# Alcatel-Lucent Enterprise

# 8328 & 8368 SIP-DECT configuration guide

## Provisioning for Rainbow Hub

September 2024

www.al-enterprise.com

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**Revision history**

| | |
|---|---|
| Edition 1: April 25, 2023 | Creation of the document |
| Edition 2: August 10, 2023 | Update of the document for firmware update |
| Edition 3: October 20, 2023 | Update of the document for 8368 base station and 8214 device |
| Edition 4: January 16, 2024 | Update of the document for central directory |
| Edition 4: September, 2024 | Update of the document for DM URL and backup |

# 1 Introduction

This document gives an overview of 8328 & 8368 SIP-DECT configuration when used in Rainbow Hub environment. The Base Station acts as SIP gateway.

8328 base station supports 8212 and 8214 DECT handsets. But 8368 base station only supports 8214 handsets.

Configuration on Rainbow Hub side (user creation, license allocation, retrieve of SIP account password and domain) is not covered by this document. Please refer to the following Help Center links *https://support.openrainbow.com/hc/en-us/articles/4407688115986-Configure-company-members*

*https://support.openrainbow.com/hc/en-us/articles/360016387260-Configure-the-telephone-numbers-of-company-members-in-a-Cloud-PBX*

*https://support.openrainbow.com/hc/en-us/articles/360021940099-Generic-SIP-devices*

A DECT system setup can be deployed as follows:

**Single cell setup:** Telephony network composed of one base station

**8328 Dual cell setup:** Telephony network composed of two base stations

**8368 Multi Cell setup:** Telephony network composed of several base stations

**The base station only supports Europe/ETSI frequency band which is 1.88 GHz – 1.90 GHz.**

# 2 Documentation

**ALE Documentation:** (available on MyPortal with Business Partner access)

- Reference 8AL91449ENAA: 8328 SIP-DECT System Guide
- Reference 8AL91459ENAA : 8368 SIP-DECT System Guide
- Reference 8AL90874USAA: DECT and IP-DECT Engineering Rules and Site Survey Kit Manual
- Reference 8AL91447ENAA: 8212 DECT Handset - SIP User Manual
- Reference 8AL91453ENAA: 8214 DECT Handset - SIP User Manual
- Reference 8AL91448USAA: SAFETY AND REGULATORY INSTRUCTIONS – Alcatel-Lucent Enterprise 8328 SIP-DECT SINGLE BASE STATION

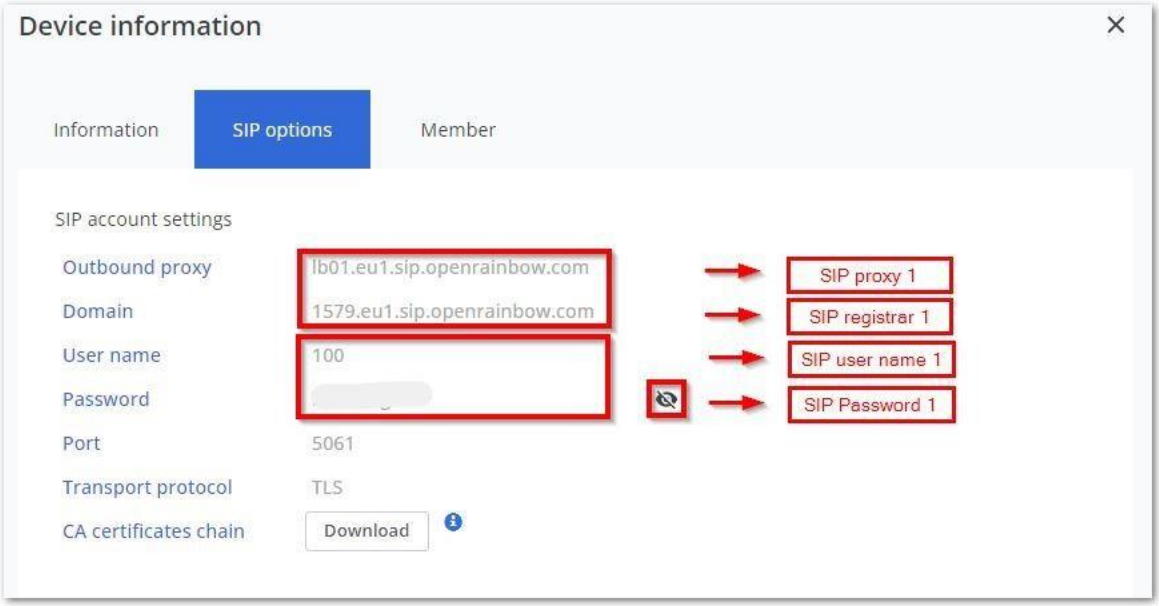
# 3 Rainbow SIP parameters configuration

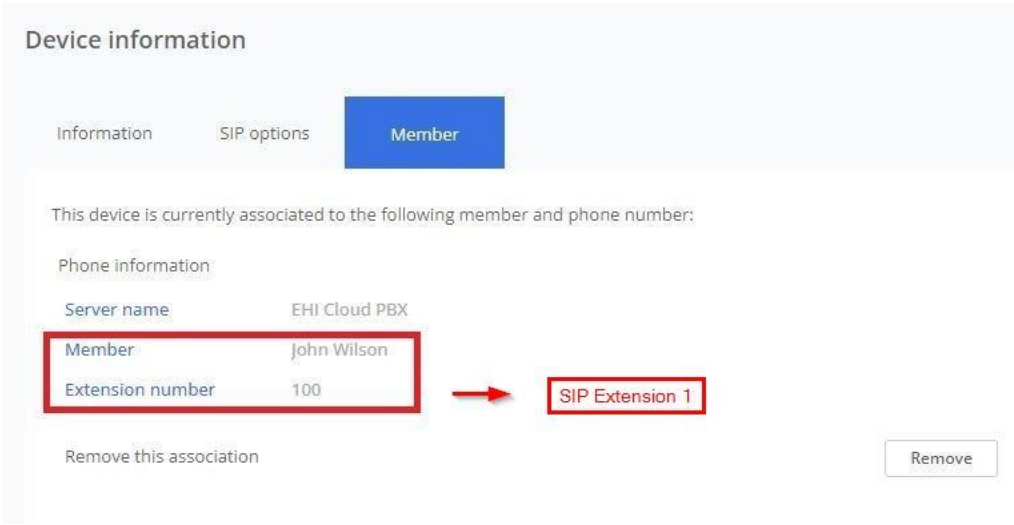
Generic devices must be configured manually. So you must create the device under Rainbow Administration interface -> *Communication -> Devices -> Create (a new device) -> Generic type = Generic SIP*

Then you just have to associate the new device to a Rainbow user.

There is a number of provisioning parameters related to Rainbow that needs to be configured in the IP-DECT 8328 or 8368. Below information must be obtained per each connected DECT device from Rainbow Company *Administration interface -> Communication -> Devices -> SIP options* :

- **SIP registrar domain name** (e.g. *1579.eu1.sip.openrainbow.com)* and port (e.g. *5061*)
- **SIP proxy domain name, outbound proxy** (e.g. *lb01.eu1.sip.openrainbow.com*) and port (e.g. *5061*)
- **SIP User name** ( e.g. *100*) – usually equals to extension number
- **SIP Password**




# 4 SIP-DECT Base station configuration

The SIP-DECT configuration interface is a web-based administration platform used for configuring and programming the base station.

- To enter the user interface of the base station, you first need to connect the base to a private network with a DHCP server.

  ***Important note:***

  The DHCP parameter must be configured with the following mandatory parameters: **NTP server and DNS IP address**.

- It is also possible to configure a static IP address via the base station *Web Administration -> Network -> IP Settings* parameters.

## 4.1 Search of the base station's IP address

Afterwards, you need to find the base station's IP and type it in your internet browser. The DECT handset has an "IP search" feature, which allows the user to view the IP addresses of the bases. To use this feature, please follow the steps below:

**Step 1** Handset in idle
**Step 2** *8212 device*: Enter in the Menu by pressing the **OK** key
*8214 device*: Enter in the Menu by pressing the **Menu** key 
**Step 3** Type ***47*** **(*IP*)** (You will not see the dialed numbers, there is no feedback)

The handset will now start to search for base stations, and for each one found, the MAC and IP address will be shown.

## 4.2 Connection to the Base Station interface

The web-based administration page is compatible with the following browsers:

- Chrome 68+
- Edge 42+
- Firefox 61+
- Safari 11.1.2+

- Open a Web browser and type in the IP address previously discovered by the DECT handset.
- On the Login page, enter your authentication credentials (i.e. username and password). By default, the username and password are **admin/admin**. Press **OK.**
- Once you have been authenticated, the browser will display the front end of the 8328 or 8368 SIP-DECT Configuration Interface.

| FEATURE | DESCRIPTION |
|---|---|
| HOME/STATUS | This is the front end of the base station's HTTP web interface. This page shows a summary of the current operating condition and settings of the base station and handset(s). |
| EXTENSIONS | Administration of extensions and handsets in the system |
| SERVERS | On this page, the user can define which SIP/NAT server the network should connect to. |
| NETWORK | Provides the user with the main network settings, such as:<br><br>**NAT settings**: allows configuration of features for resolving the Network Address Translation. These features enable interoperability with most types of routers.<br>**IP settings:** allows setting dynamic (DHCP) or static IP address for your network<br>**Virtual LAN:** allows specifying the Virtual LAN |
| MANAGEMENT | Defines additional settings such as the Configuration server address, Management transfer protocol, Text messaging and sizes of logs/traces that should be catalogued in the system. |

| | |
|---|---|
| FIRMWARE UPDATE | Remote firmware update (HTTP(s)/TFTP) settings of base stations and handsets. |
| LOCATION GATEWAYS | Administration of Location Gateways<br><br>***NOTE:*** *The Location gateway feature must be enabled via the Management page for this menu to appear on the navigation panel* |
| HEADSET BASE | Administration of headset bases<br><br>***NOTE:*** *The Headset base feature must be enabled via the Management page for this menu to appear on the navigation panel. Feature not available.* |
| COUNTRY | Allows specifying the country/territory where the network is located. Configuring these settings ensure that your system is working properly.<br><br>***NOTE:*** *The base language and country settings are independent of each other*<br><br>**Time settings**:<br>The user can configure the Time server to always have their base synched with the exact time. The time servers must deliver the time to conform to the Network Time Protocol (NTP). Handsets are synchronised to this time. Base units synchronise to the master using the Time server. |
| SECURITY | The users can administrate certificates and create account credentials with which they can log in or log out of the embedded HTTP web server. |
| CENTRAL DIRECTORY | Provides an interface to a common directory load of up to 3000 entries using *csv format, or to a configuration of an LDAP directory.<br><br>***NOTE:*** *LDAP and central directory cannot operate at the same time* |
| DUAL CELL /MULTI CELL | Enables the user to create a chain of base stations. Make sure the system ID for the relevant base stations is the same, otherwise the dual/multi cell feature will not work. |
| REPEATERS | Administration and configuration of repeaters in the system |
| ALARM | Administration and configuration of the alarm settings on the system. This controls the settings for alarms that can be sent to the handsets. This feature is only available on certain types of handsets. |
| STATISTICS | Overview of the system and call statistics |
| GENERIC STATISTICS | Overview of general parameter statistics of the system |
| DIAGNOSTICS | Overview of base stations and extensions diagnostics |
| CONFIGURATION | Displays the detailed and complete system settings for the base station |
| SYSLOG | Reports overall network related events or logs (only live feed is shown) |
| SIP LOG | Reports SIP related logs |
| EMERGENCY CALL | Administration and configuration of emergency numbers |
| LOGOUT | Logout of the web interface |

