



IP DECT (100 Series & GDC-800)

Quick Guide

Please read this quick guide carefully before operating your set. Retain it for future reference.

iPECS is an Ericsson-LG Brand



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Introduction

Base station Installation

This guide seeks to describe how to install, add and synchronize one or multiple base stations to the network. There are two main procedures involved:

- 1) Proper placement of the base stations (which is usually called network dimensioning). The present document does not address this issue. Please refer to accompanying document
- 2) Creating and adding base station profiles to the network via the IP DECT Configuration Tool (to form a multi-cell system).

This document describes the second procedure.

NOTE

This guide is valid for Base station firmware version 10.09 and above.

Abbreviations

For the purpose of this document, the following abbreviations hold:

DHCP: Dynamic Host Configuration Protocol

DNS: Domain Name Server

HTTP: Hyper Text Transfer Protocol

IOS: Internetworking Operating System

NAT: Network Address Translator

PCMA: A-law Pulse Code Modulation

PCMU: mu-law Pulse Code Modulation

STUN: Session Traversal Utilities for NAT

References or Related Documentations

IP DECT User Guide

Notes

The following notices and statements are used in this user guide. They will help you to use your application properly.



CAUTION

A caution statement alerts you to situations that may cause serious damage to hardware, software, or data.

NOTE

A note provides additional explanations, important information, or a reference to related information.

Adding Base stations via IP DECT Configuration Interface

NOTE

To use this method the network must support ip dect and the base station must be set to default state (either by web interface or hardware reset).

Here are the recommended steps to add Base stations to network:

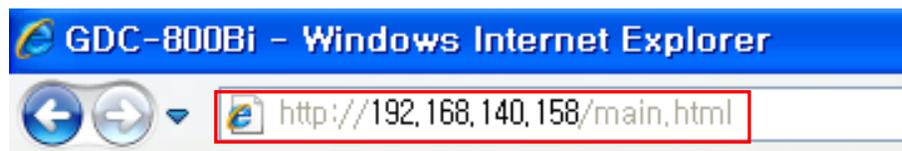
STEP 1. Connect the Base station to a private network via standard Ethernet cable (CAT-5).

STEP 2. Use one of the two methods to determine the base station IP address.

1. Use the IP find menu in the handset (Menu * 4 7 *) to determine the IP address of the base station by matching the MAC address on the back of the base station with the MAC address list in the handset.

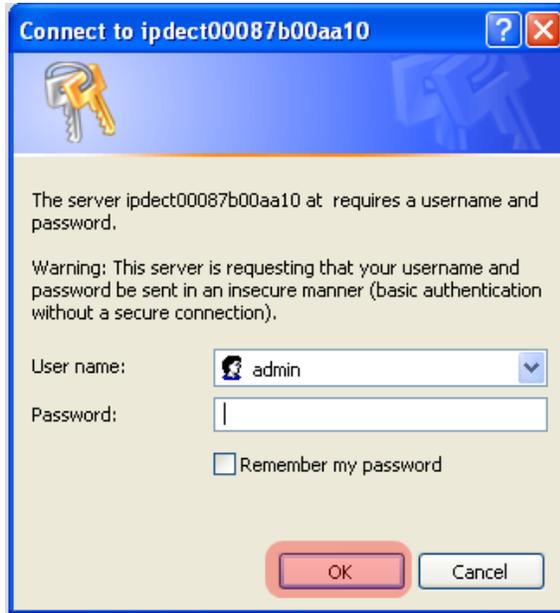
STEP 3. Skip this step if you were successful with STEP 2.

1. Use a standard network protocol analyzer (for e.g. **Wireshark**) to eavesdrop the IP address allocated to the base unit by the DHCP server. You can download Wireshark follow its documentation to know how it is done.
2. Enter the IP address into the address bar of the browser to retrieve base station HTTP Web Server Page.



STEP 4. On the Login page

1. Enter your authenticating credentials (i.e. username and password is default “admin”).
2. Click **OK** button.



Once you have authenticated, the browser will display front end of the IP DECT Configuration Interface.



TIME SERVER SETUP

Set this Time Settings to synchronize the base station(s) time to the NTP server time or use your PC time setting.

STEP 5. Navigate to the Time settings and configure it.

1. Scroll on the left column and click on Time URL link to open the **Time Settings** Page.
2. Enter the relevant parameters
3. Press the **Save and Reboot** button.

Make sure there is contact to the "Time server" otherwise the Multi-cell feature will not work. Alternatively use the Time PC button to get the time setting from your PC time.

Parameter	Description
Time Server	DNS name or IP address of NTP server. Enter the IP/DNS address of the server that distributes reference clock information to its clients including Base stations, Handsets, etc. Valid Input(s): AAA.BBB.CCC.DDD or URL (e.g. time.server.com) Currently only IPv4 address (32-bit) nomenclature is supported.
Refresh time (h)	The window time in hours within which time server refreshes. Valid Inputs: positive integer
Time Zone	Refers to local time in GMT or UTC format. Min: -12:00, Max: +13:00
Daylight Saving Time (DST)	Enter the start and stop dates if you select Automatic. The system administrator can Enable or Disable DST manually.
DST Fixed By Day	You determine when DST actually changes. Choose the relevant date or day of the week, etc. from the drop down menu.
DST Start Month	Month that DST begins Valid Input(s): Gregorian months (e.g. January, February, etc.)
DST Start Date	Numerical day of month DST comes to effect when DST is fixed to a specific date Valid Inputs: positive integer
DST Start Time	DST start time in the day Valid Inputs: positive integer
DST Start Day of Week	Day within the week DST begins

DST Start Day of Week, Last in Month	Specify the week that DST will actually start.
DST Stop Month	The month that DST actually stops.
DST Stop Date	The numerical day of month that DST turns off. Valid Inputs: positive integer (1 to 12)
DST Stop Time	The time of day DST stops Valid Inputs: positive integer (1 to 12)
DST Stop Day of Week	Day within the week DST ends
DST Stop Day of Week Last in Month	The week within the month that DST will turn off.

