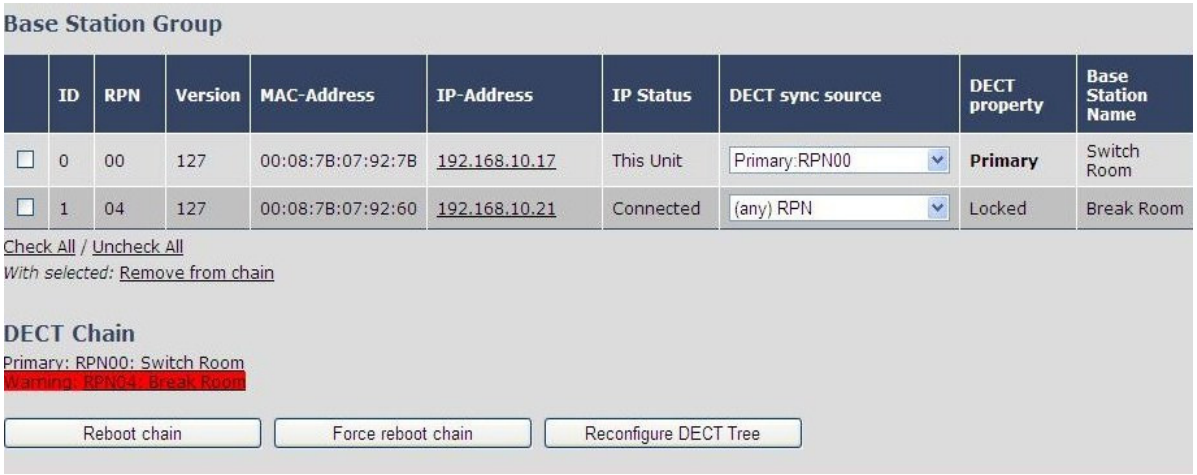
1) Place the first Level 1 base station at its final location.
2) Login to the base station.
3) Reset the base station to its default settings (open the *Management* screen and click **Default Base Station**). If this base station has never been configured, skip this step.
4) Go to the *Multi-cell* screen and set the *Multi cell system* field to *Enable*.
5) Enter the *System chain ID* of the chain this base station should belong to.
6) If you want the base station to include low level multi cell debug information in the System Log, set the *Multi cell debug field* to *Data Sync*, *Auto Tree*, or *Both*. (This log contains a large number of messages, so you should leave it disabled most of the time.)
7) Click **Save** and reboot the base station (go back to the *Home*/*Status* screen and click **Reboot**).
8) When the base station finishes rebooting, click Home, and after a few minutes, go back to the *Multi-cell* screen. You will see that the *System chain ID* field is read-only, and the *DECT system settings* and *Base station settings* fields, and the *Base Station Group* table are added to the bottom of the screen.

Figure 24: *Multi-cell* screen (top) after configuration



9) Keep the *Auto configure DECT sync source tree* set to *Disabled*.
10) In the *Number of SIP accounts before distributed load* field, enter the maximum number of handset registrations (up to 30) for each base station. This number is synchronized among all the bases in the chain, so you only have to enter it once.
11) Click **Save**.
12) Use *the Base Station Group* table to check system synchronization.

Figure 25: *Base Station Group* table, synchronizing (*Multi-cell* screen)



- The *IP Status field* of the base station you are logged into should show *This unit*. Any other base stations in this chain should show *Connected* (i.e., connected to the network and functioning properly) as their IP status. If any base station shows *Connection Loss* as its IP status, that base station is not connected to the network or has lost power.
- The primary base station always serves as its own sync source, so the *DECT sync source* field should display *Primary:RPN{its own RPN}*. The *DECT Property* field shows *Primary*.
- This base station's *DECT sync source* will show *(any) RPN* and its *DECT Property* field will show *Locked*.
- Check the *DECT sync source* drop-down box for this base station to verify that there is a selection for the primary base station with a dBm value. If there is not a dBm value, wait for the system to further synchronize (approximately 2 minutes). When there is a dBm value, select the primary base station from the *DECT sync source* drop-down box and click **Save**.
- If the primary base station is not on the list or if the signal strength is below -70 to -73 dBm (-74dBm or less), move this base station to a different location. (You could also configure the other Level 1 base stations first and then come back and configure this one at Level 2.)
- The *DECT Chain* appears at the bottom of the display and shows the synchronization source for all base stations in this system. Until the primary base station is selected as the *DECT sync source*, there will be a warning in the *DECT Chain* for this base station.

Figure 26: *Base Station Group* table, synchronization complete (*Multi-cell* screen)

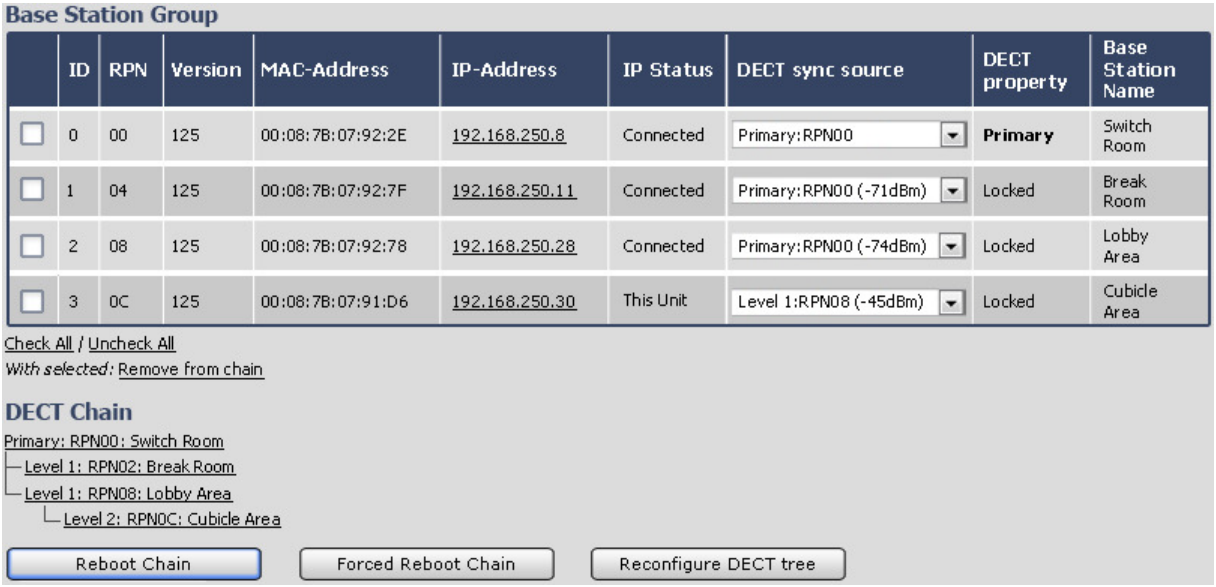
13) When the system has finished synchronizing, repeat this process for each base station at Level 1.

Figure 27: *Base Station Group* table, Level 1 complete (*Multi-cell* screen)

Configuring Base Stations at Level 2 and Up

1) Place the first Level 2 base station at its final location. (See the *Network Planning Guide* for information on the proper placement of base stations.)
2) Login to the base station.
3) Reset the base station to its default settings (open the *Management* screen and click **Default Base Station**). If this base station has never been configured, skip this step.
4) Go to the *Multi-cell* screen and set the *Multi cell system* field to *Enable*.
5) Enter the *System chain ID* and select a *Multi Cell* debug setting only if necessary.
6) Click **Save** and reboot the base station.
7) Allow several minutes for the base station to reboot, then go back to *Multi-cell* screen and check the *Base Station Group* table.

Figure 28: *Base Station Group* table, Level 2 added (*Multi-cell* screen)



- Select a synchronization source for this base station in the *DECT sync source* list (usually, this is the base station with the strongest signal). Wait until this base station locks onto the synchronization source, then click **Save**.
- In the *DECT Chain*, this base station will appear under its synchronization source.

8) When the system has finished synchronizing, repeat this process for each base station at Level 2.
9) After you've configured all the base stations at Level 2, follow the same procedure for the base stations at Level 3, Level 4, and so on, until all base stations have been added to the system.

Removing Base Station(s) from a Multi-Cell System

Before removing the primary base station from the system, configure a different base station to be the primary synchronization source (see page 38).

Never default or remove a base station from a chain with an ID of 0 (or RPN00), or the chain will have to be rebuilt.

1) Login to a base station other than the one you want to remove from the system.
2) Go to the *Multi Cell* screen and view the *Base Station Group* table. Note the RPN number of the base station to be removed.

3) Check the *Extensions* screen to see if any extensions are registered to the base station to be removed. The State column displays which base station the handset extensions are registered.
4) Physically move the handsets registered to those extensions out of this base station's coverage area and place them next to a different base station. Wait for the handsets to change their registration to the new base station. Alternatively, power off the handsets, and power them on near the different base station.
5) In the *Base Station Group* table, check to see if the base station you want to remove is serving as the synchronization source for any other base station(s). If necessary, select a new *DECT sync source* for any affected base stations, and click **Save**.
6) Click the check box beside the base station you want to remove from this chain, then click *Remove from chain*. (Be sure you do not check the base station with ID 0/RPN00.)
7) Login to the base station just removed. On the *Home*/*Status* screen, verify that it reads *Multi Cell disabled* on the *System Information* line
8) For use in another chain, reset the base station to its factory default settings (go to the *Management* screen and click **Default Base Station**).
    - When the base station finishes rebooting, login and check the Home/Status screen. The base station name at the top of the screen should read *SME VoIP* and the *System Information* field should still read *Multi cell Disabled*.
9) Log out of the base station, and repeat this procedure on any other base stations you want to remove from system.

Changing the Primary Base Station in a Chain

Only perform this procedure when the system is offline or in a maintenance period.

1) Log in to a base station in the chain.
2) Go to the *Multi Cell* screen.
3) In the Base Station Group table, determine which base station you want to become the new primary base station.
4) Select this base station's own RPN as the *DECT Sync Source*.
5) For the original Primary base station, select the new Primary or another base station within its range as its *DECT Sync Source* .
6) Click **Save**.
7) Login to the original primary base station, and go to the *Multi Cell* screen.
8) Click **Reboot**.