*8328/8368 SIP-DECT Administration Interface*

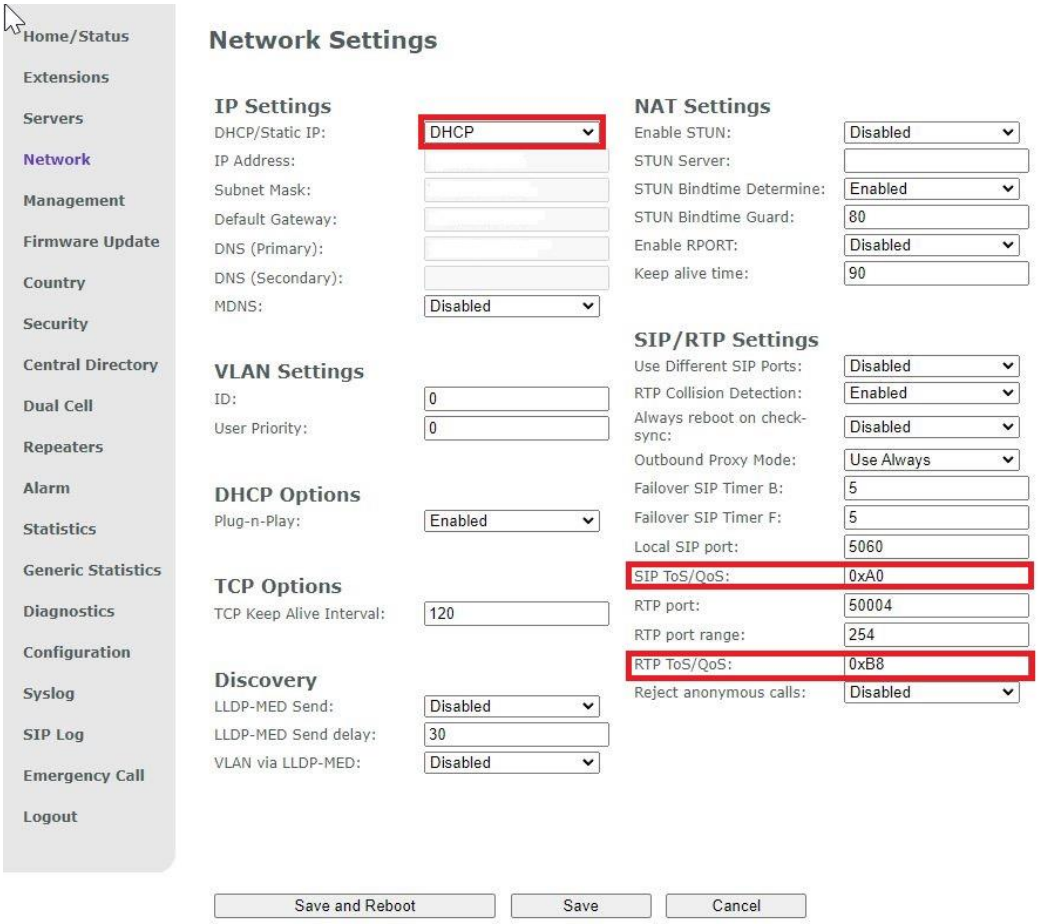
The ***Single Cell System mode*** is a single base station not in connection with other base stations. All configuration parameters are to be sent to this base station and covers the range of this base station.

The ***Dual Cell/Multi Cell System mode*** is a group of base stations on a connecting LAN using the same System Chain ID. All base stations using the same Chain ID are connected together.

## 4.3 Base station network

The Web-based Administration allows us to change the IP settings of the base station by choosing DHCP or IP static addressing through *Web Admin -> Network -> DHCP/Static IP field*

### 4.3.1 Dynamic DHCP IP addressing




Quality of Service (QOS) can be configured by changing the values of the following parameters:

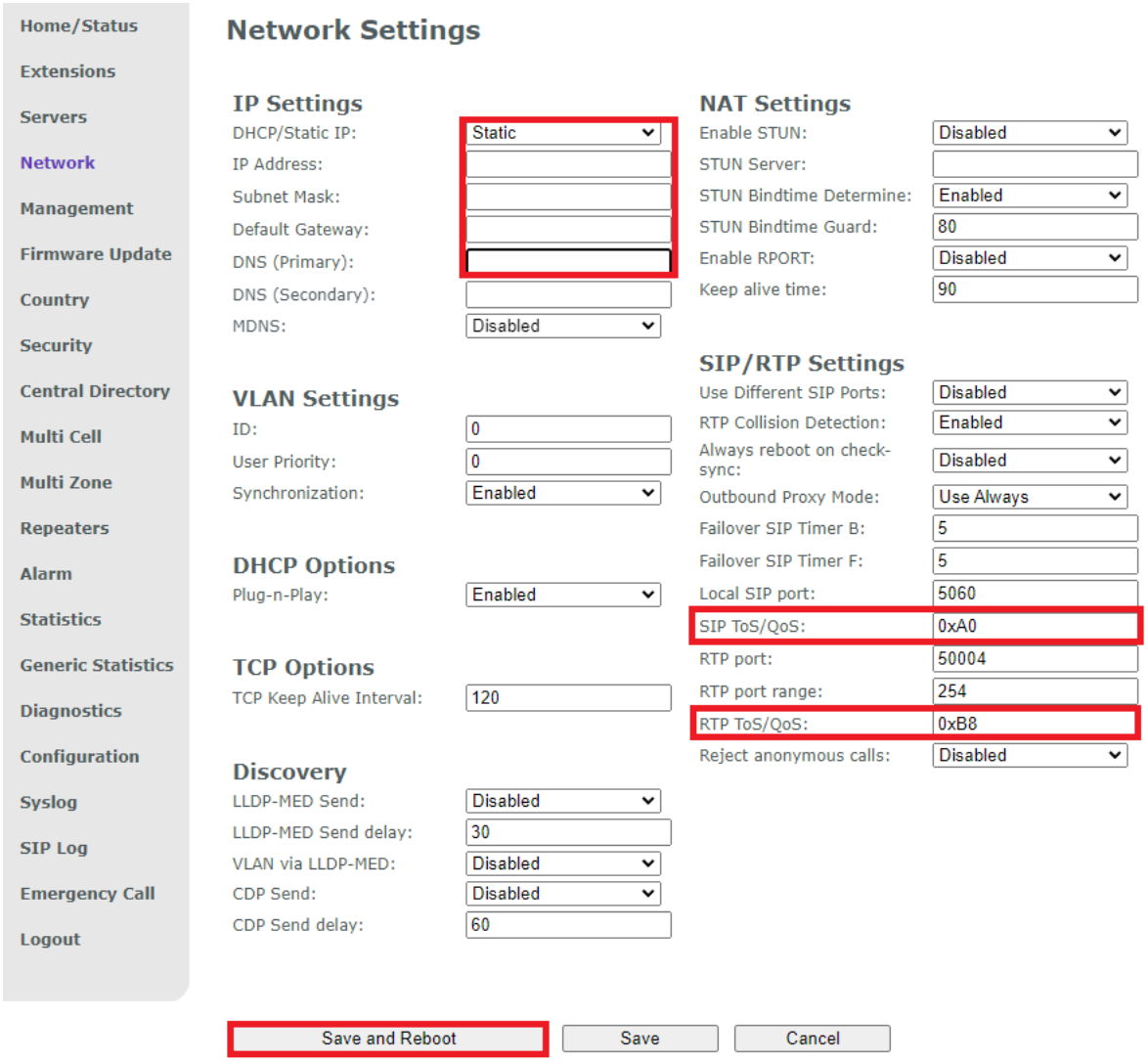
- *Network -> SIP/RTP Settings -> SIP ToS/QoS: Priority of call control signaling using the TOS byte*
- *Network -> SIP/RTP Settings -> RTP ToS/QoS: Priority of RTP traffic based on TOS byte.*

The TOS byte must also be managed at the switch/routers level.

***Note:*** If you cannot connect to the base station, you can try to execute a 'factory configuration of the base station. So just press the reset button on the bottom of the base until the red led is shown. It should last about 10 seconds.

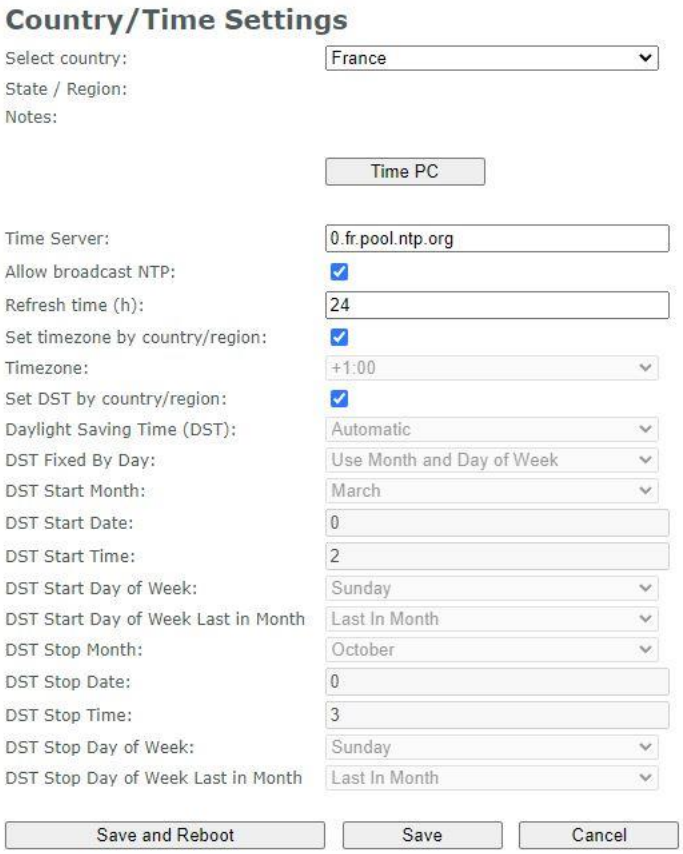
***Note:*** If you base station is still running in an old version, don't try to change the language of the base station because it is not supported in the latest version. So the official language is English.