Time Settings

Time Server:

Refresh time (h):

Timezone:

Daylight Saving Time (DST):

DST Fixed By Day:

DST Start Month:

DST Start Date:

DST Start Time:

DST Start Day of Week:

DST Start Day of Week Last in Month:

DST Stop Month:

DST Stop Date:

DST Stop Time:

DST Stop Day of Week:

DST Stop Day of Week Last in Month:

A successful reboot will reset the time in the base station (by pressing Save and Reboot).

System Information:	Multi cell Ready(Keep-alive) Primary
Phone Type:	IPDECT HW Version 00
System Type:	Generic SIP (RFC 3261)
RF Band:	EU
Current local time:	11/Jul/2011 10:11:29
Operation time:	2 Days 17:34:39 (H:M:S)
RFPI-Address:	1000015E00; RPN:00
MAC-Address:	00087b077ce8
IP-Address:	192.168.11.105
Firmware-Version:	IPDECT/01.63/08-Jul-2011 08:42
Firmware-URL:	tftp://10.10.104.144/FwuPath

SIP SERVER (OR PBX SERVER) SETUP

STEP 6. Create the relevant SIP server (or PBX Server) information in the system. Each service provider/customer should refer SIP server vendor on how to setup SIP servers.

1. Click the link “**Server**” at the left hand column of home page, where you can add your SIP server for base station use.
2. Next, from the Server page, click on the **Add Server** URL and enter the relevant SIP server information (an example is shown below).
3. Choose “Disabled” on NAT adaption parameter if NAT function of the SIP aware router is not enabled.
4. Enter the relevant parameters based on the description in the table below.
5. Select **Save** button.

Parameter	Description
NAT Adaption	To ensure all SIP messages goes directly to the NAT gateway in the SIP aware router. NAT Adaption option should be “ Disabled ” or otherwise choose “ Enabled ” Possible value(s): Enabled, Disabled
Registrar	SIP Server proxy DNS or IP address Permitted value(s): AAA.BBB.CCC.DDD:<Port-Number> or <URL>:<Port-###> Note: Specifying the Port Number is optional.
Outbound Proxy	This is a Session Border Controller DNS or IP address (OR SIP server outbound proxy address) Set the Outbound proxy to the address and port of private NAT gateway so that SIP messages sent via the NAT gateway. Permitted value(s): AAA.BBB.CCC.DDD or <URL> or <URL>:<Port-###> Examples: “192.168.0.1”, “192.168.0.1:5062”, “nat.company.com” and “sip:nat@company.com:5065”.
Re-registration time	The window period (in seconds) when base stations SIP registers with SIP server. Permitted value(s): Positive number (integer)
SIP Transport	SIP network protocol to use. Possible option(s): UDP, TCP, UDP and TCP
Keep Alive	This directive defines the window period (30 secs.) to keep opening the port of relevant NAT-aware router(s), etc. Possible option(s): Enabled, Disabled

DTMF Signaling

Conversion of decimal digits (and '*' and '#') into sounds that share similar characteristics with voice to easily traverse networks designed for voice

Possible option(s)

In band: Meta-data (e.g.: tone digits) and control information sent in the same voice band, using the same VoIP codec as the human voice (e.g. G.711, G.729, etc.)

SIP INFO: Carries application level data along SIP signaling path (e.g.: Carries DTMF digits generated during SIP session OR sending of DTMF tones via data packets in the same internet layer as the Voice Stream, etc.).

RFC 2833: DTMF handling for gateways, end systems and RTP trunks (e.g.: Sending DTMF tones via data packets in different internet layer as the voice stream)

Both: Enables SIP INFO and RFC 2833 modes.

Codec Priority

Defines the codec priority that base stations uses for audio compression and transmission.

Possible option(s): PCMU, PCMA, G726, G722.

GDC-800Bi

Servers

Server 1:
150.150.131.84

Server 2:
61.41.106.223

[Add Server](#)
[Remove Server](#)

Server 1:

NAT Adaption: Disabled

Registrar: 192.168.140.100

Outbound Proxy:

Reregistration time (s): 600

SIP Session Timers: Disabled

Session Timer Value (s): 1800

RTP from own base station: Disabled

Keep Alive: Enabled

Show Extension on Handset Idle Screen: Enabled

Hold Behaviour: RFC 3264

DTMF Signalling: RFC 2833 and SIP INFO

Codec Priority: G711U, G711A

RTP Packet Size: 20 ms

Up Down Reset Codecs Remove

Save Cancel

MULTI-CELL SETUP

STEP 7. Scroll down and Click on **Multi Cell** URL link in the **IP DECT Configuration** to view the current **Multi cell settings** status of the current base station.

Normally, most brand new base stations have **Multi cell system** feature disabled by default. Multi Cell Status shows the system information and last packet received from a base station in the chain.

Description of Settings for Specific Base units is as follows:

Parameter	Description
Multi cell system	Enable this option to allow the Base unit to be set in multi-cell mode (can be set either as Primary or Secondary in the multi-cell chain system – refer to MAC-units in Chain section for details). Possible options: Enabled, Disabled
System chain ID	This is an identifier (in string format e.g. 12345) that is unique for a specific multi-cell system. Note: There can be several multi-cell systems in IP DECT network. Up to 6 levels of base stations chains are permitted in a typical setup. Please refer to accompanied document [2] for further details and description. Valid input: 16 bit String length
Synchronization time (s)	This specifies the period in seconds when elements/nodes (e.g. Base units) in a specific Multi-cell should synchronize to each other. Permitted value(s): Positive number (integer)
Primary Data Sync IP	When Data Sync Peer-to-Peer is selected this option is visible. Enter the IP address of the base that should be primary synchronizing base (the one other base mainly sync. to). It is advisable to set this base to a static IP address. Permitted value(s): AAA.BBB.CCC.DDD
Data Sync	This specifies how the data is synchronized between base stations, multicast allows one primary and peer-to-peer allows several primaries. Possible options: Multicast, Peer-to-Peer
Multi cell debug	Enable this feature, if you want the system to catalogue low level multi-cell debug information or traces. Possible options: None, Data Sync, Auto Tree, Both

Home/Status	<h2>Multi cell Settings</h2>
Extensions	<h3>Multi Cell Status</h3> <p>System Information: Idle Last packet received from IP:</p>
Servers	<h3>Settings for this unit</h3> <p>These settings are used to connect this unit to a system.</p>
Network	Multi cell system: <input type="text" value="Disabled"/>
Management	System chain ID: <input type="text" value="512"/>
Firmware Update	Synchronization time (s): <input type="text" value="60"/>
Time	Data Sync: <input type="text" value="Multicast"/>
Country	Multi cell debug: <input type="text" value="None"/>
Web Security	

STEP 8. Next, the system administrator needs to create and Enable Multi Settings profile for the current base station. On the **Multi Cell settings** Page,

1. Choose **Enabled** option from the drop down menu of the **Multi cell system** parameter.
2. Enable the **Multi cell debug** option if the system administrator wants some Multi-cell related logs to be catalogued by the system.

