SIP-DECT OM System Manual

INSTALLATION, MAINTENANCE & ADMINISTRATION GUIDE

RELEASE 6.0

Mitel®

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TRADEMARKS

SIP-DECT OM System Manual
Release 6.0
March 2015

CONTENTS

1 OVERVIEW

This document describes the installation / configuration, administration, and maintenance of the SIP-DECT solution. Please also see the documents listed in the References section (section 11.11) for additional details on different aspects of the SIP-DECT system.

For a list of abbreviations and definitions, please refer to the appropriate sections in the Appendix.

1.1 THE SIP-DECT SOLUTION

The SIP-DECT solution includes the following main components:

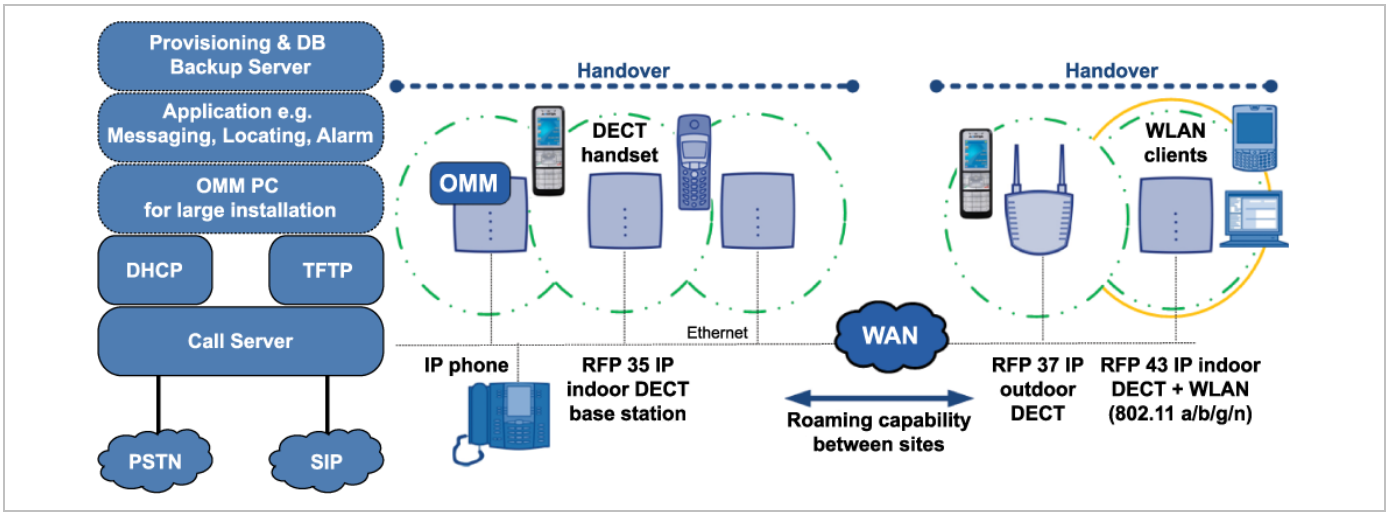
- SIP-DECT base stations that are distributed over an IP network and offer DECT and IP interfaces
- DECT phones (portable DECT devices)
- OpenMobility Manager (OMM): Management and signaling software for the SIP-DECT solution, which runs on one of the DECT base stations or on a dedicated Linux x86 server (for large installations). In addition, a standby OMM can be configured to ensure OMM function in case of failure or loss of network connection.
- A SIP Call Manager/IP PBX/Media Server platform (e.g. Asterisk)

The IP PBX/media server/media gateway, OMM and the RFPs communicate through the IP infrastructure. The RFPs and the DECT phones communicate over the air, where the DECT GAP protocol or DECT GAP with proprietary enhancements is used.

The SIP-DECT solution supports seamless handover between RFPs which are in a group of synchronized RFPs (cluster) and roaming between RFPs on remote sites.

Additional components include:

- LDAP server to facilitate a central corporate directory
- Provisioning server to provide RFP configuration or user data files
- Data backup server to automatically backup an OMM database on the server
- OM Locating server and clients to run the SIP-DECT locating solution
- 3rd party messaging or alarm server to integrate the SIP-DECT text messaging into a unified messaging or alarm environment
- Computer for administration and maintenance tools: Web browser, OM Management Portal (OMP), DECT Monitor



1.2 ABOUT DECT BASE STATIONS

DECT base stations are also referred to as Radio Fixed Parts (RFPs) in this document.

1.2.1 DECT BASE STATION FAMILIES

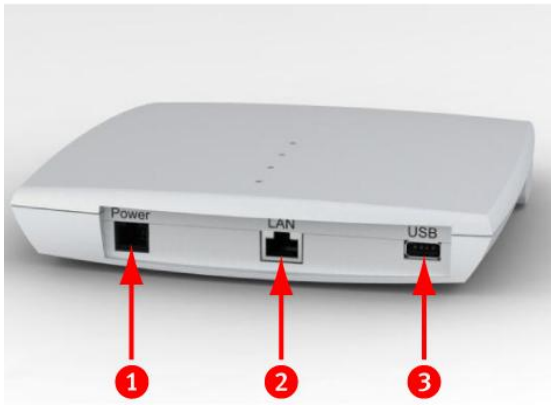
1.2.1.1 Current RFP Types

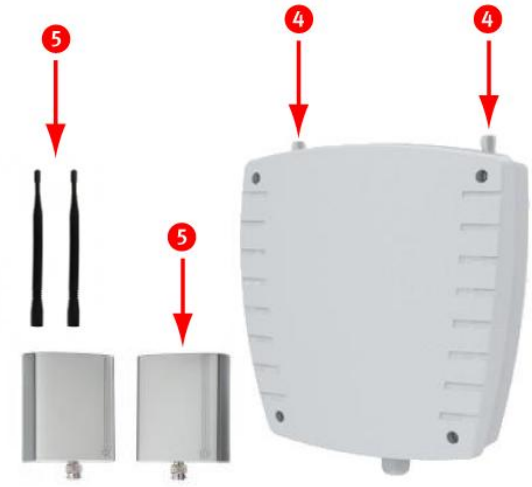
Mitel provides four types of RFPs for the SIP-DECT solution:

- RFP 35 IP
  DECT RFP as indoor model
- RFP 36 IP
  DECT RFP as outdoor model with built-in dipole antennas
- RFP 37 IP
  DECT RFP as outdoor model with connectors for external directional antennas
- RFP 43 WLAN
  DECT RFP + WLAN Access Point as indoor model with internal antennas for DECT and WLAN

As of SIP-DECT 6.0, there is no distinction between RFP soft brands (i.e., L-RFPs and non-L-RFPs). See section 6 (Licensing) for more information.

In general the RFP 35 / 36 / 37 IP have the same hardware platform and software capabilities. RFP 43 supports WLAN in addition to DECT.





1 Power 48V DC (optional)

2 1GBit Ethernet (PoE)

3 USB

4 DECT antenna connector (RFP 37 IP)

5 Antennas (RFP 37 IP)

The hardware of all the new RFPs complies with the different regulatory domains. There are no specific hardware variants required to use specific frequency bands and field strengths. Transmit Power, frequency band and carrier frequencies are controlled by software.

Other differences compared to the previous RFP family (RFP 32/34 IP and RFP 42 WLAN):

- boots from internal flash memory instead of net-boot (SIP-DECT software is already on board)
- software update via TFTP, FTP(S), HTTP(S), SFTP supported
- supports 1GBit Ethernet
- supports CAT-iq 1.0 level high definition voice for the Mitel 600 DECT phone
- hardware can support Secure SIP and SRTP (with SIP-DECT 5.0 or later)
- uses an external 48V DC Power Supply (if no PoE available) which meets the latest environmental requirements (RFP 37: PoE only)
- RFP 43 WLAN supports the 802.11a/b/g/n standards
- any 3G RFP can host the OMM.
- indoor RFPs have a USB 2.0 interface to connect external hardware for future applications (e.g., video camera).

1.2.1.2 Older RFP Types

Older RFP models supported by the SIP-DECT solution include

- RFP 32 IP
  DECT RFP as indoor model
- RFP 34 IP
  DECT RFP as outdoor model
- RFP 42 WLAN
  DECT RFP + WLAN Access Point as indoor model

In general, the RFP 32 and RFP 34 have the same hardware and software capabilities. Please note the regulatory differences between North America and other areas of the world. These differences lead to different RFP 32/34 variants which use specific frequency bands and field strengths:

- RFP 32 NA or RFP 34 NA (NA)
  - Frequency Band 1920 to 1930 MHz
  - 5 carrier frequencies
  - Transmit Power 20 dBm
- RFP 32 IP or RFP 34 IP (EMEA)
  - Frequency Band 1880 to 1900 MHz
  - 10 carrier frequencies
  - Transmit Power 24 dBm

The RFP 42 WLAN is only available for the EMEA region.

RFP 32 IP / RFP 32 NA
RFP 34 IP / RFP 34 NA

RFP 42 WLAN

1 Power jack (120 V/230 V AC adapter)

2 Ethernet jack; Power supply in line with Power over Ethernet standard IEEE 802.3af

As of SIP-DECT 6.0, there is no distinction between RFP soft brands (i.e., L-RFPs and non-L-RFPs). With SIP-DECT 5.0 and older releases, the “L” variants have built-in licenses. See section 6 (Licensing) for more information.

Note: The software package for previous RFPs has a tftp extension e.g. “iprfp2G.tftp. With SIP-DECT 3.0 or higher, you need a 3G RFP to run the Open Mobility Manager.

1.2.2 RFP ONLY MODE

Within this mode the RFP converts IP protocol to DECT protocol and then transmits the traffic to and from the DECT phones over a DECT time slot. On air the RFP has 12 available time slots, 8 can have associated DSP/media resources for media streams. All DECT time slots are used for control signaling, software download over air, messaging and bearer handover independent of associated DSP/media resources.

Two control signaling channels are also used to carry bearer signals that signal the DECT phone to start the handover process. If the radio signal of another RFP is stronger than that of the current RFP, the DECT phone starts the handover process to the RFP that has the stronger signal as the user moves around the site.

Clusters

Groups of RFPs can be built which are named clusters. Within a cluster RFPs are synchronized to enable a seamless handover when a DECT phone crosses from one RFP's area of coverage to another. For synchronization, it is not necessary for an RFP to have direct line of sight to all other RFPs in the system. Each RFP only needs to be able to see the next adjacent RFP. But it is highly recommended that an RFP have visibility to more than one RFP to guarantee synchronization in the event that one of the RFPs fails.

1.2.3 OPENMOBILITY MANAGER (OMM) MODE

If the OMM is not running on a dedicated Linux x86 server, one RFP within a SIP-DECT installation must be declared to operate as the OpenMobility Manager (OMM). The RFP acting as the OMM may also act as a regular RFP if it is part of a DECT cluster.

In OMM mode, an RFP functions as a regular RFP. Additionally, it is responsible for SIP signaling between the SIP-DECT system and the IP PBX/SIP server. Further on, it takes over the management part of the SIP-DECT solution. You designate an RFP as the OMM by assigning an IP address to the RFP within the DHCP scope (see section 9.5) or by setting the data via the OM Configurator (see section 9.7). After an RFP is designated as the OMM, it starts the extra services on board (for example, the web service that supports the management interface). All RFPs download the same firmware (for their RFP type), but only one RFP (or two, in standby implementations) activates the OMM services.

Note: It is possible to deactivate the DECT part of an RFP. If the DECT interface is deactivated, all resources (CPU and memory) are available for the OMM.
This might be necessary, for example, in configurations where a mix of OpenMobility Manager, G.729/Conferencing and WLAN is provided by the same RFP.

1.3 ABOUT THE OPENMOBILITY MANAGER

The OpenMobility Manager (OMM) requires an RFP 35/36/37 IP resp. RFP 43 WLAN, or a dedicated Linux x86 server.

There is only one OpenMobility Manager (OMM) active in the system at a given time.

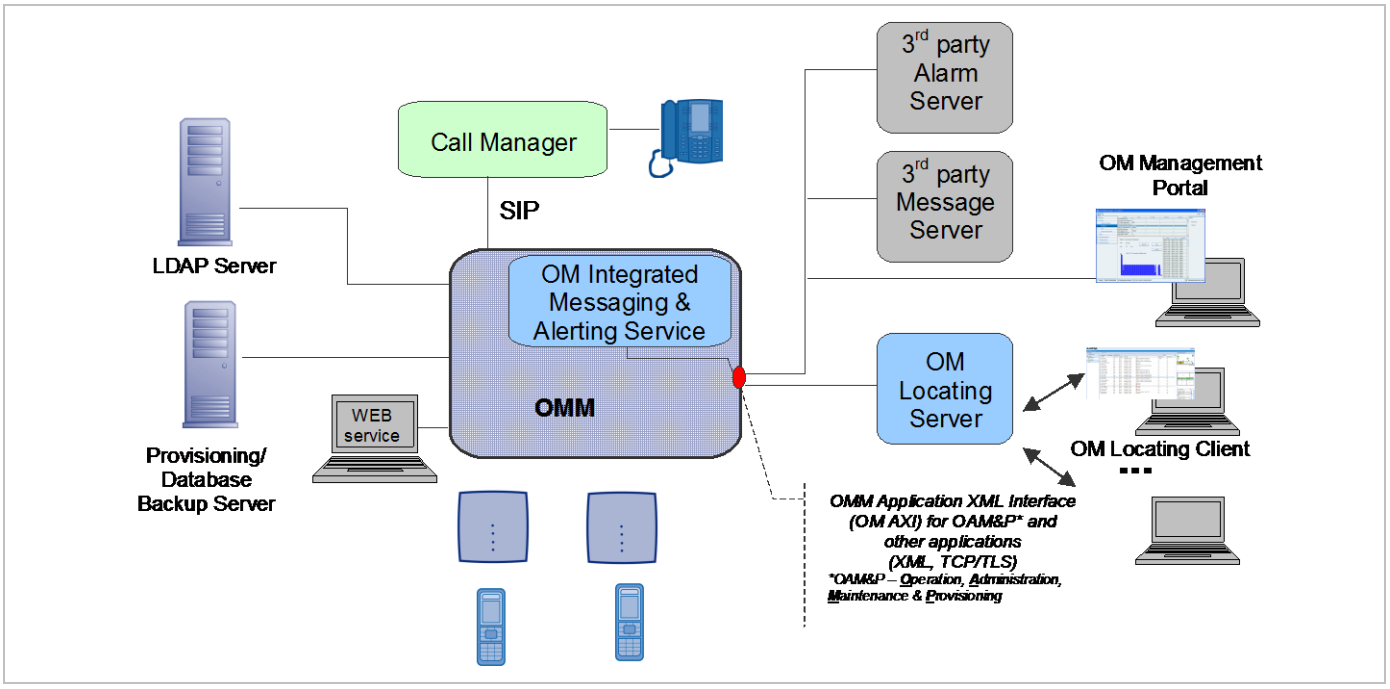
- If the OMM runs on an RFP, a 100 MB network link is required.
- If the OMM runs on a dedicated Linux x86 server, a 1 GB network link is required (see also section 9.13.1).

In addition, a standby OMM can be configured to ensure the OMM function in case of failure or loss of network connection. For more information on the standby OMM see section 9.15.

1.3.1 OMM TASKS

The OMM performs the following tasks:

- Signaling gateway (SIP <-> DECT)
- Media stream management
- Managing sync-over-air functions between RFPs
- Provides a Web service for system configuration
- Provides additional services such as
  - LDAP based central corporate directory
  - OM Application XML interface (OM AXI) for OAM&P, messaging, alerting service and locating
  - Integrated Messaging and Alerting Service (OM IMA)
  - Data backup and provisioning services
  - SIP-DECT XML terminal interface. This interface adapts the “XML API for SIP Phones“ for SIP–DECT phones. The Mitel 600 DECT phone family is supported.



Additional information on the following functionality is available in separate documents.

- **Locating**: see the *SIP-DECT OM Locating Application Installation and Administration Guide*.
- **Integrated Messaging and Alerting Service**: see the *SIP-DECT OM Integrated Messaging and Alerting Application Guide* and the *SIP-DECT Mitel 600 Messaging and Alerting Applications Guide*.
- **User data provisioning**: see the *SIP-DECT OM Handset Sharing and Provisioning Guide*.
- **Administration and monitoring by third party applications**: see the *OM Application XML Interface Specification*..
- **SIP-DECT XML terminal interface**: see the *SIP-DECT XML Terminal Interface Specification*.

1.3.2 SIP-DECT SPECIAL FEATURES AND CAPABILITIES

Feature	GAP	142d	600
Large DECT Systems (XXL)	No connection handover beyond 256 RFPs	yes	yes
Messaging & Alerting	no	no	yes
Initiate Alarm Trigger	*, # feature access code procedure, no sensor alarm	*, # feature access code procedure, no sensor alarm	yes
Locating	yes	yes	yes
DECT XQ	no	no	yes
UTF-8 and alphanumeric dialing support	no	no	yes
SIP-DECT XML terminal API	no	no	yes
CAT-iq 1.0 / Hi-Q™ audio technology	no	no	yes

1.3.3 OMM CAPACITIES AND FEATURES

The following table summarizes OMM capabilities:

Feature	Release 3.0 or later		Release 6.0 or later	
	RFP OMM	Linux x86 server OMM	RFP OMM	Linux x86 server OMM
RFP 32/34 IP and RFP 42 WLAN	256 [1]	2048 [1]	256 [1]	4096 [1]
RFP 35/36/37 IP and RFP 43 WLAN	256 [1]	2048 [1]	256 [1]	4096 [1]
Handsets / users	512	4500	512	10000
Message / Alarm receive	yes / yes [1]	yes / yes [1]	yes / yes [1]	yes / yes [1]
Message send	yes	yes	yes	yes
Locating	yes [1]	yes [1]	yes [1]	yes [1]
DECT XQ	yes	yes	yes	yes
UTF-8 and alphanumeric dialing support	yes	yes	yes	yes
SIP-DECT XML terminal API	yes	yes	yes	yes
CAT-iq 1.0 / Hi-Q™ audio technology	yes [2]	yes [2]	yes [2]	yes [2]

[1] The feature requires a license.

[2] The feature is available with the RFP 35/36/37 IP and RFP 43 WLAN and the Mitel 600 DECT phone (or other CAT-iq-capable devices). The feature is enabled per site and requires that the RFPs are configured in the same site and cluster.

1.4 ABOUT DECT PHONES

DECT Phone (formerly referred to as Portable Parts) are an integral part of the SIP-DECT solution.

Mitel provides the following DECT phones:

- Mitel 142 DECT Phone
- Mitel 600 DECT Phone series
  - Mitel 612 DECT Phone
  - Mitel 622 DECT Phone
  - Mitel 632 DECT Phone
  - Mitel 650 DECT Phone

Notes on the Mitel 600 DECT Phones

The Mitel 600 DECT phones support both the NA and EMEA regulatory requirements.

The latest Mitel 600 firmware release has the following characteristics:

- New user interface e.g. new dial editor with alphanumerical and always en-bloc dialing
- Support of UTF-8 in over the air signaling with the OMM
- Digit and alphanumeric dialing
- Support of SIP-DECT XML terminal interface

- Support of microSD card to save subscription data and the most important local device data (not supported by Mitel 600 DECT phones)
- Additional subscription options
- Additional alarm melodies
- Profile indication in idle display

For more details please see /31/and /32/.

In addition to the existing Mitel 600 DECT phone set, the new Mitel 600 DECT phone supports CAT-iq 1.0 and thus supports G.722 (wideband) voice connections. For the full experience of wideband audio, the DECT phone hardware (e.g., speakers, microphone, and processor) has been improved.

The Mitel 600 DECT phone also supports DECT enhanced security.

2 GETTING STARTED

The following example describes the steps required for a minimal SIP-DECT configuration.

2.1 BASE STATION STARTUP CONFIGURATION

Start up information for each DECT base station needs to be provided by DHCP or OM Configurator. To use DHCP, specific vendor options must be configured in the DHCP Server for SIP-DECT (see section 9.5.4.1).
In this example, the OM Configurator is used to provide a static IP Configuration to the RFPs.

1 Connect the RFP(s) to your LAN and power up the units.

2 Open the OMM Configurator and select your network interface.

3 Login (user name and password: omm for initial configuration until start up).

4 Enter the RFP MAC address.

5 Enter the configuration parameters for the RFP (OMM IP = your first RFP).

6 Use the **Add parameter** function for NTP and DNS Server, if available. Add second OMM IP address parameter for redundancy.

7 Click **Send Configuration** to apply the configuration to the RFP.

8 To configure the next unit, modify the MAC address and IP address in your configuration, and click **Send Configuration**.

Note: The OM Configurator requires the Java Runtime Environment version 1.7 or higher.

2.2 SYSTEM CONFIGURATION

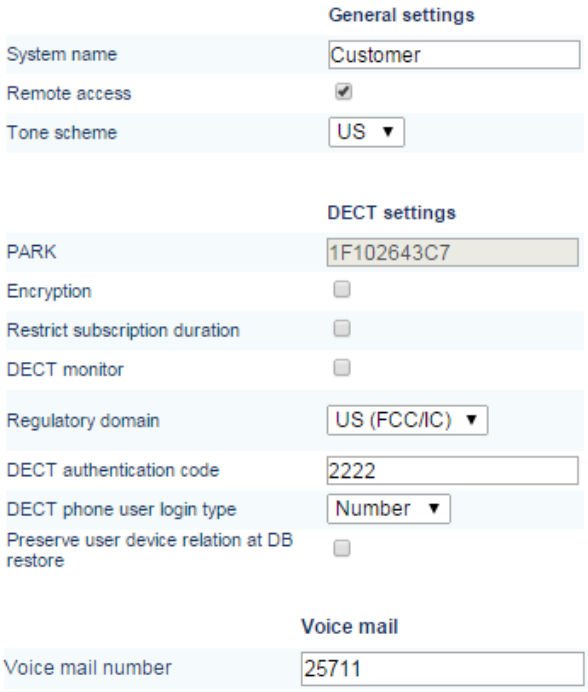
As soon as the OMM starts up, open a browser and connect (https://<IP_address>). Login with the user: omm and password: omm for the initial configuration.

The OMM forces you to change the login, which then also applies to the OM Configurator.

The OMM Web service provides basic parameters to setup the system, which is sufficient for this example scenario. To configure the OMM in detail, use the OM Management Portal (OMP). This application requires a current Java 1.7 to run and supports detailed OMM configuration and monitoring. The OMM Web service provides a link to run the OMP application via Java Web start.

2.3 SYSTEM - SYSTEM SETTINGS

The OMM System settings menu provides the fundamental settings to operate the SIP-DECT system.



System name: Customer Name

Remote access: allow SSH access

Tone Scheme: scheme to simulate call control tones (country-dependent).

PARK: The system needs a PARK code to operate. Use the Online PARK service to obtain a PARK code (see section 6.1.3) (five or more RFP systems).

Regulatory domain: DECT regulatory domain applicable to your local region.

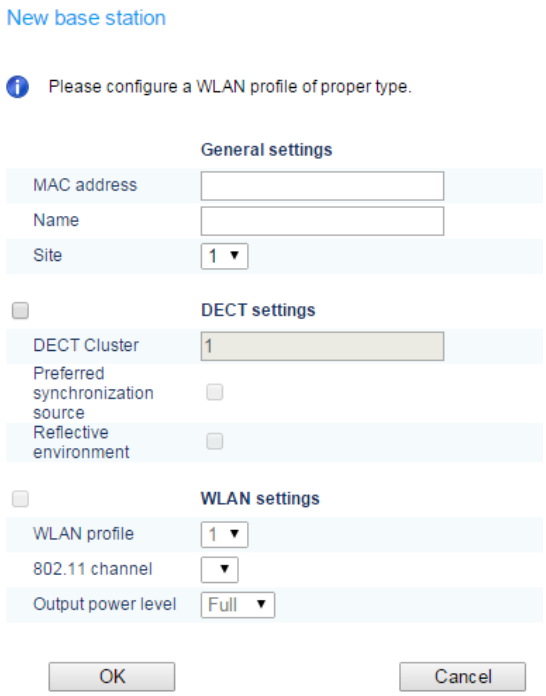
DECT authentication code: define as template for the subscription of new DECT phones.

Voice mail number: your system voicemail number. A Mitel 600 phone will then offer the voice box in the Handset menu.

2.4 BASE STATIONS

Configure all base stations (formerly referred to as Radio Fixed Parts) from the **System** -> **Base Stations** menu (including the OMM RFPs).
When you click on the **Start** button below the “Capturing unconfigured DECT base stations” caption, the OMM lists all RFPs trying to connect.

Click on **New** to configure a new base station.



The base station configuration requires:

- RFP MAC address
- Name e.g. location
- Site (default: 1)
- DECT active
- DECT cluster (default: 1)

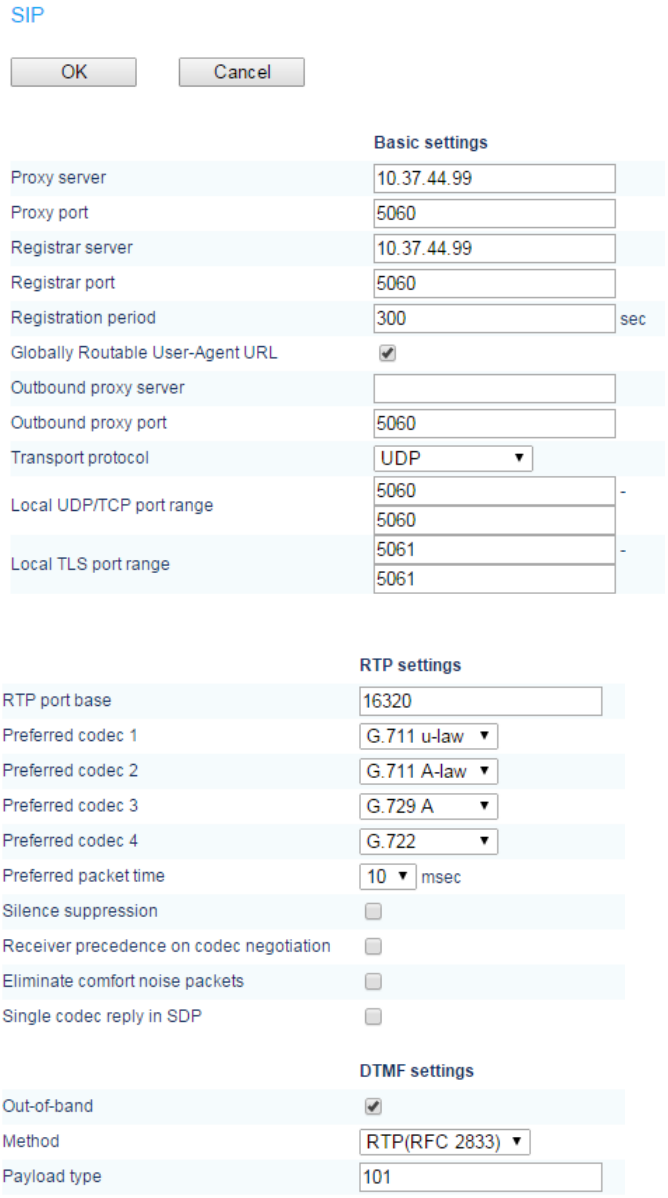
The Status for each RFP is shown in the Base Stations section.

- **Active**: DECT Radio State (Active ✓ , Searching 🔍, Off ✖, disabled ✖ / -)
- **Connected**: RFP is connected to the OMM, RFP must be configured first.

2.5 SYSTEM - SIP

Configure the SIP connection to the call server that the OMM must connect to in the OMM **System** -> **SIP** menu. Make sure the **Advanced** checkbox in the top bar is enabled.
The SIP user account (SIP-ID, Auth, and password) configuration is part of the DECT Phones configuration.

The default SIP signaling port for SIP-DECT is 5060 / UDP. Change if this is required by the SIP Server.



Enter values for the following:

- **Proxy Server** : PBX IP or DNS Name
- **Proxy Port**: 5060
- **Registration Server**: PBX IP or DNS Name
- **Registration Port**: 5060

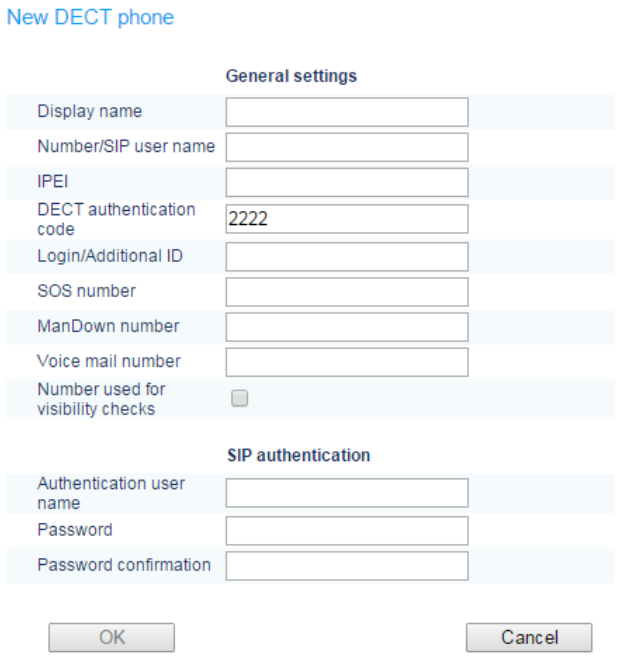
Use the default RTP settings unless your installation requires a different configuration.

Use the default DTMF settings unless your installation requires a different configuration.

2.6 DECT PHONES

SIP-DECT allows multiple configuration and provisioning methods for DECT phones. In this example we use fixed DECT phones. For each Handset (user) in SIP-DECT a SIP-Extension in the call server must be configured.

To add a new DECT phone, go to the **System** -> **DECT Phones** menu (ensure the **Advanced** option in the top bar is enabled) and click **New**.



Enter values for the following:

Display name: Extension Name

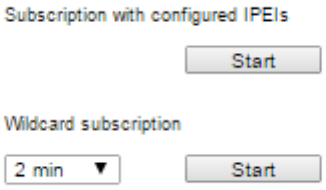
Number/SIP user name: SIP-ID e.g. terminal phone number

IPEI: Handset hardware identifier (optional)

DECT authentication code: Code for Handset subscription

Authentication user name: SIP user name

Password: SIP Extension password



To subscribe new DECT phones, subscriptions must = be permitted by the OMM.

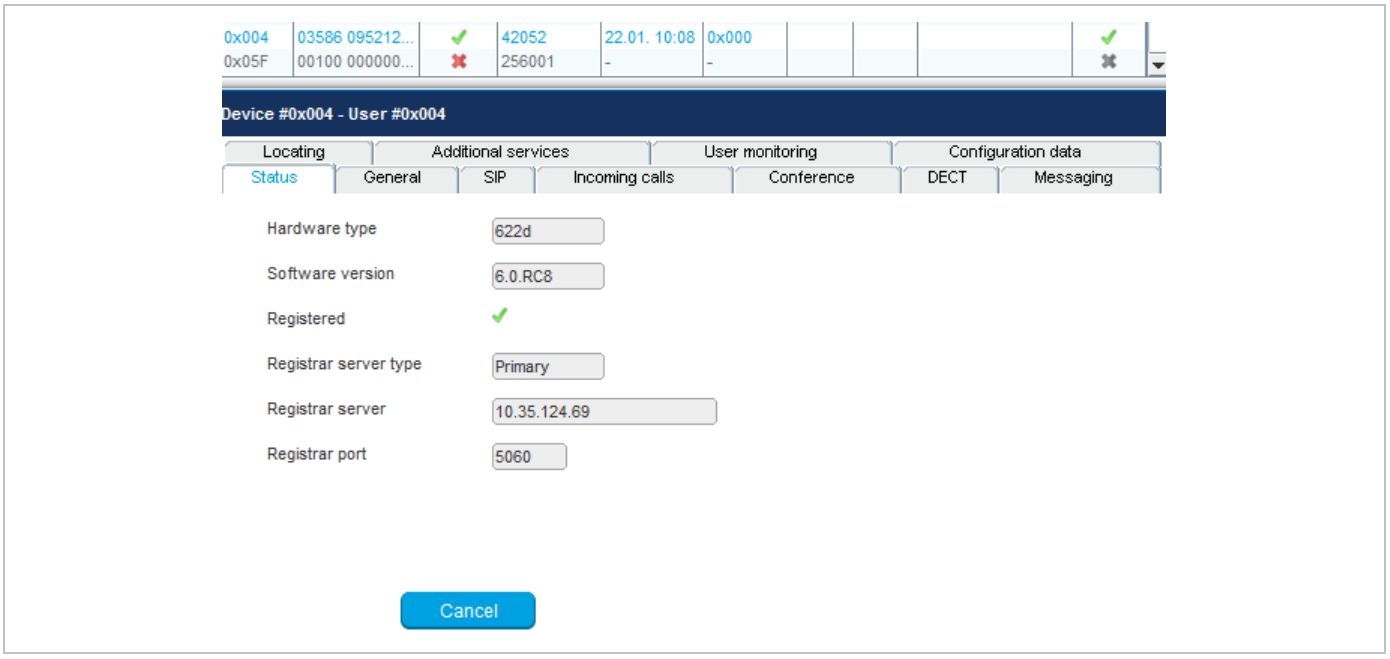
Use **Wildcard subscription** if no IPEI is set.

To subscribe new Mitel 600 DECT phones, open the DECT phone **System** > **Subscriptions** menu. Select **New system** and enter the Authentication code provided in your System Settings (e.g. 123456). The DECT phone prompts you to enter a PARK or to proceed with the subscription without a PARK. Set the PARK if several DECT systems are around, otherwise the DECT phone tries to subscribe to the first available DECT system.

2.7 VERIFY DECT PHONE AND SIP STATE USING OMP

The OpenMobility Management Portal (OMP) offers a Monitoring mode for checking the DECT phone state and SIP registration status.

Open OMP and go to **Monitoring** ( ) -> **DECT Phones** -> **Overview**. Select the DECT phone from the table, and click on **Show details** (under the Tasks menu) to view details on the SIP registration status.



Switch the DECT phone off / on to force SIP user registrations.

3 ENHANCED FEATURE OVERVIEW

A SIP-DECT system scale from a single licensed RFP up to a larger SIP-DECT system that may include hundreds of RFPs. Some of the more advanced features target larger DECT systems. You may browse the following list of features in order to get an overview and to decide if it's relevant for your requirements. You find in-depth explanations in the referenced sections.

> **Please note:** Be aware that the majority of the new enhanced features require the current DECT phone firmware release. It is assumed that SIP-DECT installations are configured to perform an automatic firmware update over the air.

3.1 DOWNLOAD OVER AIR

The Mitel 600 series DECT Phones can download and upgrade their firmware via DECT over the air.

As of SIP-DECT 6.0, the SIP-DECT RFP software image (iprfp3G.dnld) contains the Mitel 600 DECT phone software. If the RFP houses the OMM, the OMM uses this software to update the DECT phones. The RFP OMM no longer automatically attempts to load a DECT phone software image from a RFP software URL when provided via DHCP or local configuration.

For specific maintenance purposes only, SIP-DECT allows configuration of a URL via the OMM Web service or OMP to use an alternative DECT phone software image (see section 7.4.1.6). The Mitel 600 DECT phone firmware packages are delivered in the "600.dnld" file for the OMM running on an RFP. This package file must be stored on the same server and path where the RFP gets a software image file (e.g. iprfp3G.dnld) for update purposes.

For large installations using a Linux Server-hosted OMM, an RFP software image (iprfp3G.dnld) without Mitel 600 DECT Phone software is available to reduce network traffic in update scenarios.

The DECT phone firmware packages are included in the OMM installation package for Red Hat Enterprise Linux (RHEL) and CentOS for the Linux x86 server version of the OMM.

> **Please note:** An RFP upgrade from SIP-DECT 3.0 to 6.0RC2 is not supported due to the extended RFP software image. The 3.0 software does not accept the extended software image of SIP-DECT 6.0.
>
> For large installations using a Linux Server OMM, the RFP software image (iprfp3G.dnld) without Mitel 600 DECT Phone software can be used. This software image supports an immediate RFP upgrade from SIP-DECT 3.0 to 6.0RC2.

3.2 WIDEBAND (CAT-IQ 1.0 / MITEL HI-Q™ AUDIO TECHNOLOGY)

Together with the new RFP 35/36/37 IP and RFP 43 WLAN, the Mitel 600 DECT phone can act as a Mitel Hi-Q audio terminal. This feature is realized using wideband speech according to CAT-iq.

Each Hi-Q connection uses twice the capacity on the DECT air interface, as compared to conventional narrowband. Therefore, four Hi-Q connections can be established via one RFP, instead of eight.

Mitel Hi-Q audio technology must be enabled or disabled per site (see sections 7.5 and 0). This functionality must be homogeneously available among synchronous RFPs (members of the same cluster). Each site with enabled Hi-Q audio must exclusively contain new RFP 35/36/37 IP or RFP 43 WLAN.

Typically one site is identical with one cluster, i.e. all RFPs belonging to a specific site belong to a specific cluster. However a site can have more than one cluster. The OMM allows configuration of a cluster that contains multiple sites. Such configuration could annul the rule that Hi-Q audio must be homogeneously available among synchronous RFPs.

> **Please note:** It is strongly recommended not to setup systems with multiple sites within one cluster.

3.3 CONFERENCING

To improve the integration with different SIP servers, SIP-DECT includes support for centralized and internal three-way conferencing.

The centralized conferencing feature is based on RFC 4579 and supports the use of external third party conference servers (e.g. Broadsoft or Sylantro servers), which are RFC 4579-compliant.

SIP-DECT also includes an integrated conference server implementation based on RFC 4579. The integrated conference server offers SIP-DECT users who are hosted on SIP servers without their own conference solution, the opportunity for three-way conferencing.

The centralized as well as the integrated conferencing feature allows users to:

- merge two active calls together into a conference call
- transfer another party into the conference when on an active conference call
- disconnect from an active conference call while allowing the other participants to remain connected

Regardless whether the centralized or the integrated conferencing is used, conferences can be initiated from the Mitel 600 and Mitel 142d DECT phones.

For a detailed description see section 9.19.7.

3.4 CONFERENCING AUDIO NOTIFICATION

The SIP-DECT Integrated Conference Server (ICS) notifies all conference participants when someone is joining or leaving the conference. The notification is a specific tone for joining and a specific tone for leaving the conference.

3.5 VOIP ENCRYPTION

To allow secured call connections over unsecured IP infrastructures (e.g. internet), SIP-DECT supports SRTP to encrypt the RTP voice streams and TLS to encrypt the SIP signaling.

These security mechanisms, together with a secured iPBX infrastructure, allow protected call services and ensure:

- authentication
- integrity
- confidentiality
- privacy

When a Mitel 600 DECT phone user is involved in a SRTP call, a key icon in the call display indicates that the media path to the next hop is ciphered.

The key icon is only displayed when the connection uses SIP over TLS, SRTP and DECT encryption together for a secure key exchange and a secure media transport.

3.6 DECT ENHANCED SECURITY

In response to market concerns, the DECT standard has introduced improvements to security. Many security features, which were specified in the DECT standard (respectively GAP) were left optional for the DECT phones. These mechanisms became mandatory with CAT-iq. Almost all of this functionality was present and used within SIP-DECT right from the start.

Furthermore, some new features have been added to GAP:

- encryption of all calls (not only voice calls)
- re-keying during a call
- early encryption

Each feature provides an additional security guarantee and is therefore an integral part of the SIP-DECT solution.

The feature set can be enabled or disabled per site. This distinction is necessary due to the fact, that enhanced security is available with RFPs 35/36/37/43.

With SIP-DECT 5.0 and later, when DECT enhanced security is enabled, every connection will be encrypted – not only voice calls, but also such as service calls (e.g. list access) or messaging.

Additionally, the cipher key used for encryption during an ongoing call is changed every 60 seconds.

Finally, every connection is encrypted immediately upon establishment to protect the early stages of the signaling such as dialing or CLIP information.

DECT enhanced security is only supported together with Mitel 600 DECT phones. Older terminals (e.g. 6x0d or 142d) or GAP phones still operate as normal, but do not support the new security mechanisms.

3.7 SIP OVER UDP/TCP/TLS

In addition to UDP, SIP-DECT also supports TCP and TLS as transport protocols for SIP signaling. The OMM provides the following transport protocol modes:

- **UDP**: all SIP messages will be sent/received via UDP
- **TCP**: all SIP messages will be sent/received via TCP
- **UDP/TCP**: all outgoing connections are always set up via TCP, but incoming SIP messages are also accepted when being sent over UDP
- **TLS**: all SIP messages will be sent/received via TLS connections
- **Persistent TLS**: all SIP messages will be sent/received over TLS connections. The OMM tries to keep the connection to the SIP server permanently open.

3.8 SIP MULTIPORT

Some call server platforms (e.g. Cisco CUCM) and internet telephony provider environments (SBCs) do not accept SIP registration from different users who have the same IP address and port, but require a unique source signaling port for every SIP extension. By default, the OMM uses one source port for all extensions, but does allow the configuration of individual local signaling ports for users and conference rooms.

The port range is set per protocol (i.e., UDP/TCP and TLS), and must not overlap with other ports in use.

The following parameters can be configured or read per user (see section 8.10.4) and conference room (see section 0):

- **Fixed port**: Port used explicitly for SIP signaling. If set to 0, an automatically calculated port is used for this user or conference room. The default is 0.
- **Calculated port**: a read-only parameter whose calculation is based on the internal user or conference room ID and a configurable port range, in a way that all users or conference rooms are spread over the range.

  The calculation is based on the following rules:

  UserPortCount = UserPortRangeStart - UserPortRangeEnd + 1
  UserPort = ((UserID – 1) % UserPortCount) + UserPortRangeStart

  ConfRoomPortCount = ConfRoomPortRangeStart - ConfRoomPortRangeEnd + 1
  ConfRoomPort = (ConfRoomID % ConfRoomPortCount) + ConfRoomPortRangeStart

  The “Calculated port” is first updated with the SIP registration of the user or conference room. Depending on the “Register Traffic Shaping” settings and the number of users/conference rooms, the update may take some time.

The port ranges used for the port calculation can be configured globally for all SIP DECT users and conference rooms via the OMP (see section 8.5.4.1).

Please note: To provide each user and/or conference room with a unique port using the port calculation, the port range must be greater than or equal to the number of users or conference rooms.

Configuration Rules for Port Ranges

Please note the following configuration rules for configuration of the UDP/TCP and TLS port ranges:

- Port ranges for users and conference rooms may not overlap.
- A port range configured outside the defaults (5060, 5061, 4060, 4061) can be within the range 17000 – 32767.
- Port ranges may not overlap with the ports of other OMM services. See section 11.7 for a list of all ports and protocols.
- If the OMM is running on an RFP, the ranges may not include ports used by other RFP protocols. See section 11.7 for a list of all ports and protocols.
- The port range for conference rooms is limited to 100 ports.
- The port range for users is limited to the following:
  RFP OMM: maximum 512 ports
  Linux Server OMM: maximum 10,000 ports

3.9 RFP MIXED INSTALLATIONS

In sites (or whole systems) with Hi-Q audio disabled, an arbitrary mixture of RFP 32/34 IP / RFP 42 WLAN and RFP 35/36/37 IP / RFP 43 WLAN is allowed. No further restrictions appear for mixed installations.

RFP SL35 IP support

SIP-DECT supports the RFP SL35 IP after applying the unlock file and the standard SIP-DECT software to the RFP.

Before the standard SIP-DECT software can be installed on the RFP SL35 IP, the unlock.xml file must be available for the RFP on the USB. After applying the unlock.xml file the RFP accepts the standard SIP-DECT software.

In terms of licensing, the OMM manages the RFP SL35 IP with the unlock file and the standard SIP-DECT software like an RFP 35 IP.

For a detailed description see section 9.29.

3.10 DECT XQ

The DECT radio communication generally suffers from attenuation and radio wave reflection. In particular, if a building's walls and ceilings contain a higher portion of metal-based material or if larger metal surfaces are present, the DECT XQ improves the radio communication between an RFP and a Mitel 600 DECT phone at the expense of DECT channel capacity (see 9.3). Enable this feature for some or all of your RFPs (see section 7.6.3, "DECT settings" or section 8.7.1.2, "DECT tab").

DECT XQ audio cannot be combined with Hi-Q audio within the same connection.

Three operating modes regarding audio quality are available on the Mitel 600 DECT phone: standard audio, Hi-Q audio and automatic.

- In Hi-Q audio mode, a Mitel 600 DECT phone exclusively establishes wideband connections and does not switch to narrowband later. A Mitel 600 in this mode ignores the XQ capability of the RFP.
- In standard audio mode, a Mitel 600 DECT phone exclusively establishes narrowband connections and does not switch to wideband later. A Mitel 600 in this mode will switch to DECT XQ and back as necessary.
- In automatic mode, the connection establishment depends on whether the current base provides DECT XQ or not. If DECT XQ is available, a narrowband connection will be established. Otherwise a wideband connection will be established.

3.11 UTF-8

The UTF-8 support allows the presentation of a wider range of language specific characters e.g. umlauts and eases the internationalization/localization. The OMM and the Mitel 600 DECT phone family support UTF-8 for text messaging.

Also, the OMM and the Mitel 600 DECT phones support an extended character set for

- User parameter (configurable via WEB, OMP or external user configuration files)
  – System name
  – User name
  – Number
- SIP "display names" und SIP "user id's" of incoming and outgoing calls
- Call logs
- LDAP directory access
- XML terminal interface objects

For third-party GAP DECT phones, Mitel DECT 142 / Mitel 142d or Mitel 600 with older firmware releases, the UTF-8 character set is not supported. If possible, the OMM maps UTF-8 character to LATIN-1.

Please note: The available set of characters is defined by the DECT phone. Please see /31/. User configuration files must be encoded in UTF-8.

3.12 ALPHANUMERIC DIALING

SIP-DECT supports the dialing of alphanumeric characters. This allows a user to dial names (e.g. “Heinrich.Mueller”) as well as digits.

If SIP URI dialing such as “name@domain” is used, you must use an (outbound) proxy that supports the interpretation of SIP user names, including domain names.

3.13 DIGIT TREATMENT AND UTF-8/ALPHANUMERIC DIALING

The “Digit treatment” feature handles dialed digit strings only. It cannot be applied with UTF-8/alphanumeric dialing.

3.14 VOICE MAIL NUMBER

A system-wide voice mail number can be configured within the system setting section. This number is used by the Mitel 600 DECT phone family if a voice box call is initiated.

The system-wide voice mail number can be overruled by a user specific voice mail number.

If there is no voice mail number configured or another type of DECT phone is used; then the voice mail number must be configured locally in the DECT phone.

Please note: The voice mail number is supported by the external user data configuration files. The parameter UD_VoiceMailNumber can be set in the user_common.cfg and/or “user.cfg” or “LoginID.cfg” e.g. “`UD_VoiceMailNumber=222`”. For details, see the *SIP-DECT OM Handset Sharing and Provisioning Guide*.

3.15 DIVERSION INDICATION

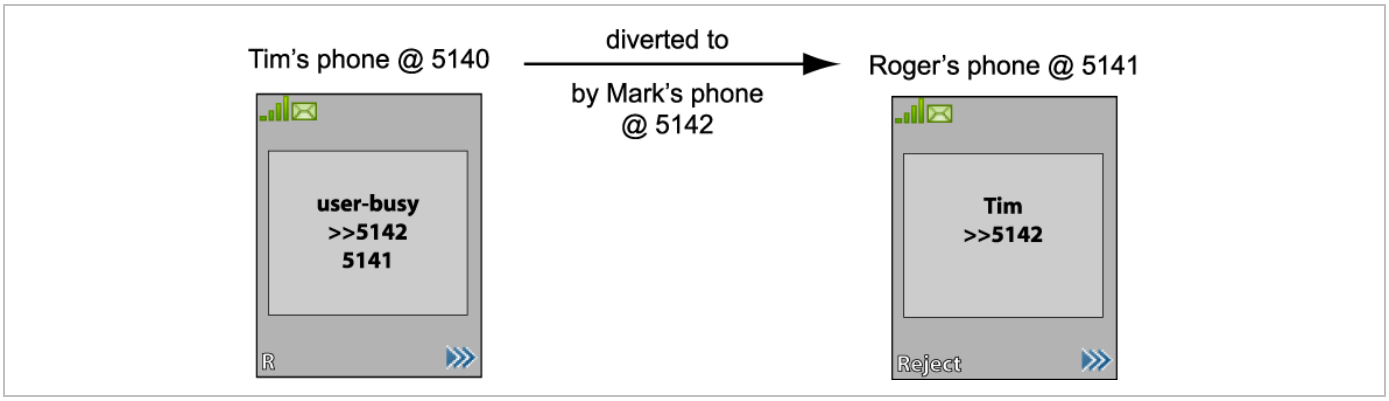
The OMM supports the displaying of diversion indications for Mitel 142d and Mitel 600 DECT phones based on the SIP Diversion Header defined in RFC 5806. This feature is only available with iPBXs generating such Diversion Headers.

When an outgoing call from a Mitel 142d / Mitel 600 phone is being diverted to another destination (i.e. via call forward), the phone displays the Caller ID (phone number and/or caller name) of the new destination and the reason for the call diversion (if delivered from IPBX). Similarly, at the new destination, the Caller ID of the original call destination is displayed.

Example:

1. Tim calls Mark at 5142.
2. Mark’s phone is busy and diverts the incoming call to Roger at 5141.
3. Tim’s phone displays the extensions where the call is being diverted to and the reason for diverting the call.

4 Roger's phone starts ringing and displays the name and number of the phone the incoming call (Tim) and the original called destination (5142).



3.16 CALL COMPLETED ELSEWHERE

SIP-DECT supports the SIP "Reason" header field defined in RFC 3326.

When SIP-DECT receives a CANCEL request including a "Reason" header field with "cause=200", the incoming call will be marked as accepted in the local incoming call logs of the Mitel 600 and Mitel 142d phones.

3.17 SEMI-ATTENDED TRANSFER

The SIP message sequence for a "Semi-Attended Transfer" allows the transferor to start the transfer while the target phone is still ringing.

SIP-DECT supports different behaviors for semi-attended transfers. This can be configured on the OMP **SIP** -> **Advanced settings** tab (see section 8.5.4.2).

The supported modes are:

Semi-attended transfer mode	Refer-to with replaces	Behavior
Blind	No	The semi-attended transfer is handled as a blind transfer. The phone sends CANCEL before REFER for semi-attended transfer.
Blind	Yes	The semi-attended transfer is handled as a blind transfer. The phone sends REFER with Replaces for semi-attended transfer and no CANCEL. This behavior is not SIP compliant but necessary for some iPBX platforms.
Attended	-	The semi-attended transfer is handled as an attended transfer. Both lines of the transferor remain active until the transfer succeeds. This behavior is compliant to RFC 5589.

Please note: The mode "Semi-attended transfer mode: Blind" with "Refer-to with replaces: yes" is not SIP compliant and should only be used on iPBX platforms which require such kind of signalization.

3.18 THIRD LINE HANDLING FOR 142D AND 600 DECT PHONES

In earlier implementations of SIP-DECT user call control, a waiting call forces the user to react to that call (accept or reject), before he can use other supplementary services like call transfer, conference or inquiry call options.

In the new implementation, a third line is reserved for call waiting purposes. The waiting call is kept in the background, even if the receiving user decides to finish supplementary services first (see rule at the end of this subsection). It is also kept, if two lines are already used for brokering (in the former implementation, the incoming call was answered with busy state). After one of those lines is released, the waiting call can be accessed by the known means (by R-key or the referring menu options).

> **Please note:** The Third Line Handling is available for Mitel 142d and Mitel 600 DECT phones, but not for third party GAP phones.

Third Line Handling follows the existing MMI philosophy of the DECT phones.
If the user wants to continue supplementary services when a call comes in:

- R-Key will accept the incoming call. All supplementary services will involve that incoming call directly or indirectly.
- Selecting “Transfer” or “Brokering” offers the possibility to keep the waiting call and continue supplementary services with the former line only. The waiting call is not involved but can be accepted later.

> **Please note:** The Third Line Handling feature offers the option to receive a further incoming call only. A user cannot open a third line as the active part (e.g. to open a further third line for an inquiry call in a brokering situation, where two lines are already involved).

3.19 CALL TRANSFER ENHANCEMENTS FOR 142D HANDSETS

The blind transfer has been slightly simplified. The second confirmation after selection of the transfer targets number by the “start” button is removed. So the steps are reduced to:

- Press I-Key within a basic call
- Select “Transfer”
- Select editor or phonebooks
- Edit or select destination and press “OK”

In earlier OMM releases (SIP-DECT 4.0 and earlier), call transfer had to be initiated via menu. Pressing the hook key led to the release of the active line and a callback menu popped up.

The OMM now allows the use of the hook key for call transfer, as it is already known from Mitel 600 DECT phones. To enable this feature, the administrator must enable the ”Call Transfer by Hook” feature in the OMP **System** -> **SIP** -> **Supplementary Services** menu.

To initiate a transfer via the hook key, do the following:

- initiate an inquiry call and dial
- wait for completed connection (optional)
- press the hook key

You can still initiate a transfer via the menu, as before.

If the “transfer by hook” capability is set, the release of the active line in brokering state must be done via the menu option “Release”:

- Press I-Key within an inquiry call or brokering state
- Select “Release”

3.20 TRUNCATING SIP USER NAME IN SIP URI

If user name info in SIP to-/from-/contact headers or p-asserted-identity is extended by a suffix, which is separated by a semicolon, this suffix is truncated before the username is printed to call displays or DECT phone internal call logs.

Example: If the DECT phone receives

Contact: "Dominique B.” sip:5405;openSipsTestproxy@testlab.mitel.randd.com

only 5405 will be extracted as user name to be printed. The display name “Dominique B.” will also be shown, but the extension “openSipsTestproxy” will be removed.

To enable this feature, the administrator must set the ”Truncate Caller Identification” parameter in the OMP **System** -> **SIP** -> **Supplementary Services** menu.

3.21 OMM STANDBY

The OMM is the central management entity in a SIP-DECT system and forms thereby single point of failure. It is possible to automatically transfer the OMM function to a second RFP device in case of failure or loss of network connection (see section 9.15).

3.22 BACKUP SIP PROXY/REGISTRAR

To increase the operational availability of the system in critical environments like hospitals, the OMM offers a new failover mechanism for the SIP server. Therefore, in addition to the primary proxy, outbound proxy and registrar server, it is possible to configure two additional levels of backup servers named “secondary” and “tertiary” servers (see section 9.19.3).

In addition, a keep-alive mechanism implemented in the OMM allows the automatic failover to secondary/tertiary servers or automatic coming back to primary servers (see section 9.19.4).

3.23 CONFIGURABLE USER ACCOUNT FOR STANDBY CHECK

The “Standby OMM” feature of SIP-DECT allows configuration of the user account to be used to check the availability of the iPBX. An availability check starts automatically in fail over situations.

The OMM starts a SIP registration for a specific DECT phone user and sends an OPTIONS request to the configured SIP proxy. If there is an answer, the SIP proxy/registrar is considered reachable and the standby OMM becomes active.

With previous SIP-DECT releases, the OMM used the user account with the lowest phone number for the check procedure. To select a specific user account for this purpose, enable the “Used for visibility checks” flag in the user settings (see section 8.10.4).

Please note: The “Used for visibility checks” flag can only be set for one user. The number for visibility checks is shown under OMP **Status** -> **Users** -> **Number** menu. If the flag is not set for a specific user, the OMM uses the user account with the lowest phone number.

3.24 OMM STANDBY ENHANCEMENT

With SIP-DECT systems using the OMM standby feature, it could happen in rare cases that both OMMs become temporarily active. In such a situation all SIP-DECT users were SIP registered from both OMMs to the configured PBX. This can cause problems, when the PBX accepts only one registration per user (non-forking proxy).

To prevent such problems, SIP-DECT has a mechanism to detect situations with two active OMMs. When such a situation is detected, the remaining active OMM will SIP re-register all users to the PBX.

This mechanism can be enabled/disabled through the “SIP reRegister after 2 active OMM failover” parameter in the OMP **System** -> **SIP**-> **Supplementary Services** menu.

3.25 RFP SYNCHRONIZATION / RADIO COVERAGE PLANNING

To ensure a seamless communication experience, the SIP-DECT system switches an ongoing DECT phone call from one RFP to another if the radio communication quality drops below a certain threshold. The seamless handover is possible only if the participating RFPs are synchronized. RFP synchronization is performed via radio communication between RFPs, which in turn requires a decent radio coverage planning (see section 9.2).

3.26 CLUSTERING / PAGING AREAS

Your SIP-DECT system may include different locations, where the distances between the locations prevent the RFPs from performing the over-the-air synchronization. In this case, you must split your network into clusters (or “synchronization domains”). Assign RFPs to cluster numbers for this (see section 7.6.3, “DECT settings” or section 8.7.1.2, “DECT tab”).

If your SIP-DECT system consists of a very large number of RFPs, you should configure the paging area size to optimize the signaling necessary for paging a DECT phone in throughout the SIP-DECT system (see 8.7.2).

Isolated sites

A separate cluster number is also required, e.g. for a single RFP servicing an office abroad. Also, if the VPN network connection to the isolated site’s RFP cannot transport DHCP, you may use static IP address configuration for the single RFP (see section 9.6).

3.27 WIRELESS LAN (WLAN)

If you purchased a number of WLAN RFPs (RFP 42 WLAN or RFP 43 WLAN), the SIP-DECT system also provides access to your company LAN via Wireless LAN. The RFP 43 WLAN supports additionally 802.11n and 802.11a. The WLAN configuration of a group of WLAN RFPs is managed by WLAN profiles (see section 7.8).

3.28 802.11I: WPA2-ENTERPRISE PRE-AUTHENTICATION FOR FAST ROAMING

WLAN stations (e.g. laptop) which decide to roam to another WLAN access point (AP) must perform the full authentication process with the new AP. In 802.1X (RADIUS) networks this can take a long time resulting in network dropouts during the roam.

The AP share authentication information with other APs, so the station can authenticate faster (pre-auth) when roaming to a new AP. This method reduces network dropouts significantly.

The RFP43 automatically enables pre-authentication for WPA-Enterprise enabled WLANs. The RFP 42 does not support this feature.

3.29 CHANNEL CONFIGURATION FEEDBACK FOR HT40 AND TX POWER

The HT40 channel configuration in 802.11n enabled networks may not always become active because of other access points that use channels that would overlap. In this case, the RFP43 falls back to HT20.

From SIP-DECT 5.0 on, the effective channel configuration and the transmit power are reported to the OpenMobility Manager.

You can view these parameters in the OMM Web service and the OMP (**DECT base stations** > **Device list** -> **Show details** – **WLAN** tab) and change the channel to a frequency without overlapping APs.

3.30 PC-BASED OMM INSTALLATION

A very large number of RFPs or a large number of DECT phones may exceed the storage capacity or processing power of the embedded RFP device. For this reason, it is also possible to operate the OMM on a standard PC under the Linux operating system (see section 9.12).

As of SIP-DECT® 5.0, CentOS 6 and Virtualized environments (based on VMWare ESXI 5.5.0) are also supported. SIP-DECT 6.0 has been tested with CentOS 6.5.

3.31 OM LOCATING APPLICATION

You can set up a system to locate and track DECT phones in your DECT system. This includes a separate Web user interface, which for example can be operated by service personnel to locate a DECT phone that has triggered an alarm. Refer to the *OpenMobility Locating Application User Guide* for details (see /27/).

Locating application image generator

The OM Locating application can display small maps showing the placement of an RFP. In earlier SIP-DECT releases, these graphic maps had to be generated manually by using a graphic editing program.

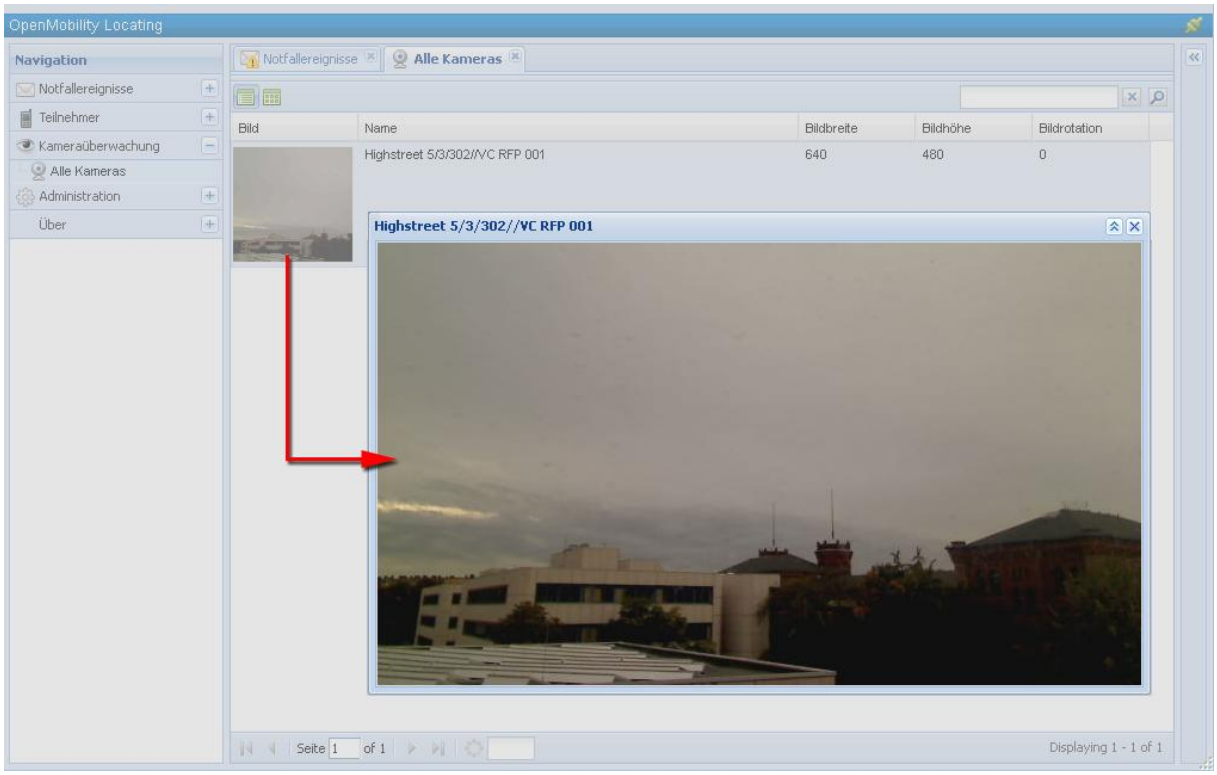
The OM Management Portal (OMP) can be used to generate the graphic map images needed by the OM Locating application.

Images showing the floor plan of the buildings belonging to the OM system can be imported into the OMP. In a next step the RFPs of the SIP-DECT system can be placed on these images with drag and drop. Finally for each of the RFPs, the graphic map images will be generated in the format and size as required by the OM Locating application.

The process and the OMP functionality for this feature are described in detail in section 9.22.

3.32 USB VIDEO DEVICES

You can configure and use USB video devices that are fully supported by the UVC video class device driver. The USB video device is connected to the USB port of one of the SIP-DECT RFPs 35 / 36 / 37 / 43. A valid locating license is also required. In conjunction with the “Surveillance” feature of the OM Locating application, the USB video devices generate snapshot images and video streams.

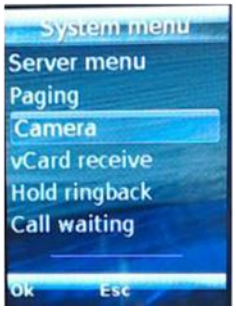


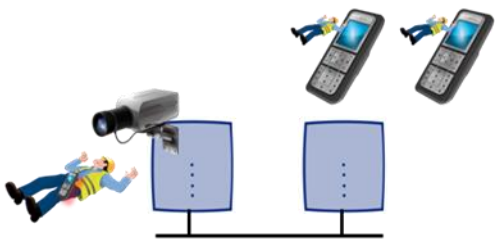
For a detailed description see section 9.26.

Today one USB camera (only the types Logitech HD Webcam C615 or Logitech HD Pro Webcam C920) can directly be connected to a SIP-DECT® base station RFP 35/43. Such cameras are used as well with the OM Locating Application as with the Terminal Video feature.

3.33 TERMINAL VIDEO

With SIP-DECT 5.0 and later, the Mitel 600 DECT phones support video streams from cameras connected to SIP-DECT® base stations RFP 35/43. When a user has the video stream permission, he can choose in the system menu from a list of cameras to connect.





Video Streaming is only available when the DECT phone is connected to a RFP 35/36/37/43 and the permission is set for the site and the DECT phone.

Video streams are treated like a call by the DECT phone, and require two (of eight) air channels on the RFP for each stream. The DECT phone can also perform handover between RFPs with an active video connection.

A video connection is automatically terminated by the system in case that any related capability (e.g. video stream permission) is changed.

The maximum number of simultaneous terminal video streams per camera is restricted to 10.

Connection and configuration of cameras is similar to the steps for the locating application. Special steps necessary for terminal video are:

- Enable all sites that have the technical capability (only RFP 35/36/37/43) via OMP for terminal video.
- Enable the additional service “Video stream permission” via OMP (**DECT Phones** -> **Users**) for those users who are allowed to use this feature.

> **Please note:** It is strongly recommended to set the radio fixed parts attributes building, floor and room, if you configure a huge system with a large number of cameras. This will ease the selection of cameras on the DECT phone menu.

The selection of the menu “Cameras” is offered in the Mitel 600 DECT phone “System menu” (e.g. long press on Menu >>>), if

- at least one camera is plugged and activated by the enable flag
- the DECT phone user has the permission to select cameras
- the DECT phone is located within a site, which allows terminal video

Navigation within the camera menu will be done by OK (and ESC) keys. To establish a video stream, press “hook off” if the name of your camera is selected.

If the number of cameras exceeds the visible lines of the DECT phones display, the presentation is arranged hierarchically. In this case, at least one sublevel must be selected before camera names are offered. The hierarchy of the referenced DECT base station (site, building, etc) is inherited for that purpose.

The destination of a video call is added to the DECT phone internal redial list.

> **Please note:** Audio calls or any system service activities are not possible during an established video link. Any kind of auto callback (initiated by a message or pushed by XML notification to direct dial) is not supported for video calls.

3.34 EXTENDED MESSAGING

You can set up an extended messaging and alarms system, e.g. to provide automated reactions on alarms triggered by DECT phones or on alert messages. The extended messaging system may also provide message confirmations, message-based services, and may also be integrated with external computer systems. Refer to the “OpenMobility Integrated Messaging & Alerting” User Guide for details, see /28/.

3.35 OPENMOBILITY PROVISIONING

While some users in the SIP-DECT system use their “personal” DECT phone, it is also possible to operate shared DECT phones. The OpenMobility SIP-DECT solution provides an enhanced DECT Handset Sharing and Provisioning concept that enables to comfortably manage a large amount of DECT

phones and which provides a flexible subscribing model. With this, the SIP-DECT system supports new features such as logging in and out with a personalized user account on different DECT phones, import of user data from an external provisioning server, automatically subscribe new DECT phones or control subscription specific system functions from DECT phones. Refer also to the “OpenMobility Provisioning” user guide for details see /29/.

3.36 USER MONITORING

To check the availability of a user for receiving calls or messages, the OMM monitors the status of the user’s DECT phone. Passive and active user monitoring is not enabled by default.

In addition to the standard request, response and notification messages, the OMM generates alarm triggers if a user becomes unavailable. The alarm triggers can be consumed by OM IMA, OM Locating application or another application using OM AXI. If a user becomes available again then the OMM informs about this status change by sending an additional alarm trigger.

The status information is available via OM AXI and OMP.

For a detailed description of the “User monitoring” feature see section 9.28.

3.37 SIP-DECT XML TERMINAL INTERFACE

The SIP-DECT XML terminal interface allows external applications to provide content for the user on the DECT phones display and much more. The list of potential applications is endless. The interface is derived from the XML API for Mitel SIP Phones and coexists with the OM AXI features e.g. text messaging.

Partners can get access to the interface specification /37/ by registering for the A2P2 program.

To call a certain URI there are a number of hooks available for the Mitel 600 DECT phones which can be put on a programmable key or can be called from a menu.

The following hooks are available:

Hook	Description	Programmable Key	Menu entry
Caller list	To replace the local caller list	yes	yes
Redial list	To replace the local redial list	yes	yes
Presence	Hook to reach a presence application	yes	yes
Server Menu	Hook to reach a server menu	yes	yes [1]
Action URI	URI to be called in case of user/DECT phone events	no [2]	no [2]
Feature access codes	Hook to provide “Feature Access Codes Translation”	yes	yes
Call Completion	Hook to provide callback option when user places outgoing call and wants to request a callback before hanging up	yes	yes
Applications	List of 10 hooks; each of them can be freely defined (App1 – App10)	yes	yes
App1 – App10	10 hooks which can be freely defined	yes	no

[1] The server menu is integrated in the OMM system menu. The OMM system menu is available as a menu entry in the local main menu of the DECT phone (soft key ») or directly available by a long press

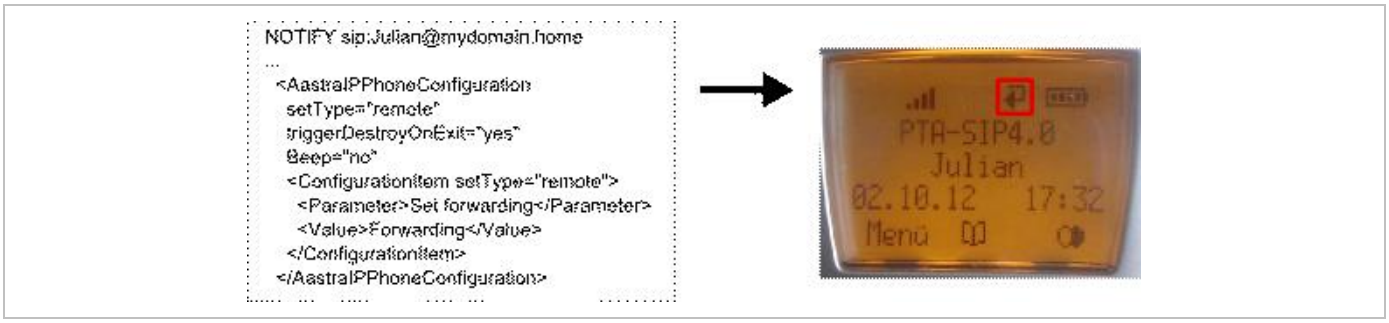
of the soft key . If no user is assigned to the DECT phone, the server menu is the only available XML application hook.

[2] The URI to be called is configured in the OMM via OMP. Content can be pushed towards the DECT phone via SIP notify. For more information please see /37/.

Please note: Since SIP-DECT release 3.1, new or changed behavior on XML objects is provided (see SIP-DECT XML terminal interface specifications “PA-001008-05-00” and “req-0715” (version 0.21) for more details).

3.38 CONTROL OF CALL-FORWARD INDICATOR ON 142D

SIP-DECT supports the control of the call-forward indicator on Mitel 142d DECT phones by a PBX using the xml terminal interface. The following illustration shows an example.

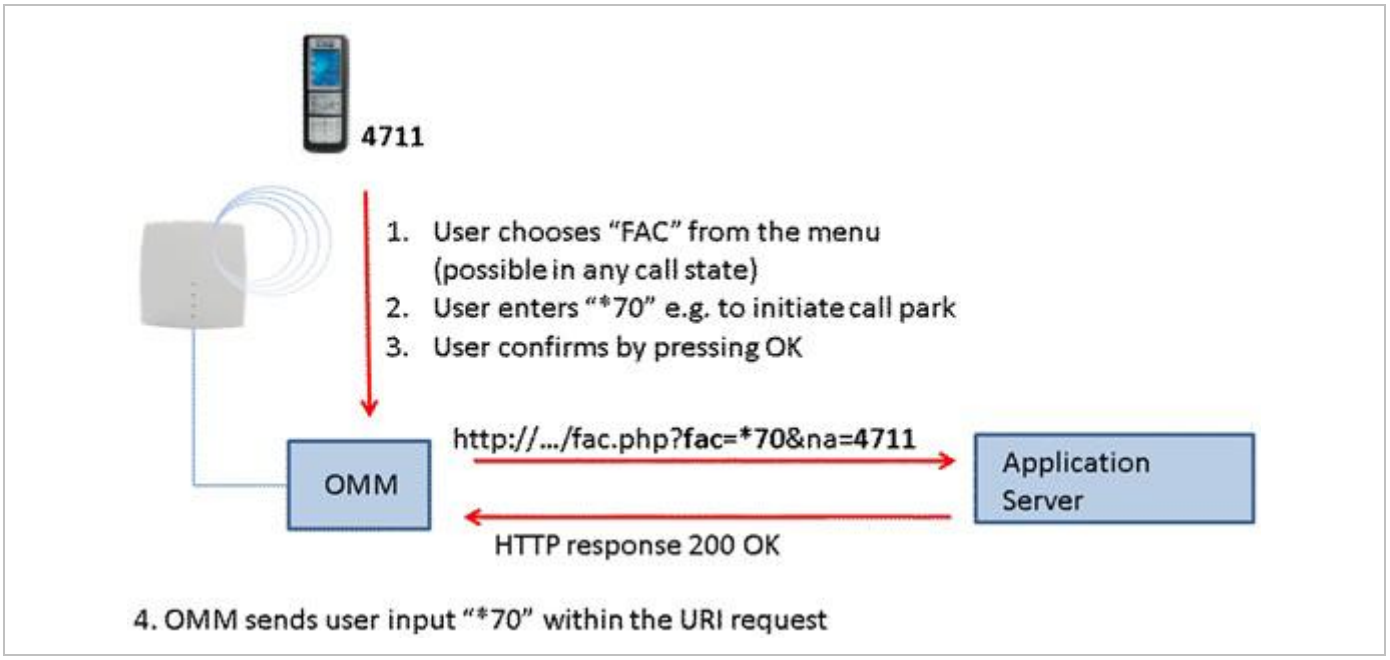


3.39 FEATURE ACCESS CODES TRANSLATION

Many PBXs allow the control of PBX supplementary services by dialing specific numbers called feature access codes (FAC).

SIP-DECT supports the XML application “Feature Access Codes Translation” to avoid any conflict to SIP-DECT feature access codes or digit treatment rules with PBX feature access codes.

If “Feature Access Codes Translation” is activated, SIP-DECT users can chose “FAC” menu on the Mitel 600 or Mitel 142d DECT phones in any call state and enter the feature code en-bloc. The input is sent to the PBX (Application server) within a URI request.



This feature can be configured using OMP on the **XML applications** page (see section 8.13.2).

3.40 INTEGRATION OF CORPORATE DIRECTORIES

The SIP-DECT solution supports integration of LDAP and XML-based corporate directory services. XML-based directory services can be implemented using the XML terminal interface. The configured directories are presented in a list on the Mitel 600 DECT phone if the user calls up the central directory.

For configuration information see section 0.

3.41 INTEGRATION INTO EXTERNAL MANAGEMENT SYSTEMS

To integrate the SIP-DECT system into external management systems, you can use the following features.

- Each RFP may run an SNMP agent that can be queried by SNMP management software (see 9.18).
- To further integrate into external configuration management systems, the DECT system's configuration is available my means of ASCII-based configuration files. You can configure automatic import or export of configuration files from/to an external server. For information on RFP configuration files see section 9.8; for user configuration files refer to the "OpenMobility Provisioning" user guide, see /29/.
- The OM AXI software application interface can also be used for integration into external systems. Refer to the OM Application XML Interface (OM AXI) specification, see /31/.

3.42 SYSTEM CONFIGURATION TOOLS

You can configure and maintain the SIP-DECT system with two different applications:

- the Web-based OMM Web service (see section 7)
- the Java-based OM Management Portal (OMP, see section 8)

Both applications support the essential configuration and administration settings required for smaller SIP-DECT systems. However, for larger SIP-DECT systems using enhanced features, some settings are

not available in both applications. To help you to decide which application to use, the following table lists the features and settings that are available in one of the applications:

Feature	Web	OMP
SNMP configuration	Yes	Yes
DB management: User data import	No	Yes
Configuration and start of a system dump	No	Yes
Event information display (Event log)	Yes	Yes
WLAN profile configuration	Yes	Yes
Dynamic DECT phone subscriptions (OpenMobility provisioning)	No	Yes
Locating settings for DECT phone	No	Yes
Paging areas	No	Yes
Alarm Triggers	No	Yes
RFP sync. View	No	Yes
RFP statistics	No	Yes
RFP data export	No	Yes
Capturing unconfigured RFPs	Yes	Yes
Configuration of XML applications (SIP-DECT XML terminal interface)	No	Yes
Configuration of SIP backup servers	No	Yes
User monitoring	No	Yes

3.43 EXCEPTION MESSAGES

Due to performance reasons, trace messages are no longer displayed in the expert console, which has been removed. The formerly used file “exception.log” is no longer generated. Messages and Java exceptions are now written to a log file, which is located in the OMP user directory (see section 8.15).

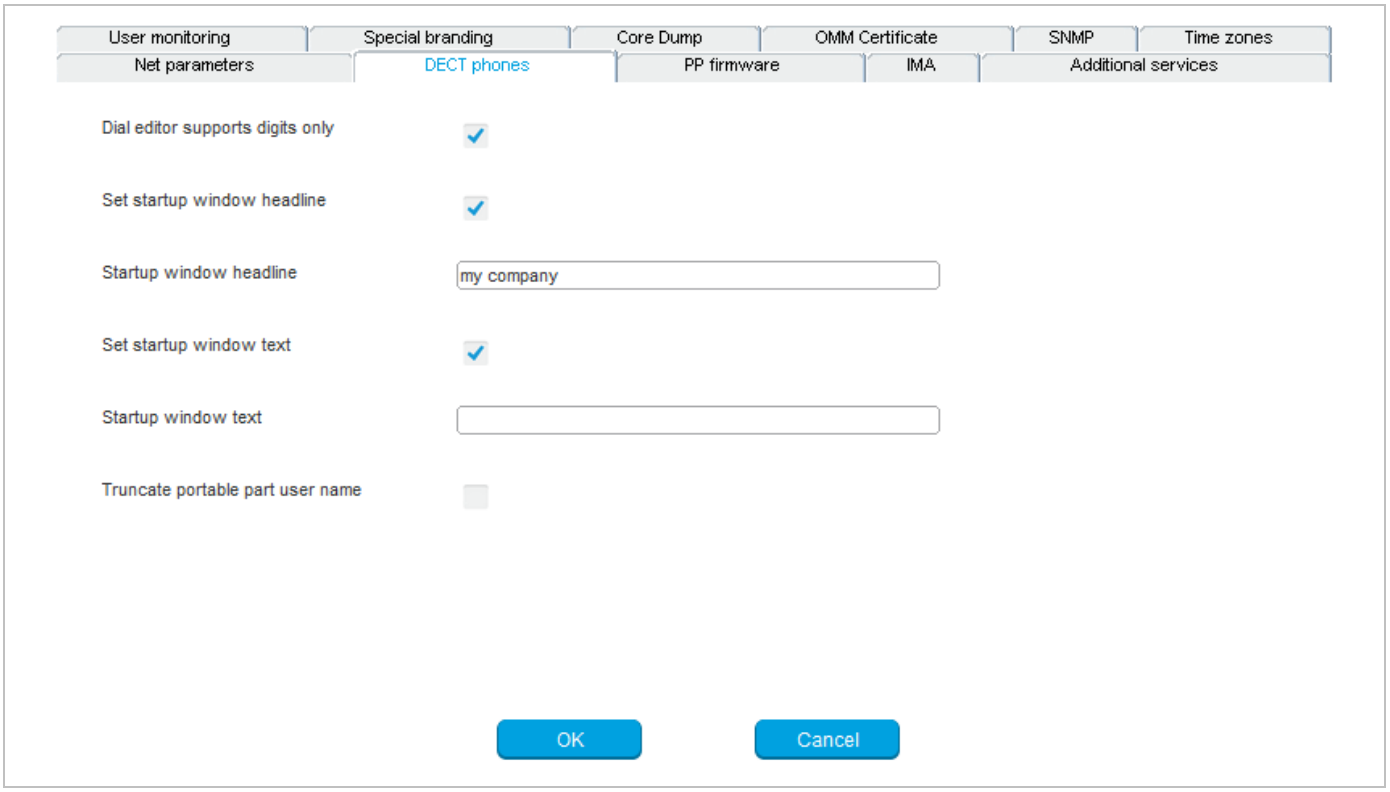
3.44 MITEL 600 DECT PHONE DIAL EDITOR MODE

It is assumed that most customers use digits only in their dialing plan, and that it is more convenient if dial editors support only the digits 0 to 9, * and #. The **Dial editor supports digits only** flag (on the OMP (**System** -> **Advanced settings** -> **DECT Phones** tab) enables this mode. In this mode, the * has the meaning of a digit to be merely dialed, even if it short-pressed.

If the mode is not set to digits only, the short pressed * will change the editor mode to alphanumeric.

3.45 MITEL 600 DECT PHONE CUSTOMIZABLE BOOT TEXTS

Normally, the text shown during startup of the Mitel 600 DECT phone is the Mitel specific default (branded in the firmware). Customers can also define their own text. See the screenshot below from the OMP (**System** -> **Advanced settings** -> **DECT Phones** tab) as an example:



- **Startup window headline** is set to “my company” and activated by the **Set startup window headline** flag
- **Startup window text** is set to an empty string. As a consequence, there will be no startup text on the DECT phone

3.46 RING TONE SELECTION FOR (ALARM) MESSAGES

This feature is related to the “Messaging Configuration and Management” section of the “OM Application XML Interface” document. It extends the possibility to set ringer tones to provide an acoustic signal to the receiver of the message.

With previous SIP-DECT releases, the “melody” field offered ten tones, selected by an identifier. The new field “explicitToneSelection” allows the user to select a tone, which need not to be part of the set of “melody” tones, by the name string. If both are set, the explicitToneSelection value takes precedence.

IMPORTANT : Depending on the DECT phone model, not all strings may work. The string value is not checked for correctness. Invalid or unknown string values are ignored.