### 4.3.2 Static IP addressing



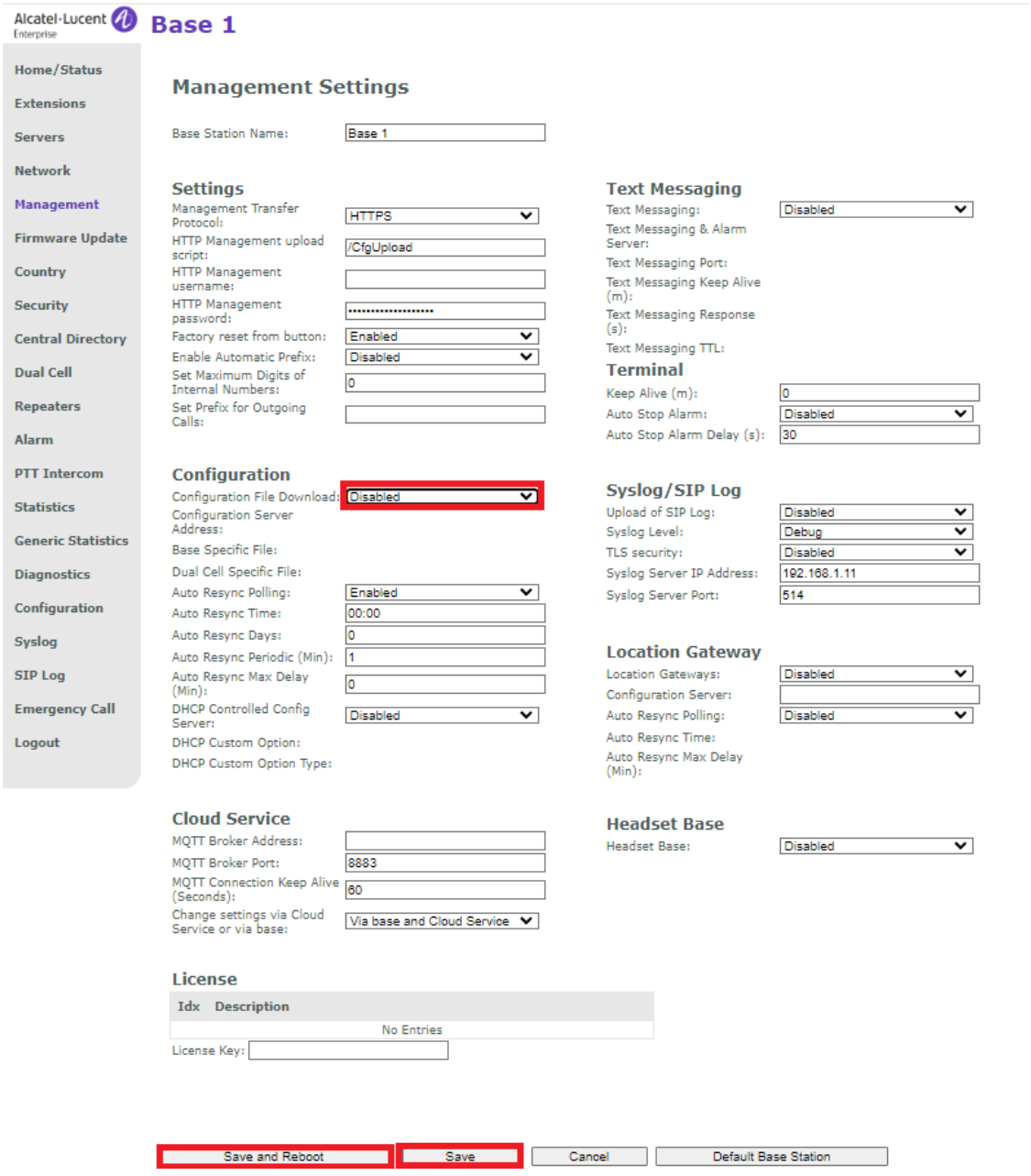

***Note:*** If you cannot connect to the base station, you can try to execute a 'factory configuration of the base station. So just press the reset button on the bottom of the base until the red led is shown. It should last about 10 seconds.

## 4.4 Country




- The country setting controls the in-band tones used by the system.
- The time server supplies the time used for data synchronisation in a dual cell configuration. As such, it is mandatory to have the time server set for a dual cell and multicell configuration, otherwise the system will not work properly.
  **You should choose the nearest NTP server which is located in your country.**
- Changing time settings will require a reboot of the system.

## 4.5 Management download parameter




- The ‘configuration file download’ parameter must be disabled.

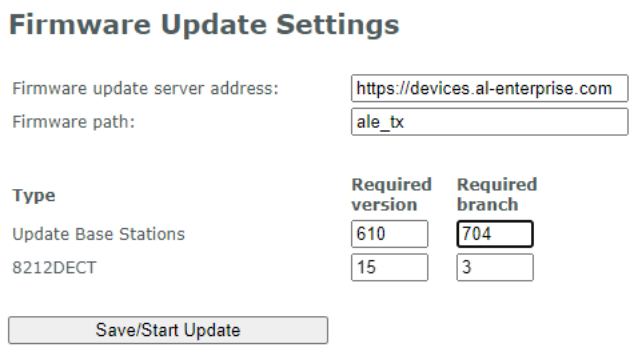
## 4.6 Firmware upgrade

### 4.6.1 Firmware Update with an https Server

#### *4.6.1.1 8328 Firmware Update with an https Server*

All devices can be upgraded via the Web-based Administration.

*Web Admin -> Firmware Update*




While upgrading the handset with a new binary, the progress can be monitored on the *Extensions* page under the *FWU Progress* column. The progress is displayed in % and as soon as the file upload is done, the column will display a message "*Waiting for charger".* The user must then place the handset in the cradle to overwrite the old firmware/binary with the new one. The handset is ready to be used as soon as it reboots.

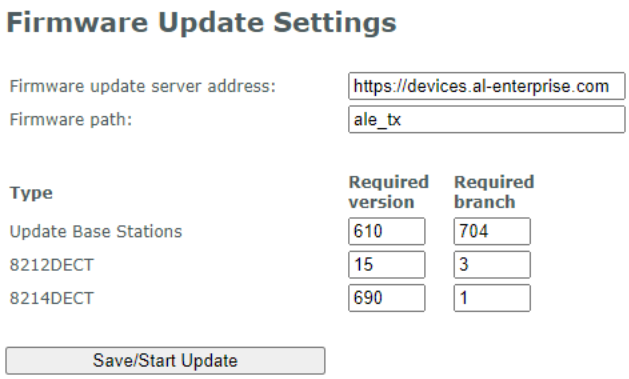
***NOTE:*** *The handset must not be removed from the charger until the* ***FWU Progress*** *column on the* ***Extensions*** *page displays "Done" or "Off".*

***NOTE:*** *If the new binary is not present on the handset after the reboot, the user must reset the settings of the device (Settings – Reset settings)*

#### *4.6.1.2 8368 Firmware Update with an https Server*

All devices can be upgraded via the Web-based Administration.

*Web Admin -> Firmware Update*




While upgrading the handset with a new binary, the progress can be monitored on the *Extensions* page under the *FWU Progress* column. The progress is displayed in % and as soon as the file upload is done, the column will display a message "*Waiting for charger".* The user must then place the handset in the cradle to overwrite the old firmware/binary with the new one. The handset is ready to be used as soon as it reboots.

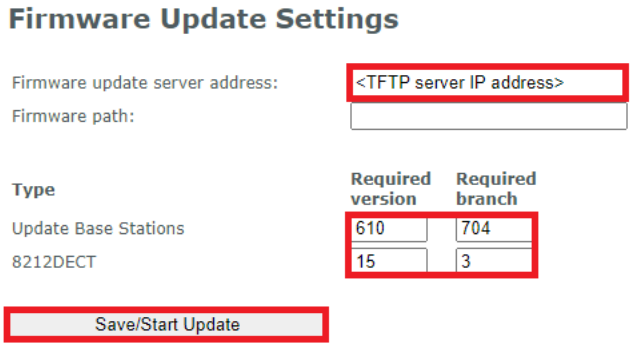
***NOTE:*** *The handset must not be removed from the charger until the* ***FWU Progress*** *column on the* ***Extensions*** *page displays "Done" or "Off".*

***NOTE:*** *If the new binary is not present on the handset after the reboot, the user must reset the settings of the device (Settings – Reset settings)*

### 4.6.2 Firmware update with a TFTP Server

All devices can be upgraded via the Web-based Administration.

*Web Admin -> Firmware Update*




*Web Admin -> Management*


You can use a TFTP or HTTP(s) server to upgrade the binaries, some free TFTP servers are available in Internet.

For example, the DECT device 8212 binary is **8212DECT_v00XX_b0YY.bin** (version XX branch YY)

https://devices.al-enterprise.com/ale_tx/8212DECT/8212DECT_v00XX_b00YY.bin

You must also create a new folder named **8212DECT** under the TFTP root directory and copy the 8212 device binary like '8212DECT_v00XX_b0YY.bin' to this folder.