<h3>Settings for this unit</h3>	
These settings are used to connect this unit to a system.	
Multi cell system:	<input type="text" value="Disabled"/>
System chain ID:	<input type="text" value="512"/>
Synchronization time (s):	<input type="text" value="60"/>
Data Sync:	<input type="text" value="Multicast"/>
Multi cell debug:	<input type="text" value="None"/>

STEP 9. On the same **Multi Cell Settings** page

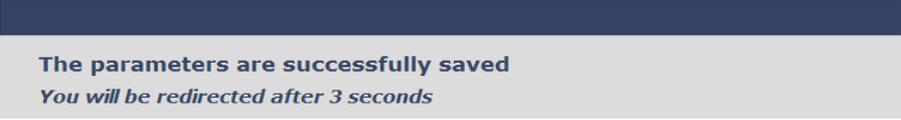
Enter the relevant values for **System chain ID** and Synchronization time (s) respectively.

The **System chain ID** is a geographically unique DECT cell identity allocated to bridge several base stations together in a chain. An example is 55555.

The **Synchronization time** (s) parameter is defined as window/period of time in seconds a specific base station synchronizes to the Primary base station unit (by default 60).

<h2>Multi cell Settings</h2>	
<h3>Multi Cell Status</h3>	
System Information: Idle Last packet received from IP:	
<h3>Settings for this unit</h3>	
These settings are used to connect this unit to a system.	
Multi cell system:	<input type="text" value="Enabled"/>
System chain ID:	<input type="text" value="55555"/>
Synchronization time (s):	<input type="text" value="60"/>
Data Sync:	<input type="text" value="Multicast"/>
Multi cell debug:	<input type="text" value="None"/>

Click on **Save and Reboot** button to keep modified changes of multi cell settings into the base station.



The parameters are successfully saved
You will be redirected after 3 seconds

NOTE

The Multi Cell data synchronization ONLY works when the relevant Time Server is set in the system before Server/Subscriber profile is added or created. Refer to STEP 5.

IMPORTANT

Base stations must be rebooted after the time server has been set..

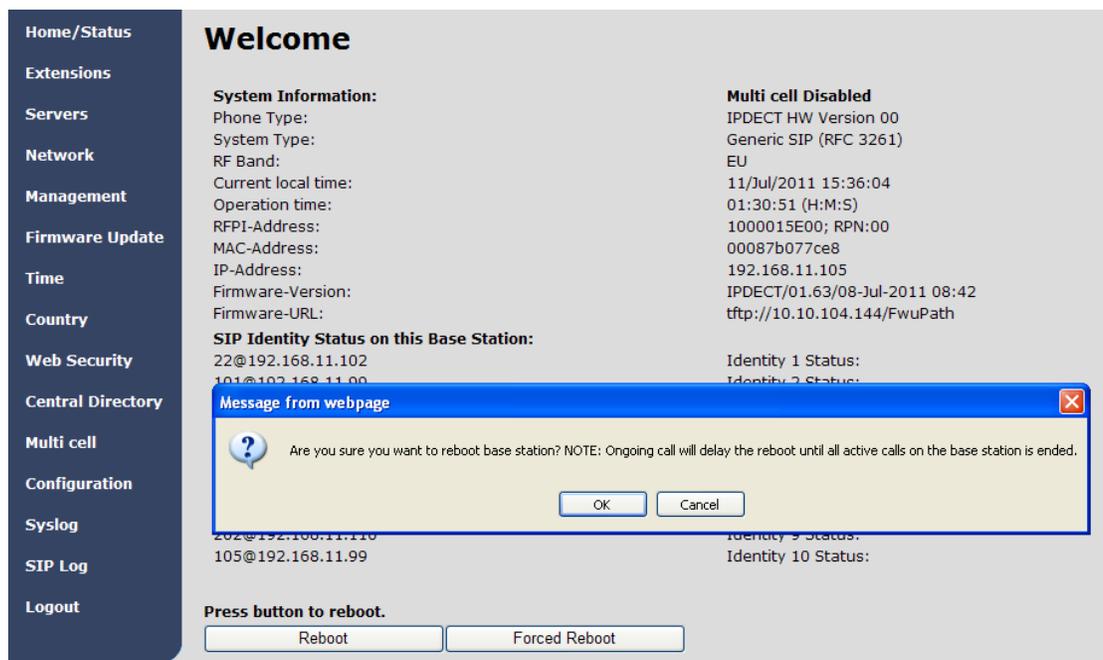
STEP 10. Repeat STEP 1-9 as explained above for each base stations.

IMPORTANT

Base stations must be rebooted after the time server has been set..

Synchronizing the Base stations

STEP 11. On each **IP DECT Configuration** interface for the base station(s) navigate to the Home/Status page and Click the Reboot button.



The screenshot shows the 'Home/Status' page of the IP DECT Configuration interface. The left sidebar contains a navigation menu with items: Home/Status, Extensions, Servers, Network, Management, Firmware Update, Time, Country, Web Security, Central Directory, Multi cell, Configuration, Syslog, SIP Log, and Logout. The main content area is titled 'Welcome' and displays system information:

- System Information:**
 - Phone Type:
 - System Type:
 - RF Band:
 - Current local time: 11/Jul/2011 15:36:04
 - Operation time: 01:30:51 (H:M:S)
 - RFPI-Address: 1000015E00; RPN:00
 - MAC-Address: 00087b077ce8
 - IP-Address: 192.168.11.105
 - Firmware-Version: IPDECT/01.63/08-Jul-2011 08:42
 - Firmware-URL: tftp://10.10.104.144/FwuPath
- Multi cell Disabled**
- SIP Identity Status on this Base Station:**
 - Identity 1 Status:
 - Identity 2 Status:
 - Identity 3 Status:
 - Identity 10 Status:

A modal dialog box titled 'Message from webpage' is overlaid on the page. It contains a question mark icon and the text: 'Are you sure you want to reboot base station? NOTE: Ongoing call will delay the reboot until all active calls on the base station is ended.' Below the text are 'OK' and 'Cancel' buttons. At the bottom of the page, there are two buttons: 'Reboot' and 'Forced Reboot'.