Please note: The OM Message & Alerting License is required to use these features.

3.47 SIMPLIFIED LICENSING

With SIP-DECT 6.0, the licensing model is simplified. The system no longer distinguishes between different RFP “soft-brands”, and some licenses are deprecated. See section 6 for more information.

Please note: New license files are not compatible with SIP-DECT 4.0 (or older) systems!

3.48 RFP RESET TO FACTORY SETTINGS

An RFP can be reset to factory settings using a USB flash drive with a file on it named “factoryReset”. When the USB flash drive is plugged into the RFP, the RFP is reset to factory settings automatically.

The file is automatically removed from the USB flash drive during this process.

3.49 SIP ENHANCEMENTS

SIP-DECT 6.0 introduces several enhancements to the SIP protocol implementation.

3.49.1 GLOBALLY ROUTABLE USER-AGENT URIS (GRUUS)

Globally Routable User-Agent URIs (GRUUs) provide a way for anyone on the Internet to route a call to a specific instance of a SIP User-Agent. IP-DECT provides GRUU support according to RFC 5627.

A “sip.instance” is added to all non-GRUU contacts. You can enable or disable this support via OMP or Web service (**System** -> **SIP** -> **Basic Settings**).

3.49.2 SESSION TIMER

SIP-DECT supports RFC4028 “Session Timers in the Session Initiation Protocol (SIP)” to keep call sessions alive and to determine whether established call sessions are still alive.

You can configure the session refresh period via OMP or Web service (**System** -> **SIP** -> **Advanced Settings**).

3.49.3 SIP CONTACT MATCHING

In special Network Address Translation (NAT) environments, the Contact URI in a SIP response to a REGISTER request may not match the URI originally sent out.

In such cases, SIP-DECT offers the “SIP contact matching” configuration parameter. You can enable this parameter via OMP or Web service (**System** -> **SIP** -> **Advanced Settings**).

3.49.4 CONFIGURABLE CALL REJECT STATE CODES

The SIP status codes for user-rejected calls and device-unreachable calls are configurable via OMP and Web service (**System** -> **SIP** -> **Advanced Settings**).

3.49.5 CALL RELEASE TIMERS

SIP-DECT 6.0 allows changing certain system default timers. These timers determine the DECT phone call behavior when calls are released by the B party.

You can configure the ”Call release timeout”, ”Hold call release timeout”, and ”Failed call release timeout” parameters via OMP or Web service (**System** -> **SIP** -> **Supplementary Services**).

3.49.6 INCOMING CALL TIMEOUT

Incoming calls are automatically rejected when the user does not answer the call within 180 seconds. This time period is too short for special customer use cases.

You can configure this interval through the “Incoming call timeout” parameter via OMP or Web service (**System** -> **SIP** -> **Advanced Settings**).

3.50 AUTO ANSWER, INTERCOM CALLS AND AUDIO SETTINGS

Certain call features (e.g., “Auto callback”, initiated by a text message or “directDial” URI in XML notifications) force the DECT phone to call a specified SIP user automatically and, as an option, to establish a speech path immediately without any intervention by the DECT phone user.

SIP-DECT allows control of the following audio settings on the DECT phone to prevent unauthorized parties from hearing the call:

- Speech path can be initially set to be muted
- A warning tone may be generated

SIP-DECT also supports intercom calls. This means that the originating party can force the called party’s phone to establish a speech path immediately. Control of the same audio settings applies.

3.50.1 INTERCOM CALLS

A DECT phone can be forced to answer an incoming SIP call automatically if certain information is included in the SIP header. A DECT phone user can also initiate an intercom call, which automatically triggers the destination to talk.

Intercom calls can interrupt active calls (“barge in”). If it is an established basic call, the active call is put on hold. In more complex call situations, a “barge in” always supercedes existing active calls, unless the active call is a “SOS” call.

The call is identified as an intercom call if the SIP INVITE header includes:

- a “Call-Info” header containing “answer-after=0”
- an “Alert-Info” header containing “info=alert-autoanswer”

> **Please note:** This feature is only available for Mitel 600 DECT Phones, version 4.0 or higher.

3.50.1.1 Barge-in of incoming intercom call

If a “barge in” action on an existing call is necessary, note the following rules about the treatment of existing active calls:

- If the user is in a basic call (one line already active) or is brokering (two lines are used), the active line is placed on hold and kept in the background. No line is released.
- Incoming ringing calls which are not yet connected are converted to waiting calls.
- If a third line is open due to a waiting call, that call is released and the line is replaced by the intercom call.
- Outgoing calls that have not yet been answered and are in a dialing state, are released.

- If a call is on hold by the B party, the call is released. An on-hold by the B party is difficult to maintain while another line has an active audio stream.

Normally, the user should be able to resume the interrupted calls again when the intercom call is finished. However, the calls may fail if several maintained lines collide with call exceptions (e.g., a failed call transfer that was maintained in the background).

Please note: Barge-in is rejected if the DECT phone is part of a SOS/alarm call.

3.50.1.2 Outgoing intercom calls

A DECT phone can initiate an intercom call. The user must dial the configured access code, followed by the destination's user id / number.

If a DECT phone generates an intercom call, an Alert-Info header is added to the SIP INVITE:

- the "Alert-Info" header contains "<http://x>info=alert-autoanswer"

3.50.2 AUTO ANSWER AUDIO SETTINGS

You can configure global auto-answer settings through the OMM Web service or the OMP. Global settings are valid for all DECT phone users in the system, except users who have individual settings.

Incoming call settings:

- Auto answer allowed (default: true)
- Microphone mute (default: true)
- Warning tone (default: true). A short ringtone is played if there are no active calls. If there is an active call in a "barge in" situation, the ringing will be in-band.
- Allow barge in (default: true)

Outgoing call setting:

- Dial prefix (default: string is empty). Empty string means that an intercom call cannot be initiated by a DECT phone.

3.50.2.1 User-specific incoming call setting

You can set user-specific settings via OMP, but not the OMM Web Service. Default values for all parameters are inherited from global settings.

4 NAMING CONVENTION

The naming convention used with SIP-DECT 2.1 or earlier for software deliverables is unified. This applies for the software packaged for the RFPs as well as for the Red Hat© Linux x86 server packages.

Software package	Old	New
Software image for RFP 32/34 IP / RFP 42 WLAN	omm_ffsip.tftp	iprfp2G.tftp
Software image for RFP 35/36/37 IP / RFP 43 WLAN	-	iprfp3G.dnld
OMM software for Linux Red Hat© x86 server (self-extracting executable)	omm_ffsip_install.bin	SIP-DECT_<version>.bin
SIP-DECT OMM software rpm	omm_ffsip-OMM-<ommversion>.i586.rpm	SIP-DECT-OMM-<version>.i586.rpm
SIP-DECT DECT phone firmware rpm	omm_ffsip-6xxd-<DECT phoneversion>.i586.rpm	SIP-DECT-HANDSET-<version>.i586.rpm

5 LOGIN AND PASSWORDS

Interface/Tool	**OMM**	**RFP 32/34 IP / RFP 42 WLAN**	**RFP 35/36/37 IP / RFP 43 WLAN**
Initial configuration via OM Configurator login / password (no previous connection with the OMM)	n/a	No login required	“omm” / “omm”
Initial OMM configuration via Web or OMP standard full-access account login / password	“omm” / “omm”	n/a	n/a
OMM access via Web or OMP (after initial OMM configuration)	Read-only or full-access accounts as configured	n/a	n/a
Configuration via OM Configurator after connection with OMM login / password (system-wide set by OMM)	n/a	OMM standard full-access account login / password	OMM standard full-access account login / password
ssh (no previous connection with the OMM)	n/a	User shell: “omm” / “omm” Root shell: “root” / “22222”	User shell: “omm” / “omm” Root shell: “root” / “22222”
ssh (with previous connection with the OMM) (system-wide set by OMM)	n/a	User shell: OMM standard full-access account login / password Root shell: as configured	User shell: OMM standard full-access account login / password Root shell: as configured

6 LICENSING

6.1 LICENSING MODEL

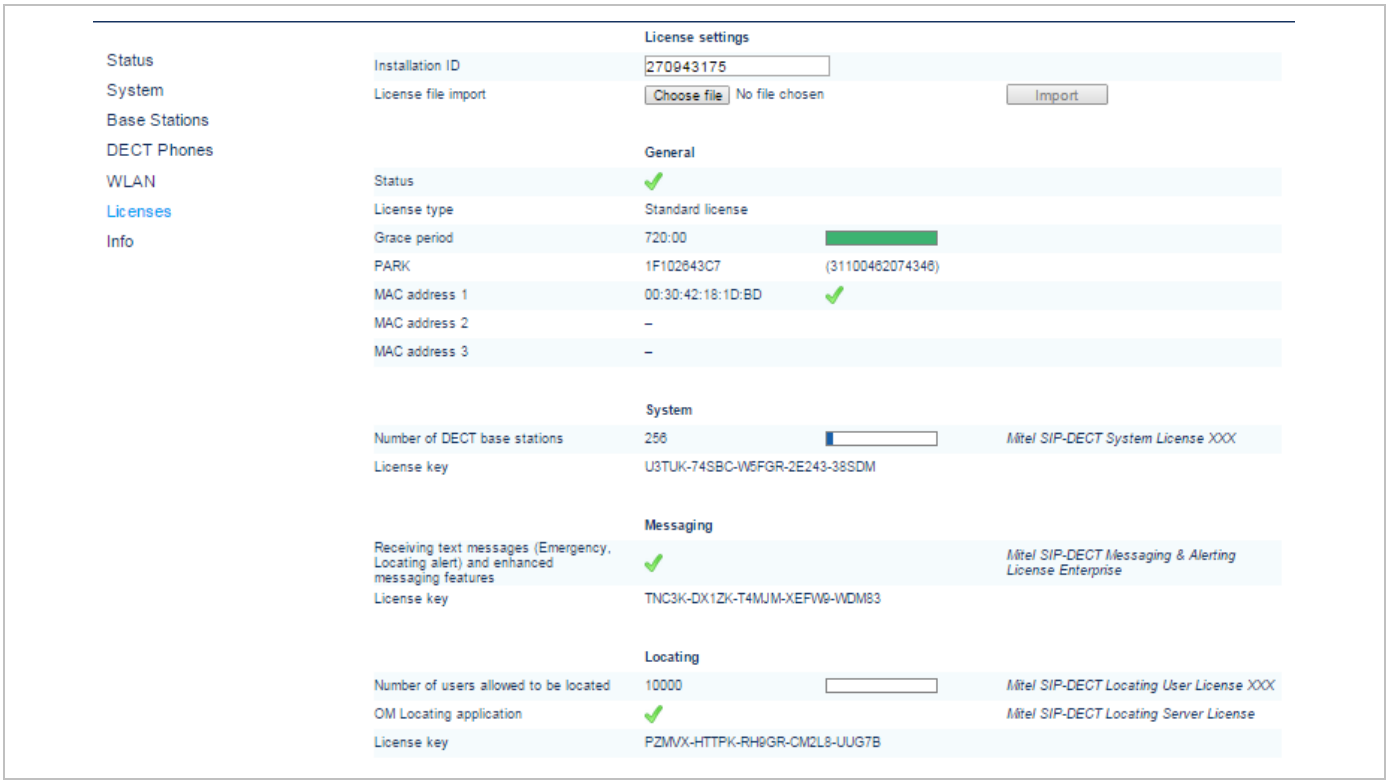
Licenses are required based on the SIP-DECT system size and feature set. Licensed features include:

- the number of configured RFPs
- the Messaging application
- the Locating application

For information on the messaging and locating applications please refer to the appropriate documents listed in the References section (section 11.11).

Note: A license to upgrade the SIP-DECT software to a SIP-DECT 6.0 or later is no longer required.

The **License settings** page in the OMM Web Service provides a summary of the SIP-DECT licenses installed.



6.1.1 SYSTEM LICENSES

To properly address small, medium and large installations, the SIP-DECT offering is split into the following categories, according to system size.

Note: As of SIP-DECT 6.0, no distinction is made between RFP brands. License and feature rules apply equally to all types of RFPs (standard RFP, L-RFP). Only the RFP hardware determines available functionality.

Small systems – 1 .. 5 RFPs

- No license required
- Telephony and basic messaging only
- No locating or enhanced messaging functionality
- PARK code for up to 256 RFPs required for operation (provided by the online PARK service)

Note: Existing SIP-DECT systems with up to five L-RFPs are automatically migrated to the integrated license model. Larger systems still require a valid license file.

Medium systems – up to 256 RFPs (minimum 3 RFPs)

- OM System License required for the number of RFPs (10, 20, 50, 100, etc)
- Licenses for Messaging and Locating can be added
- PARK code for 256 RFPs included in license file

Large systems – up to 4,096 RFPs

- OM System License required for the number of RFPs
- OpenMobility Manager (core software) resides on one or two Linux-based PCs
- Licenses for Enhanced Messaging and Locating can be added
- PARK code for 4096 RFPs included

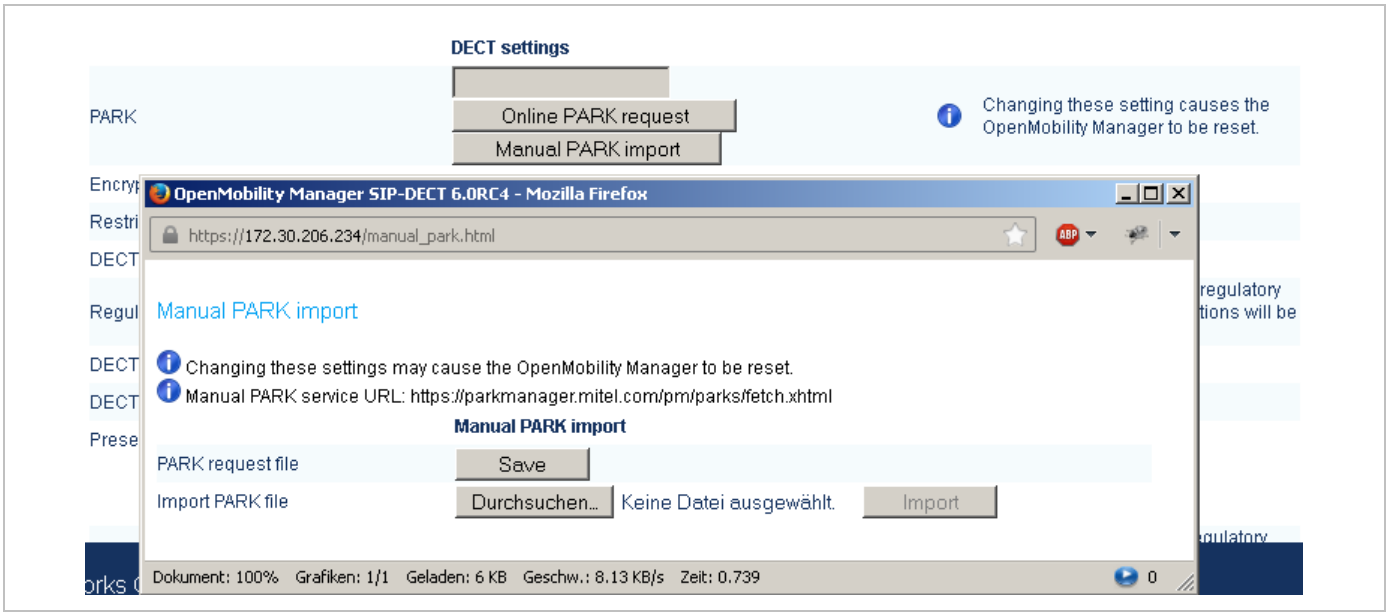
Note: As of SIP-DECT® Release 6.0, there is no longer a demonstration mode for the OMM.

6.1.2 ABOUT G.729 CHANNELS

As of SIP-DECT® Release 6.0, the number of G.729 channels is no longer limited to a specific fixed number or license. The number of G.729 channels depends only on the resources available (i.e., RFP capacity and number of RFPs).

6.1.3 PARK SERVICE

A Portable Access Rights Key (PARK) is required to operate a SIP-DECT system with up to five RFPs. (For systems with more than five RFPs, the generated license file contains the PARK code). As of SIP-DECT 6.0, the PARK code is provided via a centralized Web service; you do not need to enter the code manually (as in earlier SIP-DECT releases). A PARK for up to 256 RFPs is available upon request from the OMM Web service.



You must have an internet connection to access the online PARK service. If no internet connection is available, you can download a PARK request file from the OMM (PARK service URL is https://parkmanager.mitel.com/pm/parks/fetch.xhtml) and upload it to the PARK server from a computer that is connected to the Internet. You can then import the file into the OMM.

If you have a valid license file that includes a PARK, this mechanism is not necessary.

6.1.4 UPGRADE LICENSE

As of SIP-DECT® Release 6.0, you no longer require a license to upgrade to a newer release.

Older systems with an OM Activation License for L-RFPs (3..20 RFP-L) require a license upgrade, which is available from the License server at no cost. Note that you must already have three MAC addresses registered on the license server for the license upgrade.

6.1.5 GRACE PERIOD

The OMM identifies medium and large systems using the unique PARK as well as the MAC addresses of up to three RFPs (called validation RFPs here).

Three RFPs guarantee redundancy when a hardware or network error occurs. An odd number of RFPs prevents system duplication by splitting the system into two separate parts.

When the first validation RFP is disconnected, the OMM generates a warning and displays the message on the **Status** page of the OM Web service, see also section 7.3.

If the second validation RFP is disconnected, the OMM treats it as a license violation, and starts the timer on a 30-day grace period. When the timer expires, the OMM restricts all licensed features.

When the validation RFPs are reconnected to the OMM, the grace period is incremented until it reaches its maximum of 30 days.

6.1.6 LICENSE VIOLATIONS AND RESTRICTIONS

A license can be violated in three ways:

- The number of configured items exceeds the number of licensed items. In this case the associated feature is restricted:
  - the audio stream of calls is dropped after 30 seconds when the number of connected RFPs exceeds the licensed number
  - the messaging application limits the type of messages to “info”, “low”, “normal” and “high”
  - the locating feature is stopped
- For SIP-DECT 5.0 (or older) sytems, the software version in the license file does not match the software version running on the OMM.
- The OMM has no connection to at least two of the validation RFPs and the grace period has expired.

  The restrictions above are in place until at least two validation RFPs are reconnected to the OMM.

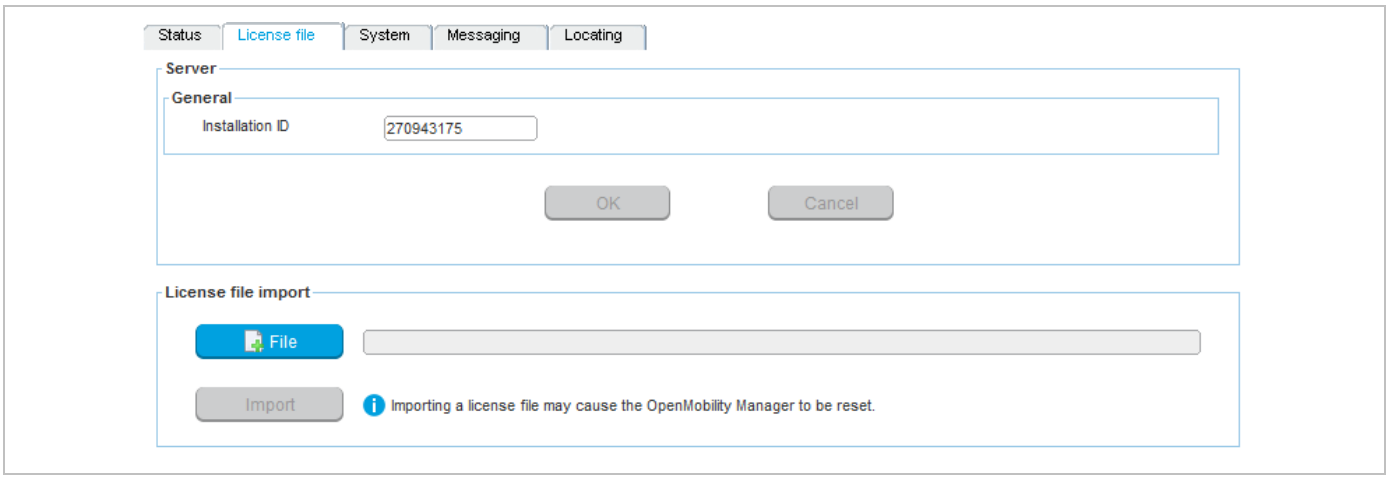
6.2 UPLOADING A LICENSE FILE

A license file must be generated on the Mitel license server. The license confirmation provided when you order your system contains detailed information on how to generate the license file. The file can be uploaded into the OMM either via Web service (see section 7.10) or via the OMP (see section 8.13.2).

A license file contains a PARK for system identification. If the newly imported PARK differs from the current PARK, the OMM performs a restart. In this case, all existing DECT phone subscriptions will be deleted.

Note: The file can be opened with a text editor to view the license or activation parameter.

The license file includes an installation ID. This ID prevents the administrator from loading the wrong license file with a different PARK (resulting in all DECT phones being unsubscribed). The download page for the license file displays the installation ID. If no Installation ID is configured (value 0, which is the default), the ID is automatically set while loading the license file. If the ID does not fit to the license file, the license file import will fail. The installation ID does not change when you load a new license file from the license server, unless the PARK has changed.



The SIP-DECT license file format prepares the system for receiving licenses from Mitel PBXs or to act as a license key server for other Mitel products in future releases.

Please note: New license files (as of SIP-DECT 5.0) are not compatible with previous versions of SIP-DECT systems (SIP –DECT 2.1 – 4.0)!

6.3 LICENSE MODELS

6.3.1 SMALL SYSTEM (UNLICENSED)

When changing the PARK on the **System settings** page of the OM Web service, the OMM uses the built-in license resp. the standard license for a small system.

The built-in license for small system features:

- up to five RFPs
  - standard telephony
  - sending messages from DECT phones for all users
  - no locating
- Messaging features are generally restricted to type “Info”, “Low”, “Normal” and “High” for all users (no “Emergency” and no “Locating Alert”).

When there are more than five RFPs configured, only the first five RFPs stay in the configuration database. All other RFPs are dropped silently.

6.3.2 MEDIUM OR LARGE SYSTEM

When the PARK is set through the upload of a license file, the OMM enters the licensed state. In this state the OMM uses the following license features coded into the license file.

- System license (Medium):
  - three and up to 256 RFPs
- System license (Large):
  - three and up to 4096 RFPs
  - software version of the OMM allowed to be executed
- Messaging license:
  - whether clients are allowed to receive messages
- Locating license:
  - number of locatable DECT phones
  - whether the locating application is allowed to execute

When you generate a license file from the license server, you must enter the MAC address of three RFPs. These three validation RFPs are used to operate the grace period as described in section 6.1.5.

When obtaining the license file from the license server, it is possible to use the PARK used for a small or medium system installation. This prevents the need to re-subscribe all DECT phones.

Note: As of SIP-DECT 6.0, the PARK can no longer be changed manually on the **System settings** page of the OM Web service.

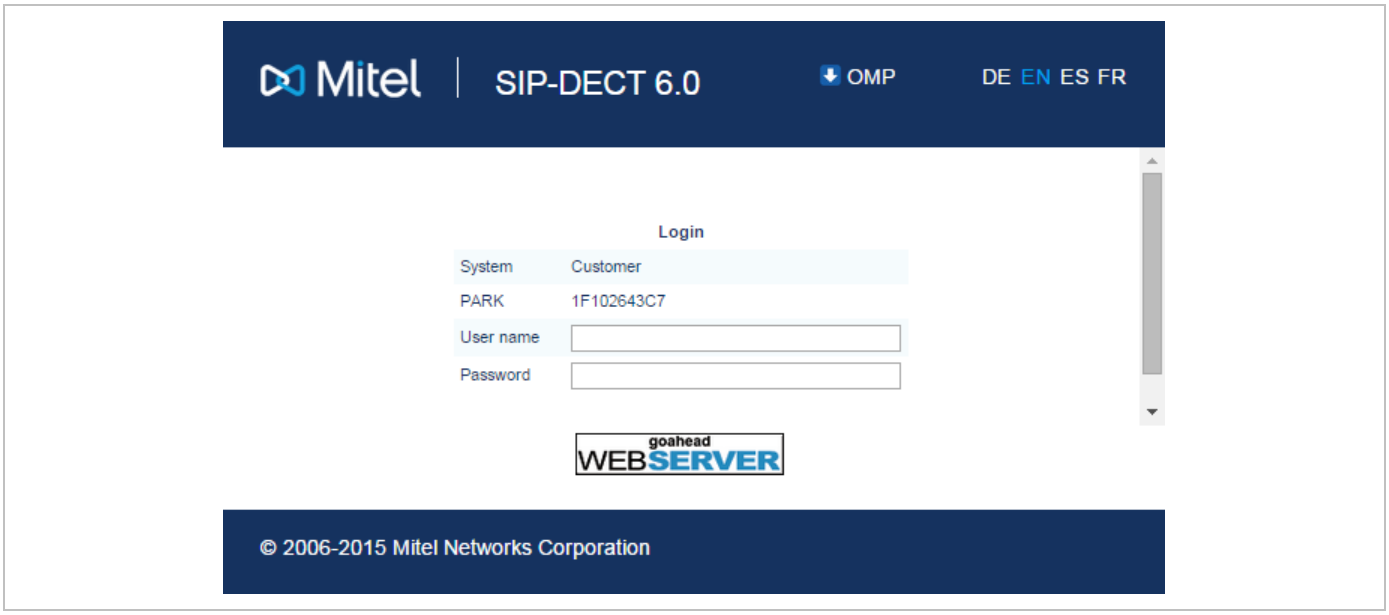
7 OMM WEB SERVICE

The OMM acts as an HTTP/HTTPS server. The HTTP server binds to port 80 and HTTPS binds to port 443 by default. A HTTP request on port 80 will be redirected to HTTPS on port 443. The service access is restricted to one active session at a time and is password protected.

7.1 LOGIN

The OMM allows more than one user at a time to configure the system. A user must authenticate with a user name and a password. Both strings are case-sensitive.

With initial installation, or after discarding all settings, the OMM Web service is accessible via a default built-in user account with user “omm” and password “omm”.



With the first login to a new SIP-DECT software version, the user must accept the End User License Agreement (EULA) (see section 7.11).

If the default built-in user account is active, the administrator must change the default account data (passwords) of the “Full access” and “root” account. The meaning of the different account types is described in section 9.16.1.

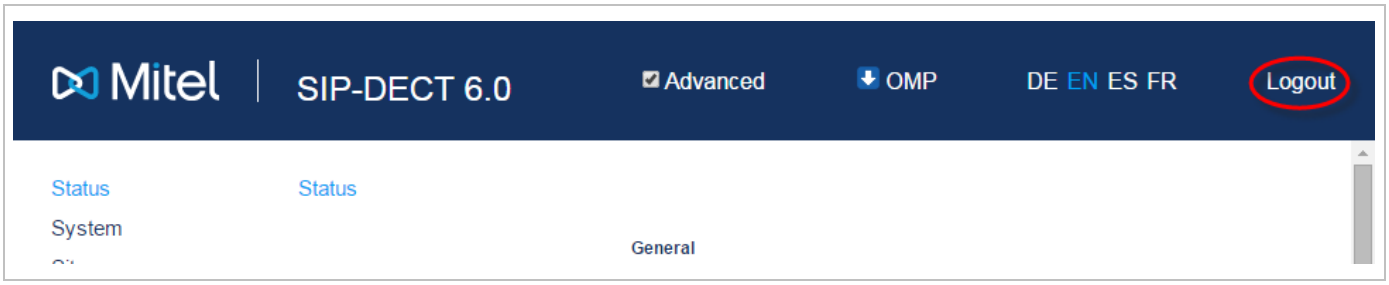
Please note: The OMM forces a change to the default account data. As long as the passwords are unchanged, the OMM will not allow any other configuration.

After login in, the following menus are available (with the **Advanced** option enabled in the top bar):

- **Status** menu: displays the system status (see section 7.3).
- **System** menu: allows configuration of general SIP-DECT system parameters (see section 7.4).
- **Sites** menu: allows grouping of RFPs into different sites (see section 7.5).
- **Base Stations** menu: allows configuration and administration of the attached RFPs (see section 7.6).
- **DECT Phones** menu: allows administration of the DECT phones (see section 7.7).
- **WLAN** menu: allows configuration of WLAN parameters (see section 7.8).
- **System Features** menu: allows administration of system features like digit treatment and directory (see section 7.9).
- **Licenses** menu: allows administration of licenses (see section 7.10).
- **Info** menu: displays the End User License Agreement (EULA) (see section 7.11).

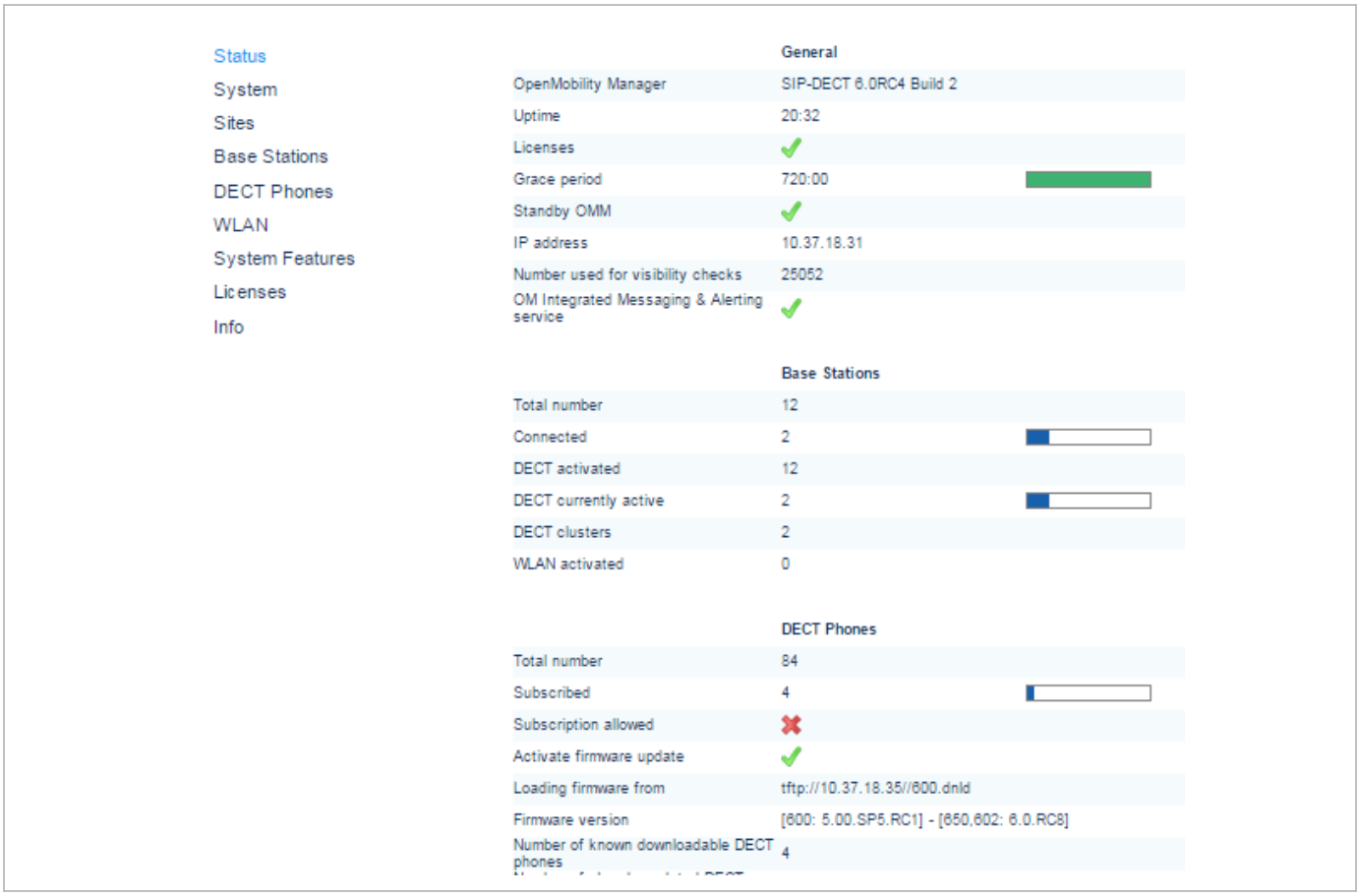
7.2 LOGOUT

If no user action takes place, the OMM automatically logs the user out after 5 minutes. To log out from the system, click the **Logout** button on the upper right of the OM Web service screen.



7.3 “STATUS” MENU

The Status page provides information on the SIP-DECT system status. In case of system errors, system warning messages are also displayed on this page.



7.4 "SYSTEM" MENU

The System menu comprises general parameters to configure and administer the system parameters of the SIP-DECT solution.

7.4.1 "SYSTEM SETTINGS" MENU

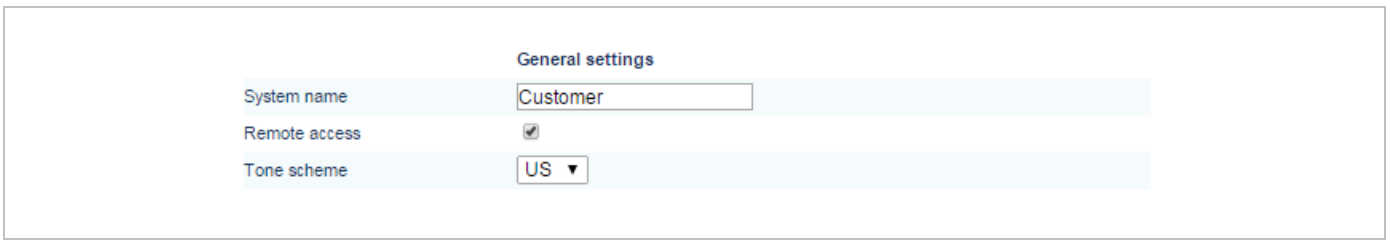
The System settings cover global settings for the OpenMobility Manager. You can perform the following tasks from the System Settings menu:

- configure global settings (see the following sub-sections)
- restart the OMM (see section 7.4.1.14)
- update the OMM (see section 7.4.1.15)

The following sections describe the parameters that can be set.

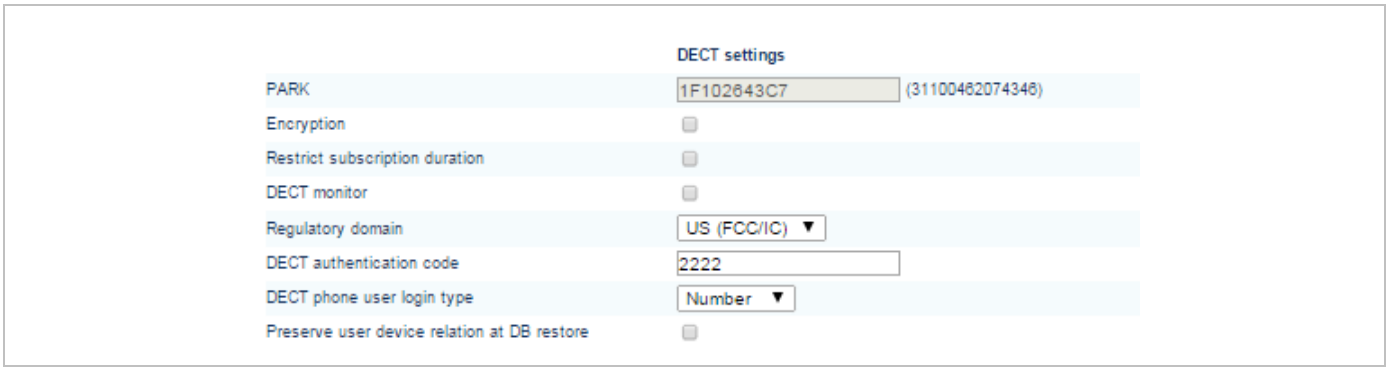
Note: The following information describes all parameters visible when the **Advanced** option (in the top bar) is enabled.

7.4.1.1 General settings



- **System Name**: Enter the system name.
- **Remote Access**: Switches on/off the SSH access to all RFPs of the DECT system. For more information on the SSH access see section 10.3.5.
- **Tone scheme**: Select the country in which the OMM resides. This enables country specific tones (busy tone, dial tone, etc).

7.4.1.2 DECT settings



- **PARK**: This setting depends on the licensing mode:

  Small systems: Enter the PARK code obtained from the PARK service (see section 6.1.3).

  License file: shows the PARK included in the license file.
- **Encryption**: Activate this option if you want to enable DECT encryption for the whole system.

> **Please note:** Make sure that all deployed third party DECT phones support DECT encryption. If not, encryption can be disabled per DECT phone (see 8.10.4).

- **Restrict subscription duration**: Activate this option if you want to restrict the duration for DECT phone subscriptions to 2 minutes after subscription activation. This option is not useful in case that you want to subscribe more than one DECT phone at a time or together with auto-create on subscription. It should be activated exclusively in case that there is a special need.
- **DECT monitor**: For monitoring the DECT system behavior of the OpenMobility Manager, the separate DECT monitor application exists. This tool needs an access to the OpenMobility Manager which is disabled by default and can be enabled here. Because of security, the DECT monitor flag is not stored permanently in the internal flash memory of the OMM/RFP. After a reset, the DECT monitor flag is ever disabled.
- **Regulatory domain**: Specifies where the IP DECT is used. Supported regulatory domains are:
  - EMEA
  - US (FCC/IC)
  - Brazil
  - Taiwan

  Note that 3rd generation RFPs support different DECT frequencies. These devices can operate in different regulatory domains provided that the **Regulatory domain** setting is configured accordingly.

  For older 2nd generation RFPs, different RFP models exist to meet the different regulatory domain demands. To setup a North American FCC compliant RFP, the value must be set to **US (FCC/IC)**. In a North American US (FCC/IC) deployment, ETSI compliant RFPs are made inactive and cannot be activated if the regulatory domain is set to **US (FCC/IC)**. The reverse is also true.

WARNING: **Please note that selecting the incorrect regulatory domain may result in a violation of applicable laws in your country!**

Note: Whenever you modify the regulatory domain, a warning is displayed. You must confirm it first to apply the changed setting.

- **DECT authentication code**: The authentication code is used during initial DECT phone subscription as a security option. A code entered here provides a system-wide DECT authentication code for each DECT phone subscription. Alternatively, a DECT phone-specific authentication code can be set (see section 7.7.1).
- **DECT phone user login type**: Specifies the system-wide variant for DECT phone login method. Two kinds of login types are supported: the user can either be determined by the telephone number (**Number**) or by the unique user login ID (**Login ID**). Both elements are part of each user data set.

  Note: Changing this setting forces an automatic logout of all logged in DECT phones.

- **Preserve user device relation at DB restore**: Enables the preservation of the user – DECT phone association with an OMM database restore.

  Note: If you want to restore the association, enable this option BEFORE uploading a database for an OMM restore. The current OMM value is used, not the setting in the database being uploaded.

7.4.1.3 WLAN settings

This setting applies to RFPs of the type RFP 42 WLAN and RFP 43 WLAN.

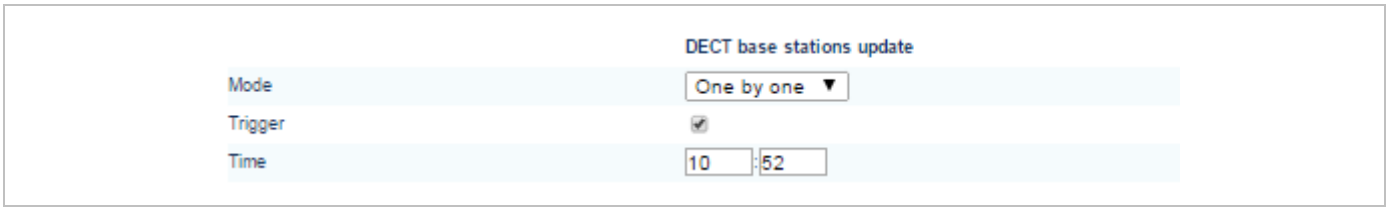
In the **Regulatory domain** field, select the regulatory domain of the WLAN network. This setting depends on the country and is prescribed by the laws of that country. Only the setting prescribed for that country must be used. For more information on the WLAN settings please refer to the sections 7.8 and 9.17.

WARNING: **Please note that selecting the incorrect regulatory domain may result in a violation of applicable law in your country!**

Note: Whenever you modify the regulatory domain, a warning is displayed. You must confirm it first to apply the changed setting.

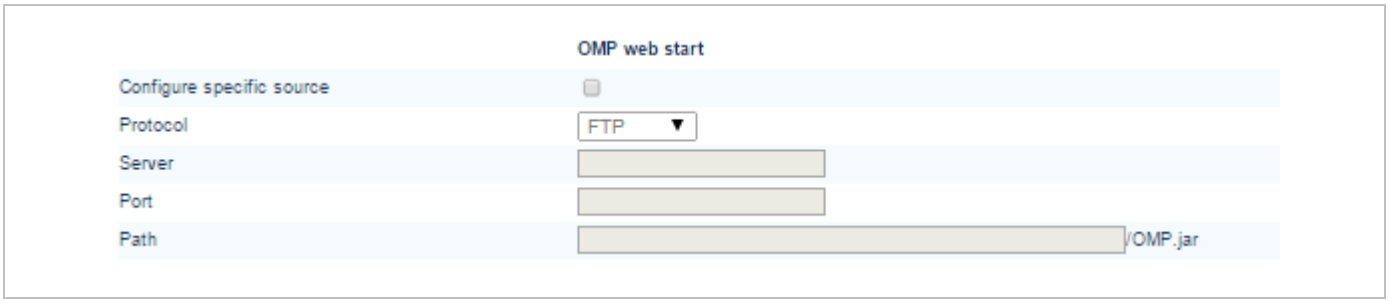
Please note: If you upgrade a system to release 3.0 or higher, you must configure the appropriate regulatory domain.

7.4.1.4 DECT base stations update



- **Mode**: RFP update mode – “One by one” (every single RFPs is updated separately) or “All at once” (all RFPs are updated in one step)
- **Trigger**: When this option is selected, the RFP update is time-controlled.
- **Time**: Time for time controlled updates

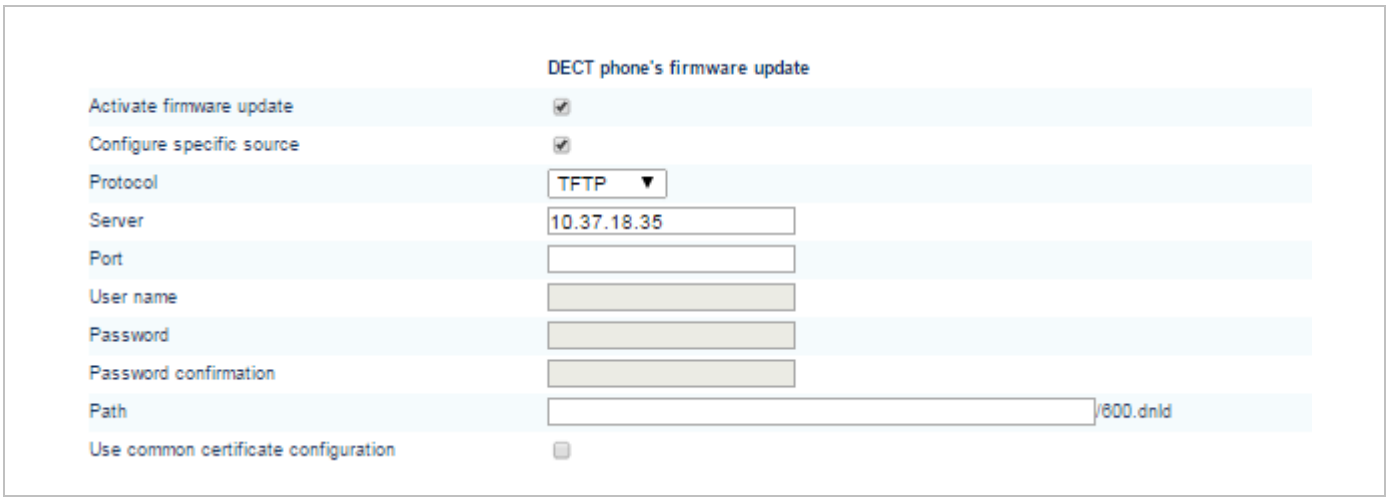
7.4.1.5 OMP web start



- **Configure specific source**: Enables the specific URL to an external file server for retrieving the OMP jar file.
- **Protocol**: Specifies the protocol used to retrieve the OMP file.
- **Server**: Specifies the IP address or name of the external file server.
- **Port**: Specifies the port of the external file server.
- **Path**: Specifies the location of the OMP jar file on the external file server.

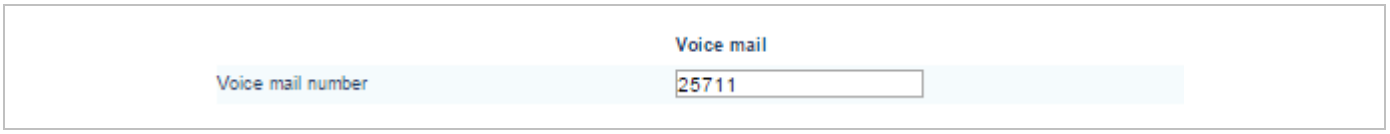
7.4.1.6 DECT phone’s firmware update

As of SIP-DECT 6.0, the SIP-DECT RFP software image (iprfp3G.dnld) contains the Mitel 600 DECT phone software. For specific maintenance purposes only, you can configure a URL to use an alternative DECT phone software image. The Mitel 600 DECT phone firmware packages are delivered in the “600.dnld” file for the OMM running on an RFP. This package file must be stored on the same server and path where the RFP gets a software image file (e.g. iprfp3G.dnld) for update purposes.



- **Activate firmware update**: Enables or disables the “Download over Air” feature. The OMM provides a DECT phone firmware update over the air when this feature is activated. For more information on, see section 9.21.
- **Configure specific source**: Enables the specific URL to an external file server for retrieving the DECT phone firmware file.
- **Protocol**: Specifies the protocol used to retrieve the firmware file from the external server.
- **Server**: Specifies the IP address or name of the external file server.
- **Port**: Specifies the port of the external file server.
- **User name**: Specifies the user name to authenticate on the external file server.
- **Password**: Specifies the password to authenticate on the external file server.
- **Password confirmation**: Confirms the password to authenticate on the external file server.
- **Path**: Specifies the location of the firmware file on the external file server.
- **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings for this URL, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2).

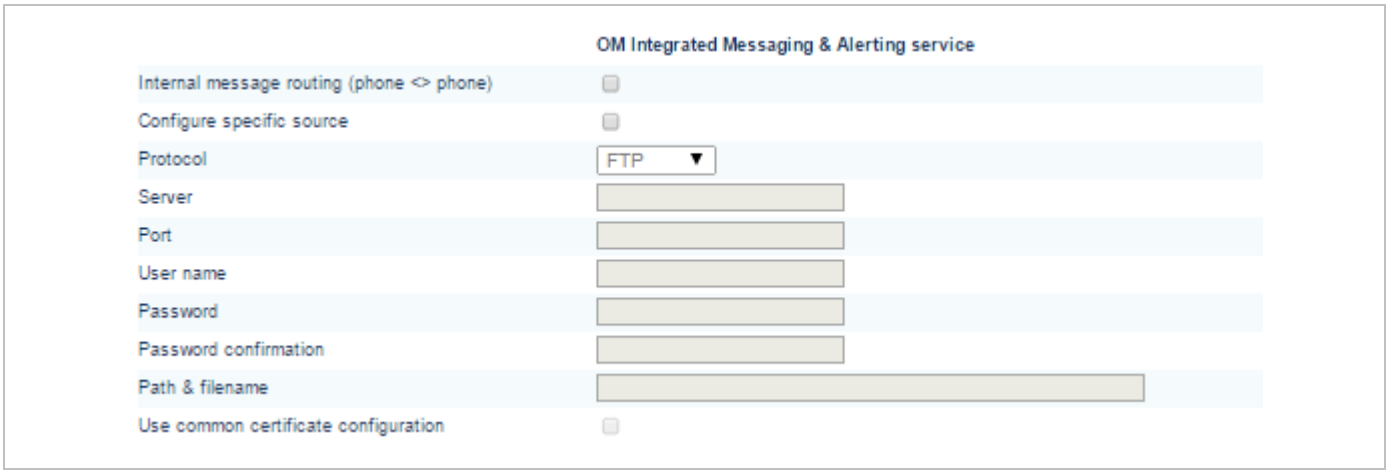
7.4.1.7 Voice mail



- **Voice mail number**: Specifies a system-wide voice mail number. This number is used by the Mitel 600 DECT phone family if the voice box is called.

7.4.1.8 OM Integrated Messaging & Alerting service

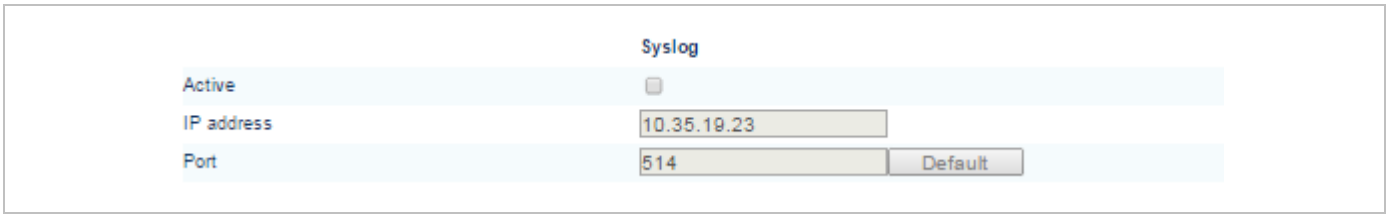
The OpenMobility Manager provides an integrated message and alarm service. The Internal message routing (DECT phone <> DECT phone) can be activated/deactivated. For a detailed description, see /28/.



- **Internal message routing (phone <> phone)**: Enables or disables internal messaging between DECT phones.
- **Configure specific destination**: Enables the specific URL to an external file server for retrieving the IMA configuration file.
- **Protocol**: Specifies the protocol used to retrieve the IMA configuration file from the external server.
- **Server**: Specifies the IP address or name of the external file server.
- **Port**: Specifies the port of the external file server.
- **User name**: Specifies the user name to authenticate on the external file server.
- **Password**: Specifies the password to authenticate on the external file server.
- **Password confirmation**: Confirms the password to authenticate on the external file server.
- **Path & filename**: Specifies the location and file name of the IMA configuration file on the external file server.
- **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings for this URL, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2).

7.4.1.9 Syslog

The OMM and the RFPs are capable of propagating syslog messages.



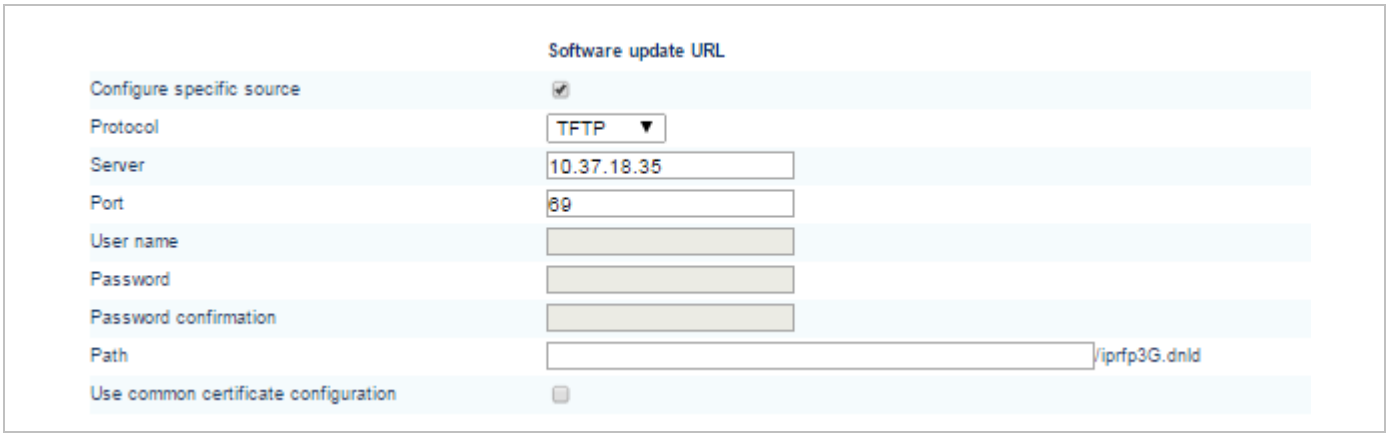
- **Active**: Enables or disables collection of syslog messages.
- **IP address**: Address of the host that should collect the syslog messages.
- **Port**: Port of the host that should collect the syslog messages.

- **Forward OMM Messages to syslog**: (Visible only on a PC-hosted OMM system) Enables/disables forwarding of syslog messages from the PC-hosted OMM.

7.4.1.10 Software update URL

As of SIP-DECT 6.0, RFPs in small SIP-DECT systems (~10 RFPs) can obtain their software image from the RFP OMM, if they have no valid URL from which to load their software (see section 9.9.2 for information on URL syntax). If the OMM is running on a RFP, the RFP OMM delivers the software to the connected RFPs.

The new software image for the RFP OMM can be provided as an iprfp3G.dnld file on an external file server. You configure the URL for the software image in this section.

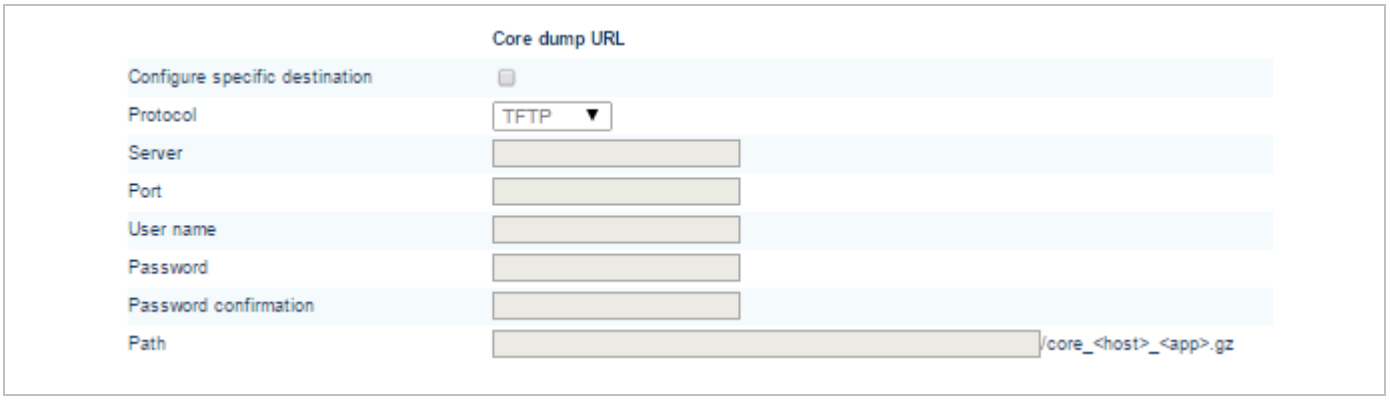


- **Configure specific source**: Enables the specific URL for downloading the iprfp3G.dnld file (as opposed to the ConfigURL, which points to an external file server for all configuration and resource files).
- **Protocol**: Specifies the protocol used to fetch the software image file.
- **Port**: Specifies the port of the external file server.
- **Server**: Specifies the IP address or name of the external file server.
- **User name**: Specifies the user name to authenticate on the external file server.
- **Password**: Specifies the password to authenticate on the external file server.
- **Password confirmation**: Confirms the password to authenticate on the external file server.
- **Path**: Specifies the location of the software image file on the external file server.
- **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings for this URL, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2).

7.4.1.11 Core dump URL

Fatal software problems may result in memory dumps, in core files. The IP RFP can transfer the core files to a remote fileserver. As of SIP-DECT 6.0, you can configure a specific URL to an external file server where core dump files should be transferred and stored. The Core dump URL is used by each RFP connected to the OMM.

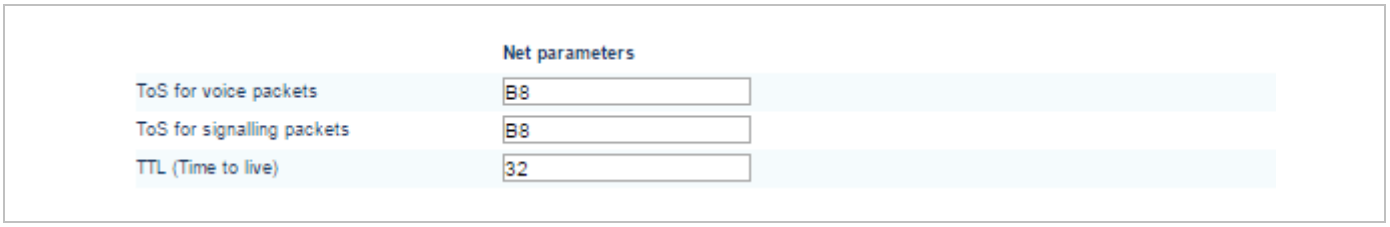
Without a configured Core dump URL, whether and where core files are transferred is dependent on specific RFP settings. Without any special configuration, the files are transferred to the server that is used to retrieve the system software (i.e., the directory of the boot image).



- **Configure specific destination**: Enables the specific URL to an external file server for transferring and storing core files.
- **Protocol**: Specifies the protocol used to transfer the core files.
- **Server**: Specifies the IP address or name of the external file server.
- **Port**: Specifies the port of the external file server.
- **User name**: Specifies the user name to authenticate on the external file server.
- **Password**: Specifies the password to authenticate on the external file server.
- **Password confirmation**: Confirms the password to authenticate on the external file server.
- **Path**: Specifies the location of the core files on the external file server.

7.4.1.12 Net parameters

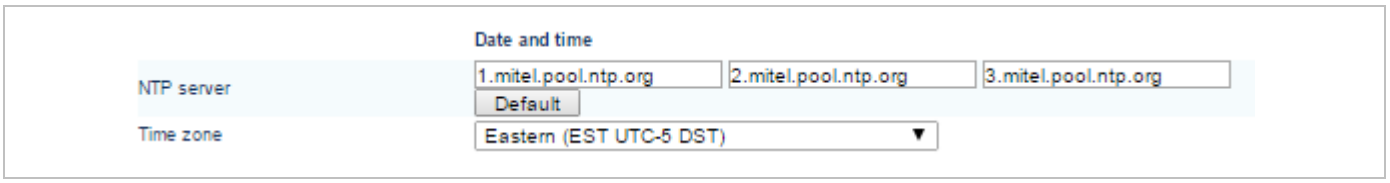
To allow the prioritization of Voice Packets and/or Signaling Packets (SIP) inside the used network the IP parameter ToS (Type of Service) should be configured.



- **ToS for voice packets**: Determines the type of service (ToS resp. DiffServ) byte of the IP packet header for all packets that transport RTP voice streams.
- **ToS for signalling packets**: Determines the type of service (ToS resp. DiffServ) byte of the IP packet header for all packets related to VoIP signaling.
- **TTL (Time to live)**: Determines the maximum hop count for all IP packets.

7.4.1.13 Date and time

If an SNTP is configured, the date and time of the configured time zone can be synchronized with the Mitel DECT 142 / Mitel 142d and Mitel 600 DECT phones. The date and time will be provided by the OMM to these DECT phones if they initiate a DECT location registration. The rules for a time zone can be configured in the **Time zones** menu (see section 7.4.5).



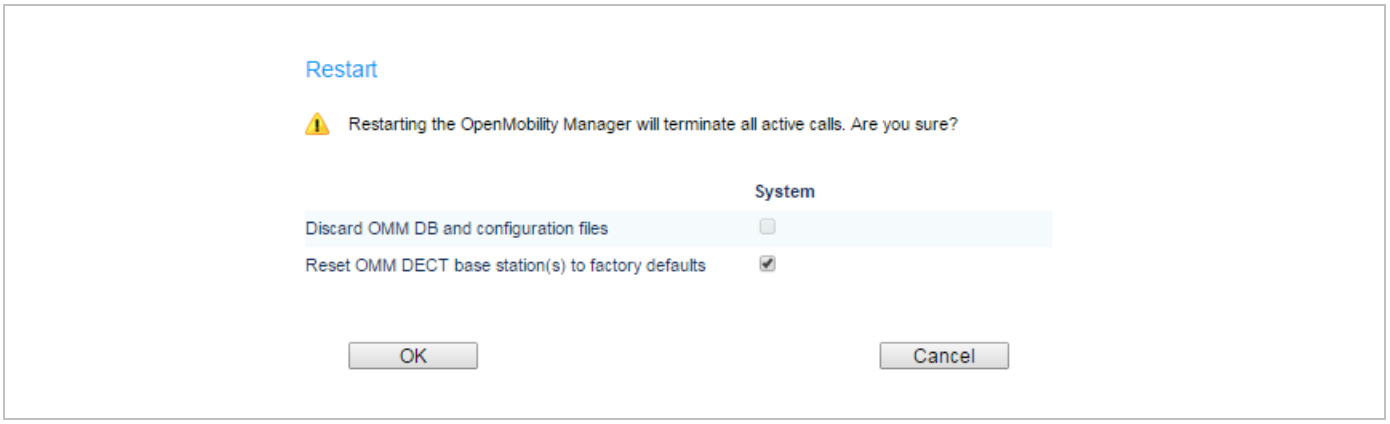
- **NTP server**: The NTP servers used for time synchronization.
- **Time zone**: Specifies the time zone in which the OMM is operating. This feature is exclusively available on RFP-OMM. On PC-OMM configurations, the PC time and time zone is used.

7.4.1.14 Restarting the OMM

You can restart the OMM by clicking on the **Restart** button in the top right corner of the **System Settings** page.

1 Click on the **Restart** button.

The **Restart** dialog window opens.



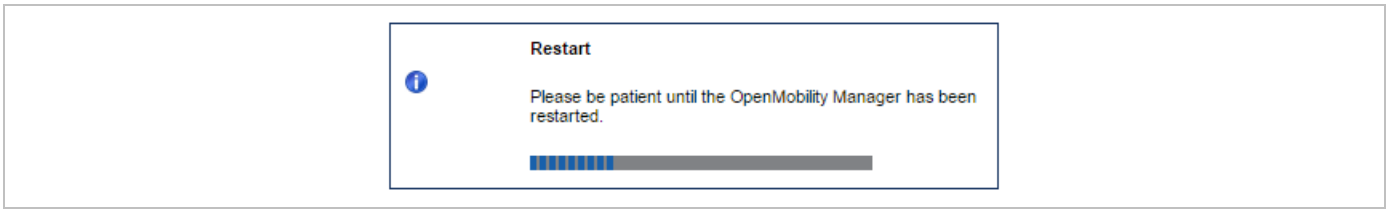
2 In the **Restart** dialog window, set the following options:

- **Discard OMM DB and configuration files**: Specifies whether OMM database and configuration data will be removed from the RFP, including the data retrieved from RCS. Local IP configuration remains unaffected. This parameter is only available on an RFP-OMM.
- **Reset OMM RFP(s) to factory defaults:** Specifies whether all data is removed from the RFP including the OMM database, configuration files and local IP configuration.

Note: Both options also affect the standby OMM.

3 Click **OK**.

A Restart web page opens and displays a progress bar. The login page is loaded automatically if the OMM is reachable again.



7.4.1.15 Updating the OMM

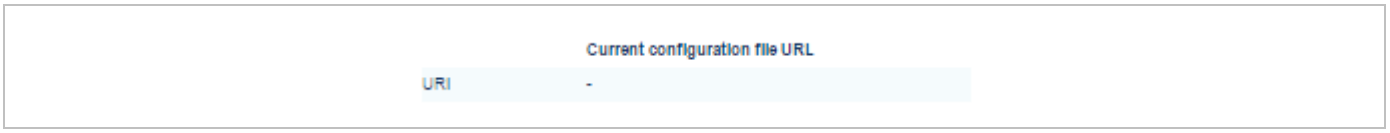
An **Update** button is available on the **System settings** web page. Pressing the **Update** button forces the RFPs to check for new software and initiates the software update process of RFPs. For more details about updating the OMM see the section 9.14.

7.4.2 ”PROVISIONING” MENU

SIP-DECT supports provisioning through external configuration files. As of SIP-DECT 6.0, you can configure a URL for an external file server, from which all configuration files can be downloaded. The configured provisioning server URL is used for secure connections to the file server to retrieve configuration or firmware files. For more information on this feature, see section 9.8.1.

The **Provisioning** menu allows you to set parameters for the external provisioning server.

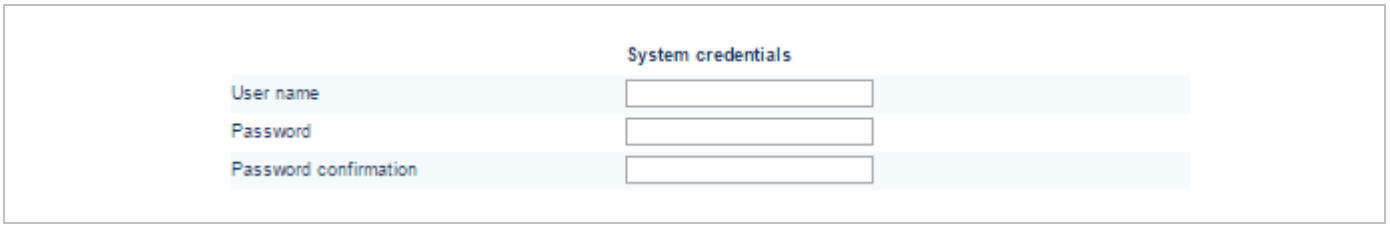
7.4.2.1 Current configuration file URL



- **Current configuration file URL**: URL for the configuration file that is currently loaded.

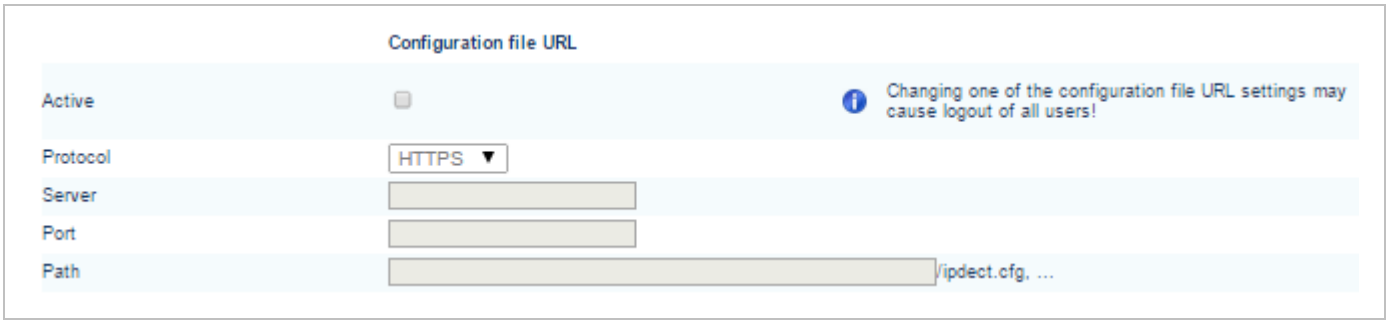
7.4.2.2 System credentials

System credentials are used to retrieve configuration and resource files from the configured provisioning server for protocols supporting authentication or servers requesting authentication. For HTTP/HTTPS, basic and digest authentication are supported. System credentials can also be inherited for specific URLs, where no user credentials are specified.



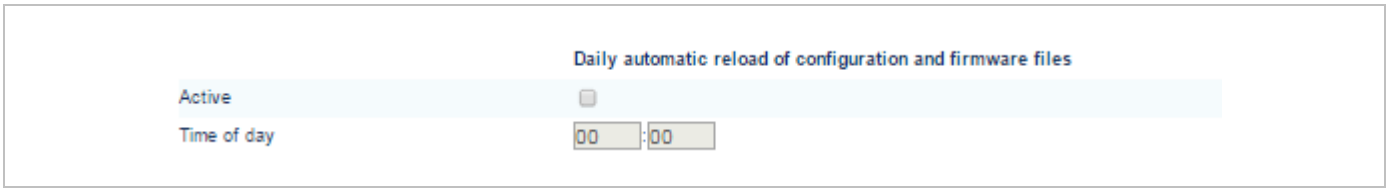
- **User name**: Specifies the user name for authentication against the provisioning server.
- **Password**: Specifies the password for authentication against the provisioning server
- **Password confirmation**: Confirms the password for authentication against the provisioning server.

7.4.2.3 Configuration file URL



- **Active**: Enables or disables the configuration file URL feature.
- **Protocol**: Specifies the protocol to be used to fetch the configuration files.
- **Server**: Specifies the IP address or name of the provisioning server.
- **Port**: Specifies the provisioning server's port number.
- **Path**: Specifies the path to the configuration and resource files on the provisioning server.

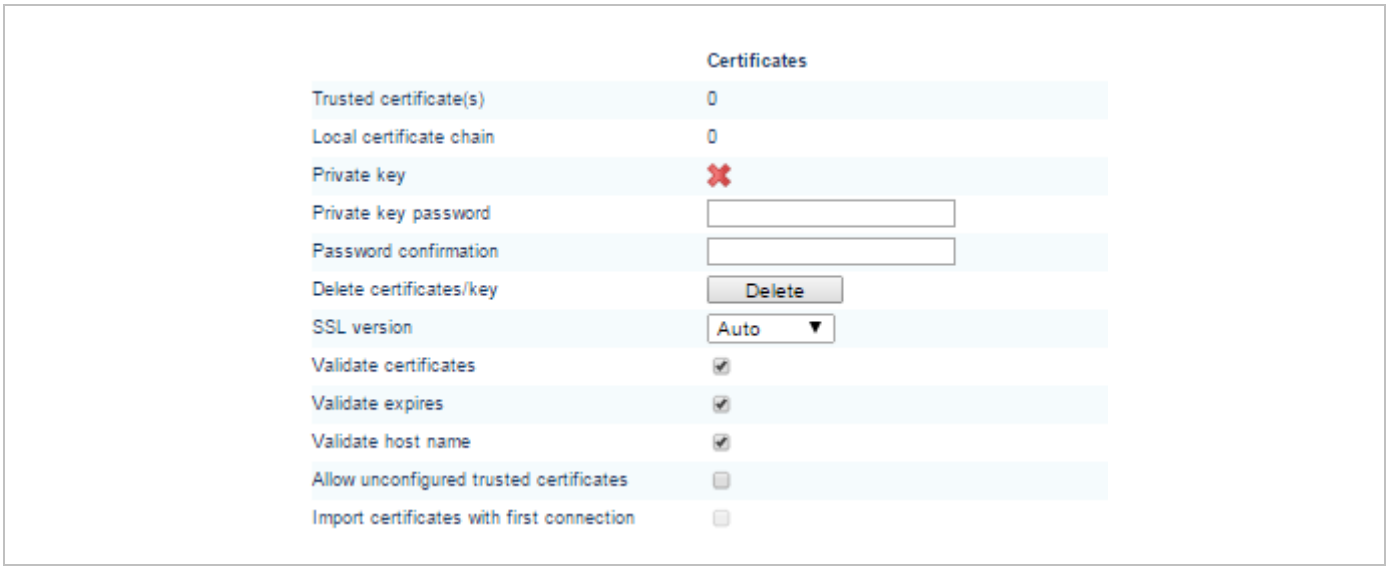
7.4.2.4 Daily automatic reload of configuration and firmware files



- **Active**: Enables automatic reload of the configuration and resource files on a daily basis, at the specified time.
- **Time of day**: Time for scheduled reload of configuration and firmware files.

7.4.2.5 Certificates

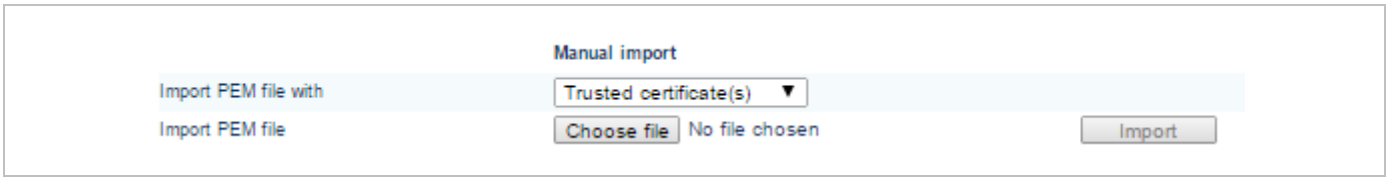
The OMM uses a trusted certificate chain to validate the server. This is required if the server has no certificate derived from a trusted CA root certificate, where the OMM uses the Mozilla CA Certificate List. You can specify the validation methods to be used.



- **Trusted certificate(s)**: Read-only; specifies the number of trusted certificates deployed on the OMM.
- **Local certificate chain**: Read-only; specifies the number of local certificate chains deployed on the OMM.
- **Private key**: Read-only; specifies whether a private key file is deployed on the OMM.
- **Private key password**: Specifies a password for the private key file.
- **Password confirmation**: Confirms the password for the private key file.
- **Delete certificates/key**: Allows the user to delete existing certificates and private key files from the OMM.
- **SSL version**: The SSL protocol version to use for the configuration file server connection. Available options are: TLS1.0, TLS1.1, TLS1.2 or AUTO, where AUTO accepts all protocol versions.
- **Validate certificates**: Enables or disables certificate validation. If enabled, the server certificate is validated against trusted CA's (signed by a CA from the Mozilla CA certificate list) and the configured trusted certificates.
- **Validate expires**: Enables or disables the validation of certificate expiry. When this parameter is enabled, the client verifies whether or not a certificate has expired prior to accepting the certificate.
- **Validate host name**: Enables or disables the validation of hostnames on the OMM.
- **Allow unconfigured trusted certificates**: If enabled, this parameter disables any server certificate validation as long as no trusted certificate was imported into the OMM. AXI commands in a received configuration file may import such trusted certificates into the OMM.
- **Import certificates with first connection**: If enabled (in conjunction with the Allow unconfigured trusted certificates parameter), the trusted certificate will be imported from the cert chain delivered in the server response without any validation, as long as no trusted certificate was imported previously into the OMM.

7.4.2.6 Manual import

You can overwrite the hard coded OMM certificate by importing trusted certificates, a local certificate chain and a private key file.



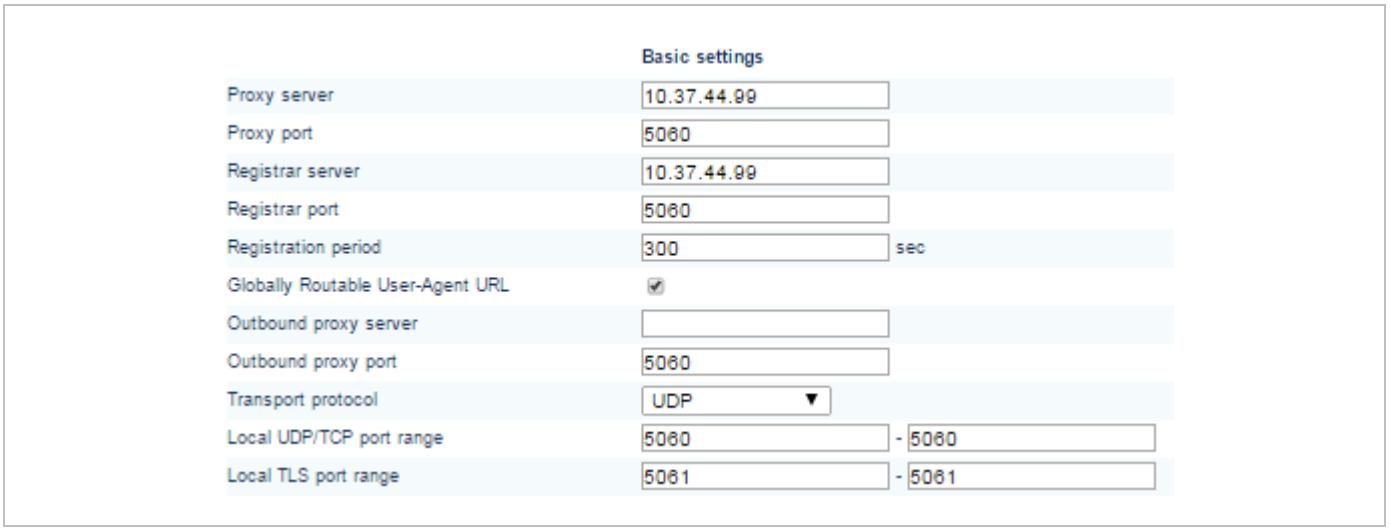
- **Import PEM file with**: Specifies the type of file to be imported (trusted certificate, local certificate, or private key).
- **Import PEM file**: Specifies the location of the file to be imported.

7.4.3 ”SIP” MENU

The SIP settings cover all global settings matching the SIP signaling and the RTP voice streams. Parameters are grouped under the tabs described below.

7.4.3.1 Basic settings

You can set basic SIP settings for the system on the Basic settings menu.



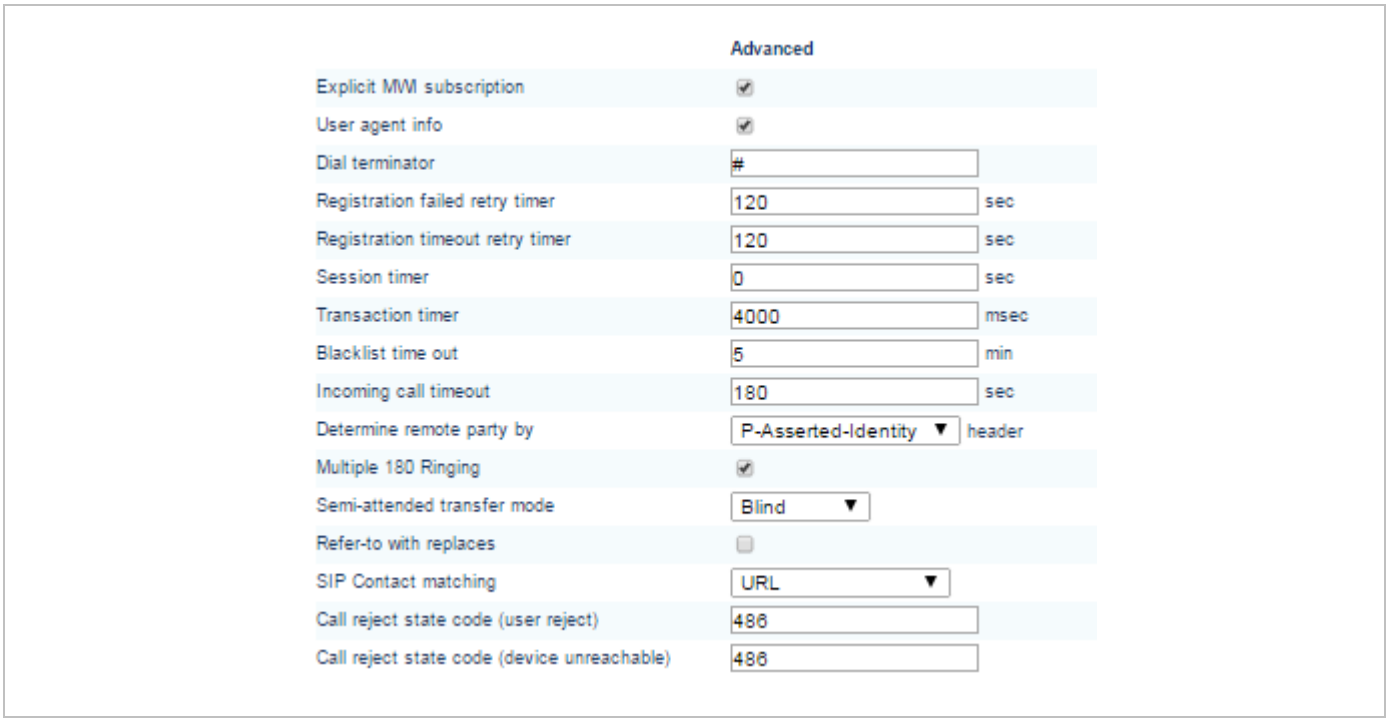
- **Proxy server**: IP address or name of the SIP proxy server. If a host name and domain are used for the proxy server parameter, ensure that a DNS server and a domain are specified for your SIP-DECT system via DHCP or the OM Configurator tool.
- **Proxy port**: SIP proxy server’s port number. Default is “5060”. To enable DNS SRV support for proxy lookups, use a value of “0” for the proxy port. In case that TLS is used, the value shall be changed to “5061”.
- **Registrar server**: IP address or name of the SIP registrar. Enables the DECT phones to be registered with a registrar. If a host name and domain are used for the proxy server parameter, ensure that a DNS server and a domain are specified for your SIP-DECT system via DHCP or the OM Configurator tool.
- **Registrar port**: SIP registrar’s port number. Default is “5060”. To enable DNS SRV support for registrar lookups, use a value of “0” for the registrar port. In case that TLS is used, the value shall be changed to “5061”.
- **Registration period**: The requested registration period, in seconds, from the registrar. Default is “3600”.
- **Globally Routable User Agent (URL)**: Enables support for Globally Routable User-Agent URIs (GRUUs). GRUUs provide a way for anyone on the Internet to route a call to a specific instance of a SIP User-Agent.
- **Outbound proxy server**: This setting is optional. You can enter the address of the outbound proxy server in this field. All SIP messages originating from the OMM are sent to this server. For example, if you have a Session Border Controller in your network, then you would normally set its address here.
- **Outbound proxy port**: The proxy port on the proxy server to which the OMM sends all SIP messages. Default is “5060”. In case that TLS is used, the value shall be changed to “5061”.
- **Transport protocol**: The protocol used by the OMM to send/receive SIP signaling. Default is “UDP”.
- **Local UDP/TCP port range**: The port range to be used for DECT users when UDP/TCP is used as the transport protocol. The default is 5060 – 5060.

- **Local TLS port range**: The port range to be used for DECT users when TLS is used as the transport protocol. The default is 5061 – 5061.