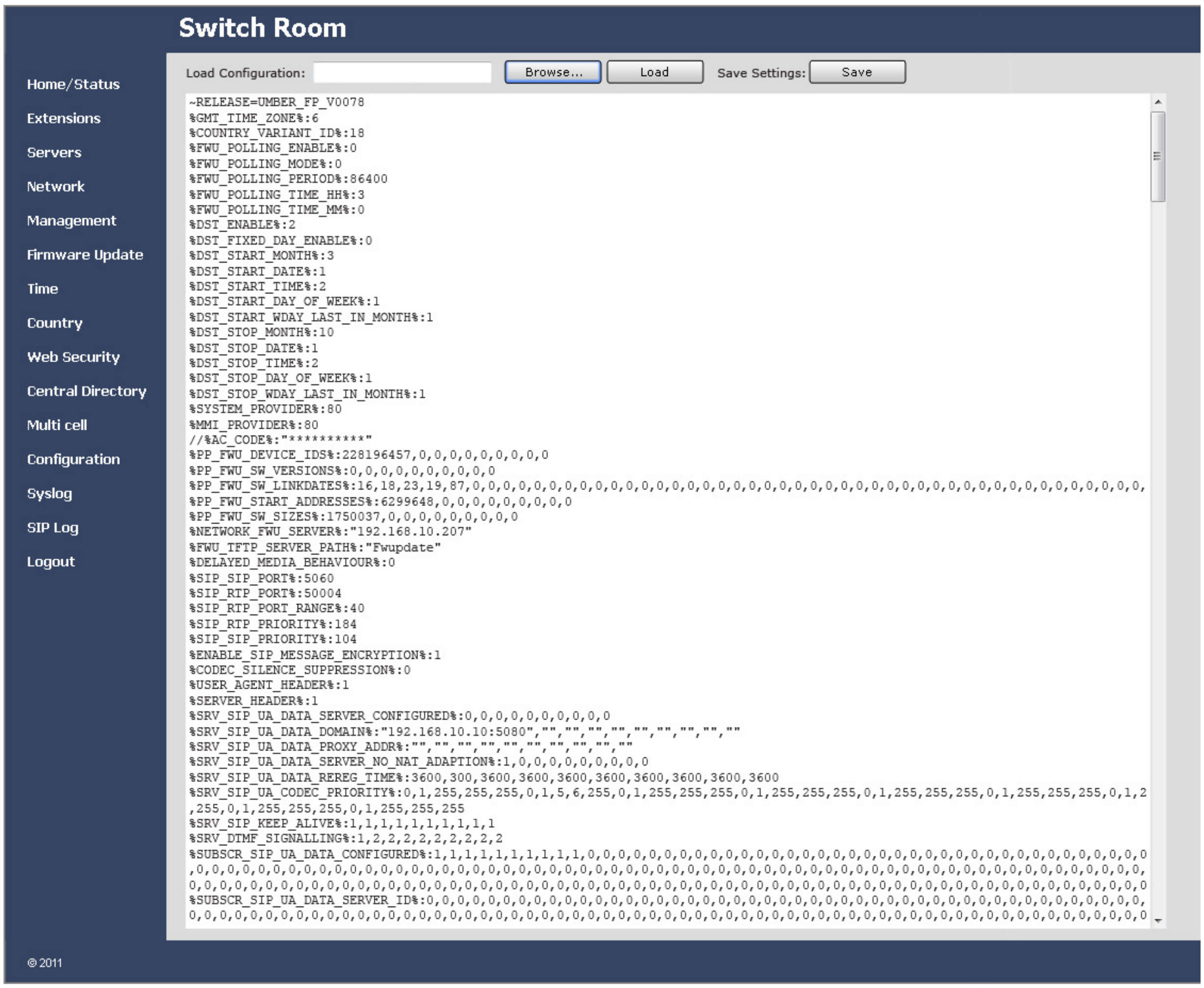
9) After reboot, on the *Home*/*Status* screen, verify that it reads *Multi cell Ready (Keep-alive) Secondary*.
10) Login to the new primary base station. On the *Home*/*Status* screen, verify that it reads *Multi cell Ready (Keep-alive) Primary*.
11) Go to the Multi Cell screen. Check the *Base Station Group* table and verify that all base stations have properly resynchronized.

System Maintenance

Backing Up Configuration Settings

1) Configure the first base station completely and save the configuration.
2) In the left hand panel, click on *Configuration*. This opens the *Configuration* screen.

Figure 29: *Configuration* screen



3) At the top of the screen, click **Save**.
4) Save the file with a *.cfg* extension to a designated location for managing base station configuration settings.

Restoring a Configuration

1) Login to the base station interface (see page 16), and go to the *Configuration* screen.
2) Click **Browse** and select the configuration file for this base station.
3) Click **Load**, then reboot the base station.
4) When the base station finishes rebooting, check the configuration settings to be sure they loaded correctly.

Updating the Firmware

You can update the firmware on base stations and handsets remotely via TFTP.

Setting Up Firmware Folders

The TFTP server must be correctly configured before you can update the firmware on any components, and folders and firmware filenames must use specific naming conventions.

- The server must be identifiable by an URL or IP address (IPv4).
- The server must allow both transmitting and receiving on the firmware folder (so base stations can upload copies of old firmware before updating).
- Folders in the firmware path must have or TFTP compatible names, e.g., they must not contain spaces, question marks, colons, semicolons, commas, etc.
- In the firmware update path directory, create the directories *Beatus* (for base station firmware files) and *Pegasus* (for handset firmware files)
- Place the new base and handset firmware files in their respective directories. The name of the firmware file will be in the following format (where *{version number}* is any 3-digit positive integer):

Base station files	Handset files
BeatusSW_4181_v0{version number}.fwu	PegasusSW_4181_v0{version number}.fwu

Valid server, folder, and firmware file name examples (base stations)

- tftp://update.abc.com/ipdect/firmware/Beatus/BeatusSW_4181_v0026.fwu
- tftp://abc.com/firmware_update/Beatus/BeatusSW_4181_v0001.fwu
- tftp://192.168.10.207/fwupdate/Beatus/BeatusSW_4181_v0010.fwu

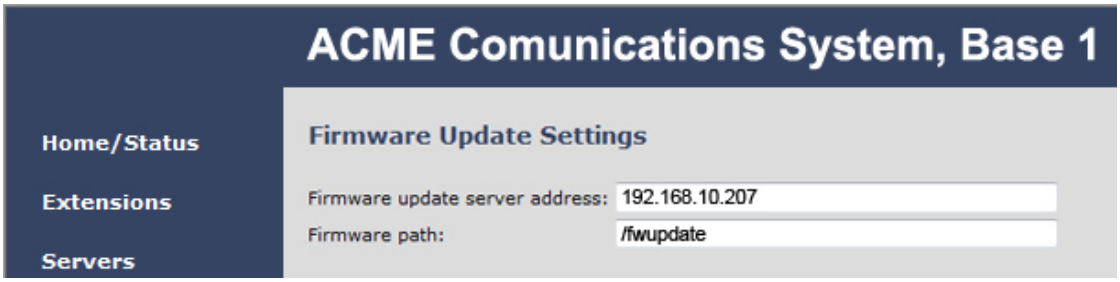
Valid server, folder, and firmware file name examples (handsets)

- tftp://update.abc.com/ipdect/firmware/Pegasus/PegasusSW_4181_v0019.fwu
- tftp://abc.com/firmware_update/Pegasus/PegasusSW_4181_v0007.fwu
- tftp://192.168.10.207/fwupdate/Pegasus/PegasusSW_4181_v0023.fwu

Configuring the Firmware Update Settings

Login to the base station interface (see page 16), and go to the *Firmware Update* screen.

Figure 30: *Firmware Update* server information



5) In the *Firmware update server address* field, enter the name or IP address of the TFTP server.
   - Enter the folder path between the server root and the Beatus or Pegasus folder.
   - Do not include the folder name for base stations (*Beatus*) or handsets or (*Pegasus*): these are added automatically).
   - This field must start with a forward slash (/).
   - Do not include a forward slash at the end of the field.
   - The table below shows how you would enter the server address and firmware path using the examples shown on page 41.

Table 7 Firmware path examples

Firmware update server address	*Firmware path*	Firmware folder	Firmware file name
Base station firmware files			
update.abc.com	*/ipdect/firmware*	/Beatus/	BeatusSW_4181_v0026.fwu
abc.com	*/firmware_update*	/Beatus/	BeatusSW_4181_v0001.fwu
192.168.10.207	*/FWupdate*	/Beatus/	BeatusSW_4181_v0127.fwu

Handset firmware files			
update.abc.com	*/ipdect/firmware*	/Pegasus/	PegasusSW_4181_v0019.fwu
abc.com	*/firmware_update*	/Pegasus/	PegasusSW_4181_v0007.fwu
192.168.10.207	*/FWupdate*	/Pegasus/	PegasusSW_4181_v0107.fwu

6) Click **Save** when you're finished. This information is saved in the base station so you don't have to re-enter it every time you want to update the firmware.

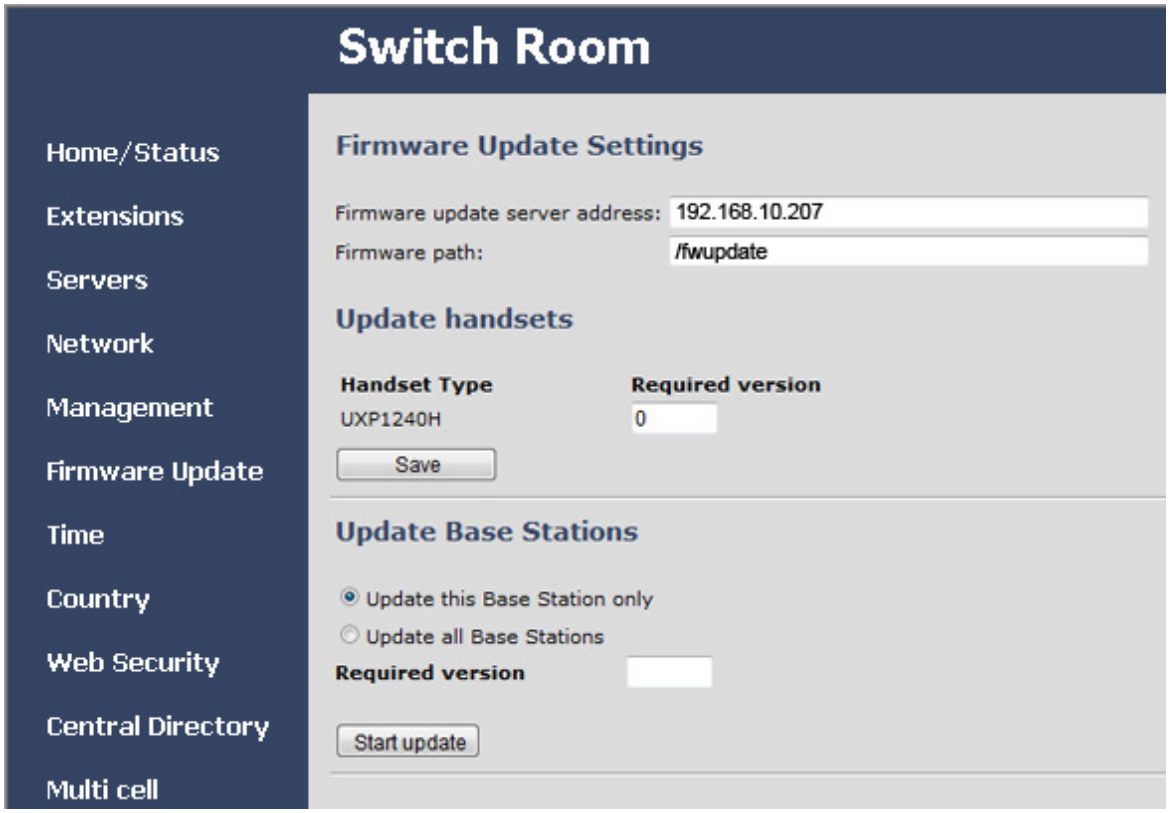
Updating Base Station Firmware

Updating base station firmware involves an automatic reboot of the base station at the end of the firmware download. This will drop any active calls. It is recommended to perform this update after normal business hours.