This will trigger “Are you sure you want to reboot base station?” window.

Click **OK** button on this window.

A successful restart of the base stations will lead to a display of the page: **Base Station has been reset**.



The screenshot shows a page with the heading 'Base Station has been reset' in large, bold, black text. Below the heading, it says 'Please wait, base station rebooting'. At the bottom of the page, there is a single button labeled 'Home'.

STEP 12. Navigate back to the **Multi cell settings** page by clicking **Multi-cell** URL link at the left column.

The revised **Multi cell settings** page shows the relevant base stations synchronized together. By default, the system uses the first registered base station as the Primary base unit.

STEP 13. On the Multi-cell settings page, scroll to the DECT system settings and Enable or Disable the “Auto configure DECT sync source tree” (See description in the table below).

Usually the DECT system RFPI parameter is computed by the system (It’s often greyed in a multi-cell system configuration).

Parameter	Description
DECT system RFPI	<p>This is a radio network identity accessed by all Base units in a specific multi-cell system. It composed of 5 octets. It is actually 5 different variables combined together.</p> <p>RFPI Format: XX XX XX XX XX (where XX are HEX values)</p> <p>Note: Only type e.g. 11 6E 60 49 04 the system reformats as 0x11 0x6E 0x60 0x49 0x04</p> <p><u>Access Rights Class (ARC):</u></p> <p>Defines network identity structure used by terminals especially in multi-cell environment. Fixed/default Value=1 (Private multi-cell system).</p> <p>RFPI: 1X XX XX XX XX</p> <p><u>Equipment Installer's code (EIC):</u></p> <p>Code that allows terminals to distinguish between separate DECT networks.</p> <p>Example_RTX_EIC: 0x16E6 (May change in the future)</p>

	<p>RFPI: 11 6E 6X XX XX</p> <p><u>Fixed Part Number(FPN):</u> Is a geographically unique identity transmitted to DECT networks to help PP distinguish between base station communications in different cells/multi-cell systems. E.g. FPN: 0x049</p> <p>RFPI: 11 6E 60 49 XX</p> <p><u>Location Area Length (Lal):</u> A unique code sent to the terminal during location registration to determine the size of the location or cell area. Type: 8-bit value (from 0x00 to 0xFF). E.g Lal=0x04</p> <p>RFPI: 11 6E 60 49 04</p>
Allow multi primary	<p>Enable this to allow more than one primary in the DECT chain (when automatically configured). Note –this option will not block for multi primary if the chain is manually configured. Possible options: Enabled, Disabled</p>
Auto create multi primary	<p>When Allow multi primary is enabled this option is visible. Enabling this option will automatically create primary bases, but be aware that if this option is enabled it can create (in some situations) unwanted primary bases. Possible options: Enabled, Disabled</p>
Auto configure DECT sync source tree	<p>Enable this to allow the network to automatically synchronize the multi-cell chain tree – activating “Reconfigure DECT Tree” automatically. (Not available in some base station firmware(s)). Possible options: Enabled, Disabled</p>
DECT system RFPI	<p>This is a radio network identity accessed by all Base units in a specific multi-cell system. It composed of 5 octets. It is actually 5 different variables combined together. RFPI Format: XX XX XX XX XX (where XX are HEX values) Note: Only type e.g. 11 6E 60 49 04 the system reformats as 0x11 0x6E 0x60 0x49 0x04</p> <p><u>Access Rights Class (ARC):</u> Defines network identity structure used by terminals especially in multi-cell environment. Fixed/default Value=1 (Private multi-cell system). RFPI: 1X XX XX XX XX</p> <p><u>Equipment Installer's code (EIC):</u> Code that allows terminals to distinguish between separate DECT networks. Example_RTX_EIC: 0x16E6 (May change in the future)</p>

RFPI: 11 6E 6X XX XX

Fixed Part Number(FPN):

Is a geographically unique identity transmitted to DECT networks to help PP distinguish between base station communications in different cells/multi-cell systems.

E.g. FPN: 0x049

RFPI: 11 6E 60 49 XX

Location Area Length (Lal):

A unique code sent to the terminal during location registration to determine the size of the location or cell area.

Type: 8-bit value (from 0x00 to 0xFF). **E.g Lal=0x04**

RFPI: 11 6E 60 49 04

DECT system settings

These settings are DECT settings for the system.

RFPI System:

Allow multi primary:

Auto configure DECT sync source tree

DECT Chain Buttons

- **Reboot chain:** Reboots all the bases in the chain (do not reboot bases that are active).
- **Force reboots chain:** Forcing a reboot of all the bases in the chain (used if calls must be interrupted).

Reconfigure DECT Tree: Reconfigure the network to synchronize the multi-cell chain tree once, depending on the settings in “DECT system settings”.

Base Station Group

	ID	RPN	Version	MAC-Address	IP-Address	IP Status	DECT sync source	DECT property	Base Station Name
<input type="checkbox"/>	0	00	163	00:08:7B:07:7C:E8	192.168.11.105	This Unit	Primary:RPN00	Primary	SME VoIP Configuration
<input type="checkbox"/>	1	04	163	00:08:7B:07:7D:11	192.168.11.104	Connected	Primary:RPN00 (-33dBm)	Locked	SME VoIP

[Check All / Uncheck All](#)
With selected: [Remove from chain](#)

DECT Chain
Primary: RPN00: SME VoIP Configuration
└─ Level 1: RPN04: SME VoIP

Summary of Procedure

Creating a Chain

We enumerate the short version of how to add 3 base stations units in a multi-cell setup. This can be applied for up to N number of base units. This procedure is divided into four (4) main stages. Apply this procedure if all base units are straight from production.