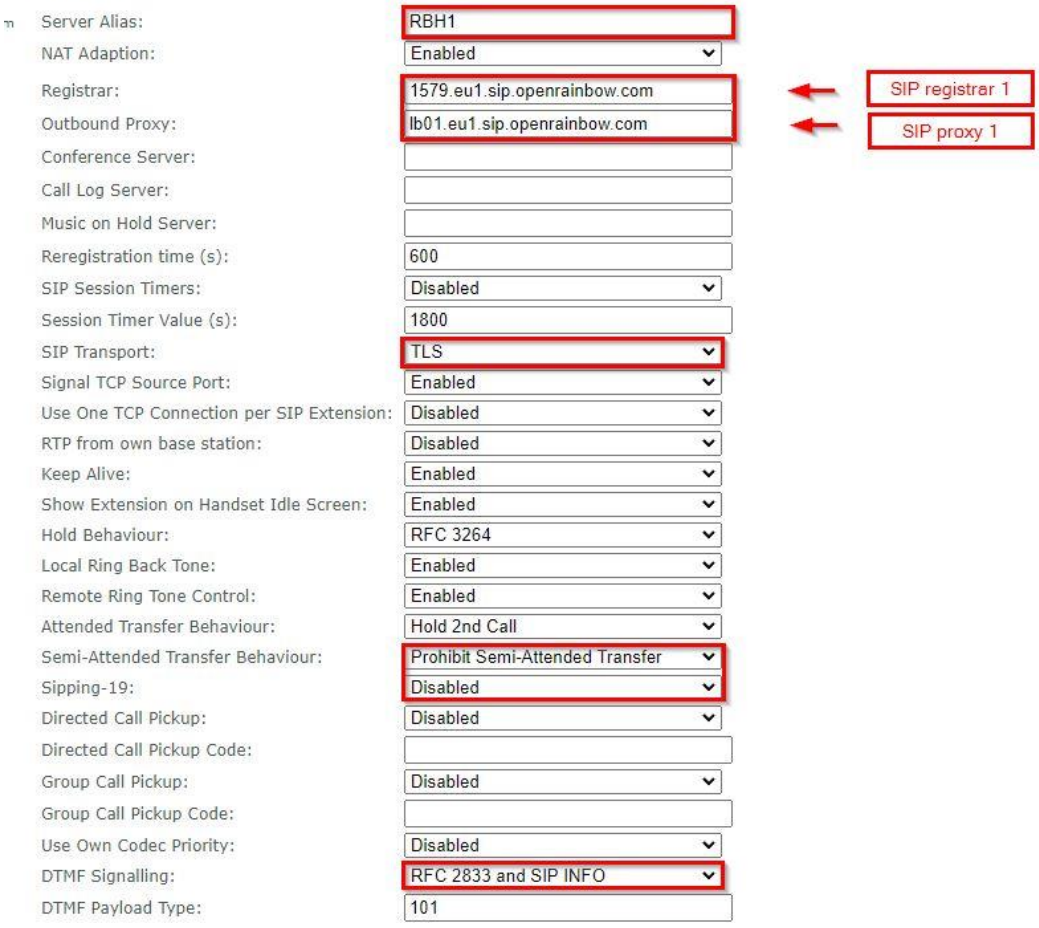
While upgrading the handset with a new binary, the progress can be monitored on the *Extensions* page under the *FWU Progress* column. The progress is displayed in % and as soon as the file upload is done, the column will display a message "*Waiting for charger".* The user must then place the handset in the cradle to overwrite the old firmware/binary with the new one. The handset is ready to be used as soon as it reboots.

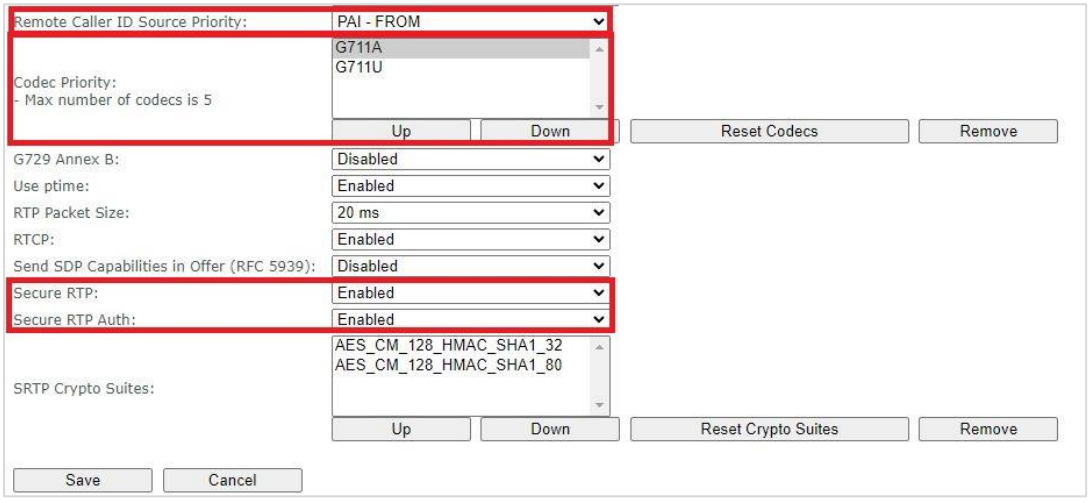
***NOTE:*** *The handset must not be removed from the charger until the* ***FWU Progress*** *column on the* ***Extensions*** *page displays "Done" or "Off".*

## 4.7 Base station configuration concerning Rainbow Hub server

A new server can be created with the Web-based Administration through *Web Admin -> Server -> Add Server*