Before starting an update, ensure that the TFTP Server is running.

7) Login to the base station configuration interface (see page 16), and go to the *Firmware Update* screen.

Figure 31: *Firmware Update* screen



8) Under the *Update Base Stations* section, select *Update this BaseStation only* to update only the base station you are currently connected to. To update all base stations at the same time, select *Update all BaseStations*.
9) Enter the last 3 digits of the firmware filename in the *Required version* field. The required version identifies the firmware file containing the update; for example, if you want to update the base station to the firmware file BeatusSW_4181_v0127.fwu, enter *127* in the *Required version* field.
10) Click *Start update*. When the base station asks you to confirm, click *OK*.
    - The base station firmware download will start. (You can check the download progress in the relevant log of your TFTP Server application.) The base station configuration interface will be temporarily unavailable when the base station(s) reboot at the end of the download. The overall update for a base station takes several minutes.
    - To verify the firmware update, go to the *Home*/*Status* screen and check the *Firmware-Version* field. The field shows the current firmware version in the format *IPDECT*/*{Required FW version}*/*{date of FW file}*, so in this example, the field should read *IPDECT*/*01.27* followed by the date the file was created.

Updating Handsets

Updating handset firmware will take several hours and will affect the number of channels available for simultaneous call. Be sure to perform this update outside of normal business hours.

To finalize a firmware update, each handset must be placed in its charger. Be sure your end users return the handsets to the chargers before an update

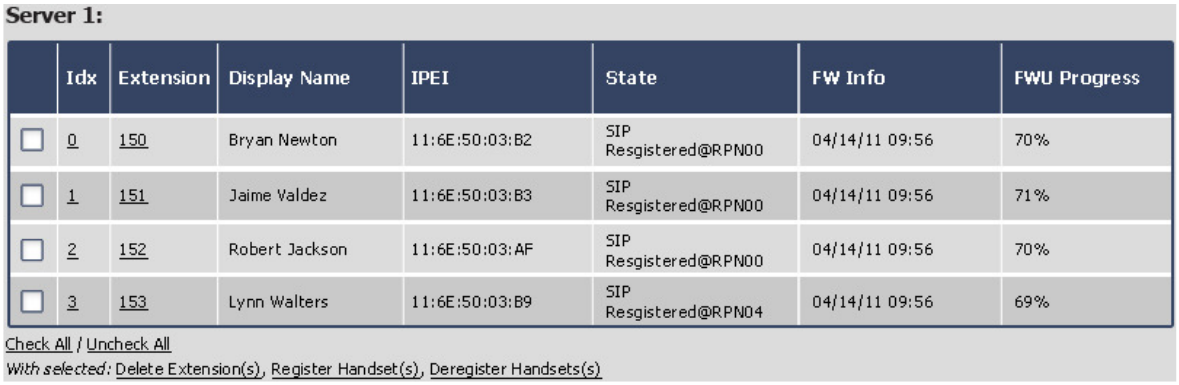
Before starting an update, ensure that the TFTP Server is running.

- Each base station uses the DECT RF channels to download new firmware files to its handsets, and it can only update handsets that are registered to it.
- Each update session takes approximately 3 hours, and the base station will complete a session before starting a new one.
- A base station in a single cell system can update 10 handsets in a single session (because there are 10 available RF channels), so Handsets 1 through 10 are updated in session 1, Handsets 11 through 20 are updated in the second session, etc.
- In a multi-cell system, each base station can update 8 handsets in a session, but all base stations can perform update sessions at the same time. If you distribute the

handset registrations across different base stations in the same system, you will reduce the amount of time needed for firmware updates.

11) Login to the base station configuration interface (see page 16), and go to the *Firmware Update* screen (see Figure 31 on page 43).
12) Under the *Update handsets* section, enter the last 3 digits of the firmware filename in the *Required version* field. The required version identifies the firmware file containing the update; for example, if you want to update the handsets to the firmware file PegasusSW_4181_v0107.fwu, enter *107* in the *Required version* field.
13) Click *Save*. The download will automatically start to any base stations with registered handsets that are not at the required version.
    - You can see the progress of the handset update on the *Extensions* screen. The *FWU Progress* column shows the status of the firmware update for the handset registered to each extension.

Figure 32: Firmware update progress (*Extensions* screen)



To verify the firmware update

14) On the front of the handset, press **Menu** ( ).
15) Select *Settings* ( ), then select *Status*.
16) Under *SW version*, make sure the three digits after the period match the *Required version*, and the line directly below shows the current date and time.

Appendix A: Software Reference

Base Station Configuration Interface

- To open the configuration interface, open a web browser window and enter the IP address of the base station you want to configure in the address bar.
- When prompted, enter the user ID and password. The default user ID and password are both *admin* (all lower case).
- The base station opens the *Home*/*Status* screen and displays the values specific to this base station.

Available Screens

You can open any configuration screen by clicking its name on the left side of the screen; the screen name links appear on every screen.

Screen	**Purpose**
Home/Status	Return to the home screen.
Extensions	Programming extensions and handsets.
Servers	Provisioning SIP servers.
Network	Configure how the base station communicates with the network.
Management	Change the base station name and configure SIP and system logs.
Firmware Update	Configure remote firmware updates for base stations and handsets.
Time	Configure the NTP Time server used for synchronization and system time stamps.
Country	Specify the country or territory where the system is located.
Web Security	Change the user name and password used to access the base station web server.
Central Directory	Upload a CSV file containing a central directory list.

Screen	Purpose
Multi cell	Configure base stations to operate in a multi-cell chain.
Configuration	Display complete settings for the base station and the servers it relies on. You can copy these settings to create a configuration file.
Syslog	Review system level messages of the current base station.
SIP Log	Review SIP server related messages to and from the current base station.
Logout	Exit the base station configuration interface.

Global Buttons and Options

The items listed below appear as buttons or options on more than one of the base station configuration screens (these items will not be described every time they appear):

Button or Option	Function
Save	Save changes made on this screen.
Cancel	Clear all changes on this screen and revert to the previous values.
Refresh/Reload	Refresh the screen and reload all values from the connected base station.

Home/Status Screen (Read Only)

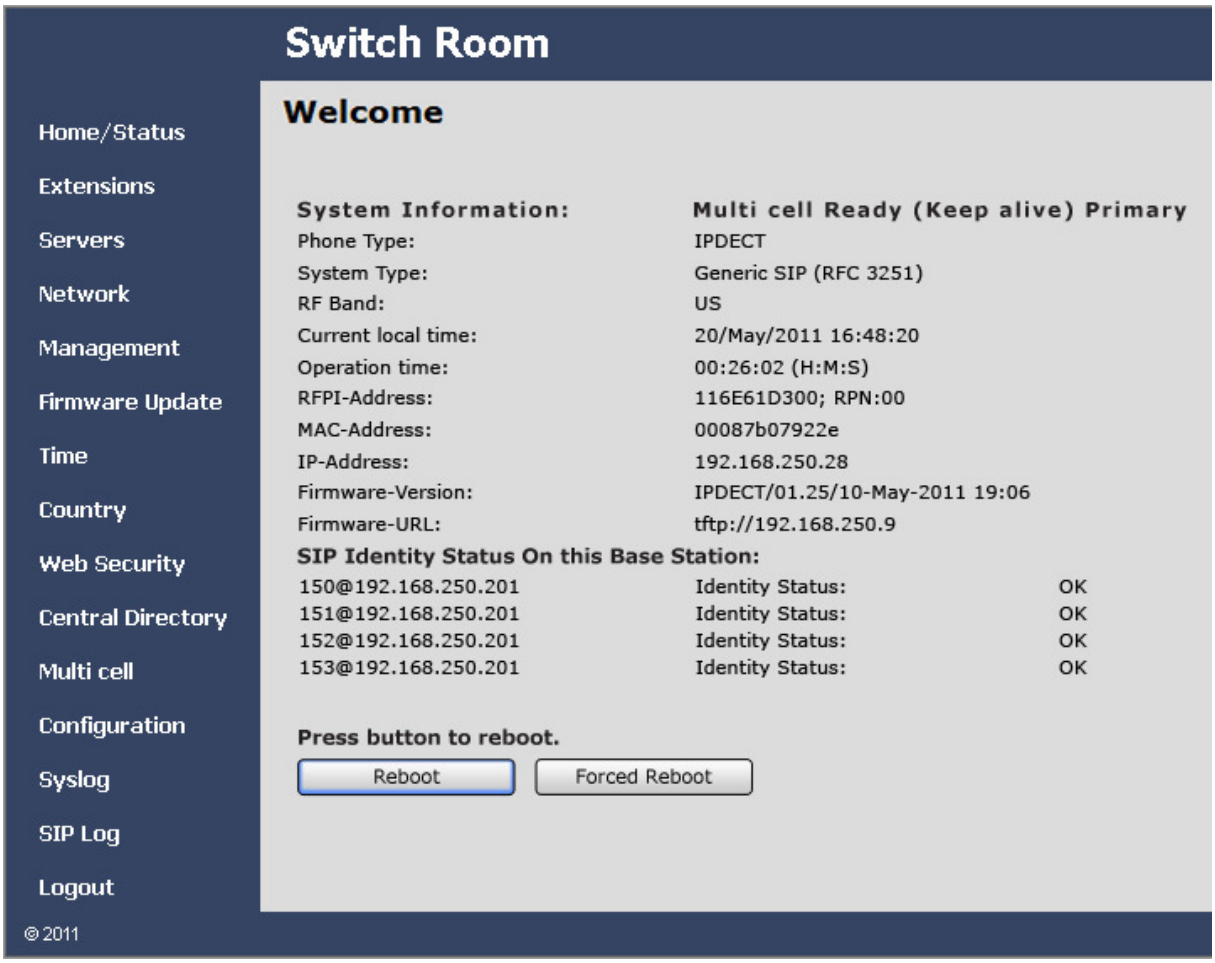


Table 8: *Home/Status* Options

Button or Option	Function
Reboot	Reboot the connected base station. If there are any active calls on the base station, it will not reboot.
Forced Reboot	Disconnect any active calls and reboot the connected base station.