Stage 1

Skip this stage if relevant base stations are already in the network.

1. Add 3 base stations i.e. RFP1, RFP2, RFP3 > Disable the “Multi cell system” option and “Save”
2. RFP1, RFP2, RFP3: Reboot from the HTTP IP DECT Configuration Main Page
3. RFP1, RFP2, RFP3: Default by pressing reset button 12-sec.

Stage 2

Choosing 1st base unit i.e. RFP1 as Primary

1. RFP1: Define Time server and “Save and reboot” from the **Time** page
2. RFP1: Reboot automatically
3. RFP1: Press “Add server” and define SIP server IP and “Save” from the **Servers** page
4. RFP1: Multi cell system = enabled and “Save” from the **Multi-cell** page
5. RFP1: Reboot (Verify from Debug log “**SYNCMGR: This base is ready to be Primary in a Chain**”)

Stage 3

Choose another base unit, RFP2 as Secondary1

1. RFP2: Multi cell system = enabled and “Save”
2. RFP2: Reboot (Verify from Debug log “**SYNCMGR: This base is ready to join into another Chain**”)
3. RFP1, RFP2: Wait 2min for stable Primary-Secondary chain (check for the message: **SYNCMGR: Socket#10 creation success**)

Stage 4

Choose the 3rd base unit, RFP3 as Secondary2.

1. RFP3: Multi cell system = enabled and "Save"
2. RFP3: Reboot (Verify Debug log "SYNCMGR: This base is ready to join into another Chain")
3. RFP1, RFP3: Wait 2min for stable Primary-Secondary chain (SYNCMGR: Socket#10 creation success)
4. RFP3: Check mark ID2/RPN08 and select dropdown "1 – RPN: 04" and "Save"
5. RFP3: Reboot (**SYNCMGR: Socket#8 creation success**)

Multi-cell chain of 3 base stations has been created successfully. Next step involves adding extensions to the system.

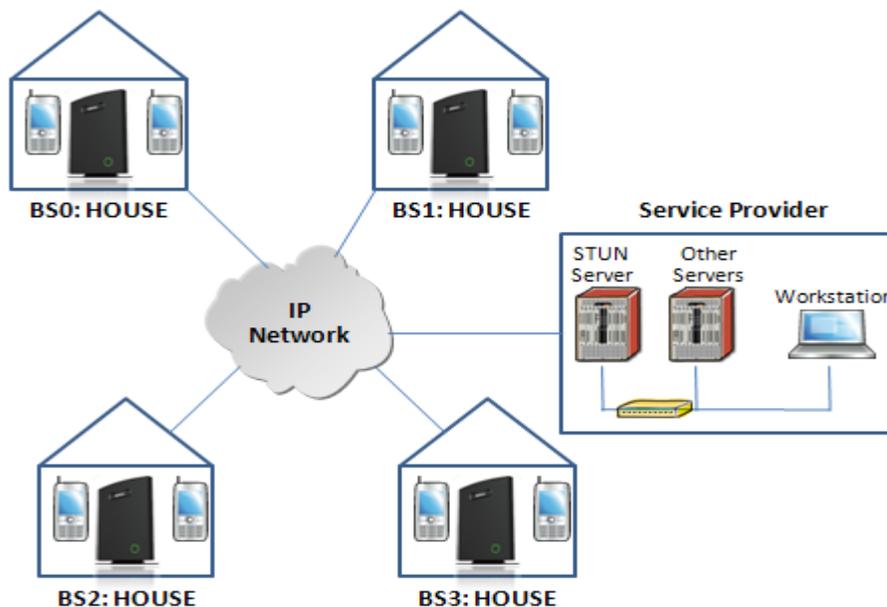
Practical Configuration of Multi-Cell System

In this chapter we describe what exactly to configure in the IP DECT Configuration Interface ensure these scenarios really work.

Case ##1: Isolated Buildings

Example includes Branch or small office, Retail outlet or store, etc. The optimal configuration for isolated buildings is standalone base stations setting. In this setting, you must:

- A. Using the figure below as illustration, log into the Configuration Interface of each base station.
- B. Configure the Time Server, SIP Server, Extensions as described in the previous chapters.
- C. On the main page of the configuration interface, click **Network URL** > disable the Multi-cell parameter of each base station > Save and Reboot each base to complete the Case ##1 setup.



Disable Multi Cell option of Base Stations

Settings for this unit

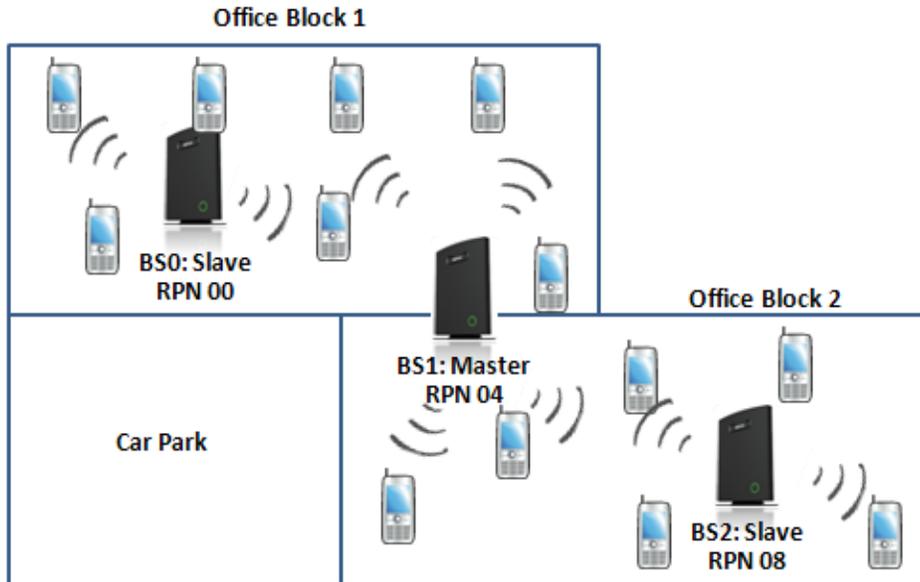
These settings are used to connect this unit to a system.