## RBH1:



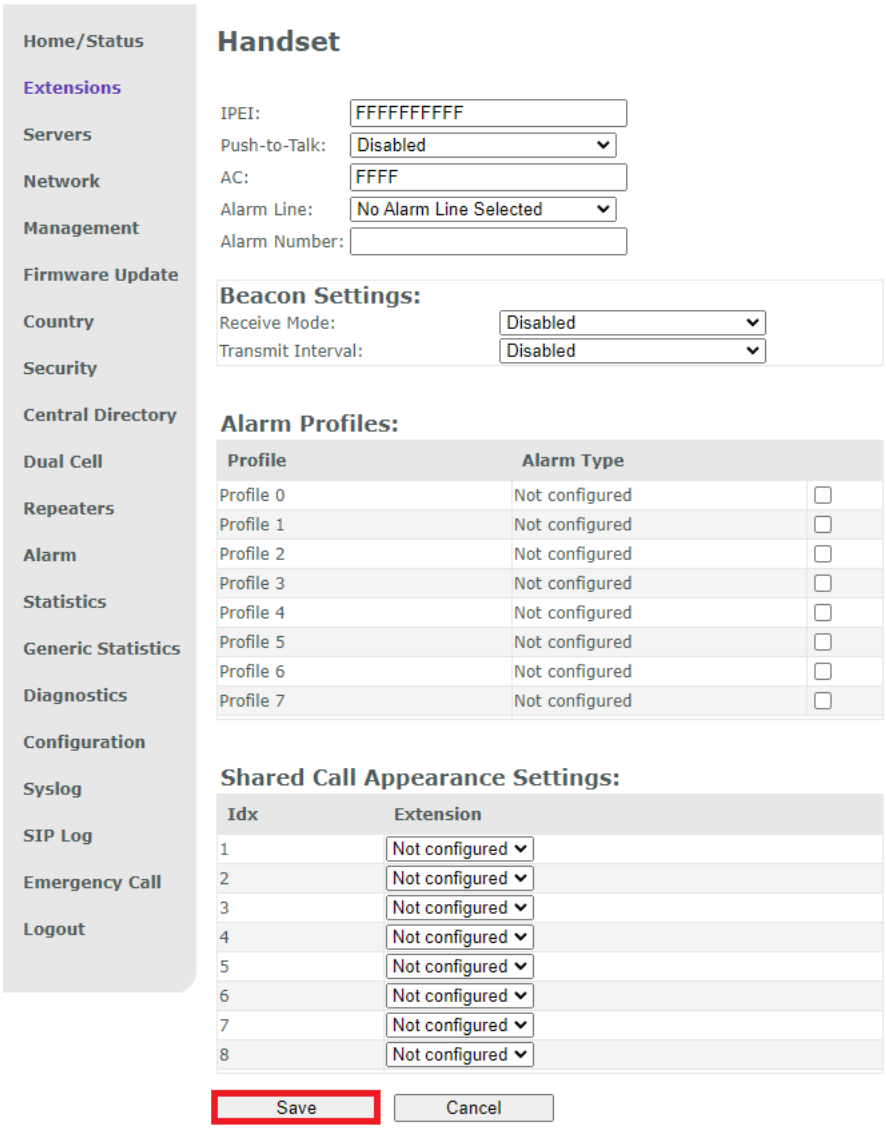

**Note:**

**Secure RTP must be enabled, otherwise there will be voice issues.**

## 4.8 8328 - DECT device configuration

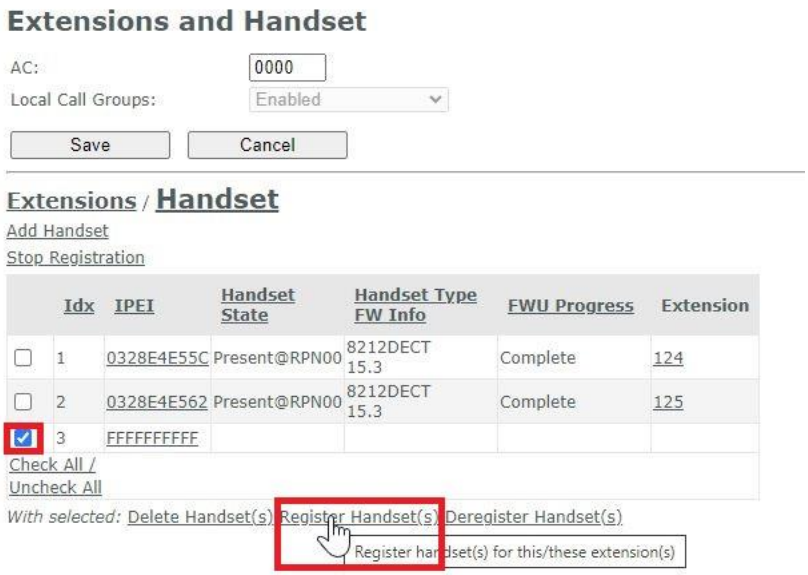
### 4.8.1 8328 – Handset configuration

Go to *''Extensions'' -> Handset -> Add handset*

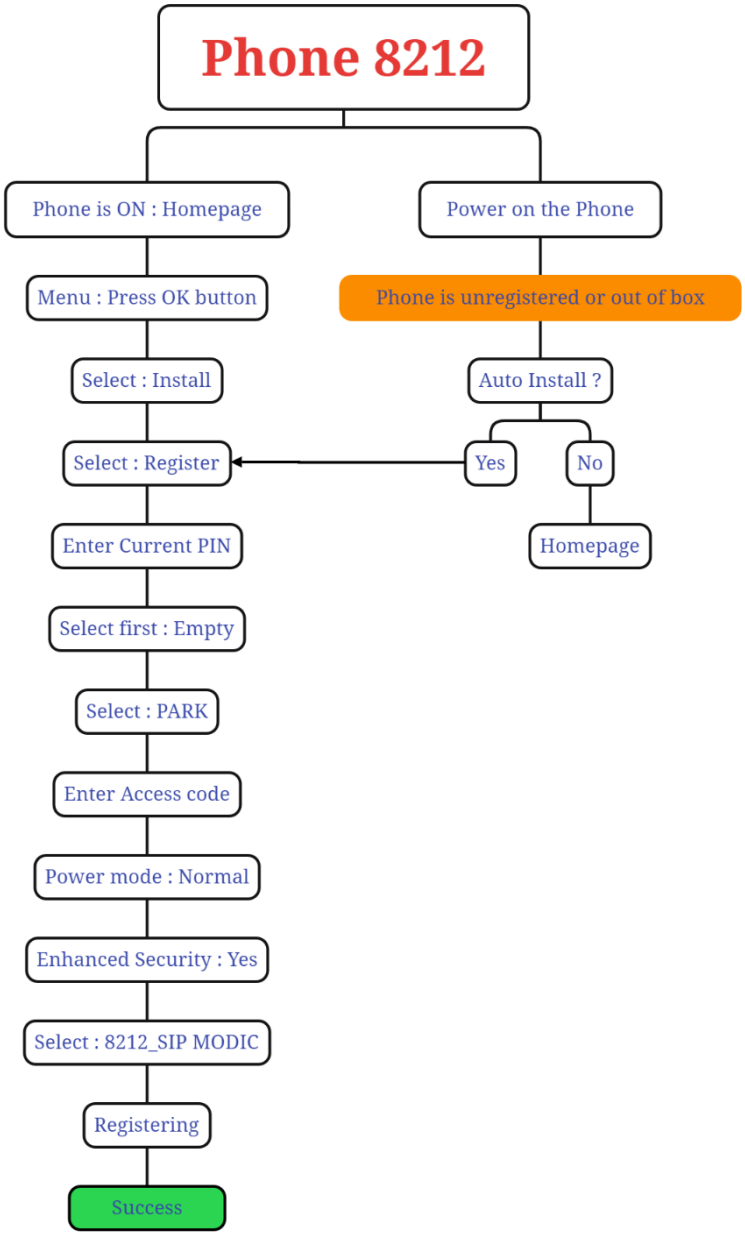




Select the 'Save' button to add the handset.

- Select the IPEI ‘FFFFFFFFF’ and ‘Register Handset(s)’. The base station goes in **registration mode**.




- Power on one 8212 DECT handset ‘out of the box’.






**NOTE:**

- Default PIN code is equal to '0000'.
- The Access code (AC) is used to allow the handset to register to the base station. By default, the value is 0000, but the administrator can change the AC to another numeric value.

- During the registration step, the 8212 device displays ‘Registering’.

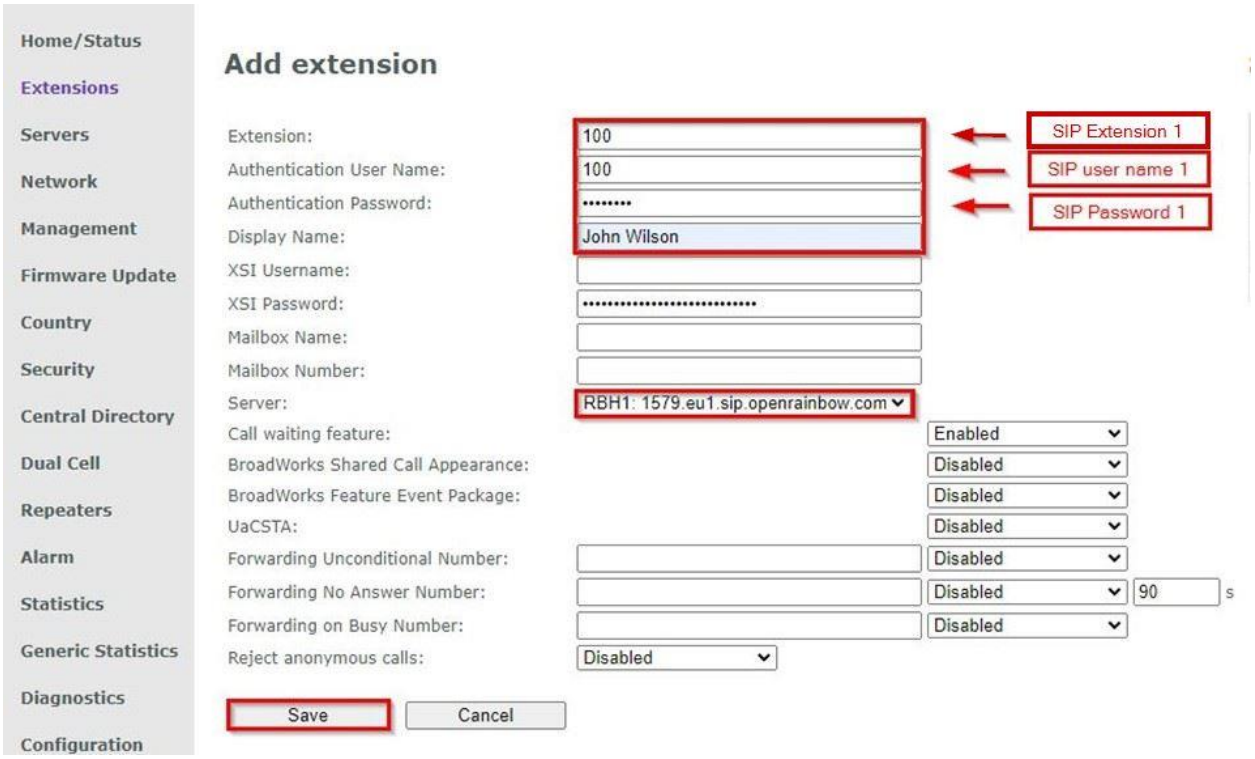
When the registration is finished, the IPEI field will be filled by the new DECT handset IPEI. The 8212 device displays then ‘Registration 0’.

**NOTE:** To verify that the handset has been registered to the base, you need to refresh the **Extensions -> Extensions** page, as it will not update automatically.

### 4.8.2 8328 – Extension configuration

You should execute the following configuration for each Rainbow device.
Go to *Extensions -> Add extension*


- Fill the field *Extension* with the Extension number defined in chapter “3. Rainbow SIP parameters configuration.”
- Fill the field *Authentication User Name* with the Rainbow Device SIP options ‘User Name’
- Fill the field *Authentication Password* with the Rainbow Device SIP options ‘Password’
- Fill the field *Display Name* with Rainbow user first name and last name
- Select the right *RBH server*.

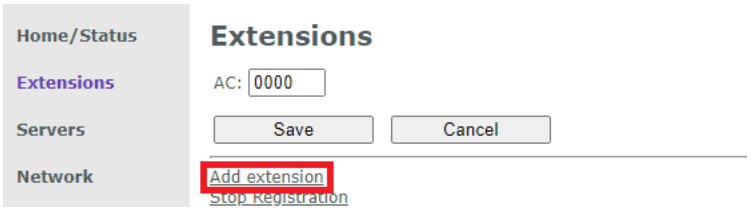


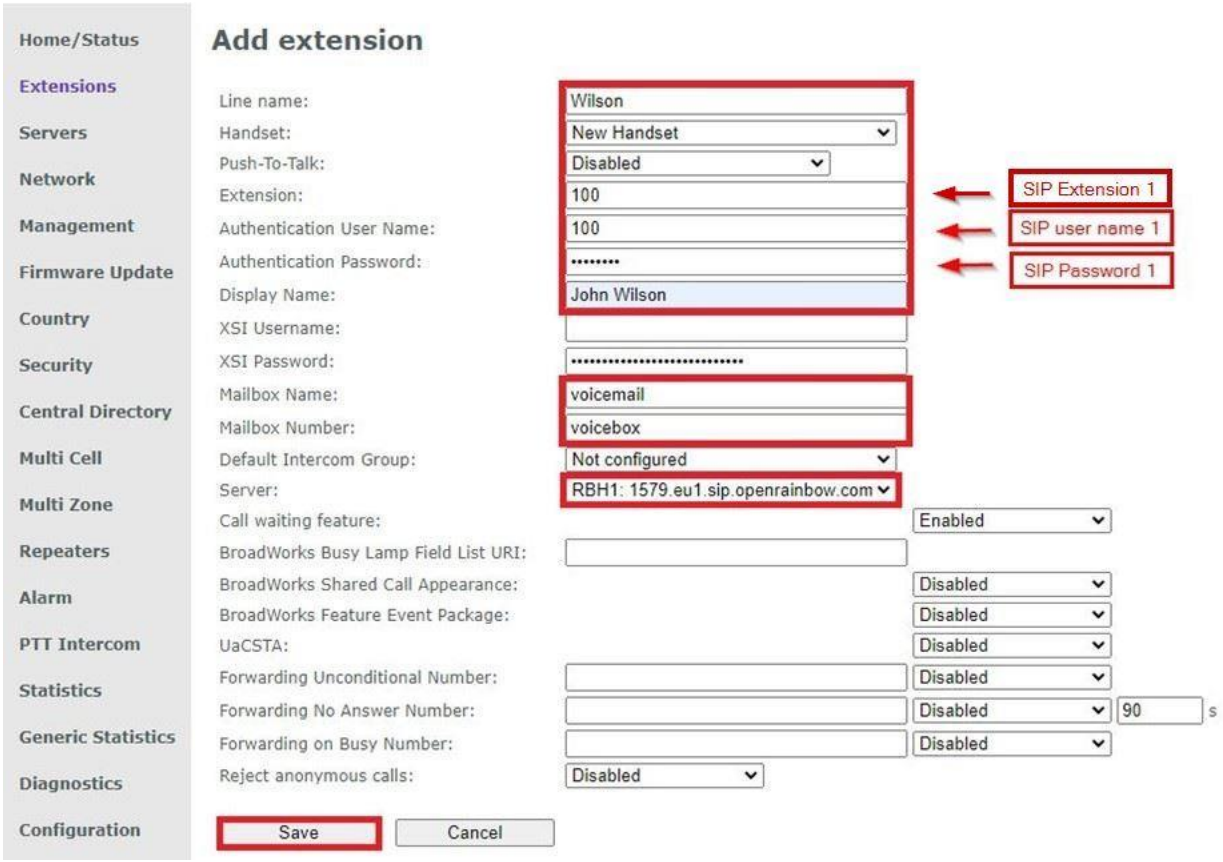

On the right side of the web page, select the handset with the right IPEI in order to associate it to the current extension.