Table 9: *Home/Status* parameters

Item	Definition
System Information	The current multi-cell state of this base station (*Multi Cell Disabled* or *Ready*; *Primary* or *Secondary*).
Phone Type	Always IPDECT, a combination of VoIP and wireless DECT technology.

Item	Definition
System Type	The signalling protocol used to communicate with the SIP Server.
RF Band	The DECT radio band currently in use by this base station.
Current Local Time	The current time and date received from the time server.
Operation Time	The amount of time since this base station was last rebooted.
RFPI-Address	The address assigned to the DECT radio of this base station.
MAC-Address	The address assigned to the Ethernet connector of this base station.
IP-Address	The current IP address assigned to this base station.
Firmware Version	The version of the current firmware on this base station.
Firmware URL	The address of the server this base station uses for firmware updates.
SIP Identity Status on this Base station	The status of all handsets registered to this base station, in the format *{Extension}@{SIP Server}*.

Extensions Screen

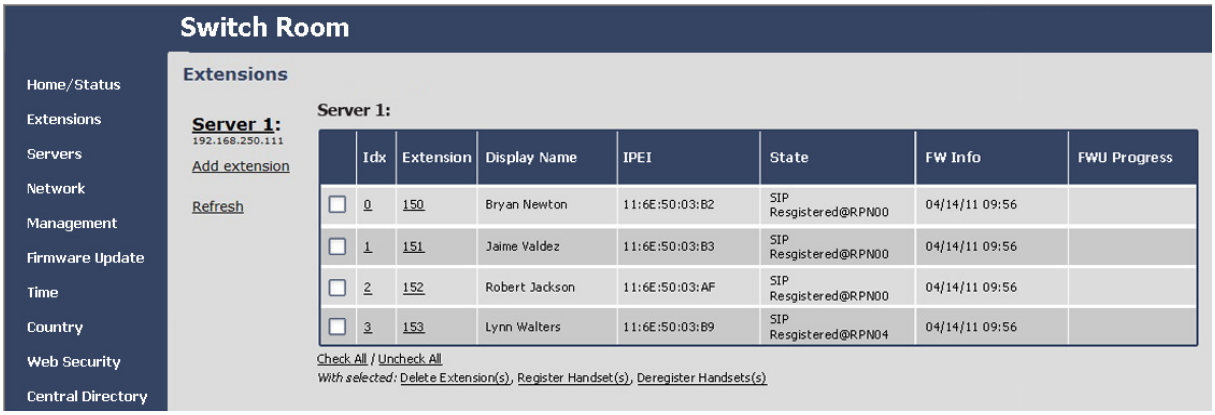


Table 10: *Extensions* options

Option	Description
Server X	If you have more than one server set up for this system, select the server you want to see the extensions for. (If there is only one server configured, clicking the server title has no effect.)
Add Extension	Create a new extension on the selected server.
Refresh	Reload the list of extensions for this server.

Option	Description
Check All	Select all extensions for this server.
Uncheck All	Clear all check mark or selections.
Delete extension(s)	Remove the selected extensions.
Register handset(s)	Register a handset or handsets to use the selected extension or extensions.
Deregister handset(s)	Deregister a handset and clear handset registration information for the selected extensions.

Table 11: *Extensions* parameters (read only)

Parameter	Definition
Idx	A reference number for the extension.
Extension	The extension as configured in the SIP server.
Display Name	The name of this extension as configured in the PBX or in the Add/Edit extension page.
IPEI	The unique ID of the handset registered to this extension.
State	The current status of the handset registered to this extension, and the RPN ID of the base station the handset is registered to.
FW Info	The firmware version of the handset.
FWU Progress	When updating the handset firmware, this field displays the progress of the update.

Add Extension and Edit Extension screens

The parameters for the *Add Extension* and the *Edit Extension* screens are the same.

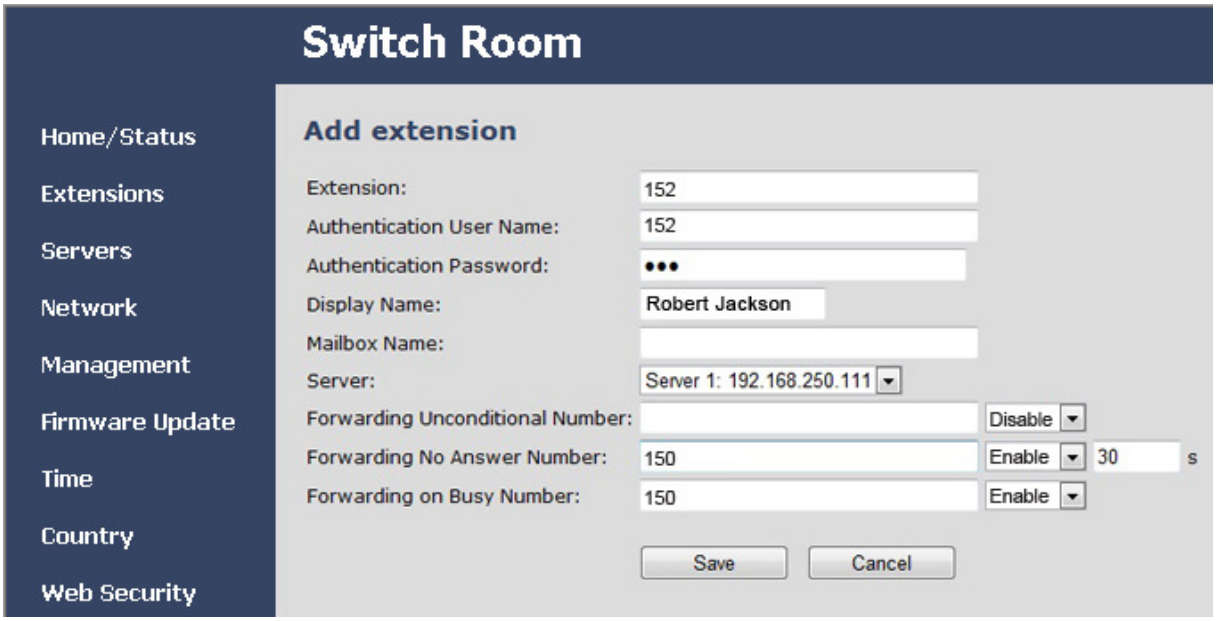


Table 12: *Add extension* and *Edit extension* parameters

Parameter	Description
Extension	Enter the handset phone number or SIP username as configured on the SIP server or VoIP PBX.
Authentication User Name and Password	Enter the name and password you use to log into the selected SIP server.
Display Name	Enter the name the system should display for this extension (up to 10 characters).
Mailbox Name	Enter the name of the voice mailbox this extension should use.
Server	Select the SIP server this extension is programmed on.
Forwarding Unconditional Number	Forward all calls: Enter the number the system should forward calls to. Select *Enable* to turn call forwarding on or *Disable* to leave it off.
Forwarding No Answer Number	Forward on no answer: Enter the number the system should forward calls to when this extension does not answer, then enter the number of seconds you want the system to wait in the field to the right. Select *Enable* to turn call forwarding on or *Disable* to leave it off.
Forwarding on Busy Number	Forward on busy: Enter the number the system should forward calls to when this extension is busy. Select *Enable* to turn call forwarding on or *Disable* to leave it off.

Servers Screen

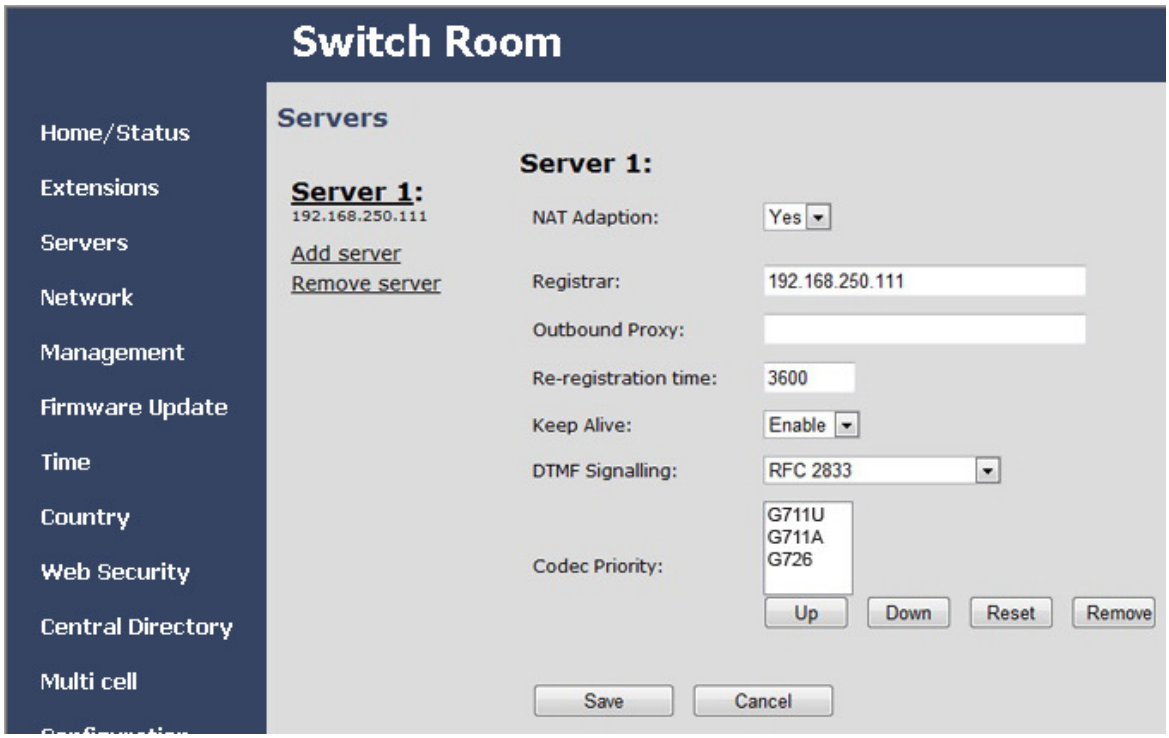


Table 13: *Servers* options

Option	Description
Add Server	Provision a new SIP server for the EXP1240 system.
Remove Server	Remove the selected SIP server from the system.

Table 14: *Servers* parameters

Parameter	Description
NAT Adaption	– If you want the base to change the rport and received parameters in its outgoing SIP messages according to the parameters in incoming SIP messages received from the SIP server, select *Yes*. – If you want the base to ignore the rport and received parameters in SIP messages received from the SIP server, set this field to No.