Multi cell system:	<input type="button" value="Disable"/> ▾
System chain ID:	<input type="text" value="2275"/>
Synchronization time (s):	<input type="text" value="60"/>
Multi cell debug:	<input type="button" value="Disable"/> ▾

Case ##2: Location with co-located partners

Example includes Department shops, Retail location with co-located photo kiosk or pharmacy, etc.

To illustrate this setup, two Secondary base stations are synchronized to one Primary base in the two office blocks. Here is diagram to illustrate Case ##2.



The procedure:

- A. Follow the steps described in STAGES 1 to 4
- B. On the **Network** page of each base define the **DECT sync source** settings as illustrated in the table below.
- C. Save and reboot each base to complete case ##2 setup

Multi Cell Page of Base Stations

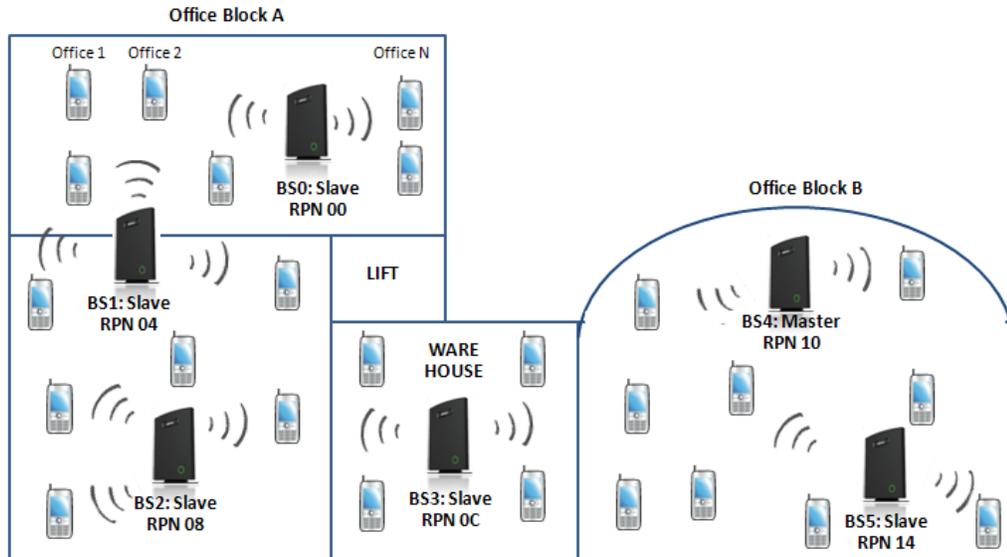
Recommended settings of MAC-units in Chain section of page (Other different settings exist):

ID	RPN	Version	MAC-Address	IP-Address	IP Status	DECT sync source	DECT Property	Base Station Name
0	00	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN04	Locked	Base1
1	04	XX	XX:XX:XX...	XXX.XXX...	This Unit	Primary: RPN04	Primary	Base2
2	08	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN04	Locked	Base3

Case ##3: Large to Medium Sized Enterprises

In this scenario, we have five Secondary bases synchronized to one Primary base. The Primary base is located in office block B while the Secondary bases are spread across the whole enterprise.

No base station is deployed in the lift because it has high attenuation properties that will drastically reduce radio signals. Example of this deployment Corporate headquarters, Harbor areas, Campus



The procedure:

- A. Follow the steps described in STAGES 1 to 4
- B. On the Network page of each base define the DECT sync source settings as illustrated in the table below.
- C. Save and reboot each base to complete case ## 3 setup

Multi Cell Page of Base Stations

Recommended settings of MAC-units in Chain section of page (Other valid setting exists):

ID	RPN	Version	MAC-Address	IP-Address	IP Status	DECT sync source	DECT Property	Base Station Name
0	00	XX	XX:XX:XX...	XXX.XXX...	Connected	Level 3: RPN04	Locked	Base1
1	04	XX	XX:XX:XX...	XXX.XXX...	Connected	Level 2: RPN08	Locked	Base2
2	08	XX	XX:XX:XX...	XXX.XXX...	Connected	Level 1: RPN0C	Locked	Base3

3	0C	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN10	Locked	Base4
4	10	XX	XX:XX:XX...	XXX.XXX...	This Unit	Primary: RPN10	Primary	Base5

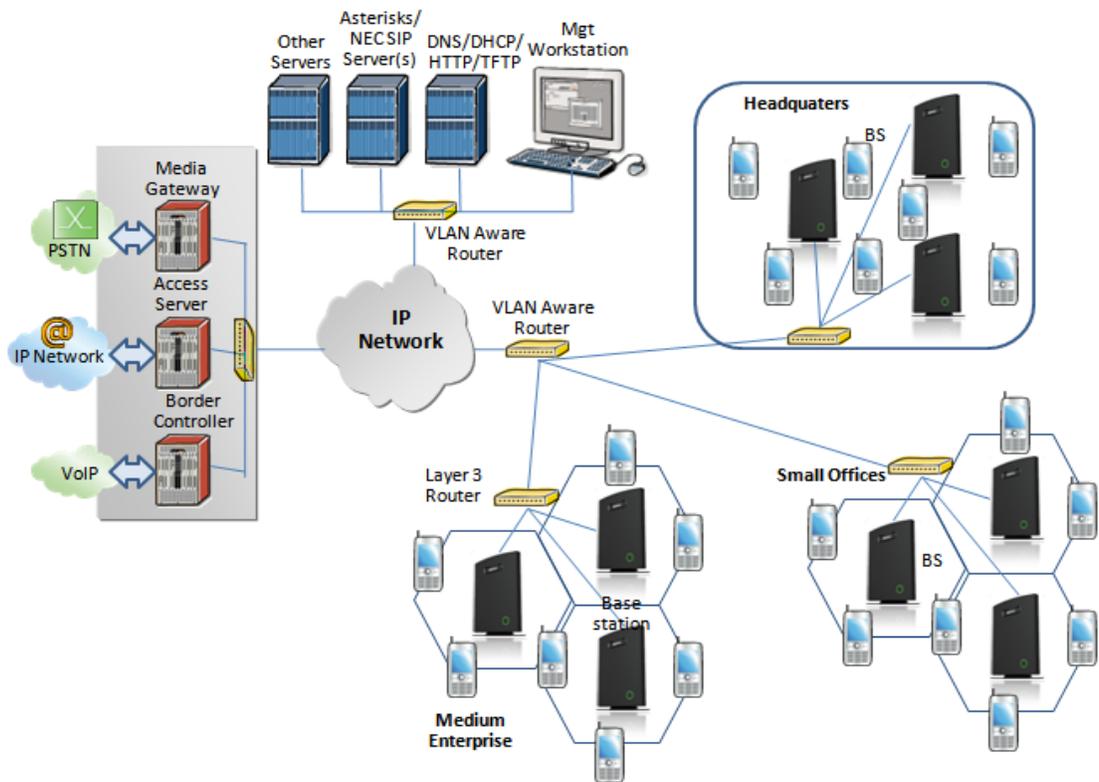
NOTE)