  There are certain rules to note when configuring port ranges; see section 3.8 for more information.

7.4.3.2 Advanced settings

You can set basic SIP settings for the system on the Advanced settings menu.



- **Explicit MWI subscription**: Some Media Servers such as the Asterisk support Message Waiting Indication (MWI) based on /21/. An MWI icon is displayed on a DECT phone (Mitel DECT 142 / Mitel 142d, Mitel 600) if the user has received a voice message on his voice box which is supported by the Media Server. If **Explicit MWI subscription** is enabled, the OMM sends explicit for each DECT phone an MWI subscription message to the Proxy or Outbound Proxy Server.
- **User agent info**: If this option is enabled, the OMM sends information on his version inside the SIP headers *User-Agent*/*Server*.
- **Dial terminator**: The dial terminator is configurable (up to 2 characters; “0” – “9”, “*”, “#” or empty). The default dial terminator is “#”. A dial terminator is necessary if digit treatment shall be applied on outgoing calls and overlapped sending is used.
- **Registration failed retry timer**: Specifies the time, in seconds, that the OMM waits between registration attempts when the registration is rejected by the registrar. Default is “1200” seconds.
- **Registration timeout retry timer**: Specifies the time that the OMM waits between registration attempts when the registration timed out. Default is “180” seconds.
- **Session timer**: The interval, in seconds, between re-INVITE requests sent from the OMM to keep a SIP session alive. The minimum session timer is 90 seconds and the maximum is 86400 seconds. The default is 0 (i.e., feature is disabled).

- **Transaction timer**: The time period in milliseconds that the OMM allows a call server (proxy/registrar) to respond to SIP messages that it sends. If the OMM does not receive a response in the time period designated for this parameter, the OMM assumes the message as timed out. In this case the call server is recorded to the blacklist. Valid values are “4000” to “64000”. Default is “4000” milliseconds.
- **Blacklist time out**: The time period in minutes an unreachable call server stays in the blacklist. Valid values are “0” to “1440”. Default is “5” minutes.
- **Incoming call timeout**: The time, in seconds, that the OMM waits for a user to accept an incoming call before rejecting the call automatically. The minimum time is 30 seconds and the maximum is 300 seconds. The default is 180 seconds.
- **Determine remote party by**: You can select the SIP header from which the remote party information (user id and display name) should be determined. If **P-Asserted-Identity** (default value) is selected but no such header is received, a fallback to the mandatory **From / To** header will be done. This feature can be configured by choosing one of the two values.

  Note: When SIP-DECT receives a SIP header **P-Asserted-Identity** in ringing state during an outgoing call, the included identity information (e.g. SIP display name and user-id) will be displayed on Mitel 600 and Mitel 142d phones as new call target. In addition, the outgoing call log of the Mitel 600 and Mitel 142d phones will be updated with the new given identity.

- **Multiple 180 Ringing**: If this feature is deactivated, the OMM sends out only one 180 Ringing response for an incoming call if PRACK is not supported. If this feature is activated, the OMM retransmits multiple times the 180 Ringing response for an incoming call if PRACK is not supported. This ensures that the calling side receives a 180 Ringing response in case of packet losses on the network. By default this feature is active.
- **Semi-attended transfer mode** and **Refer-to with replaces:**

Semi-attended transfer mode	Refer-to with replaces	Behavior
Blind	No	The semi-attended transfer is handled as a blind transfer. The phone sends CANCEL before REFER for semi-attended transfer.
Blind	Yes	The semi-attended transfer is handled as a blind transfer. The phone sends REFER with Replaces for semi-attended transfer and no CANCEL. This behavior is not SIP compliant but necessary for some iPBX platforms.
Attended	-	The semi-attended transfer is handled as an attended transfer. Both lines of the transferor remain active until the transfer succeeds. This behavior is compliant to RFC 5589.

Please note: The mode “Semi-attended transfer mode: Blind” with “Refer-to with replaces: yes” is not SIP compliant and should only be used on iPBX platforms that require this type of signaling.

- **SIP contact matching**: Specifies the method used by the OMM to match the Contact header in a SIP response to a REGISTER request. Available options are:
  - **URI** – match user username, domain name, phone IP and port and transport
  - **IP only** – match the IP address of the phone only
  - **Username only** – match the username only

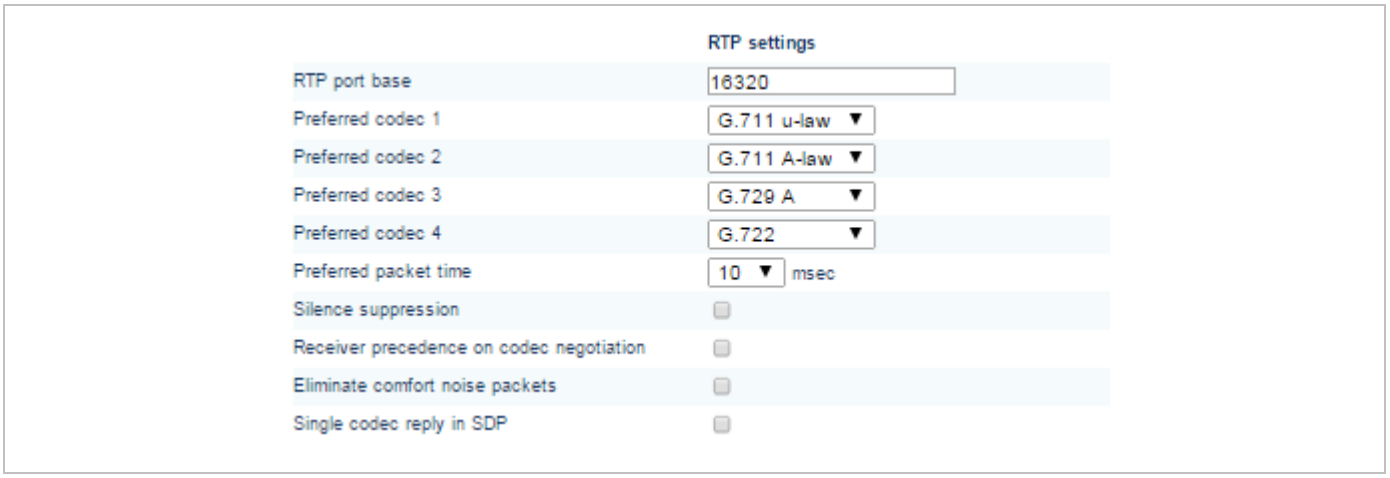
- **IP and user name** – match the IP address of the phone and the username

The default is **URI**.

- **Call reject state code (user reject)**: Specifies the SIP state code sent as response when the user rejects an incoming call by pressing the “Reject” option. Valid values are “400” to “699”. The default is “486”
- **Out of range state code (device unreachable)**: Specifies the SIP state code sent as response when the incoming call is rejected because the DECT phone is unreachable (e.g., the DECT phone is out of range or out of battery power). Valid values are “400” to “699”. The default is 486.

7.4.3.3 RTP settings

You can set RTP parameters in the RTP settings section.



- **RTP port base**: Each RFP needs a continuous port area of 68 UDP ports for RTP voice streaming. The RTP port base is the start port number of that area. Default is “16320”.
- **Preferred codec 1 – 4**: Specifies a customized codec preference list which allows you to use the preferred codecs. The *Codec 1* has the highest and *Codec 4* the lowest priority.

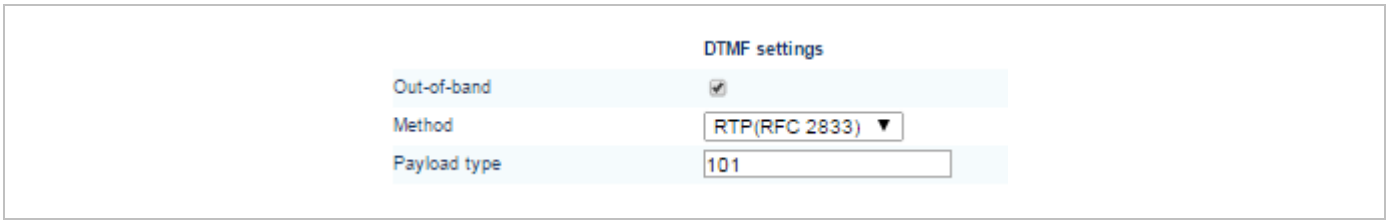
  Note: With SIP-DECT Release 3.0 or higher the voice codecs G.722 (wideband), G.711 u-law, G.711 A-law and G.729 A are supported. The previously supported codec G.723 is no longer available.

- **Preferred packet time** (10, 20 or 30 msec): Determines the length of voice samples collected before sending out a new RTP packet. A small setting improves voice quality at the expense of data transmission overhead. Default is “20” milliseconds.
- **Silence suppression**: Enables automatic silence detection in the RTP voice data stream to optimize the data transfer volume.
- **Receiver precedence on CODEC negotiation**:
  - The ON (option is enabled) setting means:
    The CODEC selection for incoming SDP offers based on the own preference order list. The first entry in the OMM preferred codec list matching an entry in the incoming SDP offer will be selected.
  - The OFF (option is disabled) setting means:
    The CODEC selection based on the preference order list of incoming SDP offer. The first entry in the incoming order list matching an entry of OMM preferred codec list will be selected. This is the default and is as recommended in RFC 3264.

- **Eliminate comfort noise packets**: If this feature is activated, then comfort noise packets are removed from the RTP media stream which causes gaps in the sequence numbers. This can be used if comfort noise packets e.g. in G.711 media streams disturb voice calls in certain installations.
- **Single codec reply in SDP**: If this feature is activated, the OMM answers to SDP offers (included in the SIP signalization) with a single codec in the SDP answer.

7.4.3.4 DTMF settings

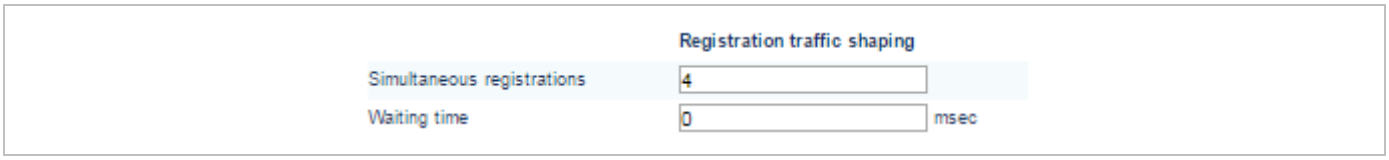
You can set DTMF parameters in the DTMF section.



- **Out-of-band**: Used to configure whether DTMF Out-of-band is preferred or not.
- **Method**: The OMM supports the following DTMF Out-of-band methods:
  - RTP (RFC 2833)
    Transmits DTMF as RTP events according to RFC 2833 (/14/) after the payload type negotiation via SIP/SDP. If the payload type is not negotiated, “in band” will be used automatically.
  - INFO
    The SIP INFO method is used to transmit DTMF tones as telephone events (application/dtmf-relay). This setting should be used if RFC 2833 is not supported.
  - BOTH
    DTMF telephones events are send according to RFC 2833 and as well as SIP INFO method. **Note:** Possibly, the other party recognizes events twice.
- **Payload type**: If the **Out-of-band** option is enabled, this setting specifies the payload type which is used for sending DTMF events based on section 3.1, reference /14/.

7.4.3.5 Registration traffic shaping

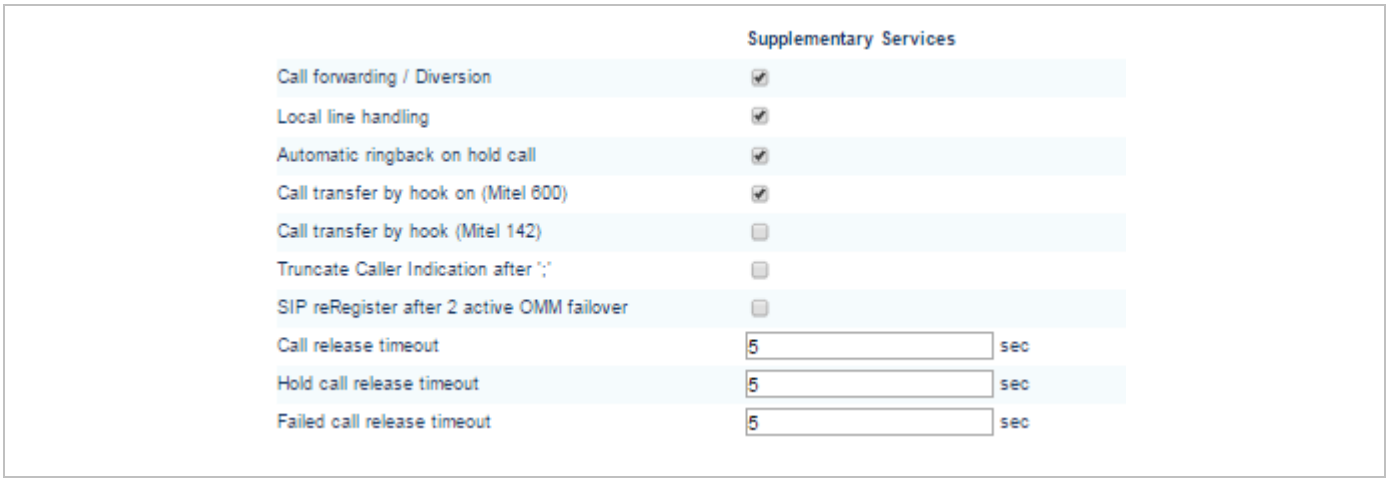
Registration traffic shaping parameters allow you to limit the number of simultaneous SIP registrations at startup/fail over of the OMM. This feature is always activated because disabling it may overload the OMM or the call server.



- **Simultaneous registrations**: The maximum number of simultaneously started registrations.
- **Waiting time**: The waiting time between a registration finish and starting the next registration in ms (0-1000ms).

7.4.3.6 Supplementary Services

The Supplementary Services section contains various parameters releated to call control.



- **Call forwarding / Diversion**: The DECT phone user can (de)activate call forwarding/diversion in the OMM via DECT phone menu. In some installations the implemented call forwarding/diversion feature in the IPBX system is in conflict with the OMM-based call forwarding/diversion. Thus, the OMM-based call forwarding/diversion can be deactivated to let the menu on the DECT phone disappear. This setting becomes active on DECT phones with the next DECT “Locating Registration” process (can be forced by switching the DECT phone off and on again). Call forwarding that is already activated is ignored if the call forwarding feature is deactivated.
- **Local line handling**: In some installations the implemented multiple line support in the IPBX system is in conflict with the OMM based multiple line support. Thus, the OMM based multiple line support can be deactivated. Note, that the OMM based multiple line support is active by default.

  A deactivation of the “Local line handling” flag results in the following implications:
  - Only one line is handled for each user (except for an SOS call [1])
  - If a user presses the “R” key or hook-off key in a call active state, a DTMF event is send to the IPBX via SIP INFO including signal 16 (hook-flash). All Hook-flash events are sent in every case via SIP INFO, independent of the configured or negotiated DTMF method during call setup. All other key events are sent via the configured or negotiated DTMF method.
  - The OMM-based call features “Call waiting”, “Call Transfer”, “Brokering” and “Hold” are no longer supported.
  - This setting becomes active on DECT phones with the next DECT “Locating Registration” process (can be forced by switching the DECT phone off and on again).
- **Automatic ringback on hold call:** Enables or disables a ringback on the loudspeaker if the B party of the active line releases the call. The ringing begins after the call release timeout interval (see description below).
- **Call transfer by hook on (Mitel 600)**: Enables call transfer via the hook key on a Mitel 600 DECT phone (in addition to call transfer via menu).
- **Call transfer by hook on (Mitel 142)**: Enables call transfer via the hook key on a Mitel 142 DECT phone (in addition to call transfer via menu).

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[1] The OM SOS call feature is unchanged. The initiation of a SOS call in call active state results in the creation of a new line which handles the SOS call.

- **Truncate Caller Indication after ';'**: If the user name info in SIP to-/from-/contact headers or p-asserted-identity is extended by a suffix, which is separated by a semicolon, this suffix is truncated before the username is printed to call displays or DECT phone internal call logs.
- **SIP reRegister after 2 active OMM failover**: With SIP-DECT systems using the OMM standby feature it could happen in rare cases that both OMMs become temporarily active. In such a situation all SIP-DECT users would be SIP registered from both OMMs to the configured PBX. This can cause problems, if the PBX accepts only one registration per user (non-forking proxy).
  To prevent such problems a mechanism is realized to detect situations with two active OMMs. If such a situation is detected and this feature is enabled the remaining active OMM will SIP re-register all users to the PBX.
- **Call release timeout**: Specifies the time, in seconds, after which an active line is released if the DECT phone user has not gone on-hook after the B party on an active call releases the call.
- **Hold call release timeout**: Specifies the time, in seconds, after which the active line is released if the DECT phone user has not switched to a held line (when the B party on a held call releases the call).
- **Failed call release timeout**: Specifies the time, in seconds, after which an active line is released if the called party is busy, or the call is rejected for any reason.

7.4.3.7 Security

- **Persistent TLS keep alive timer active**: When enabled and "Persistent TLS" is selected as transport protocol, the OMM sends out keep alive messages periodically to keep the TLS connection open.
- **Persistent TLS keep alive timer timeout**: Specifies the time pattern, in seconds, in which the OMM sends out keep-alive messages. Valid values are "10" to "3600". Default is "30" seconds.
- **Send SIPS over TLS active**: When enabled, and "TLS" or "Persistent TLS" is selected as transport protocol, the OMM uses SIPS URIs in the SIP signaling. Default is "ON".
- **TLS-Authentication**: When enabled and "TLS" or "Persistent TLS" is selected as transport protocol, the OMM validates the authenticity of the remote peer via exchanged certificates and the configured "Trusted certificates". Default is "ON".
- **TLS-Common-Name-Validation**: When enabled and "TLS authentication" is selected, the OMM validates the "Alternative Name" and "Common Name" of the remote peer certificate against the configured proxy, registrar and outbound proxy settings. If there is no match, an established TLS connection will be closed immediately.
- **Trusted certificate(s)**: The number of imported trusted certificates (read-only).
- **Local certification chain**: Indicates the number of imported certificates in the local certificate chain (read-only).
- **Private key**: Indicates whether the OMM has a private key file (read-only).
- **Delete certificates/key**: Allows deletion of all certificates and the local key.

7.4.3.8 Certificate server

Set the parameters on the Certificate server tab to automatically import Trusted, Local Certificates and a Private Key files from an external server for SIP signaling.

- **Active**: Enables the feature.
- **Protocol**: Specifies the preferred protocol (FTP, TFTP, FTPS, HTTP, HTTPS, SFTP)
- **Server**: Specifies the name or IP address of the external file servedr.
- **User name**: Specifies the user name to authenticate against the external file server.

- **Password**: Specifies the password to authenticate against the external file server.
- **Password confirmation**: Confirms the password to authenticate against the external file server.
- **Path**: Specifies the path on the file server to the certificate files.
- **Trusted certificate file**: Specifies the name of the PEM file on the specified server, including the trusted certificates.
- **Local certificate file**: Specifies the name of the PEM file on the external server including the local certificate or a certificate chain.
- **Private key file**: Specifies the name of hte PEM file on the external server including the local key.

7.4.3.9 Manual import

Import PEM file with: Allows selection of the kind of certificate/key to be imported.

Import PEM file: Specifies the file to be imported.

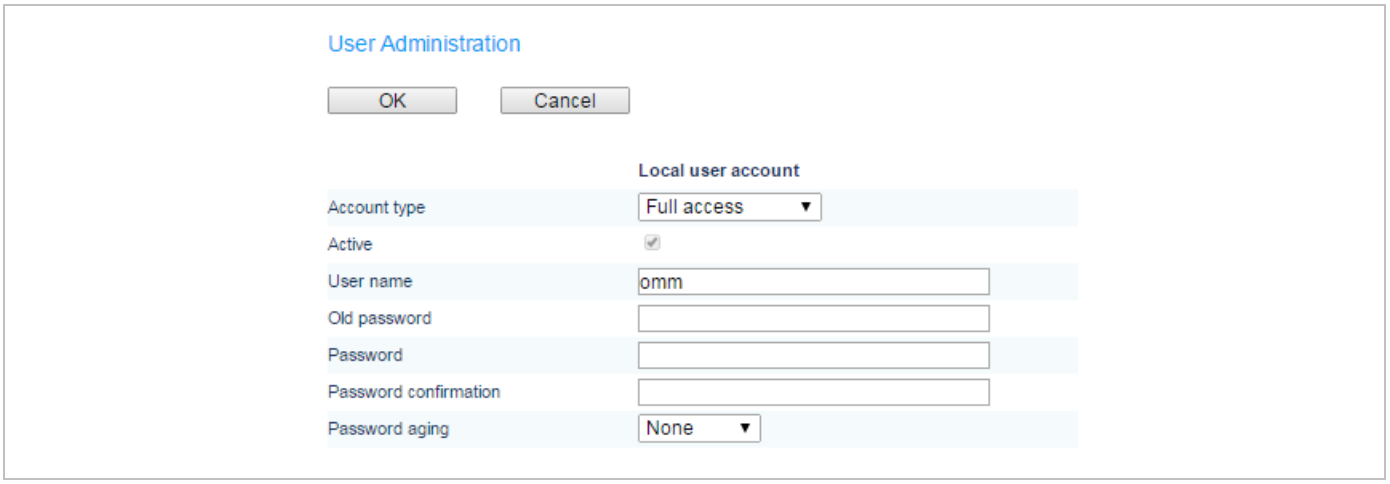
7.4.4 "USER ADMINISTRATION" MENU

After initial installation or after removing the configuration file, the OMM Web service is accessible via a built-in user account with user "omm" and password "omm".

If the default built-in user account is active, the administrator must change the default account data of the "Full access" and "Root (SSH only)" account. The meaning of the different account types is described in section 9.16.1.

> **Please note:** The OMM forces you to change the default account data. As long as the passwords are unchanged, the OMM will not allow any other configuration.

These settings are case sensitive and can be changed on the **User administration** web page.



1 **Account type**: Select the account type you wish to change.

2 **Active**: This setting applies to the **Read-only access** account. Using this account, a user is not allowed to configure any item of the OMM installation. The account can be deactivated.

3 **User name**: If desired, enter a new user name.

4 **Old password**: Related to the "Full Access Account", to change the password the old password must be typed in again.

5 **Password**, **Password confirmation**: Enter the appropriate data in these fields.

The OMM has several rules to check the complexity of the new password. A new password will not be accepted if:

– the new password is not five or more characters long

– the new password does not contain characters from at least three of the following groups: lower case, upper case, digits or other characters

– the new password has 50% or more of the same character ('World11111' or 'W1o1r1l1d1')

– the new password contains one of the following items (either upper or lower case as well as forward or backward):

  – account name

  – host name (IP address)

  – old password

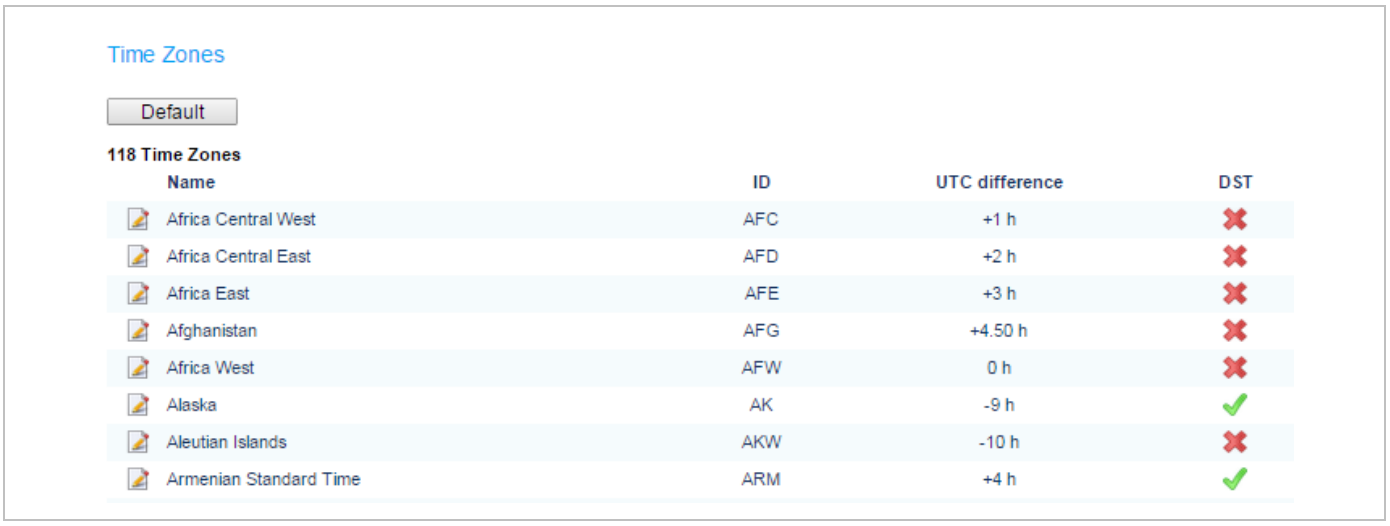
  – some adjoining keystrokes (e.g. 'qwert')

6 **Password aging**: A timeout for the password can be set. Select the duration, the password should be valid.

7.4.5 "TIME ZONES" MENU

Note: This menu is only available if the OMM resides on an RFP.

On the **Time zones** page, the OMM provides all available time zones. They are set with their known daylight savings time rules adjusted to the Universal Coordinated Time (UTC) per default. The difference to the UTC time is shown in the **UTC difference** column. In case of a configured daylight savings time rule (**DST** column) this is also marked for each time zone.



The date and time are provided by the OMM to the Mitel 142 and Mitel 600 DECT phones if the DECT phone initiates a DECT location registration. This will be done in the following cases:

- subscribing to the OMM
- entering the network again after the DECT signal was lost
- power on
- silent charging feature is active at the phone and the phone is taken out of the charger

- after a specific time to update date and time

The following tasks can be performed on the **Time zones** page:

- changing the time zones (see section 7.4.5.1)
- resetting time zones (see section 7.4.5.2)

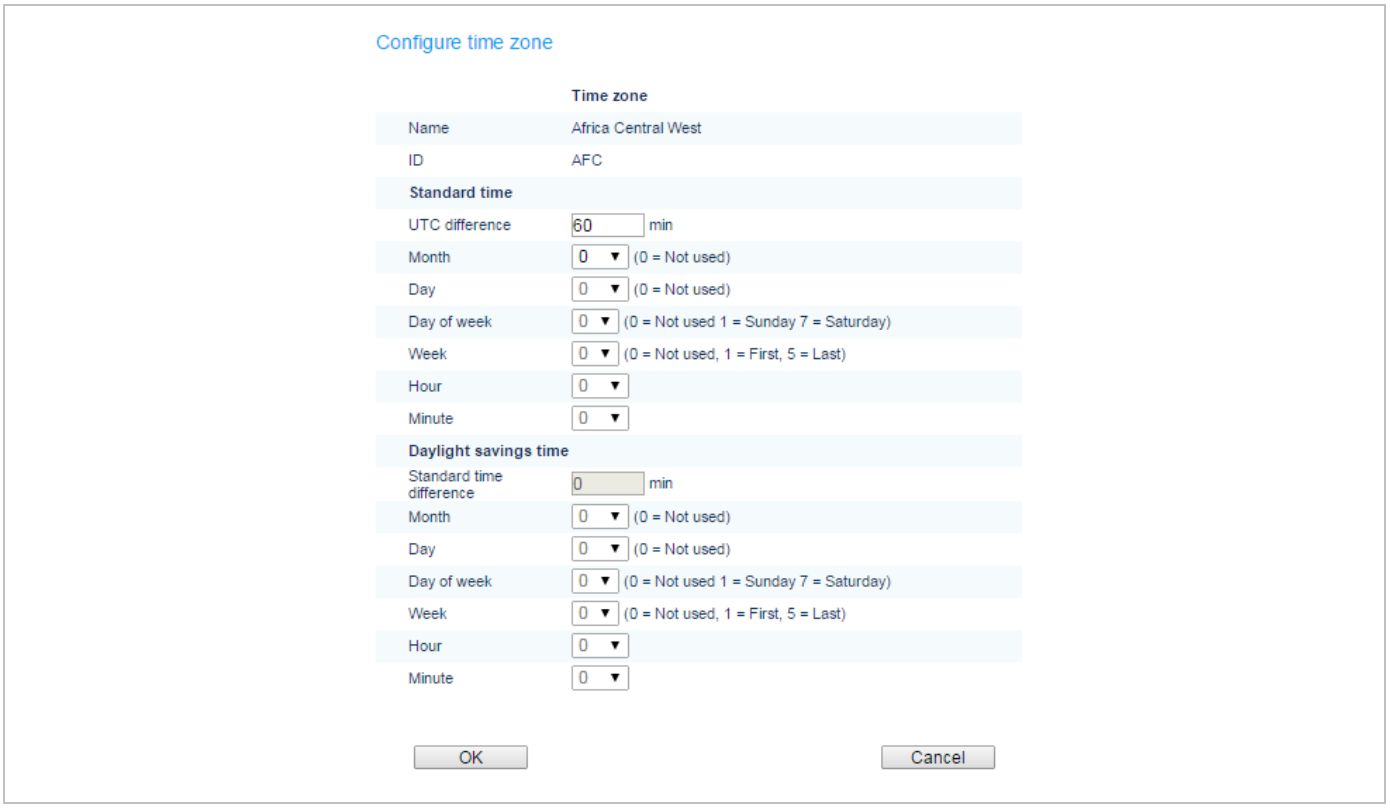
7.4.5.1 Changing Time Zones

It is possible to change the time zone rules for maximal five time zones. Changed rules are marked with a bold time zone name in the table. The changes are saved in the configuration file and are restored after each OpenMobility Manager startup.

1 To change the settings of a time zone, click on the icon left behind the time zone entry.

The **Configure time zone** dialog opens.

2 You can change the standard time and the daylight savings time (DST) of a time zone. If the time zone has no DST, only the UTC difference can be configured. For the DST both points of time (begin of standard time and begin of daylight savings time) must be specified exactly. Therefore a certain day in the month or a certain week day in a month can be used. See the following screenshot as an example:

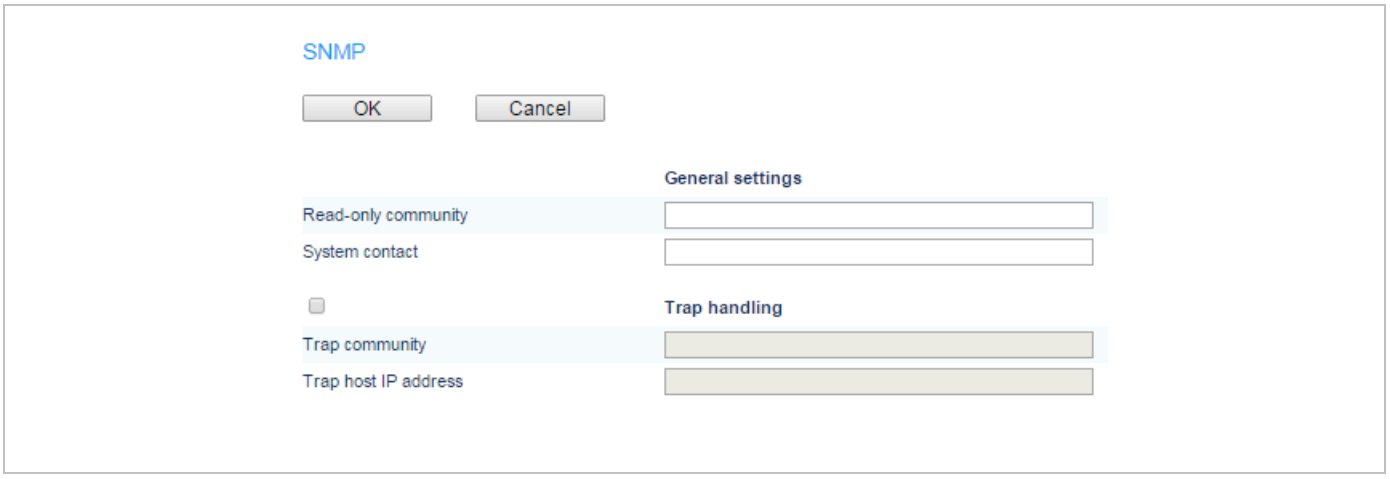


7.4.5.2 Resetting Time Zones

To reset individual time zone settings, press the **Default** button on the **Time zones** web page. This sets all time zones back to the default values and deletes the changed time zone rules in the configuration file.

7.4.6 “SNMP” MENU

To manage a larger RFP network, an SNMP agent is provided for each RFP. This will give alarm information and allow an SNMP management system (such as “HP Open View”) to manage this network. On the **SNMP** page of the OMM Web service you configure the SNMP service settings.



The following parameters can be configured using the OMM web service:

General settings

- **Read-only community**: The SNMP community string forms a password that is sent by the SNMP management system when querying devices. The query is answered only if the SNMP community string matches. You may use “public” as a default keyword for read-only access.
- **System contact**: Enter a descriptive text that typically is displayed in the SNMP management software.

Trap handling

Activate the checkbox behind the **Trap handling** section to enable this feature.

- **Trap community**: This community string is used if the SNMP agent informs the SNMP management system about events (traps).
- **Trap host IP address**: Enter the IP Address that the SNMP agent uses to send traps.

Further notes

- The RFP needs an initial (one-time) OMM connection to receive its SNMP configuration. In case of a reset, this configuration does not change. Changing the SNMP configuration on the OMM forces all agents to be reconfigured.
- The agent does not support MIB-II write access, SNMPv2-MIB read/write access, NET-SNMP-MIB read/write access, NET-SNMP-AGENT-MIB read/write access and SNMPv3.
- For background information on using SNMP with the SIP-DECT system please refer to section 9.18.

7.4.7 "DB MANAGEMENT" MENU

The database management (DB) menu allows flexible backup and restore management of the OMM database. The OMM database contains all configuration settings which are configurable via the OMM Web service interface.

The OMM database can be

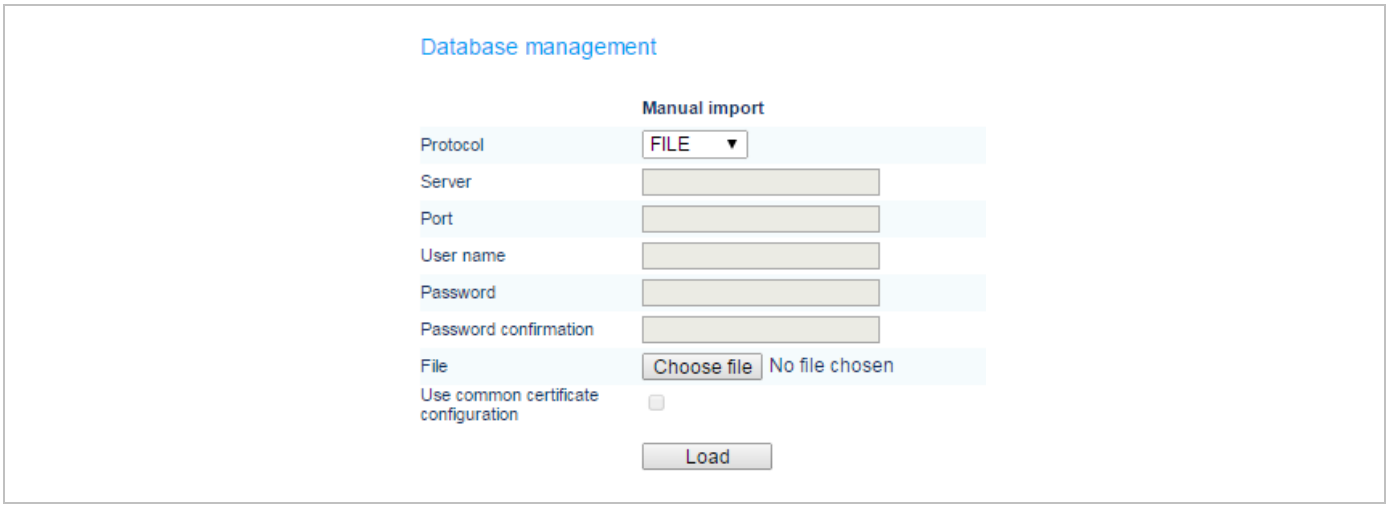
- manually imported from the Web browser's file system or from an external server (see section 7.4.7.1),
- manually exported to the Web browser's file system or to an external server (see section 7.4.7.2),
- automatically exported to an external server when configuration modifications are done (see section 7.4.7.3).

Note: The OMM database is saved in a compressed file in a proprietary format. Any modification of this file outside the OMM is not allowed.

The following protocols for the transport to or from an external server are supported:
FTP, TFTP, FTPS, HTTP, HTTPS, SFTP.

7.4.7.1 Manual Database Import

Please note: A manual import of a database results in a reset of the OMM.



In the **Manual import** section of the **Database management** page enter the following:

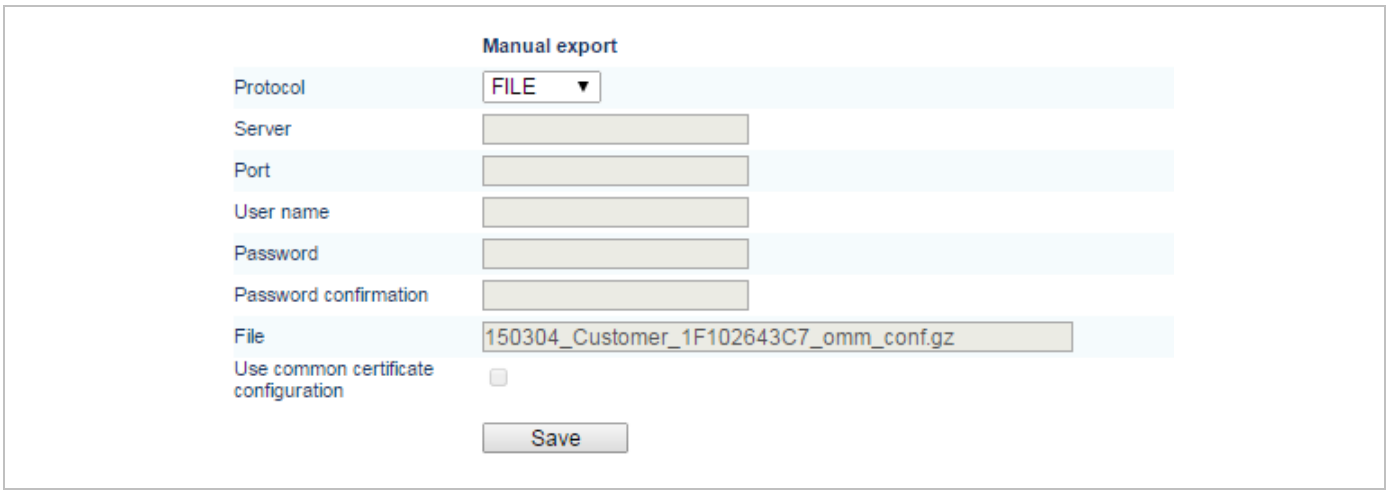
1 **Protocol**:
   – To import a database from the Web browser's file system the protocol **FILE** must be selected.
   – To import a database from an external server select the preferred protocol (e.g. HTTP).
2 **Server**: IP address or the name of the external server.
3 **User name**, **Password** (in case of import from an external server): If necessary, enter the account data of the server.
4 **File**: Path and file name which include the OMM database. If you have selected the **FILE** protocol, the **Browse** button is displayed and you can to select the file from the file system.
5 **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2.5).

6 Press the **Load** button.

Before the OMM accepts the database, a validation check is performed. If the database is verified as valid, the OMM will be reset to activate the new database.

Note: After the reset, all configuration in the restored database takes effect with the exception of the user account settings. The user account settings can be only modified locally via the OMM Web service and are never restored by a database import.

7.4.7.2 Manual Database Export



In the **Manual export** section of the **Database management** page enter the following:

1 **Protocol**: Select the preferred protocol. If you want to export the database to the Web browser's file system, select the **FILE** setting.

2 **Server**: Enter the IP address or the name of the server.

3 **User name**, **Password**: If necessary, enter the account data of the server.

4 **File**: Enter the path and filename where the database is to be saved.

5 **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2.5).

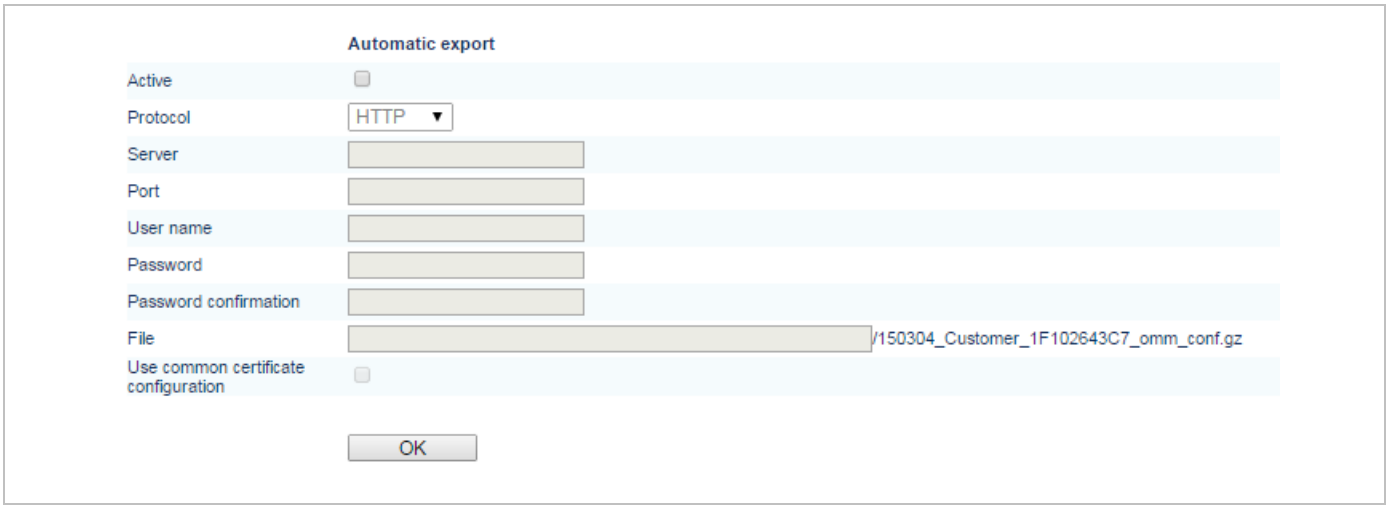
6 Press the **Save** button.

7.4.7.3 Automatic Database Export

The automatic database export feature allows an automatic database backup to an external server for each configuration modification.

If this feature is activated, the OMM transfers a backup file to a configured external server any time configuration changes occur, e.g. DECT phone subscription. If there is no configuration change, then no backup will be done. A backup file will be overwritten during a day if there is more than one modification. A new file will be created when this first change occurs at the day.

Please note: Synchronization with an NTP server is mandatory for an automatic database export. For NTP server configuration see section 9.5.4 and section 9.6.



In the **Automatic export** section of the **Database management** page enter the following:

1 **Active**: Activate this option to enable the automatic export feature.

2 **Protocol**: Select the preferred protocol.

3 **Server**: Enter the IP address or the name of the server.

4 **Port**: Enter the port of the server.

5 **User name**, **Password**: If necessary, enter the account data of the server.

6 **File**: Enter the path and filename where the database is to be saved.

The OMM writes the database into a file on the external server with following name convention:

<yymmdd>_<system_name>_<PARK>_omm_conf.gz

If the system name contains non-standard ASCII character then these character are replaced by "_".

7 **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2.5).

8 Press the **OK** button.

7.4.8 "EVENT LOG" MENU

The **Event log** page displays important event information on OMM system functions, e.g. security aspects. A more detailed system log is available by configuring the **Syslog** function in the **System settings** menu (see section 7.4.1.9).

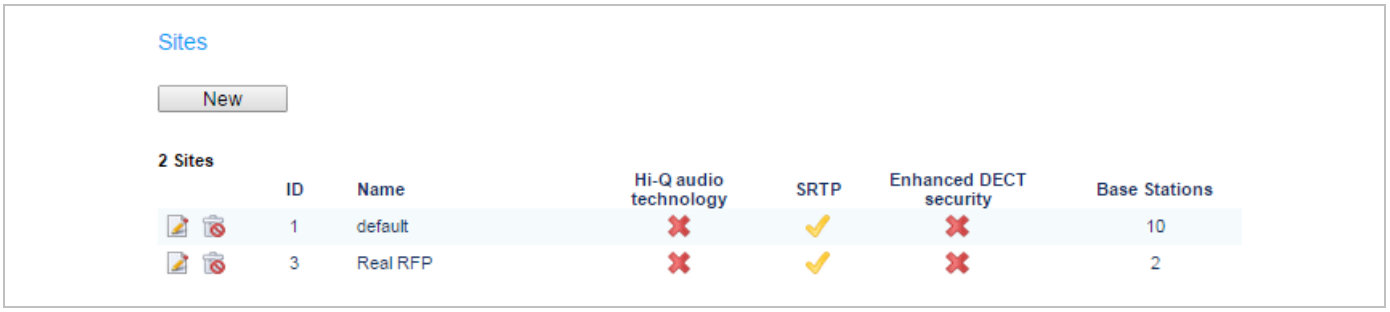
Severity	Count	Time (UTC)	Event
3	6	2015/01/23 22:20:50.431	DSIP: SIP registration to 10.37.44.99 failed - timed out
2	1	2015/01/23 05:11:52.491	AXI : [203/omm] Remote host closed connection (10.8.4.180:2621) / Last rcv: Request / Last snd: Response
3	2	2015/01/23 04:57:04.135	DSIP: SIP registration to 10.37.44.99 failed - timed out
2	1	2015/01/23 03:46:11.018	AXI : [203] New secure connection from 10.8.4.180:2621
3	1	2015/01/23 00:03:38.777	DSIP: SIP registration to 10.37.44.99 failed - timed out
2	1	2015/01/22 19:14:11.920	AXI : [203/omm] Remote host closed connection (10.8.4.88:7246) / Last rcv: Request / Last snd: Response
2	1	2015/01/22 18:19:01.431	AXI : [203] New secure connection from 10.8.4.88:7246
2	1	2015/01/22 17:38:20.471	AXI : [203/omm] Connection closed: 10.8.4.88:2438 / Last rcvRequest / Last sndResponse
3	1	2015/01/22 17:38:20.470	AXI : [203] Disconnect client (10.8.4.88) because of elapsed client inactivity timer
2	1	2015/01/22 15:20:59.585	AXI : [202] New secure connection from 10.37.18.35:61027
2	1	2015/01/22 15:19:26.962	AXI : [202/omm] Remote host closed connection (10.37.18.35:56482) / Last rcv: Request / Last snd: Response
2	1	2015/01/22 14:58:21.104	AXI : [203] New secure connection from 10.8.4.88:2438
3	1	2015/01/22 11:46:19.980	DSIP: SIP registration to 10.37.44.99 failed - timed out
2	1	2015/01/22 11:30:35.483	AXI : [203/omm] Connection closed: 10.8.4.226:42845 / Last rcvRequest / Last sndResponse
3	1	2015/01/22 11:30:35.482	AXI : [203] Disconnect client (10.8.4.226) because of elapsed client inactivity timer

To clear the display, press the **Clear** button.

7.5 “SITES” MENU

RFPs can be grouped into different sites. A site consists of the following parameters:

- **ID**: Identification number of the site.
- **Name**: The name of the site.
- **Hi-Q Audio Technology, SRTP, Enhanced DECT Security**: Indicates whether (one of) these features are enabled for this site.
- **Base stations**: The number of RFPs which are assigned to this site.



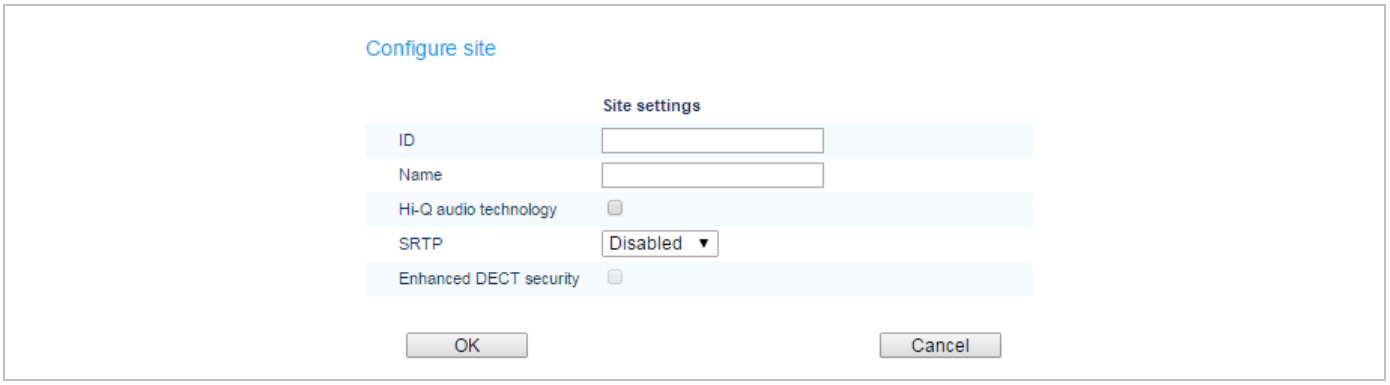
	ID	Name	Hi-Q audio technology	SRTP	Enhanced DECT security	Base Stations
	1	default	✗	✓	✗	10
	3	Real RFP	✗	✓	✗	2

The following tasks can be performed:

- create a new site (see section 7.5.1)
- edit a site (see section 7.5.2)
- delete a site (see section 7.5.3)

7.5.1 CREATING A NEW SITE

1 On the **Sites** page press the **New** button.
The **Configure site** dialog opens.



2 **ID**: Enter the identification number of the site. A value between 1 and 250 is possible. If no value is given, the OMM selects the next free ID.
3 **Name**: Enter the name of the site.
4 **Hi-Q audio technology, SRTP, Enhanced DECT security**: These capabilities must be enabled or disabled for each site specifically.
– In sites, which are configured to provide this functionality, exclusively RFP 35/36/37 IP and RFP 43 WLAN are applicable.
– In sites without this capability, it is allowed to mix these new RFP types with former RFP 32/34 and RFP 42 WLAN.
5 Press the **OK** button.

7.5.2 EDITING A SITE

You can change the name of an existing site:
1 On the **Sites** page click on the icon left behind the site entry.
The **Configure site** dialog opens.
2 Change the site name.
3 Press the **OK** button.

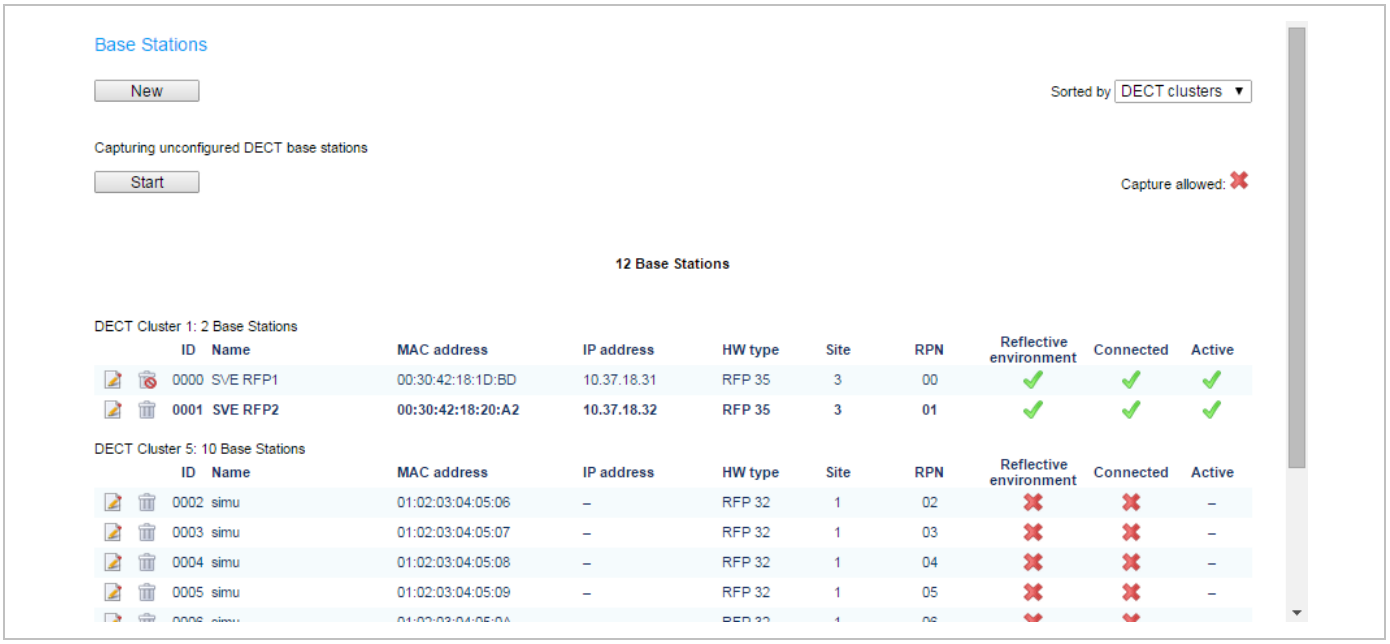
7.5.3 DELETING A SITE

Note: Only sites without assigned base stations can be deleted. At least one site must remain, so the last site cannot be deleted.

To delete an existing site:
1 On the **Sites** web page click on the icon left behind the site entry.
The **Delete site** dialog opens.
2 Press the **Delete** button.

7.6 “BASE STATIONS” MENU

All configured base stations are listed on the **Base stations** page. The base stations are sorted by their Ethernet (MAC) addresses.



You can select a sorting criterion for the RFP table. In the **Sorted by** field, select the criterion:

- **DECT clusters**: The base stations are sorted by clusters. All used clusters are displayed in the navigation bar on the left side. The OMM base station is marked with a bold font.
- **WLAN profiles**: The base stations are sorted by WLAN profile (see section 7.8).
- **Sites**: The base stations are sorted by sites (see section 7.5). All used sites are displayed in the navigation bar on the left side. The OMM base station is marked with a bold font.

The table provides information on all configured base stations and their status in several columns:

- **ID**: An internal number that is used to manage the base station.
- **Name**: Indicates the base station's name (see section7.6.3).
- **MAC address**: Indicates the base station's MAC address (see section7.6.3).
- **IP address**: Shows the current IP address of the RFP. The IP address may change over time by using dynamic IP assignment on the DHCP server.
- **HW type**: When the base stations connect to the OMM, they submit their hardware type. The hardware type is displayed in this column. If an error message is indicated in this column, there is a mismatch between the base station and the OMM software version (see section 7.6.2).
- **Site**: Indicates the site the base station is assigned to (see section 7.5).
- **RPN**: Shows the Radio Fixed Part Number that is currently used by the RFP.
- **Reflective environment**: Indicates if the base station is operated in a reflective environment (see section 7.6.3).
- **Connected**: Indicates if the base station is connected to the OMM (see section 7.6.1).
- **Active**: Indicates if the base station is active (see section 7.6.1).

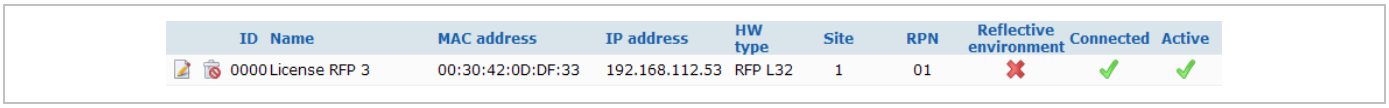
The following tasks can be performed on the **Base stations** page:

- create and change base stations (see section 7.6.3),
- capture base stations (see section 7.6.4),
- delete base stations (see section 7.6.5).

7.6.1 BASE STATION STATES

For each base station the state of the DECT subsystem is displayed. These states are:

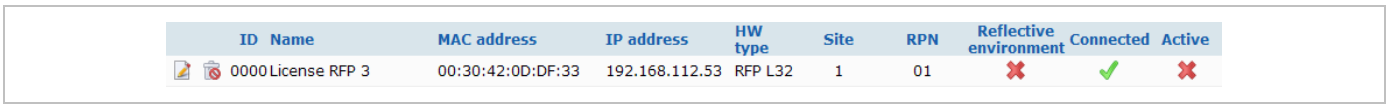
Synchronous



ID	Name	MAC address	IP address	HW type	Site	RPN	Reflective environment	Connected	Active
0000	License RFP 3	00:30:42:0D:DF:33	192.168.112.53	RFP L32	1	01	✗	✓	✓

The RFP is up and running. The RFP recognizes and is recognized by other RFPs in its cluster through its air interface and delivers a synchronous clock signal to the DECT phones.

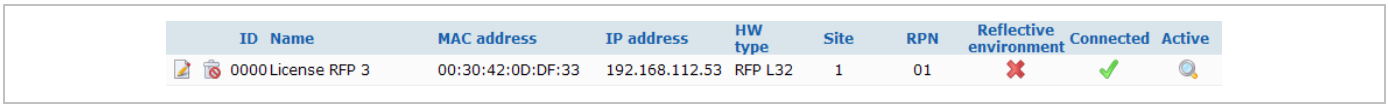
Asynchronous



ID	Name	MAC address	IP address	HW type	Site	RPN	Reflective environment	Connected	Active
0000	License RFP 3	00:30:42:0D:DF:33	192.168.112.53	RFP L32	1	01	✗	✓	✗

The RFP has not been able to synchronize to its neighbors yet. No DECT communication is possible. But nevertheless the RFP has already been able to connect to the OMM. This phase should usually last only for a few seconds after starting up the RFP or the OMM. If this state lasts longer this is an indication for a hardware or network failure.

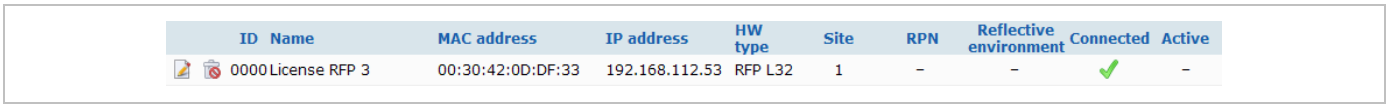
Searching



ID	Name	MAC address	IP address	HW type	Site	RPN	Reflective environment	Connected	Active
0000	License RFP 3	00:30:42:0D:DF:33	192.168.112.53	RFP L32	1	01	✗	✓	🔍

The RFP has lost synchronization to its neighbors. No DECT communication is possible. This phase should usually last only for a few seconds after starting up the RFP or the OMM. If this state lasts longer or is re-entered after being in a synchronous state this is an indication for a bad location of the RFP.

Inactive



ID	Name	MAC address	IP address	HW type	Site	RPN	Reflective environment	Connected	Active
0000	License RFP 3	00:30:42:0D:DF:33	192.168.112.53	RFP L32	1	–	–	✓	–

The RFP has connected to the OMM but the air interface has not been switched on yet. For any RFP with activated DECT functionality this phase should last only for a few seconds after starting up the RFP. If this state lasts longer this may indicate a hardware failure.

Not connected

ID	Name	MAC address	IP address	HW type	Site	RPN	Reflective environment	Connected	Active
0000	License RFP 3	00:30:42:0D:DF:33	–	RFP L32	1	–	–	✗	–

The RFP was configured but has not connected to the OMM yet. Therefore the IP address column is empty.

Software Update available

ID	Name	MAC address	IP address	HW type	Site	RPN	Reflective environment	Connected	Active
0000	License RFP 3	00:30:42:0D:DF:33	192.168.112.53	RFP L32	1	01	✖	✓	✓

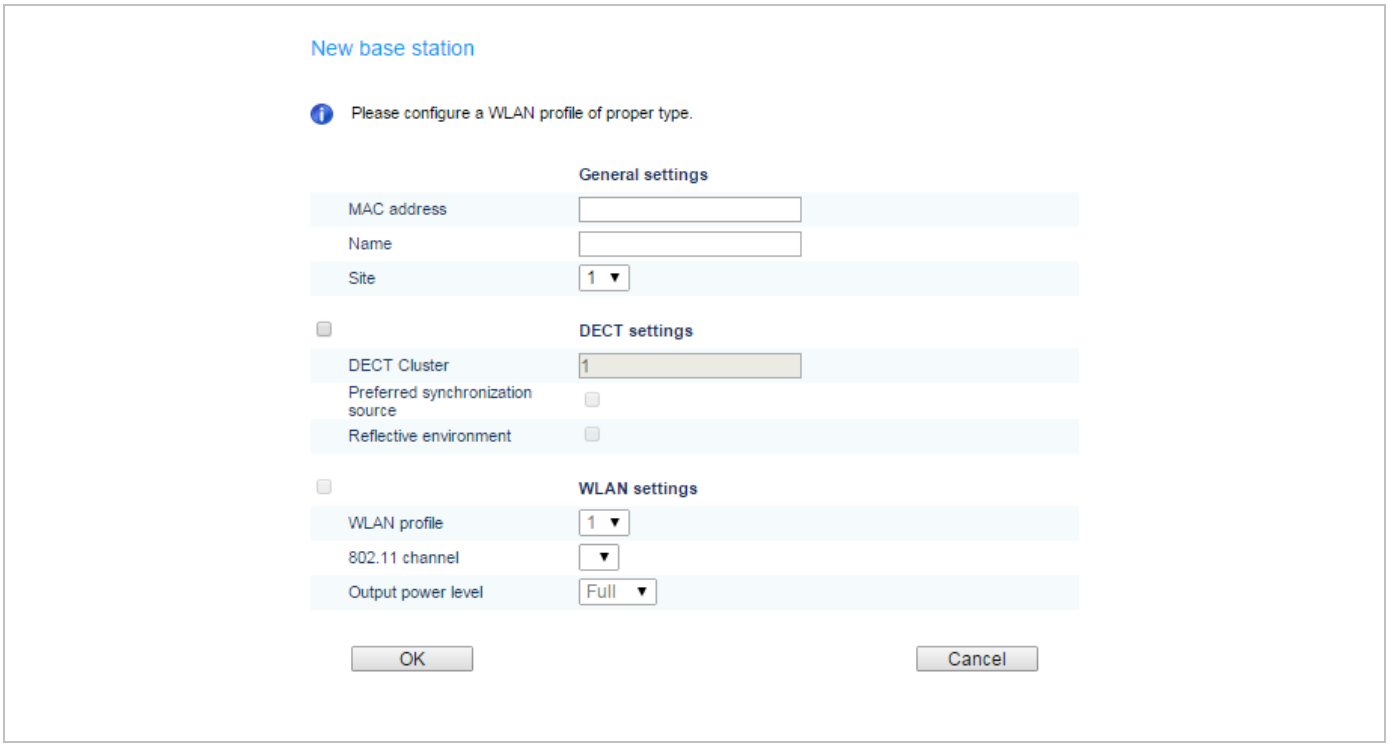
The RFP is connected to the OMM. The OMM has found new software on the TFTP server. The RFP is waiting for the OMM to initiate a reboot. In the meantime is the RFP fully operational.

7.6.2 OMM / RFP SOFTWARE VERSION CHECK

When the RFPs connect to the OMM, they submit their software version. If this version differs from the OMM software version and the versions are incompatible, the RFP connection attempt is rejected. This could happen when using several TFTP servers with different OpenMobility software versions. In this case, the RFP is marked with an error message. Moreover a global error message is displayed on the RFP list web page if at least one version mismatch has been found.

7.6.3 CREATING AND CHANGING BASE STATIONS

1 To configure a new RFP, click the **New** button on the **Base Stations** page.
To change the configuration of an existing RFP click on the icon left beside the base station entry.
The **New base station** (or the **Configure base station**) dialog opens.



2 Configure the base station (see parameter descriptions below).

3 Click **OK**.

Please note: DECT regulatory domain, WLAN regulatory domain and WLAN profile must be configured first. Otherwise DECT and/or WLAN cannot be enabled.

The following parameters can be set in the **New base station** and the **Configure base station** dialogs:

General settings

- **MAC address**: Each RFP is identified by its unique MAC address (6 bytes hex format, colon separated). Enter the MAC address (as it appears on the back of the base station chassis).
- **Name**: For easier administration each RFP can be associated with a location string. The location string can hold up to 20 characters.
- **Site**: If several sites exist (see section 7.5), select the site the RFP is assigned to.

DECT settings

The DECT functionality for each RFP can be switched on/off.

- **DECT cluster**: If DECT is active the RFP can be assigned to a cluster.
- **Preferred synchronization source**: Activate this checkbox if the RFP should be used as synchronization source for the other RFPs in the cluster. For background information on RFP synchronization please refer to section 9.2.
- **Reflective environment**: Within areas containing lot of reflective surfaces (e.g. metal or metal coated glass) in an open space environment the voice quality of a DECT call can be disturbed because of signal reflections which arrive on the DECT phone or RFP using multipath propagation. Calls may have permanent drop outs while moving and high error rates on the RFPs and DECT phones.

  For such environment Mitel has developed the DECT XQ enhancement into the RFP base stations and the Mitel 600 DECT phones family. Using this enhancement by switching the **Reflective environment** flag on might reduce drop outs and cracking noise.

  As soon as **Reflective environment** is switched on, the number of calls on an RFP is reduced to 4 calls at the same time.

> **Please note:** The RFPs and DECT phones use more bandwidth on the Air Interfaces if the “Reflective environment“ attribute is switched on. Therefore this is used when problems caused by metal reflections are detected.

WLAN settings

The WLAN section applies to RFPs of the type “RFP 42 WLAN” and “RFP 43 WLAN” only. For details about WLAN configurations please see section 9.17.

RFP 42 WLAN and RFP 43 WLAN have different WLAN parameters, which are configurable in the RFP configuration dialog.

- Activation check box: Enables or disables the WLAN function for this RFP.
- **WLAN profile**: Select the desired profile from the list. This applies all settings made in the respective WLAN profile to the current RFP. For information on configuring WLAN profiles see section 7.8.1.

> **Please note:** WLAN settings are only configurable if the RFP has been connected at least once to detect the hardware type and a proper WLAN profile is configured (see also section 7.8.1). WLAN cannot be enabled in the **New DECT base station** dialog if the hardware type is unknown.

The following settings are not applied by the WLAN profile. Configure these settings for each RFP individually.

- **Antenna diversity** (RFP 42 WLAN only): This option should generally be activated so that the AP (Access Point) can automatically select the antenna with the best transmission and reception characteristics.
- **Antenna** (RFP 42 WLAN only): If **Antenna diversity** is switched off, this setting determines the antenna that is used for transmitting or receiving WLAN data.
- **802.11 channel**: Determines the WLAN channel used by the current RFP. The channel numbers available are determined by the WLAN **Regulatory domain** setting on the **System settings** page.
- **Output power level** (default: “Full”): Determines the signal power level used by the RFP to send WLAN data. You may limit the power level to minimize interferences with other WLAN devices. The actual power level is also capped by the WLAN **Regulatory domain** setting on the **System settings** page.
- **HT40** (RFP 43 WLAN only): High throughput mode with 40 MHz bandwidth increases data rate up to 300 MB/s.

7.6.4 CAPTURING BASE STATIONS

Base stations that are assigned to the OMM by DHCP options or OM Configurator settings may connect to the system.

1 On the **Base Stations** page, press the **Start** button below the “Capturing unconfigured DECT base stations” caption.

The page is updated with the MAC addresses of those base stations that attempted to register with the OMM (unregistered RFPs).

Note: These entries are not actually stored, and are lost after an OMM reset.

2 By clicking on the edit icon  of the appropriate base station, you can add further data and store the base station (see section 7.6.3).

7.6.5 DELETING RFPS

To delete an existing RFP:

1 On the **Base Stations** page, click on the  icon left beside the RFP entry.

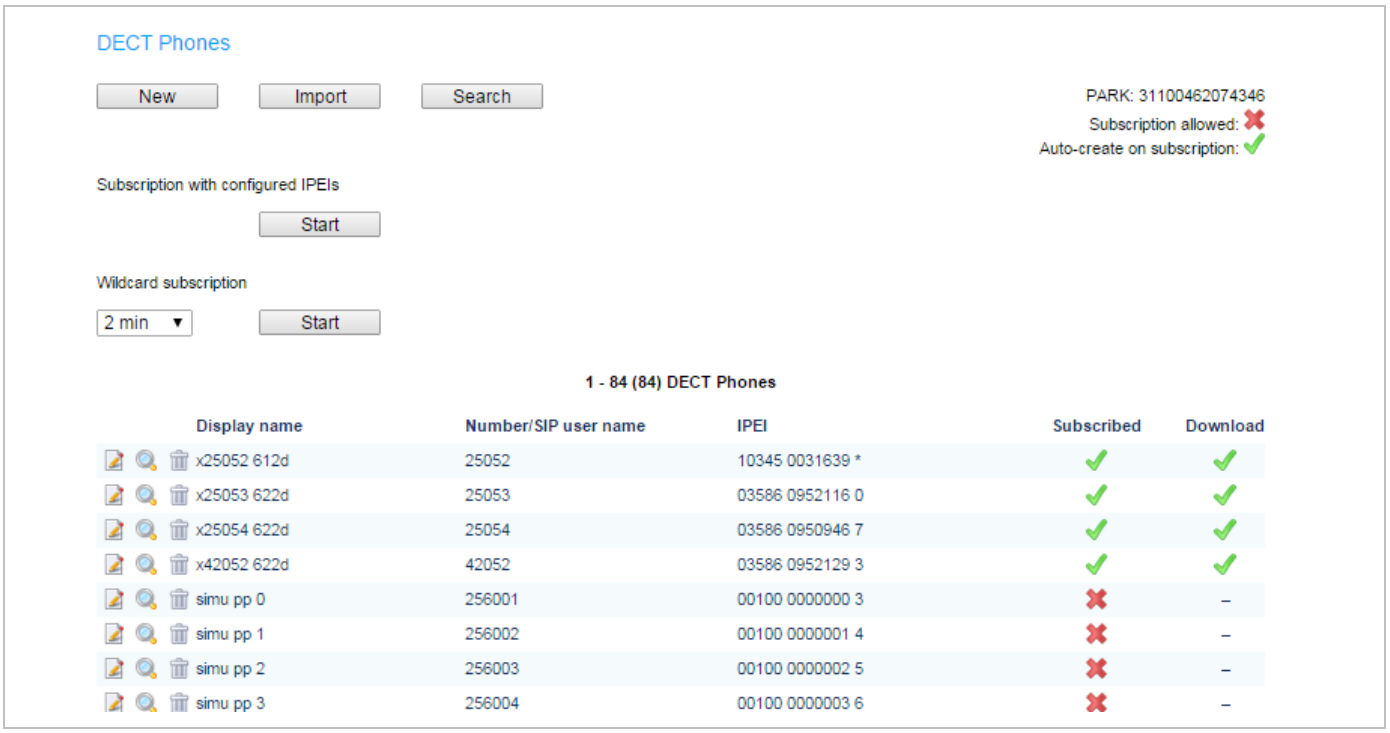
The **Delete base station?** dialog opens showing the current configuration of this RFP.

2 Click the **Delete** button.

Please note: The RFPs bound to a license (License RFPs) cannot be deleted. The License RFPs are displayed in the list with a license icon  instead of the trash icon. For further information on licenses see section 3.43).

7.7 “DECT PHONES” MENU

The **DECT Phones** page provides an overview of all configured DECT phones sorted by their number. To keep the list concise, the complete list is split up into sub lists containing up to 100 DECT phones. You can move back and forth in increments of 100 DECT phones.



The table provides information on the DECT phones and their status in several columns:

- **Display name**: Indicates the DECT phone name.
- **Number/SIP user name**: Indicates the internal call number of the DECT phone.
- **IPEI**: Indicates the DECT phone IPEI.
- **Subscribed**: Indicates if the DECT phone is subscribed to the system.
- **Download**: This column is only displayed if the “Download over Air” feature is started successfully and provides information about the download status of the DECT phone software (see section 9.19).

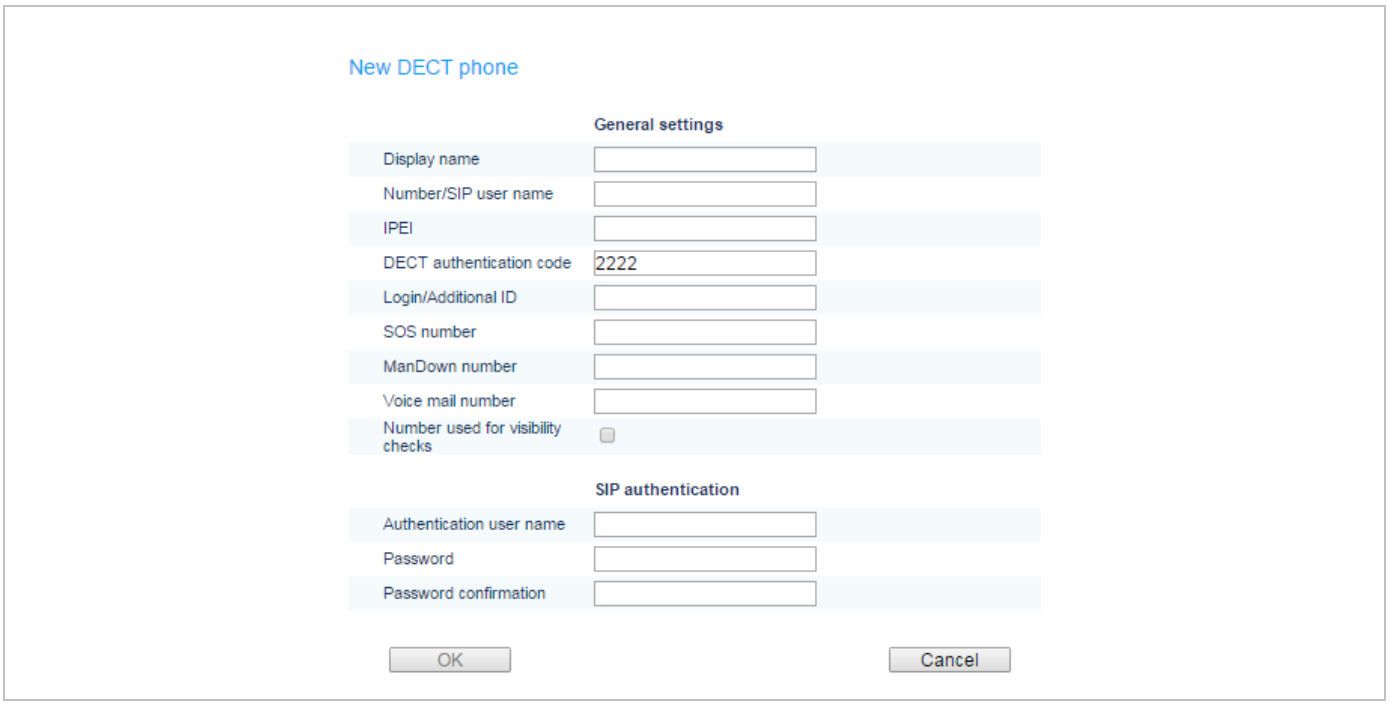
Note: All DECT phone data that are configured as unbound (split into DECT phone and user data) are also listed at the OM Web service when a user is logged in at the DECT phone, but they cannot be deleted or changed. This is indicated by the and icons. Unbound DECT phones where no user is logged in are not displayed on the **DECT phones** page.

The following tasks can be performed on the **DECT Phones** page:

- create and change DECT phones (see section 7.7.1)
- import DECT phone configuration files (see section 7.7.2),
- subscribe DECT phones (see section 7.7.3)
- delete DECT phones (see section 7.7.4)
- search within the DECT phone list (see section 7.7.5)

7.7.1 CREATING AND CHANGING DECT PHONES

1 To configure a new DECT phone, click the **New** button on the **DECT phones** page.
To change the configuration of an existing DECT phone click on the icon left beside the DECT phones entry.
The **New DECT phone** or the **Configure DECT phone** dialog opens.



2 Configure the DECT phone (see parameter descriptions below).

3 Press the **OK** button.

The following parameters can be set in the **New DECT phone** and the **Configure DECT phone** dialog:

General settings

- **Display name**: The name parameter represents the SIP Display Name field. This parameter is optional but recommended.
- **Number/SIP user name**: The number is the SIP account number or extension for the DECT phone.
- **IPEI**: This optional setting is the DECT phone IPEI number. On a Mitel DECT 142 / Mitel 142d DECT phone, the IPEI can be found via the following path of the DECT phone menu: **Main menu** > **Phone settings** > **System**. On a Mitel 600 DECT phone, the IPEI can be found in the **System** DECT phone menu. Consult the DECT phone's user guide for further information.
- **DECT authentication code**: The DECT authentication code is used during initial DECT subscription as a security option and can be set here for each DECT phone separately (DECT phone-specific DECT authentication code). This parameter is optional. If a system-wide DECT authentication code is entered on the **System settings** page, this value is filled in here as default. If no DECT phone-specific DECT authentication code is set, the system-wide DECT authentication code is used.

  Note: The DECT authentication code can only be changed if the DECT phone is not subscribed.

- **Login/Additional ID**: The additional ID can be used as a mean for data search within wildcard subscription (because of the IPEI is not configured which selects the data otherwise).

- **Delete subscription**: This option is only available when configuring an existing DECT phone (in the **Configure DECT phone** dialog). If this option is selected, the DECT phone will be unsubscribed.
- **SOS number**, **ManDown number**: SOS and ManDown are calling numbers which will be automatically called as soon as an SOS or ManDown event happens. If no individual SOS or ManDown number is configured for a DECT phone, the number of the appropriate alarm trigger will be used as a system-wide calling number in case of a SOS or ManDown event. Please see /31/ for details.
- **Voice mail number**: The voice mail number is the number which will be automatically called as soon as a voice mail call is initiated on the Mitel 600 DECT phone. If there is no individual voice mail number configured in this field, then the system-wide voice mail number is used (see also the **System setting** menu, section 7.4.1.7). If there is no voice mail number configured (neither the individual nor the system-wide) or another DECT phone type is used, then the voice mail number must be configured locally in the DECT phone.
- **Number used for visibility checks**: Provides phone number or SIP user name used for standby OMM visibility checks.

SIP authentication

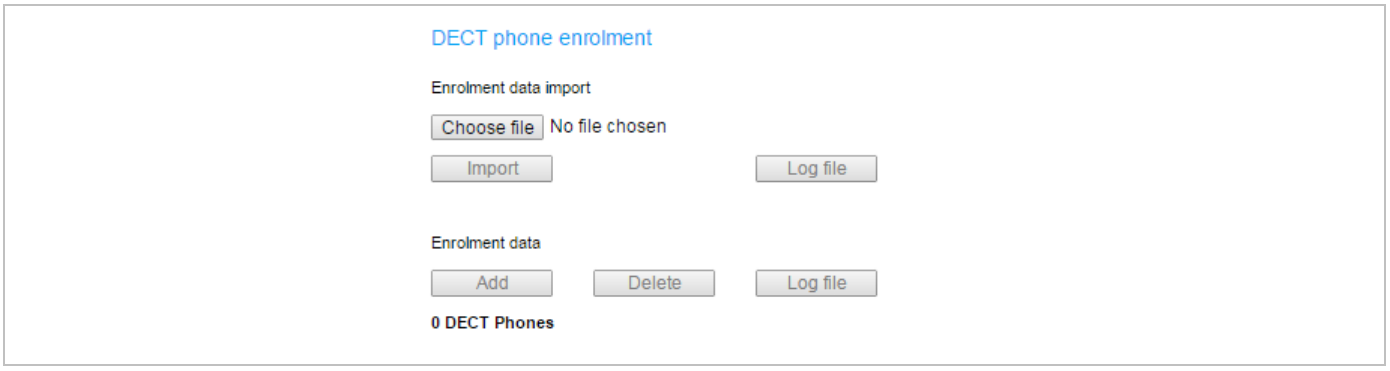
- **User name**: The SIP Authentication user name is optional but recommended. It represents the name which will be used during SIP registration and authentication. If no name is given the number will be used by default.
- **Password**, **Password confirmation**: The password will be used during SIP registration and authentication. Enter the appropriate data in these fields.

7.7.2 IMPORTING DECT PHONE CONFIGURATION FILES

A set of DECT phones can also be configured in a semi-automatic manner by import of a configuration file.

1 On the **DECT Phones** page press the **Import** button.

The **DECT phone enrolment** page opens.



2 Select your configuration file and press the **Import** button. For information on the file layout see section 11.4.1.

3 A parsing protocol can be read, if you press the referring **Log file** button. All successfully imported data records are presented in a list:

4 Select the DECT phones you want to add to the OMM database by selecting the appropriate checkboxes, and click **Add**.

All successfully stored records are marked green in the **Added** column.

Failed records are marked with a red star.

5 To read error hints in the referring log file, press the **Log file** button. Error hints can also be read in a syslog trace.

6 To remove imported data entries, activate the check box next to the desired entries. Press **Delete** to remove the selected entries.

7.7.3 SUBSCRIBING DECT PHONES

Preparation by OMM Web service

After adding a DECT phone configuration to the OMM, the DECT phone must be subscribed. The OMM must first be enabled to allow subscriptions to be take place from DECT phone DECT phones. This is done by pressing the following buttons on the **DECT Phones** page.

- **Start** button under the “Subscription with configured IPEI” caption (see section 7.7.3.1). This button enables subscription for the next 24 hours.
- **Start** button and time interval parameter under the “Wildcard subscription” caption. This button enables wildcard subscription for the selected time. After expiry the “subscription with configured IPEIs” is still enabled for 24 hours.

Note: To ease the first installation of a DECT system, the subscription is enabled permanently while at least one DECT phone (with IPEI) is set up in the database and no DECT phone is subscribed. After successful subscription of the first DECT phone the subscription will still be enabled for 24 hours.

Subscription steps, done by DECT phone

After the DECT phone configuration is complete on the OMM and the OMM is allowing new subscriptions, each DECT phone must subscribe to the system.

On each DECT phone, the administrator or user must subscribe to the SIP-DECT system through the **System** -> **Subscriptions** menu. The specific PARK code for the SIP-DECT system should be entered to subscribe to the system.