Parameter	Description
Registrar	Enter the IP address of the SIP server optionally followed by the port number you want the base to use. Use one of the following formats: IP address (e.g., 192.168.0.1 {IPaddress}:{port} (e.g., 192.168.0.1:5060).
Outbound Proxy	Enter the IP address and port of the Session Border Controller DNS or the SIP server outbound proxy address. Use one of these formats: – IP address (e.g., 192.168.0.1) – {IPaddress}:{port} (e.g., 192.168.0.1:5060) – Domain name (e.g., nat.company.com) – {SIP address}:{port} (e.g., sip:nat@company.com:5065)
Re-registration time	Enter the number of seconds that will determine the frequency of handset re-registrations with the SIP Server. If the number of seconds is less than 600, then the frequency will be half of the number of seconds. If the number of seconds is 600 or greater, then the frequency will be the value minus 300 seconds. As examples, if the entered number of seconds is 500, then the re-registration frequency will be 500/2 = 250 seconds. If the number of seconds is 700, then the re-registration frequency will be 700 – 300 = 400 seconds.
Keep Alive	– If you want the base to send Keep Alive messages, select *Enable*. They will be sent according to the frequency specified on the Network Settings screen. – If you do not want the base to send Keep Alive messages, select *Disable*.
DTMF Signalling	Select the type of DTMF signalling used by the SIP server: – *SIP INFO*: DTMF tones are sent along the SIP signalling path. – *RFC 2833*: DTMF tones are sent via data packets in a different Internet layer from the voice stream. – *Both*: DTMF tones are sent both in the SIP signalling path (SIP INFO mode) and via data packets (RFC 2833 mode).
Codec Priority	Set the priority order of the voice codecs in use by the SIP server. To change the priority of the codecs, select a codec and click **Up** to move that codec up the priority list, **Down** to move it down the priority list, or **Remove** to remove the codec from the list. To restore the codec list to its original values and order, click **Reset**.

Network Screen

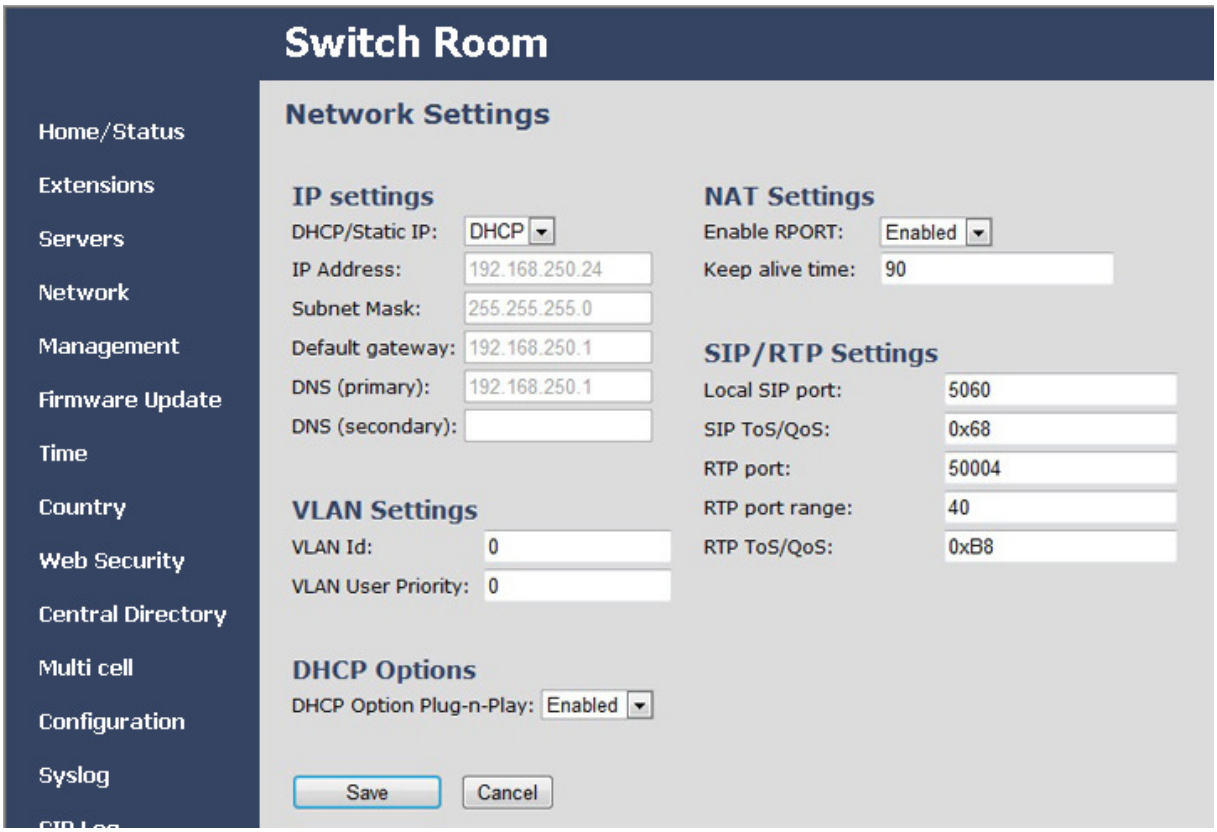


Table 15: *IP Settings* parameters

Parameter	Description
DHCP/Static IP	Select whether this base station gets its IP address from a DHCP server or uses a static IP address.
IP Address	(static IP address only) Enter the 32-bit IP address this base station should use.
Subnet Mask	(static IP address only) Enter the 32-bit mask to specify which part of the IP address identifies the network (255) and which part identifies the node (0). Class A, B, and C networks use the following default masks: – Class A: 255.0.0.0 – Class B: 255.255.0.0 – Class C: 255.255.255.0

Parameter	Description
Default Gateway	(static IP address only) Enter the IP address of the router that acts as an entrance to the network or provides a default route for communicating with hosts on remote networks.
DNS (Primary and Secondary)	(static IP address only) Enter the IP addresses of the main (primary) and backup (secondary) servers where this base station should direct Domain Name System (DNS) queries.

Table 16: *VLAN Settings* parameters

Parameter	Description
VLAN ID	Enter the unique identifier (0-4094) for the 802.1Q Virtual LAN that this base station belongs to. If this field is null, the base station will not recognize VLAN tagging or VLAN discovery through DHCP.
VLAN User Priority	Enter the priority level given to packets belonging to the VLAN identified above. Enter a priority level from 0 to 7.

VLAN Settings are not synchronized with other base stations in a multi cell chain. If you change the VLAN Settings, you must change them on each base station.

Table 17: *DHCP Options* parameters

Parameter	Description
DHCP Option Plug and Play	– Select *Enable* to use SIP server option 120 to obtain the SIP Server's IP address in the DHCP response. (To enable this feature, Option 120 with the SIP server IP address must be configured on the DHCP server.) – Select *Disable* to not use SIP server option 120.

Table 18: *NAT Settings* parameters

Parameter	Description
Enable RPORT	Select *Enabled* if you want the system to use RPORT in SIP messages. This will also cause the base stations to send Keep Alive messages according to the Keep Alive time. Otherwise, leave this feature *Disabled*.
Keep alive time	Enter the number of seconds (as a positive integer) between each keep-alive message sent to maintain NAT address assignments. The default value is 90.

Table 19: *SIP/RTP Settings* parameters

Parameter	Description
Local SIP port	Enter the port number the server should use for the first user agent (UA) instance. Successive ports will be automatically assigned for additional UA instances. The default port number is 5060.
SIP ToS/QoS	Enter the Type of Service or Quality of Service priority code for SIP call control traffic. The default value is 0x68 (104 in decimal notation).
RTP port	Enter the number of the first RTP port to use. Successive ports will be automatically assigned up to the number entered below. The default port is 50004.
RTP port range	Enter the number of ports that can be used for RTP audio streaming (the default is 40).
RTP ToS/QoS	Enter the Type of Service or Quality of Service priority code for RTP traffic; the default is 0xB8.

Management Screen

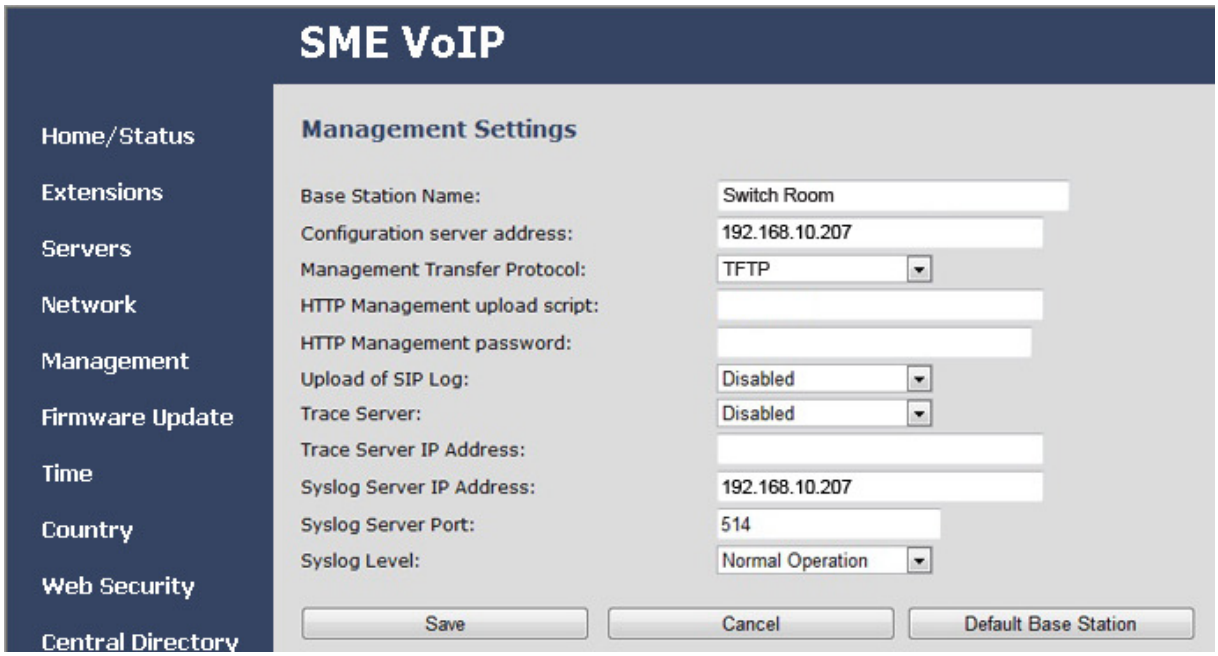


Table 20: *Management Settings* parameters

Parameter	Description
Base Station Name	Enter the name you want this base station to display at the top of the interface screens.
Configuration Server Address	Enter the IP address or URL of the server that hosts the uploaded SIP log files. Base station configuration file(s); base stations will upload log files to the same server. **This server must be available to the base stations when the Upload of SIP Logs is enabled.**
Management Transfer Protocol	Select the protocol used for the configuration files and firmware downloads. The default value is *TFTP*.
HTTP Management upload script	(for development purpose only)
HTTP Management password	(for development purpose only)

Parameter	Description
Upload of SIP Log	Select *Enabled* to have this base station copy low-level SIP debug messages onto the configuration server. SIP logs are named in the format of *{MAC_address}_SIP_{timestamp}.log*. Unless you are troubleshooting a specific problem, leave this log disabled.
Trace Server	(for development purpose only)
Trace Server IP Address	(for development purpose only)
Syslog Server IP Address	Enter the IP address of the server you want the base station to upload Syslogs to.
Syslog Server Port	If your syslog server is listening to a port other than 514 (the default), enter that port number.
Syslog Level	Select the level of messages you want the base station to log: – *Disabled*: the base station will not log any messages to the server. – *Normal Operation:* Normal operation events are logged, incoming call, outgoing calls, handset registration, DECT location, and call lost due to busy, critical system erroprs, general system information. The Syslog Level should be at this setting. The intended audience is Level 1 or 2 technical support. – *System Analyze*: Handset roaming events are logged at this level plus Normal Operation logs. The intended audience is Level 1 or 2 technical support. – *Debug*: Low level debug logs plus System Analyse logs. The intended audience are system developers.