The number of chains cannot exceed 6 levels.

Case ##4: Large Enterprises at Different Locations

In this scenario, multi-cell systems are deployed at different locations; geographically separated from each other.

Each location has a Primary base station with more than one Secondary base synchronize to it.



The procedure:

- A. Follow the steps described in STAGES 1 to 4
- B. On the Network page of each base define the DECT sync source settings as illustrated in the table below.
- C. Save and reboot each base to complete case ## 4 setup

Multi Cell Page of Base Stations

Recommended settings of MAC-units in Chain section of page (Other valid setting exists):

ID	RPN	Version	MAC-Address	IP-Address	IP Status	DECT sync source	DECT Property	Base Station Name
0	00	XX	XX:XX:XX...	XXX.XXX...	This Unit	Primary: RPN00	Primary	Base1
1	04	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN00	Locked	Base2
2	08	XX	XX:XX:XX...	XXX.XXX...	Connected	Level 1: RPN04	Locked	Base3
3	0C	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN0C	Primary	Base4
4	10	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN0C	Locked	Base5
5	14	XX	XX:XX:XX...	XXX.XXX...	Connected	Level 1: RPN10	Locked	Base6
6	18	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN18	Primary	Base7
7	1C	XX	XX:XX:XX...	XXX.XXX...	Connected	Primary: RPN18	Locked	Base8

Adding Extension/Handset Registration

Here is the recommended procedure of adding extension(s) and registering one or more handsets to the Multi-cell system which was just created.

ADDING EXTENSIONS TO SYSTEM

STEP 14. Choose the “**Extensions**” URL at the left hand column of home page.

STEP 15. Select the **Add Extension** URL.

1. Enter the relevant entries (an example is shown below with 3020 as the extension).
2. Click on the Save button.

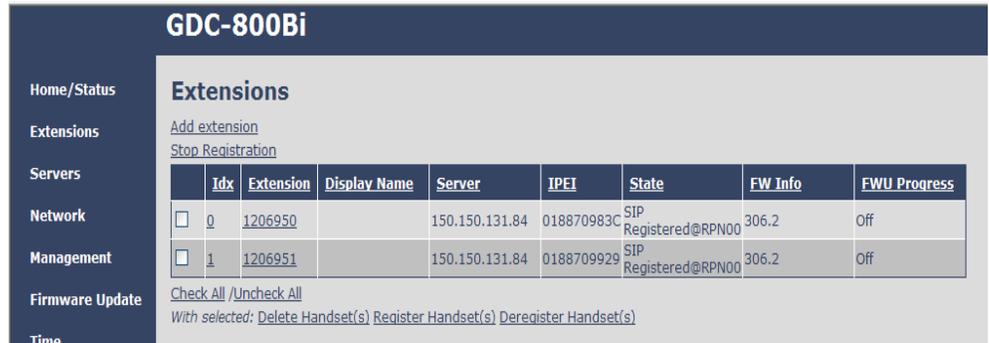
The screenshot displays the GDC-800Bi web interface. On the left is a dark blue navigation menu with the following items: Home/Status, Extensions, Servers, Network, Management, Firmware Update, Time, Country, Security, Central Directory, Multi cell, Repeaters, and Statistics. The main content area is titled 'Edit extension' and contains the following fields and controls:

- Extension: 1206950
- Authentication User Name: 1206950
- Authentication Password: ••••••••
- Display Name: (empty)
- Mailbox Name: (empty)
- Mailbox Number: (empty)
- Emergency Number: (empty)
- Server: Server 1: 150.150.131.84 (dropdown)
- Location: ANY (dropdown)
- Call waiting feature: Enabled (dropdown)
- Broadsoft Feature Event Package: Disabled (dropdown)
- Forwarding Unconditional Number: (empty) Disabled (dropdown)
- Forwarding No Answer Number: (empty) Disabled (dropdown) 90 s
- Forwarding on Busy Number: 6136 Enabled (dropdown)

At the bottom of the form are two buttons: 'Save' and 'Cancel'.

HANDSET REGISTRATION

STEP 16. The extension page will show the figure below, if you save successfully the entries safely. Enable the check option and choose the option “**Register Handset**” URL.



GDC-800Bi

Home/Status
Extensions
Servers
Network
Management
Firmware Update
Time

Extentions

[Add extension](#)
[Stop Registration](#)

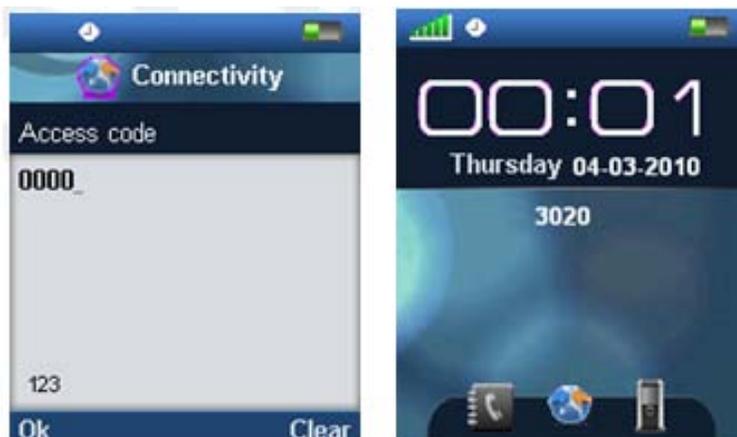
	Idx	Extension	Display Name	Server	IPEI	State	FW Info	FWU Progress
<input type="checkbox"/>	0	1206950		150.150.131.84	018870983C	SIP Registered@RPN00	306.2	Off
<input type="checkbox"/>	1	1206951		150.150.131.84	0188709929	SIP Registered@RPN00	306.2	Off

[Check All /Uncheck All](#)
With selected: Delete Handset(s) Register Handset(s) Deregister Handset(s)

STEP 17. Next, take the handset you will like to register > power it up > in the idle mode navigate to the Menu > Choose **Connectivity** > Select **Register**.