Please note: The PARK is displayed in the top-right corner of the **DECT Phones** page. Each SIP-DECT deployment has a unique PARK code.

If the administrator configured a global or device-specific DECT phone DECT authentication code, the administrator/user must enter in the code before the DECT phone subscribes to the system.

For “wildcard subscription”, an additional ID may be configured (see sub section Wildcard Subscription).

7.7.3.1 Subscription with Configured IPEI

The DECT phone data to be assigned to the subscribing DECT phone are identified by the IPEI. The identity of a DECT phone (IPEI) is already known by the system before the DECT phone attempts to subscribe. Unknown DECT phones are not allowed to subscribe in this mode.

To enable subscriptions, click the **Start** button under the section **Subscription with configured IPEIs** caption on the **DECT Phones** page.

The OMM allows a subscription of configured but not subscribed DECT phones during the next 24 hours. The administrator must press the Subscribe button again to permit more DECT phones to subscribe to the SIP-DECT system.

Note: Older DECT phones may not offer the possibility to enter an access code (AC). You should always subscribe these DECT phones with configured IPEI to maintain security.

7.7.3.2 Wildcard Subscription

To minimize administration effort, subscription is also possible, if the IPEI is not configured. But because of the loss of further security by IPEI check, this kind of subscription is only allowed within a short default time interval of 2 minutes.

To enable subscriptions, press the **Start** button of the section **Wildcard subscription** on the **DECT phones** page. If necessary, increase the time interval (or refresh subscription permission in time).

The OMM will allow a wildcard subscription during the set time interval. In case of timeout the permission is lost. Only subscription with IPEI remains allowed within the fixed limit of 24 hours.

To achieve a selection of data during subscription (e.g. the user name being assigned to the DECT phone), the field “additional ID” can be set in OMM data. If the OMM receives a valid “additional ID” during subscription, the referring data are assigned to the DECT phone.

If the additional ID is requested for a data record, the DECT phone user must type it. “Additional ID” can be set within the authentication code menu. Please type the R-Key and type the additional ID.

Please note: The input of the additional ID is only possible with Mitel 142 and Mitel 600 DECT phones. The value is not supported on third party GAP phones. If GAP phones are going to subscribe wildcard, the first free DECT phone data record without any additional ID will be assigned.

7.7.4 DELETING DECT PHONES

To delete an existing DECT phone:

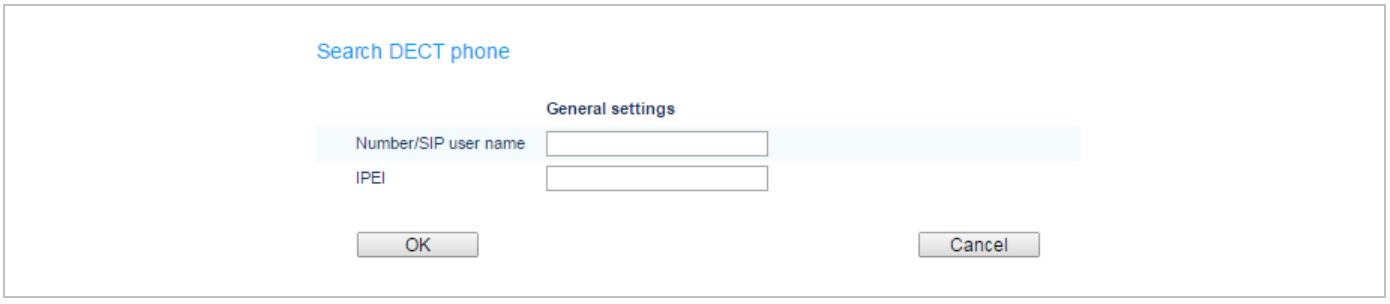
1 On the **DECT phone** page click on the icon left beside the DECT phone entry.
The **Delete DECT phone?** dialog opens showing the current configuration of this DECT phone.

2 Press the **Delete** button.

7.7.5 SEARCHING WITHIN THE DECT PHONE LIST

You can use the search function to search for a specific DECT phone in the DECT phone list. The search function allows you to find a DECT phone by a given number or IPEI.

1 On the **DECT phones** page click on the **Search** button.
The **Search DECT phone** dialog opens.



2 Enter the DECT phone’s number or IPEI. At least one parameter must be set. The entered number or IPEI must match exactly with a DECT phone’s number or IPEI. If number **and** IPEI are given then a

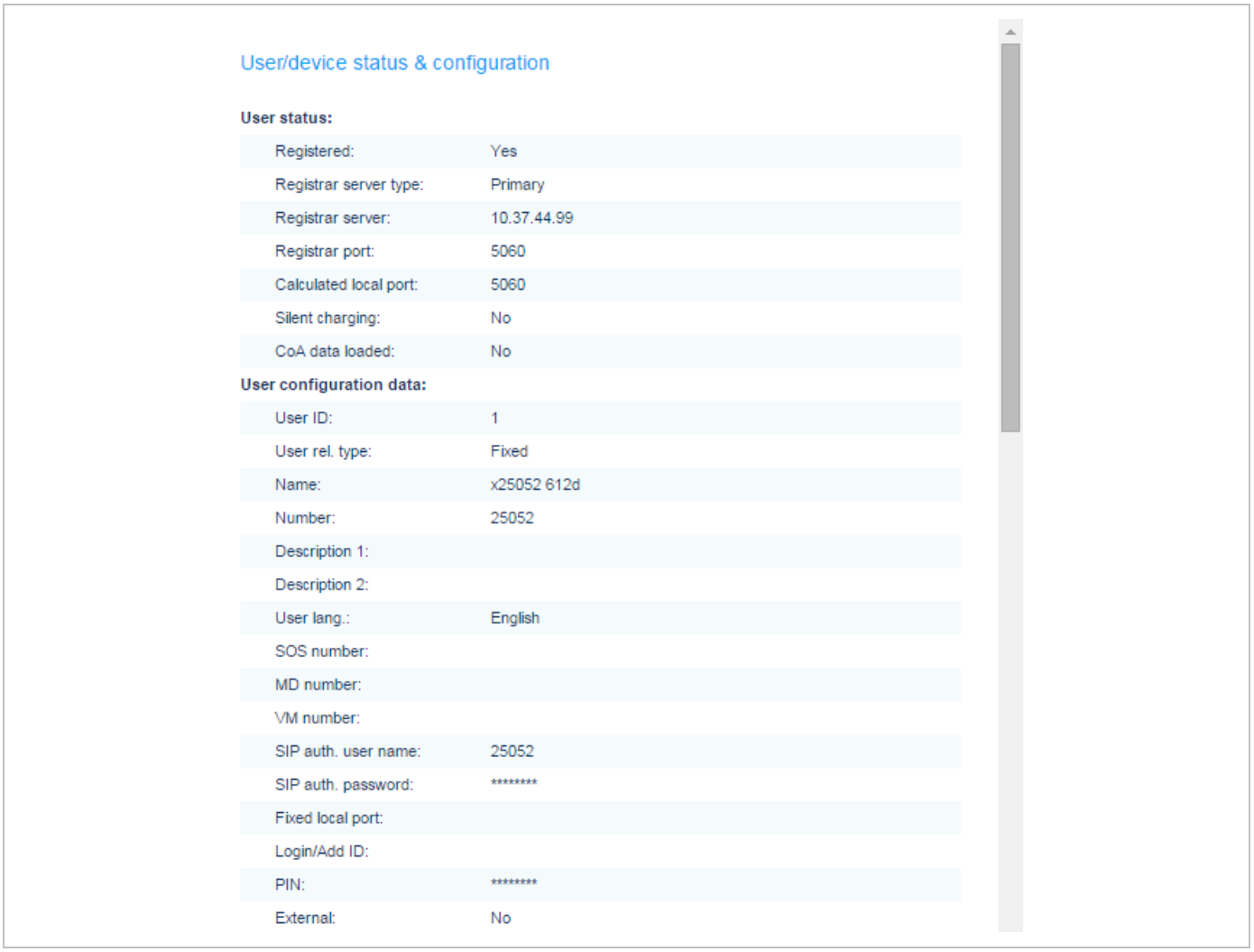
DECT phone must exist in the OMM's database whose number and IPEI match both otherwise the search fails.

If a DECT phone with the specified number and/or IPEI was found, a list is displayed with this DECT phone as the first entry. The search function can also be used to get to the right sub list in one step.

7.7.6 DISPLAYING USER AND DECT PHONE DATA

You can display a summary of user status and DECT phone configuration in a pop-up window on the **DECT Phone** page. Click the magnifying glass icon beside a DECT phone entry to view the **User/device status & configuration** window.

Note: A configuration and status summary for the DECT phone is also available on the DECT phone under the Administration menu. The presentation layout is similar to the OMM Web service window, but the DECT phone only displays its own data.



The following table summarizes the parameters displayed in the **User/device status & configuration** window.

Parameter	Description
User status	
Registered	Current SIP user registration status Yes = registered No = not registered
Registrar server type	Current SIP registrar: Primary or backup SIP registrar (secondary or tertiary)
Registrar server	IP address of the SIP Registrar
Registrar port	Port number of the SIP Registrar
Calculated local port	SIP user's automatically determined client port
Silent charging	Current silent charging state Yes = in silent charging mode No = not in silent charging mode
CoA data loaded	COA data sent to DECT phone Yes = data has been sent No = no data sent
User configuration data	
User Id	Internal system identifier for the user
User rel. Type	Type of association between the user and the DECT phone. Dynamic or fixed.
Name	User's name
Number	SIP user name or number
Description 1	Additional textual description for a user (e.g., department or function)
Description 2	Additional textual description for a user (e.g., department or function)
User lang.	Language setting on the DECT phone
SOS number	Emergency number to be dialed when the SOS key has been pressed
MD number	Emergency number to be dialed when a sensor alarm (Mitel 600 DECT phone) has been initiated
VM number	Voice mail number (dialed by a long press of '1' key on the Mitel 600 DECT phone)
SIP auth. user name	SIP authentication user name
SIP auth. password	SIP authentication password
Fixed local port	SIP user's configured fixed client port (used for SIP registration)
Login/Add ID	ID used for user identification during login procedure at the DECT phone OR ID used for wildcard subscription during DECT phone subscription procedure
PIN	PIN used for user identification during login procedure at the DECT phone "*******" = a PIN is set, empty = no PIN is set
External	User data provided by an external provisioning server (<user>.cfg) Yes = user data imported from a server No = user data only stored internally in the OMM DB

VIP	To guarantee a minimum blackout for a very important person (e.g. emergency user) the SIP (re-)registration of such people can be prioritized. Yes = prioritized No = not prioritized
Visibility checks	The OMM standby feature uses an existing SIP account to check the availability of the registrar. Yes = this account is used No = this account is not used
Sending messages	User's permissions to send text messages using the Mitel 600 DECT phone Yes = user is authorized to send text messages No = user is not authorized to send text messages
Sending vCards	User's permissions to send vCards using the Mitel 600 DECT phone Yes = user is authorized to send vCards No = user is not authorized to vCards
Receiving vCards	Indicates whether the user accepts received vCards Yes = incoming vCards are accepted No = incoming vCards are not accepted
Video stream perm.	User's permissions to access video using the Mitel 600 DECT phone Yes = user is authorized to access video No = user is not authorized to access video
Locate	User's permissions to locate other users using the Mitel 600 DECT phone Yes = user can locate other users No = user cannot locate other users
Tracking	Tracking forces the Mitel 600 DECT phone to indicate every change of the DECT base station even in idle state Yes = tracking is active No = tracking is inactive
DECT locatable	Permission to locate the user (i.e., through the SIP-DECT locating solution) Yes = locating the user is permitted No = not permitted
Keep personal dir.	The local directory of the Mitel 600 DECT phone is usually the user's personal directory and is cleared at logout. If deleting the directory content is not desirable, this option can be set Yes = local directory is not cleared No = local directory is cleared
Logout on charging	A user logout can be performed automatically when the Mitel 600 DECT phone is placed in the charger cradle Yes = automatic logout when put in charger No = no automatic logout
Forward mode	Mode of Call diversion or Call forwarding (Off, Immediately, Busy, No answer, Busy & no answer)
Forward time	Time delay in seconds before the incoming call is redirected.
Forward dest.	Destination of the redirected call
Hold ring back time	Time in minutes after which the user wants to be reminded of the connection on hold 0 = Off, no reminder

Call waiting disabled	An incoming call is signaled in-band if the user is otherwise engaged (Call waiting). This feature can be disabled Yes = call waiting is disabled No = call waiting feature is active
Auto answer	Enables or disables auto-answer on incoming calls. If auto answer is enabled, the DECT phone plays a tone to alert the user before answering the call. If auto answer is disabled, the DECT phone treats the incoming call as a normal call.
Microphone mute	Enables or disables microphone muting when incoming calls are automatically answered.
Warning tone	Enables or disables a warning tone to play when the DECT phone receives an incoming call on an active line.. A short ringtone is played if there are no active calls. If there is an active call in a “barge in” situation, the ringing will be in-band.
Allow barge in	Allows/disallows how the DECT phone handles incoming calls while the DECT phone is on an active call. When enabled an incoming call takes precedence over an active call, by placing the active call on hold and automatically answering the call. When disabled the DECT phone treats an incoming call like a normal call.
Monitoring mode	SIP-DECT supports a “User Monitoring” feature to check the availability of a user to receive calls or messages. On = monitoring feature is active Off = monitoring feature is not activated
Conference server type	User-specific setting of the conference service to be used for three-way conferencing None = three-way conferencing is disabled Global = OMM system setting is used (default) Integrated = integrated conference server is used
Conference server URI	URI for the external conference server
Use CoA profile	ID of the CoA (Central DECT phone configuration over air) profile
Device status	
IPEI	International Portable Equipment Identifier (globally unique identifier of the DECT phone)
HW type	Hardware type of 600 DECT phone or 142d otherwise “unknown”
SW version	Version of the software on the Mitel 600 DECT phone
Subscribed	Subscription status of the DECT phone Yes = DECT phone is subscribed No = DECT phone is not subscribed
Encryption	DECT encryption status Yes = Encryption is enabled No = Encryption is disabled
Capability ”Messaging”	Messaging capability of the DECT phone Yes = DECT phone supports messaging No = DECT phone does not support messaging
Capability ”Enh. Locating”	Enhanced locating capability of the DECT phone Yes = DECT phone supports enhanced locating No = DECT phone does not support enhanced locating

Capability ”Video”	Video capability of the DECT phone Yes = DECT phone supports video No = DECT phone does not support video
Capability ”CoA profile”	CoA capability (Central DECT phone configuration over air) of the DECT phone Yes = DECT phone supports CoA No = DECT phone does not support CoA
Device auto-created	Auto-creation occus when the DECT phone data set is automatically generated in the OMM’s database at subscription time. No administrative task is required onthe SIP-DECT system to subscribe a DECT phone in this auto-create mode. Yes = DECT phone has been subscribed in auto-create mode No = DECT phone has not been subscribed in auto-create mode
Default CoA profile loaded	A default CoA profile (Central DECT phone configuration over air) can be sent to a 600 DECT phone Yes = a default profile was sent No = no default profile was sent
Device configuration data	
Device ID	Internal system identifier for the DECT phone

7.8 “WLAN” MENU

The **WLAN** menu allows you to manage the wireless LAN function of all WLAN capable RFPs that are connected to the OMM. You can view and change wireless parameters and security settings to adapt the WLAN configuration to suit your needs. You can also check how many and which wireless clients are currently connected. Nevertheless, the WLAN function is only available for base stations of the type RFP 42 WLAN and RFP 43 WLAN.

Note: You cannot activate the WLAN function for the OMM, even if the OMM base station is an RFP 42 WLAN.

For a detailed description on WLAN configuration please refer to the section 9.17.

7.8.1 “WLAN PROFILES” MENU

WLAN settings are grouped in WLAN profiles. You need at least one WLAN profile that can be assigned to one or more WLAN-RFPs. You can define more than one WLAN profile, to a maximum of 20 WLAN profiles. You can manage / change the desired WLAN settings for a group of WLAN-RFPs by changing their assigned WLAN profiles. Moreover, you can manage different settings, for example separate WLAN profiles for different buildings, a special WLAN profile for temporary use, or WLAN profile for RFPs only useable by guests.

Note the different WLAN profile types:

RFP type	**WLAN profile type**
RFP 42 WLAN	RFP42
RFP 43 WLAN	RFP43

The **WLAN profiles** menu allows configuration and administration of these WLAN profiles. The following tasks can be performed:

- create and change WLAN profiles (see section 7.8.1.1)
- delete WLAN profiles (see section 7.8.1.2)
- export WLAN profiles (see section 7.8.1.3)

The defined WLAN profiles are then assigned to one or more WLAN base stations (see section 7.8.2). Note, that some device-specific WLAN settings are not part of a WLAN profile, such as the channel and the antenna configuration. These settings are defined separately for each base station (see section 7.6.3).

7.8.1.1 Creating and Changing WLAN Profiles

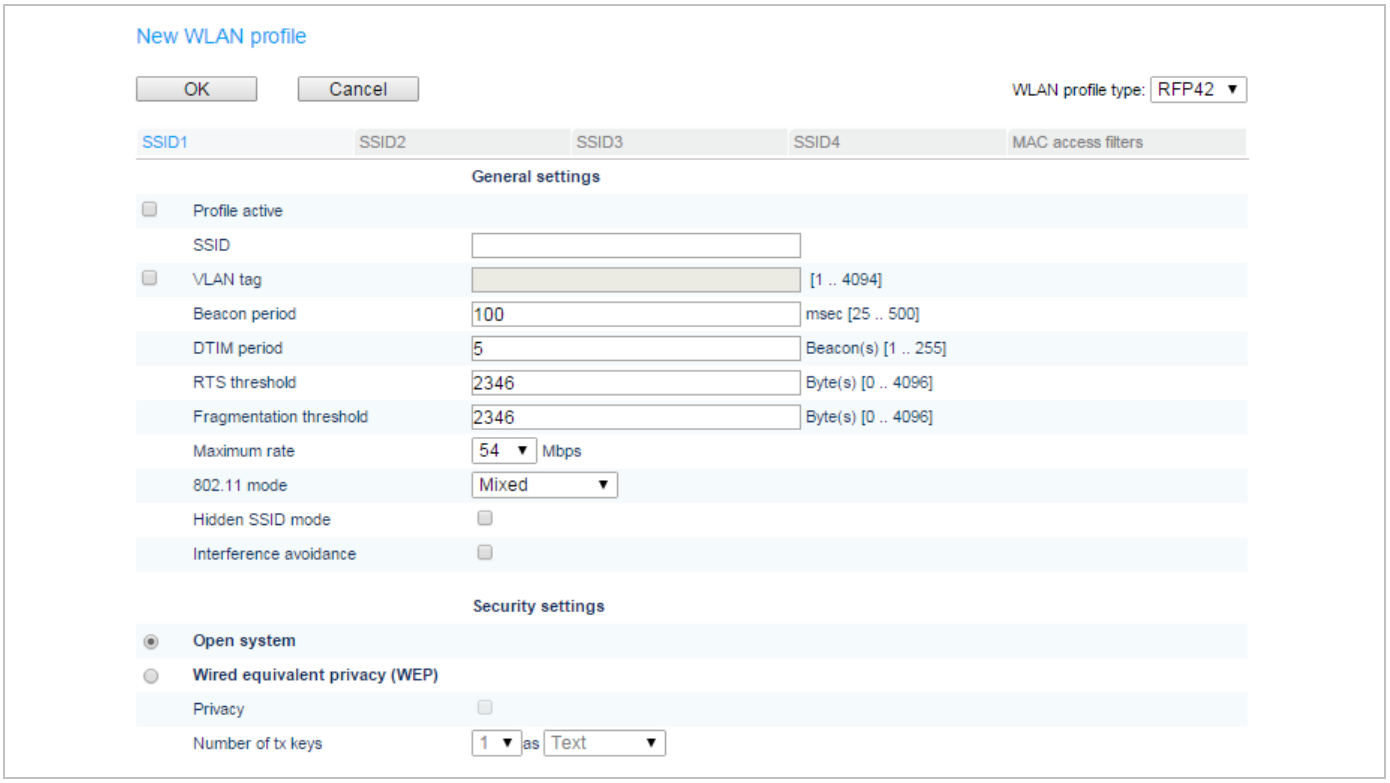
You need at least one active WLAN profile in order to operate the WLAN function for an RFP 42 WLAN or RFP 43 WLAN device.

1 Navigate to the **WLAN profiles** page. This page shows the number of existing WLAN profiles and a list of available WLAN profiles.

2 If you create a new WLAN profile, configure the RFP type first to get the correct input fields. Select the appropriate profile (**RFP42** or **RFP43**) from the **WLAN profile type** selection list.

3 To add a new WLAN profile, press the **New** button. To change an existing WLAN profile, click on the  icon available on the left of the WLAN profile entry.

The **New WLAN profile** page resp. the **WLAN profile [Number]** page shows the WLAN profile configuration.



4 Change the desired settings of the WLAN profile. You need at last to define the ESSID setting. The different settings are explained in detail in the sections below.

5 Activate the **Profile active** setting; otherwise the WLAN profile is inactive which de-activates the WLAN function for base stations that are assigned to this WLAN profile.

6 Press the **OK** button to apply the settings. If you created a new WLAN profile, you can proceed by assigning the WLAN profile to the desired base stations (see section 7.6.3). If you changed an existing WLAN profile, the settings are applied to the assigned base stations automatically.

The following description details the different parameters that are available on the **New WLAN profile** page and. on the **WLAN profile [Number]** page.

General settings

- **Profile active**: Activate this checkbox to activate the profile. This in turn activates the WLAN function for all RFPs that are assigned to the WLAN profile.
- **SSID**: Enter a descriptive character string to identify the WLAN network (e.g. “OurCompany”).The service set identifier is broadcasted by the RFP within “WLAN beacons” in a regularly interval. The SSID identifies the WLAN network and is visible by all WLAN clients. This is typically used with a scan function, e.g. from a WLAN client that tries to establish a connection. The SSID should not exceed 32 characters and it is advisable not to use unusual characters that may trigger WLAN client software bugs.
- **VLAN tag** (number, 1..4094, default: off): You can separate VoIP and client data traffic (transferred via WLAN) by using different virtual LANs, e.g. to prevent bulk data transfers to interfere with VoIP. To use a separate VLAN for the client data traffic, activate the check box and enter the desired VLAN number (see sections 9.17 and 9.12).
- **Beacon period** (milliseconds, 50..65535, default: 100 ms): Determines the WLAN beacon interval. A higher value can save some WLAN airtime that can be used for data transfers.
- **DTIM period** (number, 1..255, default: 5): Determines the number of beacons between DTIM messages. These messages manage the WLAN wakeup/sleep function e.g. that is critical for battery powered WLAN clients.
- **RTS threshold** (bytes, 0..4096, default: 2346): If a WLAN packet exceeds this threshold, it will be transferred with RTS/CTS handshake. This may improve transfer reliability if several WLANs share the same channel. The default of 2346 byte switches off this function because the IP-MTU is typically only 1500 byte.
- **Fragmentation threshold** (bytes, 0..4096, default: 2346): If a WLAN packet exceeds this threshold, it will be transferred in chunks. This may improve transfer reliability for a weak connection. The default of 2346 bytes switches off this function because the IP-MTU is typically only 1500 byte.
- **Maximum rate** (list of rates in Mbps, 1..54, default: 54): This setting applies to RFP 42 WLAN only. Determines the maximum transfer rate used by the RFP. You can limit the rate to increase the WLAN range, e.g. to prevent WLAN clients in the vicinity of the RFP to disturb distant WLAN clients.

- **802.11 mode** (RFP 42 WLAN selection list: Mixed / 802.11b only / 802.11g only, default: Mixed): Both the older and long-ranged B-Mode and the newer and faster G-Mode are typically supported by WLAN clients. You can change this setting to prevent problems with very old WLAN clients.
  (RFP 43 WLAN selection list: 802.11bg /802.11b only / 802.11g only / 802.11abg /802.11n, default: 802.11bg): On the **RFP43** profile you can choose additionally 802.11 modes 802.11abg and 802.11n.

Mode	**802.11abg**	**802.11n**
Open	yes	yes
WEP	yes	no
Radius (802.1x WEP)	yes	no
WPA v.1 (802.1x + PSK)	yes	no
WPA v.2 (802.1x + PSK)	yes	yes

- **Hidden SSID mode** (on / off, default: off): If switched on, the transmission of the SSID within beacons is suppressed. This in turn requires a more elaborate and manual connection procedure for WLAN clients.
- **Interference avoidance** (on / off, default: off): This setting applies to RFP 42 WLAN only. Enables a WLAN procedure to enhance radio interference avoidance.

Security settings

These settings determine the encryption used for the WLAN connection. Select one of the four modes (Open, WEP, WPA, or Radius). This will activate / gray-out the necessary additional input fields that specify further security settings on the **WLAN profile** page.

- **Open system**: Enable this option to deactivate authentication and encryption (“Hotel mode”). Note, that all data is transferred un-encrypted in this mode, which can be easily eavesdropped with any WLAN equipment.
- **Wired equivalent privacy (WEP)**: Enable this option to use the older WEP encryption mode. This mode may be useful, e.g. if your WLAN should support older WLAN clients that do not implement the recommended WPA encryption.
  - **Privacy** (on / off, default: off): De-activate this setting to use no authentication (“Open System”) with standard WEP encryption. Activate this setting to use an additional shared key authentication between the RFP and the WLAN client.
  - **Number of tx keys** (number, 1..4, default: 1): The WEP encryption can use a single shared key or multiple shared keys (“key rotation”). Select the number of shared keys, select how to enter a shared key (by default as **Text** or as **Hex value**), and select the **Cipher length** (see **Key settings** below).
  - **Default tx key** (number, 1..4, default: 1): If more than one shared keys is used, you can select the default shared key. You must configure the same default key on the WLAN client.
  - **Key #1** – **Key #4**: Enter one or more shared key. The **Cipher length** setting (see **Key settings** below) determines the length of the required input. If you selected to enter as **Text** (see above), input a password with 5, 13, or 29 characters that matches a 64 or 128 bit cipher. If you selected to enter as **Hex value**, you can input a hexadecimal number with 10, 26, or 58 characters (0-9, a-f). Press the **Generate** button to generate a random shared key that matches the current settings.
- **WiFi protected access (WPA)**: Enable this option to use the recommended WPA encryption mode.

- **Type** (selection, WPA any / WPA v.1 / WPA v.2, default: WPA any): Select the WPA version required for WLAN clients. The **WPA any** setting allows WPA v.1 and WPA v.2 to be used concurrently. The **WPA v.1** setting enforces the use of the older RC4-based encryption. The **WPA v.2** setting enforces the use of the stronger AES encryption. You can also change the distribution interval (see **Key settings** below).
- **802.1x (Radius)**: Select this option if your WLAN should use a RADIUS server for WLAN client authentication ("Enterprise WPA" with different username/password combinations per client). You must also specify the **Radius settings** (see below). For details about the RADIUS authentication procedure, using the public keys, and importing certificates to the WLAN clients refer to the documentation of your RADIUS server product.
- **Pre-shared key**: Select this option to use a single shared key for all WLAN clients (**Value** setting below). A WLAN client user needs to enter the shared key in order to connect.
- **Value**: You can enter a shared key as **Text**. Use a longer text sequence with alphanumeric characters and special characters to enhance the shared key strength. A text shared key is case sensitive. Alternatively, the shared key can be entered as **Hex value** (hexadecimal number, 0-9, a-f). Press the **Generate** button to generate a random shared key that matches the current settings.

- **802.1x (Radius)**: This setting applies to RFP 42 WLAN only. Enable this option to use the RADIUS authentication without the stronger WPA encryption. You must also specify the **Radius settings** and you may adapt the **Key settings** (see below).
- **MAC access filters** (on / off, default: off): This setting applies to RFP 43 WLAN only. You can limit WLAN access for WLAN clients with specified MAC addresses. Note, that without encryption this should not be used for security reasons. You can configure a list of MAC addresses that are allowed to connect via the **MAC access filters** tab on the WLAN profile page.
- **BSS isolation** (on / off, default: off): In a standard WLAN setup, each WLAN client can contact other WLAN clients. For special purposes (e.g. "Internet café setup"), you may switch on this options to protect WLAN clients from eavesdropping on other WLAN clients.

Key settings

- **Cipher length** (selection, 64 Bits / 128 Bits / 256 Bits (RFP 42 WLAN only), default: 64 Bits): Determines the key length used for the WEP encryption. Larger bit sequences provide better security but may be unsupported by very old WLAN clients.
- **Distribution interval** (seconds, 1..65535, default: 20): Determines how often the WEP encryption is re-negotiated.

Radius settings

The parameters in this section can only be configured if the **802.1x (Radius)** option has been selected.

- **IP address**: Enter the IP address of the RADIUS server.
- **Port**: Enter the port number used to connect to the RADIUS server. Press the **Default** button to change to the standard port.
- **Secret**: Enter the character string that is used by the RFP to secure the communication with the RADIUS server.

QoS settings

- **WME**: (on / off, VLAN or DiffServ (RFP 42 WLAN only), default RFP 42 WLAN: off/VLAN, default RFP 43 WLAN: off): You can enable the Wireless Media Extensions to prioritize WLAN traffic. The WLAN traffic priority is determined by **VLAN** number or by examining the **DiffServ** data field of IP packets.

SSID2 – SSID4 Tabs

You can enable up to three additional virtual WLAN networks that are managed by their SSID. This can be used for example to provide WLAN access for guests that is separated from the company WLAN by means of VLAN tags and encryption settings. To activate this feature proceed as follows:

1. Switch to the appropriate **SSID** tab, e.g. SSID2. Activate the **Active** check box to enable the additional virtual WLAN. The tab provides separate configuration items for the selected SSID.
2. Enter at least a new **SSID**. Also enter a currently unused **VLAN tag** number.
3. You can specify different authentication/encryption settings for each SSID section. For example, you can use **WPA** / **Pre-shared key** with different passwords.

Note that some configuration combinations are incompatible with multiple SSIDs. For example, the wireless hardware only manages a single WEP encryption key. Also, some features apply to all defined SSIDs, including the **MAC access filters** list.

You can edit the **MAC access filters** list via the **MAC access filters** tab on the WLAN profile page.

- You can import a prepared list of MAC addresses (*.txt. file, one line per MAC address) Use the **Browse** button to select the file from the file system. Afterwards press the **Import** button.
- To configure single MAC addresses, use the **New** button in the **General settings** section. Enter the address in the following **New MAC access filter** dialog.
- To delete a single MAC address, click on the icon left behind the address entry. Use the **Delete all** button to delete the entire list.
- Using the **Save** button you can export the MAC address filter list.

The **Associate** column indicates for each MAC address if the respective WLAN client is currently connected to the WLAN.

7.8.1.2 Deleting WLAN Profiles

To delete an existing WLAN profile:

1. You cannot remove WLAN profile that is in use. To remove a currently used WLAN profile, you must select another WLAN profile for all assigned RFPs first (see section 7.6.3.
2. On the **WLAN profiles** page click on the icon next to the profile entry.
   The **Delete WLAN profile?** dialog opens showing a summary of the WLAN profile's configuration.
3. Press the **Delete** button.

7.8.1.3 Exporting WLAN Profiles

To simplify the configuration of wireless devices, you can export SSID configuration to a XML WLAN profile file. To export the configuration, click on the icon.

On Windows 7 you can use the "netsh wlan add profile filename=xxx" command to import a WLAN configuration. Many other tools to import WLAN configuration files are available for Windows Vista / Windows XP systems (for example wlan.exe from Microsoft).

7.8.2 "WLAN CLIENTS" MENU

The **WLAN clients** page shows the status of all WLAN clients currently connected to the WLAN. This can be used for example for troubleshooting purposes. The display shows the total number of connected

WLAN clients and a list of RFPs that are part of the WLAN. For each RFP, the WLAN client connected to the RFP are listed. You can view the **MAC address** and the current **Status** of each WLAN client.

7.9 “SYSTEM FEATURES” MENU

The **System features** menu allows administration of system features concerning call number handling and directory access.

7.9.1 “DIGIT TREATMENT” MENU

A number manipulation is provided by the digit treatment feature for corporate directories that handles both incoming and outgoing calls.

Digit treatment for LDAP directories

A chosen number from an LDAP directory entry is checked against the external prefix pattern and if a pattern matches, it is replaced by the configured internal prefix pattern. Only the best matching rule will be applied.

Before a rule is applied, the following characters are automatically removed from the LDAP directory entry: ‘%’, space, ‘(’ and ‘)’. The result of the conversion is sent to the DECT phone to be displayed e.g. in the directory entry details and entered in the redial list.

Note: A conversion performed for an LDAP directory entry can be reversed if the rule is also activated for an outgoing call.

Incoming call

The calling party number of an incoming call is checked against the configured external prefix pattern and if a pattern matches it will be replaced by the internal prefix pattern. Only the best matching rule will be applied.

The result of the conversion is sent to the DECT phone to be displayed and entered in the call log[1].

Outgoing call

The dialed number of an outgoing call is checked against the configured internal prefix pattern and if a pattern matches it will be replaced by the external prefix pattern. This applies to en-bloc dialed numbers and to overlap sending as long as the SIP session has not been initiated.

Note: To support digit treatment and overlap sending, it is necessary to have a dial terminator configured.

The result of the conversion is not sent to the DECT phone to be displayed or entered in the call log[2].

The following tasks can be performed on the **Digit treatment** page:

---

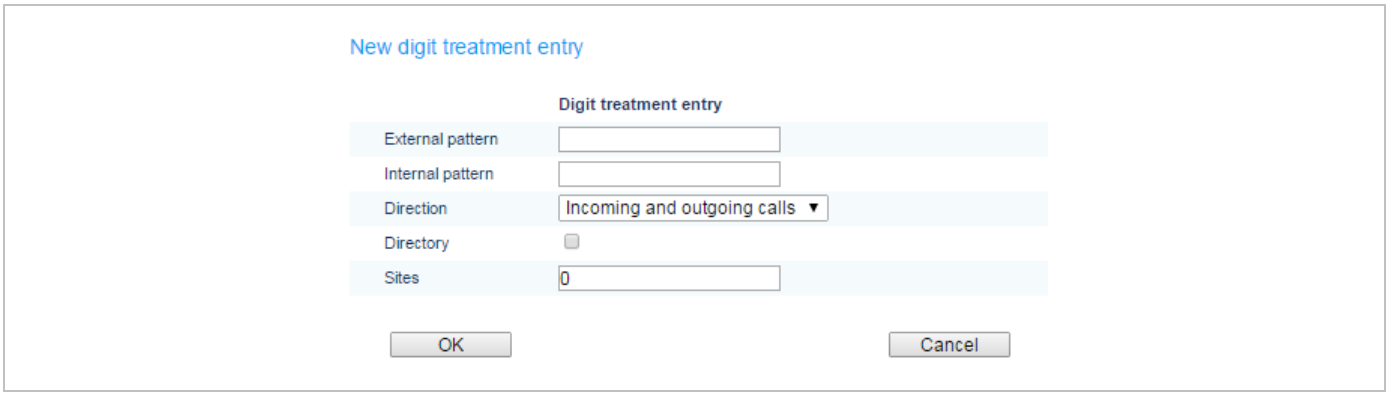
[1] For Incoming Call/Calling Party Number: Depending on the capabilities of the DECT phone and the level of integration.

[2] For Outgoing Call/Called Number: If the user dials the number from the redial list again, the same procedure will be applied as for the initial dialing.

- creating and changing “Digit treatment” entries (see section 7.9.1.1)
- deleting “Digit treatment” entries(see section 7.9.1.2)

7.9.1.1 Creating and Changing “Digit treatment” Entries

1 To configure a new entry, click the **New** button on the **Digit treatment** page.
To change the configuration of an existing entry click on the icon left beside the entry.
The **New digit treatment entry** or the **Configure digit treatment entry** dialog opens.



2 **External pattern**: Enter an external prefix pattern with up to 32 characters that matches an incoming call number or a number received via a directory entry. The prefix to be substituted for calling party numbers has the same character set as the user telephone number (e.g., :”+*~#,;.-_!$%&/()=?09aAzZ”).

3 **Internal pattern**: Enter an internal prefix pattern with up to 32 characters that replaces the external pattern for the directory entry / incoming calls or vice versa for outgoing calls. An internal prefix pattern can be composed of characters “*”, ”#” and “0” – “9”.

> **Please note:** The plus character (“+”) can only be dialed and transferred to a call log with a Mitel 600 DECT phone.

4 **Direction**: Select one of the following options:
- “Incoming calls”: Rule applies on incoming calls.
- “Outgoing calls”: Rule applies on outgoing calls.
- “Incoming and outgoing calls”: Rule applies on incoming and outgoing calls.
- “Apply on directory only”: Rule applies to directories only.

5 **Directory**: This option can be used to specify the rule for incoming and/or outgoing calls. Activate this option if the rule applies to directories.

6 **Sites**: Specifies the sites for which a rule is applied e.g. “1, 2” (see section 7.5). If set to “0”, the rule applies to all sites i.e. the rule will be applied to all calls or corporate directory requests.

7 Press the **OK** button.

7.9.1.2 Deleting “Digit treatment” Entries

To delete an existing entry:

1 On the **Digit treatment** page click on the icon left behind the entry.

The **Delete digit treatment entry?** dialog opens showing the current configuration of this entry.

2 Press the **Delete** button.

7.9.2 “DIRECTORY” MENU

The **Directory** menu allows you to manage connections to one or more LDAP or XML servers that in turn facilitate central corporate directories. The OMM supports multiple LDAP or XML servers with specific parameter settings to support different types of directories e.g. global corporate directory, group specific directory, personal directory. XML-based directory services can be implemented using the XML terminal interface.

If there is more than one directory server configured, the multiple options are offered to the user as a list. The list is presented to the user if the central directory is called up e.g. via softkey or selecting central directory from the menu. The user can choose one of the entries in the list. The name of an entry shown in the list is configured in the OMM when creating the directory server entry. (Latin-1 character set is supported).

- If there is only one directory server configured, the directory function is directly started when pressing the softkey or selecting central directory from the menu.
- The name configured in the OMM is not relevant and ignored if there is only one directory server configured.
- There are up to five directory entries configurable.

The OMM determines the display order of the directories in the DECT phone menu by the order specified by the administrator.

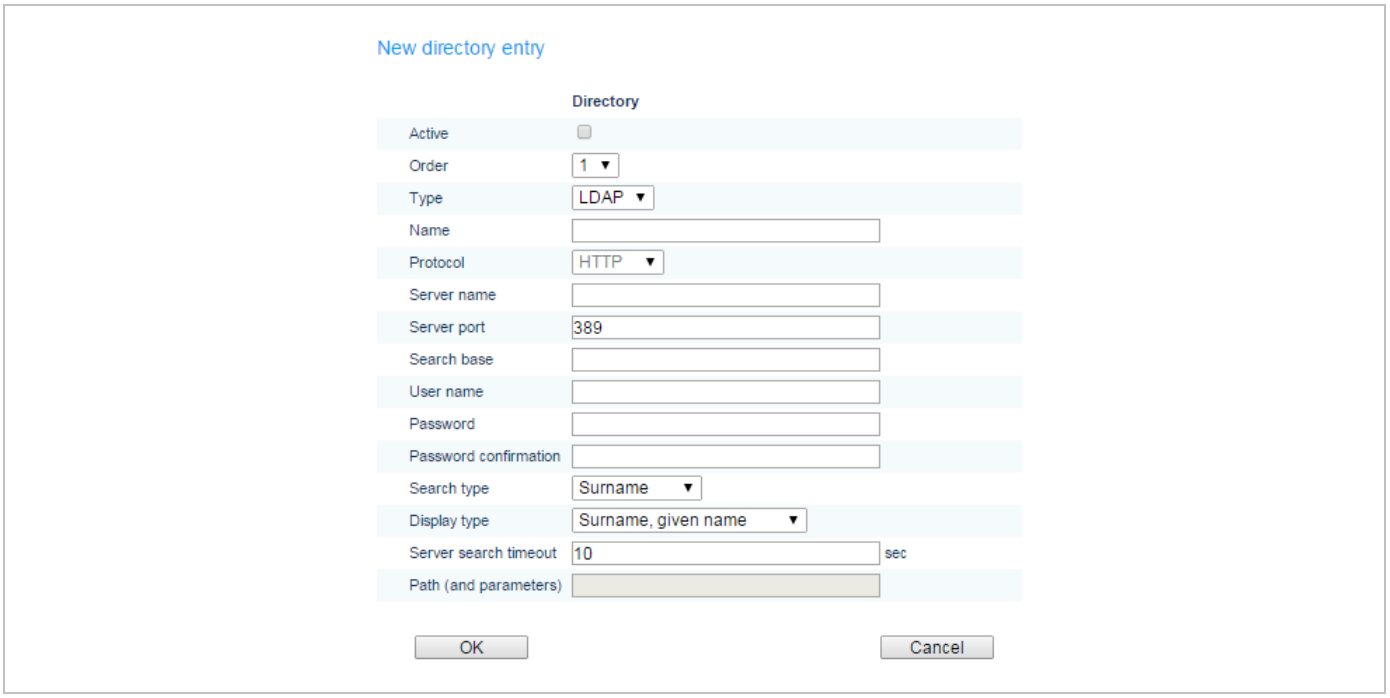
The following tasks can be performed on the **Directory** page:

- create and change directory entries (see section 7.9.1.1)
- delete directory entries (see section 7.9.2.2)

7.9.2.1 Creating and Changing Directory Entries

1 To configure a new directory entry, click the **New** button on the **Directory** page.
To change the configuration of an existing entry click on the  icon left behind the entry.

The **New directory entry** resp. the **Configure directory entry** dialog opens.



2 In the **New directory entry** / **Configure directory entry** dialog enter the parameters for the LDAP access, see parameter description below.

3 Press the **OK** button to create or change a directory entry.

The following parameters can be set per directory entry:

- **Active flag**: allows enabling/disabling of a specific entry.
- **Order**: determines the position in the DECT phone menu (1 – top; 5 – bottom).
- **Type**: Select the protocol that is supported by the directory server (**LDAP** or **XML**).
- **Name**: Enter a name for the directory entry. Latin-1 character set is supported.

  Note: The name configured here is not relevant and ignored when the DECT phone user searches for a call number in the telephone's central directory if there is only one directory entry configured.
- **Protocol**: This setting applies only to XML directory entries. Select the preferred transfer protocol.
- **Server name** (mandatory): Enter the name or IP address of the directory server.
- **Server port** (mandatory): This setting applies only to LDAP directory entries. Enter the server port number (default: 389).

  Note: SSL (default port 689) is not supported.
  Windows® Active Directory Server uses port 3268.
- **Search base**: This setting applies only to LDAP directory entries. The search base must be edited (e.g. "ou=people,o=my com").
- **User name**, **Password**, **Password confirmation**: User name (a distinguished name) and password may be filled if requested by the directory server. Otherwise an anonymous bind takes place.

  Note: SIP-DECT supports LDAP simple bind.
- **Search type**: This setting applies only to LDAP directory entries. Searches will be done for one of the following attributes:

  – Name (sn) // Surname (default)

  – First name (Given name)

- **Display type**: This setting applies only to LDAP directory entries. Selection between the following two alternatives is possible:

  – Surname (sn), first name (given name) (default)

  – first name (Given name) and Surname (sn)
- **Server search timeout**: This setting applies only to LDAP directory entries. The search results will be accepted within the entered search time (value range: 1 - 99 sec).

  The configuration is valid for all DECT phone DECT phones which support the LDAP directory feature. To make search requests unique for different users the search base configuration can include placeholders which are replaced by user specific values when submitting the LDAP request to a server. The following placeholders are defined:

  “<TEL>” which is replaced by the specific telephone number of the user

  “<DESC1>” which is replaced by the “Description 1” attribute value of the user

  “<DESC2>” which is replaced by the “Description 2” attribute value of the user
- **Path (and parameters)**: This setting applies only to XML directory entries. Enter the URL (if required with parameters) where the XML directory is located on the directory server.

Note: The telephone number in SIP-DECT is not limited to numeric characters.

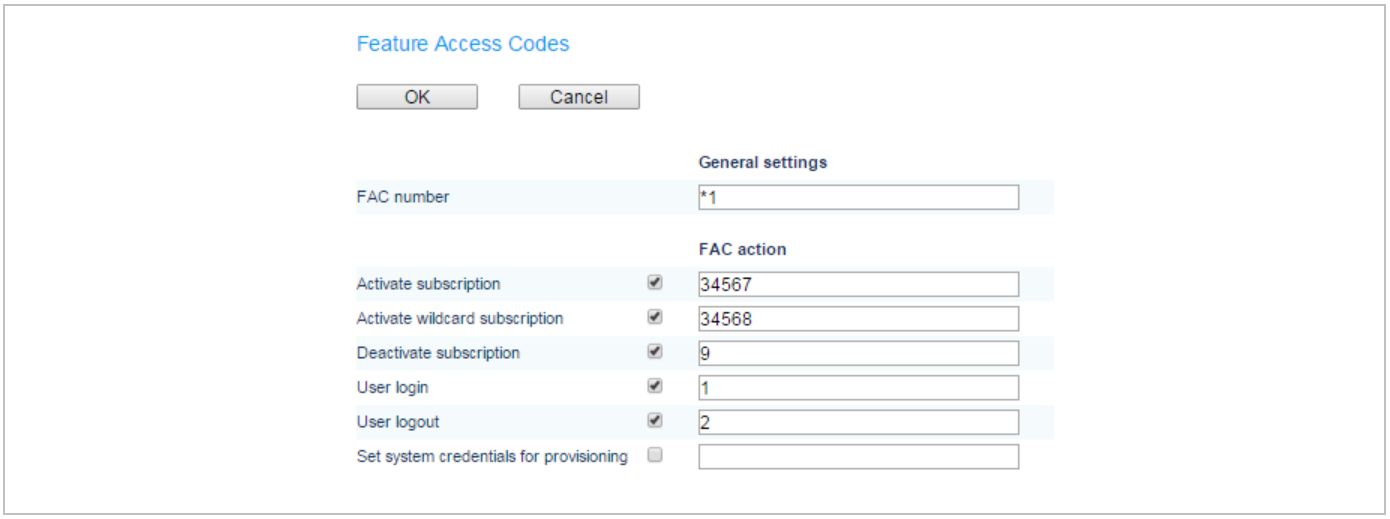
7.9.2.2 Deleting Directory Entries

1 To delete an existing directory entry click on the icon on the left of the entry on the **Directory** page. The **Delete directory entry** dialog opens showing the current configuration of this entry.

2 Press the **Delete** button.

7.9.3 “FEATURE ACCESS CODES” MENU

Feature access codes (FAC) allow a DECT phone user to perform specific actions on the OMM from any subscribed DECT phone.



To configure the FAC feature:

1 **FAC number**: Enter a unique FAC number.

2 Activate the appropriate checkbox(es) to enable the corresponding FAC feature(s). For each enabled FAC feature enter an assigned access code.

3 Enable the **Set system credentials for provisioning** parameter to allow a user to set system credentials via the Mitel 600 DECT phone using the FAC code.

4 Press the **OK** button.

Afterwards the appropriate action can be performed by dialing the “FAC number” followed by the “FAC access code” en-bloc from any subscribed DECT phone.

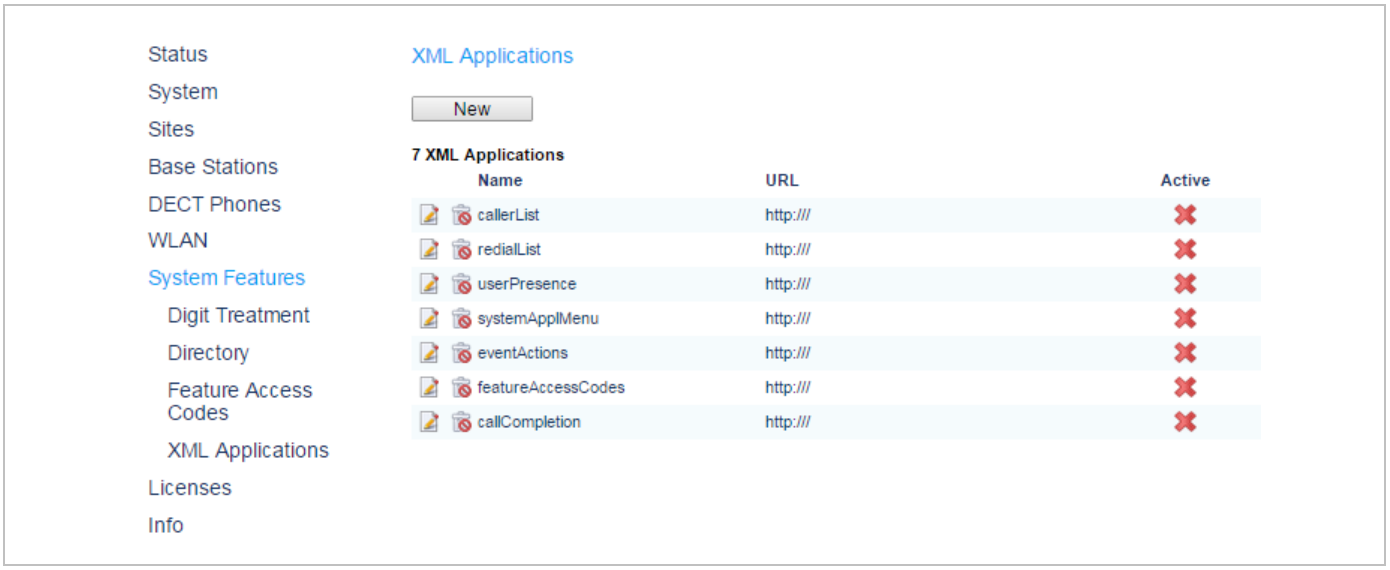
In the example above a subscribed user can activate the OMM DECT subscription by dialing “*134567” en-bloc.

> **Please note:** Overlap sending is not supported for FAC. “FAC number” and “FAC action code” must be entered en-bloc.

FAC functions will be confirmed by an audible indication to the user (in-band tone signals).

7.9.4 ”XML APPLICATIONS” MENU

The SIP-DECT® XML terminal interface allows external applications to provide content for the user on the Mitel 600 DECT phone display and much more. To make the XML terminal interface applications available for the DECT phone user, you must configure the appropriate hooks in the **XML Applications** menu.



The following hooks are predefined:

- **callerList**: hook to replace the local caller list (displayed with “Info > Caller List” DECT phone menu entry)
- **redialList**: hook to replace the local redial list (displayed with “Info > Redial List” DECT phone menu entry)
- **userPresence**: hook to reach a presence application (displayed as additional “Presence” DECT phone menu entry)
- **systemApplMenu**: hook to reach a server menu (displayed as additional “System > Server” DECT phone menu entry)
- **eventActions**: URI to be called in case of user/device events
- **featureAccessCodes**: hook to provide “Feature Access Codes Translation”

- **callCompletion**: hook to provide a “callback” option in the DECT phone menu when a user places an outgoing call and wants to request a callback before releasing the call.

These hooks can be activated or deactivated but not deleted. Up to 10 additional hooks can be created dynamically.

For more information on creating, activating or deleting XML hooks, see section 8.13.2.

7.10 “LICENSES” MENU

The **Licenses** page provides an overview on the currently used license. On this page you can also import an activation or license file:

1 Select the path and file name where the activation or license key is stored.

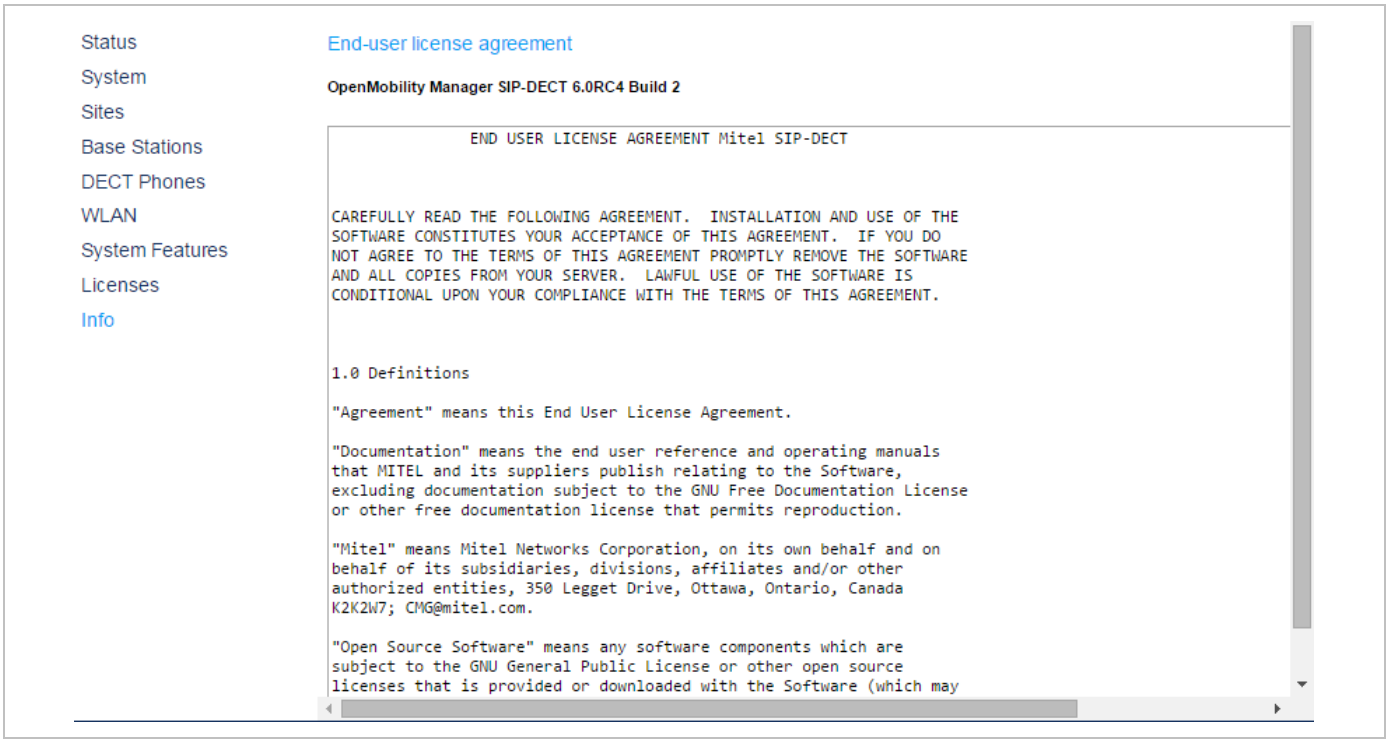
2 Click the **Import** button.

For a detailed description on the OMM licensing model see section 6.

7.11 “INFO” MENU

On the **Info** page, the End User License Agreement (EULA) is displayed.

With the first login into a new SIP-DECT software version, this page is displayed automatically and the user must accept the EULA by clicking the **Accept** button.



8 OM MANAGEMENT PORTAL (OMP)

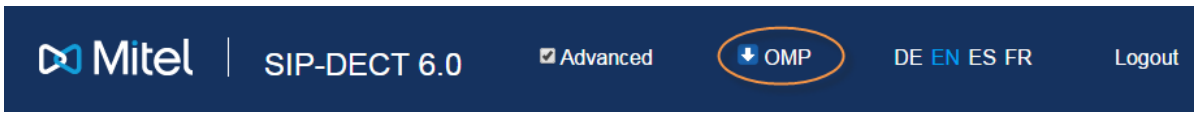
The OM Management Portal (OMP) is a Java tool used to manage the SIP-DECT solution. It can be used to view and configure OMM system data and has integrated monitoring and other maintenance features.

SIP-DECT supports Java web start to start the OMP. Java 1.7 is required to run OMP 5.0 or later. By default, the source for the OMP binary is a Mitel web server (RFP-OMM) or the OMP.jar from the RPM installation (PC-OMM).

You can also configure a different source (**System settings** -> **OMP web start** in the OMM Web service, or **System** -> **Advanced settings** -> **Additional services – OMP web start** in the OMP). The following configuration order is used:

- GUI-configured OMP web start URL in RFP-OMM installations
- Environment variable 'OM_WebStartUrl' (e.g. set by ipdect.cfg configuration file)
- Mitel web server (RFP-OMM) / from RPM installation (PC-OMM)

You can download the OMP jar file from the OMM Web service by clicking on the OMP link in the top bar:



Double-click on the downloaded file (OMP.jnlp) and click "Run" in the dialog window. The OM Management Portal starts and prompts for login credentials.

Please note: Configuration of a non-default source must not contain login credentials because this is not supported by the Java Web Start mechanism. The HTTP/FTP server must be configured accordingly.

This section lists all parameters which can be configured and viewed using OMP. All parameters which are also accessible by the OM Web service are described in the appropriate OM Web service section (section 7). New parameters which are only accessible via OMP are described in this section.

8.1 LOGIN

The OMM allows more than one user at a time to configure the system.

To log in to the system enter the following data:

- **IP address** of the OMM.
- **User name**, **Password**: Enter a user name and a password. Both strings are checked case sensitive.
  With initial installation or after removing the configuration file, the OMM Web service is accessible via a default built-in user account with user "omm" and password "omm".

The **System name** is set by the system administrator after first successful login to the OMM, see section 8.5.1.

The system name and the IP address of successful logins are stored in the local OMP preferences and can be reselected for further logins. Up to 10 different login datasets can be stored.

- On a Linux system, preferences are stored in the users home directory “~/.java/.userPrefs/…”.
- On a Windows system, preferences are stored in the registry node “HKEY_CURRENT_USER/Software/JavaSoft/Prefs/…”.

After login the OMP is set to the configuration mode page showing the system status page which contains health state information of the connected OMM (see section 8.4). If there is a version difference between the OMP and the OMM, this will also be indicated here. Details can be viewed in the **Help**: **About AXI** menu (see section 8.16).

8.2 LOGOUT

There is no automatic logout for the OMP. The user must log out manually.

To log out from the system:

- click on the Close icon in the upper right corner of the OMP window
- select the **Exit** entry from the **General** drop-down menu.

Note: If the OMM link is broken, the OMP asks if you want to reconnect to the OMM. In that case, you must enter the login data again.

8.3 OMP MAIN WINDOW

The header of the OMP window shows the version of the connected OMM.

“OMP mode” toolbar buttons

The OMP provides different modes: **configuration mode, monitor mode** and **planning mode**. Configuration mode allows changing of parameters. In monitor mode, parameters are only displayed, but are not changeable. Monitor mode provides additional features, e.g. system and RFP statistics and RFP synchronization monitoring. Planning mode enables the creation of graphics which can be used with the OM Locating application to visualize the placement of the RFPs (see also /27/).

To select the desired mode, press the appropriate button in the upper toolbar of the OMP window:

-  Configuration mode
-  Monitor mode
-  Planning mode

Main menus

The OMP provides two main menus which are available in all program situations:

- **General** menu, see section 8.15.
- **Help** menu, see section 8.16.

Navigation panel

Both configuration and monitor mode contain a navigation panel. This panel contains the mode-dependant menu.

Status bar

The status bar is located at the bottom of the main window. It shows the following items:

- Encryption state:

  The  icon indicates that encryption is enabled.

  The  icon indicates that encryption is disabled.

  This setting can be configured in the **DECT** tab of the **System settings** menu (see also section 8.5.1).
- PARK,
- Subscription state: Clicking on one of the following icons enables / disables subscription.

  The  icon indicates that subscription is enabled.

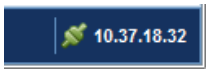
  The  icon indicates that subscription is disabled.

  Subscription can also be enabled / disabled in the **DECT phones** menu (see also section 8.7.8).
- Auto-create on subscription state: Clicking on one of the following icons enables / disables Auto-create on subscription.

  The  icon indicates that Auto-create on subscription is enabled.

  The  icon indicates that Auto-create on subscription is disabled.

  This setting can also be configured in the **DECT** tab of the **System settings** menu (see also section 8.5.1).
- Connection status to the OMM:

  If connected to the OMM, the IP address of the OMM is displayed.

   OMP is disconnected from the OMM.

Info console

General OMP events are displayed the **Info console**.

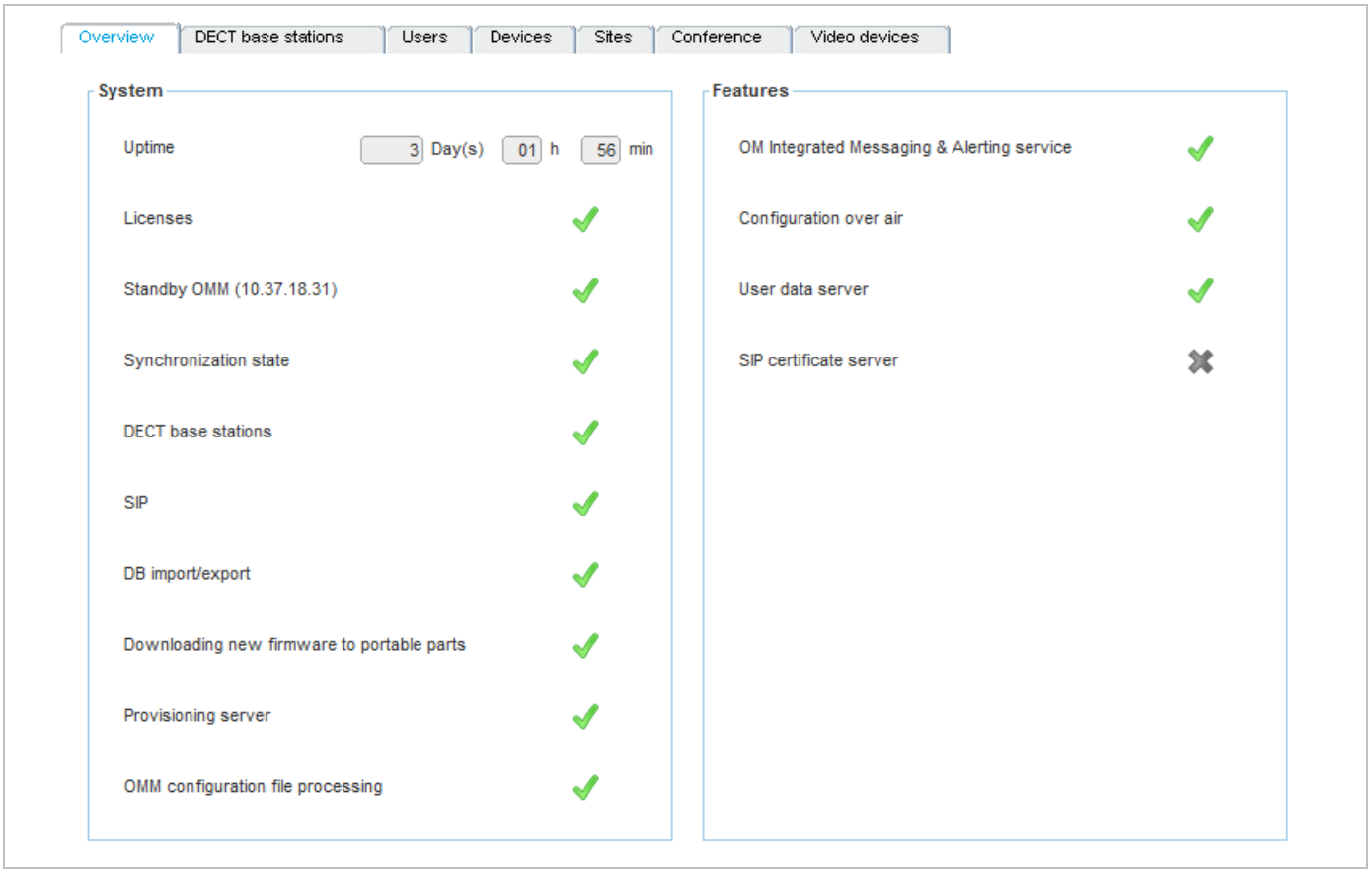
8.4 “STATUS” MENU

The system status is displayed after startup of OMP. The **Status** panel provides information about the system health states, and contains the following tabs:

- Overview (see section 8.4.1)
- DECT base stations (see section 8.4.2)
- Users (see section 8.4.3)
- Devices (see section 8.4.4)
- Sites (see section 8.4.5)
- Conference (see section 8.4.6)
- Video devices (see section 8.4.7)

8.4.1 OVERVIEW

The “Overview” tab consists of a “System” panel providing general system health states information and a “Features” panel which shows health states of system features. Some of these features are optional; that means the relevant health state is only shown if the feature is activated in system.



The “Overview” tab shows following system information:

- **System uptime**: Elapsed time since OMM start (in days, hours and minutes)
- **Licenses**: Licenses health state
- **Standby OMM**: Standby OMM IP address and health state of standby configuration (if no standby OMM is configured a grey cross is shown)
- **Synchronization state**: Synchronization health state
- **DECT base stations**: Base stations health state
- **SIP**: SIP health state
- **DB import/export**: DB import/export health state
- **Downloading new firmware to portable parts**: (Health) state of firmware download to DECT phones
- **Provisioning server**: Health state of provisioning server health state
- **OMM configuration file processing**: Health state of configuration file processing.

Depending on OMM system configuration, the “Features” tab consists of all or a subset of these health states:

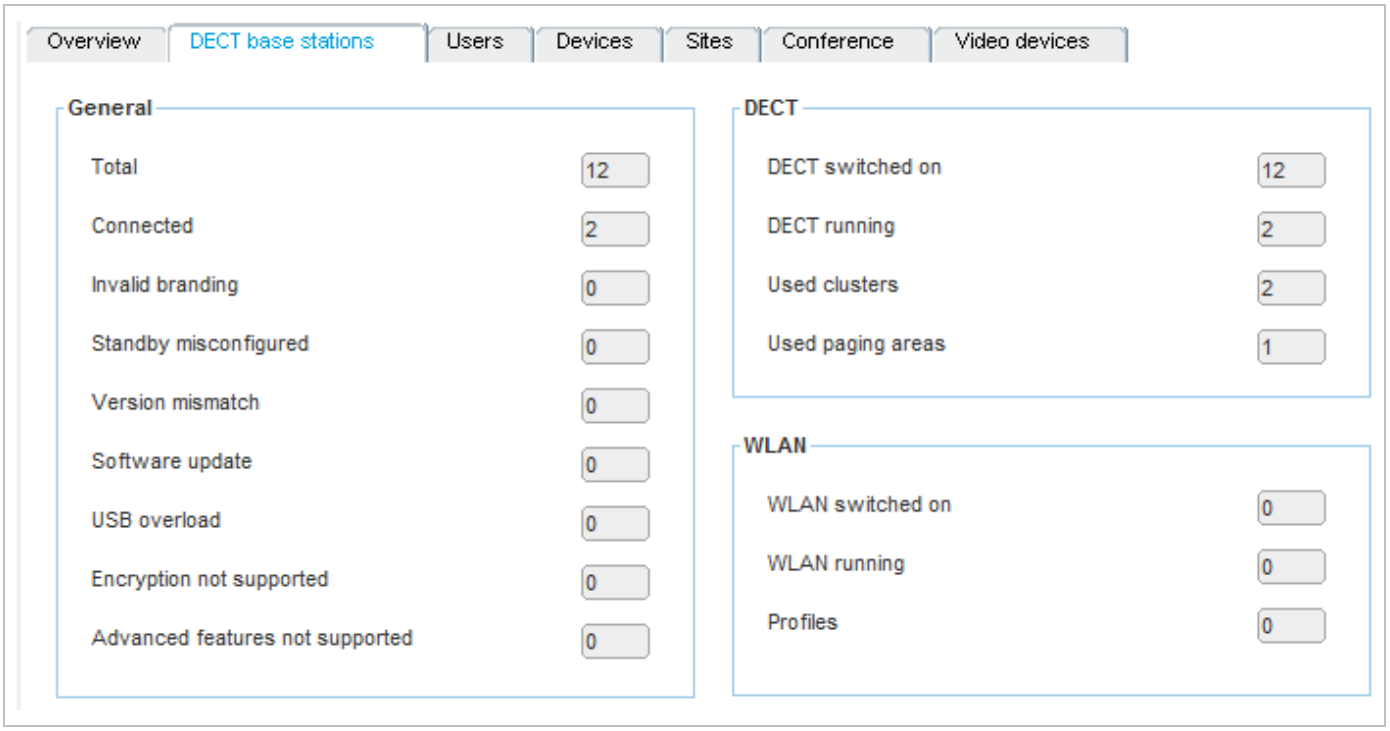
- **OM Integrated Messaging & Alerting service**: Messaging and alerting feature health state (always active)
- **SIP certificate server**: SIP certificate server health state (always active)
- **Configuration over Air**: Central DECT phone configuration over air state (optional)
- **User data server**: User data server health state (optional)
- **User monitoring**: User monitoring health state (optional)
- **Video**: Video health state (optional)

Health states can be set to these values:

-  – inactive or unknown
-  – error
-  – warning; all G.729 channels are consumed
-  – OK

8.4.2 DECT BASE STATIONS

The “**DECT base stations**” tab contains the following sections: “General”, “DECT” and “WLAN”.



The “General” panel provides counters related to RFP configuration and state:

- **Total**: Total number of RFPs configured
- **Connected**: Number of RFPs connected to OMM
- **Invalid branding**: Number of connected RFPs with invalid branding
- **Standby misconfigured**: Number of connected RFPs with wrong standby configuration
- **Version mismatch**: Number of connected RFPs running with wrong software version
- **Software update**: Number of connected RFPs requesting software update
- **USB overload**: Number of connected RFPs detecting overload at their USB port
- **Encryption not supported**: Number of connected RFPs not supporting encryption
- **Advanced features not supported**: Number of connected RFPs not supporting “Advanced features” which covers “Hi-Q audio technology”, “Terminal video”, “Enhanced DECT security” and “SRTP”.

The “DECT” panel provides counters related to RFPs DECT configuration and state:

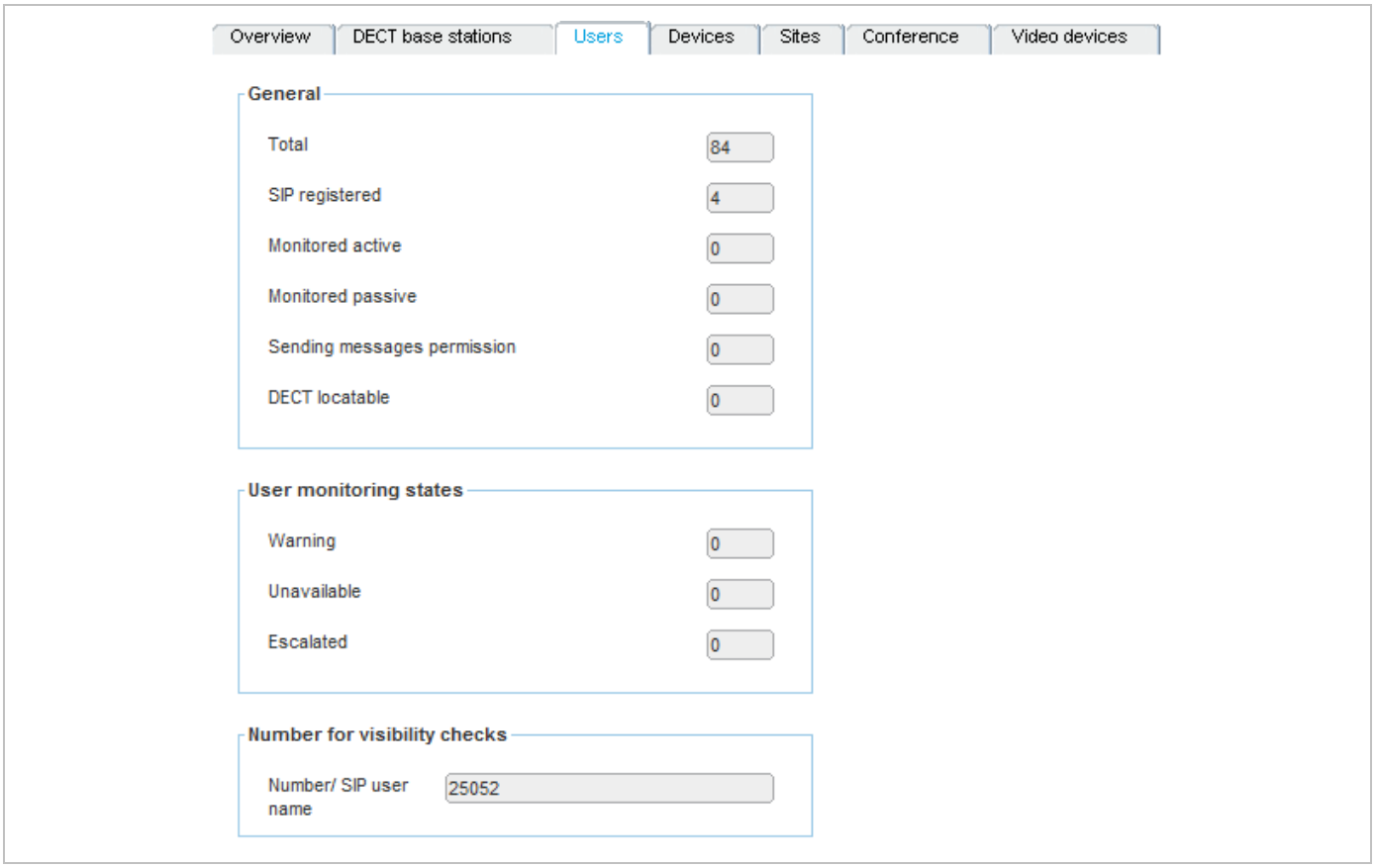
- **DECT switched on**: Number of configured RFPs with DECT switched on
- **DECT running**: Number of connected RFPs with DECT running
- **Used cluster**: Number of configured clusters
- **Used paging areas**: Number of paging areas used by RFPs

The “WLAN” panel provides counters related to RFPs WLAN configuration and state:

- **WLAN switched on**: Number of configured RFPs with WLAN switched on
- **WLAN running**: Number of connected RFPs with WLAN running
- **Profiles**: Number of WLAN profiles used by RFPs

8.4.3 USERS

The “**Users**” tab provides information about DECT phone users.



The “General” panel provides counters concerning DECT phones user configuration and states:

- **Total**: Total number of configured users
- **SIP registered**: Number of configured users registered at SIP server
- **Monitored active**: Number of configured users with active monitoring enabled
- **Monitored passive**: Number of configured users with passive monitoring enabled
- **Sending messages permission**: Number of configured users with message sending permission enabled
- **DECT locatable**: Number of configured users with DECT locatable enabled

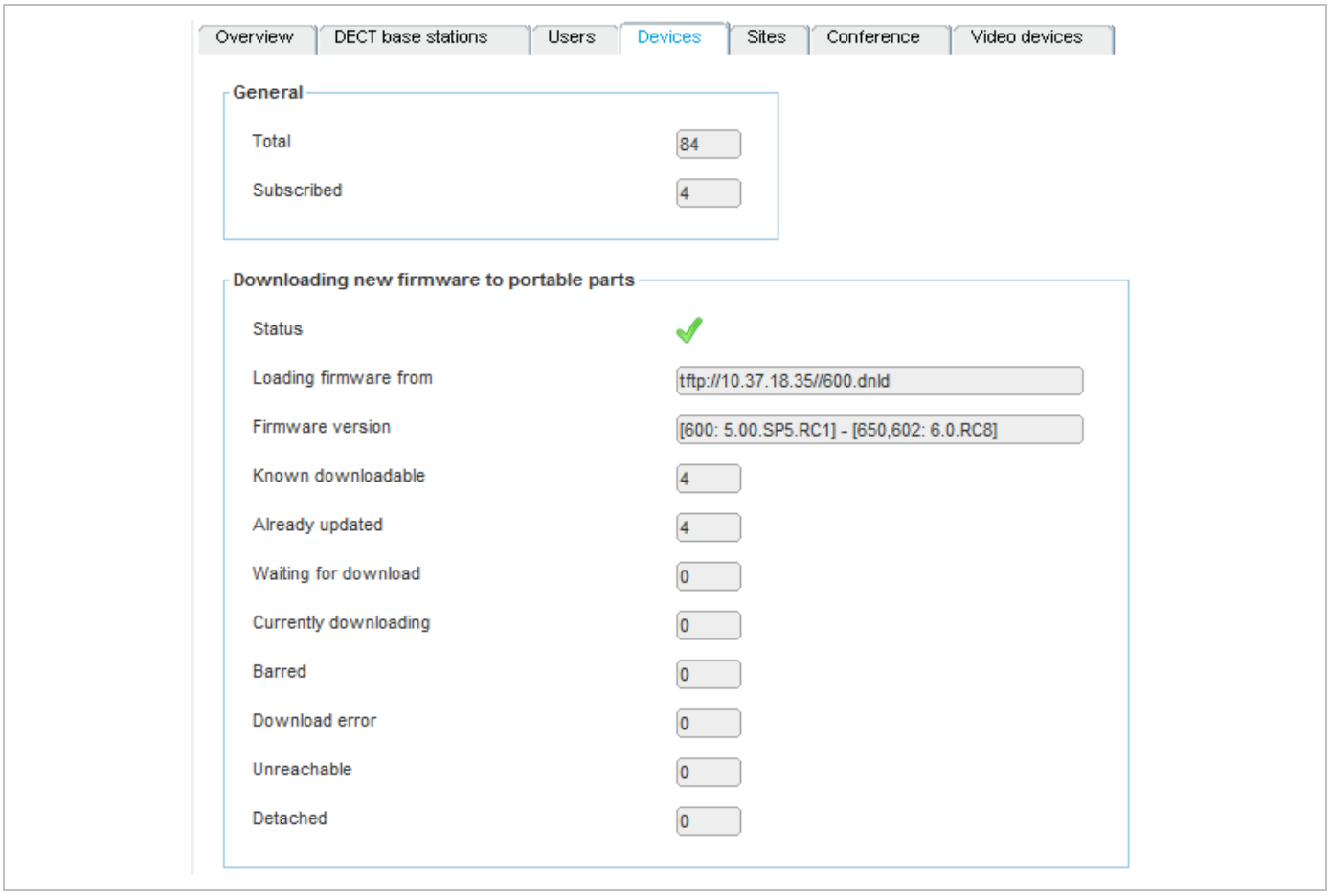
The “User monitoring states” panel provides counters concerning DECT phone user monitoring state

- **Warning**: Number of monitored users in state ‘Warning’
- **Unavailable**: Number of monitored users in state ‘Unavailable’
- **Escalated**: Number of monitored users in state ‘Escalated’

The “Number for visibility checks” panel provides phone number or SIP user name used for standby OMM visibility checks.

8.4.4 DEVICES

The “**Devices**” tab provides information about DECT phones.



The “General” panel contains counters related to DECT phones:

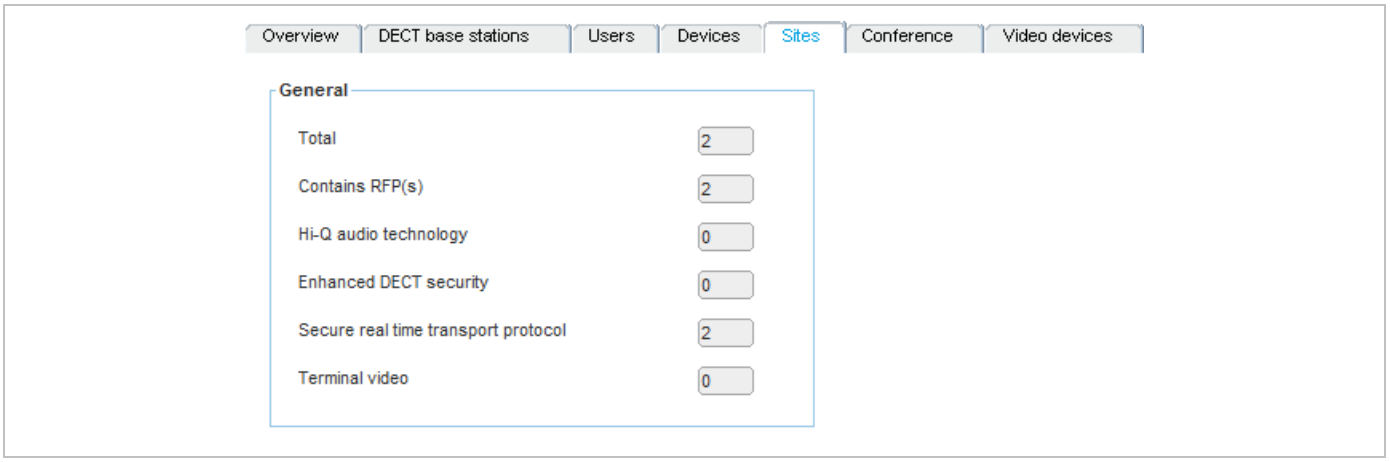
- **Total**: Total number of configured DECT phones
- **Subscribed**: Number of configured DECT phones which are subscribed to OMM

The “Downloading new firmware to portable parts” panel provides information about state of DECT phone firmware download:

- **Status**: Status of firmware download
- **Loading firmware from**: URL of firmware download container
- **Firmware version**: Version info of firmware container
- **Known downloadable**: Number of DECT phones known as downloadable
- **Already updated**: Number of DECT phones already updated
- **Waiting for download**: Number of DECT phones waiting for download
- **Currently downloading**: Number of DECT phones currently downloading
- **Barred**: Number of downloadable DECT phones currently barred
- **Download error**: Number of downloadable DECT phones with download error
- **Unreachable**: Number of downloadable DECT phones currently unreachable
- **Detached**: Number downloadable DECT phones currently detached

8.4.5 SITES

The “**Sites**” tab provides counters concerning site configuration and state:



- **Total**: Total number of configured sites
- **Contains RFPs**: Number of sites with dedicated RFPs
- **Hi-Q audio technology**: Number of sites with Hi-Q audio technology enabled
- **Enhanced DECT security**: Number of sites with “Enhanced DECT security” enabled
- **Secure real time transport protocol**: Number of sites with “Secure real time transport protocol” (SRTP) enabled
- **Terminal video**: Number of sites with terminal video enabled

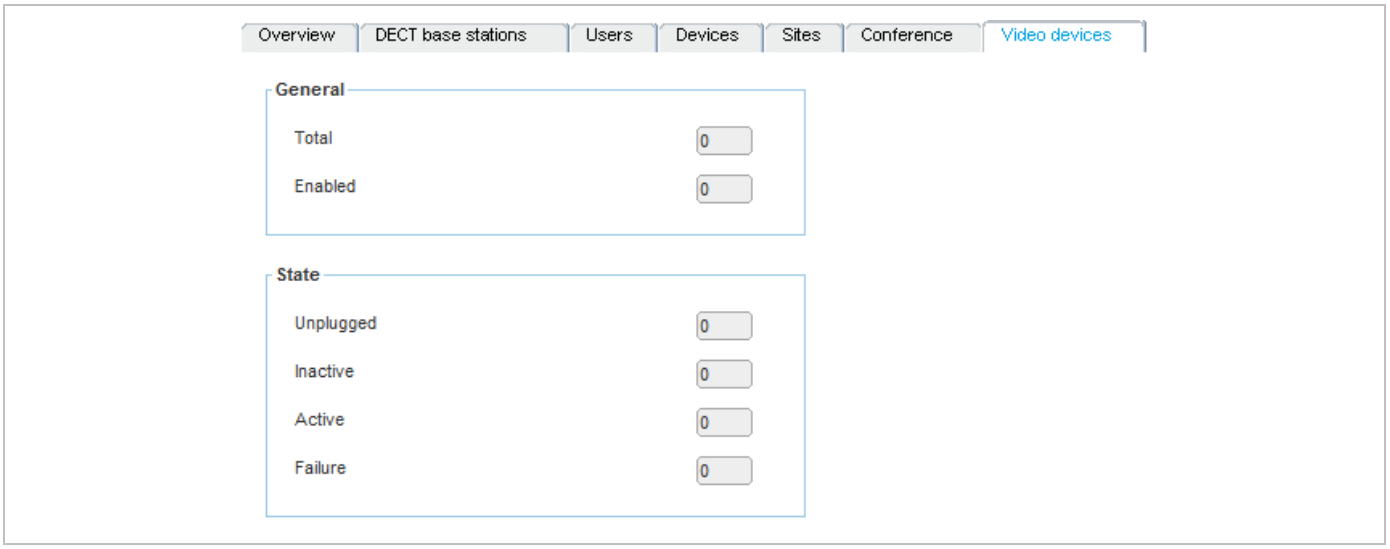
8.4.6 CONFERENCE

The “**Conference**” tab provides conference channel information:

- **Total**: Total number of conference channels in system
- **Available**: Number of currently available conference channels

8.4.7 VIDEO DEVICES

The “**Video devices**” tab provides video device state information.