Firmware Update Screen

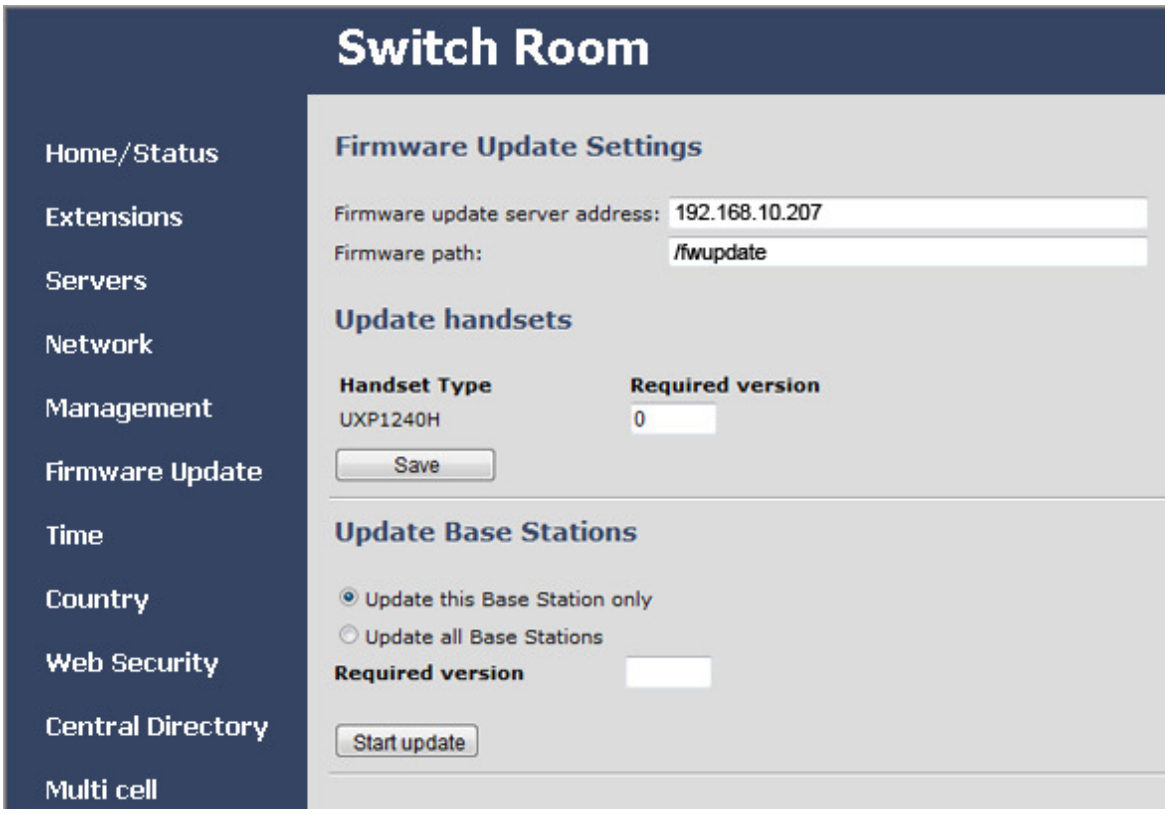


Table 21: *Firmware Update* screen options

Option	Description
Save	Start the handset firmware update OR save changes on this screen. – If the required version field for a handset type has any value other than *0*, clicking **Save** triggers the firmware update process for any handset of that handset type which is not at the required version. (Handsets already at the required version are not affected.) – To save changes to the server address or firmware path, be sure the required version field for all handset types is blank or *0* before clicking, then click **Save**.
Start update	Start the firmware update for the base station(s). Updating the firmware will reboot the base station(s) and disconnect any calls.

Table 22: *Firmware Update Settings* parameters

Parameter	Description
Firmware update server address	Enter the IP address or URL of the server that hosts the firmware update files. **This server must be available before starting an update.**
Firmware path	Enter the path of the firmware update folder (see Table 7 on page 42).

Table 23: *Update Handsets* parameters

Parameter	Description
Handset Type	If you have more than one hardware version or handset model on your system, each detected handset type will be displayed here.
Required Version	Enter the version of the firmware that will be used to update each type of handset. This field must match the last 3 digits of the name of the firmware file.

Firmware file versions are independent for each handset type. Be sure you enter the correct version number for the specific type of handset.

If the required version field for any handset type contains any value other than *0*, clicking Save will start the firmware update process for that handset type.

Table 24: *Update Base stations* parameters

Parameter	Description
Required Version	Enter the version of the firmware that will be used to update the base station. This field must match the last 3 digits of the name of the firmware file.
Update this base station only	Update the firmware on the currently connected base station.

Parameter	Description
Update all base stations	Update the firmware on all base stations in this system.

Time Screen

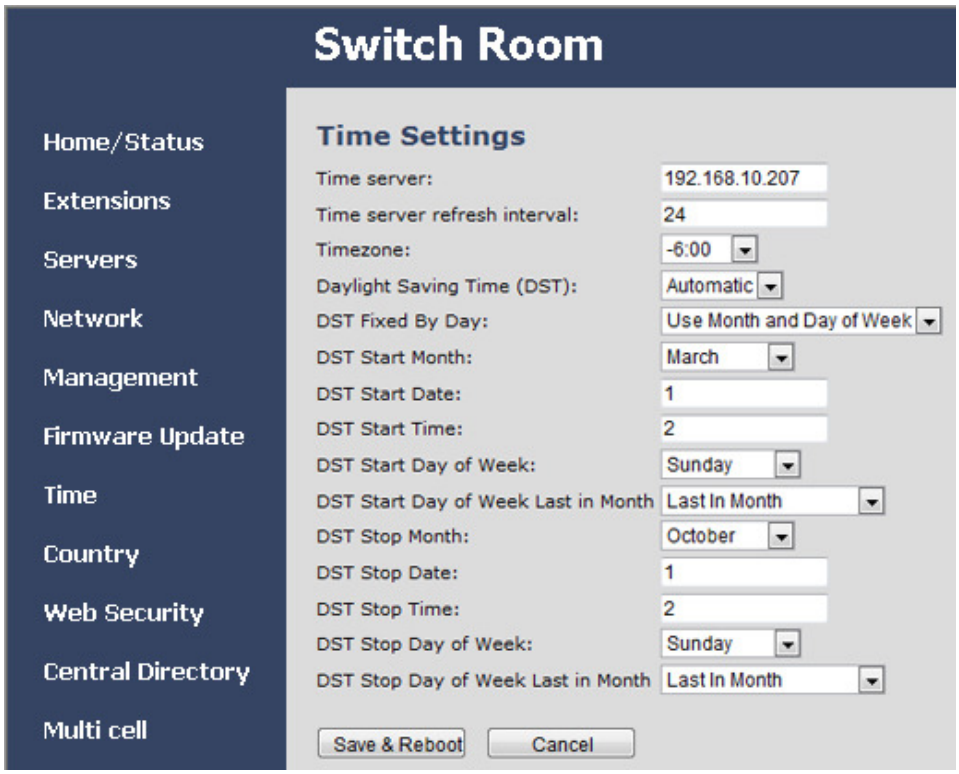


Table 25: *Time Settings* parameters

Parameter	Description
Time Server	Enter the IP address or URL of the server that distributes reference clock information; this information is used by all system components.
Refresh Time (h)	Enter the number of hours (positive integer) between time server refreshes.
Time Zone	Select the number of hours the local time zone differs from GMT/UTC time.

Parameter	Description
Daylight Saving Time (DST)	Select whether the time server adjusts one hour forward for daylight savings time (*Enable*), does not adjust for daylight savings time (*Disable*), or automatically turns daylight savings time on and off throughout the year (*Automatic*).
DST Fixed By Day	If you set daylight saving time to *Automatic*, select the parameters the server should use to turn it on and off: – *Use Month and day of week*: the system uses the values in the Month, Time, Day of week, and Last Week of Month fields to start and stop daylight savings time – *Use Date*: the system uses the values in the Month, Time, and Date fields to start and stop daylight savings time
DST Start Month	Select the month daylight savings time begins (start).
DST Start Date	(if *Use Date* is selected) Enter the day of the month (1 through 31) on which daylight savings time begins .
DST Start Time	Enter the hour (1 through 24) in which daylight savings time begins.
DST Start Day of Week	(if *Use Month and Day of week* is selected) Select the day of the week on which daylight savings time begins.
DST Start Day of Week Last in Month	(if *Use Month and Day of week* is selected) Select which week during the month daylight savings time should begin.
DST Stop Month	Select the month daylight savings time ends.
DST Stop Date	(if *Use Date* is selected) Enter the day of the month (1 through 31) on which daylight savings time ends.
DST Stop Time	Enter the hour (1 through 24) in which daylight savings time ends.
DST Stop Day of Week	(if *Use Month and Day of week* is selected) Select the day of the week on which daylight savings time ends.
DST Stop Day of Week Last in Month	(if *Use Month and Day of week* is selected) Select which week during the month daylight savings time should end.