STEP 18. On the Connectivity dialog and after choosing Register option > Enter the **Access code** (by default is 0000) > Press **OK** > Successful registration displays Extension(s) registered.



STEP 19. Open the HTTP interface of relevant base unit > On the **Home/Status** page, you can check the current status of the SIP end node (which is the same as the handset). (In the example below you can check the status of an extension 101)

Welcome

System Information: Phone Type: System Type: RF Band: Current local time: Operation time: RFPI-Address: MAC-Address: IP-Address: Firmware-Version: Firmware-URL:	Multi cell Disabled IPDECT HW Version 00 Generic SIP (RFC 3261) EU 11/Jul/2011 13:06:04 02:35:29 (H:M:S) 1000015E00; RPN:00 00087b077ce8 192.168.11.105 IPDECT/01.63/08-Jul-2011 08:42 tftp://10.10.104.144/FwuPath
---	--

SIP Identity Status on this Base Station:

105@192.168.11.99	Identity 1 Status:	OK
21@192.168.11.102	Identity 2 Status:	OK
202@192.168.11.110	Identity 3 Status:	OK
104@192.168.11.99	Identity 4 Status:	OK
106@192.168.11.99	Identity 5 Status:	OK
22@192.168.11.102	Identity 6 Status:	OK
101@192.168.11.99	Identity 7 Status:	OK
102@192.168.11.99	Identity 8 Status:	OK
103@192.168.11.99	Identity 9 Status:	OK
201@192.168.11.110	Identity 10 Status:	OK

Press button to reboot.

<input type="button" value="Reboot"/>	<input type="button" value="Forced Reboot"/>
---------------------------------------	--

Creating Multi-Cell Using 2 Bases/Handsets

In this chapter, we assume a user have single functioning standalone Base unit and will like to add another base unit. Here is the procedure for example:

The multi-cell system contains one Primary and can have more than one Secondary. Secondary will have the information synchronized with Primary.

BEFORE CONFIGURING THE BASE STATIONS

STEP 1. Reset the relevant bases (BS1 and BS2) to the default state.

STEP 2. Take each base station and long press on the side a small button (after the bases restart or powers up) until the LED in front lit **RED** for 5 sec (continue pressing even when you see **ORANGE**):

1. Long press reset button.
2. Wait until LED stay to RED for 5 seconds. (No flashing).
3. Power down and up the BS again to finish.



CONFIGURATION OF BASE STATIONS

STEP 3. For each base station [BS 1 and BS 2] navigate to multi-cell configuration page by clicking “Multi-cell” > On this page

1. Select the “Enabled” option for Multi cell system parameter
2. Fill in a number for System chain ID
3. Press Save and Reboot button to reboot base station and wait for 1 to 3 minutes.

If a reboot warning pops up press OK to confirm.

Multi cell Settings

Multi Cell Status
 System Information: Idle
 Last packet received from IP:

Settings for this unit
 These settings are used to connect this unit to a system.

Multi cell system: Enabled

System chain ID: 55555

Synchronization time (s): 60

Data Sync: Multicast

Multi cell debug: None

STEP 4. After a successful restart, on each base [BS 1 and BS 2] Multi-cell page you will find the other base connected and synchronized (the IP status shows This Unit or Connected) to the system as illustrated below.

Base Station Group

ID	RPN	Version	MAC-Address	IP-Address	IP Status	DECT sync source	DECT property	Base Station Name
<input type="checkbox"/> 0	00	163	00:08:7B:07:7C:E8	192.168.11.105	This Unit	Primary:RPN00	Primary	SME VoIP Configuration
<input type="checkbox"/> 1	04	163	00:08:7B:07:7D:11	192.168.11.104	Connected	Primary:RPN00 (-33dBm)	Locked	SME VoIP

[Check All / Uncheck All](#)
 With selected: [Remove from chain](#)

DECT Chain
 Primary: RPN00: SME VoIP Configuration
 - Level 1: RPN04: SME VoIP

Reboot chain Force reboot chain Reconfigure DECT Tree

STEP 5. For [BS 1] Add server and extension to BS 1 similar to earlier sections.

STEP 6. [BS 1] Register HS to the extension and verify whether it's successful from the "Home" page and Handset UI.

Welcome

System Information:

Phone Type: IPDECT HW version 00
 System Type: Generic SIP (RFC 3261)
 RF Band: EU
 Current local time: 11/Jul/2011 13:35:10
 Operation time: 00:19:52 (H:M:S)
 RFPI-Address: 1000015E00; RPN:00
 MAC-Address: 00087b077ce8
 IP-Address: 192.168.11.105
 Firmware-Version: IPDECT/01.63/08-Jul-2011 08:42
 Firmware-URL: tftp://10.10.104.144/FwuPath

Multi cell Ready(Keep-alive) Primary

SIP Identity Status on this Base Station:

105@192.168.11.99	Identity 1 Status:	OK
202@192.168.11.110	Identity 2 Status:	OK
106@192.168.11.99	Identity 3 Status:	OK
103@192.168.11.99	Identity 4 Status:	OK
102@192.168.11.99	Identity 5 Status:	OK
104@192.168.11.99	Identity 6 Status:	OK
22@192.168.11.102	Identity 7 Status:	OK
101@192.168.11.99	Identity 8 Status:	OK
21@192.168.11.102	Identity 9 Status:	OK
201@192.168.11.110	Identity 10 Status:	OK

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