The “General” panel provides video device configuration related counters:

- **Total**: Total number of configured video devices
- **Checkpoint**: Number of video devices enabled

The “State” panel provides video device state related counters:

- **Unplugged**: Number of video devices in state unplugged
- **Inactive**: Number of video devices in state inactive
- **Active**: Number of video devices in state active
- **Failure**: Number of video devices in state failure

8.5 “SYSTEM” MENU

The **System** menu allows configuration and display of global OMM settings. The system settings are changeable in configuration mode. Change of some parameters can cause the OMM to be reset. In this case a new login is required.

The **System** menu provides the following entries:

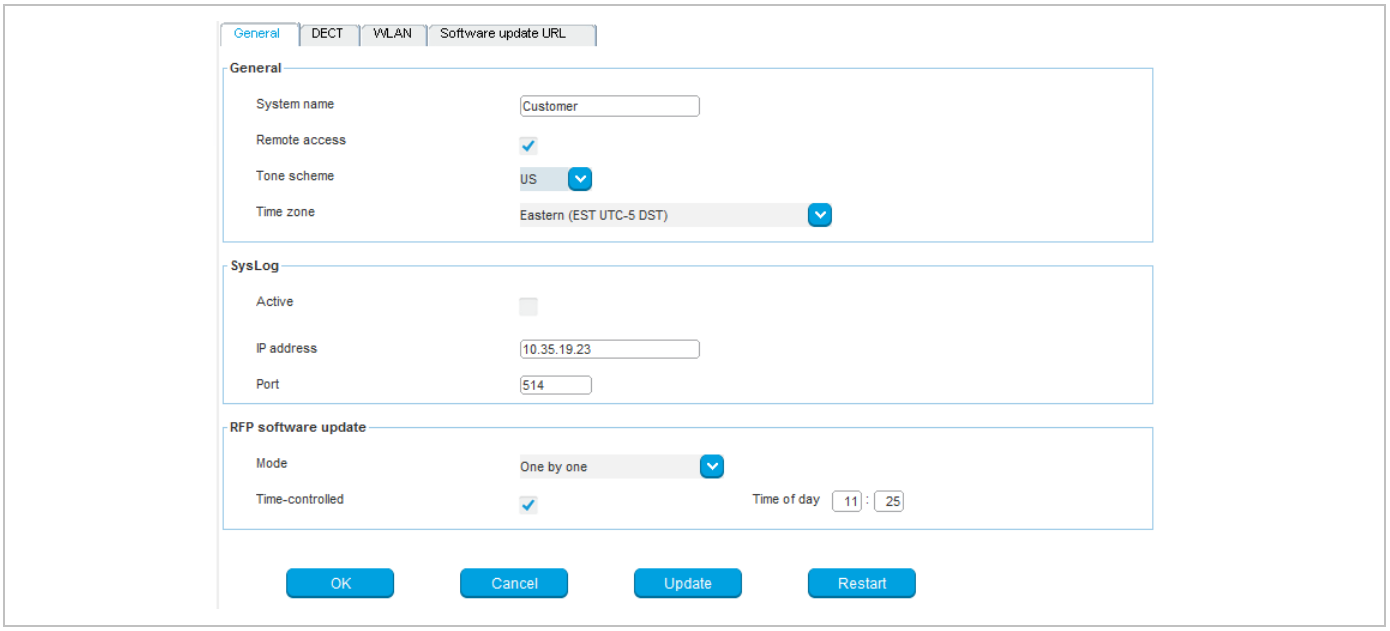
Configuration mode	Monitor mode	See section
Basic settings	Basic settings	8.5.1
Advanced settings	Advanced settings	8.5.2
	Statistics	8.5.3
SIP	SIP	8.5.4
User administration	User administration	8.5.6
Data management	Data management	8.5.7

8.5.1 “BASIC SETTINGS” MENU

The **Basic settings** menu contains general settings for the OpenMobility Manager and contains the following tabs:

- General (see section 8.5.1.1)
- DECT (see section 8.5.1.2)
- WLAN (see section 8.5.1.3)
- Software update URL (only on systems where the OMM is running on an RFP) (see section 0)

8.5.1.1 General settings



The following parameters can be set on the General tab of the “Basic Settings” menu.

General

- **System name**: Name of the SIP-DECT system.
- **Remote access**: Enables or disables SSH access to all RFPs in the DECT system. For more information on SSH access, see section 10.3.5.
- **Tone scheme**: Specifies the country in which the OMM resides, which enables country-specific tones (e.g., busy tone, dial tone, etc).
- **Time zone**: Specifies the time zone in which the OMM is operating.

Syslog

- **Active**: Enables propagation of syslog messages by the OMM and RFPs.
- **IP address**: Address of the host that collects the syslog messages.
- **Port**: Port of the host that collects the syslog messages.
- **Forward OMM Messages to syslog**: (Visible only on a PC-hosted OMM system) Enables/disables forwarding of syslog messages from the PC-hosted OMM.

RFP software update

- **Mode**: RFP update mode. Options are “One by one” (each RFP is updated separately) or “All at once” (all RFPs are updated in one operation).
- **Time-controlled**: Indicates whether the start of the RFP update is time-controlled.
- **Time of day**: Specifies the time for time-controlled RFP updates.

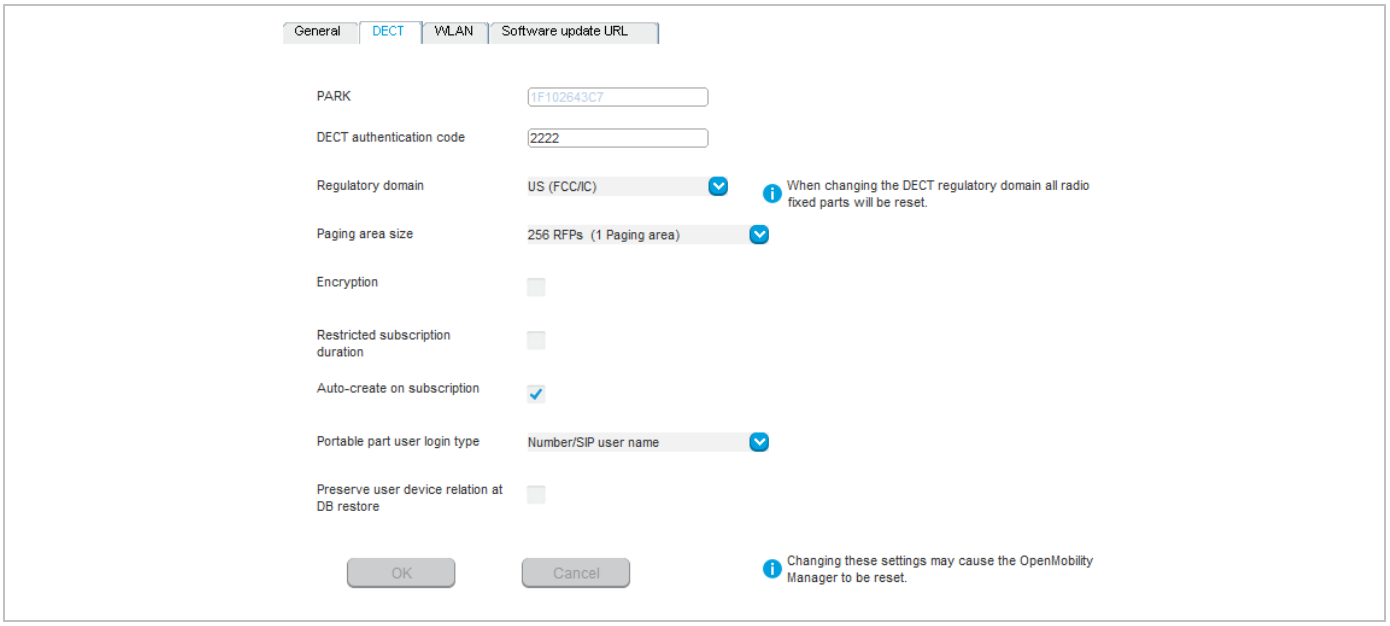
Note: Updates are not only triggered at the specified time. Triggers can be controlled through update intervals (DHCP, config files) or manually triggered via the **Update** button. See section 9.8.3 for more information.

The “General” tab contains two additional buttons (aside from default buttons):

- **Update**: Requests an immediate update of RFP software.
- **Restart:** Requests an OMM restart.

8.5.1.2 DECT settings

For a description of the parameters which can be set in the **DECT** tab, please refer to the description of the **System settings** page of the OMM Web service (see section 7.4.1). The corresponding parameters are described in the **DECT settings** and **Downloading new firmware to portable parts** page sections.

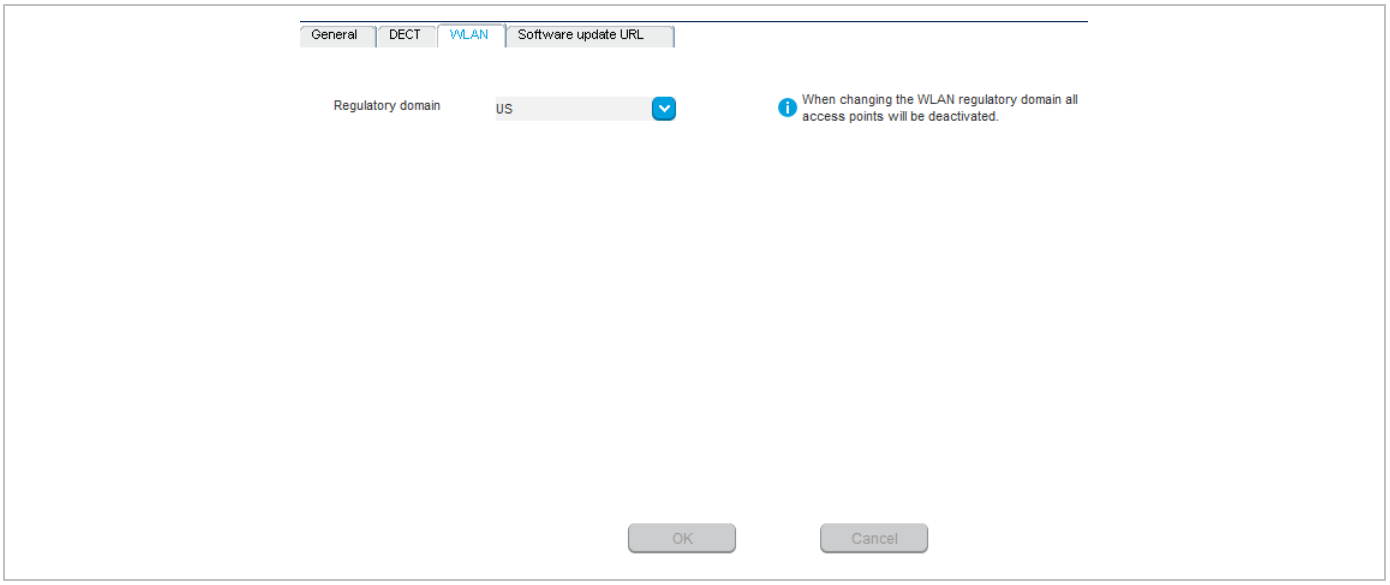


The following settings are only available in the OMP.

- **Paging area size**: Select the number of paging areas for the SIP-DECT system. A paging area can consist of up to 16 RFPs. The configuration of the paging areas is done in the **Paging areas** menu of the OMP (see section 8.7.2).
- **Restricted subscription duration**: Restricts the time period throughout which a DECT phone can be subscribed to 2 minutes. Furthermore, the subscription mode will be disabled immediately after every successful subscription of a DECT phone.
- **Auto-create on subscription**: Activate this option if an unbound subscription of DECT phones should be allowed. Please see the SIP-DECT; OM Handset Sharing & Provisioning; User Guide /29/ for details.

8.5.1.3 WLAN settings

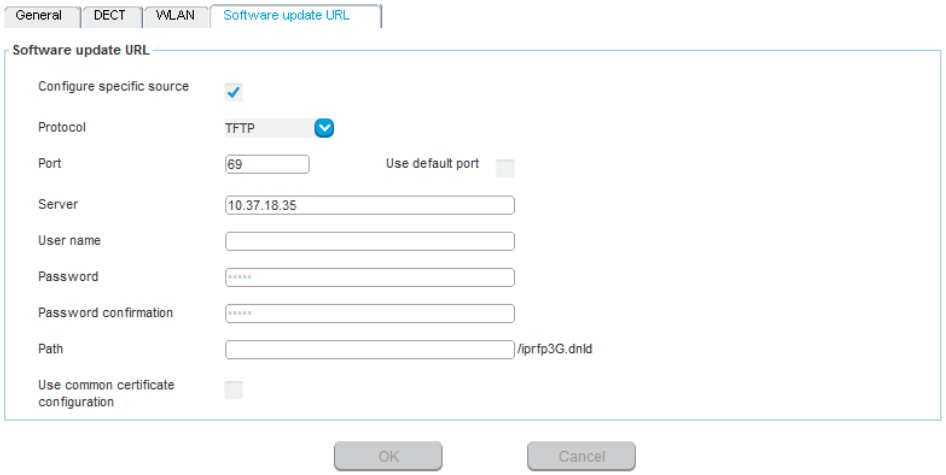
For a description of the parameters which can be set in the **WLAN** tab, please refer to the description of the **System settings** page of the OMM Web service. The same parameters are described in the **WLAN settings** section (section 7.4.1.3).



8.5.1.4 Software Update URL settings

As of SIP-DECT 6.0, RFPs in small SIP-DECT systems (~10 RFPs) can obtain their software image from the RFP OMM, if they have no valid URL from which to load their software. If the OMM is running on a RFP, the RFP OMM delivers the software to the connected RFPs.

You configure the URL for the RFP software image (iprfp3G.dnld) on this tab. This tab is only available when the OMM resides on an RFP.



For a description of the parameters that can be set in the **Software update URL** tab, see the description of the **System settings** page of the OMM Web service. The same parameters are described in the **Software update URL** section (section 7.4.1.10).

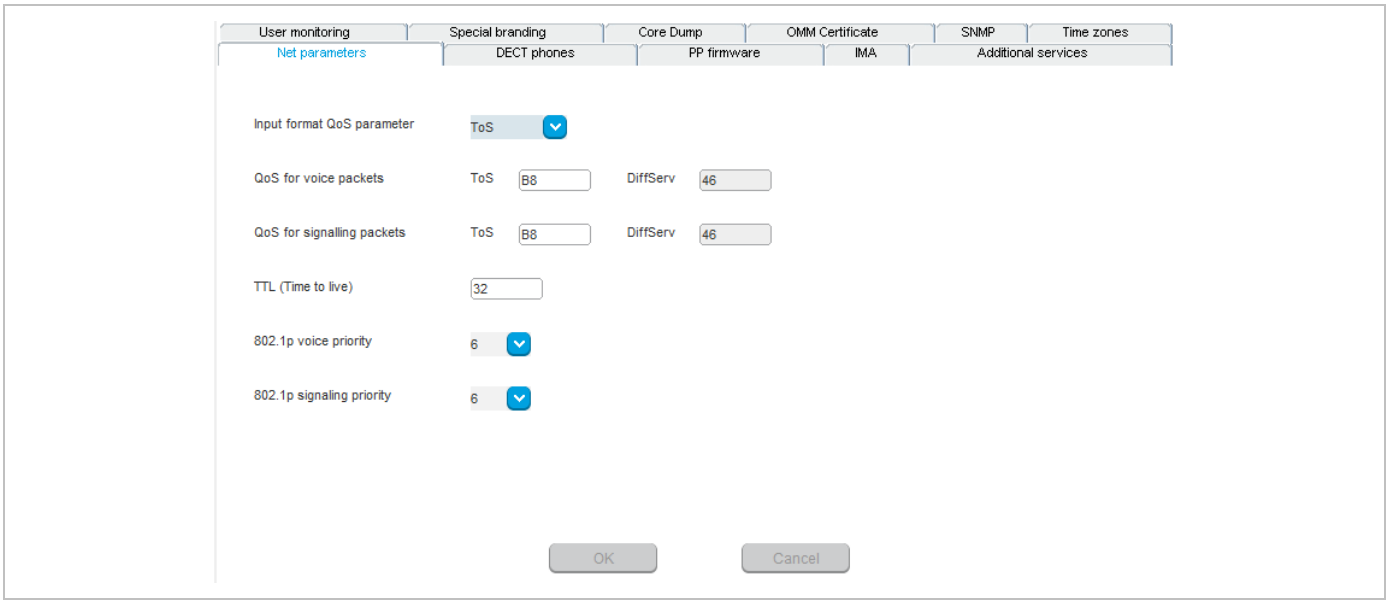
8.5.2 "ADVANCED SETTINGS" MENU

The **Advanced settings** menu contains additional settings for the OpenMobility Manager, and contains the following tabs:

- Net parameters (see section 8.5.2.1)
- DECT phones (see section 8.5.2.2)
- DECT phone firmware (see section 8.5.2.3)
- IMA (see section 8.5.2.4)
- Additional services (see section 8.5.2.5)
- User monitoring (see section 8.5.2.6)
- Special branding (see section 8.5.2.7)
- Core dump (see section 8.5.2.8)
- OMM certificate (see section 8.5.2.9)
- SNMP (see section 8.5.2.10)
- Time zones (see section 0)

8.5.2.1 Net parameters

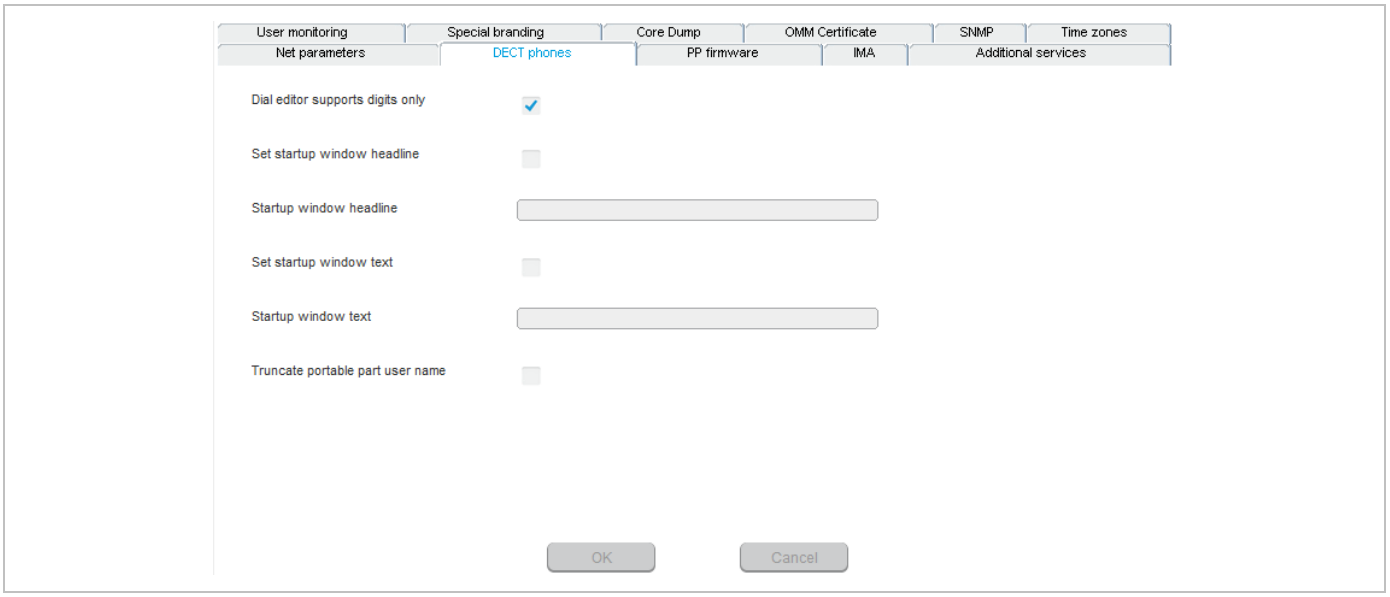
For a description of the parameters that can be set in the **Net parameters** tab, see the description of the **System settings** page of the OMM Web service. The same parameters are described in the **Net Parameters** section (section 7.4.1.12).



- **Input format QoS parameter**: format for quality of service parameter. Available options are ToS or DiffServ.
- **QoS for voice packets**: Specifies the value of the type of service (ToS) or DiffServ byte (depending on the QoS input format value) of the IP packet header for all packets that transport RTP voice streams.
- **QoS for signalling packets**: Specifies the value of the type of service (ToS) or DiffServ byte (depending on the QoS input format value) of the IP packet header for all packets related to VoIP signaling.

- **TTL (Time to live)**: Specifies the maximum hop count for all IP packets.
- **802.1p voice priority**: Specifies the VLAN priority tag for RTP packets.
- **802.1p signaling priority**: Specifies the VLAN priority tag for VoIP signaling packets.

8.5.2.2 DECT Phones



8.5.2.3 PP firmware

The OMM can provide a DECT phone firmware update over the air. If the **Activate firmware update** checkbox is enabled, the “Download over Air” feature is activated. For more information on this feature please refer to section 9.21.

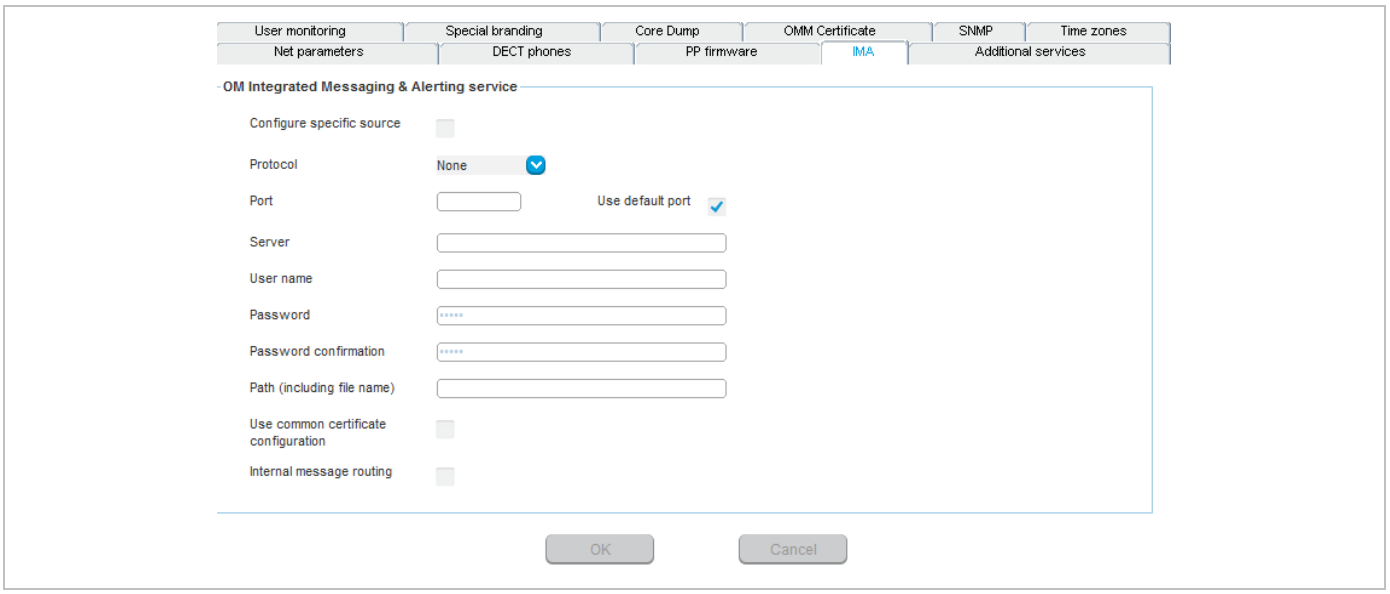
For a description of the parameters on the **PP firmware** tab, see the description of the **System settings** page of the OMM Web service. The same parameters are described in the **DECT phone’s firmware update** section (section 7.4.1.6).

8.5.2.4 IMA

The Integrated Message and Alarm (IMA) configuration is stored in the OMM database. You can configure a specific URL for the OMM to retrieve the IMA configuration file (ima.cfg). The IMA configuration remains available even if the configured server becomes unavailable.

When you set a specific URL, the OMM uses that URL to load the IMA configuration file during startup. If no specific IMA configuration file source is configured, the provisioning server settings (ConfigURL) are used to retrieve the ‘ima.cfg’ file.

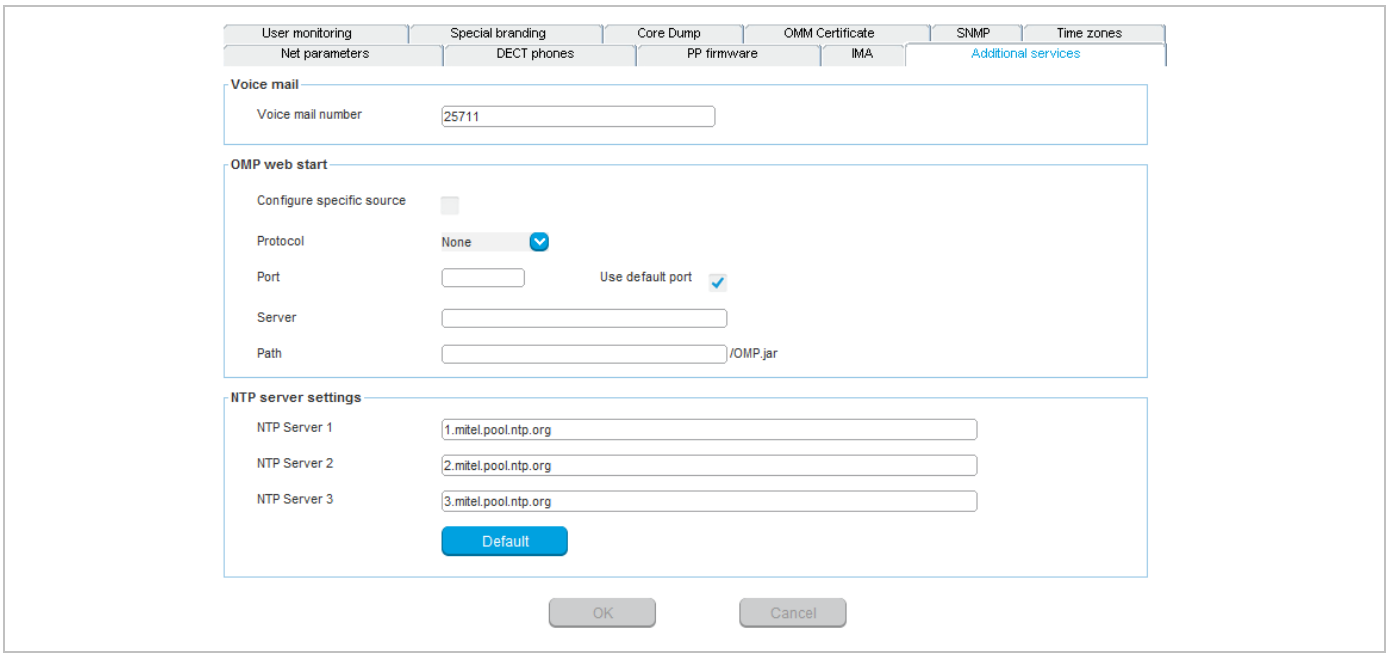
For a description of the parameters on the **IMA** tab, see the description of the **System settings** page of the OMM Web service. The same parameters are described in the **OM Integrated Messaging & Alerting service** section (section 7.4.1.8).



8.5.2.5 Additional services

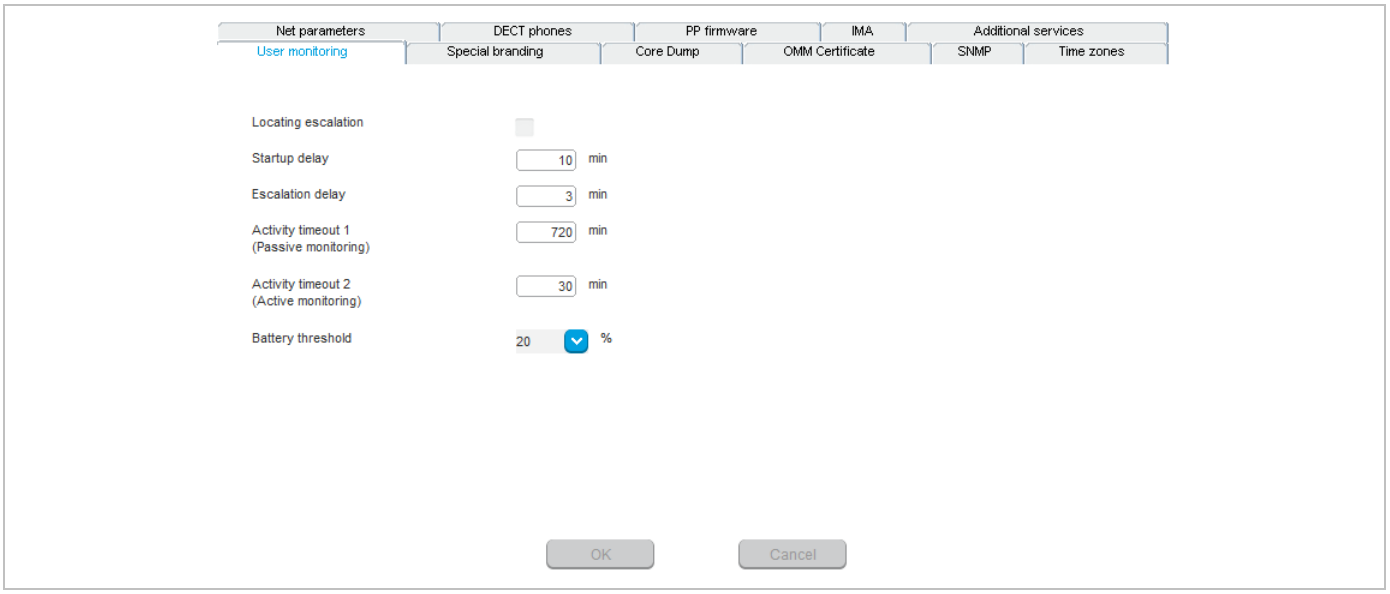
For a description of the parameters on the **Additional services** tab, see the description of the **System settings** page of the OMM Web service. The same parameters are described in the following sections:

- **Voice mail** (section 7.4.1.7)
- **OMP web start** (section 7.4.1.5)
- **Date and time** (for NTP servers) (section 7.4.1.13)



8.5.2.6 User monitoring

The **User monitoring** tab allows you to configure the system-wide parameters for the user monitoring feature.



- **Locating escalation**: If this option enabled, the alarm trigger “LOC-ERR-USERSTATE” will be generated by the OMM. Default setting is “off”.
- **Start-up delay**: The start-up delay defines the period of time the user monitoring start-up is delayed (between 2 and 15 minutes) after failover or system start-up.
- **Escalation delay**: The escalation delay defines the period of time the user monitoring will wait before the unavailable status is escalated.
- **Activity timeout 1**: The activity timeout 1 defines the maximum time (between 30 and 1440 minutes) between user activities in passive monitoring mode.
- **Activity timeout 2**: The activity timeout 2 defines the maximum time (between 5 and 60 minutes) between user activities in active monitoring mode.
- **Battery threshold**: The battery threshold defines the minimum battery load (between 0 and 100% in steps of 5%).

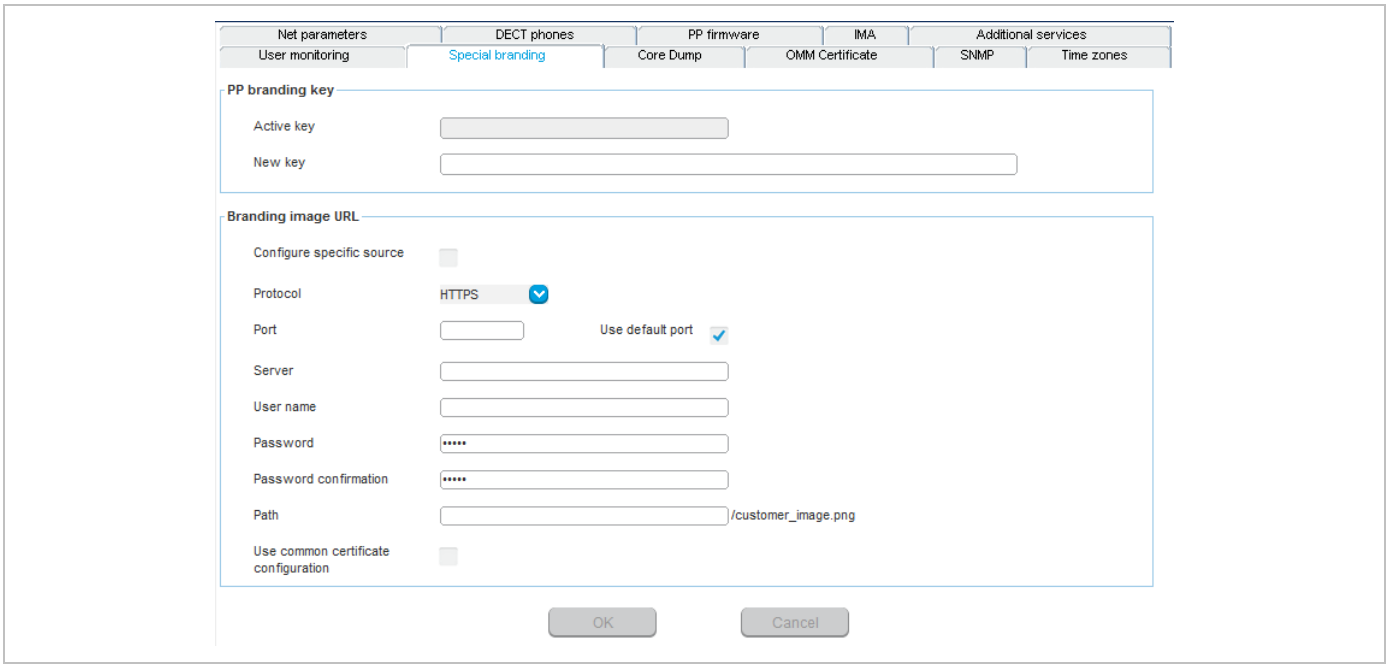
8.5.2.7 Special branding

As of SIP-DECT 6.0, you can integrate a customer-specific logo into the OMM Web service interface (displayed beside the Mitel logo in the top bar). The ”Special Branding” tab allows you to specify the location of the branding image file (customer_image.png) on an external file server.

When you set a specific URL, the OMM uses that URL to load the image file during startup. If no specific customer logo file source is configured, the provisioning server settings (ConfigURL) are used to retrieve the image file.

The branding image is stored permanently in the OMM database. The file is deleted automatically when the branding image URL configuration is disabled. The picture should not be larger than 50 pixels high and 216 pixels wide.

By special request, you can use specific branding key to lock the OMM; the key must be branded to all DECT phones before they can be subscribed. See section 9.24 for more information on this feature.



DECT phone Branding key

- **Active key**: Displays the current branding key associated with the DECT phones.
- **New key**: Specifies the new branding key generated through the `DECTSuiteBrandingInstallation.exe` utility.

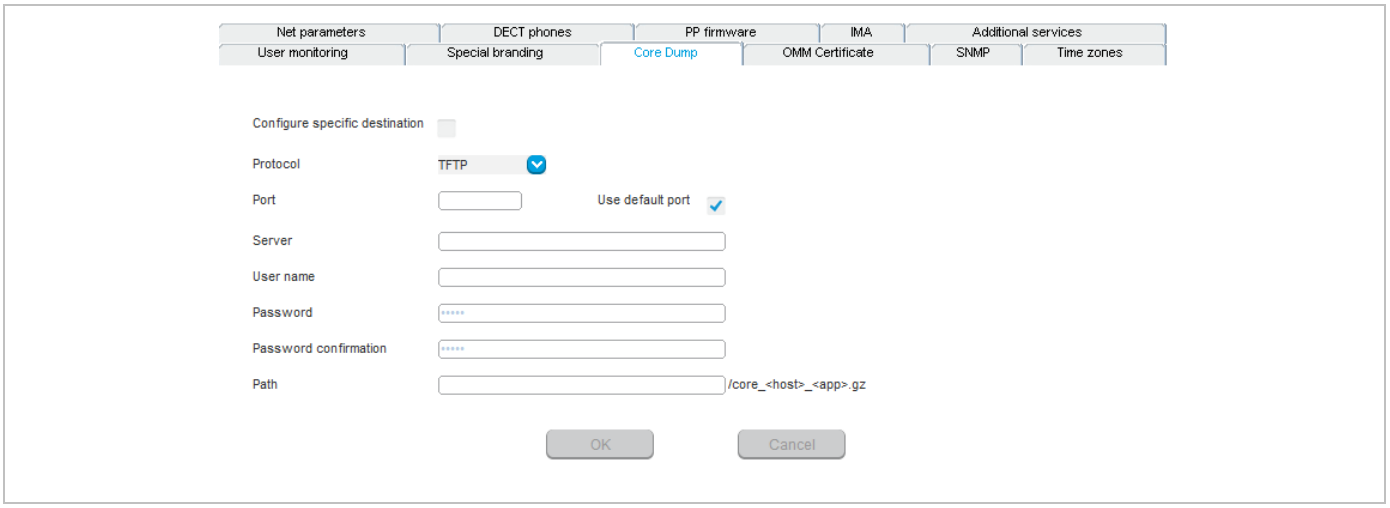
Branding image URL

- **Active**: Enables the specific URL for downloading the customer_image.png file (as opposed to the ConfigURL, which points to an external file server for all configuration and resource files).
- **Protocol**: Specifies the protocol used to fetch the image file.
- **Port**: Specifies the port of the external file server.
- **Server**: Specifies the IP address or name of the external file server.
- **User name**: Specifies the user name to authenticate on the external file server.
- **Password**: Specifies the password to authenticate on the external file server.
- **Password confirmation**: Confirms the password to authenticate on the external file server.
- **Directory**: Specifies the location of the image file on the external file server.
- **Use common certificate configuration**: Enables the use of the same certificate validation settings for the image file URL as specified for the ConfigURL.

8.5.2.8 Core Dump

Fatal software problems may result in memory dumps, in core files. The IP RFP can transfer the core files to a remote fileserver. As of SIP-DECT 6.0, you can configure a specific URL to an external file server where core dump files should be transferred and stored. The Core dump URL is used by each RFP connected to the OMM.

Without a configured Core dump URL, whether and where core files are transferred is dependent on specific RFP settings. Without any special configuration, the files are transferred to the server that is used to retrieve the system software (i.e., the directory of the boot image).

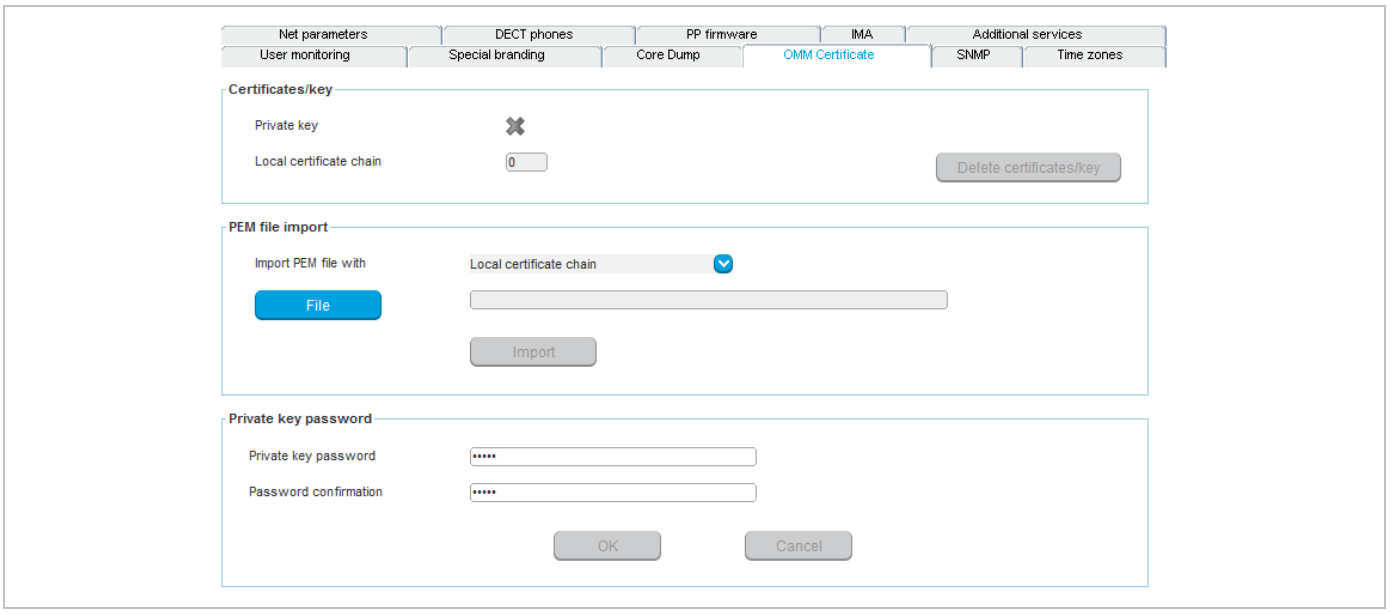


For a description of the parameters on the **Core Dump** tab, please refer to the description of the **System settings** page of the OMM Web service. The same parameters are described in the **Core dump URL** section (section 7.4.1.11).

8.5.2.9 OMM Certificate

You can overwrite the hard-coded OMM certificate by importing a local certificate chain and a private key file which may be password-protected. The OMM certificate will be used for incoming AXI and HTTPS connections to the OMM services. If the OMM can be reached from the internet by a domain and an appropriate CA certificate has been imported, no security warnings are displayed in web browsers that trust the CA root certificate.

For more information on this feature, see section 9.10.



Certificates/key

- **Private key**: Indicates whether the OMM has a private key file (read-only).
- **Local certificate chain**: Indicates the number of local certificate chains deployed on the OMM (read-only).
- **Delete certificates/key**: Allows you to delete any existing certificate or key files.

PEM file import

- **Import PEM file with**: Indicates the content type of the PEM file being imported. Available options are “Local certificate chain” or “Private key”.
- **File**: Specifies the location of the PEM file to be imported.
- **Import**: Triggers the import of the specified PEM file.

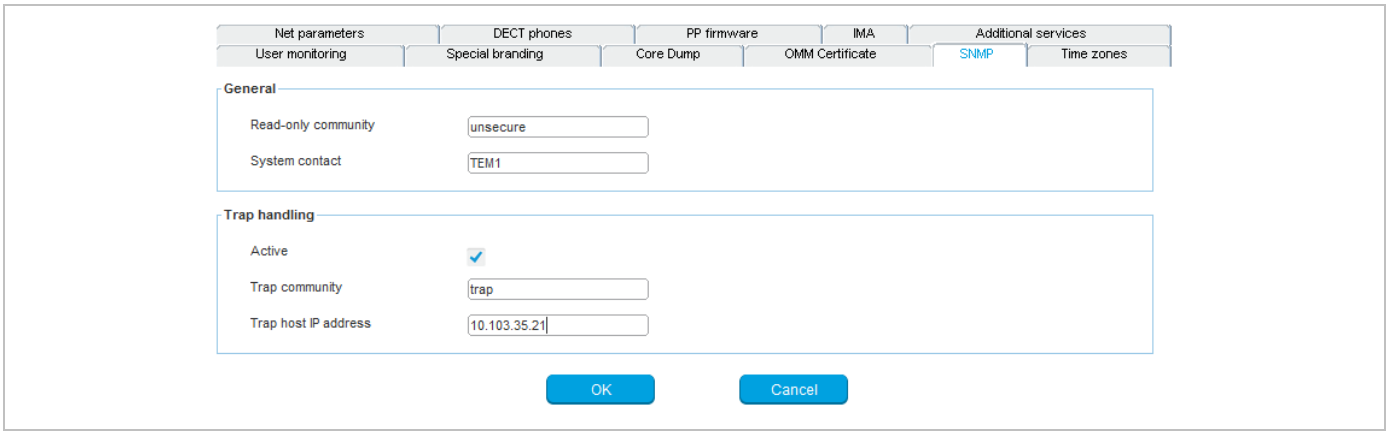
Private key password

- **Private key password**: Specifies the password to be used for the private key file, if you want the file to be password-protected.
- **Password confirmation**: Confirms the password for the private key file.

8.5.2.10 SNMP

To manage a larger RFP network, an SNMP agent is provided for each RFP. The SNMP agent provides alarm information and allows an SNMP management system (such as “HP Open View”) to manage this network. The SNMP sub menu of the OMP provides configuration of SNMP service settings.

For a description of the parameters on the **SNMP** tab, please refer to the description of the **SNMP** menu of the OMM Web service (see section 7.4.6).



8.5.2.11 Time zones

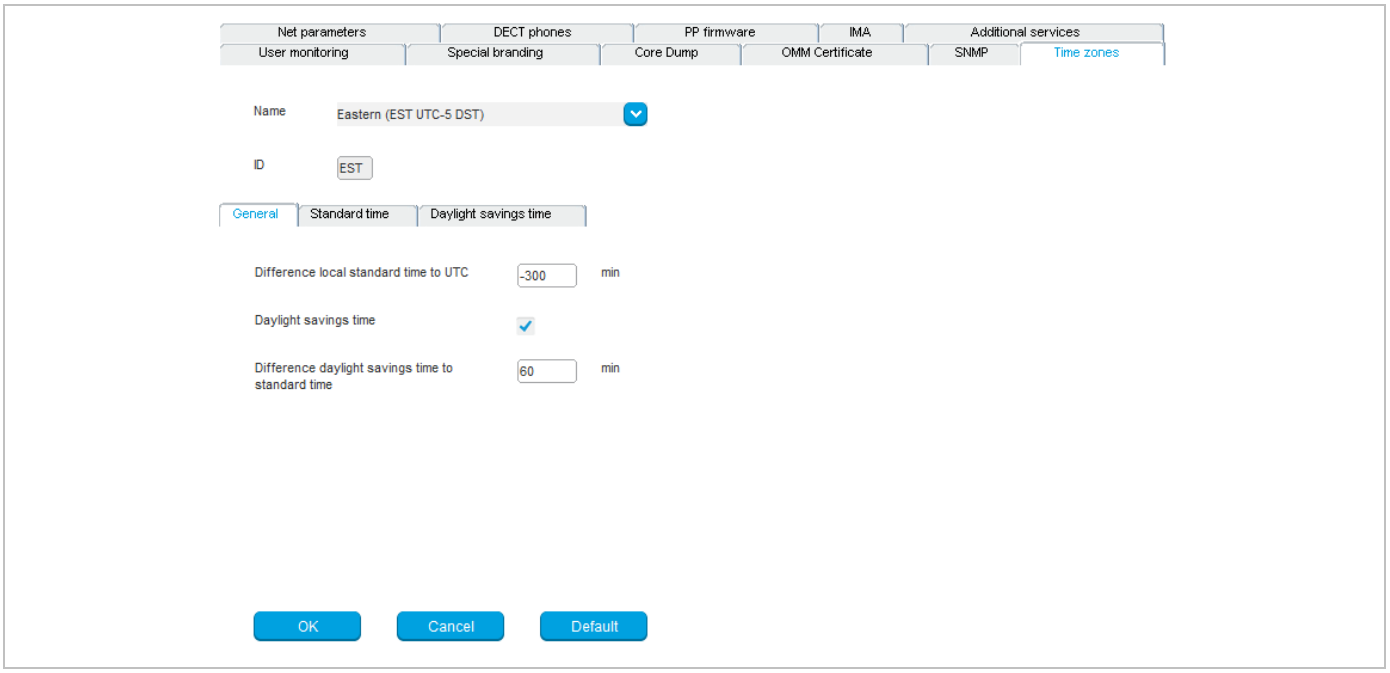
The OMM provides all available time zones on the **Time zones** tab. They are set with their known daylight savings time rules adjusted to the Universal Coordinated Time (UTC) by default. The difference to the UTC time is shown in the **UTC difference** field.

In addition, you can configure a new (free) time zone.

The date and time are provided by the OMM to the Mitel 142d and Mitel 600 DECT phones if the DECT phone initiates a DECT location registration. The DECT phone initiates a DECT location registration when:

- subscribing to the OMM
- entering the network again after the DECT signal was lost
- at power on
- silent charging feature is active at the phone and the phone is taken out of the charger
- after a specific time to update date and time

You can change the time zone rules for up to five time zones. The changes are saved in the configuration file and are restored after each OpenMobility Manager startup.



General

- **Difference local standard time to UTC**: The difference (in minutes) between the local standard time and UTC time.
- **Daylight savings time**: Enables or disables application of Daylight Savings Time (DST) for the time zone. If disabled, the Standard time and Daylight savings time tabs are not accessible.
- **Difference daylight savings time to standard time**: The difference (in minutes) between Daylight Savings Time (DST) and Standard Time for the time zone.

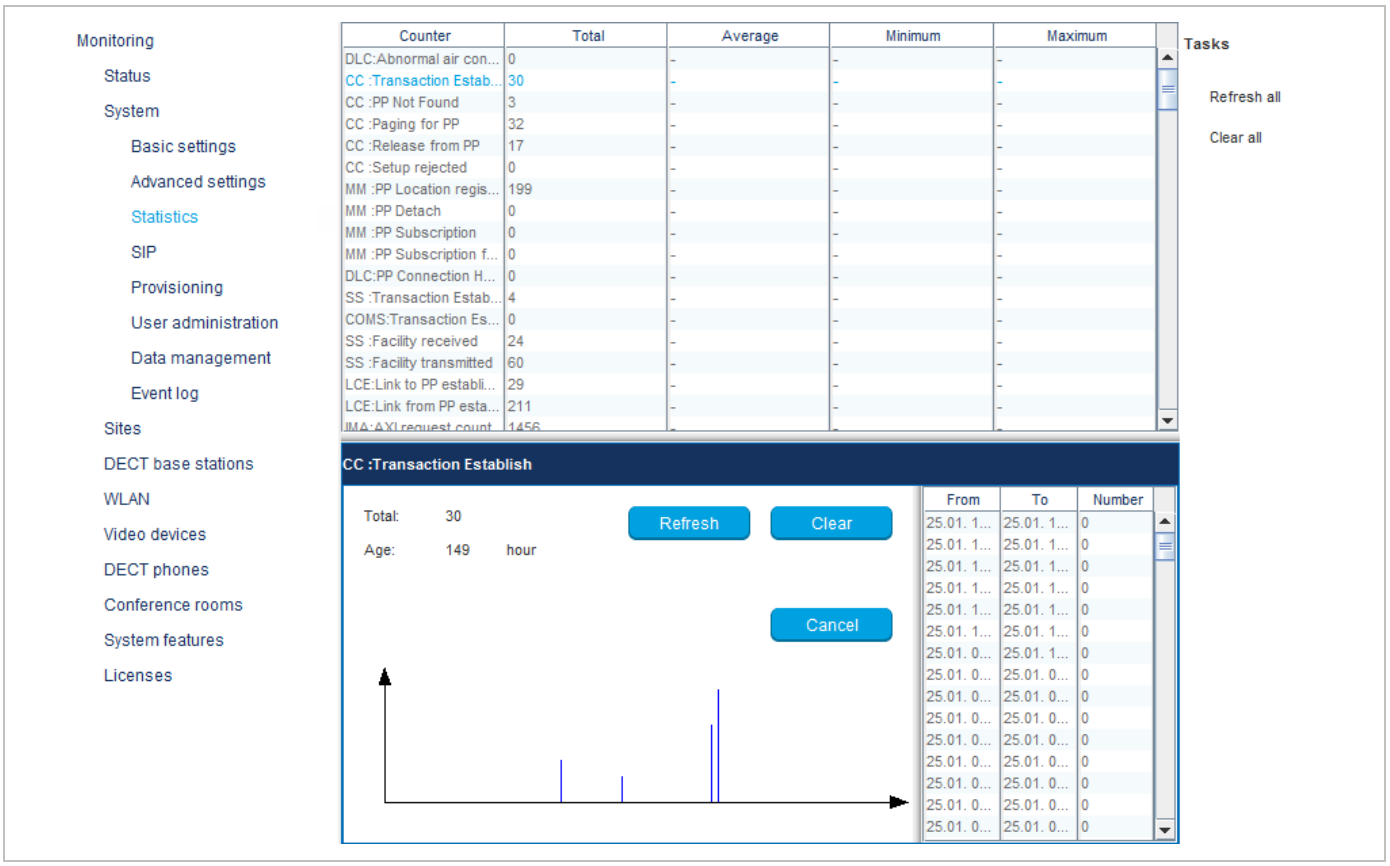
If the **Daylight savings time** parameter on the **General** tab is enabled, you can change the standard time and the daylight savings time (DST) of a time zone in the **Standard time** and **Daylight savings time** tabs. If the time zone has no DST, only the UTC difference can be configured. For the DST both points of time (begin of standard time and begin of daylight savings time) must be specified exactly. Therefore a certain day in the month or a certain week day in a month can be used.

The following commands are available to edit time zones:

- **OK**: Confirm the changed time zone settings.
- **Cancel**: Cancels the operation and resets the changed time zone back to the default setting.
- **Default**: Resets **all** individual time zone settings to the default values and deletes the changed time zone rules in the configuration file.

8.5.3 “STATISTICS” MENU (MONITORING MODE ONLY)

The **Statistics** menu provides numerous system statistics counters which can be used to check system behavior. The menu is only available in **Monitor Mode**.



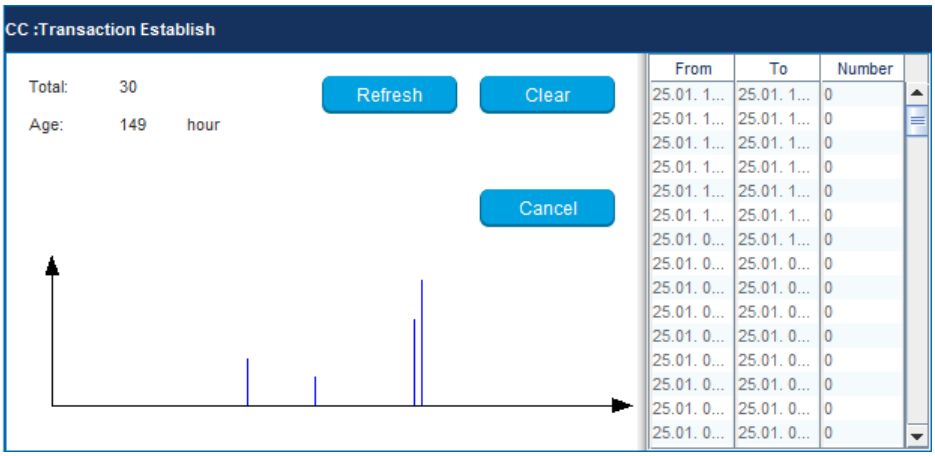
Statistic counters beginning with “+” are counters that are taken over by standby OMM in case of a failover. All other counters are reset to the defaults in case of a failover. For more details about the standby feature, see section 9.15.

The following tasks can be performed:

- **Refresh all**: request OMM update for all statistics counters.
- **Clear all**: reset all statistics counters in OMM.

If a statistics counter is selected in the table, it is shown in a detail panel. This detail panel provides all available information for this statistics counter. You can:

- update this single statistics counter by pressing the **Refresh** button, or
- reset this single statistics counter by pressing the **Clear** button.



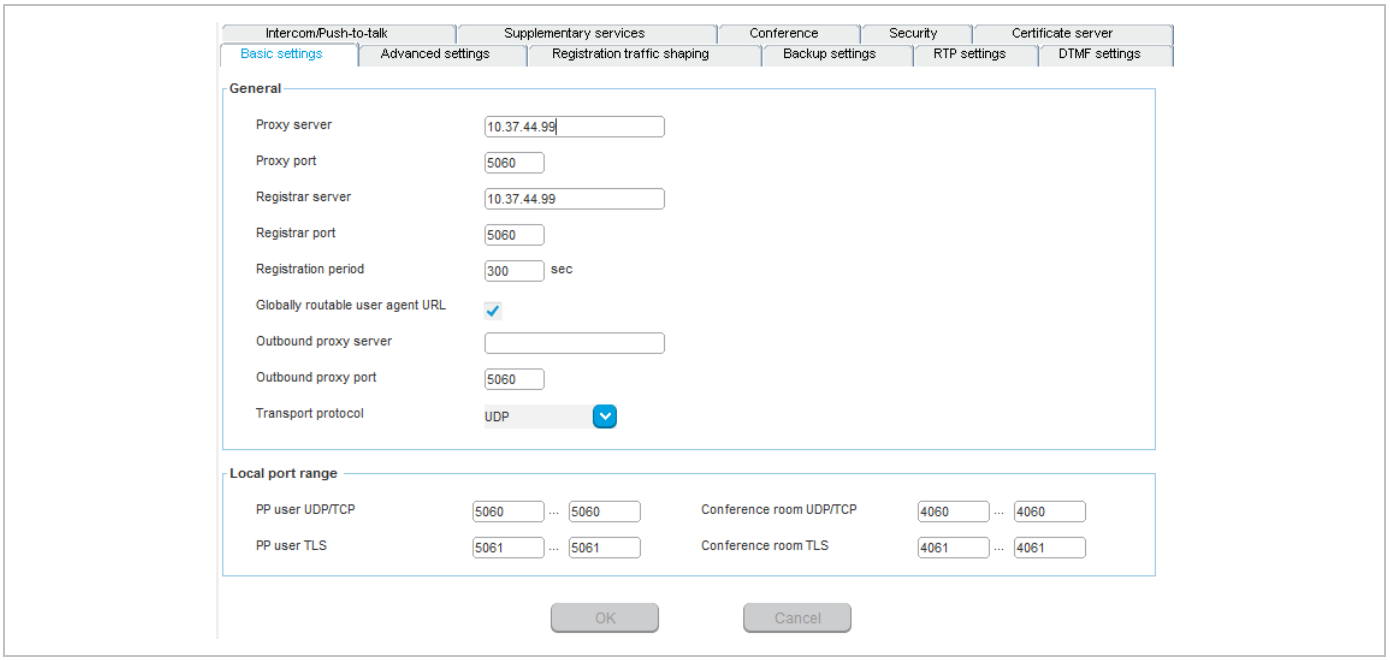
8.5.4 "SIP" MENU

The **SIP** menu covers global settings for SIP signaling and RTP voice streams and contains the following tabs:

- Basic settings (see section 8.5.4.1)
- Advanced settings (see section 8.5.4.2)
- Registration traffic shaping (see section 8.5.4.3)
- Backup settings (see section 0)
- RTP settings (see section 8.5.4.5)
- DTMF settings (see section 0)
- Intercom Push-to-talk (see section 8.5.4.7)
- Supplementary services (see section 8.5.4.8)
- Conference (see section 8.5.4.9)
- Security (see section 8.5.4.10)
- Certificate server (see section 0)

8.5.4.1 Basic settings

For a description of the parameters on the **Basic settings** tab, please refer to the description of the **System** -> **SIP** menu of the OMM Web service. The same parameters are described in the **Basic settings** section (section 7.4.3.1).



In addition, the following parameters (related to SIP multiport support) are available on the **Basic settings** tab:

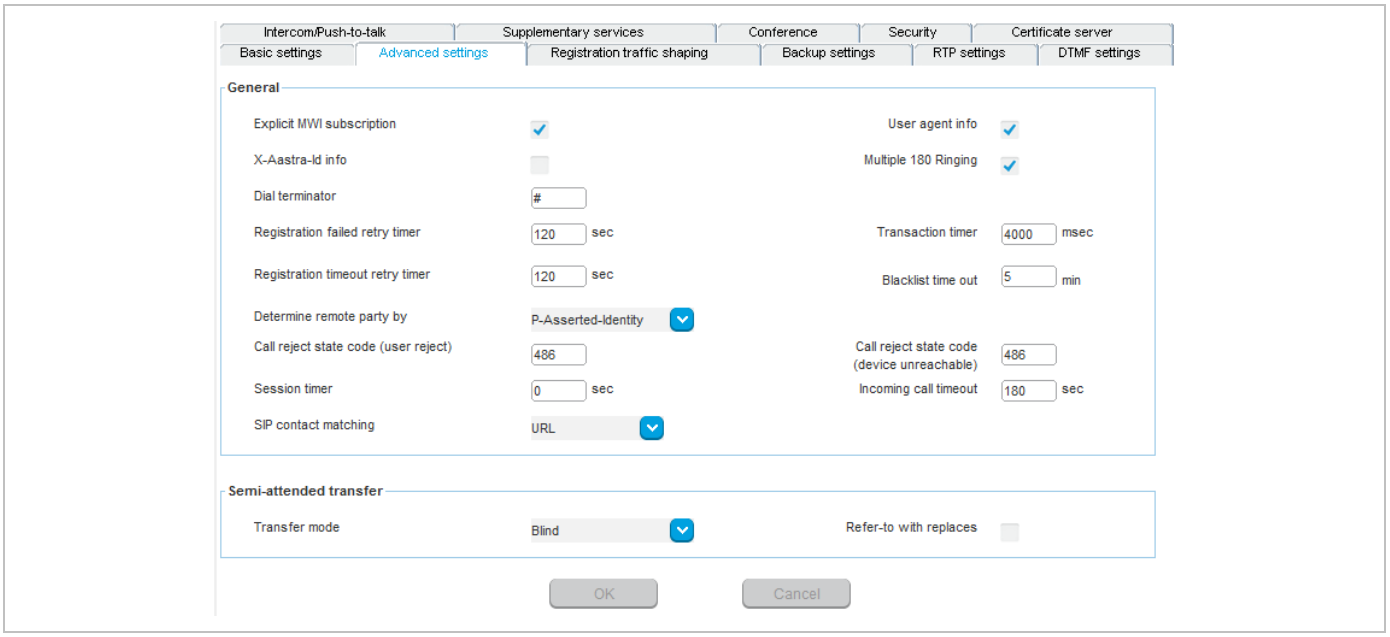
Local port range

- **DECT phone user UDP/TCP**: The port range to be used for DECT users when UDP/TCP is used as the transport protocol. The default is 5060 – 5060.
- **DECT phone user TLS**: The port range to be used for DECT users when TLS is used as the transport protocol. The default is 5061 – 5061.
- **Conference room UDP/TCP**: The port range to be used for Conference Rooms when UDP/TCP is used as the transport protocol. The default is 4060 – 4060.
- **Conference room TLS**: The port range to be used for DECT users when TLS is used as the transport protocol. The default is 4061 – 4061.

Note: There are certain rules to note when configuring port ranges; see section 3.8 for more information.

8.5.4.2 Advanced settings

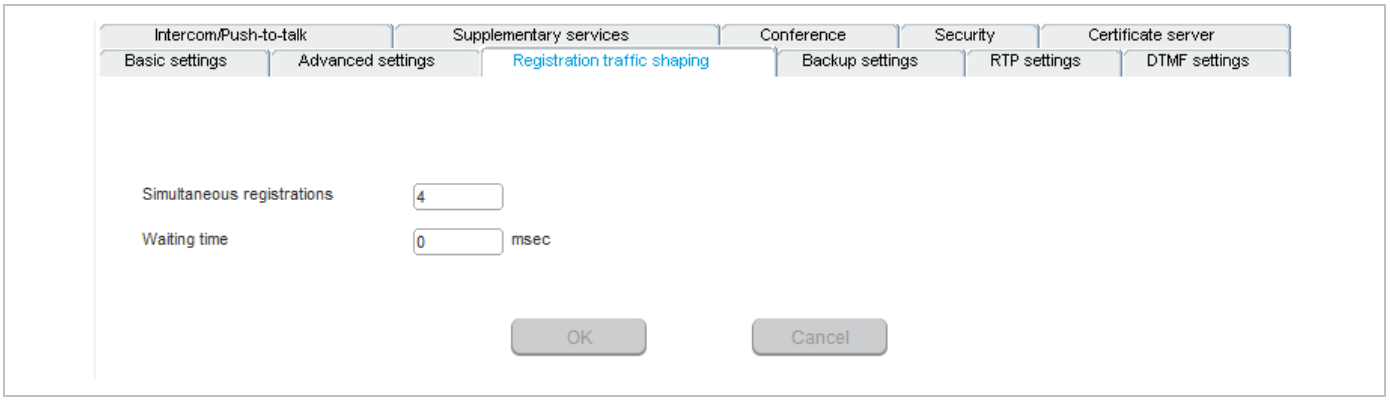
For a description of the parameters on the **Advanced settings** tab, please refer to the description of the **System** -> **SIP** menu of the OMM Web service. The same parameters are described in the **Advanced settings** section (section 7.4.3.2).



- **X-Aastra-Id info** setting (OMP only): external applications (Alarm Server, Corporate Directory …) need information about the type, model, version and IPEI of subscribed DECT terminals to manage them according to their capabilities. This can be determined via the XML API or during the SIP registration with the SIP header X-Aastra-Id. For terminal type identification purposes, the private X-Aastra-Id header can be sent out with each SIP REGISTER message, when this feature is activated.

8.5.4.3 Registration traffic shaping

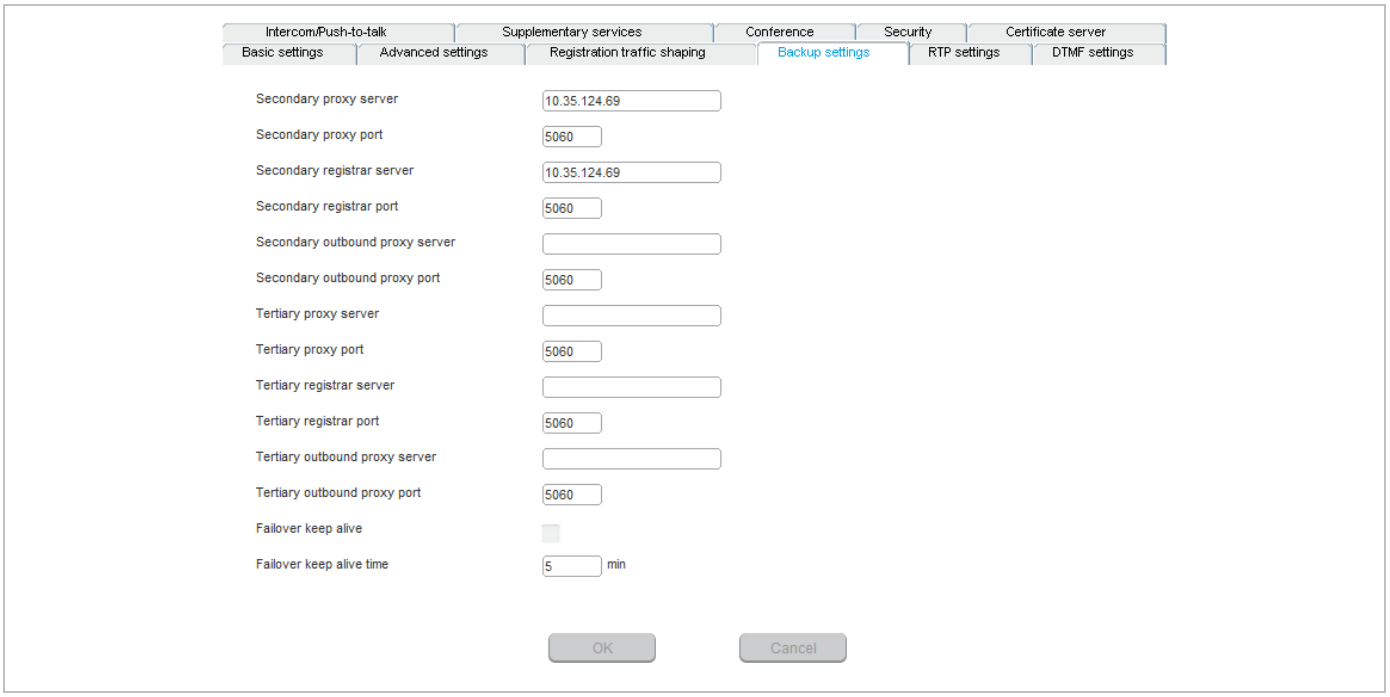
For a description of the parameters on the **Registration traffic shaping** tab, please refer to the description of the **System** -> **SIP** page of the OMM Web service. The same parameters are described in the **Registration traffic shaping** section (section 7.4.3.5). This feature is always activated.



8.5.4.4 Backup settings

To increase the operational availability of the system in critical environments like hospitals, the OMM offers a failover redundancy mechanism for the SIP server. In addition to the primary proxy, outbound proxy and registrar server, you can configure two additional levels of backup servers (secondary and tertiary servers).

The OMM failover behavior in detail depends on the backup server settings set here. A full description of the behavior and deployment hints can be found in section 9.19.3.



- **Secondary proxy server / port**, **Secondary registrar server / port**, **Secondary outbound server / port**: Enter the parameters for the secondary server in these fields.
- **Tertiary proxy server / port**, **Tertiary registrar server / port**, **Tertiary outbound server / port**: Enter the parameters for the tertiary server in these fields.

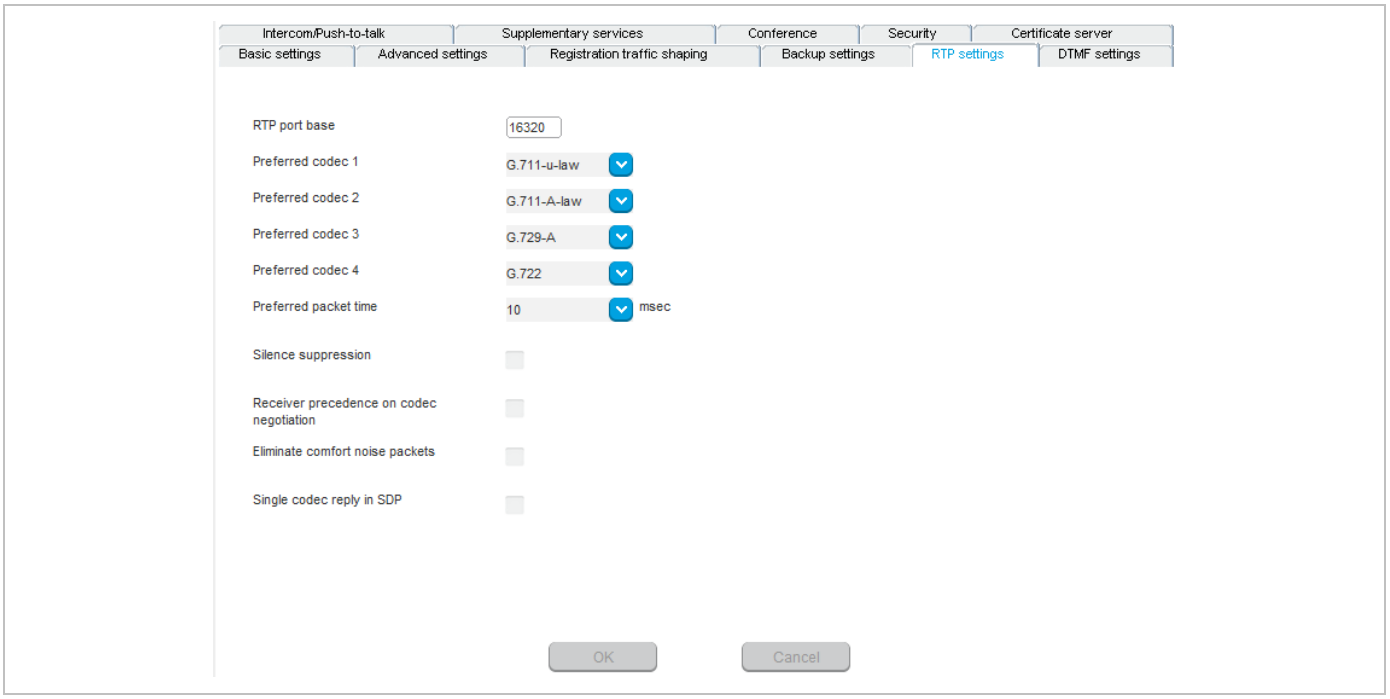
  Note: Server addresses can be configured as IP addresses, names or a fully qualified domain names. It is possible to configure a mixture of IP addresses, names or fully qualified domain names for the different servers. If fully qualified domain names are configured and the respective port setting is configured to zero (“0”), DNS SRV queries will be performed to locate a list of servers in the domain (see 9.19.2).

- **Failover keep alive**: The keep-alive mechanism allows transferring all users registered on a failed server (failover) to secondary/tertiary servers as well as automatically switching back to primary servers. Otherwise, failover is executed only single users. Enable this option if you want to use this feature (default: off).
- **Failover keep alive time**: For each registration target, a user could be registered successful with, a keep alive procedure is started. Enter the time in this field after which a new keep-alive procedure must be started (1-60 minutes, default 10 min.).

For a detailed description of the keep-alive mechanism see section 9.19.4.

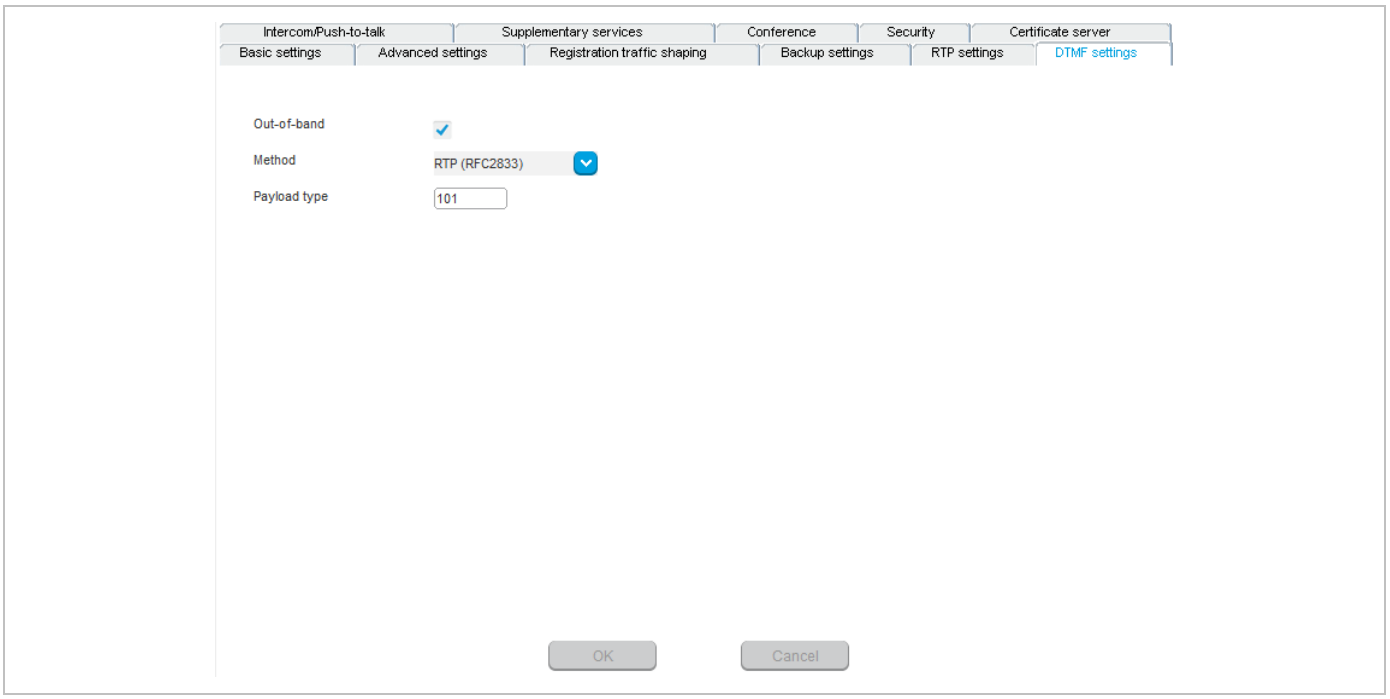
8.5.4.5 RTP settings

For a description of the parameters on the **RTP settings** tab, please refer to the description of the **System** -> **SIP** page of the OMM Web service. The same parameters are described in the **RTP settings** section (section 7.4.3.3).



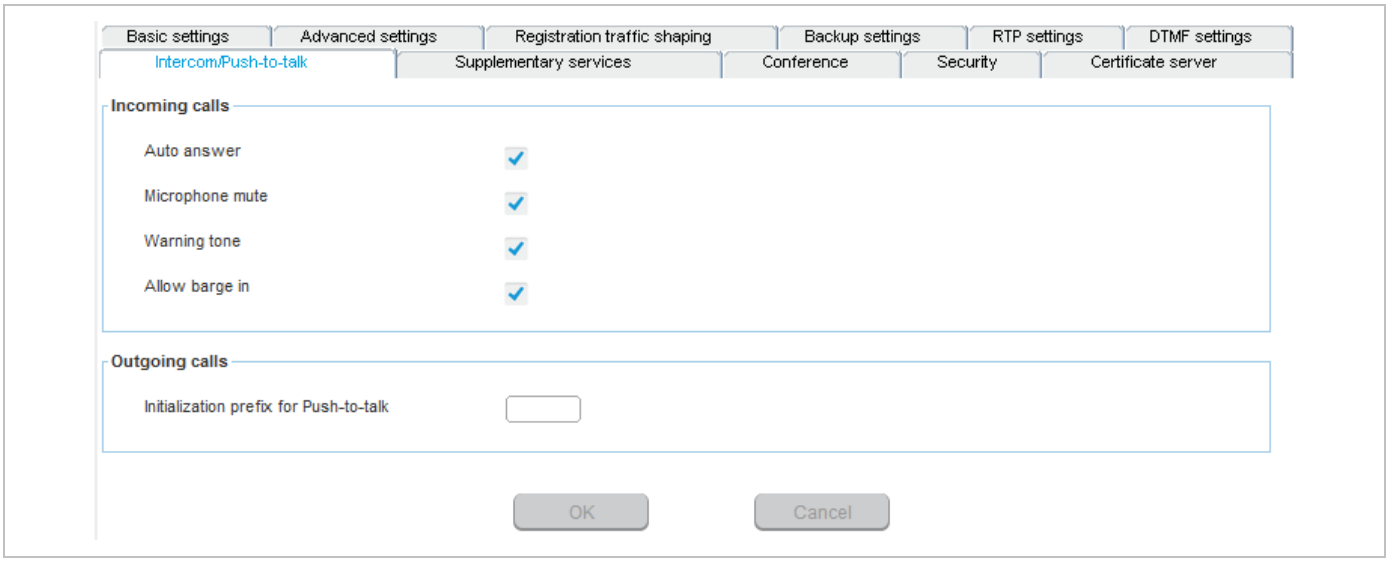
8.5.4.6 DTMF settings

For a description of the parameters on the **DTMF settings** tab, please refer to the description of the **System** -> **SIP** page of the OMM Web service. The same parameters are described in the **DTMF settings** section (section 7.4.3.4).



8.5.4.7 Intercom Push-to-talk

You can set global auto-answer settings on the **Intercom Push-to-talk** tab. For more information on this feature, see section 3.50.