## 4.9 8368 – DECT device configuration

### 4.9.1 8368 Base station configuration

You should execute the following configuration for each Rainbow device.
Go to *Extensions -> Add extension*

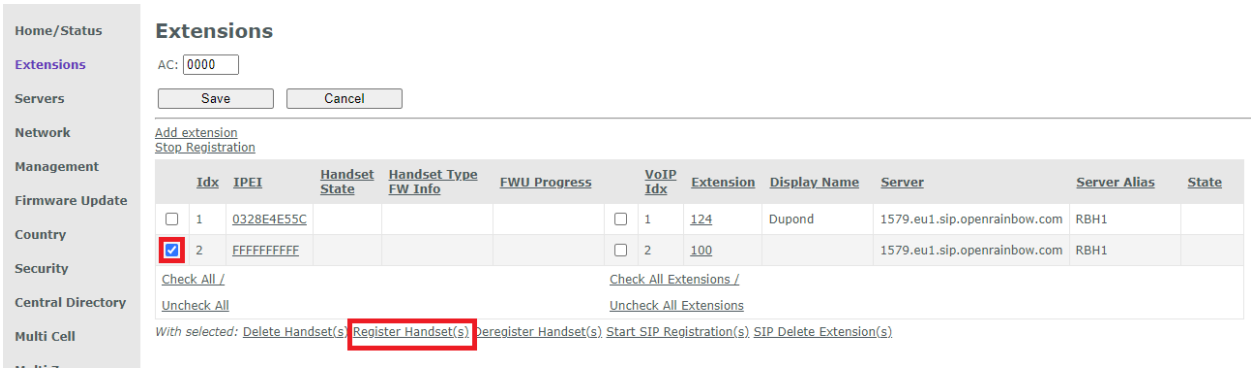


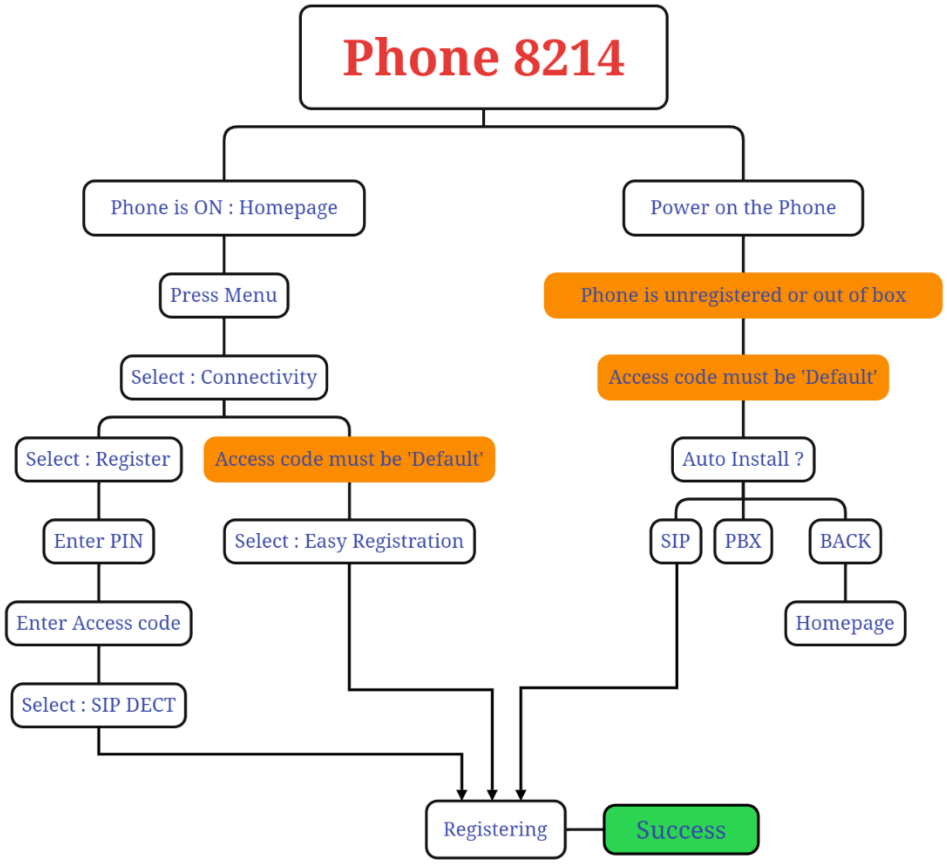

- Fill the field *Extension* with the Extension number defined in chapter "3. Rainbow SIP parameters configuration."
- Fill the field *Authentication User Name* with the Rainbow Device SIP options 'User Name'
- Fill the field *Authentication Password* with the Rainbow Device SIP options 'Password'
- Fill the field *Display Name* with Rainbow user first name and last name
- Select the right *RBH server*.

### 4.9.2 8214 device registration with 8368 base station

- Go to *Extensions -> Add extension via base station Web Admin*
- Select the IPEI 'FFFFFFFFFF' and 'Register Handset(s)'. The base station goes in **registration mode**.




- Power on one 8214 DECT handset 'out of the box' and follow these steps.




Presented with xmind

**NOTE:**

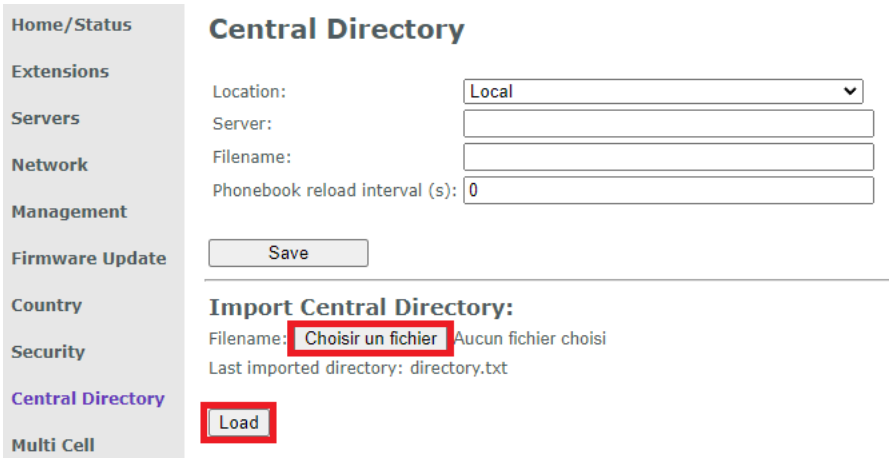
- The Access code (AC) is used to allow the handset to register to the base station. By default, the value is 0000, but the administrator can change the AC to another numeric value.

- 8214 handset allows to do an “Easy registration” but this works only if the Access Code is set to default value.
- When the registration is finished, the IPEI field will be filled by the new DECT handset IPEI.
- Voice messages can be listened by pressing the ‘1’ digit (long press).

## 4.10 Central directory

It is possible to configure three types of central directories but the local directory should only be used.

This feature enables the administrator to import a central directory file with *.csv/.txt/.xml* file format. This feature is using a browse file approach. After file selection, the load button must be pressed to load the file. The system supports only the original *.csv* format.




So the administrator can upload a contact list to share the list as a local central directory.

If you are creating a **.txt** directory file, the contact entry should be like “Name,phone_number”.

Example of .txt directory file
John Wilson,100
Sophie Smith,135
Marie Martin,+33612345678

***.txt directory file limitations:***

- Contact name must NOT contain “**,**”
- Contact number digits must be: +33612345678
- Contact number does not support SIP-URI
- Spaces between name section “**,**” and number section are not supported

- The central directory feature can handle up to 3000 contacts (Max file size 100kb)

Once the directory file is imported, a new key ‘Central directory’ appears on the DECT 8214 device.

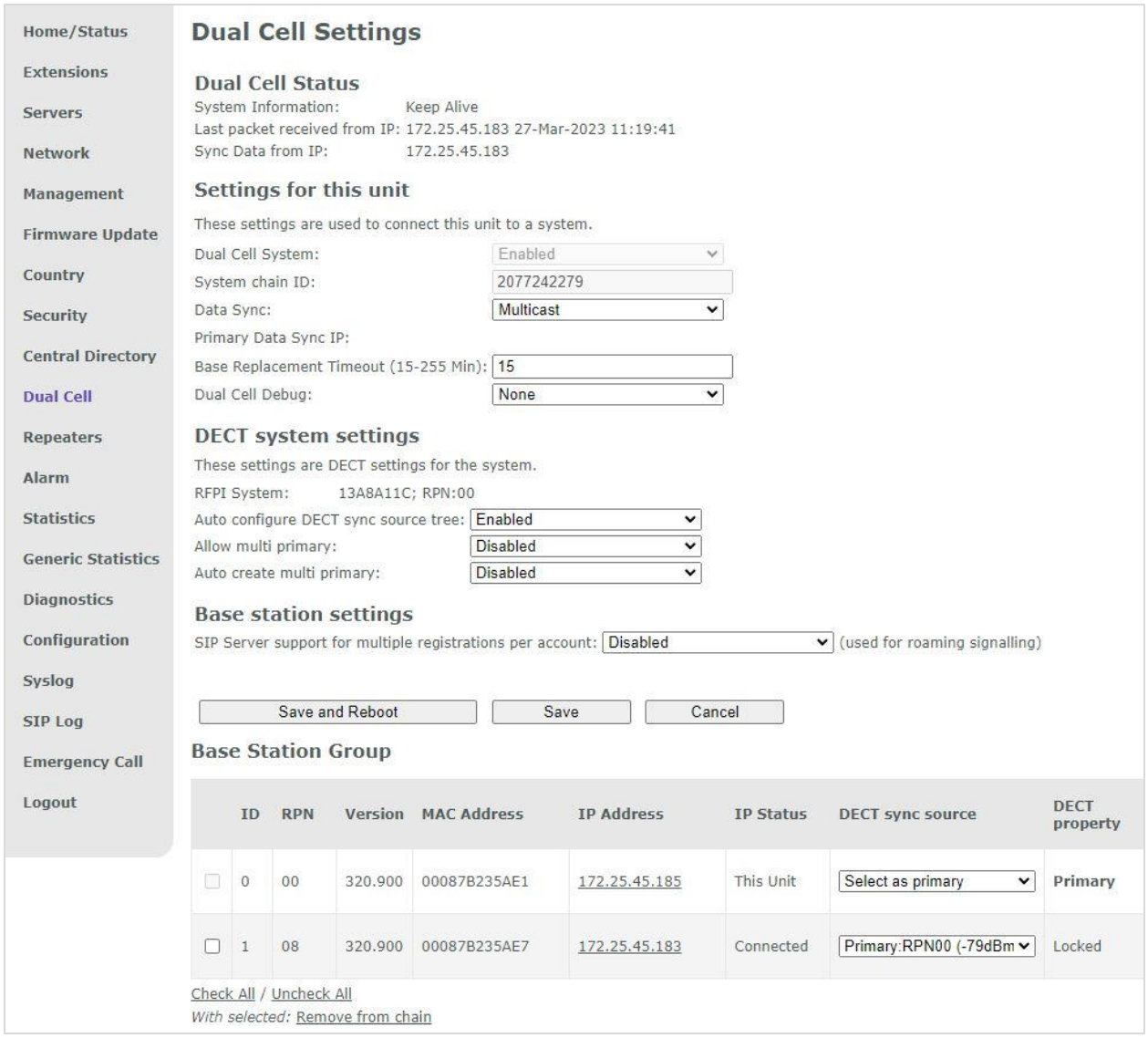

## 4.11 8328 - Dual Cell

We are going to setup a dual cell environment by connecting two bases into one DECT system. See document ‘8328 SIP-DECT System Guide’, *Dual cell* chapter for more details.