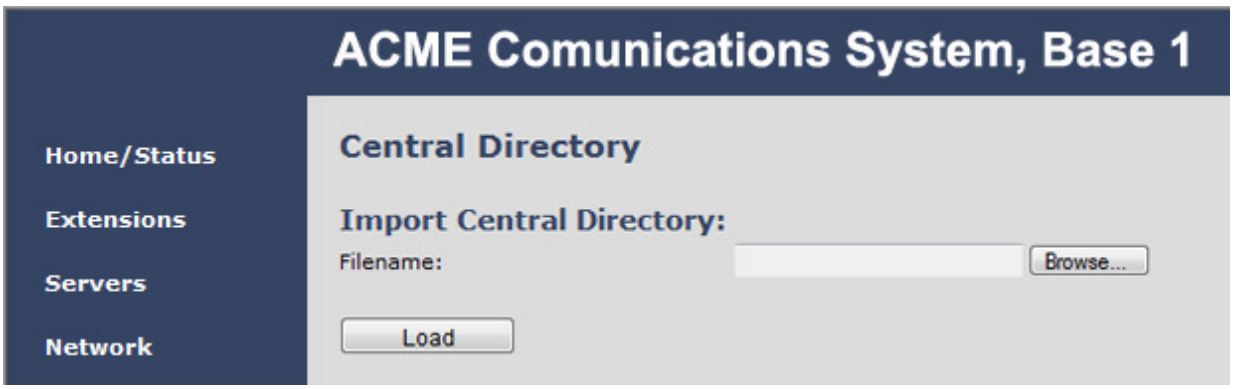
Country Screen

Select the country that best represents the tones and emergency dialing you want to use for the system. Reboot the base station to activate the new setting.

Web Security Screen

Enter the user name and password used to access the configuration screens.

Central Directory Screen



Enter the filename (CSV file) of a contact list you want to import into the system's central directory, then click **Load.**

Importing a new file will replace the existing contact list.

The format of an entry in the CSV file is:

"name","extension"

Double quotation marks surround the name and extension fields. Note that there are no spaces between the double quotations and the comma.

When the CSV file is uploaded to the base station the entries will be alphabetized according to the name field. For alphabetization by last name, create the entries in a standard "lastname, firstname" format. Initials may be used.

Below is a sample CSV file showing a few entries:

```
"Smith, Al","119"
"Williams, J.","120"
"Jones, Mary","121"
"Johnson, T.","124"
"Roe, Cliff","127"
"Ricardo, Bert","128"
"Mays, Jeff","129"
"Gomez, Liz","131"
"Marks, Dave","138"
"Foster, E.","111"
"Quincy, P.","113"
"Cole, Joyce","141"
"Dawson, Bryan","125"
"Ono, Peter","191"
```

When a handset user accesses the Central Directory, the entries will be listed alphabetically. The first few entries from the above list will be displayed as:

```
Cole, Joyce
Dawson, Bryan
Foster, E.
Gomez, Liz
.
.
.
```

Multi Cell Screen

Only the *Settings for this unit* section of this screen will be visible until two or more base stations share the same system chain ID.

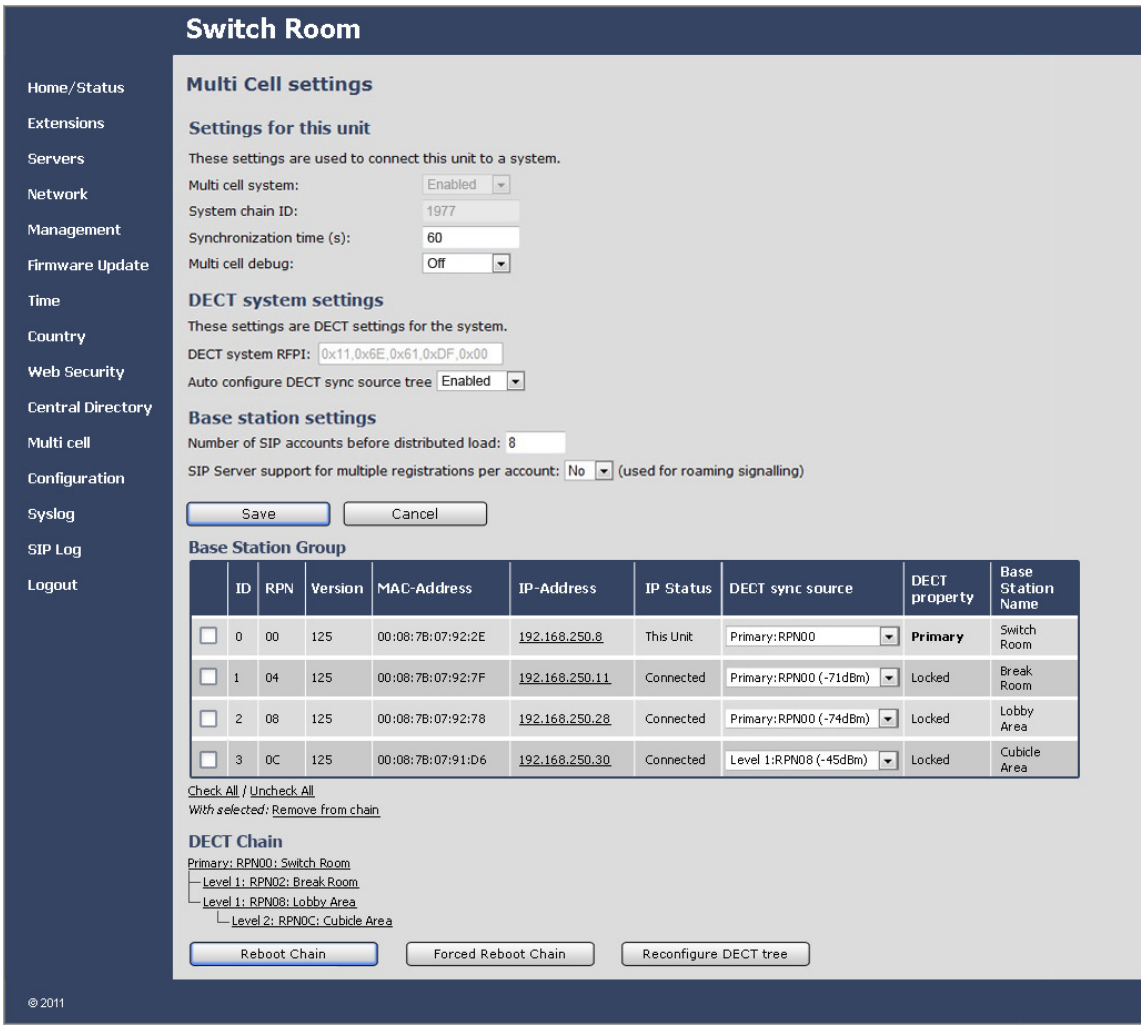


Table 26: *Settings for this unit* parameters

Parameter	Description
Multi cell system	Select *Enable* to allow this base station to operate in a multi-cell or daisy chain system.
System chain ID	Enter the unique identifier of the chain you want this base station to belong to.
Synchronization time (s)	Enter the number of seconds between each re-synchronization between this base station and the other base stations in the same chain.

Parameter	Description
Multi cell debug	Select: – *Off* - To not include any multi cell logs in the syslogs. This is the recommended setting unless requested otherwise by a technician. A lot of logs are generated when the other selections are chosen. – *Data Sync* – To include in the syslogs logs regarding which signals are received from which IP addresses. Timeout handling and state changes are logged. – *Auto tree* – To include in the syslogs logs regarding events triggering the reconfiguration of the DECT chain, and timeouts within Auto tree are logged. – *Both* – To include both Data sync and Auto tree logs in the syslogs.

Table 27: *DECT system settings* parameters

Parameter	Description
DECT system RFPI	The radio network identity used by all base stations in a specific chain to communicate with each other. (See Appendix B: RFPI Number on page 71 for details.)
Auto configure DECT sync source tree	This setting should remain disabled.

Table 28: *Base station settings* parameters

Parameter	Description
Number of SIP accounts before distributed load	Enter the maximum number of handset registrations (up to 30) you want each base station in the chain to be able to handle. If the number of registered handsets at a particular base station goes beyond the number entered here, extra handsets will be distributed to other base stations in this chain.

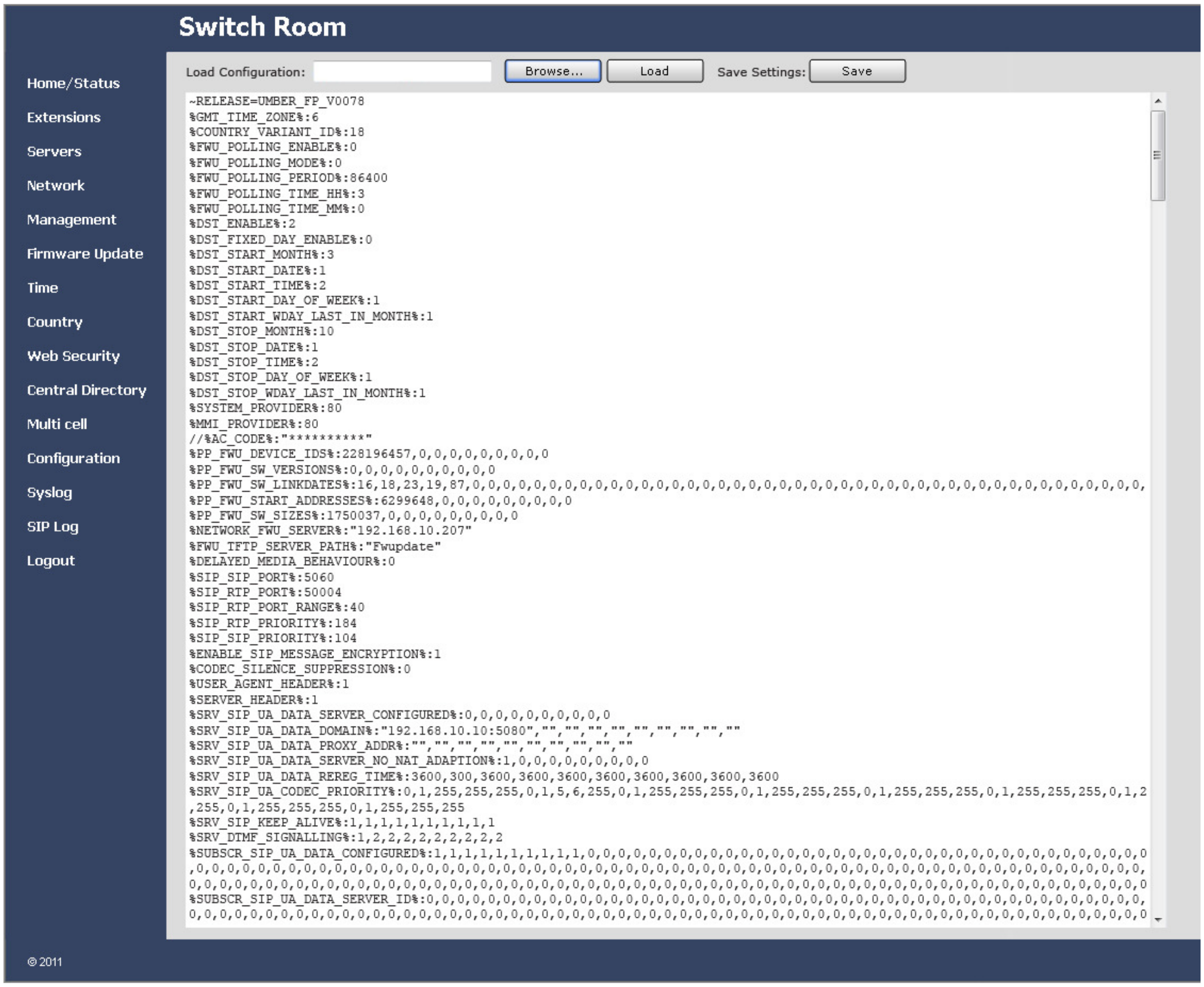
Parameter	Description
SIP support for multiple registrations per account	Select *Enabled* to allow more than one handset to use the same extension or SIP account; if this feature is not supported by the SIP server, this field is disabled.