Incoming calls

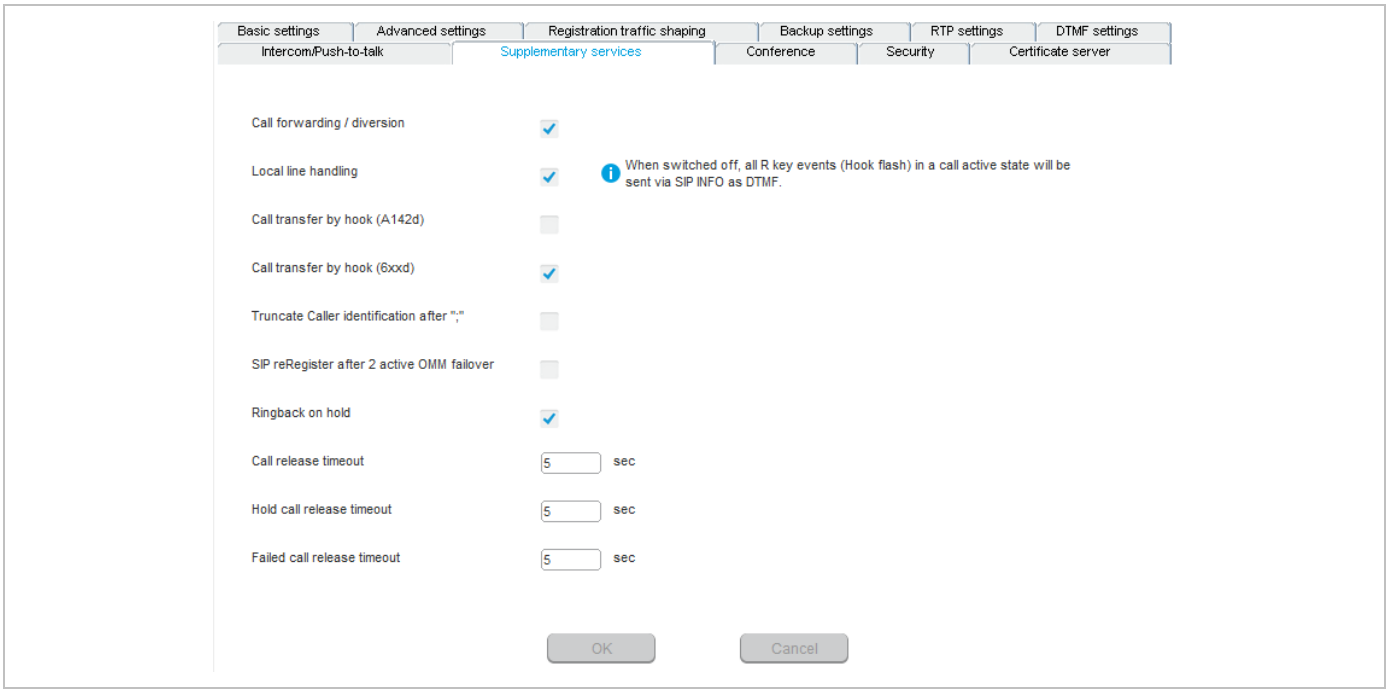
- **Auto answer**: Enables or disables auto-answer on incoming calls.
- **Microphone mute**: Enables or disables microphone muting when incoming calls are automatically answered.
- **Warning tone**: Enables or disables warning tone on incoming call. A short ringtone is played if there are no active calls. If there is an active call in a “barge in” situation, the ringing will be in-band
- **Allow barge in**: Allows/disallows “barge-in” on existing calls.

Outgoing calls

- **Initialization prefix for push-to-talk**: String to be entered when initiating an intercom call. An empty string indicates that the DECT phone cannot initiate an intercom call.

8.5.4.8 Supplementary services

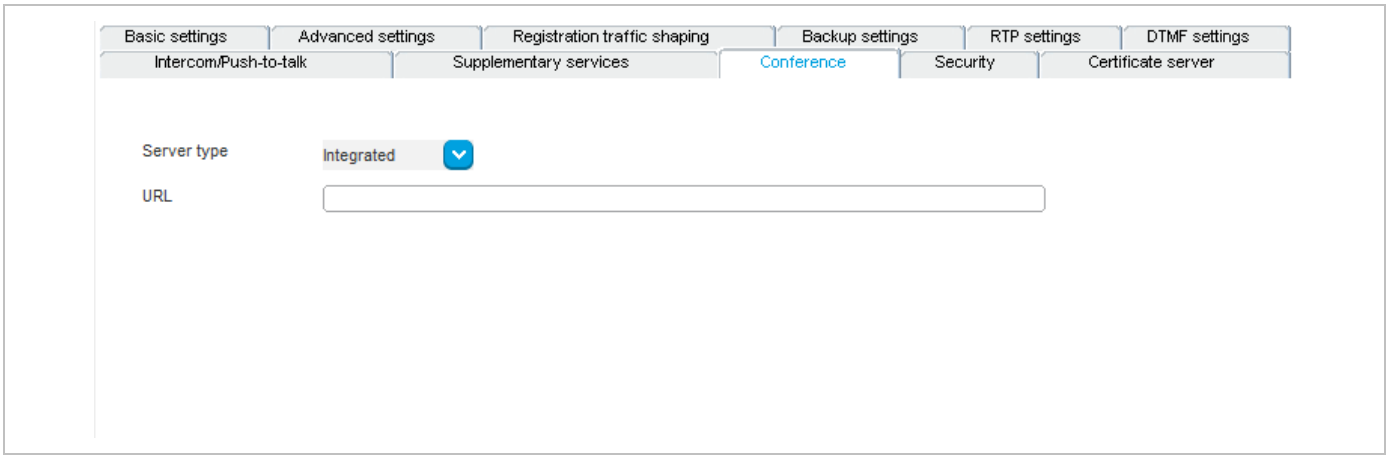
For a description of the parameters on the **Supplementary services** tab, please refer to the description of the **System** -> **SIP** page of the OMM Web service. The same parameters are described in the **Supplementary Services** section (section 7.4.3.6).



8.5.4.9 Conference

You can define the conference mode globally for all SIP-DECT users on the **Conference** tab.

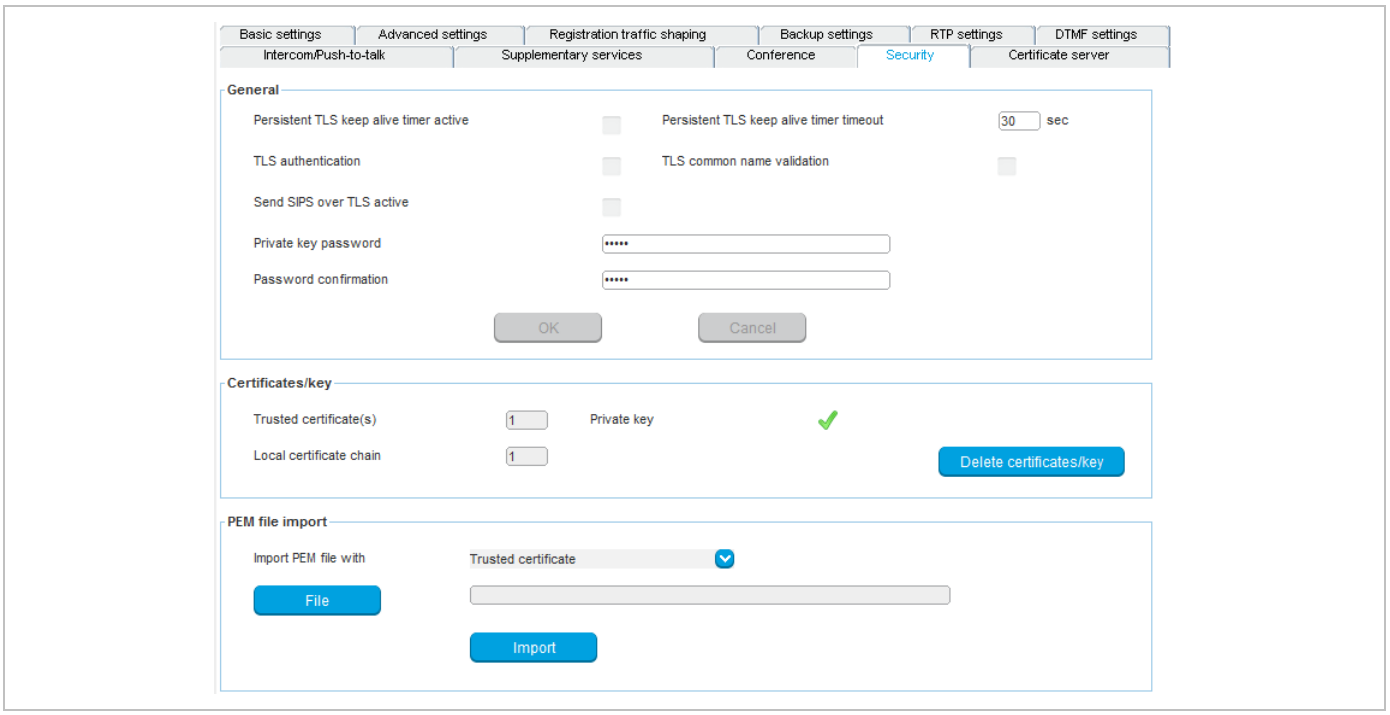
For more information on the Conferencing feature, see section 9.20.



- **Server type**: Specifies the operational mode for the conference server. Available options are:
  - **None**: neither external nor internal conference server is used.
  - Integrated: the conference server integrated in the SIP-DECT system is used.
  - External: an external conference server (e.g., Broadsoft) is used.
- **URL**: Specifies the URL for the conference server.

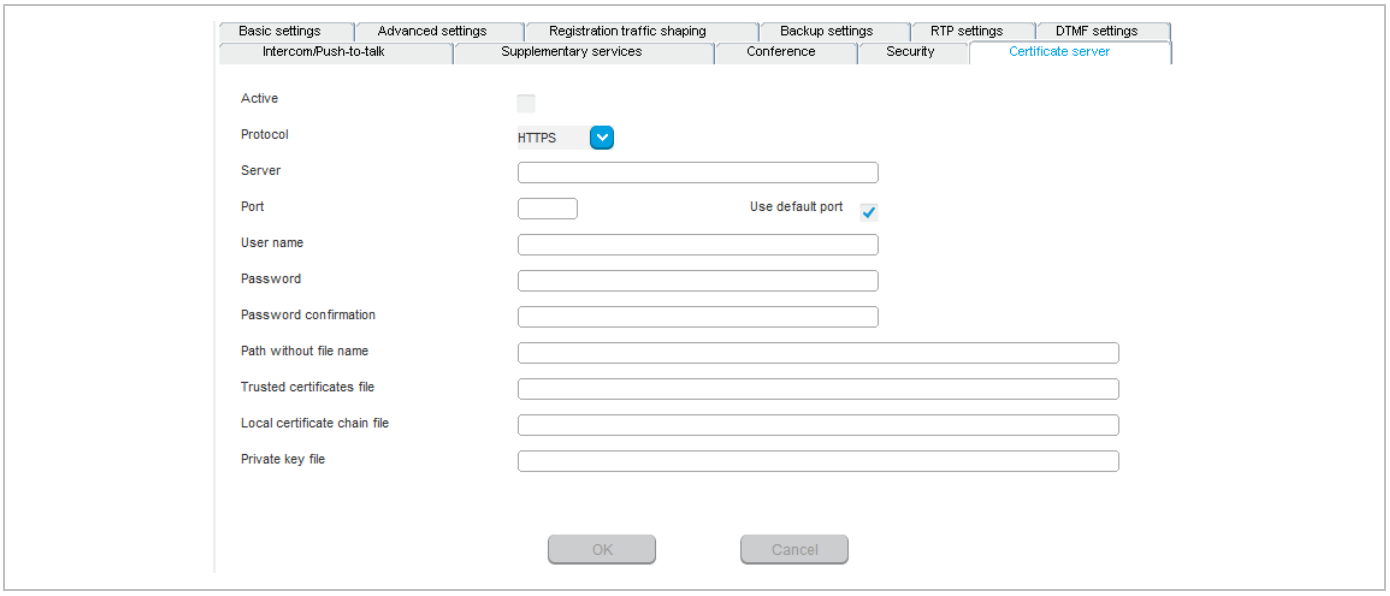
8.5.4.10 Security

For a description of the parameters on the **Security** tab, please refer to the description of the **System** -> **SIP** page of the OMM Web service. The same parameters are described in the **Security** section (section 7.4.3.7) and the **Manual Import** section (section 7.4.3.9).



8.5.4.11 Certificate server

For a description of the parameters on the **Certificate server** tab, please refer to the description of the **System** -> **SIP** page of the OMM Web service. The same parameters are described in the **Certificate server** section (section 7.4.3.8).



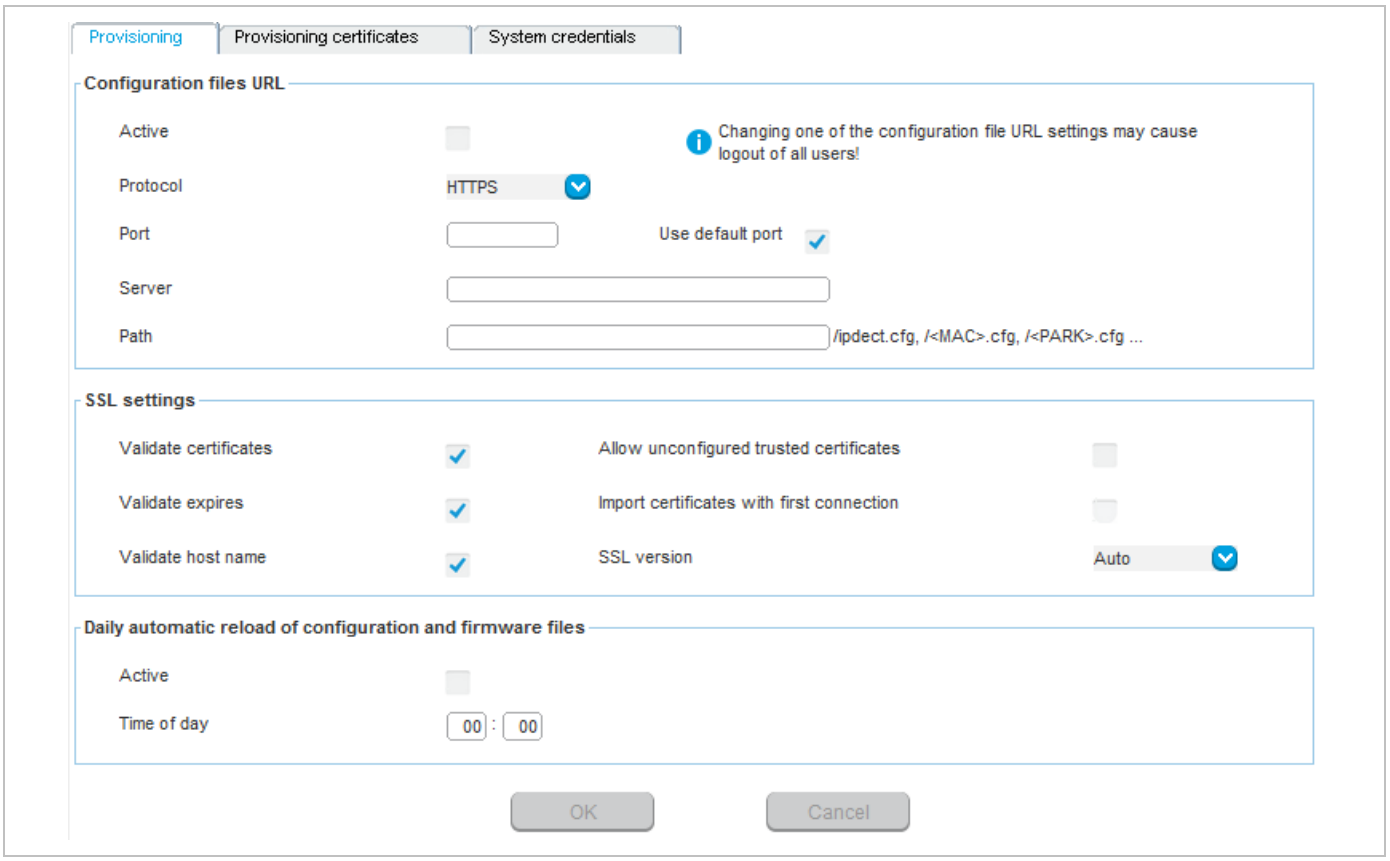
8.5.5 ”PROVISIONING” MENU

SIP-DECT supports provisioning through external configuration files. As of SIP-DECT 6.0, you can configure a URL for an external file server, from which all configuration files can be downloaded. The configured provisioning server URL is used for secure connections to the file server to retrieve configuration or firmware files.

The **Provisioning** menu contains settings related to the provisioning server and contains the following tabs:

- Provisioning (see section 8.5.5.1)
- Provisioning certificate (see section 8.5.5.2)
- System credentials (see section 8.5.5.3)

8.5.5.1 Provisioning



Configuration files URL

Active: Enable the configuration file URL feature.

Protocol: The protocol to be used to fetch the configuration files.

Port: Provisioning server's port number.

Use default port: If selected, the default port associated with the selected protocol is used.

Server: IP address or name of the provisioning server.

Path: Path to the configuration and resource files on the provisioning server.

SSL settings

Validate certificates: Enables or disables certificate validation. If enabled, the server certificate is validated against trusted CA's (signed by a CA from the Mozilla CA certificate list) and the configured trusted certificates.

Validate expires: Enables or disables the validation of certificate expiry. When this parameter is enabled, the client verifies whether or not a certificate has expired prior to accepting the certificate.

Validate host name: Enables or disables the validation of hostnames on the OMM.

Allow unconfigured trusted certificates: If enabled, this parameter disables any server certificate validation as long as no trusted certificate was imported into the OMM. AXI commands in a received configuration file may import such trusted certificates into the OMM.

Import certificates with first connection: If enabled (in conjunction with the **Allow unconfigured trusted certificates** parameter), the trusted certificate will be imported from the cert chain delivered in the server response without any validation, as long as no trusted certificate was imported previously into the OMM.

SSL version: The SSL protocol version to use for the configuration file server connection. Available options are: TLS1.0, TLS1.1, TLS1.2 or AUTO, where AUTO accepts all protocol versions.

Daily automatic reload of configuration and firmware files

Active: Enables automatic reload of the configuration and resource files on a daily basis, at the specified time.

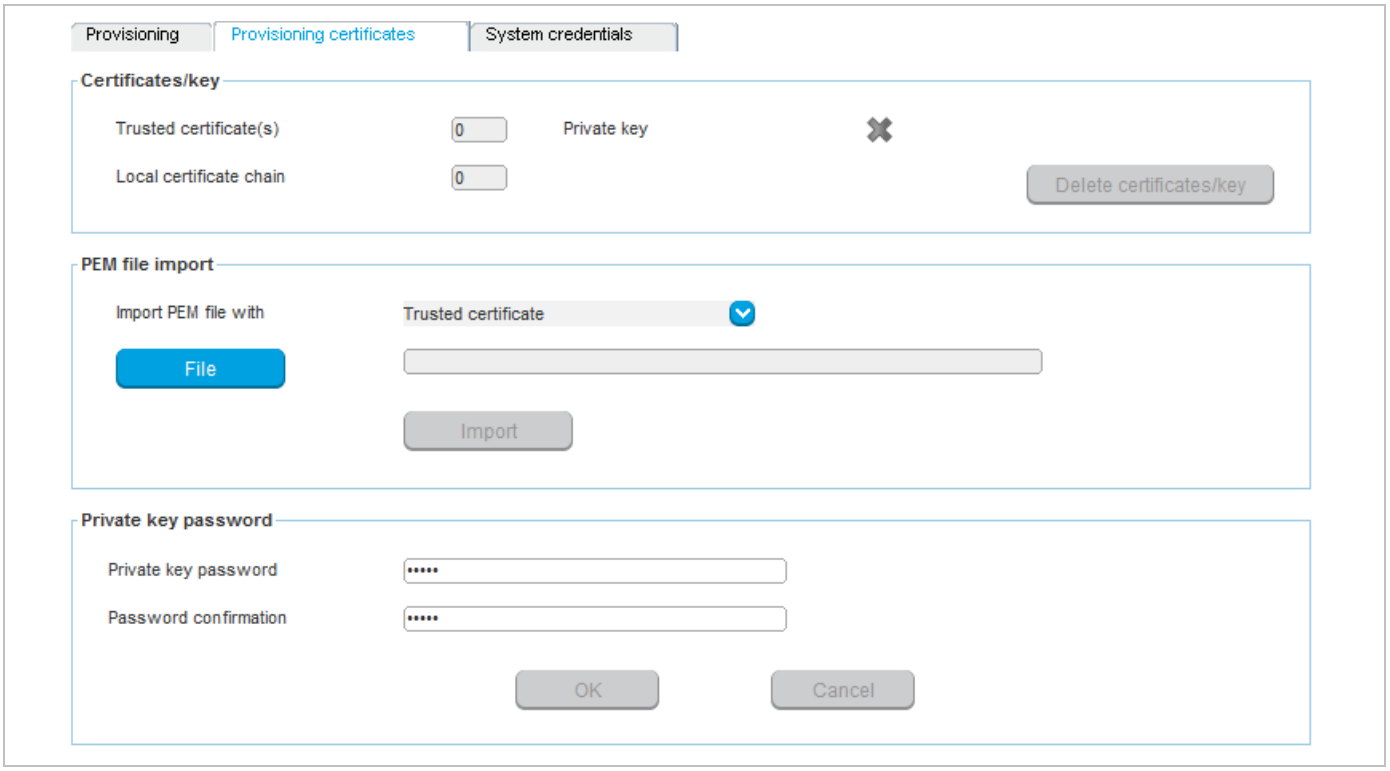
Time of day: Time for scheduled reload of configuration and firmware files.

8.5.5.2 Provisioning certificates

Provisioning certificates are used for secure connections to configuration or firmware file servers that support mutual authentication.

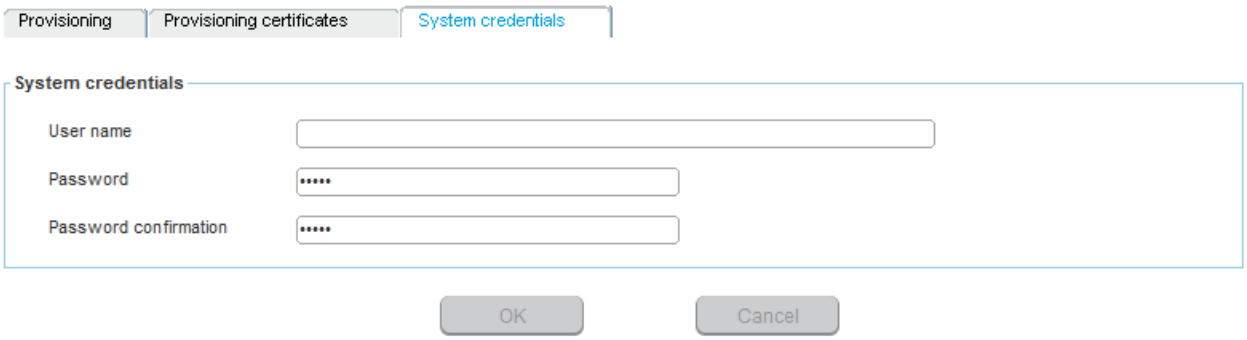
A trusted certificate chain is used by the OMM to validate the server. This is required if the server has no certificate derived from a trusted CA root certificate, where the OMM uses the Mozilla CA Certificate List. If no server certificate is available, the validation against trusted and CA certificates can be disabled in the certificate validation options (only encrypted TLS connection).

The local certificate chain plus the private key are provided from the OMM to servers requesting mutual authentication. The private key file may be password protected.



8.5.5.3 System credentials

System credentials are used to retrieve configuration and resource files from the configured provisioning server for protocols supporting authentication or servers requesting authentication. For HTTP/HTTPS, basic and digest authentication are supported.



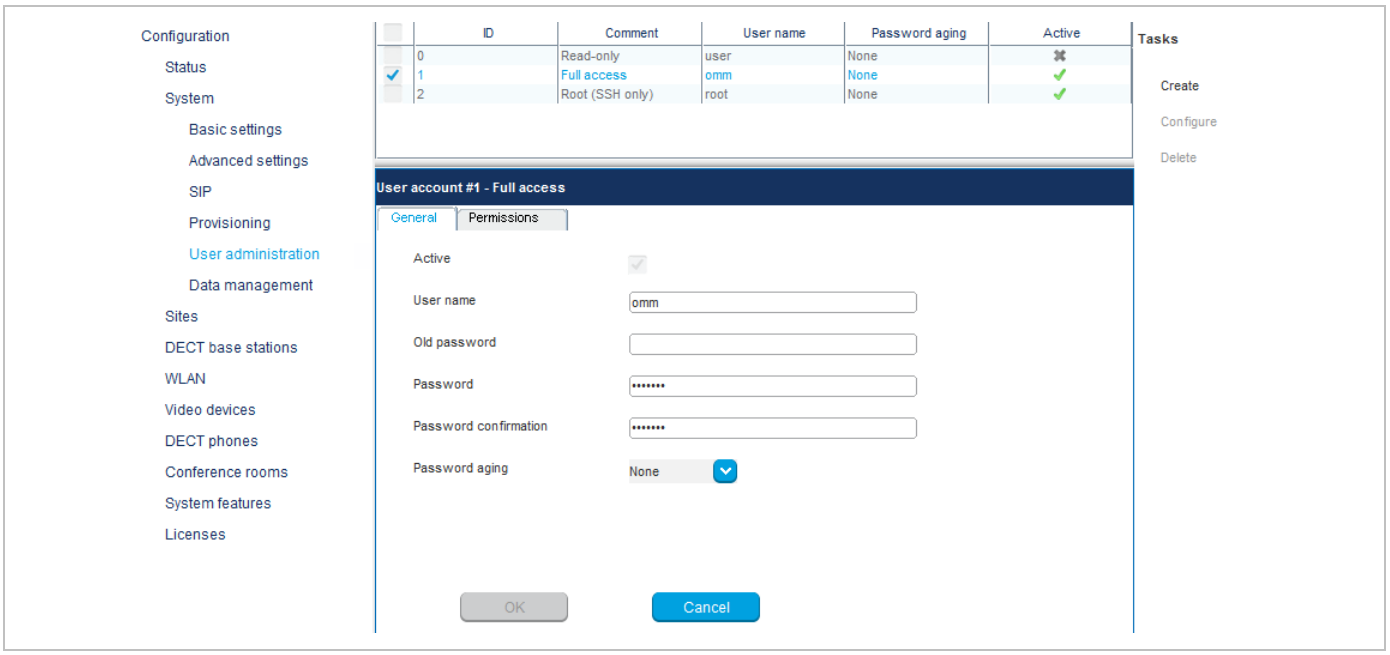
User name: Specifies the user name for authentication against the provisioning server.

Password: Specifies the password for authentication against the provisioning server

Password confirmation: Confirms the password for authentication against the provisioning server.

8.5.6 "USER ADMINISTRATION" MENU

In the **User administration** menu you configure the OMM user accounts.



The three user accounts "Full access", "Read-only" and "Root (ssh only)" available via the **User administration** page of the OMM Web service (see section) can also be configured in the OMP. These are 3 predefined user accounts, which cannot be removed or renamed. Only the "Read-only" account can be activated and deactivated. The permissions are fixed. This is consistent with the OMM WEB service. The meaning of the different account types is described in section 9.16.1. In addition, the OMP allows to create additional user accounts (login and password) and to assign specific permissions.

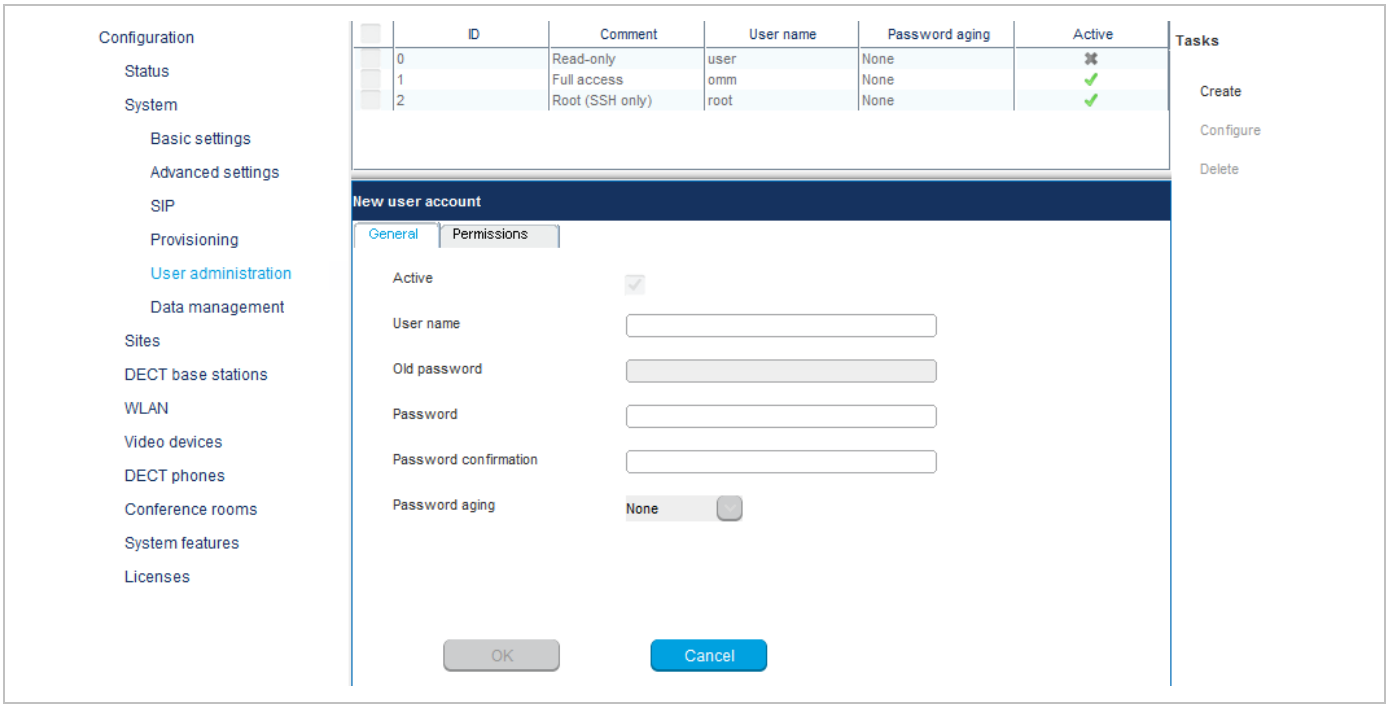
The tasks which can be performed are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create new user account		8.5.6.1
Configure: configure selected user account in detail panel		0
	Show details: shows selected user account in detail panel	8.5.6.3
Delete: delete selected user account		8.5.6.4

8.5.6.1 Creating New User Accounts

It is possible to create additional user accounts (login and password) and to assign specific permissions. These accounts are mainly designed to have specific login data and permissions for applications which are using OM AXI to connect with the OMM.

Note: Individual user accounts cannot be used for a login to the OMM Web service nor SSH.



Adding individual user accounts is only possible in **Configuration Mode**. To add a user account, do the following:

1 In the **Tasks** bar click on the **Create** command.

The **New user account** panel opens. It provides various tabs where the account data must be entered.

2 Configure the user account, see parameter description below.

3 Press the **OK** button.

The following parameters can be set in the tabs of the **New user account** panel:

General

For a description of the parameters which can be set in the **General** tab, please refer to the description of the **User administration** page of the OMM Web service (see section 8.5.6.).

Permissions

The permissions for an individual user account can be set independent from any license status even if some of the permissions can only been used with an appropriate license.

If an application connects with the OMM via OM AXI, then the permissions been sent from the OMM to the application is the result of the configured permissions for this account and the actual license status. For more information please see the OM Application XML Interface (OM AXI) specification /31/.

The permissions have the following meaning:

Permission	Description
Read	Read OMM data (OM AXI get requests)
Write	Set OMM data (OM AXI set requests)
Messaging info	Sent messages with priority “Info”
Messaging	Sent messages with priority “Low”, “Normal” and “High”
Messaging emergency	Sent messages with priority “Emergency”
Messaging locating	Sent messages with priority “LocatingAlert”
Locating	Permission to query the position of DECT phones and to track DECT phone positions
Monitoring	Permission to monitor various technical aspects of the mobility system

8.5.6.2 Changing a User Account

Changing user accounts is only possible in **configuration mode**. To change the configuration of an existing user account, do the following:

1 Select the appropriate user account in the account table.

2 In the **Tasks** bar click on the **Configure** command.

3 Change the user account parameters (see parameter descriptions in section 8.5.6.1).

4 Press the **OK** button.

Please note: The predefined user accounts “Full access”, “Read-only” and “Root (ssh only)” user accounts cannot be renamed. Also their permissions are fixed and cannot be changed.

8.5.6.3 Viewing User Account Details

You can view the configuration of a user account in **monitor mode**. Proceed as follows:

1. Select the appropriate user account in the table.
2. In the **Tasks** bar click on the **Show details** command.
   The user account data is displayed in the user account detail panel.
3. To close the user account detail panel, click the **Cancel** button.

8.5.6.4 Deleting User Accounts

Deleting user accounts is only possible in **configuration mode**. To delete one or more existing user accounts proceed as follows:

1. Select the appropriate account(s) in the user account table by activating the corresponding checkbox(es).
2. In the **Tasks** bar click on the **Delete** command.
3. Confirm the displayed prompt with **OK**.

> **Please note:** The predefined user accounts “Full access”, “Read-only” and “Root (ssh only)” user accounts cannot be removed.

8.5.7 “DATA MANAGEMENT” MENU

The **Data management** menu provides access to data related to import and export features.

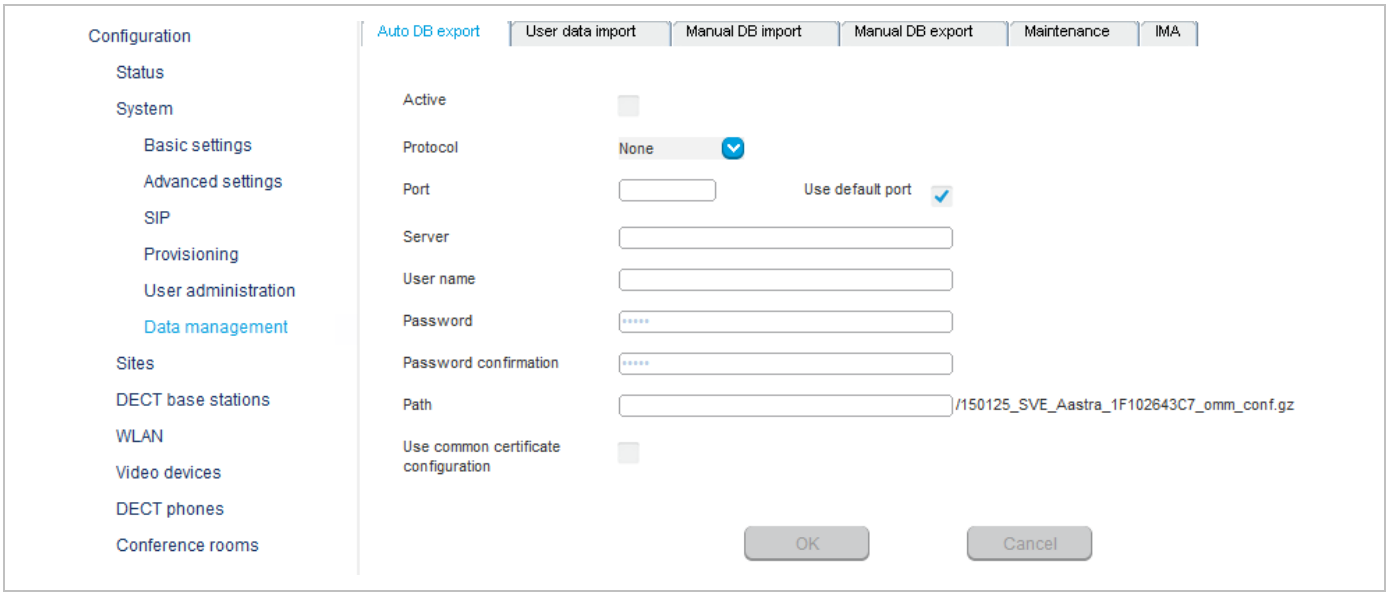
The menu provides the settings in several tabs:

- **Auto DB export** (see section 8.5.7.1)
- **User data import** (see section 8.5.7.2)
- **Manual DB import** (see section 8.5.7.3)
- **Manual DB export** (see section 0)
- **Maintenance** (see section 0)

8.5.7.1 Automatic DB export

The automatic database export feature allows an automatic database backup to an external server for each configuration modification.

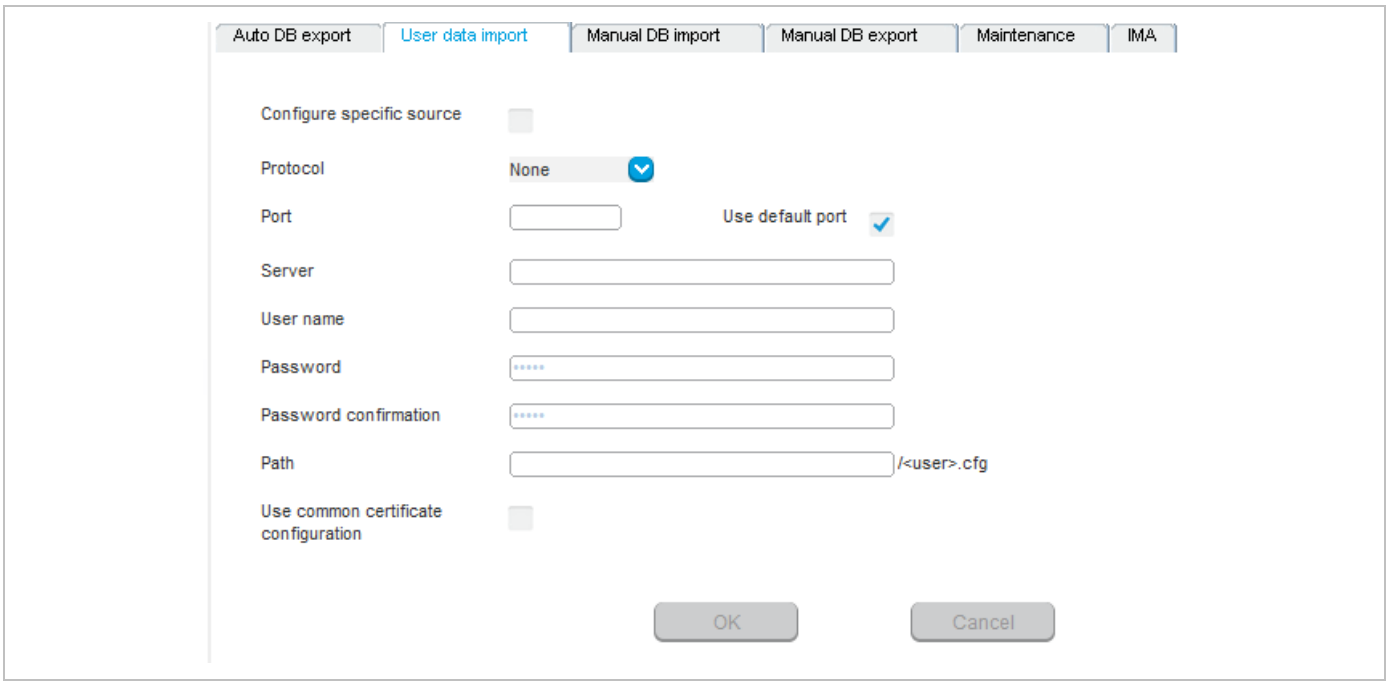
> **Please note:** Synchronization with an NTP server is mandatory for an automatic database export. For NTP server configuration, see section 9.5.4 and section 9.6.



For a description of the parameters on the **Automatic DB export** tab, please refer to the description of the **System** -> **Data management** page of the OMM Web service. The same parameters are described in the **Automatic Database Export** section (section 7.4.7.3).

8.5.7.2 User data import

The user data import feature allows the import of user data from an external provisioning server.



- **Configure specific source**: Enables the specific URL to an external file server for retrieving the user data file.
- **Protocol**: Specifies the preferred protocol.
- **Port**: Specifies the port on the server.
- **Server**: Specifies the IP address or the name of the server.
- **User name**, **Password**, **Password confirmation**: Specifies the credentials for the server.

- **Path**: Specifies the path to the file containing the user data.
- **Use common certificate configuration**: Enables the use of the system-wide certificate validation settings, as configured on the **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2.5).

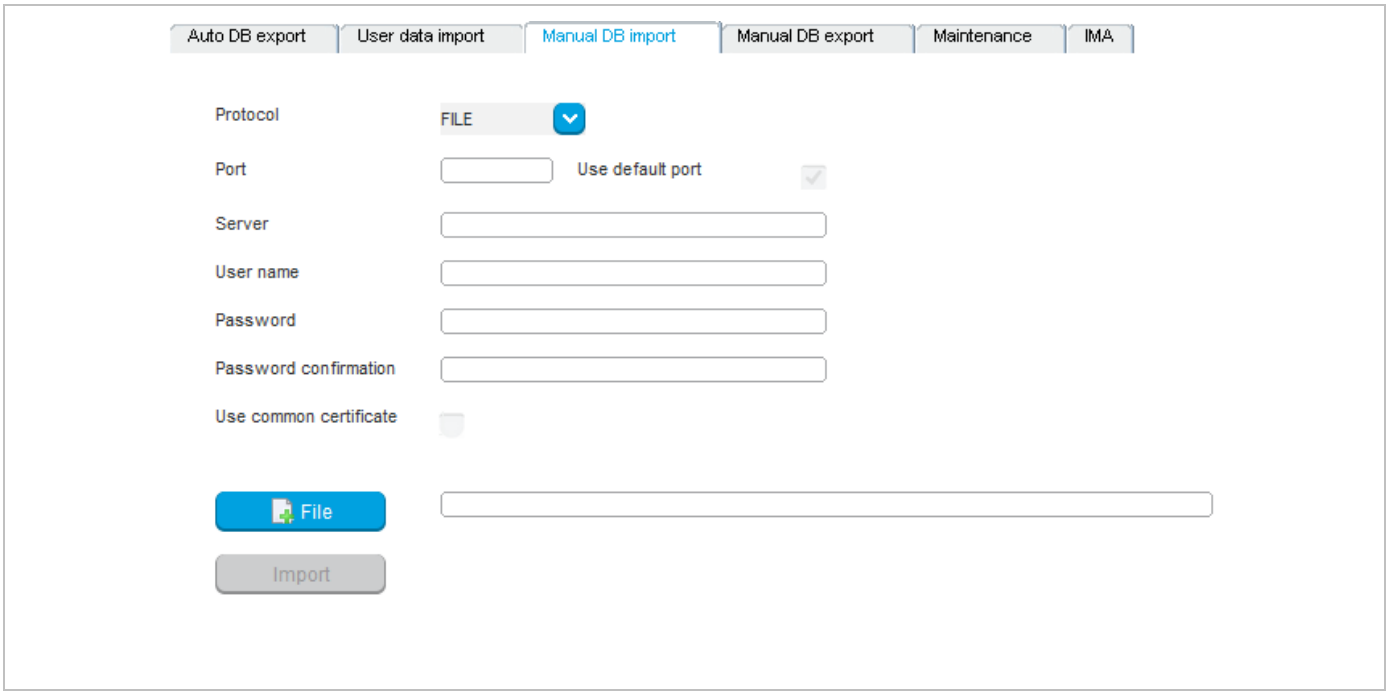
For further information on the user data import please refer to the “OpenMobility Provisioning” user guide for details see /29/.

8.5.7.3 Manual DB import

The manual database import feature allows the import of an OMM database.

> **Please note:** A manual import of a database results in a reset of the OMM.

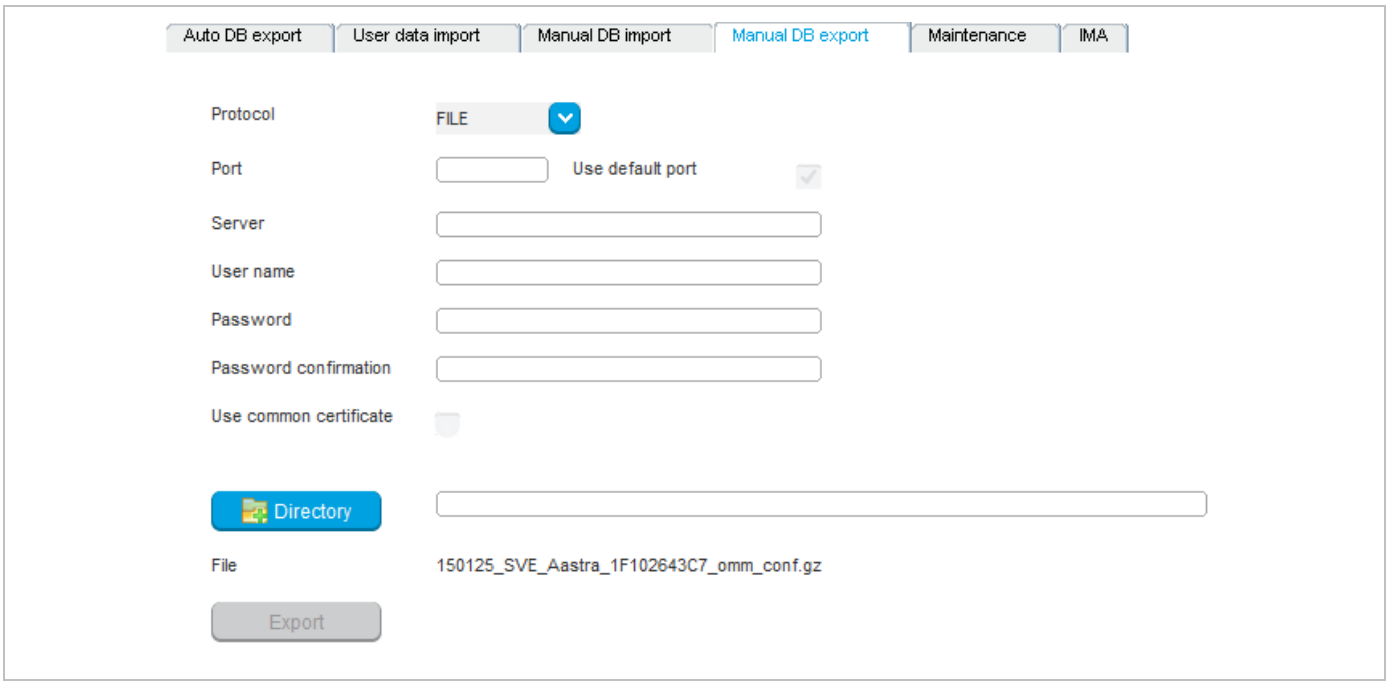
For a description of the parameters on the **Manual DB import** tab, please refer to the description of the **System** -> **Data management** page of the OMM Web service. The same parameters are described in the **Manual Database Import** section (section 7.4.7.1).



8.5.7.4 Manual DB export

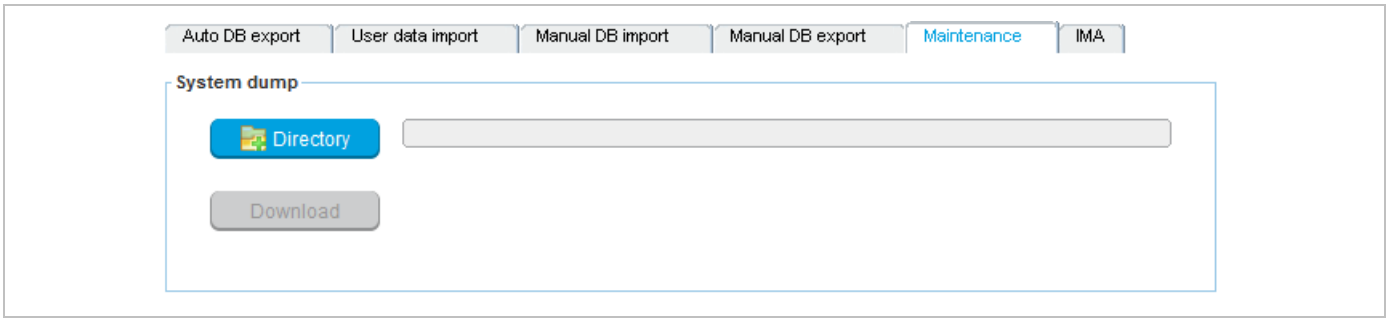
The manual database export feature allows a manual database backup to an external server.

For a description of the parameters on the **Manual DB export** tab, please refer to the description of the **System** -> **Data management** page of the OMM Web service. The same parameters are described in the **Manual Database Export** section (section 7.4.7.2).



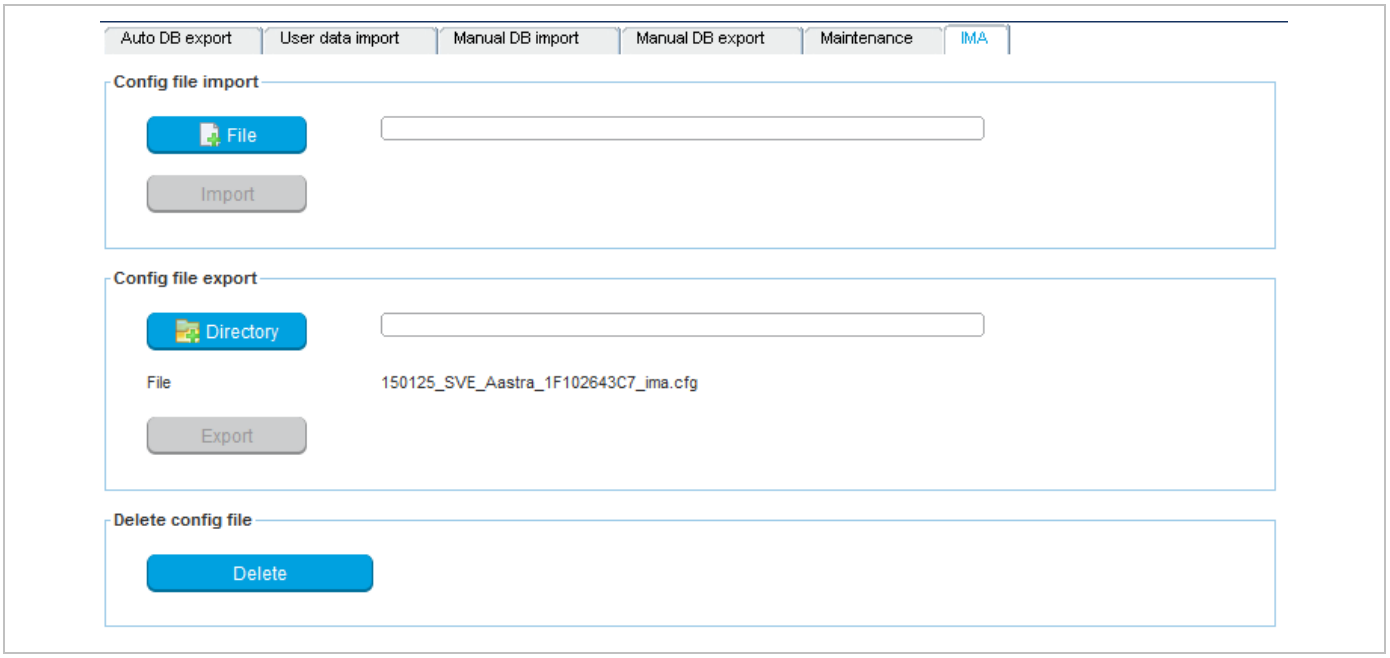
8.5.7.5 Maintenance

In the **Maintenance** panel, you can perform a system dump, for example, for product support information purposes. A file “sysdump.txt” is created in the selected directory. Click the **Directory** button to select the directory, then click the **Download** button to start the system dump.



8.5.7.6 IMA

You can upload an IMA configuration file manually. To validate the existing configuration, the IMA configuration can be also downloaded. An uploaded IMA configuration may be overwritten if a server for the IMA configuration file is configured or if the ‘ima.cfg’ is available on the provisioning server. The IMA configuration can be deleted regardless of its source.



- **Config file import**

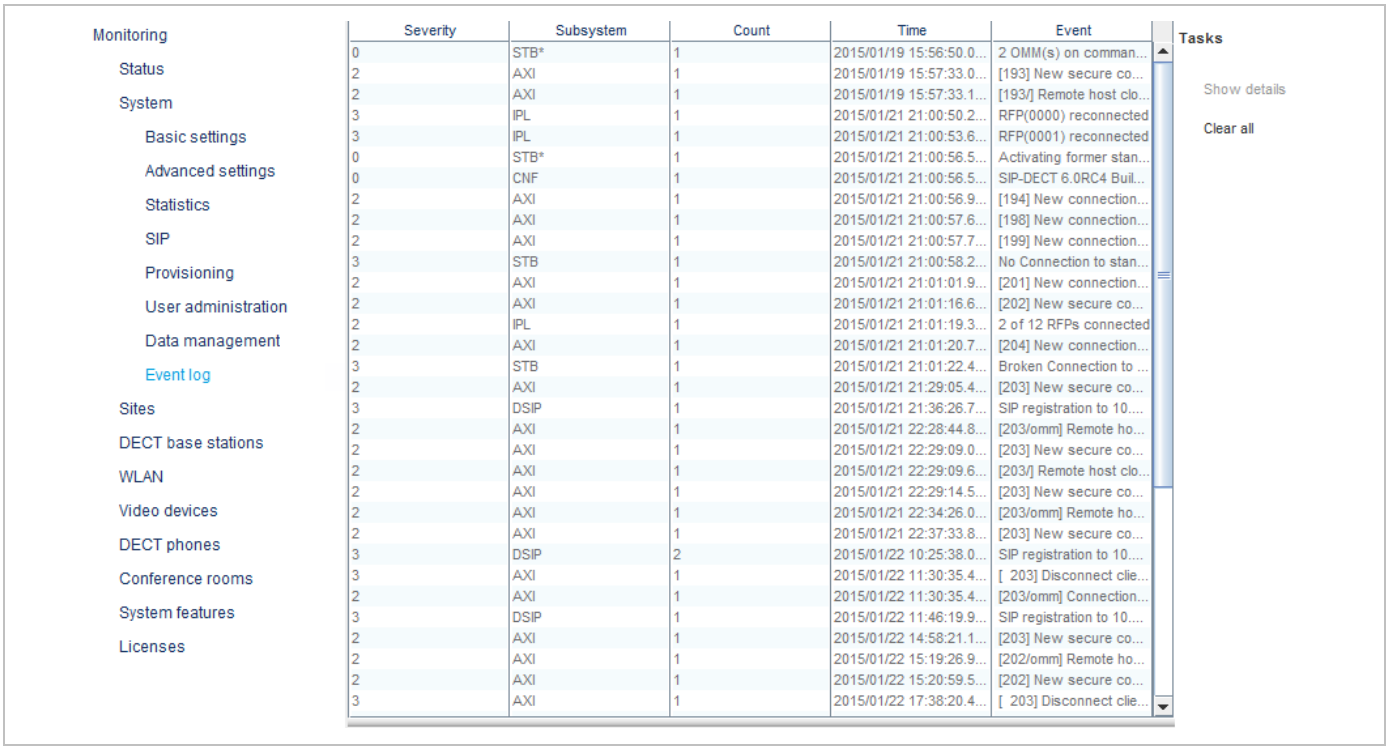
  To upload an IMA configuration file, click the **File** button to browse to the file, then click **Import**.
- **Config file export**

  To download the current IMA configuration file, click the **Directory** button to select the destination directory, then click **Export**.
- **Delete config file**

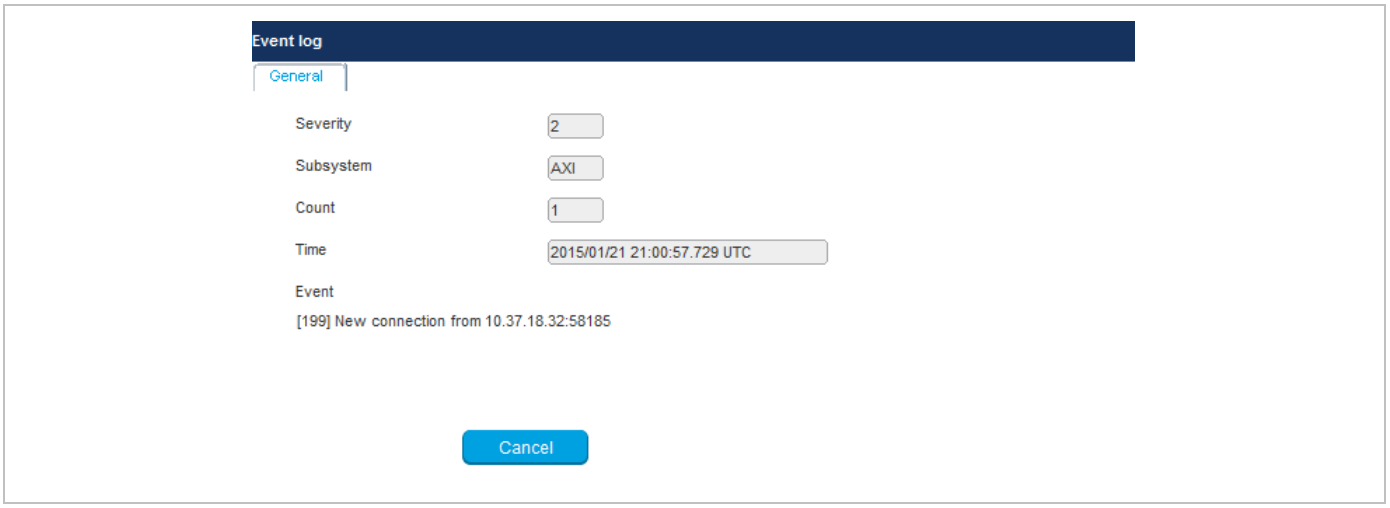
  To delete the IMA configuration file, click **Delete**.

8.5.8 "EVENT LOG" MENU

The **Event Log** menu provides information about system events. The menu is only available in **Monitor Mode**.

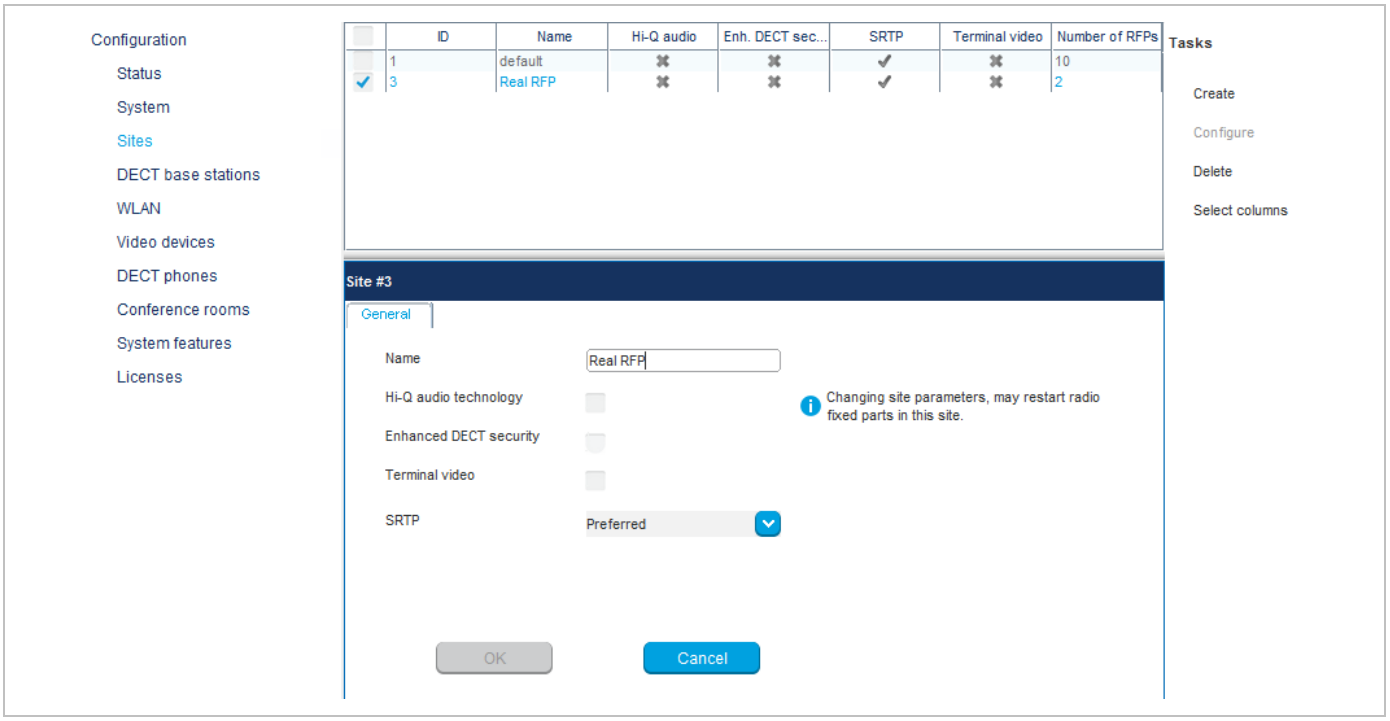


8.5.8.1 Event log detail panel



8.6 “SITES” MENU

DECT base stations can be grouped into different sites. The **Sites** menu allows configuration and display of configured sites. An empty system has one predefined site (ID: 1) named “default”. The system requires a minimum of one site.



A site consists of the following parameters:

- **ID**: Identification number of the site. A value between 1 and 250 is possible. If no value is given, the OMM selects the next free ID.
- **Name**: The name of the site.
- **Hi-Q audio technology /**
  Enhanced DECT security /
  Terminal video /
  SRTP: These capabilities must be enabled or disabled specific for every site.

  – In sites, which are configured to provide this functionality, exclusively RFP 35/36/37 IP and RFP 43 WLAN are applicable.

  – In sites without this capability, it is allowed to mix these new RFP types with RFP 32/34 IP and RFP 42 WLAN.
- **Number of RFPs**: The number of RFPs which are assigned to this site.

The following tasks can be performed:

- **Create**: create a new site in the **General** tab.
- **Configure**: configure an existing site in the **General** tab.
- **Delete**: delete selected sites (only sites without assigned RFPs can be deleted).
- **Show details** (only in **Monitor Mode**): shows configuration of a selected site in the **General** tab.

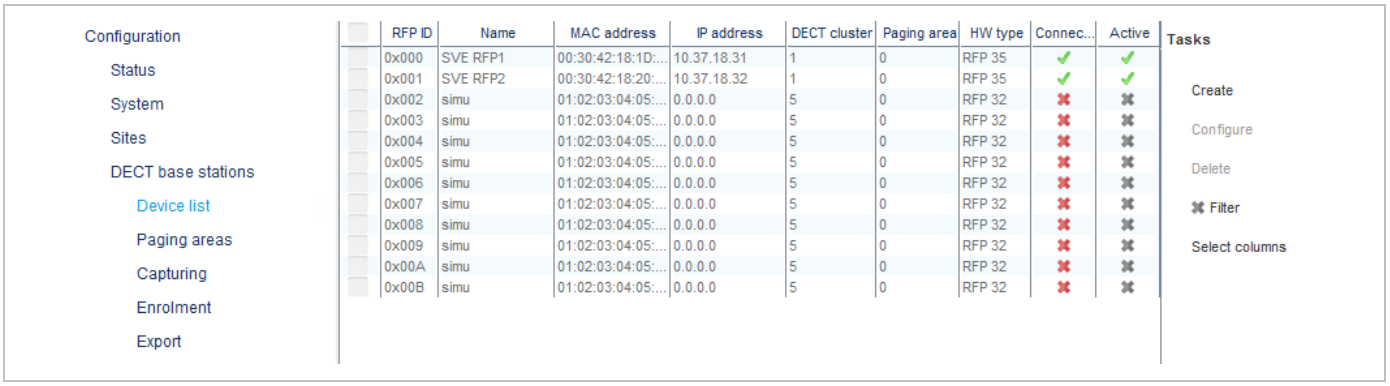
8.7 “DECT BASE STATIONS” MENU

RFPs can be configured and viewed in the **DECT base stations** menu.

Configuration mode	Monitor mode	See section
Device list	Device list	8.7.1
Paging areas		8.7.2
Capturing		8.7.3
Enrolment		8.7.4
Export		8.7.5
	Sync view	8.7.6
	Statistics	8.7.7

8.7.1 “DEVICE LIST” MENU

The **Device list** panel displays all configured RFPs are listed in a table. The device list is available in **Configuration Mode** and **Monitor Mode**.



The **Active** column shows the following states:

- – DECT is not enabled and/or RFP not connected.
- – DECT is enabled and RFP connected, but DECT has not been activated yet.
- – DECT is enabled and RFP is connected, but RFP is not synchronized and searches for other synchronized RFPs.
- – DECT is enabled and RFP is connected and synchronized.

Note: If the **Active** column is not displayed, you can activate it in the **Select columns** dialog, see section 8.7.1.7.

The tasks you can perform are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create new RFP in detail panel		8.7.1.2
Configure: configure selected RFP in detail panel		8.7.1.3
	Show details: show selected RFP in	8.7.1.4

Configuration mode	Monitor mode	See section
	detail panel	
Delete: delete selected RFP		8.7.1.5
	Show sync. relations: show synchronization relation for selected RFPs	8.7.1.6
Select columns: select columns/parameters to be shown in RFP table	**Select columns**: select columns/parameters to be shown in RFP table	8.7.1.7
Filter: show only RFP datasets in table which contain a special search string	**Filter**: show only RFP datasets in table which contain a special search string	8.7.1.8

8.7.1.1 DECT base station Detail Panel

The DECT base station detail panel is used for configuration/display of RFP settings and creation of new RFP datasets.

To call up the DECT base station detail panel

- choose one of the commands in the task bar on the right of the **DECT base stations** panel (**Create**, **Configure**, or **Show details**)

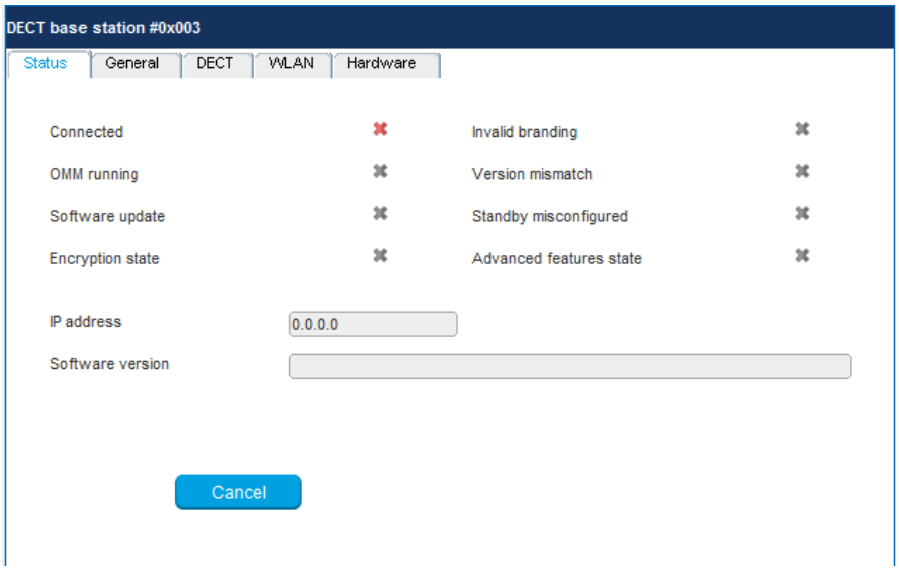
  or

- double-click on the appropriate RFP entry in the RFP table.

The DECT base station detail panel contains the following parameter groups sorted in different tabs.

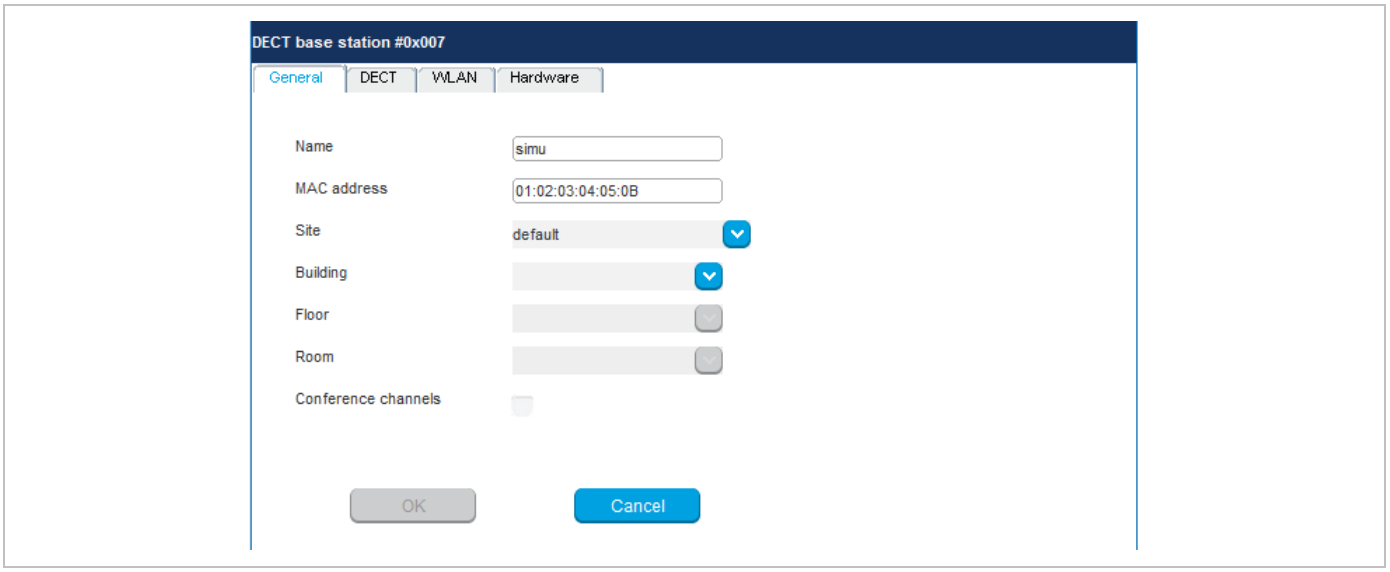
“Status” tab

This tab is only available in **Monitor Mode**. It shows system status information relating to the selected RFP.



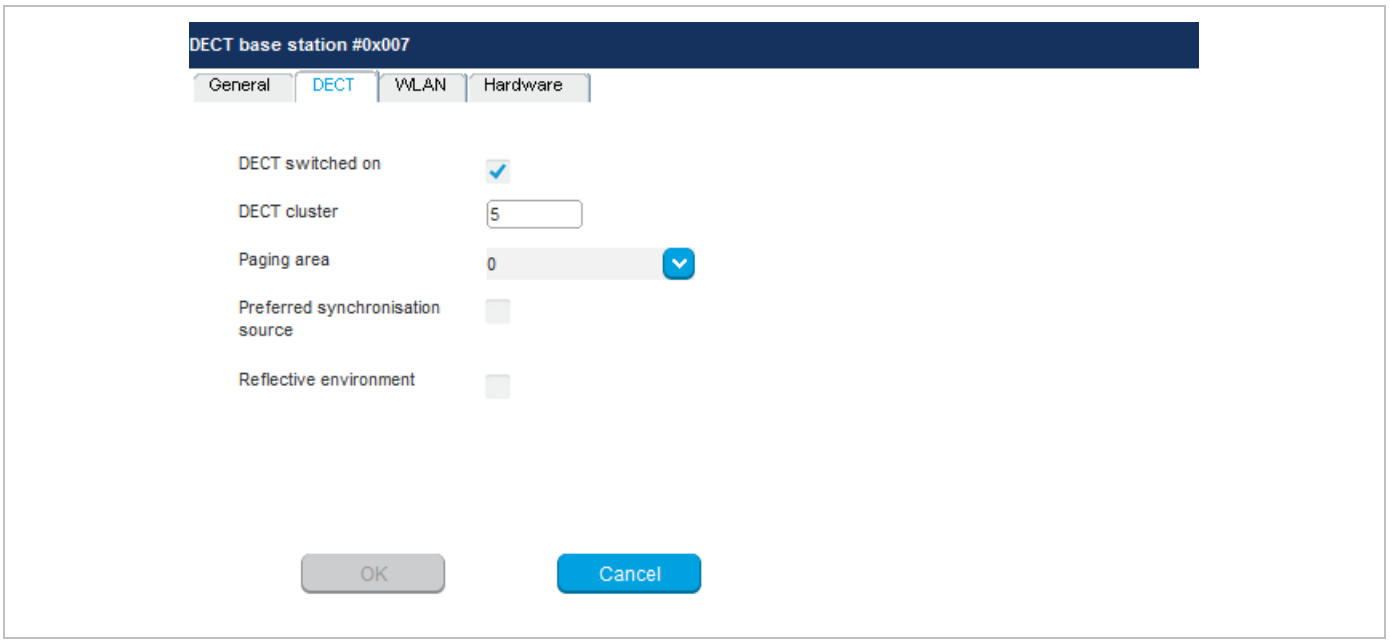
“General” tab

This tab contains the general RFP parameters.



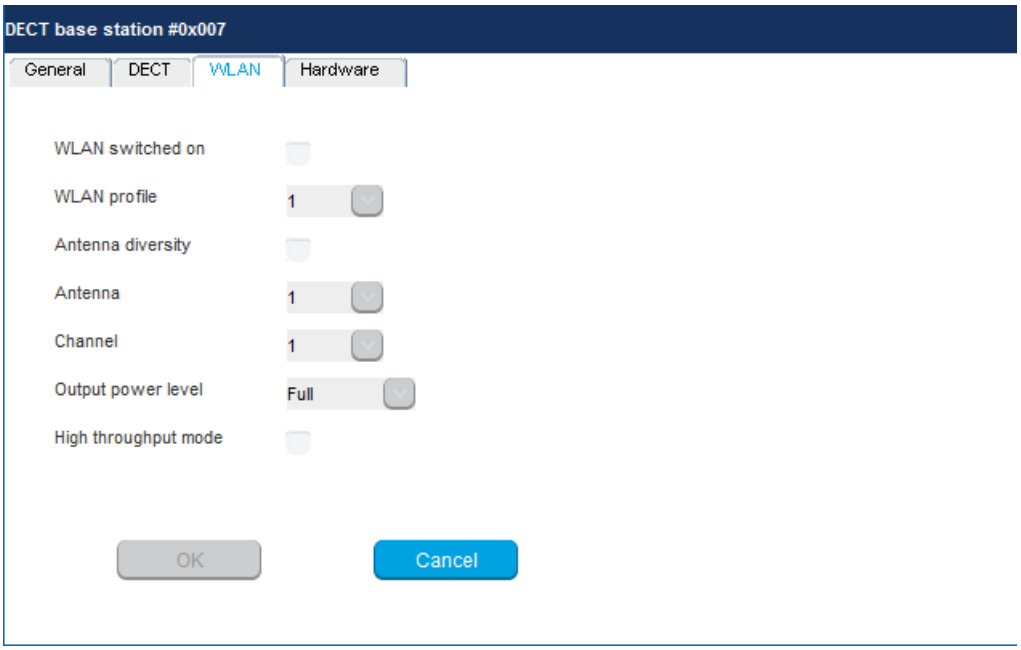
“DECT” tab

This tab contains the DECT base station's DECT parameters.



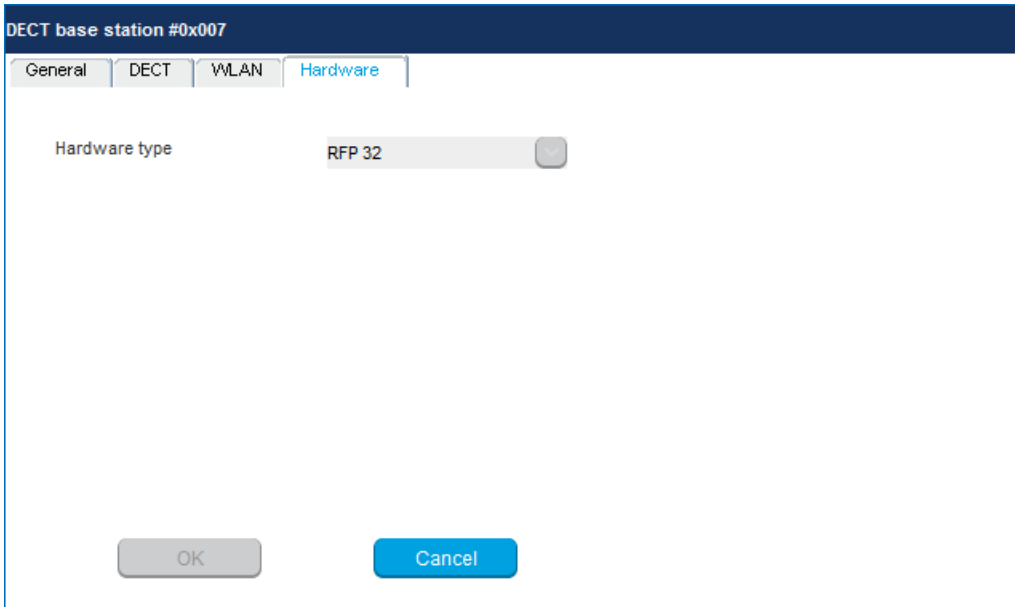
“WLAN” tab

This tab contains the DECT base station's WLAN parameters. Settings in the **WLAN** tab apply to RFP 42 WLAN and RFP 43 WLAN base stations only.



“Hardware” tab

In **Monitor Mode,** this tab shows hardware information of the selected DECT base station.



In configuration mode, the DECT base station **Hardware type** can be set if it is connecting to the OMM for the first time. Once the correct hardware type is received from the DECT base station, you cannot change it.

8.7.1.2 Adding New DECT Base Stations

You must be in **Configuration Mode** to add a new DECT base station. To add a DECT base station to the list of known base stations, do the following:

1 Click **Create** under the Tasks lists on the right side of the **DECT base stations** window.
The **New radio fixed part** panel opens.

2 Configure the DECT base station (see parameter descriptions below).

3 Click **OK**.

The following parameters can be set in the tabs of the **New DECT base station** panel:

"General" tab

- **Name**: The name for the RFP.
- **MAC address**: Each RFP is identified by its unique MAC address (6 bytes hex format, colon separated). Enter the MAC address, it can be found on the back of the chassis.
- **Site**: If several sites exist (see section 0), select the site the RFP is assigned to.
- **Building**, **Floor**, **Room**: For easier localization of the RFP you can enter data in these fields.
- **Conference channels**: Activate this option to enable the RFP to provide channels for 3-way conferencing. This option is available for RFP 35 / 36 / 37 / 43 (see section 9.19.7).

"DECT" tab

- **DECT switched on**: The DECT functionality for each RFP can be switched on/off.
- **DECT cluster**: If DECT is active the RFP can be assigned to a cluster.
- **Paging area**: Enter the paging area, the RFP is assigned to.

  Note: The **Paging area size** is set in the **DECT** tab of the **System settings** menu (see section 8.5.1). The assignment between RFPs and paging areas can be changed in the **Paging areas** menu (see section 8.7.1.8).

- **Preferred synchronisation source**: Activate this checkbox if the RFP should be used as synchronization source for the other RFPs in the cluster. For background information on RFP synchronization please refer to section 9.2.
- **Reflective environment**: Within areas containing lot of reflective surfaces (e.g. metal or metal coated glass) in an open space environment the voice quality of a DECT call can be disturbed because of signal reflections which arrive on the DECT phone or RFP using multipath propagation. Calls may have permanent drop outs while moving and high error rates on the RFPs and DECT phones.

  For such environment Mitel has developed the DECT XQ enhancement into base stations (RFP 32/34 , RFP 42 WLAN and RFP 35/36/37 IP, RFP 43 WLAN) and the Mitel 600 DECT phones family. Using this enhancement by switching the **Reflective environment** flag on might reduce drop outs and cracking noise.

  As soon as **Reflective environment** is switched on, the number of calls on an RFP 32/34 resp. RFP 42 WLAN or RFP 35/36/37 IP resp. RFP 43 WLAN is reduced to 4 calls at the same time.

Please note: The RFPs and DECT phones use more bandwidth on the Air Interfaces if the "Reflective environment" is switched on. Therefore this shall only be used when problems sourced by metal reflections are detected.

“WLAN” tab

Settings in the **WLAN** tab apply to RFPs of the type “RFP 42 WLAN” and “RFP 43 WLAN” only. For details about WLAN configurations please see section 9.17.

> **Please note:** WLAN properties can only be set if the correct hardware type is configured in the **Hardware** tab.

- **WLAN switched on**: The WLAN functionality for an RFP 42 WLAN or an RFP 43 WLAN can be switched on/off.
- For a description of the other parameters which can be set in the **WLAN** tab, please refer to the description of the **DECT base stations** page of the OMM Web service (see section 7.6.3). The corresponding parameters can be found there in the **WLAN settings** section.

Note: Configuration of WLAN profiles is only possible with the OM Web service, see section 7.8.1.

“Hardware” tab

WLAN properties can only be set if the correct hardware type is configured. This can be done manually before an RFP connects with the OMM and an automatic detection is possible (**Auto** setting).

8.7.1.3 Changing DECT base station configuration

Changing RFPs is only possible in **configuration mode**. To change the configuration of an existing RFP, do the following:

1. Select the appropriate RFP in the RFP table.
2. Click **Configure** under the Tasks lists on the right side of the **DECT base stations** window.
   The DECT base station detail panel opens (see section 0).
3. Change RFP parameters (see descriptions in section 8.7.1.2).
4. Click **OK**.

8.7.1.4 Viewing DECT base station Details

You can view the configuration of an RFP in **Monitor Mode**. Proceed as follows:

1. Select the appropriate RFP in the RFP table.
2. Click **Show details** under the Tasks lists on the right side of the **DECT base stations** window.
   The DECT base station detail panel opens (see section 0).
3. To close the RFP detail panel, click **Cancel**.

8.7.1.5 Deleting DECT base stations

Deleting RFPs is only possible in **Configuration Mode**. To delete one or more existing RFP, do the following:

1. Select the appropriate RFP(s) in the RFP table by activating the corresponding checkbox(es).
2. Click **Delete** under the Tasks lists on the right side of the **DECT base stations** window.
   The **Delete selected DECT base station(s)** dialog opens showing a confirmation prompt.

3 Click **OK** to confirm.

> **Please note:** License RFPs cannot be deleted.