- Setup the primary base by following the previous chapters.
- At least, one extension must be created on primary base station before adding the second base station.
- To add the secondary base to the primary, just connect the second base station to the same private subnetwork. And it will connect to the primary base.
  *It may take up to 5 minutes to add the base station to the dual cell DECT system.*

**NOTE:**

- It is strongly recommended to configure the DHCP server so that it reserves a DHCP IP address according to the base’s MAC address. Then the base’s IP address will not change. Otherwise the communications can be cut if the IP address changes.
- The time server (NTP) is mandatory in a dual cell configuration otherwise the DECT system will not work properly. Example: 0.fr.pool.ntp.org




## 4.12 8368 - Multi Cell

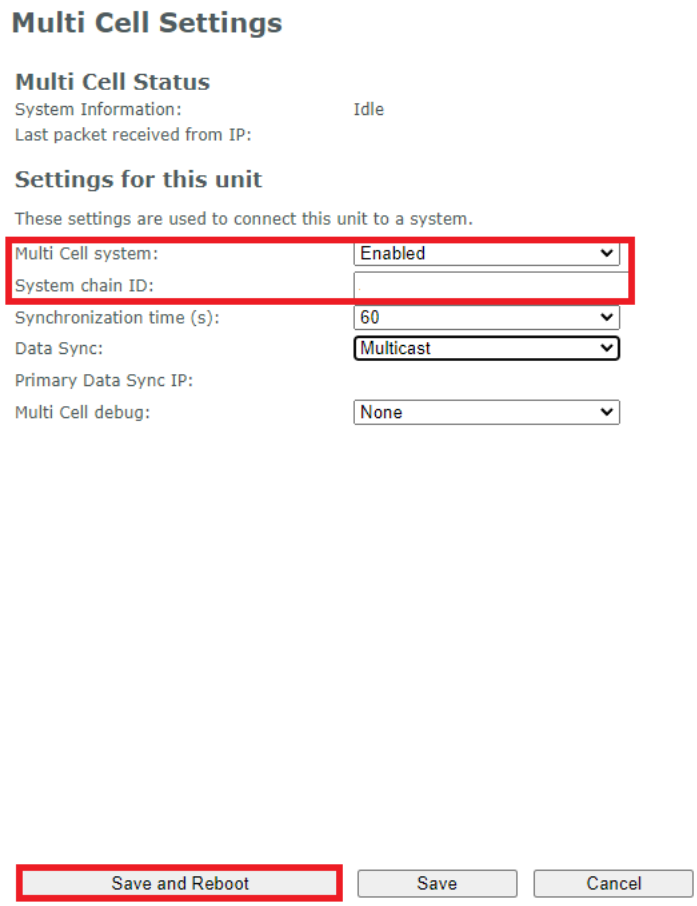
**NOTE:**

- It is strongly recommended to configure the DHCP server so that it reserves a DHCP IP address according to the base's MAC address. Then the base's IP address will not change. Otherwise the communications can be cut if the IP address changes.
- The time server (NTP) is mandatory in a multicell configuration otherwise the DECT system will not work properly. Example: 0.fr.pool.ntp.org. NTP server is mandatory for security reason to be able to check the certificates validity.

We are going to setup a Multi Cell environment by connecting several bases into one DECT system. See document '8368 SIP-DECT System Guide', *Multi cell system* chapter for more details.

### 4.12.1 Configuration of primary base station

- Setup the primary base by following the previous chapters.
- At least, one extension must be created on primary base station before adding the second base station. Thus, registering a handset at this point is not a requirement.




- Enable the *Multi Cell system*, enter a value in the *System chain Id* and press *Save and Reboot*. The *System chain ID* is set by the user and the value MUST NOT be equal to a used SIP account.

***NOTE:*** *After reboot, on the front page of the UI will be displayed the following System information status: "Unchained Allowed to Join as Primary"*

***NOTE:*** *It is recommended to configure the multicast in the 'Data sync' parameter. So make sure that Multicast/IGMP is enabled on your switches.*

*Nevertheless, if multicast is not allowed in the LAN network, Peer-To-Peer must be used.*

### 4.12.2 Configuration of additional base stations

- If the base station has already been connected to an other system, it is necessary to do a factory reset of the base station.
- Login to the base station that you wish to connect to the multi cell chain
- Navigate to the **Multi cell** page, enable the *Multi cell system* parameter and enter the *System chain ID* that you previously typed for the primary base station. Press *Save and Reboot.*
- After reboot, the base will try to find and synchronize to the primary base station.

***NOTE:*** *It takes up to 5 minutes (synchronization time) to add a new base station to a multi cell system.*

8368 DECT System is a distributed system, meaning that all data are synchronized to all base stations. This means that you can login to any base station and make configuration changes.

## 4.13 DECT base station database backup

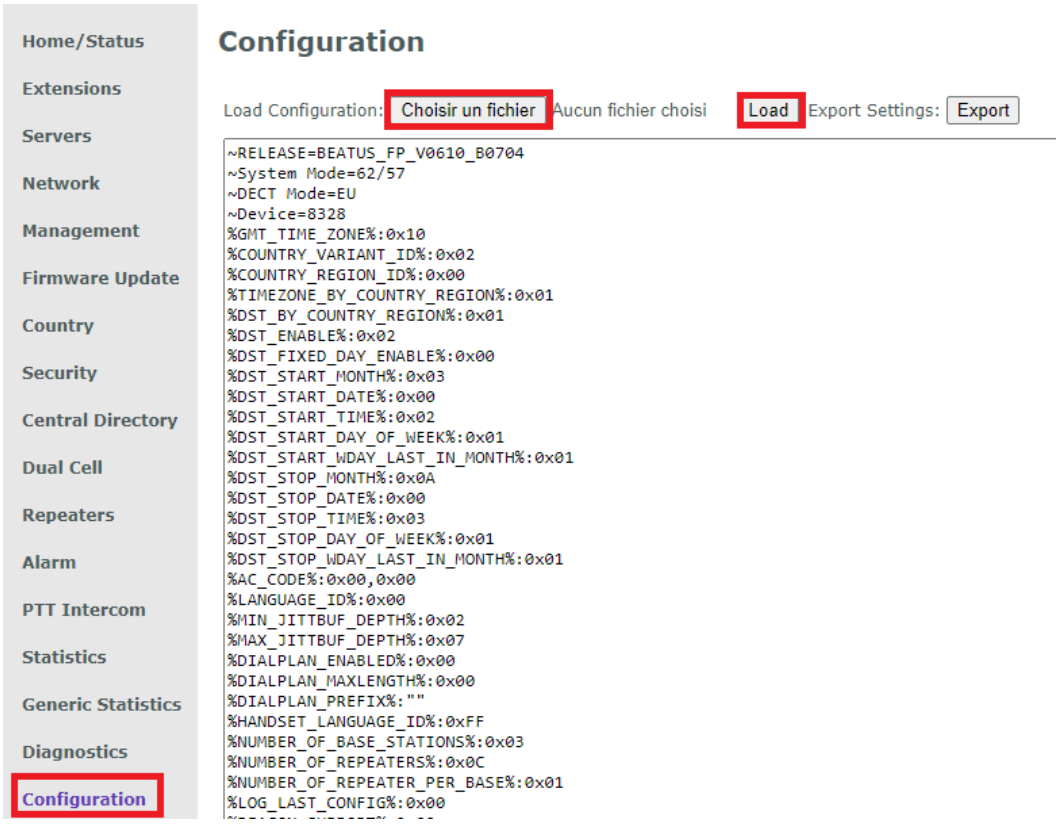
- Go to base station Web Admin -> *Configuration -> Export*
  The file 'Settings.cfg' is a backup of the database without the SIP passwords.

## 4.14 DECT base station database restore

### 4.14.1 Configuration executed on the base station

- Go to base station Web Admin -> *Configuration -> Choisir un fichier*

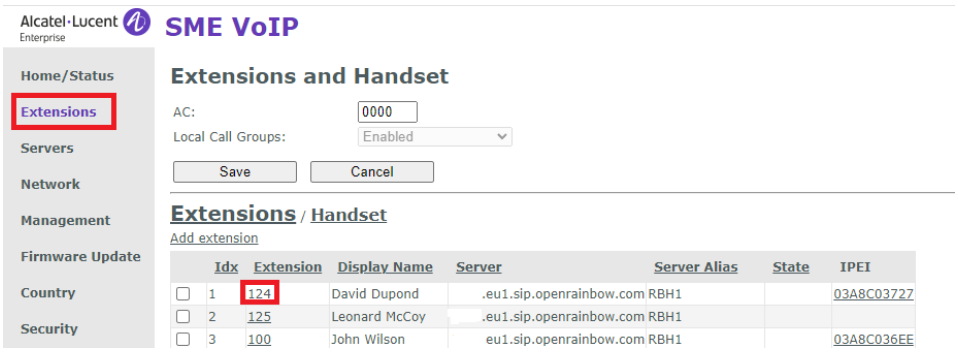
  *Configuration -> Load*




**Note:**

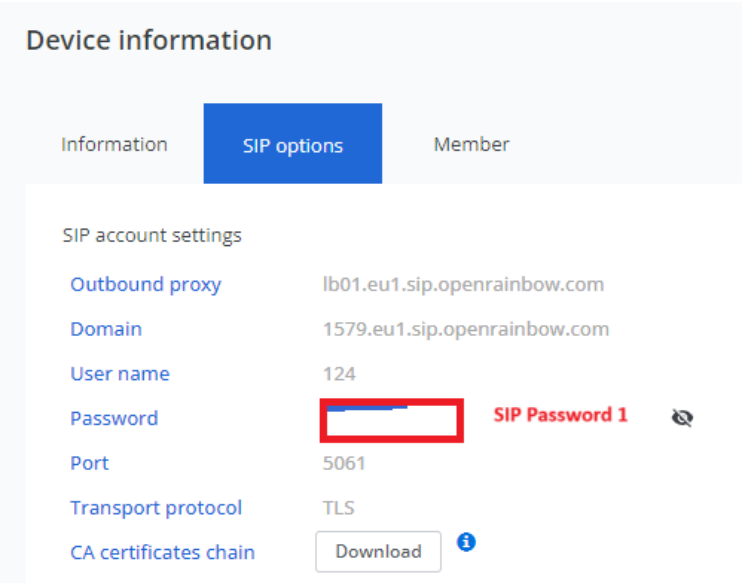
The restore of the database can change the IP address of the DECT base station if there was a static IP configuration in the backup. So if you can't connect to your base station, check the IP address of your DECT base station by following the steps of chapter 2.2.