Table 29: *Base Station Group* parameters

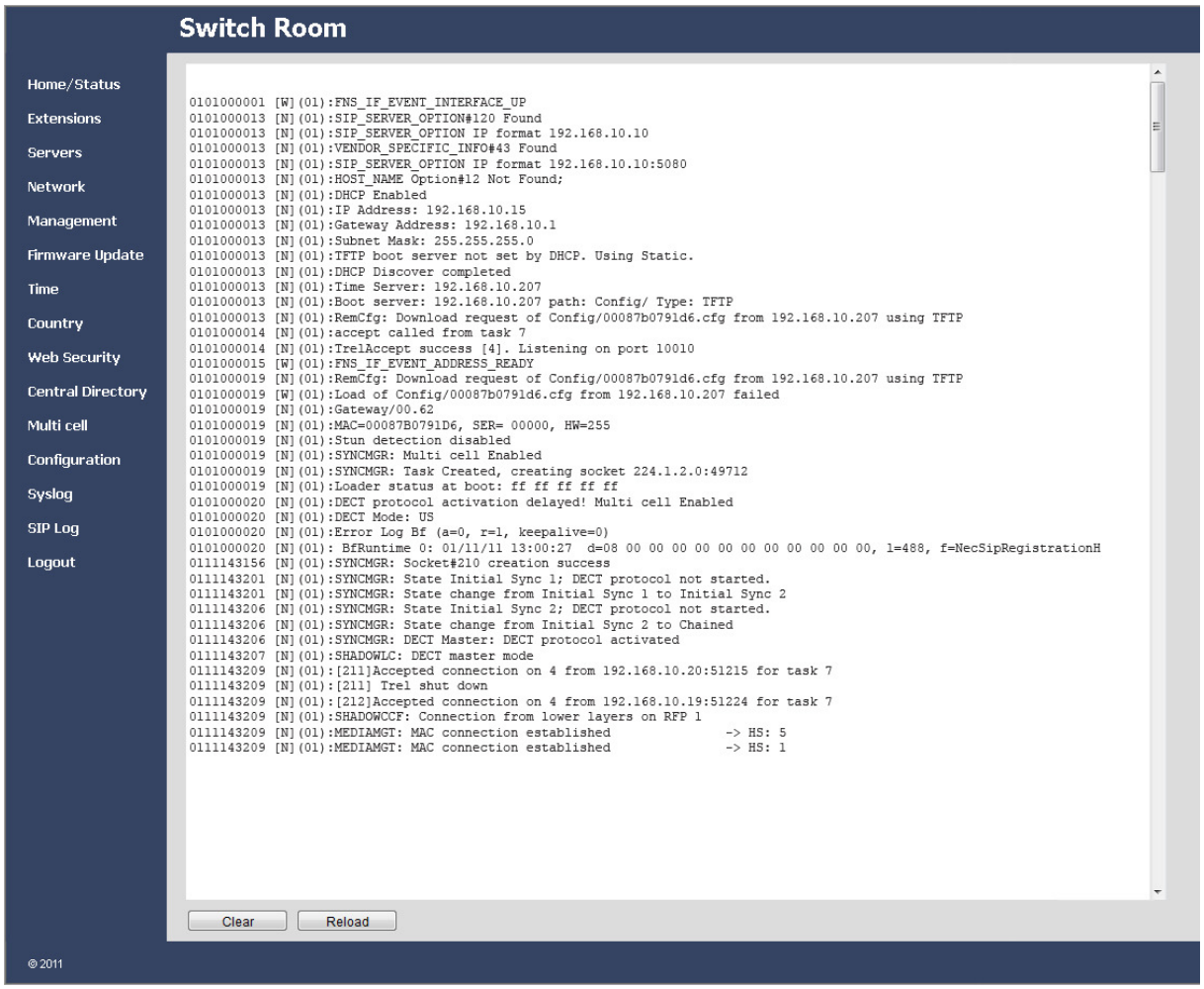
Parameters	Description
ID (chain)	Displays the ID number of the base stations in this chain, usually corresponding to the order the base stations were added to the chain. (The same ID number might be used in other chains.)
RPN (DECT network)	Displays the Radio Part Number (DECT network ID) of the base stations on this chain. The RPN is automatically assigned by the system, and it must be unique on the local DECT network. (The same RPN might be used at remote locations.)
MAC Address	Displays the MAC address of each base station.
Version	Displays the current firmware version on each base station.
Status	– *Connected*: The base station is connected and functioning properly. – *Connection Loss*: The base station is not connected to the network. – *This Unit*: The base station is the one you are currently logged into.
DECT Sync source	– Select the synchronization source for each base station on this chain. The primary base station has its own RPN as the sync source. – The value in parentheses after the RPN shows the relative signal strength of the other base stations in this chain.
DECT Property	– *Primary*: The designated base station serves as the primary synchronization source for this chain. – *Locked*: The base station is synchronized to its sync source. – *Searching*: The base station is locating its sync source. – *Free Running*: The base station was locked, but it has since lost its synchronization source. – *Unknown*: There is no current connection to the base station.

Parameters	Description
Base station name	Displays the name of each base station (as configured on the *Management* screen)

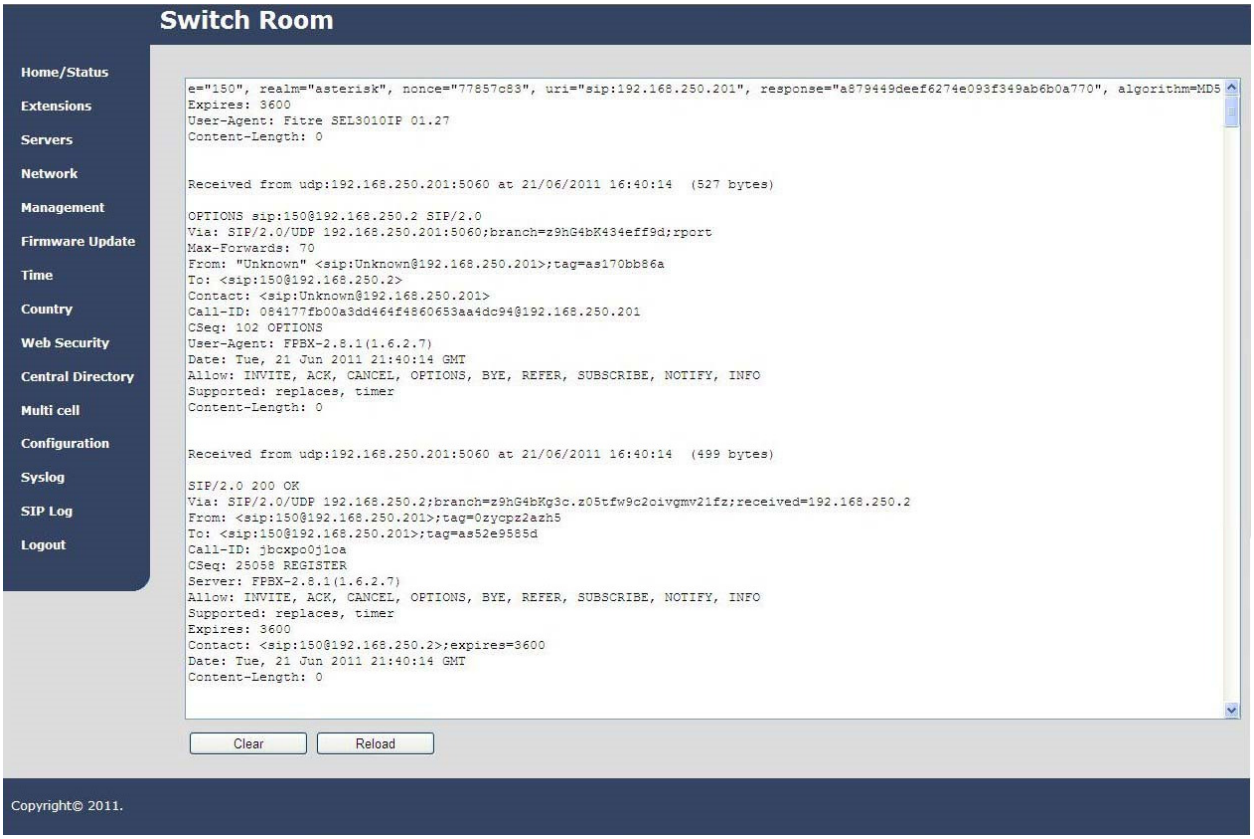
Configuration Screen (read only)



Syslog Screen (read only)



SIP Log Screen (read only)



Appendix B: RFPI Numbers

The RFPI is constructed from 4 different variables which make up the 10 characters (represented by N in the format *0xNN*,*0xNN*,*0xNN*,*0xNN*,*0xNN*):

- Access Rights Class (ARC), character 1
  The network identity structure used by terminals in multi-cell. Private multi-cell systems use the default value of 1.
- Equipment Installer's Code (EIC), characters 2 through 5
  A preset code that allows terminals to distinguish between separate DECT networks. The minimum value is 0000; the maximum is FFFF. The default value for the EXP1240 system is 16E6.
- Fixed Part Number (FPN), characters 6 through 8:
  A geographically unique identity transmitted to DECT networks to help distinguish between communications in different cells or chains. The minimum value is 001; the maximum is FFF.
- Location Area Length (LAL), characters 9 and 10:
  A unique code sent to the terminal during location registration to determine the size of the cell area. The minimum value is 00; the maximum is FF.

An example RFPI would be

ARC (char 1)	EIC (chars 2-5)	FPN (chars 6-8)	LAL (chars 9-10)
1	16E6	000	FF

The values are collapsed into a single 10-character string (116E6000FF), then the string is separated into 5 pairs of 2 characters each:

Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
11	6E	60	00	FF

Each pair is written as a 2-character HEX value (i.e., *0x* is added to the front):

Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
0x11	0x6E	0x60	0x00	0xFF

The HEX values are separated with commas, and the final result is displayed in the field as *0x11*,*0x6E*,*0x60*,*0x00*,*0xFF*.