8.7.1.6 Showing Synchronization Relations

You can view the synchronization relations of a DECT base station in **Monitor Mode**. Do the following:

1 Select the appropriate RFPs in the RFP table. At least two RFPs must be selected to show their synchronization relations.

2 Click **Show sync. Relations** under the Tasks lists on the right side of the **DECT base stations** window.

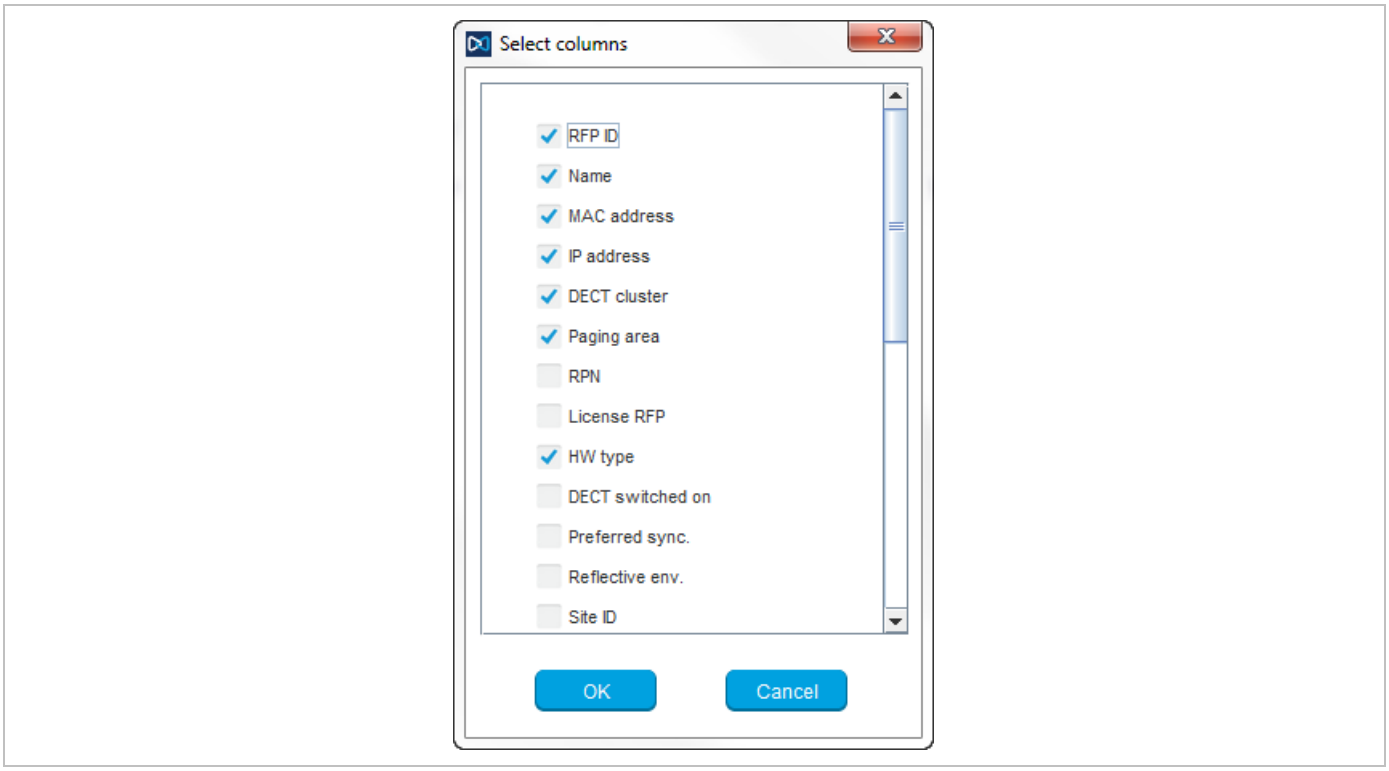
The view switches to the **Sync view** menu . For further information see section 8.7.6.

8.7.1.7 Selecting Columns

You can adapt the parameters shown in the RFP table to your needs:

1 Click **Select columns** under the Tasks lists on the right side of the **DECT base stations** window.

The **Select columns** dialog opens.



2 Select the columns that shall be shown by activating the appropriate checkboxes.

3 Click the **OK** button.

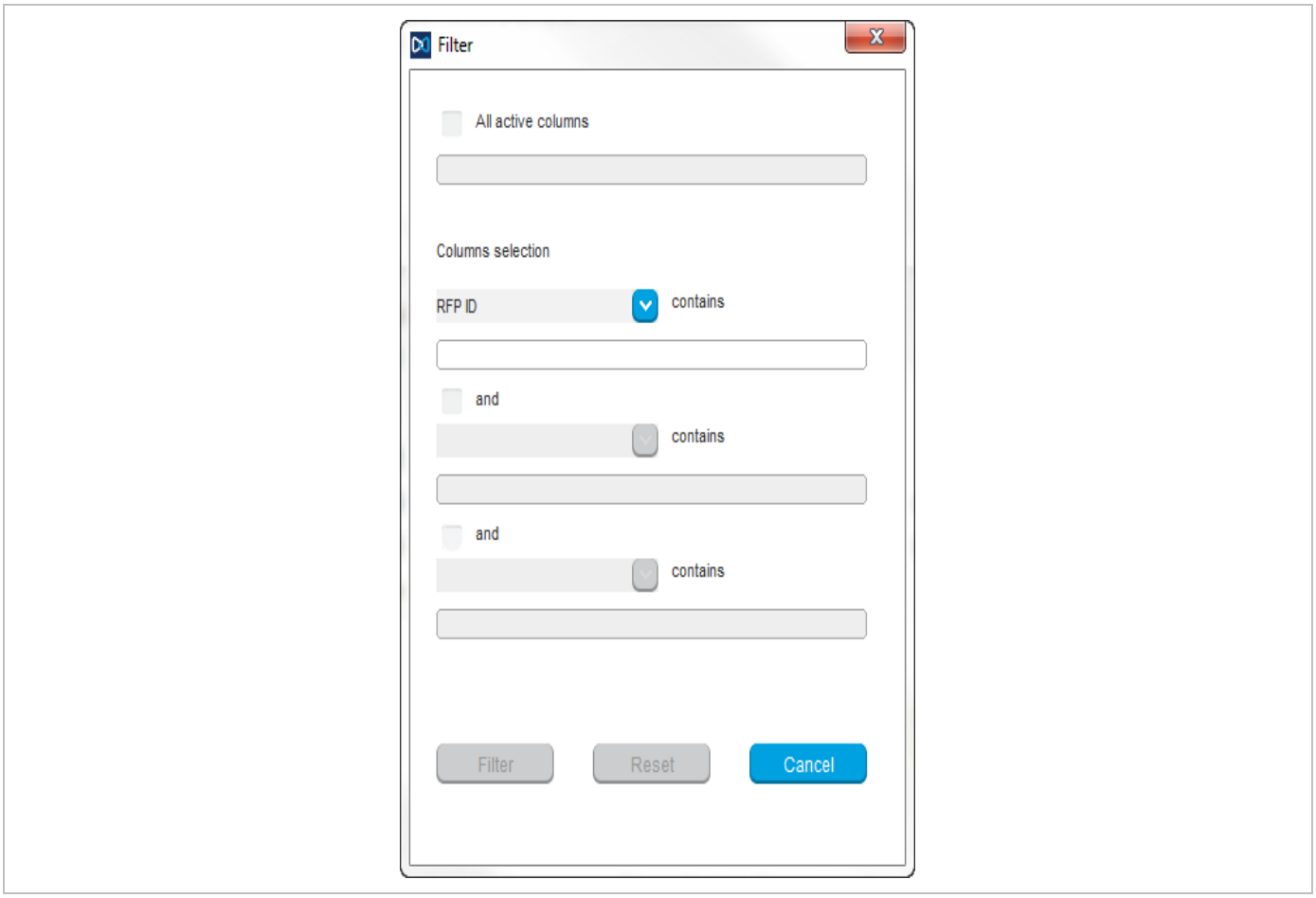
The RFP table will be adapted accordingly.

8.7.1.8 Filtering RFP Table

You can filter the list of RFP datasets shown in the RFP table by using a filter.

1 Click **Filter** under the Tasks lists on the right side of the **DECT base stations** window.

The **Filter** dialog opens.



2 Enter the search string that serves as filter criterion. You can enter digits and characters. The search is case sensitive.

3 Click on the **Filter** button.

The **Filter** dialog is closed and the RFP table will be adapted accordingly.

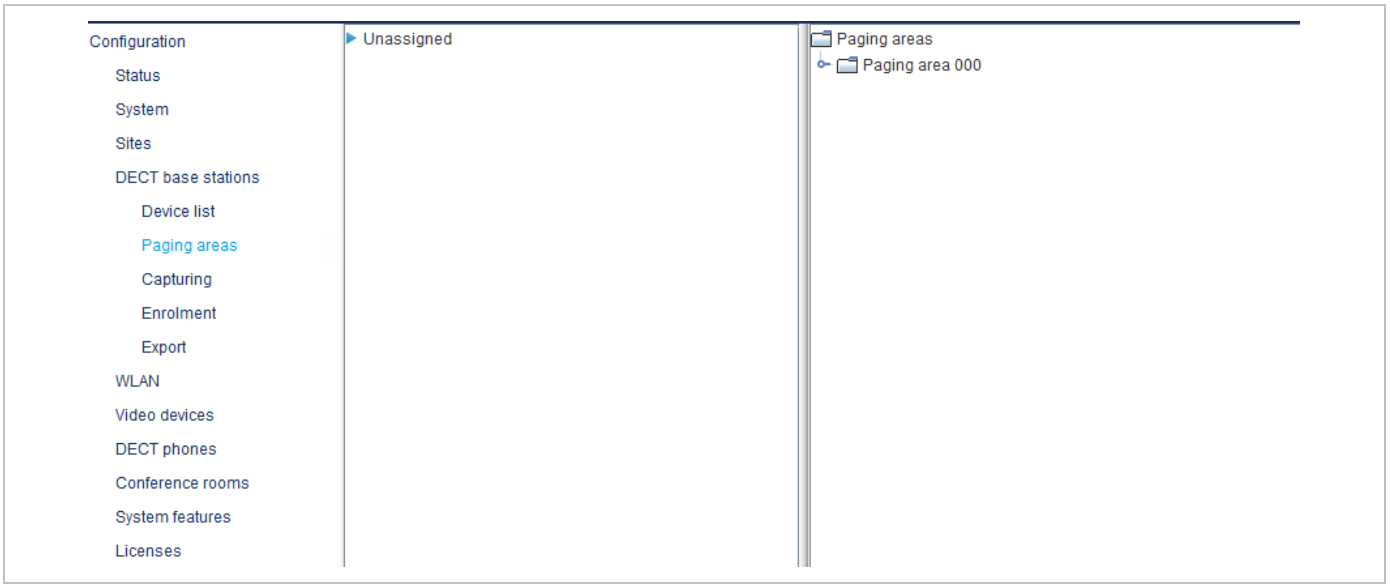
4 To reset the filter, click on the **Filter** command in the task bar on the right of the **DECT base stations** panel.

5 In the **Filter** dialog click on the **Reset** button.

8.7.2 "PAGING AREAS" MENU

The **Paging area** menu shows all configured RFPs in a tree structure consisting of two trees:

- The left **Unassigned RFPs** tree contains all RFPs without an assigned paging area.
- The right **Paging areas** tree shows all configured paging areas with RFPs assigned to these paging areas.



All RFPs are shown including their site and optional hierarchy (building, floor, and room) settings.

- RFPs can be moved by drag and drop from unassigned tree to paging area tree and vice versa, as well as between different paging areas inside the paging area tree.
- Only one RFP node can be moved at once.
- If a site or a hierarchy node is selected, all RFPs which are children of this node will be moved.
- If a paging area is completely filled with RFPs, moving additional RFPs in that paging area is prevented.
- If not all RFPs (selected by a site or hierarchy node) can be moved into a paging area, you will be asked if you want to move as much as possible RFPs or if the operation shall be cancelled.

Note: The **Paging area size** is set in the **DECT** tab of the **System settings** menu (see section 8.5.1).

8.7.3 "CAPTURING" MENU

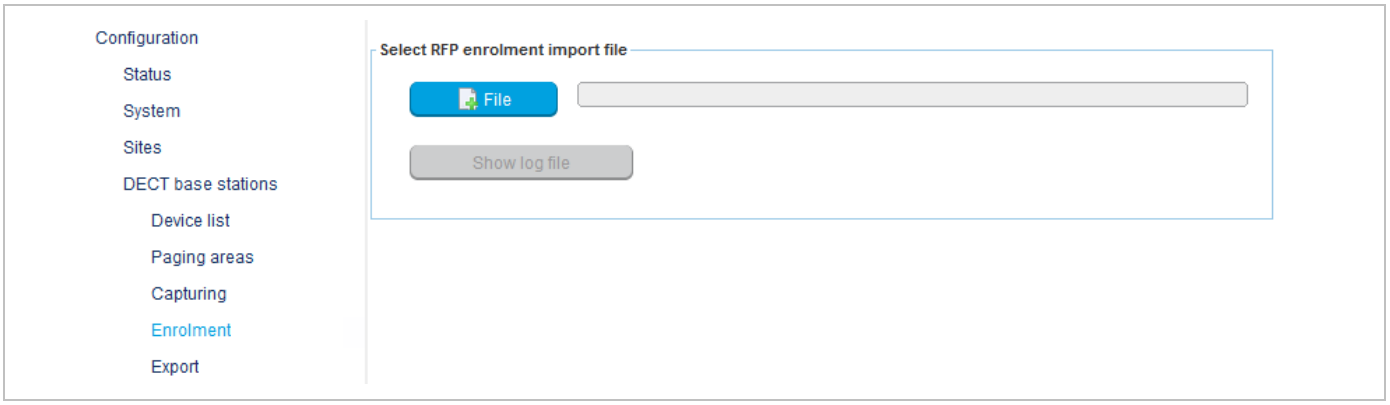
OMP supports the capture of DECT base stations that try to connect to OMM. These RFPs are assigned to OMM by DHCP options or OMM Configurator settings. Capturing is only accessible in **Configuration Mode**.

Available tasks:

- **Capturing**: Start/stop capturing (active capturing is indicated with a green check mark)
- **Add all**: Add all captured RFPs to OMM
- **Add selected**: Add selected RFPs to OMM
- **Remove all**: Remove selected RFPs from list (without adding to OMM)
- **Remove selected**: Remove selected RFPs from list (without adding to OMM)
- **Select columns**: Select RFP capturing table columns to be shown

8.7.4 “ENROLMENT” MENU

The **Enrolment** menu allows import of RFP datasets using a configuration file. For information about required configuration file format see section 11.5.



1 Click the **File** button.

A file system dialog opens in which you can select the configuration file. The configuration file must be encoded in UTF-8.

2 To check the results from reading the configuration file press the **Show log file** button. In case of file format errors these errors are listed here.

If reading of configuration file is successful, all RFP datasets read are shown in a newly created table. This table contains, apart from some RFP parameters, the **Status** column which shows the current import status for every RFP dataset:

– Not enrolled yet

– Enrolment failed

– OK (Enrolment successful)

3 Start the import by selecting one of the following commands:

Add all: import all RFP datasets into the OMM.

Add selected: import selected RFP datasets to the OMM. For selection activate the corresponding checkboxes in the RFP table.

Remove all: remove all RFP datasets from table. The table will be hidden.

Remove selected: remove selected RFP datasets from table. If the table is empty after removing of datasets, the table will be hidden. For selection activate the corresponding checkboxes in the RFP table.

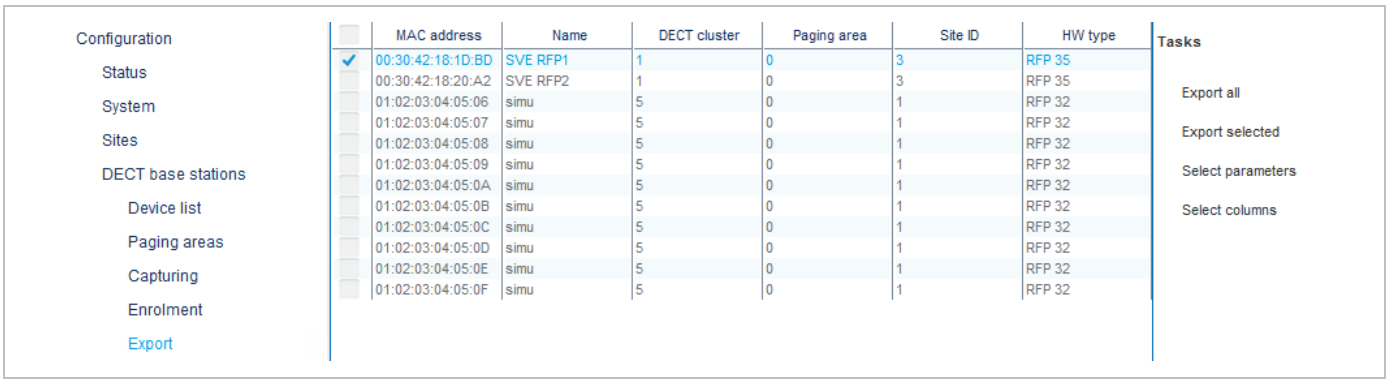
Show status: show import status of a selected RFP dataset. If enrolment failed for this RFP, a message describing the enrolment error is shown.

Select columns: select the columns that shall be shown in RFP table (see also 8.7.1.7).

8.7.5 "EXPORT" MENU

The **Export** menu allows export of all RFPs enrolled to the OMM to a ".csv" file. The generated file can be viewed with a standard spreadsheet application.

All enrolled DECT base stations are shown in a table.



The following tasks can be performed:

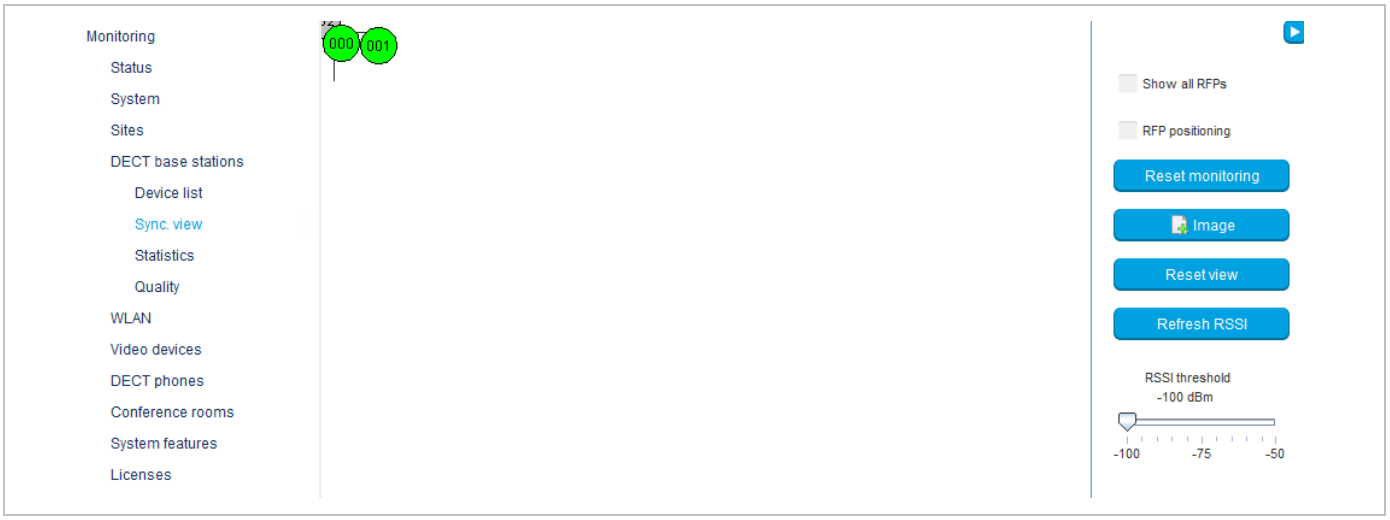
- **Export all**: export all DECT base station datasets.
- **Export selected**: export selected DECT base station datasets.
- **Select parameters**: select DECT base station parameters to be written to the .csv file (select all DECT base station parameters or a subset of these parameters).
- **Select columns**: select the columns to be written to the .csv file.

When the export begins, a file system dialog opens where you can select the export file name. If all parameters are selected for export, the export file can be re-imported using the Enrolment function (see section 8.7.3). For information about DECT base station export file format see Appendix, section 11.6).

8.7.6 “SYNC VIEW” MENU

The **Sync view** menu allows verification of the synchronization relations between DECT base stations in a graphical manner.

Note: For information on DECT base station synchronization, see section 9.2.



To open the task panel, click the arrow icon in the upper right corner of the **Sync view** panel.

The task panel is displayed on the right. The following tasks can be performed:

- **Show all RFPs**: If this checkbox is activated, all configured RFPs are shown in the sync panel; else only selected RFPs are shown.
- **RFP positioning**: If this checkbox is activated, RFP positions can be changed; else RFP positions are fixed.
- **Reset monitoring**: reset all active sync view monitoring relations.
- **Image**: select background image for sync panel.
- **Reset view**: reset selected view (zero coordinates are reset to the left upper corner of the sync view panel).
- **Refresh RSSI**: request new RSSI values from OMM for active sync relations.

Viewing sync relations

RFPs for which sync relations shall be shown, can be selected as follows:

- Select (more than one) RFP in device list table (see section 8.7.1)

  or

- Activate RFP mouse menu in sync view: Press the right mouse button while mouse cursor is on an RFP icon and select the **Activate Monitoring** command from the context menu.

The color of the RFP icon indicates synchronization state of that RFP:

- Grey: inactive
- Red: not synchronized
- Yellow: searching
- Green: synchronized

Sync relations between RFPs are represented by arrows.

Viewing RSSI values

The color of the arrows between RFPs is an indication of the RSSI value of the link:

- Red: RSSI < -90 dBm
- Orange: -90 dBm <= RSSI <= -70 dBm
- Green: RSSI > -70 dBm

If the mouse is moved over an RFP with monitoring activated, a tool tip with RSSI values will be opened. You can use the **RSSI threshold** slider to limit the display of values in the tool tip.

8.7.7 "STATISTICS" MENU

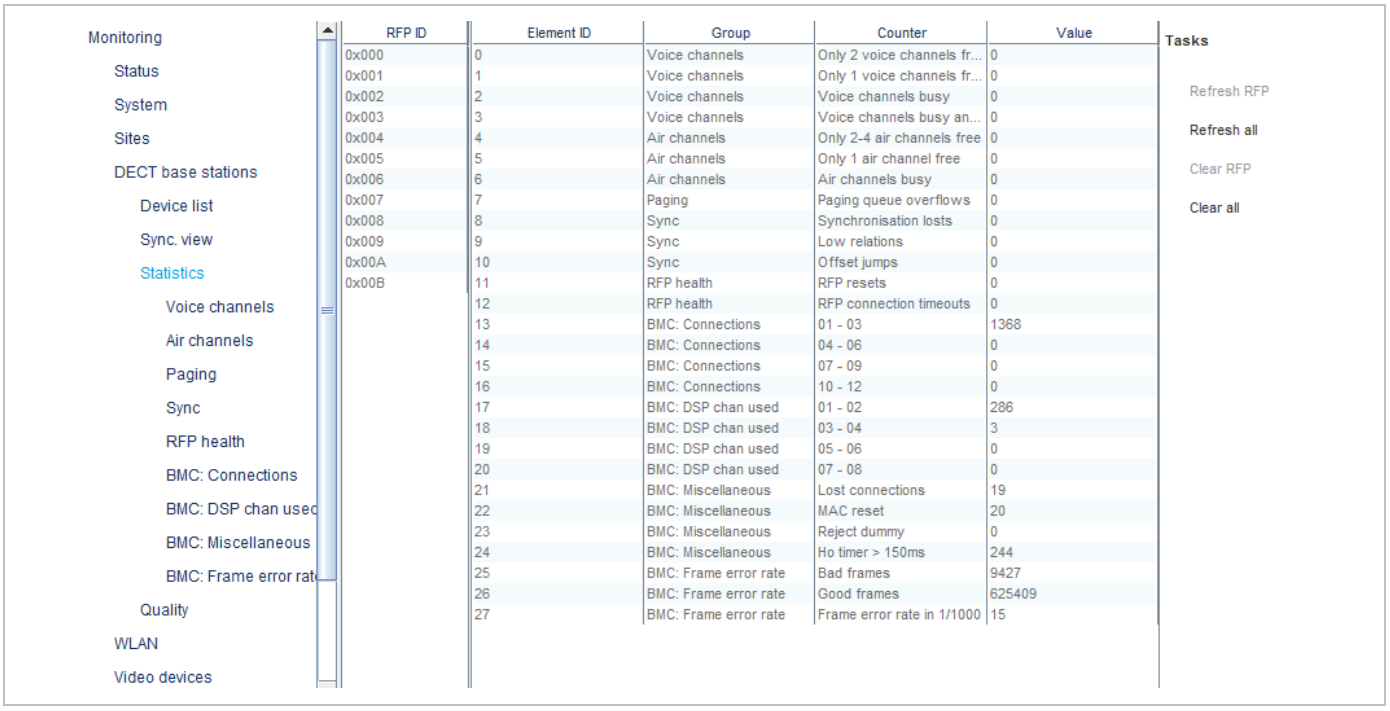
The **DECT base stations** -> **Statistics** menu provides information about DECT base station statistics counters. It contains:

- an overview panel with all statistics counters (see section 8.7.7.1)
- multiple statistics group panels, where related statistics counter types are grouped together (see section 8.7.7.2).

The menu is only available in **Monitor Mode**.

8.7.7.1 DECT base station Statistics Overview

The DECT base station statistics overview page contains a list of RFPOs by ID, and an overview of all RFP statistics counters.



RFP ID	Element ID	Group	Counter	Value
0x000	0	Voice channels	Only 2 voice channels fr...	0
0x001	1	Voice channels	Only 1 voice channels fr...	0
0x002	2	Voice channels	Voice channels busy	0
0x003	3	Voice channels	Voice channels busy an...	0
0x004	4	Air channels	Only 2-4 air channels free	0
0x005	5	Air channels	Only 1 air channel free	0
0x006	6	Air channels	Air channels busy	0
0x007	7	Paging	Paging queue overflows	0
0x008	8	Sync	Synchronisation losts	0
0x009	9	Sync	Low relations	0
0x00A	10	Sync	Offset jumps	0
0x00B	11	RFP health	RFP resets	0
	12	RFP health	RFP connection timeouts	0
	13	BMC: Connections	01 - 03	1368
	14	BMC: Connections	04 - 06	0
	15	BMC: Connections	07 - 09	0
	16	BMC: Connections	10 - 12	0
	17	BMC: DSP chan used	01 - 02	286
	18	BMC: DSP chan used	03 - 04	3
	19	BMC: DSP chan used	05 - 06	0
	20	BMC: DSP chan used	07 - 08	0
	21	BMC: Miscellaneous	Lost connections	19
	22	BMC: Miscellaneous	MAC reset	20
	23	BMC: Miscellaneous	Reject dummy	0
	24	BMC: Miscellaneous	Ho timer > 150ms	244
	25	BMC: Frame error rate	Bad frames	9427
	26	BMC: Frame error rate	Good frames	625409
	27	BMC: Frame error rate	Frame error rate in 1/1000	15

The following tasks can be performed:

- **Refresh RFP**: request counter update by OMM for selected DECT base station statistics counters.
- **Refresh all**: request counter update by OMM for all DECT base station statistics counters.
- **Clear RFP**: clear all DECT base station statistics counters on selected DECT base station.
- **Clear all**: clear all DECT base station statistics counters.

If a DECT base station is selected (left **RFP ID** table), the statistics counter table shows counter values for that DECT base station (right table). When a statistics counter entry is selected, a detail panel opens which shows more detailed information for that counter.

The detail panel shows values for total occurrence and occurrence in current and last week. You can clear the selected statistics counter on the selected DECT base station by pressing the **Clear** button.

8.7.7.2 DECT base station Statistics Group Panels

The DECT base station statistics group panels divide DECT base station statistics counters into logical groups. This allows display of all statistics counters of a special group of all DECT base stations in one table.

The group panels are listed under the **Statistics** menu entry in the left panel.

Note that as of SIP-DECT 6.0, the statistic data collected by the BMC part of each DECT base station device (in the DECT MAC layer) are now shown with the DECT base station statistic data collected by the OMM.

As an update between OMM and DECT base station usually occurs once every hour, it can take up to one hour for an event that increments a BMC statistic counter to appear in the OMP.

The following tasks can be performed:

- **Refresh RFP**: request counter update by OMM for selected DECT base station.
- **Refresh all**: request counter update by OMM for all counters.
- **Clear group RFP**: clear counter group of selected DECT base stations.
- **Clear group**: clear counter group of all DECT base stations.
- **Clear RFP**: clear all counters of selected DECT base station.
- **Clear all**: clear all counters of all DECT base stations.

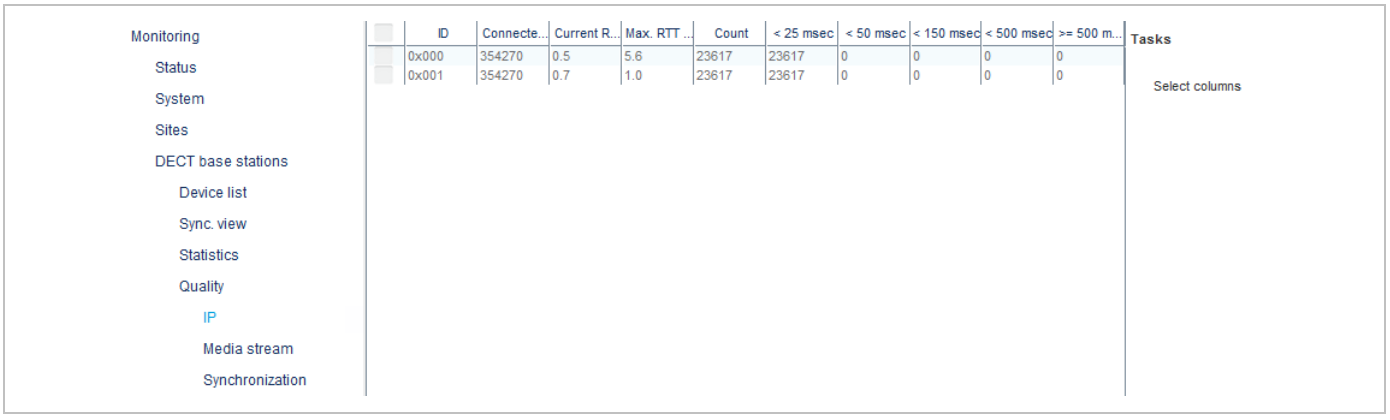
8.7.8 “QUALITY” MENU

OMP provides a monitoring ability for critical IP network parameters. Administrators can check basic network quality information for all DECT base stations. This includes Voice quality (Jitter, Packet lost) and OMM to RFP link quality (Roundtrip delay).

The menu is only available in **Monitor Mode**.

8.7.8.1 IP

IP quality menu provides information about link quality between DECT base stations and OMM.



Displayed parameters:

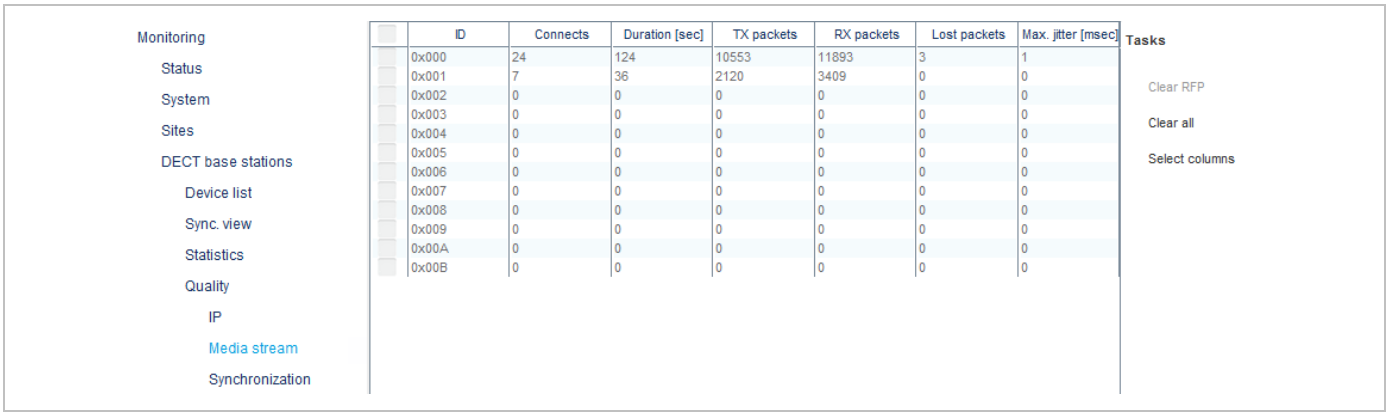
- **ID**: Radio fixed part identifier
- **Connected time**: Time the RFP is connected to OMM (sec)
- **Current RTT**: Current roundtrip time between RFP and OMM (msec)
- **Max. RTT**: Maximal detected roundtrip time between RFP and OMM
- **Count**: Number of roundtrip time measures
- **< 25 msec**: Number of roundtrip time measures lower than 25 msec
- **< 50 msec**: Number of roundtrip time measures between 25 and 50 msec
- **< 150 msec**: Number of roundtrip time measures between 50 and 150 msec
- **< 500 msec**: Number of roundtrip time measures between 150 and 500 msec
- **>= 500 msec**: Number of roundtrip time measures 500 msec and more

Available tasks:

- **Select columns**: Columns to be shown in IP quality table

8.7.8.2 Media Stream

Media stream panel provides information about voice quality.



Displayed parameters:

- **ID**: Radio fixed part identifier
- **Connects**
- **Duration (sec)**
- **TX packets**
- **RX packets**
- **Lost packets**
- **Max. jitter(msec)**

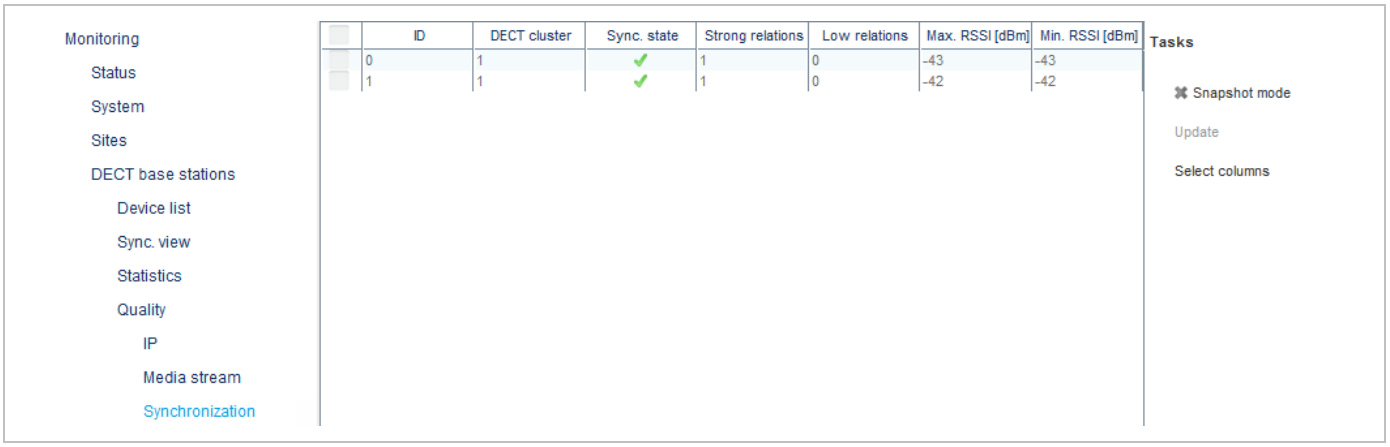
Available tasks:

- **Clear RFP**: Clear values for selected RFPs
- **Clear all**: Clear values for all RFPs
- **Select columns**: Select media stream quality table columns to be shown

8.7.8.3 Synchronization

Synchronization panel allows checking the synchronization status of RFPs which allows identifying RFPs with bad synchronization coverage.

Synchronization monitoring can optionally be run in snapshoot mode. If this mode is activated, data update must be triggered by a user otherwise data were updated automatically anytime if new values arrive from OMM.



Available parameters:

- **ID**: Radio fixed part id
- **DECT cluster:** Cluster of the RFP
- **Sync state**: Synchronization state of the RFP
- **Strong relations**
- **Low relations**
- **Max. RSSI (dBm)**
- **Min. RSSI (dBm)**

Available tasks in media synchronization quality table:

- **Snapshoot mode**: Enable snapshoot mode (green check mark signalize snapshoot mode is activated)
- **Update**: Request data update in snapshoot mode
- **Select columns**: Select synchronization quality table columns to be shown

8.8 “WLAN” MENU

OMP supports configuration of WLAN profiles and provides an overview of wireless clients currently connected.

8.8.1 PROFILES

OMM supports up to 20 WLAN profiles, which can be added, changed and deleted in OMP configuration mode. Configuration and state of any WLAN profile can be checked in monitoring mode.

8.8.1.1 WLAN Profiles - configuration mode

WLAN profile configuration menu provides an overview of all configured WLAN profiles.

The following tasks are available in this menu:

- **Create profile**: Create a new WLAN profile (available if the maximal number of 10 WLAN profiles is not yet reached)
- **Configure profile**: Reconfigure selected profile
- **Delete profile**: Deletes a selected profile (only available if selected profile is not in use by any Radio fixed part)
- **Delete all profiles**: Deletes all existing profiles (only available if none of these profiles is in use by any Radio fixed part)
- **Configure MAC filter**: Add, configure, delete MAC filter for selected profile
- **Select columns**: Select WLAN profile table columns to be shown

8.8.1.2 WLAN Profiles Monitoring Mode

WLAN profile monitoring menu shows all configured WLAN profiles.

The following tasks are available:

- **Show Profile**: Show details of selected WLAN profile
- **Show MAC filter**: Show configured MAC filter of selected WLAN profile
- **Select columns**: Select WLAN profile table columns to be shown

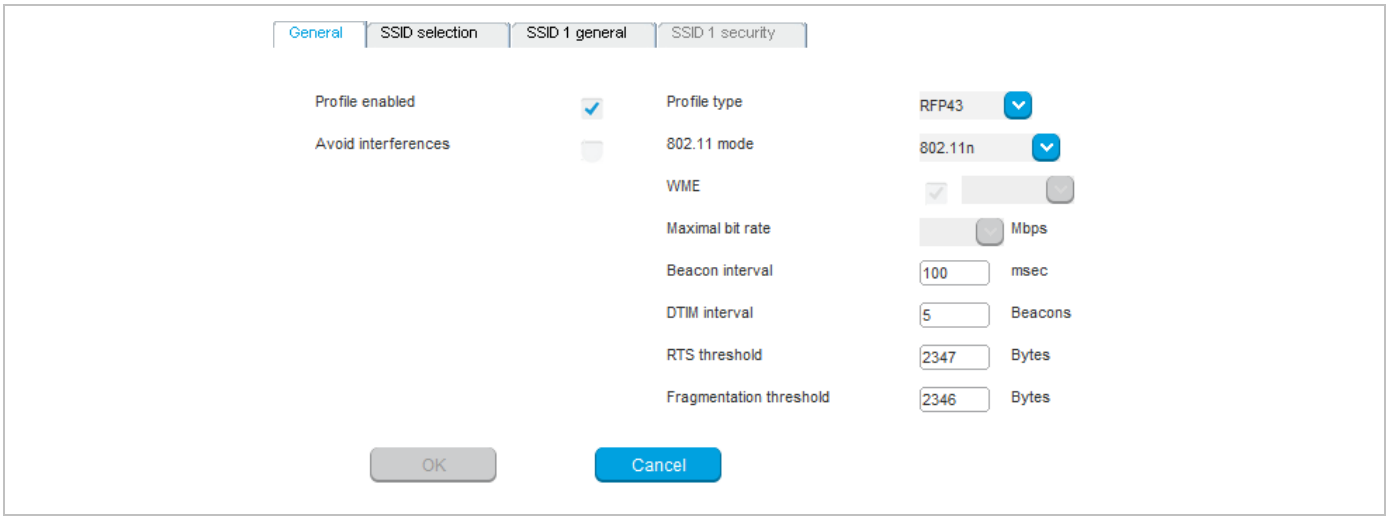
8.8.1.3 WLAN Profile Detail Panel

WLAN profile detail panel is used to create, reconfigure or show a profile. It consists of different tabs which are used for general settings of WLAN profile, SSID configuration and SSID security settings.

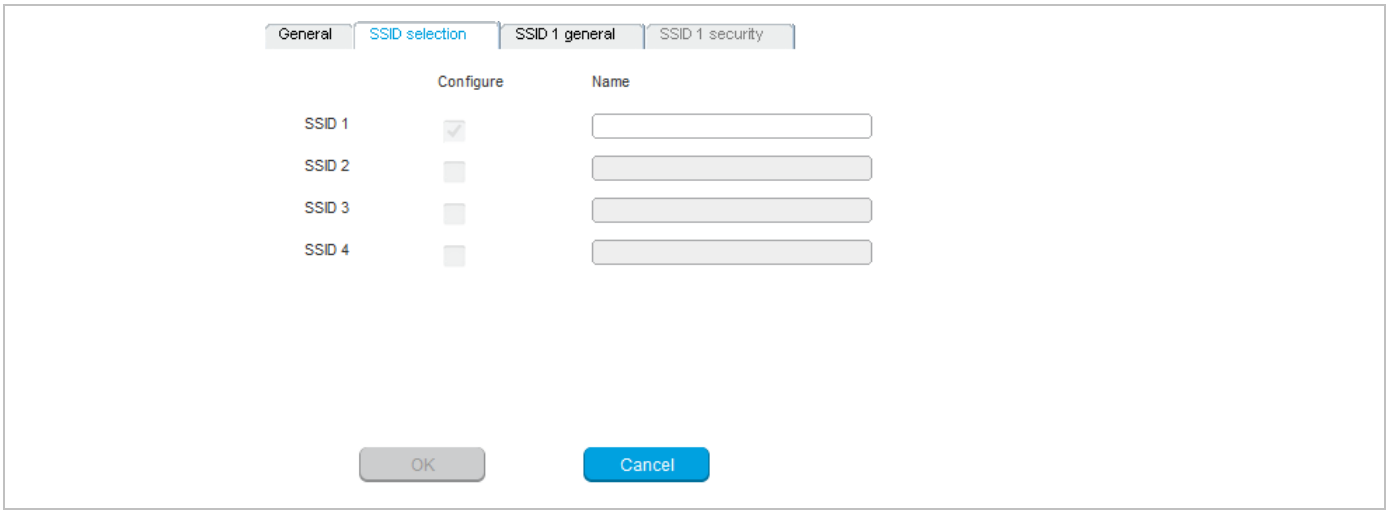
WLAN profile detail panel is opened if one of the following tasks is performed in WLAN profile menu:

- **Create profile** (configuration mode)
- **Configure profile** (configuration mode)
- **Show profile** (monitoring mode)

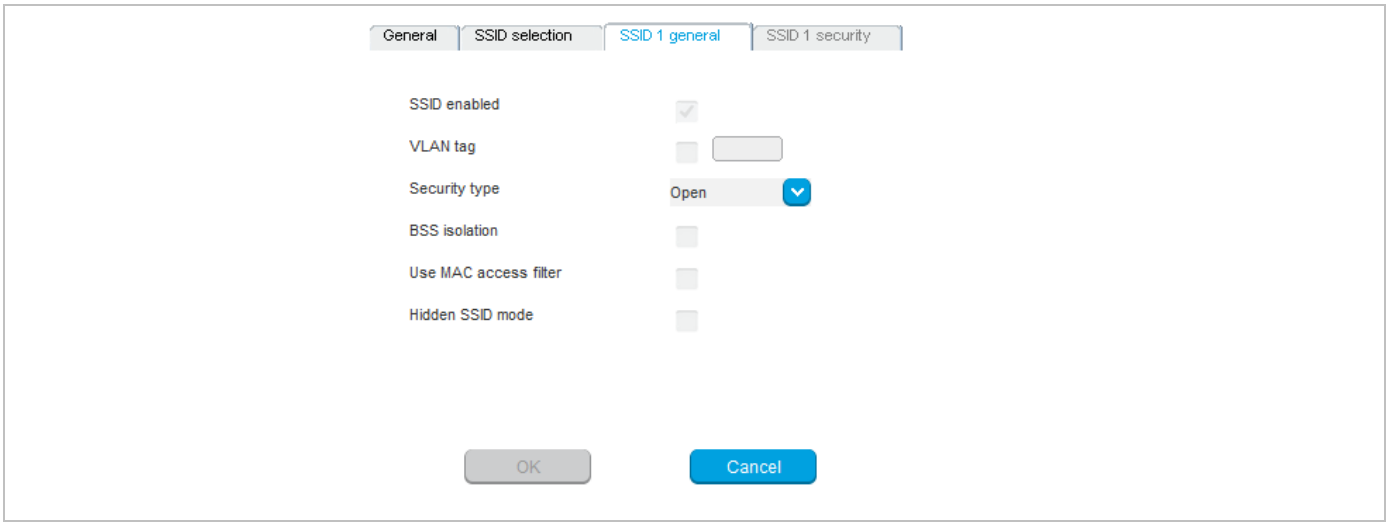
The “General” tab is always shown and configures/shows general settings of this profile like enabling of profile and profile type.



The ”SSID selection” tab is used for enabling of SSIDs. At least “SSID 1” is always enabled. “SSID 2”, “SSID 3” and “SSID 4” can be activated optional.



The “SSID x general” tab is shown for any activated SSID. Among other things, you can use it to select Security type.



A tab “SSID x security” is shown as well. It is accessible only for SSIDs with security type set to “WEP” or “WPA”. If security type stays at “Open” this tab is inactive. It allows setting of all necessary security parameters for this SSID.

8.8.1.4 MAC Access Filter Detail Panel

MAC access filter detail panel in configuration mode allows the adding, configuring and deleting of MAC access filters. File import and export of MAC access filters is supported as well.

Monitoring mode shows all configured MAC access filters only.

MAC access filter detail panel is opened if one of the following tasks is performed in WLAN profile menu:

- **Configure MAC filter** (configuration mode)
- **Show MAC filter** (monitoring mode)

The “General” tab in configuration mode shows all configured MAC access filter.

The following actions are available:

- **Create**: Create new MAC access filter
- **Configure**: Change name of selected MAC access filter
- **Delete**: Delete all selected MAC access filter

The “Import” tab (configuration mode only) provides import of a list of MAC access filter from file.

The “Export” tab (configuration mode only) provides export of all configured MAC access filters to file. If no MAC access filter is configured, this tab is inactive.

8.8.1.5 Clients

WLAN clients menu which is available in monitoring mode only, shows all currently connected wireless clients.

8.9 “VIDEO DEVICES” MENU

The **Video devices** panel lists all configured video devices. The device list is available in **Configuration Mode** as well as in **Monitor mode**.

New video device entries show up automatically after they are connected to and recognized by a DECT base station. The **Plugged** and **State** columns shows the following states:

- ✖ / **unplugged** – Video device is not connected.
- ✔ / **plugged** – Video device is connected.
- ✔ / **started** – Video device is being watched in the OM Locating application.
- ✖ / **stopped** – Video device is connected but disabled in the OMP.

The **Tag** column shows the USB ID of the connected video device. The **USB path** column shows the USB port number to be used, e.g. “1” is a video device connected directly to the RFP while “1.1” indicates an indirect connection using an USB hub.

The tasks which can be performed are mode-dependant.

Configuration mode	Monitor mode	See section
Configure: configure selected video device in detail panel		8.9.1
	Show details: show selected video device in detail panel	8.9.2
Delete: delete selected disconnected video device		8.9.3
Filter: show only video device entries in table which contains a special search string	**Filter**: show only video device entries in table which contains a special search string	8.9.4

8.9.1 CHANGING VIDEO DEVICES

Changing video devices is only possible in **Configuration Mode**. To change the configuration of an existing video device, do the following:

1. Select the appropriate video device in the video devices table.
2. In the task bar on the right of the **Video devices** panel click on the **Configure** command.
   The video device detail panel opens.
3. Change video device parameters, see description below.
4. Press the **OK** button.

> **Please note:** You cannot change the configuration for a video device that is being watched in the OM Locating application (**State** column shows “active”). You must disable the video device first by deactivating the **Active** option.

The following parameters can be set in the **General** tab of the **Video devices** panel:

- **Active**: Disable this option to switch off the video device. This also switches off the status LED of the video device immediately (if applicable).
- **Name**: Enter a meaningful name for the video device.
- **Building**, **Floor**, **Room**: For easier localization of the video device you can enter data in these fields.

- **Resolution**: Select a resolution for the video device. Higher resolutions require more bandwidth when watching the video image in the OM Locating application. Note, that not all video devices support all available resolutions. Default: “VGA (640 x 480)”.
- **Frame rate**: Select a frame rate (2-10 frames per second). Higher frame rates require more bandwidth when watching the video image in the OM Locating application.
- **Rotation**: Select the video image rotation (0, 90, 180, or 270 degrees).

8.9.2 VIEWING VIDEO DEVICE DETAILS

You can view the configuration of a video device in **monitor mode**. Proceed as follows:

1 Select the appropriate video device in the video devices table.

2 In the task bar on the right of the **Video devices** panel click on the **Show details** command.
The video device detail panel opens (see 8.9.1).

3 Click **Cancel** to close the video device detail panel.

8.9.3 DELETING VIDEO DEVICES

Deleting video devices is only possible in **Configuration Mode**. To delete one or more existing video devices proceed as follows:

1 Select the appropriate video device(s) in the video devices table by activating the corresponding checkbox(es). Note that you can only delete disconnected video devices.

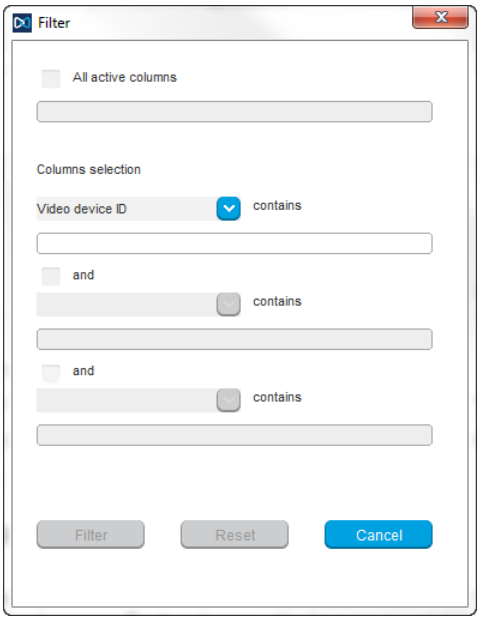
2 In the task bar on the right of the **Video devices** panel click on the **Delete** command.
The **Delete selected video devices(s)** dialog opens showing a confirmation prompt.

3 Confirm the displayed prompt with **OK**.

8.9.4 FILTERING VIDEO DEVICE TABLE

You can filter the list of video device entries shown in the video devices table by using a filter.

1 In the task bar on the right of the **Video devices** panel click on the **Filter** command.
The **Filter** dialog opens.



2 Enter the search string that serves as filter criterion. You can enter digits and characters. The search is case sensitive.

3 Click on the **Filter** button.

The **Filter** dialog is closed and the video device table will be adapted accordingly.

4 To reset the filter, click on the **Filter** command in the task bar on the right of the **Video devices** panel.

5 In the **Filter** dialog click on the **Reset** button.

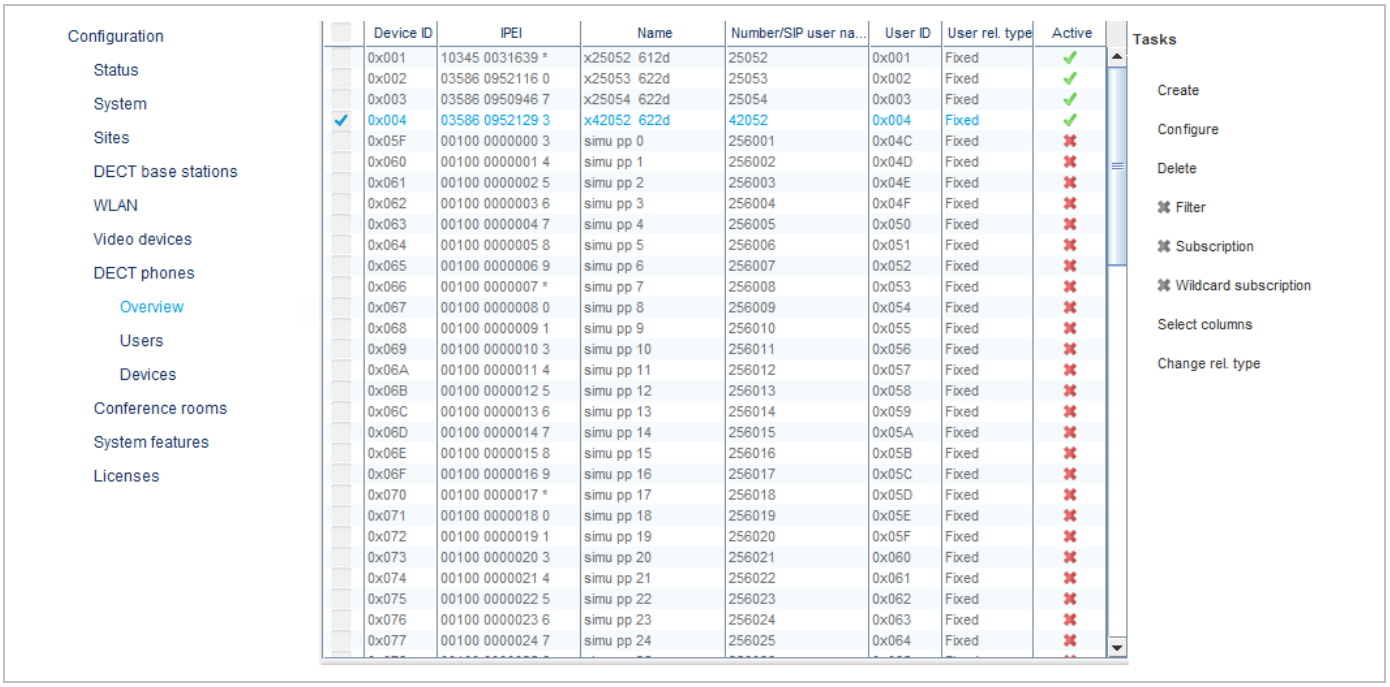
8.10 “DECT PHONES” MENU

DECT phone datasets can be configured and viewed in the **DECT phones** menu. The **DECT Phones** menu contains different submenus. Each submenu displays its own table of DECT phone datasets.

Configuration mode	Monitor mode	See section
Overview: Displays all user and device-related DECT phone data	**Overview**: Displays all user and device-related DECT phone data	8.10.1
Users: Displays all DECT phone user data		8.10.2
Devices: Displays all DECT phone device data	**Devices**: Displays all DECT phone device data	8.10.3
	User monitoring: Displays the status of all monitored users	9.28.7.3

8.10.1 ”OVERVIEW” MENU

In the **Overview** panel, all user-related and device-related DECT phone data are listed in a table. The overview is available in **Configuration Mode** and **Monitor mode**.



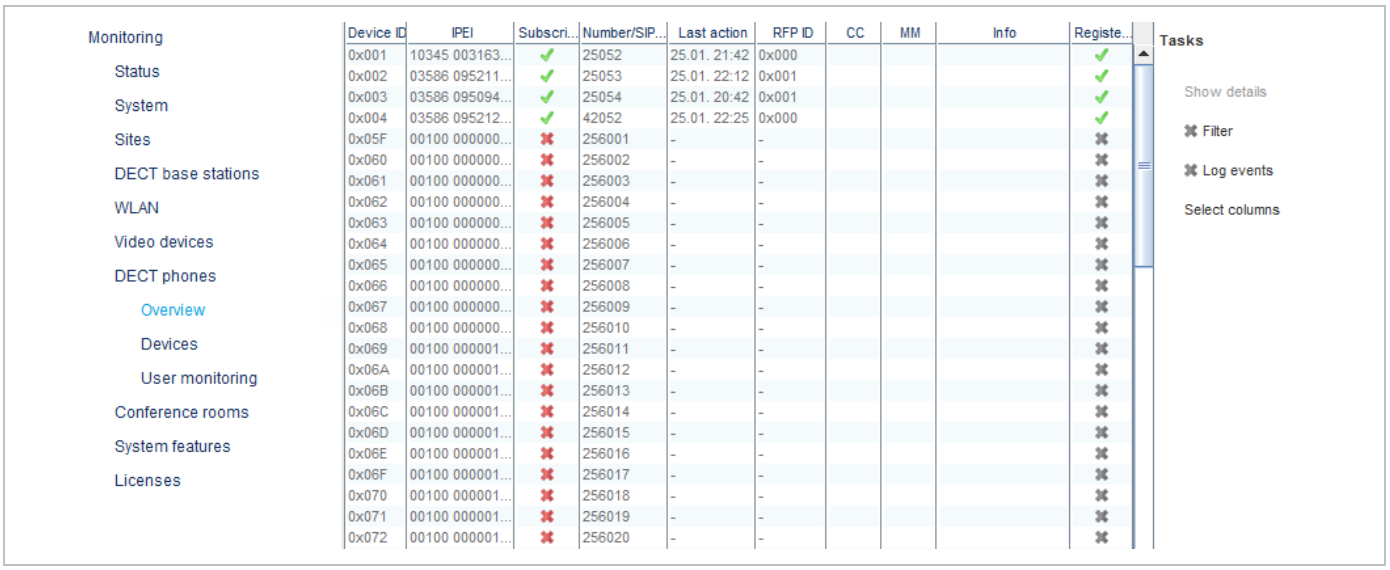
In **Configuration Mode**, the **Overview** panel allows you to create **fixed** DECT phones (i.e., user and device are permanently associated).

The **Active** column shows the following states:

- ✖ - DECT phone is not subscribed to the system.
- ✔ - DECT phone is subscribed to the system.

Note: If the **Active** column is not displayed, you can activate it in the **Select columns** dialog, see section 8.10.9.
To view the user-device-relation, ensure that the **User ID** and **Device ID** columns are also activated.

In monitor mode you can view the registration status of a DECT phone user by activating the **Registered**, **Registrar server type**, **Registrar server** and **Registrar port** columns. See section 8.10.9 for information on selecting columns and section 9.19.6 for information on the SIP registration status.

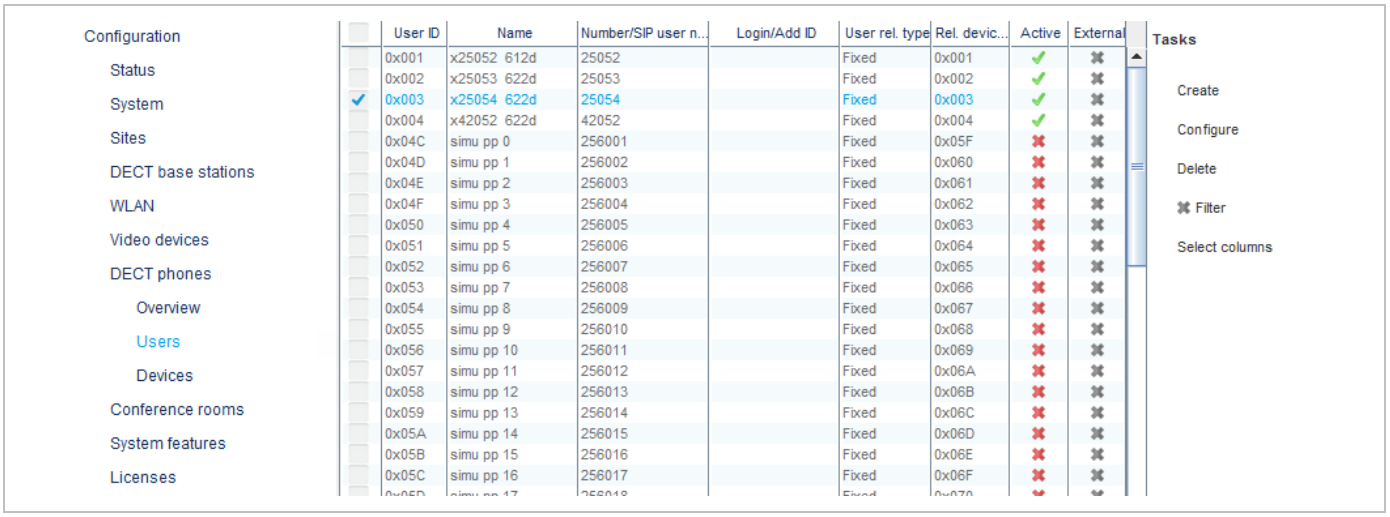


The tasks you can perform are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create new fixed DECT phone dataset in detail panel		8.10.5
Configure: configure selected DECT phone user and device dataset in detail panel		8.10.6
	Show details: show selected DECT phone user and device dataset in detail panel	8.10.4
Delete: delete selected DECT phone user and device dataset (in case of fixed relation) or delete DECT phone user and set device to unbound status (in case of dynamic relation)		8.10.8

Configuration mode	Monitor mode	See section
Subscription: start DECT phone subscription		8.10.7
Wildcard subscription: start DECT phone wildcard subscription		8.10.7
Select columns: select columns/parameters to be shown in DECT phone table	**Select columns**: select columns/parameters to be shown in DECT phone table	8.10.9
Filter: show only DECT phone datasets in table which contain a special search string	**Filter**: show only DECT phone datasets in table which contain a special search string	8.10.10
Change rel. type: change the DECT phone relation type		8.10.11
	Log events: enable/disable DECT phone event log	8.10.11

8.10.2 “USERS” MENU



In the **Users** panel, all DECT phone user data are listed in a table. The **Users** panel allows you to create (unbound) users (which should be able to login and logout at a device).

Note: Use the **Select columns** dialog (see section 8.10.9) to display the desired DECT phone user data.

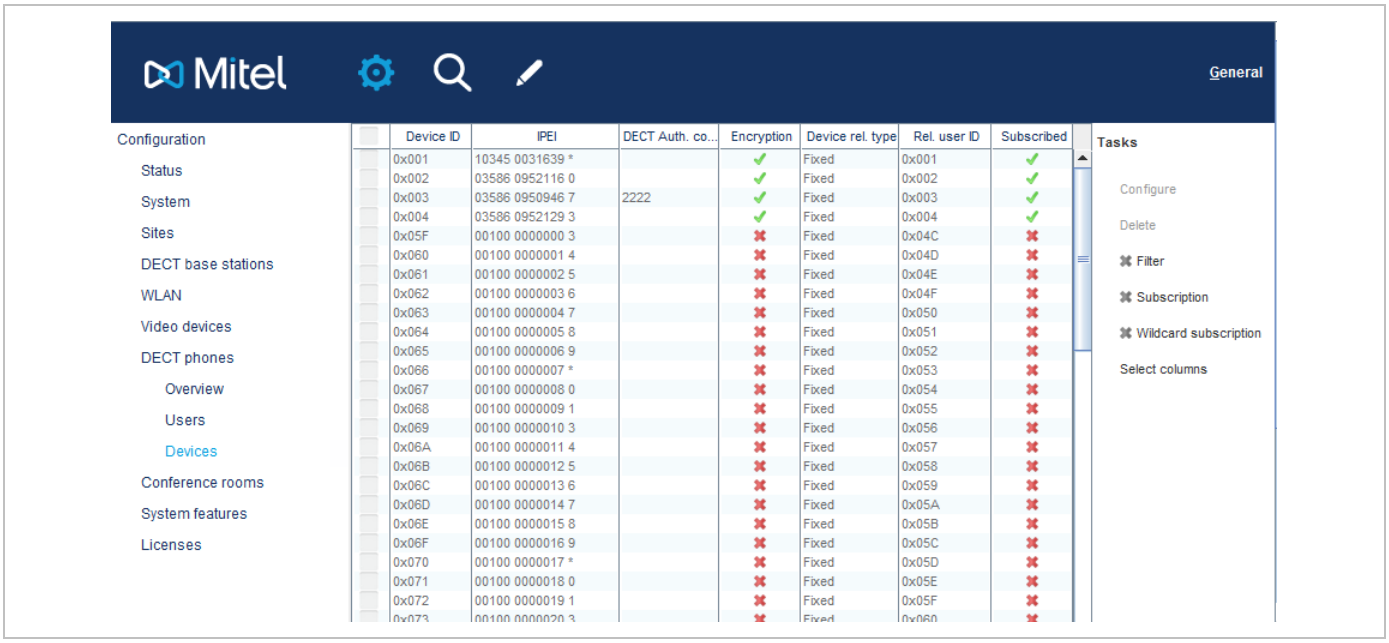
The following tasks can be performed:

- **Create**: create new unbound DECT Phone user dataset (see section 8.10.5).
- **Configure**: configure selected DECT Phone user dataset (see section 8.10.6).
- **Delete**: delete selected DECT Phone user dataset. Also delete device data in case of a fixed relation (see section 8.10.8).
- **Select columns**: select parameter columns to be shown in table (see section 8.10.9).
- **Filter**: filter DECT phone datasets shown in table for string set in filter mask (see section 8.10.10).
- **Change rel. type**: change the DECT phone relation type (see section 8.10.11).

8.10.3 “DEVICES” MENU

In the **Devices** panel, all DECT phone device data are listed in a table. The **Device** panel allows you to configure the DECT part of a DECT phone device dataset.

Devices cannot be created separately. They are created automatically during subscription (unbound) or they are created fixed bound to a user when a user is created in the **Overview** submenu.



Note: Use the **Select columns** dialog (see section 8.10.9) to display the desired DECT phone device data.

The following tasks can be performed:

- **Configure**: configure selected DECT phone device dataset (see section 8.10.6).
- **Delete**: delete selected DECT phone device dataset (see section 8.10.8).
- **Subscription**: start DECT phone subscription (see section 8.10.7).
- **Wildcard subscription**: start DECT phone wildcard subscription (see section 8.10.7).
- **Select columns**: select parameter columns to be shown in table (see section 8.10.9).
- **Filter**: filter DECT phone datasets shown in table for string set in filter mask (see section 8.10.10).

8.10.4 DEVICE DETAIL PANEL

The **Device detail** panel is used for configuration/showing of device settings and creation of new DECT phone datasets.

To open the **Device detail** panel

- choose one of the commands in the task bar on the right of the **DECT Phones** panel (**Configure**)

  or
- double-click on the appropriate device entry in the device table

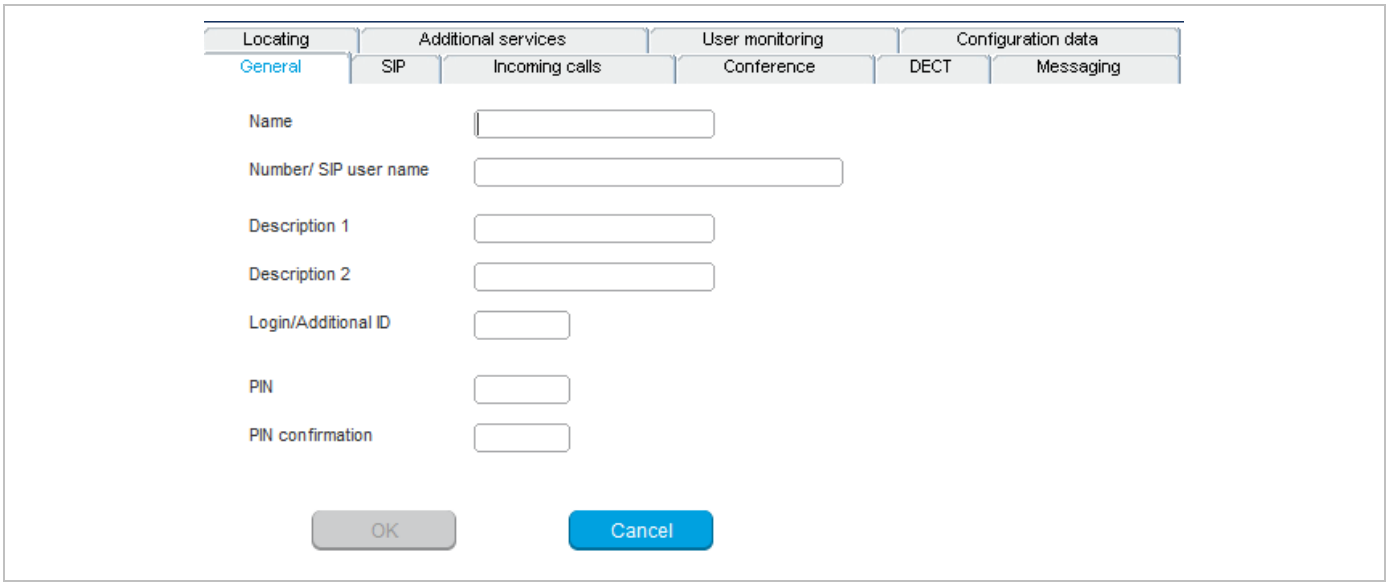
The **Device detail** panel contains the different parameter groups sorted in tabs. The tabs displayed depend on the current mode and the panel from which the DECT phone detail panel was invoked.

- **Overview** panel (configuration and monitor mode): The DECT phone detail panel contains all tabs listed below.

- **User** panel (configuration mode): The DECT phone detail panel contains all tabs but not **DECT**.
- **Device** panel (configuration mode): The DECT phone detail panel contains only **DECT**.

8.10.4.1 “General” tab

This tab configures the general settings for the DECT phone dataset.



- **Name**: represents the DECT phone user name with up to 20 characters
- **Number**: the DECT phone telephone number with up to 31 characters (1234567890*#azAz+-_.!$%&/()=?$&). Please be aware that only “*”,”#” and “0” to “9” can be dialed with a DECT phone.
- **Description 1** and **Description 2**: free text comments with up to16 characters each.
- **Login/Additional ID**: The additional ID can be used as a mean for data search within wildcard subscription (because of the IPEI is not configured which selects the data otherwise).

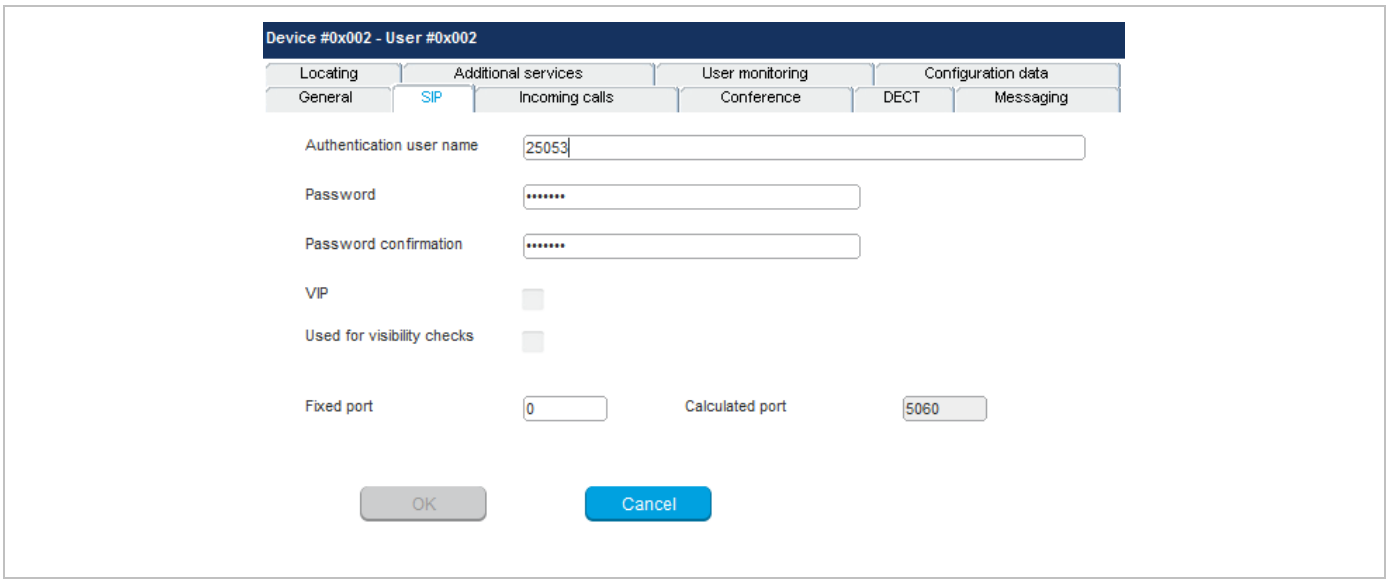
  Note: The authentication code can only be changed if the DECT phone is not subscribed.

- **PIN**, **PIN confirmation**: A user PIN to be entered during user login.

  Note: The attempt to set the user PIN to an empty string sets the PIN to the default value “0000”.

8.10.4.2 “SIP” tab

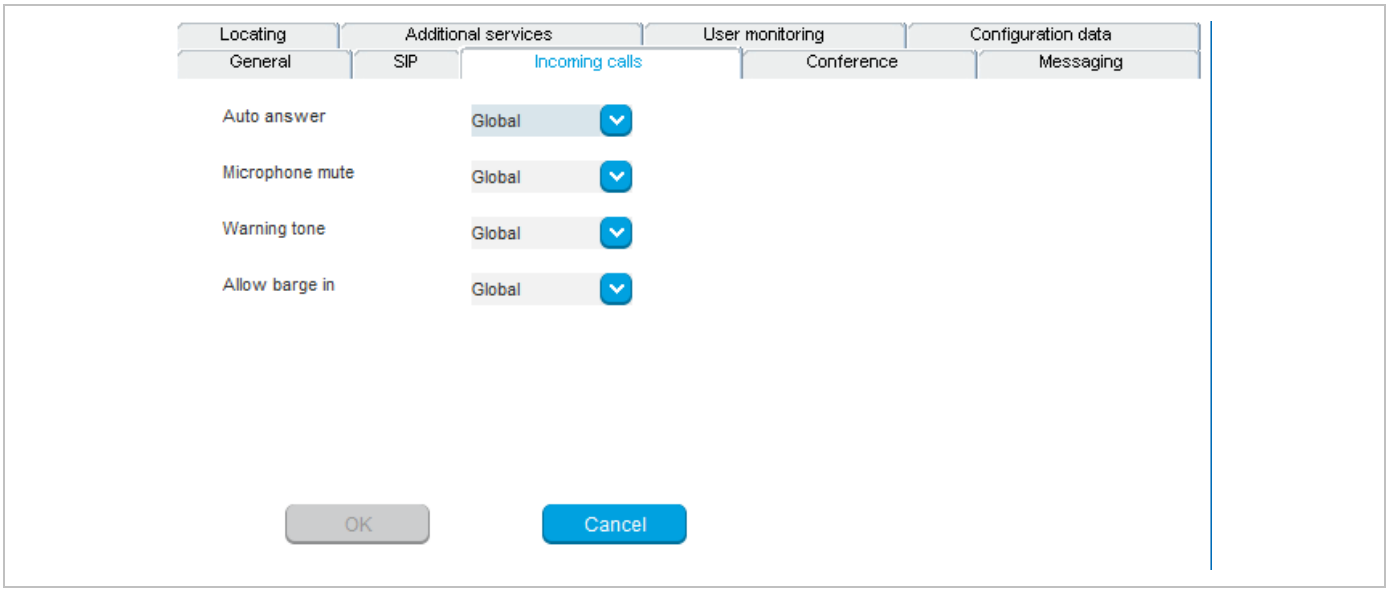
This tab configures the SIP authentication for the DECT phone dataset.



- **User name**: The SIP Authentication user name is optional but recommended. It represents the name which will be used during SIP registration and authentication. If no name is given the number will be used by default.
- **Password**, **Password confirmation**: The password will be used during SIP registration and authentication. Enter the appropriate data in these fields.
- **VIP**: Enable this option if the registration of this user should be prioritized (default off). VIP users will be registered first. For more information on prioritized registration see section 9.19.5.
- **Used for visibility checks**: Enables the use of this user account to check the availability of the iPBX (e.g., in fail over situations). See section 9.19.7 for more information on this feature.
- **Fixed port**: Specifies the port used explicitly for SIP signaling. If set to 0, an automatically calculated port is used. The default is 0. See section 3.8 for more information on this feature.

8.10.4.3 ”Incoming calls” tab

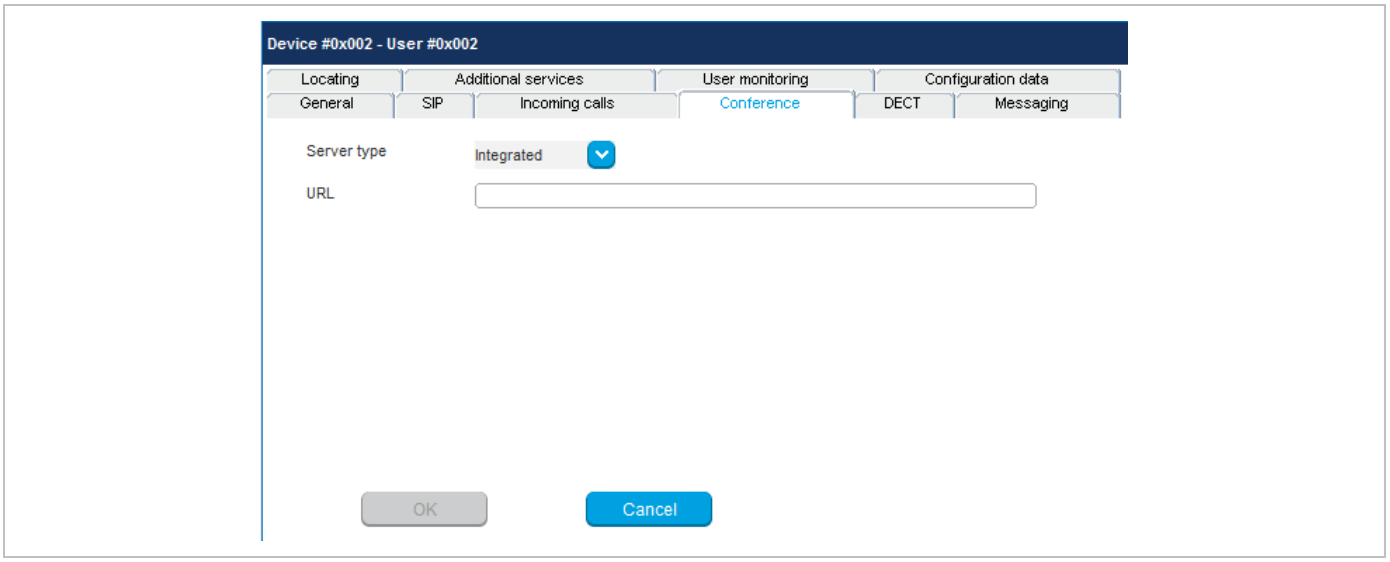
This tab allows you to set device-specific settings for auto-answering incoming calls. Default values for all parameters are inherited from global settings (see section 8.5.4.7).



- **Auto answer**: Enables or disables auto-answer on incoming calls.
- **Microphone mute**: Enables or disables microphone muting when incoming calls are automatically answered.
- **Warning tone**: Enables or disables warning tone on incoming call. A short ringtone is played if there are no active calls. If there is an active call in a “barge in” situation, the ringing will be in-band
- **Allow barge in**: Allows/disallows “barge-in” on existing calls.

8.10.4.4 “Conference” tab

This tab configures the three-way conferencing for the DECT phone dataset individually.

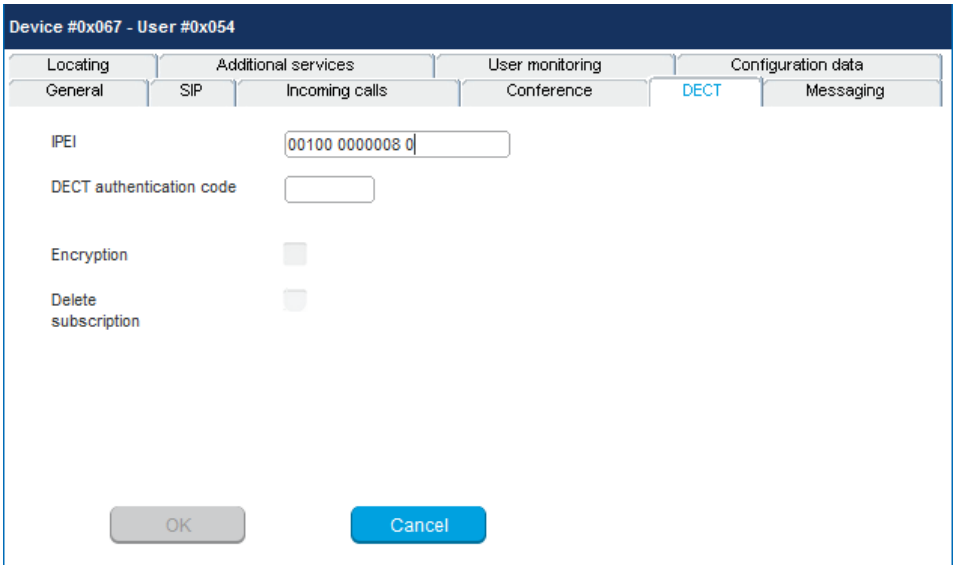


- **Server type**: Determines the conference service to be used for three-way conferencing. Possible values are:
  - “None”: Disables 3-way conferencing.
  - “Global”: The OMM system setting is used (default).
  - “Integrated”: The integrated conference server is used.
  - “External”: An external conference server is used.
- **URL**: Determines how to reach an external conference server (field only activated if the server type is “External”)

For more information see section 9.19.7.

8.10.4.5 “DECT” tab

This tab configures the DECT part for the DECT phone dataset. When configuring a device (see 8.10.3), only the **DECT** tab is shown in the DECT phone detail panel.