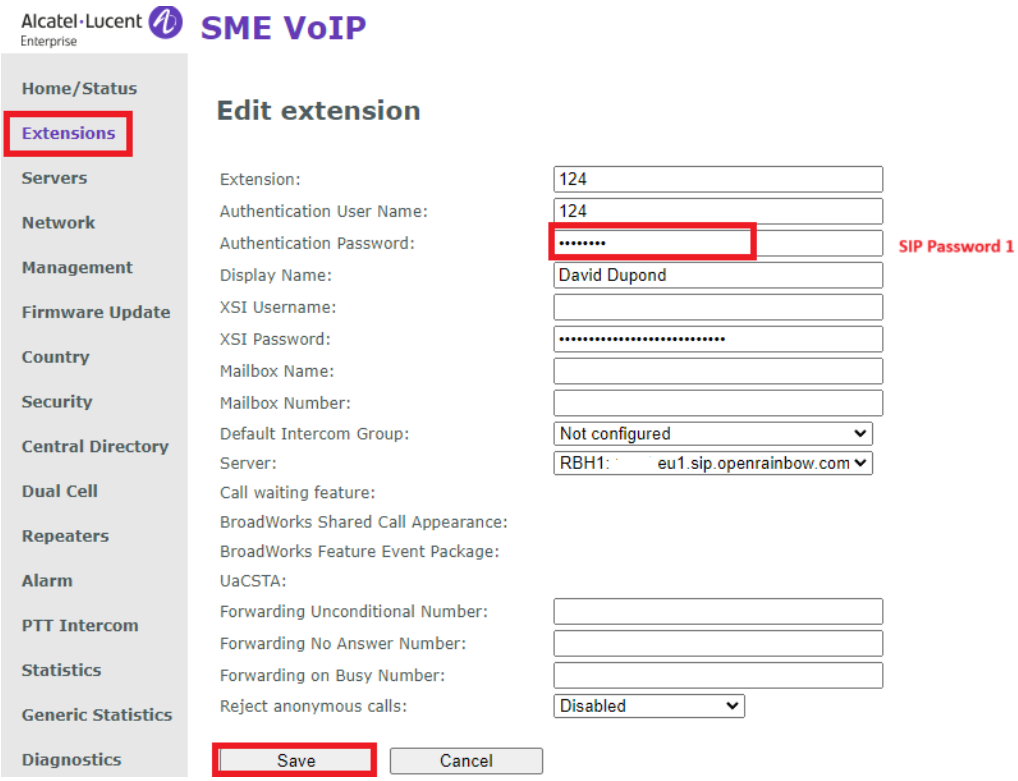
- Go to *Extensions -> Select you Extension number* to enter in edition mode




- Modify the Authentication password of the extension by entering again the correct password.

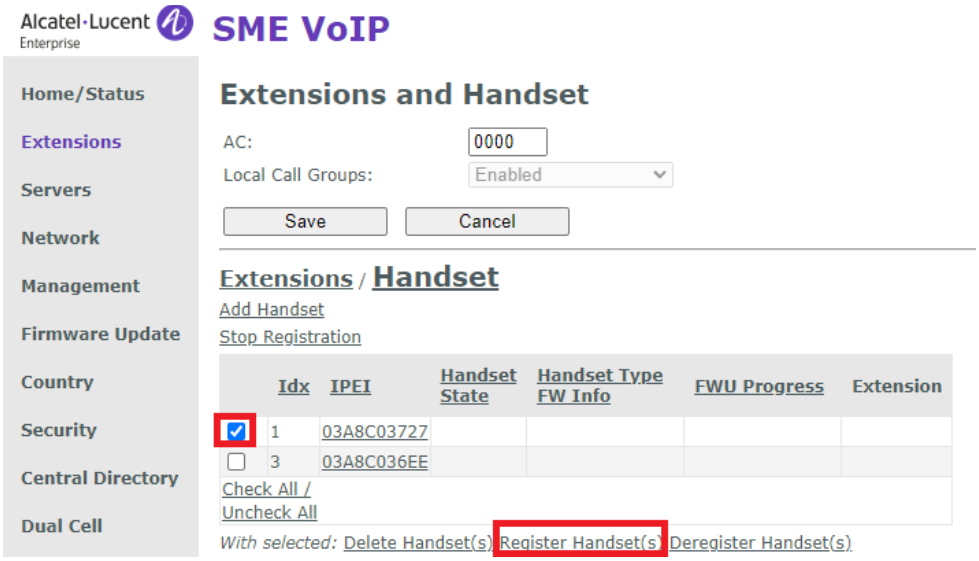
This password can be retrieved via Rainbow Web admin -> Communication -> Devices -> SIP Options




- Check also the AC code of the handset.


- Open the DECT registration on the DECT base station.




### 4.14.2 Actions to be done on the DECT device

**The following steps could be done by the customer.**

- Launch the DECT registration on the DECT device.
- Power off and on the device.

  To do an easy registration, Select *Auto install -> SIP*.


- If the Auto install label is not displayed, it is possible to deregister the device manually. Press the Settings key -> Connectivity -> Deregister -> Pin code: 0000 (default code)


- The DECT registration can also be done through the Menu key -> Connectivity -> Easy Registration

Please refer to the following web link for more details, page 20
**https://support.openrainbow.com/hc/en-us/article_attachments/16464671770002**

## 4.15 Logging

This page allows the administrator to collect system diagnostics information into a zip file. The zip file includes all type of information, such as RSX trace, Syslog, SIP Log, Config file(s), etc.

Go to *Diagnostics -> Bases stations / Extensions / Logging*

### 4.15.1 Syslog

The '*Management*' web page allows to configure a syslog server.

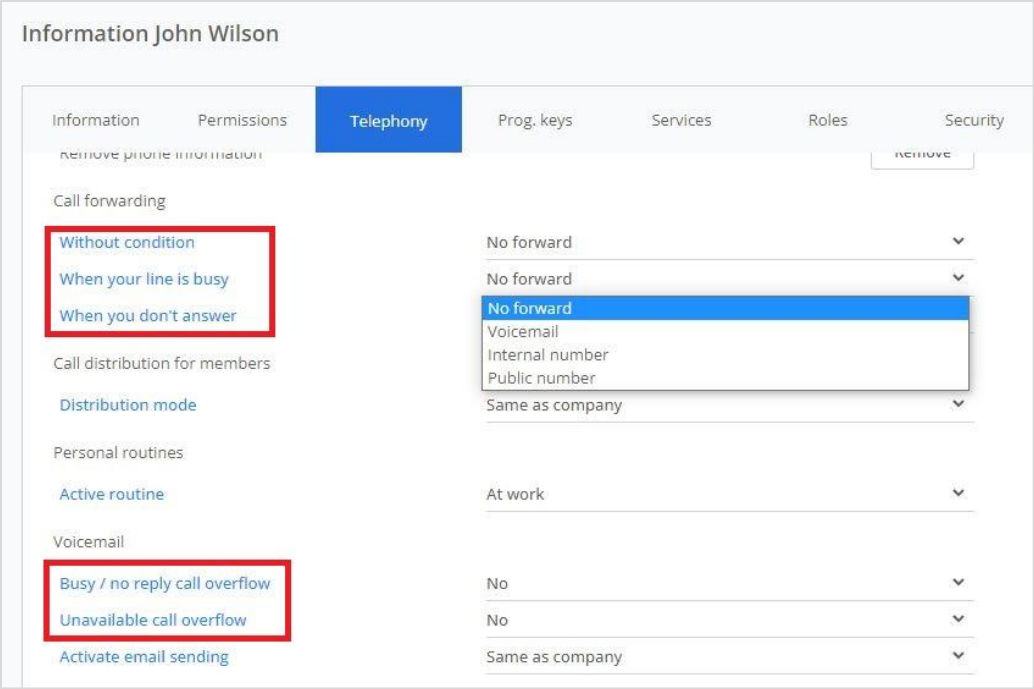

Then you can check the logs with the base station web admin '*Syslog*' page and select one of the following action.


### 4.15.2 SIP log

The '*SIP Log*' web page allows to see and export SIP logs.

# 5 Restrictions & limitations

- **If a voice message is left in the user's mailbox, the user is not able to listen to the voicemail from his 8212 DECT handset.**
  **So if the user is only using his DECT device, the administrator must change the call forwarding of the user to avoid any routing to its voicemail.**




This restriction does not concern 8214 device. The voice mail can be used with 8214 devices. Voice messages can be listened by pressing the '1' digit (long press).

- Only extension number can be used for text messaging if the feature is 'enabled without server' in the base station Management Web Administration.
  This feature allows a DECT handset to send messages to other handsets.
- When a DECT device transfers a call on ringing, it stays in 'call state' and displays 'connected'. The user must then press the release button.
- The 8212 and 8214 DECT handsets cannot generate/receive alarms.
- Only G.711 A and G.711 µ are supported by Rainbow Hub.
- 8212 doesn't support the base station feature named emergency calls.
  Note: This feature allows the user to dial emergency numbers during key lock and the base will release non-emergency calls to handle the emergency ones.
- If the user is in communication with one call and has one communication on hold, if the user releases the current communication, the two distant communications will be joined.
- Rainbow Generic SIP DECT devices are not ALE fully integrated devices. That's why there are still some restrictions.
  - No unified presence, telephony status of these sets is not reflected on Rainbow clients
  - Users cannot initiate a call on their DECT from their Rainbow applications
  - There is no supervision of the generic SIP device.

- The maximum number of available channels for communications depends on the 8328 Base Station configuration. The table below summarizes the different combinations.

| | **8328 Single Cell** | **8328 Dual Cell** |
|---|---|---|
| No of DECT registrations per DECT system | 20 | 20 |
| Voice channels per handset | 2 | 2 |
| Max NB of simultaneous calls per DECT system | 10 | 20 |

- The maximum number of available channels for communications depends on the 8368 Multi Base Station configuration. The table below summarizes the different combinations.

| | **8368 Multi cell** |
|---|---|
| Nb of SIP extension | 40x Nb of bases (*) |
| Nb of DECT registrations | 40x Nb of bases (*) |
| Number of simultaneous calls WO/W SRTP with G711 codec per base | 10 (**) |

(*) max number of SIP registration is limited to 1000 per system depending on the number of bases

(**) max number of calls is limited to 1000 per system depending on the number of bases