- **IPEI**: This optional setting is the DECT phone IPEI number. On a Mitel DECT 142 / Mitel 142d DECT phone, the IPEI can be found via the following path of the device menu: **Main menu** > **Phone settings** > **System**. On a Mitel 600 DECT phone, the IPEI can be found in the **System** device menu. Consult the DECT phone's user guide for further information.
- **DECT authentication code**: The DECT authentication code is used during initial DECT subscription as a security option and can be set here for each DECT phone device separately (DECT phone-specific DECT authentication code). This parameter is optional. If a system-wide DECT authentication code is given on the **System settings** page (see section 8.5.1), this value is filled in here as default. If no DECT phone-specific DECT authentication code is set, the system-wide DECT authentication code is used.
- **Encryption**: If the encryption feature is enabled for the whole system (in the **System settings** menu, see section 8.5.1), you can de-activate the DECT encryption for this device.

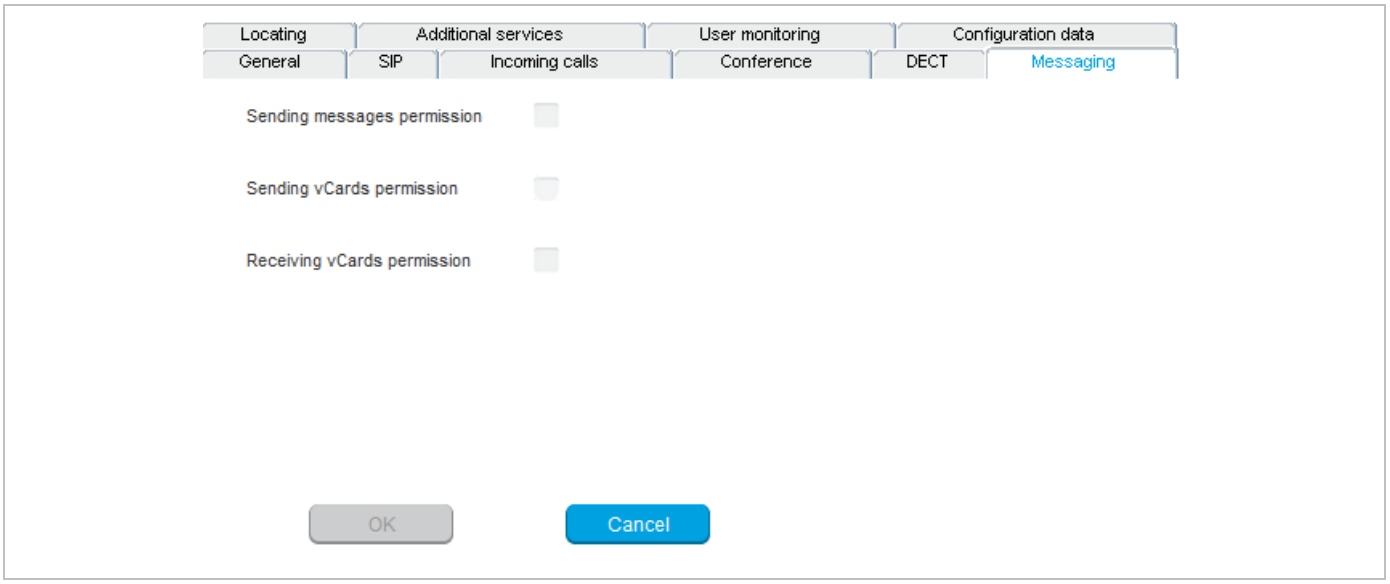
  Please note: The DECT phone device must support DECT encryption which is not a mandatory feature.

- **Delete subscription**: This option is only available when configuring an existing DECT phone. If this option is activated, the subscription data will be deleted which also requires a re-subscription of the DECT phone device.

8.10.4.6 "Messaging" tab

This tab configures the OM Integrated Messaging and Alerting service for the DECT phone dataset.

If a user is created independent of any specific configuration, the **Sending messages** and **Sending vCards** features are enabled by default.



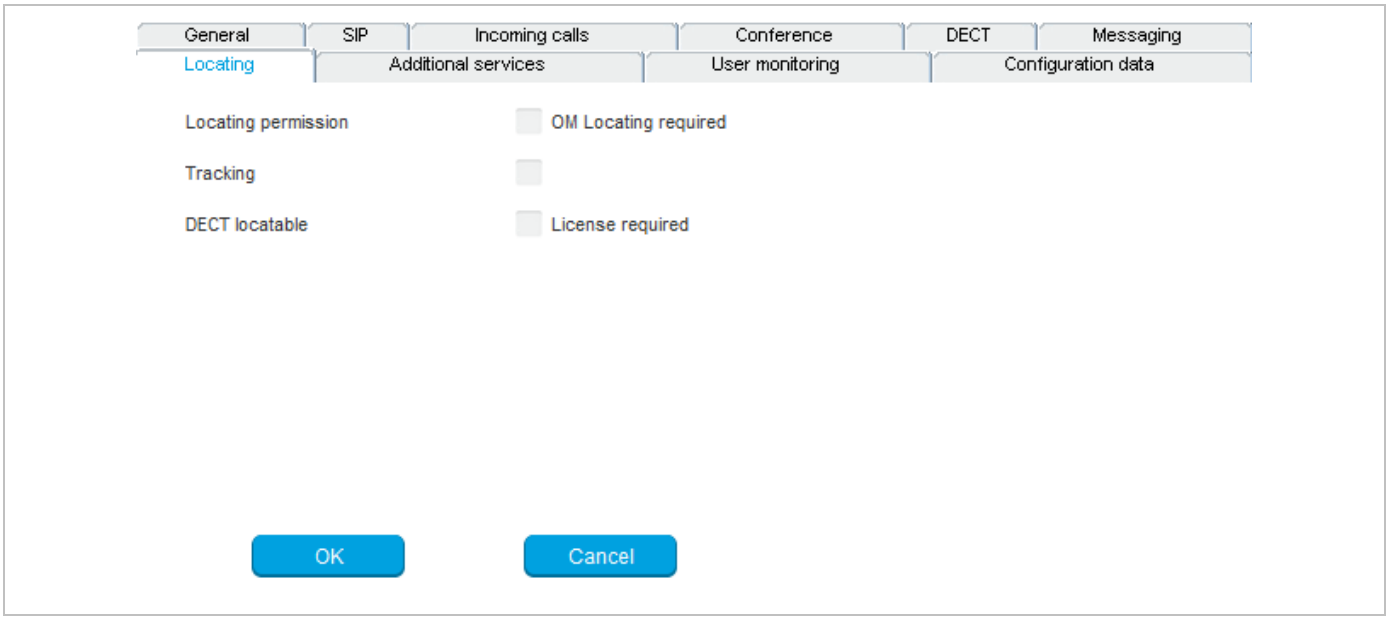
- **Sending messages permission**: If this option is enabled, the DECT phone can send messages (if this function is supported by the device).

  Note: For further information please refer to the document SIP-DECT OM Integrated Messaging & Alerting Application Installation, Administration & User Guide.

- **Sending vCards permission**: Allows the user to send personal directory entries as a vCard message from the DECT phone to other users (if this function is supported by the device).
- **Receiving vCards permission**: If this option is enabled, all received vCard messages are automatically processed and written into the personal directory of the DECT phone (if this function is supported by the device).

8.10.4.7 ”Locating” tab

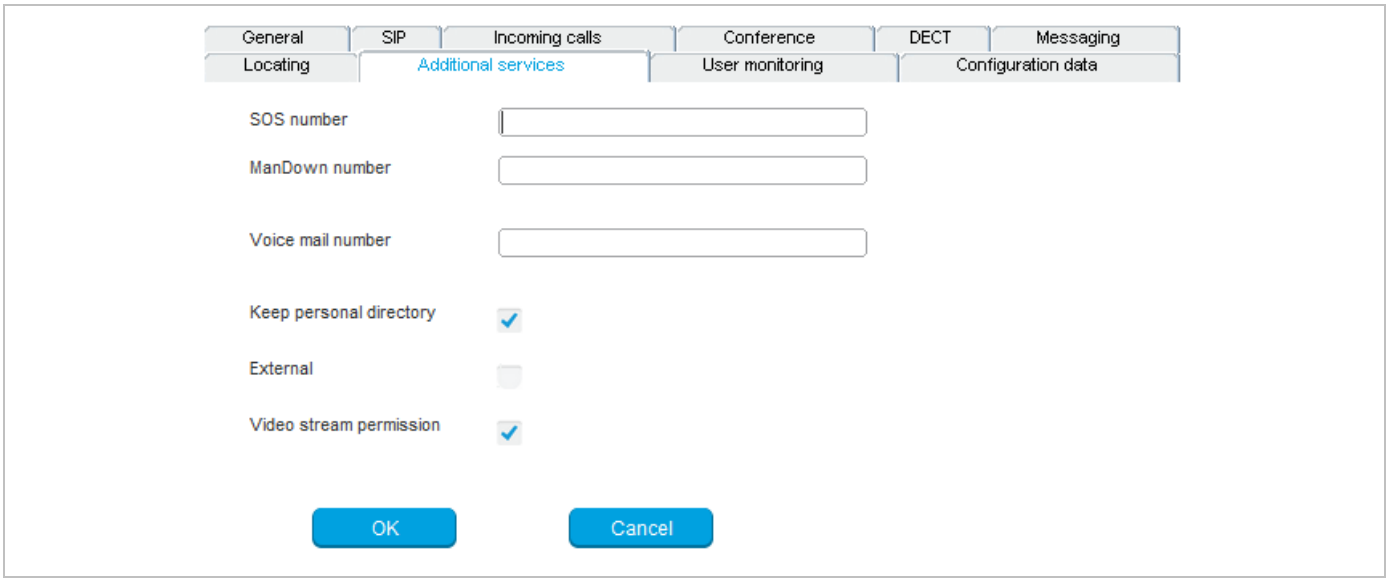
This tab contains parameters for configuring location parameters for the DECT phone.



- **Locating permission**: This option applies to Mitel 600 DECT phones only. If this option is enabled, the user is allowed to determine the location of other DECT phones. The main menu of the Mitel 600 DECT phones provides an extra **Locating** menu entry for this function.
- **Tracking**: If this option is enabled, the operator of the OM Locating application is able to use the constant tracking feature for the DECT phone. Note that this feature consumes more of the DECT phone's battery power, because it activates a DECT base station update information if the device roams and is not in communication. You also cannot enable this feature, if the **DECT locatable** option is disabled
- **DECT locatable**: If this option is enabled, the DECT phone is locatable. Either with the OM Locating application or by querying it's location from other DECT phones.

8.10.4.8 "Additional services" tab

This tab configures extra configuration items for the DECT phone dataset.



- **SOS number**: User-specific SOS number that is dialed automatically if the SOS key on the DECT phone is pressed.
- **ManDown number**: User specific "Man down" number that is dialed automatically if a Man down event happens. This event is triggered by the sensor of a Mitel 600 DECT phone.

If no individual SOS or Man down number is configured for a DECT phone, the number of the appropriate alarm trigger will be used as calling number in case of a SOS or Man down event. Please see /31/ for details.

- **Voice mail number**: The number that will be automatically called as soon as a voice mail call is initiated on the Mitel 600 DECT phone. If there is no individual voice mail number configured in this field, then the system-wide voice mail number is used (see also the **System setting** menu, section 8.5.1). If there is no voice mail number configured (neither the individual nor the system-wide) or another DECT phone type is used, then the voice mail number must be configured locally in the DECT phone.
- **Keep personal directory**: Activate this option, to keep the personal directory data in the DECT phone if the user logs out.
- **External**: A user data set can either be provisioned on an external user data server or locally in the OMM database. To provide an easy way to change the provisioning storage of user data sets, the user data sets can be moved from an external user data server into the local OMM database and vice versa.

  Deactivate the **External** option if you want to move user data sets from an external user data server into the local OMM database.

  External to internal transformation rules: To change a user data set from an external user data server to an internally provisioned one, the following conditions must be applied to the data set:

  – external provisioned on an external user data server

  – user data set device relation must not be “fixed”

  Internal to external transformation rules: To change a user data set from local OMM database to an external user data server provisioned one the following conditions must be applied for the data set:

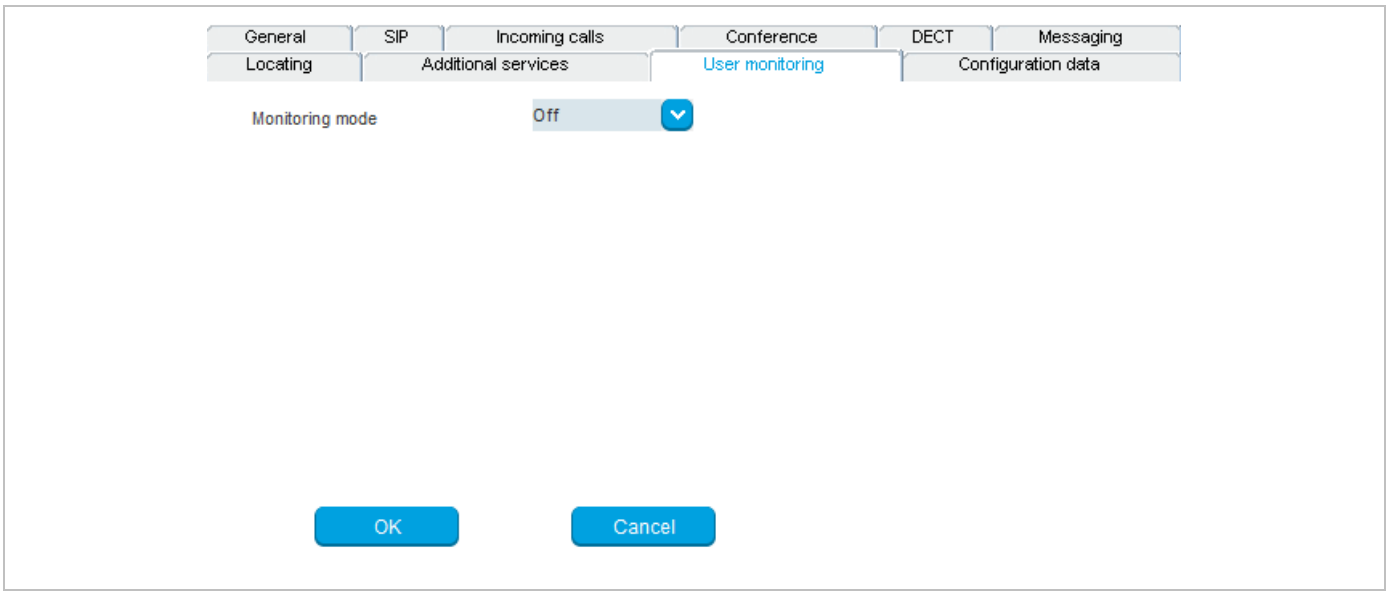
  – external provisioned on an external server

  – user data set device relation must not be “fixed”

  – an external user data server must be available
- **Video stream permission**: Activate this option to allow video streaming on the DECT phone. See section 9.27 for details on this feature.

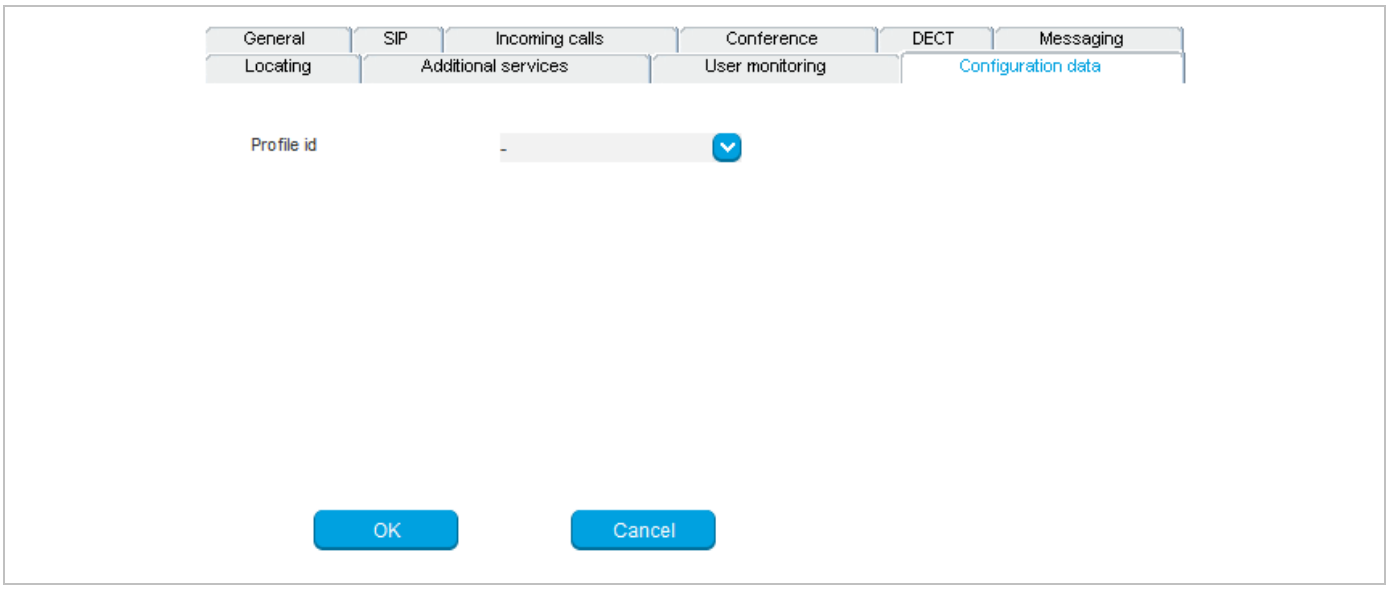
8.10.4.9 “User monitoring” tab

This tab is designed to configure the user-specific parameters for the User Monitoring feature. For a description of the parameters which can be set in the **User monitoring** tab, please refer to the description in section 9.28.7.2.



8.10.4.10 "Configuration data" tab

The **Configuration data** tab allows you to assign a Configuration over Air (CoA) profile to a DECT phone user. See section 9.22 for more information on this feature.



- **Profile id**: Specifies the CoA configuration profile you want to assign to the DECT phone user.

8.10.5 CREATING DECT PHONE DATASETS

Creating DECT phone datasets is only possible in **Configuration Mode**. You can create the fixed DECT phone dataset or only the DECT phone user data.

To create a DECT phone dataset proceed as follows:

1 Click **Create** under the Task list on the right-hand side of the **DECT Phones** window.

– In the **Overview** submenu you can now create a fixed DECT phone dataset (with combined user and device data).

– In the **Users** submenu you can create an unbound user. This user can login and logout at any prepared device.

The DECT phone detail panel opens. It provides various tabs where the DECT phone data must be entered.

2 Configure the DECT phone, see parameter description in section 8.10.4.

3 Press the **OK** button.

8.10.6 CONFIGURING DECT PHONE DATASETS

Configuring DECT phone datasets is only possible in **Configuration Mode**. To configure an existing DECT phone dataset proceed as follows:

1 Select a DECT Phone from the table, and click **Configure** under the Task list on the right-hand side of the **DECT Phones** window.

– In the **Overview** submenu you can configure the whole DECT phone dataset (user and device data).

– In the **Users** submenu you can configure the DECT phone user data.

– In the **Device** submenu you can configure the DECT phone device data.

The DECT phone detail panel opens.

2 Change the DECT phone dataset as desired, see parameter description in section 8.10.4.

3 Press the **OK** button.

8.10.7 SUBSCRIBING DECT PHONE DATASETS

After adding a DECT phone dataset to the OMM, the DECT phone must be subscribed. The OMM must first be enabled to allow subscriptions to be take place from DECT phone DECT phones. Subscribing DECT phone datasets is possible in the **Overview** panel and in the **Device** panel. To start subscription, press one of the following commands in the **DECT phones** menu:

- **Subscription**: start DECT phone subscription with configured IPEI. For more information on this see section 7.7.3.1.
- **Wildcard subscription**: start DECT phone wildcard subscription (without configured IPEI). In the **Wildcard subscription** dialog, which is now opened, enter the **Timeout** for this subscription method. Press the **Start** button. For more information on this see section 7.7.3.2.

8.10.8 DELETING DECT PHONE DATASETS

Deleting DECT phone datasets is only possible in **configuration mode**. You can delete the fixed DECT phone dataset (in case of fixed relation) or only the DECT phone user data resp. the DECT phone device data (in case of dynamic relation).

To delete one or more existing DECT phone datasets proceed as follows:

1 Select the appropriate DECT phone dataset(s) in the DECT phone table by activating the corresponding checkbox(es).

2 In the task bar on the right of the **DECT phones** panel click on the **Delete** command.

– In the **Overview** submenu the whole DECT phone dataset will be deleted.

– In the **Users** submenu only the DECT phone user data will be deleted.

– In the **Devices** submenu only the DECT phone device data will be deleted.

The **Delete [xxx]** dialog opens showing a confirmation prompt.

3 Confirm the displayed prompt with **OK**.

8.10.9 SELECTING COLUMNS

You can adapt the parameters shown in the DECT phone table to your needs:

1 Click **Select columns** under the Task list on the right-hand side of the **DECT Phones** window.

The **Select columns** dialog opens.

2 Select the columns that shall be shown by activating the appropriate checkboxes.

3 Click the **OK** button.

4 The DECT phone table will be adapted accordingly.

8.10.10 FILTERING DECT PHONE TABLE

You can filter the list of DECT phone datasets shown in the DECT phone table by using a filter.

1 Click **Filter** under the Task list on the right-hand side of the **DECT Phones** window.

The **Filter** dialog opens.

2 Enter the search string that serves as filter criterion. You can enter digits and characters. The search is case sensitive.

3 Click on the **Filter** button.

The **Filter** dialog is closed and the DECT phone table will be adapted accordingly.

4 To reset the filter, click on the **Filter** command in the task bar on the right of the **DECT phones** panel.

5 In the **Filter** dialog click on the **Reset** button.

8.10.11 CHANGING THE RELATION TYPE

The user data device relation transformation can only be performed by the admin user. A user data device relation data set can be changed from “fixed” to “dynamic” and vice versa. This means the login/logout feature can be enabled or disabled for a DECT phone.

To change the relation type of a DECT phone:

1 Select the appropriate DECT phone dataset(s) in the DECT phone table by activating the corresponding checkbox(es).

2 Click **Change rel. type** under the Task list on the right-hand side of the **DECT Phones** window.

Rules to change the relation from “fixed” to “dynamic”

- The DECT phone must be subscribed.
- A user login/logout PIN is configured in the user data set.
- Depending on the DECT phone user login type (“LoginID”), in the **DECT** tab of the **System settings** menu, the **Login ID** option must be set in the **DECT phone user login type** field.

IMPORTANT : If there is no specific PIN configured then “0000” is automatically set.

Rules to change the relation from “dynamic” to “fixed”

- The user relation type must be “Dynamic” (not “Unbound”), because a subscribed DECT phone exists in this case.

- The user data set is not retrieved from an external user data server / the user data set is provisioned locally in the OMM database (see also page 175).

8.10.12 ENABLING / DISABLING DECT PHONE EVENT LOG

You can store a DECT phone event log file in **Monitor Mode**. Do the following:

1 To enable/disable the DECT phone event log, click **Log events** under the Task list on the right-hand side of the **DECT Phones** window:

 - DECT phone event log is enabled.

 - DECT phone event log is disabled.

2 Repeat step 1 to disable/enable the DECT phone event log.

The DECT phone event log will be stored in a file called “pp_event.log“. This file can be found in the user’s home directory:

- on a Linux system it is located under ‘~/.oamp’,
- on a windows system under ‘c:/Users/<user>/MyDocuments/.Oamp’.

8.10.13 USER MONITORING

User monitoring menu available in monitoring mode only a list of the DECT Phone users who are configured for user monitoring.

The following parameters are displayed for each DECT Phone user:

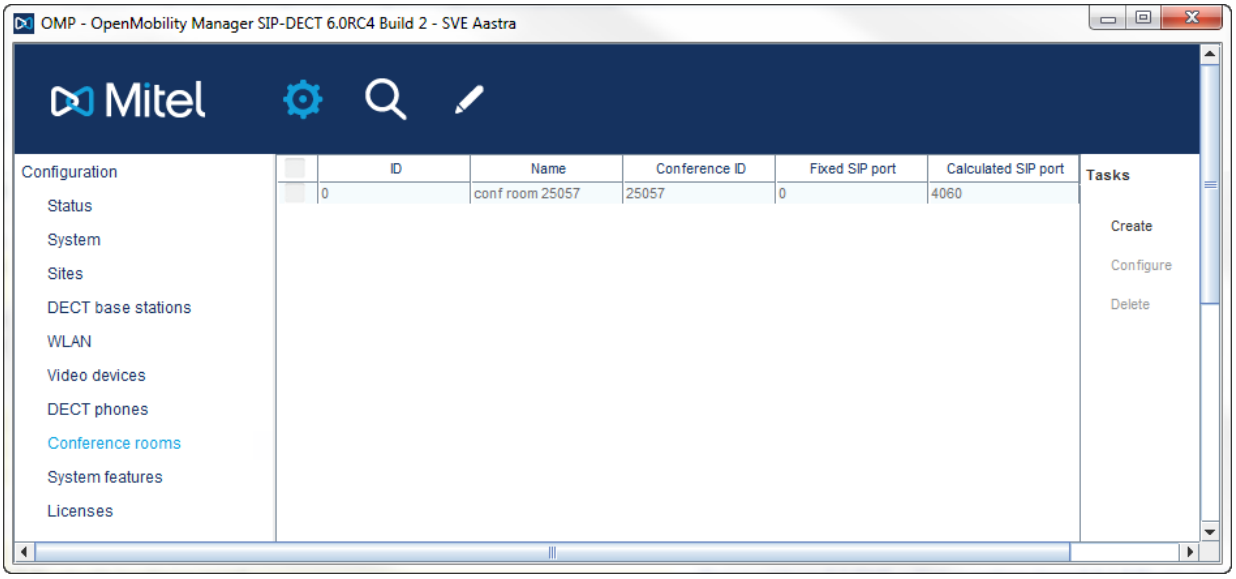
- User ID
- Name
- Number
- Related device ID
- Mode: User monitoring mode (active or passive)
- Combined User Status (CUS)
- Handset Assignment Status (HAS) (Dynamic User logged on)
- Handset Subscription Status (HSS) (DECT subscribed)
- Handset registration status (HRS) (DECT attached)
- Handset activity status (HCS) (Handset active within time period)
- SIP user registration status (SRS) (SIP user registered)
- Silent charging status (SCS) (Silent charging + Charger)
- Call diversion status (CDS) (immediate call diversion enabled)
- Handset battery status (HBS) (Battery power above limit, warn only)
- Software status (SWS) (minimal required software version, warn only)

Monitoring parameter can have these values:

-  - Available
-  - Warning
-  - Unavailable
-  - Escalated

8.11 “CONFERENCE ROOMS” MENU

On this menu page you managed individual conference rooms for the Integrated Conference Server (ICS). For details on how to configure the conferencing feature refer to section 9.19.7.

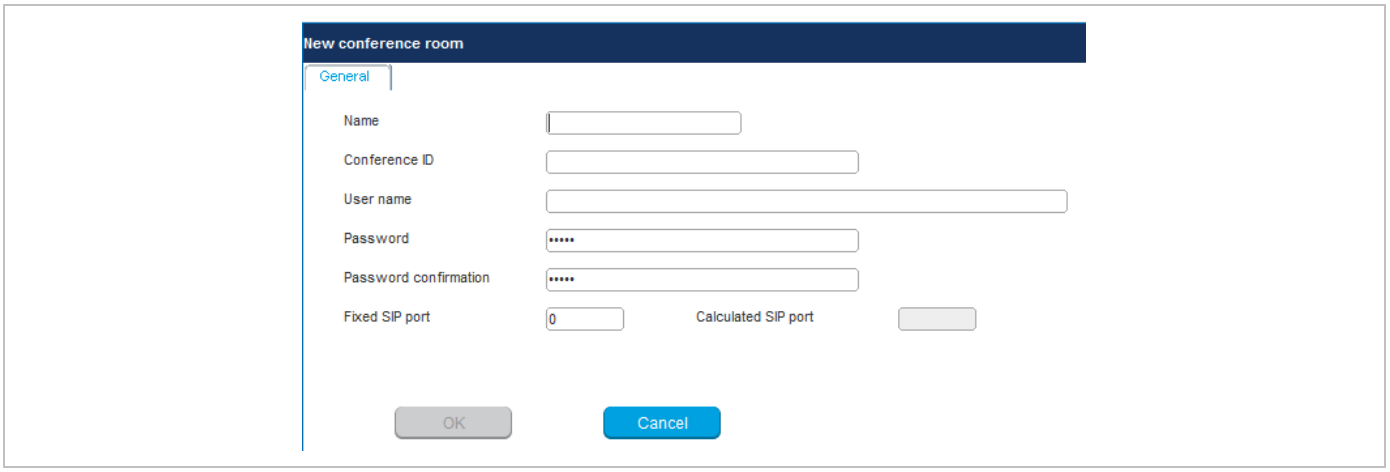


The tasks which can be performed are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create conference room		0
Configure: configure selected conference room		8.11.2
	Show details: show details about a selected conference room	8.11.4
Delete: delete selected conference room		8.11.3

8.11.1 CREATING CONFERENCE ROOMS

In **Configuration Mode** you can create new conference rooms. Conference rooms will be registered on the configured SIP registrar, thus you must enter the SIP account data to be used.



1 Click **Create** in the **Tasks** menu of the **Conference rooms** page.
2 In the **General** tab, enter the conference room parameters.
- **Name**: Enter the SIP display name for the SIP account to be used.
- **Conference ID**: Enter the SIP user id.
- **User name**: Enter the SIP authentication name.
- **Password, Password confirmation**: Enter the password that is required by the SIP server.
- **Fixed SIP port**: Enter the port used explicitly for SIP signaling. If set to 0, an automatically calculated port is used for this conference room. The default is 0. See section 3.8 for more information on this feature.

3 Click **OK**.

8.11.2 CONFIGURING CONFERENCE ROOMS

In **Configuration Mode** you can configure an existing conference room.
1 Select the appropriate conference room entry in the conference rooms table.
2 Click **Configure**.
The **General** tab is displayed showing the current conference room configuration.
3 Change the conference room parameters (see section 0).
4 Click **OK**.

8.11.3 DELETING CONFERENCE ROOMS

In **Configuration Mode**, you can delete conference rooms.
1 Select one or more conference rooms entries in the conference rooms table.
2 Click **Delete**.
A confirmation dialog appears.
3 Click **OK** to confirm.

8.11.4 VIEWING CONFERENCE ROOM DETAILS

In **Monitor Mode**, you can view the details of a conference room.

1 Select the appropriate conference room entry in the conference room table.
2 Click **Show details**.
The **General** tab is displayed showing the conference room configuration.
3 Click **Cancel** to close the tab.

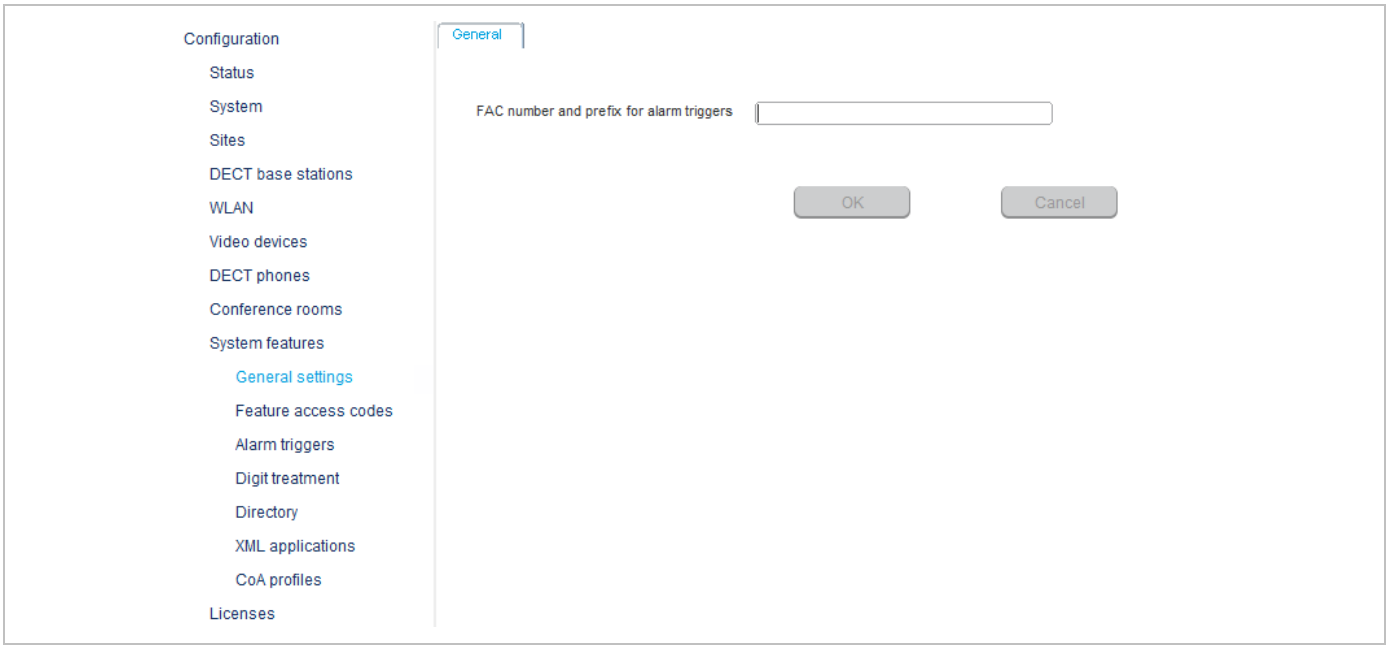
8.12 “SYSTEM FEATURES” MENU

The **System features** menu provides the following entries:

Configuration mode	Monitor mode	See section
General settings	General settings	8.12.1
Feature access codes	Feature access codes	8.12.2
Alarm triggers	Alarm triggers	8.12.3
Digit treatment	Digit treatment	8.12.4
Directory	Directory	0
XML applications	XML applications	8.13.2
CoA profiles	CoA profiles	8.13.3

8.12.1 “GENERAL SETTINGS” MENU

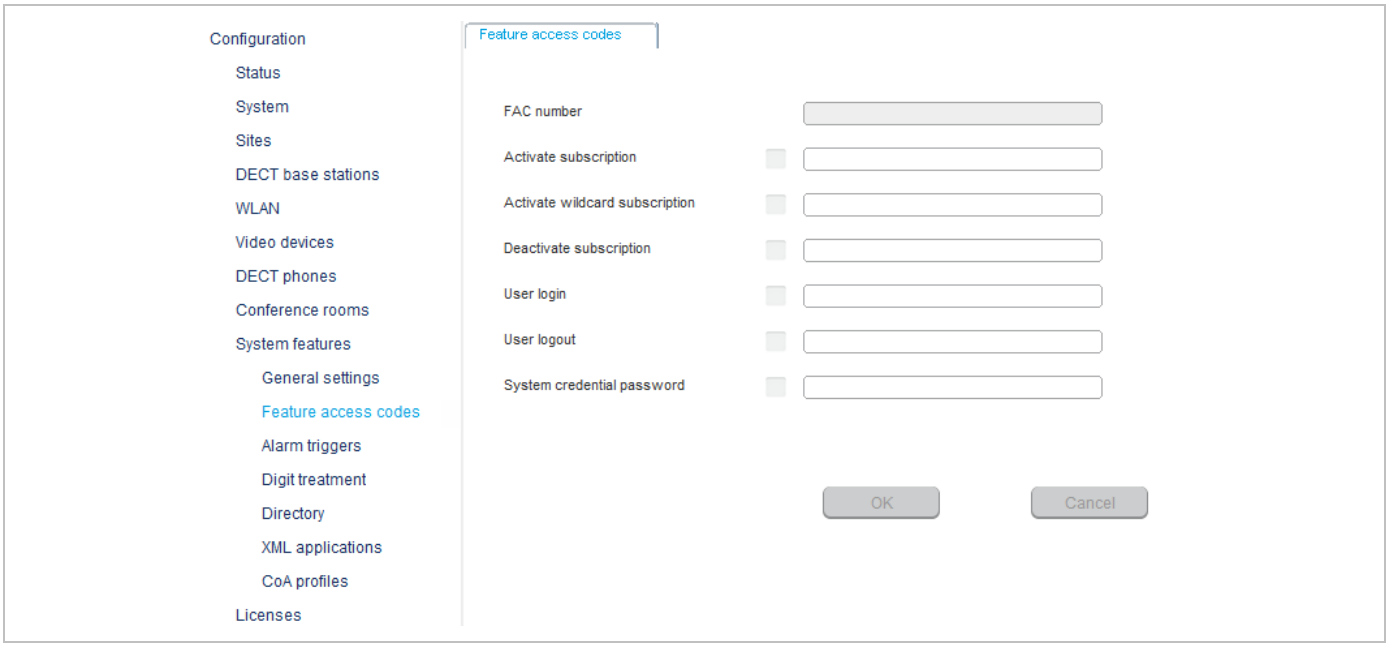
The **General settings** menu allows to configure/view the FAC number prefix used for feature access codes and alarm triggers.



4 **FAC number and prefix for alarm triggers**: Enter a unique FAC number.
5 Press the **OK** button.

8.12.2 “FEATURE ACCESS CODES” MENU

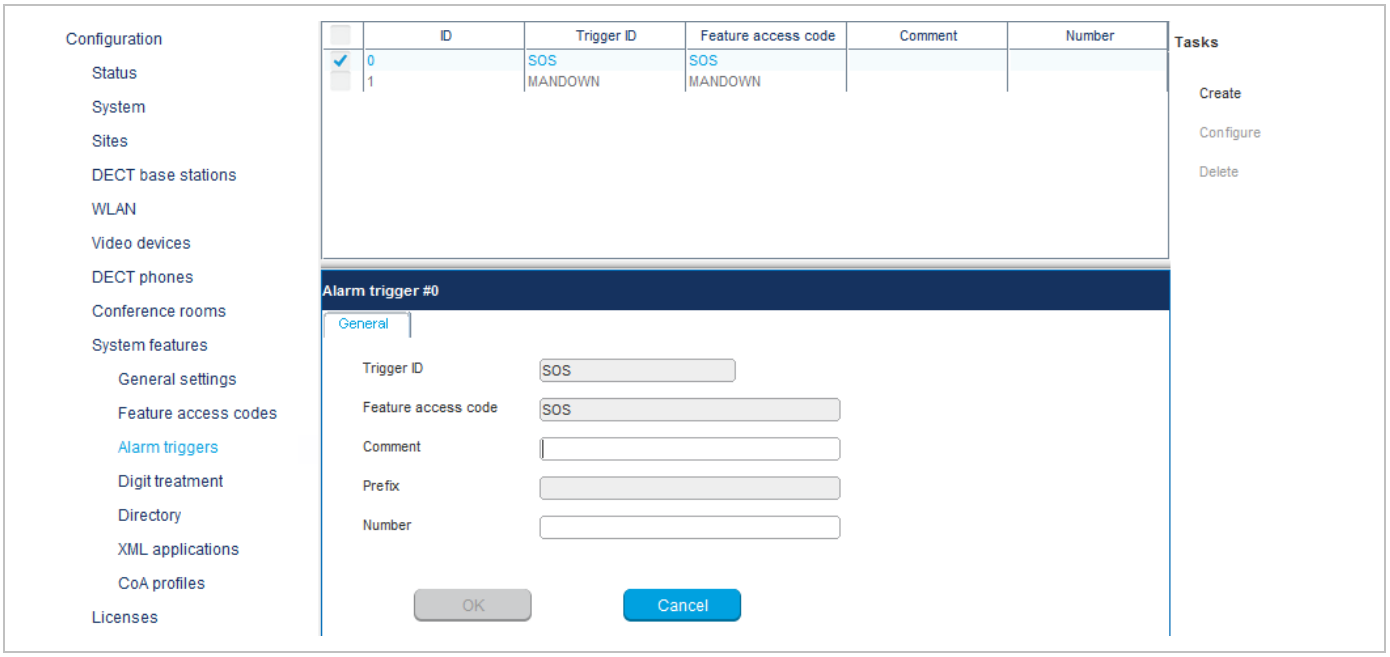
The **Feature access codes** menu is used to configure/view the feature access codes parameters.



The **FAC number** which introduces the feature access code (see also section 8.12.1) is displayed. For a description of the parameters which can be set in this menu see section 7.9.3.

8.12.3 “ALARM TRIGGERS” MENU

The **Alarm triggers** menu allows configuration and display of numerous alarm trigger datasets. There are two predefined alarm triggers (“SOS” and “MANDOWN”) which cannot be deleted.

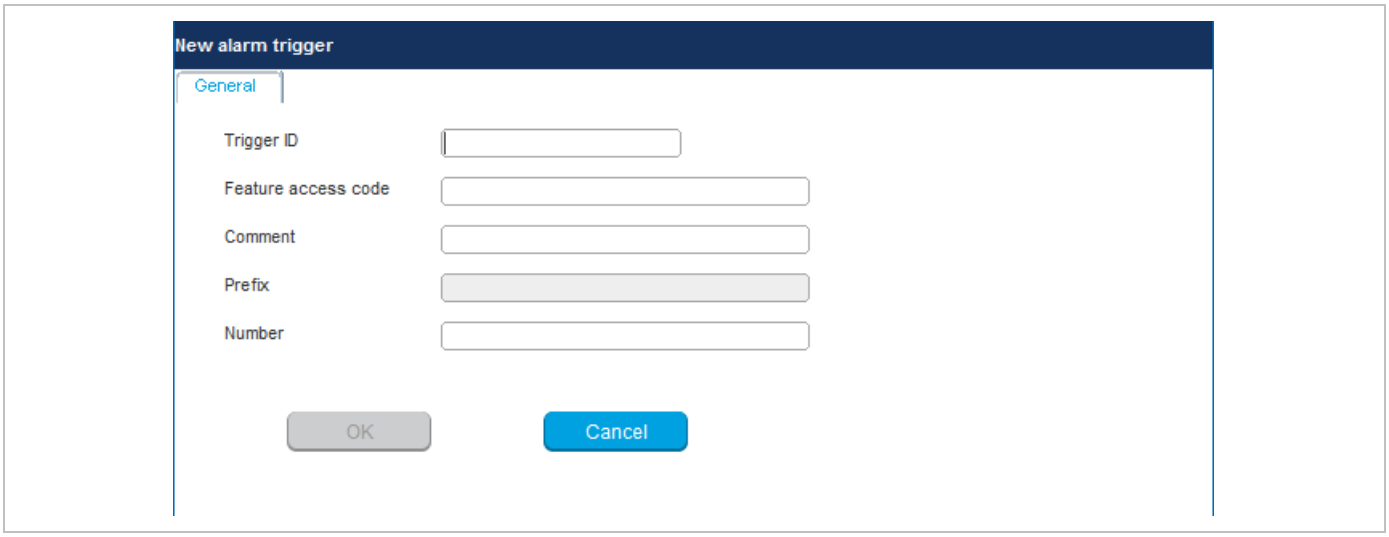


The tasks which can be performed are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create alarm trigger		8.12.3.1
Configure: configure a selected alarm trigger		8.12.3.2
	Show details: show parameters of a selected alarm trigger	8.12.3.4
Delete: delete selected alarm triggers		8.12.3.3

8.12.3.1 Creating “Alarm triggers”

In **Configuration Mode** you can create new alarm triggers.



1 Click **Create**. In the **General** tab enter the alarm trigger parameters.
2 **Trigger ID**: Enter the Trigger ID. The Trigger ID identifies the alarm scenario and also selects the source which triggers the alarm.
3 **Feature access code**: Enter the access code which should be assigned to the alarm trigger.
4 **Comment**: Enter a comment for the new trigger.
5 **Prefix**: This field displays the **FAC number** which introduces the feature access code (see also section 8.12.1).
6 **Number**: Enter the number to be called in case of this alarm trigger.
7 Press the **OK** button.

8.12.3.2 Configuring “Alarm triggers”

In **Configuration Mode** you can configure an existing alarm trigger.

1 In the alarm trigger table click on the appropriate trigger entry.
2 Click **Configure**.
The **General** tab is displayed showing the current trigger configuration.
3 Change the trigger parameters.
4 Press the **OK** button.

8.12.3.3 Deleting “Alarm triggers”

In **Configuration mode** you can delete alarm triggers. The predefined alarm triggers (‘SOS and ’Man down‘) cannot be deleted.

1 In the alarm trigger table click on one or more trigger entries.

2 Click **Delete**.

3 Confirm the displayed prompt with **OK**.

8.12.3.4 View “Alarm trigger” Details

In **Monitor Mode** you can view the details of an alarm trigger.

1 In the alarm trigger table click on the appropriate trigger entry.

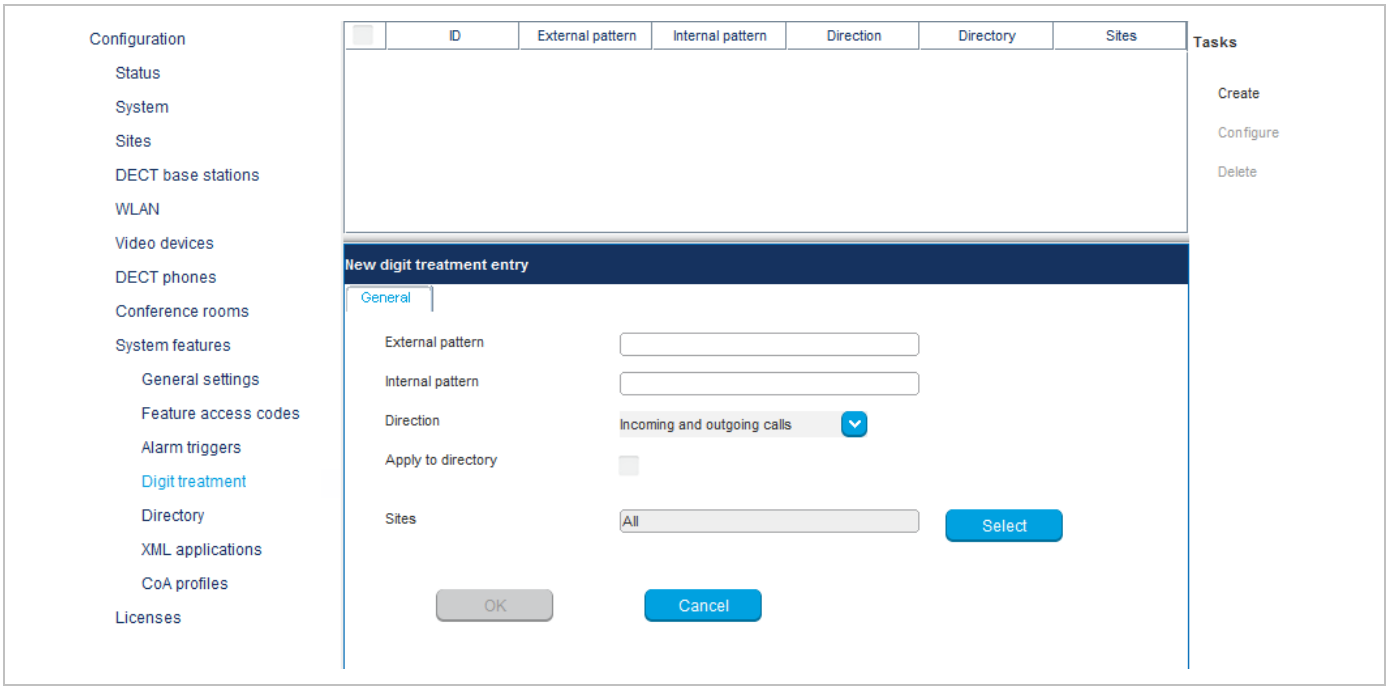
2 Click **Show details**.

The **General** tab is displayed showing the trigger configuration.

3 Click **Cancel** to close the tab.

8.12.4 “DIGIT TREATMENT” MENU

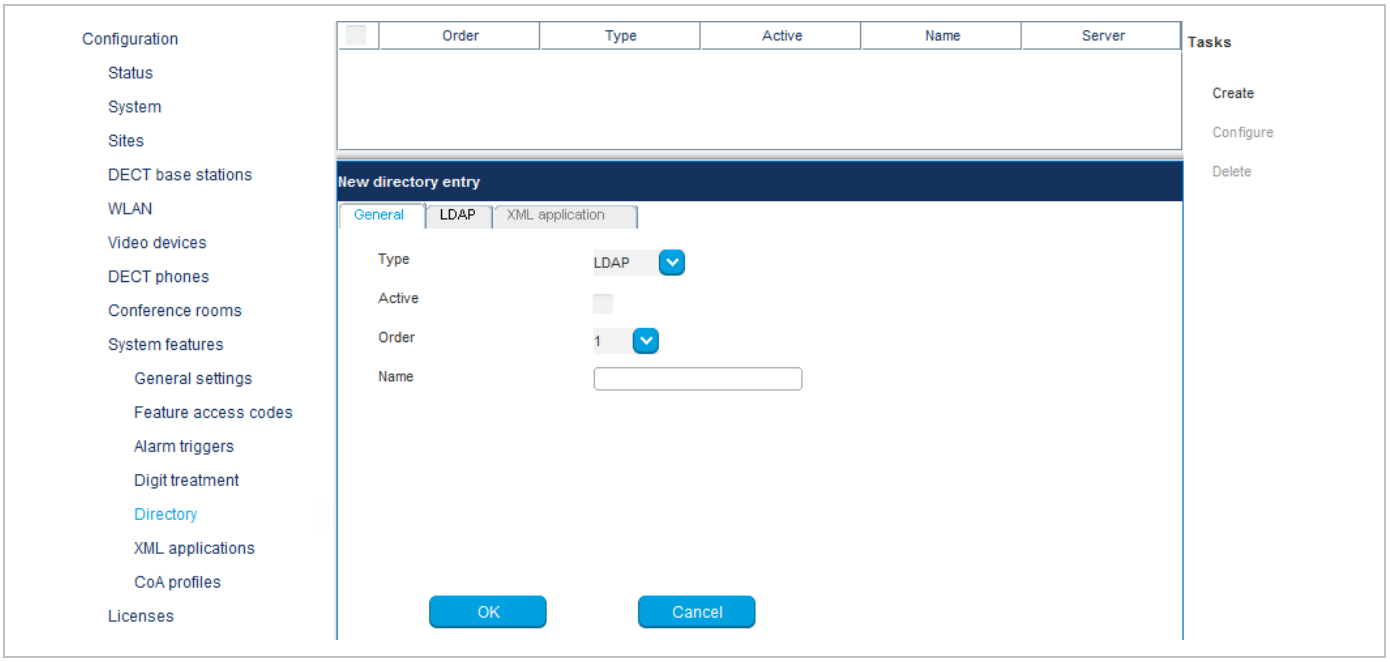
The **Digit treatment** menu allows you to configure the number manipulation that is provided by the digit treatment feature for LDAP corporate directories.



For a description of tasks and parameters available in this menu, refer to section 7.9.1.

8.13 “DIRECTORY” MENU

The **Directory** menu allows configuration of LDAP or XML-based corporate directory services.



The tasks which can be performed are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create new directory entry in detail panel		0
Configure: configure selected directory entry in detail panel		8.13.1.2
	Show details: show selected directory entry in detail panel	8.13.1.3
Delete: delete selected directory entry/entries		8.13.1.4

8.13.1.1 Creating New Directory Entries

Adding directory entries is only possible in **configuration mode**. You can configure up to 5 directory entries. To add a new entry, do the following:

1 In the **Tasks** bar, click **Create**.

The **New directory entry** panel opens and provides various tabs where the directory data must be entered.

2 Configure the Directory entry (see parameter descriptions below).

3 Click **OK**.

The following parameters can be set in the tabs of the **New directory entry** panel:

General

- **Type**: Select the protocol that is supported by the directory server (**LDAP** or **XML**).
- **Active**: Enable or disable the entry.
- **Order**: This setting determines the position in the DECT phone menu (1 – top; 5 – bottom).
- **Name**: Enter a name for the directory entry. Latin-1 character set is supported.

  Note: The name configured here is not relevant and ignored when the DECT phone user searches for a call number in the telephone's central directory if there is only one directory entry configured.

LDAP

This tab is automatically activated if you have selected the **LDAP** directory type in the **General** tab.

- **Search base**: The search base must be edited (e.g. "ou=people,o=my com").

  The configuration is valid for all DECT phone DECT phones which support the LDAP directory feature. To make search requests unique for different users the search base configuration can include placeholders which are replaced by user specific values when submitting the LDAP request to a server. The following placeholders are defined:

  "<TEL>" which is replaced by the specific telephone number of the user

  "<DESC1>" which is replaced by the "Description 1" attribute value of the user

  "<DESC2>" which is replaced by the "Description 2" attribute value of the user
- **Search type**: Searches will be done for one of the following attributes:

  – Name (sn) // Surname (default)

  – First name (Given name)
- **Display type**: Selection between the following two alternatives is possible:

  – Surname (sn), first name (given name) (default)

  – first name (Given name) and Surname (sn)
- **Server**: (mandatory): Enter the name or IP address of the directory server.
- **Port** (mandatory): Enter the server port number (default: 389).

  Note: SSL (default port 689) is not supported.
  Windows® Active Directory Server uses port 3268.
- **User name**, **Password**, **Password confirmation**: User name (a distinguished name) and password may be filled if requested by the directory server. Otherwise an anonymous bind takes place.

  Note: SIP-DECT supports LDAP simple bind.
- **Server search timeout**: The search results will be accepted within the entered search time (value range: 1 - 99 sec).

XML application

This tab is automatically activated if you have selected the **XML** directory type in the **General** tab.

- **Protocol**: Select the preferred transfer protocol.
- **Server**: (mandatory): Enter the name or IP address of the directory server.
- **User name**, **Password**, **Password confirmation**: User name (a distinguished name) and password may be filled if requested by the directory server. Otherwise an anonymous bind takes place.

- **Path (and parameters)**: Enter the URL (if required with parameters) where the XML directory is located on the directory server.

  Note: The telephone number in SIP-DECT is not limited to numeric characters.

8.13.1.2 Changing a Directory Entry

Changing directory entry is only possible in **configuration mode**. To change the configuration of an existing directory entry, do the following:

1. Select the appropriate directory entry in the table.
2. In the **Tasks** bar, click **Configure**.
3. Change the directory entry parameters (see parameter descriptions in section 0).
4. Click **OK**.

8.13.1.3 Viewing Directory Entry Details

You can view the configuration of a directory in **Monitor Mode**. Do the following:

1. Select the appropriate directory entry in the table.
2. In the **Tasks** bar click **Show details**.

   The directory entry data is displayed in the detail panel.
3. Click **Cancel** to close the directory entry detail panel.

8.13.1.4 Deleting Directory Entries

Deleting directory entries is only possible in **Configuration Mode**. To delete one or more existing entries, do the following:

1. Select the appropriate entry/entries in the directory entry table by activating the corresponding checkbox(es).
2. In the **Tasks** bar click **Delete**.

   A confirmation dialog opens.
3. Click **OK** to confirm.

8.13.2 "XML APPLICATIONS" MENU

The SIP-DECT XML terminal interface allows external applications to provide content for the user on the Mitel 600 DECT phone display and much more. To make the XML terminal interface applications available for the DECT phone user, the relevant hooks must be configured in the **XML applications** menu.

There are seven predefined hooks and 10 hooks which can be freely defined. The predefined hooks are:

- **Caller list**: to replace the local caller list (displayed with "Info > Caller List" DECT phone menu entry)
- **Redial list**: to replace the local redial list (displayed with "Info > Redial List" DECT phone menu entry)
- **Presence**: hook to reach a presence application (displayed as additional "Presence" DECT phone menu entry)

- **Server menu**: hook to reach a server menu (displayed as additional “System > Server” DECT phone menu entry)
- **Action URI**: URI to be called in case of user/device events
- **Feature access codes**: hook to provide “Feature Access Codes Translation”
- **callCompletion**: hook to provide “callback” option in the DECT phone menu when a user places an outgoing call and wants to request a callback before releasing the call.

These hooks can be activated or deactivated but not deleted. Up to 10 additional hooks can be created dynamically.

Please note: “Caller list” and “Redial list” replace the local caller and redial lists of the Mitel 600 if activated. Additionally the list access must be set to “Automatic” or “PBX” on the DECT phone in the “Settings > List access” menu. If the list access is set to “Local”, the local list is used by the DECT phone.

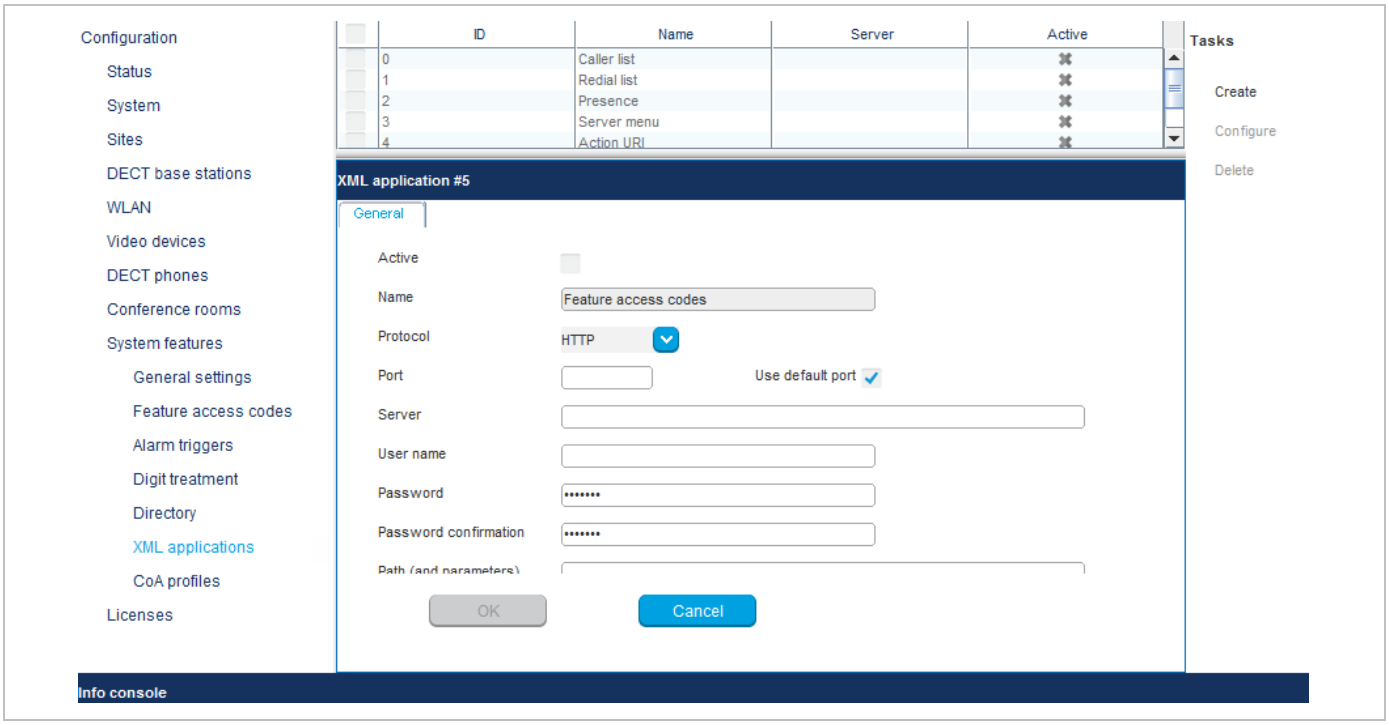
Note: An XML directory entry is also read-only listed in the XML applications menu. For information on configuration of XML directories please see section 0.

An activated hook becomes available on a DECT phone (incl. the corresponding menu entry) after the next DECT location registration of the DECT phone. This can be forced by switching the DECT phone off and on. The same applies if a hook shall be deactivated.

XML terminal interface application – selecting a menu entry on the DECT phone

When a “TextMenu” XML object is displayed on the DECT phone, the user can move with the “Up” and “Down” arrow keys to an entry and select the highlighted entry by pressing the “OK” key.

Alternatively the user can press the digit keys to select a displayed entry. The digit key refers to the displayed line number which shall be selected e.g. 1 selects the first menu line, 2 the second menu line and so forth.

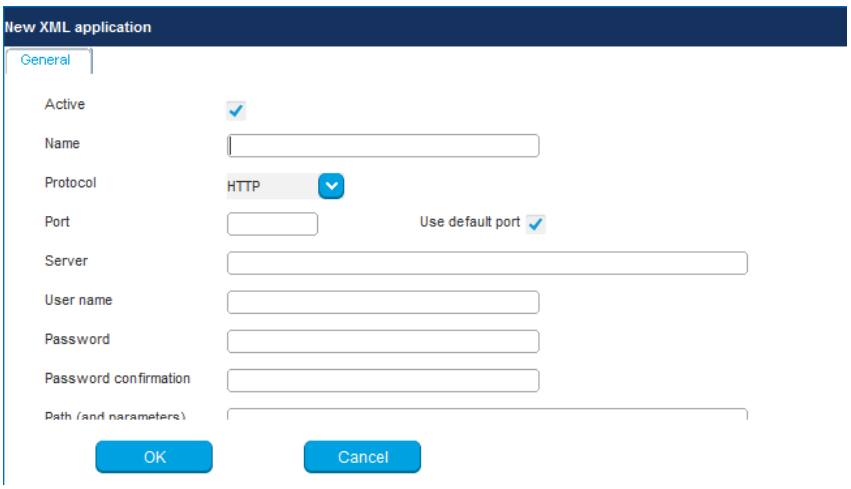


The tasks which can be performed in the **XML applications** menu are mode-dependant.

Configuration mode	Monitor mode	See section
Create: create new XML hooks		8.13.2.1
Configure: configure selected XML hook in detail panel		8.13.2.2
	Show details: shows selected XML hook in detail panel	8.13.2.3
Delete: delete selected XML hook		8.13.2.4

8.13.2.1 Creating a New XML Hook

In addition to the six predefined XML hooks, you can create up to 10 additional XML hooks.



Adding individual XML hooks is only possible in **Configuration Mode**. To add an XML hook proceed as follows:

1 In the **Tasks** bar click on the **Create** command.

The **New XML application** panel opens.

2 Configure the XML hook, see parameter description below.

3 Press the **OK** button.

The following parameters can be set in the tabs of the **New XML application** panel:

- **Active**: This setting activates or deactivates a configured XML application entry.
- **Name**: The predefined hooks have fixed predefined names. A name must be configured for the free defined hooks.

  The following parameters specify the URI:
- **Protocol**: Select the protocol HTTP or HTTPS.
- **Server**: Enter the IP address or the name of the server which provides the XML content.

Note: SIP-DECT 6.0 supports “SIPProxy” placeholders for XML Server application URLs within SIP redundancy setups. In cases where applications are located on a SIP server, it is necessary to address XML applications by using the current primary, secondary or tertiary SIP server address. In those cases, the “SIPProxy” placeholder can be used as server input.

- **User name**: Enter the login user name if an authentication is required by the server.
- **Password**, **Password confirmation**: Enter the password if the authentication is required by the server.
- **Path** (and parameter): Enter the path and query of the URI. For “Feature access codes translation”, the **Path** settings contains placeholders for the queried translation: {subsc} = Number, {ppn} = Device ID, {fac} = FAC

8.13.2.2 Changing an XML Hook

Changing XML hooks is only possible in **configuration mode**. To change the configuration of an existing XML hook, do the following:

1. Select the appropriate XML hook in the account table.
2. In the **Tasks** bar, click **Configure**.
3. Change the XML hook parameters (see parameter descriptions in section 8.13.2.1).
4. Click **OK**.

Note: The predefined XML hooks cannot be renamed.

8.13.2.3 Viewing XML Hook Details

You can view the configuration of an XML hook in **Monitor Mode**. Do the following:

1. Select the appropriate XML hook in the table.
2. In the **Tasks** bar click on the **Show details** command.
   The user account data is displayed in the user account detail panel.
3. Click **Cancel** to close the XML hook detail panel.

8.13.2.4 Deleting XML Hooks

Deleting XML hooks is only possible in **Configuration Mode**. To delete one or more existing XML hook, do the following:

1. Select the appropriate XML hook(s) in the table by activating the corresponding checkbox(es).
2. In the **Tasks** bar, click **Delete**.
   A confirmation dialog opens.
3. Click **OK** to confirm.

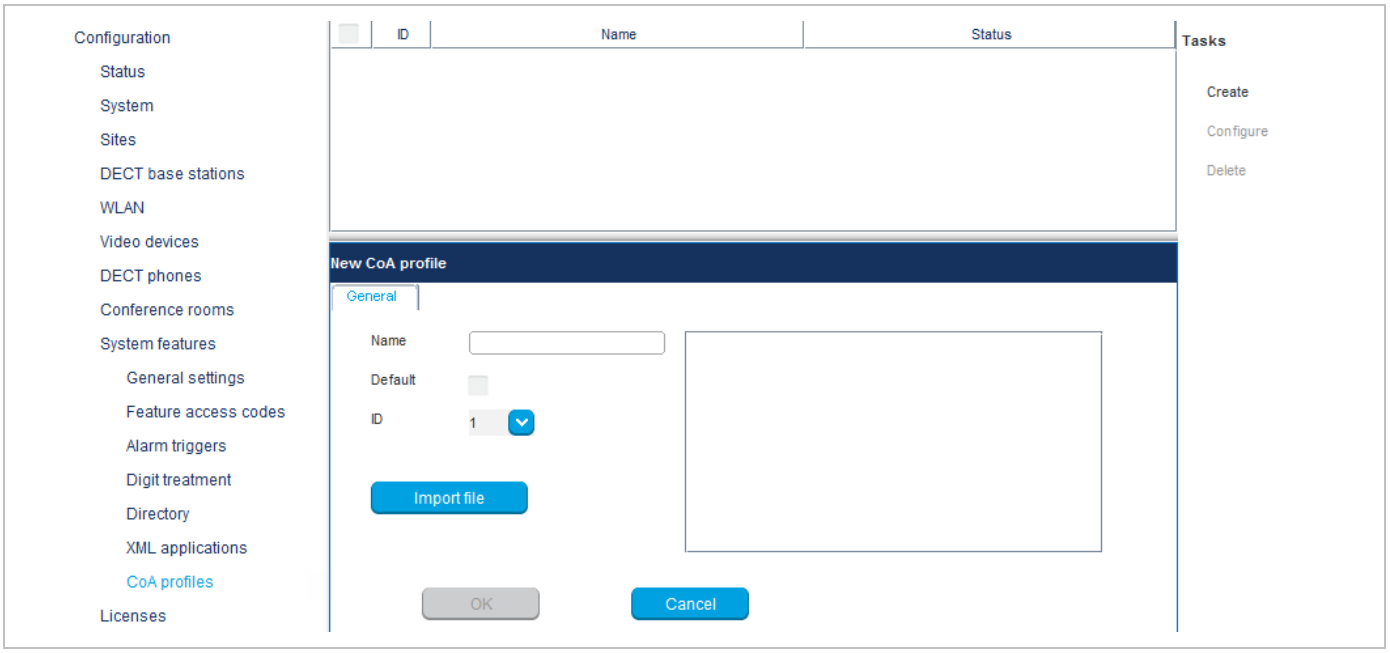
Please note: The predefined XML hooks cannot be removed.

8.13.3 “COA PROFILES” MENU

SIP-DECT 6.0 supports central configuration over the air (CoA) for Mitel 602 DECT phones. The CoA profiles page lists the available CoA profiles that can be downloaded to the DECT phones.

Note: The profiles generated by the user_common.cfg configuration file are also listed in this window. When managed with OMP, they can be overwritten when the user_common.cfg configuration file is reloaded. The maximum download size is 4kB.

You can import CoA profiles via the **CoA Profiles** menu. Once you have imported the profiles, you can assign them to specific DECT phone users.



To create a new CoA profile:

1 Click **Create** under the Tasks list on the right-hand side of the **CoA profiles** window.
The **New CoA profile** dialog opens.

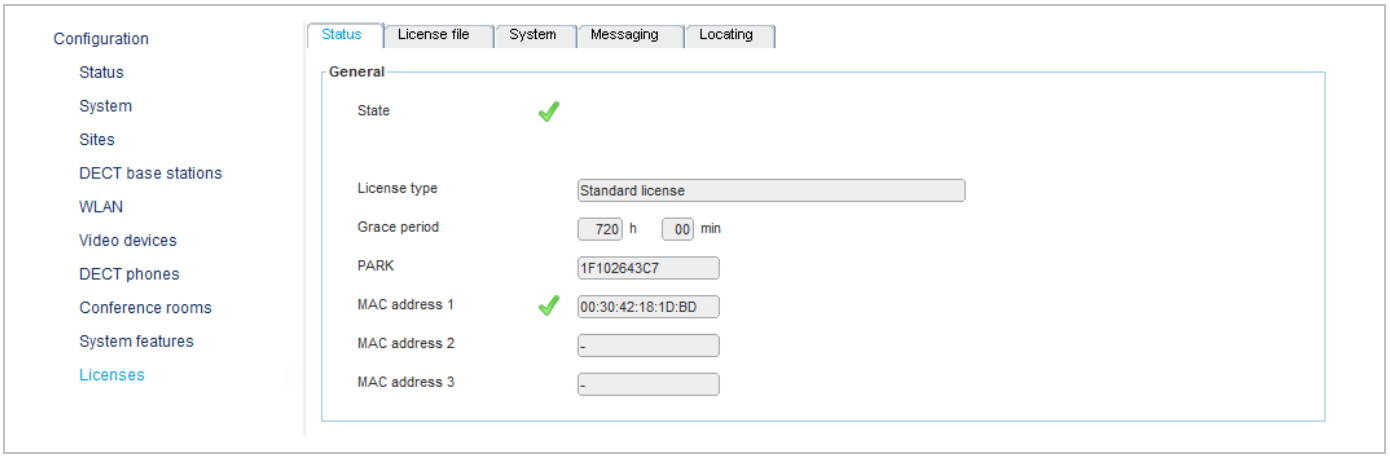
2 Configure the settings for the CoA profile:
- **Name**: Specify a name for the CoA profile
- **Default**: Indicate whether this is the default CoA profile to be used
- **ID**: Select an ID for the CoA profile from the drop-down menu.

3 Click **Import file** to select the CoA file to import.

The **CoA profiles** page displays the new CoA profile in the table.

8.14 “LICENSE” MENU

The **License** panel provides an overview of licenses currently in use. In **Configuration Mode**, you can also import a license file.



The license information is displayed in the following tabs:

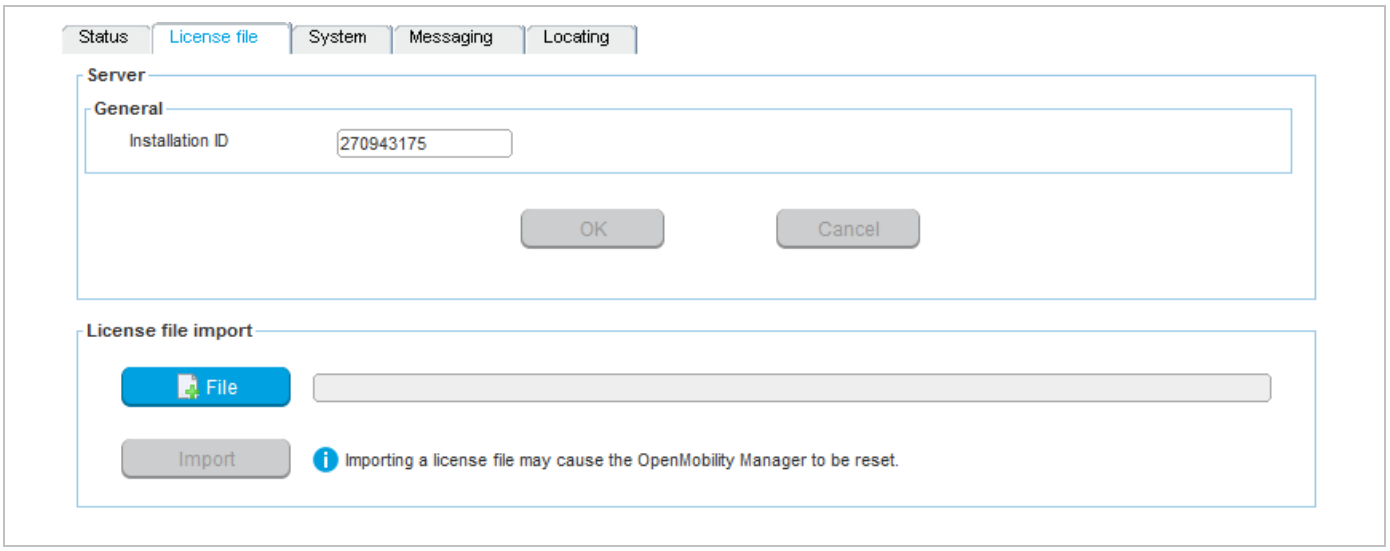
- **Status**: shows general license information.
- **License file**: allows import of a license file
- **System**: shows system license status.
- **Messaging**: shows Integrated Messaging and Alerting Service (IMA) license status.
- **Locating**: shows Locating license status.

“General” tab

The General tab displays general information about the current system license.

“License file” tab

The License file tab allows you to import a license file (only possible in **Configuration Mode**).

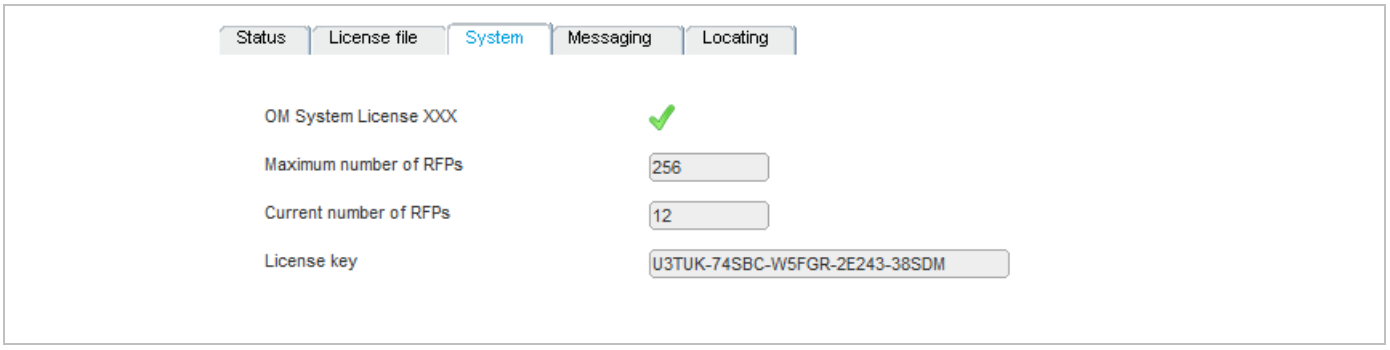


1 Click the **File** button to select the path and file name where the license file is stored.

2 Click the **Import** button.

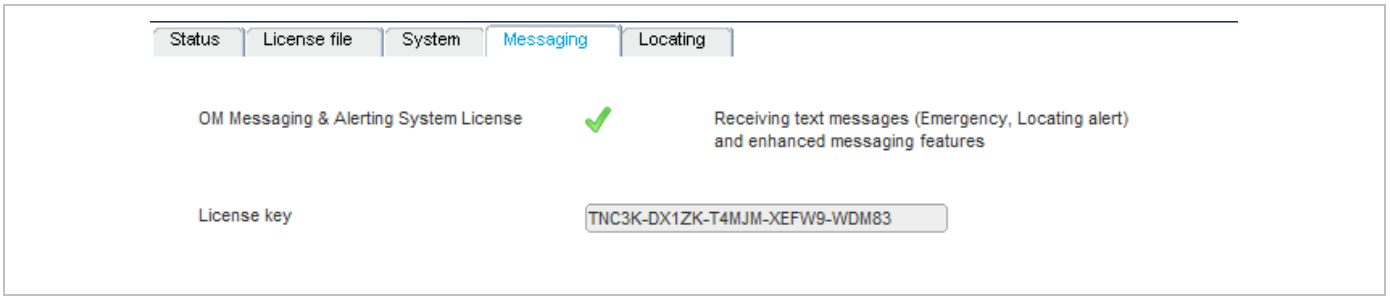
“System” tab

The “System” tab provides OM System license information. This includes supported software version and number of licensed DECT base stations (RFPs) compared to number of connected DECT base stations.



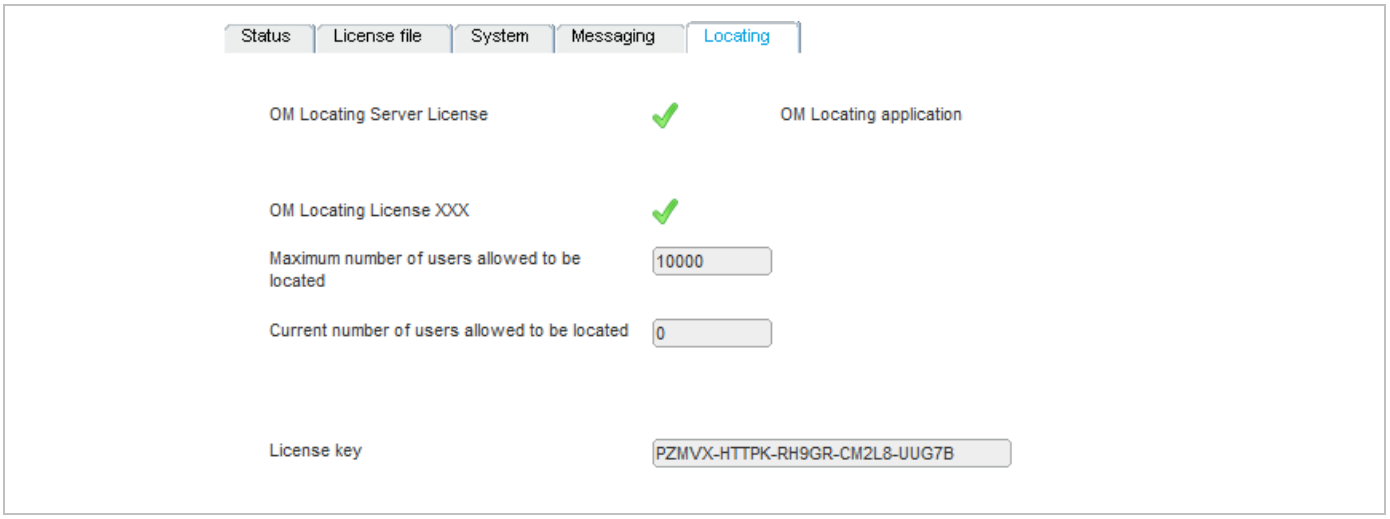
“Messaging” tab

The “Messaging” tab provides OM Messaging and Alerting license information.



“Locating” tab

The “Locating” tab provides OM Locating license information.

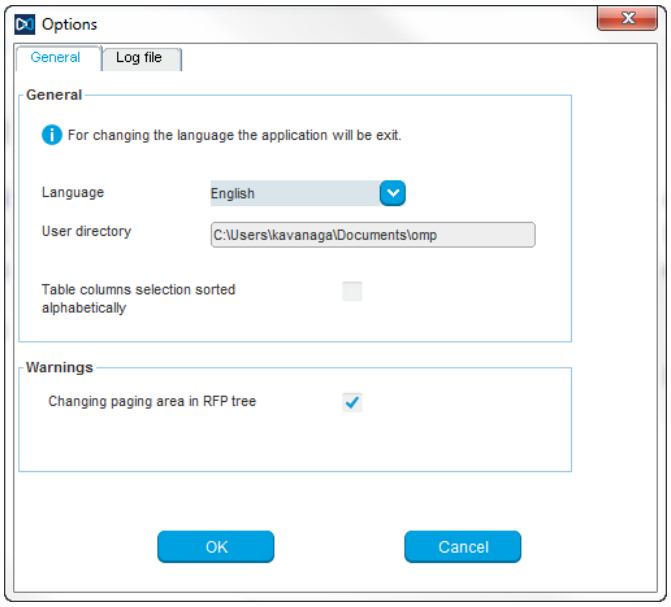


8.15 “GENERAL” MENU

The **General** menu is available in all program situations. It contains following submenus:

- **Exit**: Selecting this menu entry opens the exit dialog to close the OMP.
- **Options**: Selecting this menu entry opens the **Options** dialog (see below).

“Options” - “General” tab



Language: You can select the OMP language. After changing the language, the OMP is automatically closed and must be started again.

The field **User directory** shows the path where the following files are saved if necessary:

- System dump file “sys_dump.txt”
- Expert console log file “spy.log” when the application terminates
- Exception log file “spy_trace_<date>_pxxx” in case of a Java exception, file name extension “xxx” ranges from 000 to 999

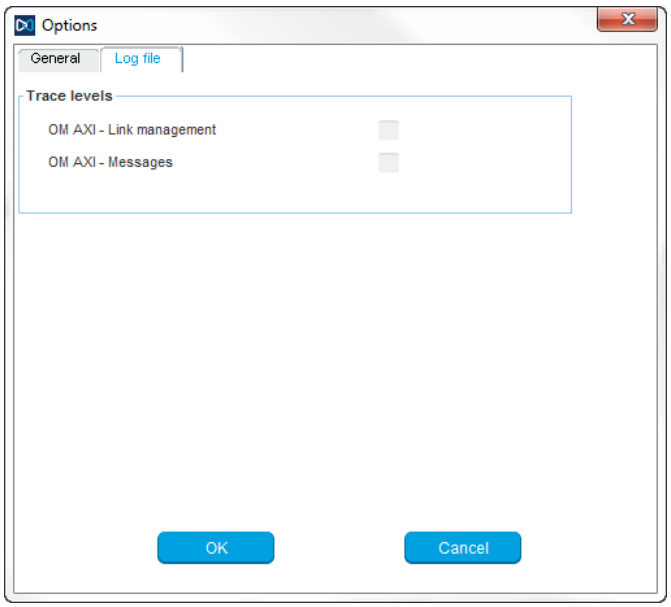
In the **Warnings** section you can activate/deactivate the display of warning messages in the OMP.

Notes on log files

The mechanism for creating the log files is the same as the PC OMM spy log mechanism, what means:

- The maximum size of the log file is 1 GB
- 1000 log files per day at maximum
- Only the 30 newest created log files are kept, older ones are removed automatically
- Log files older than 6 days are removed

“Options” - “Log file” tab

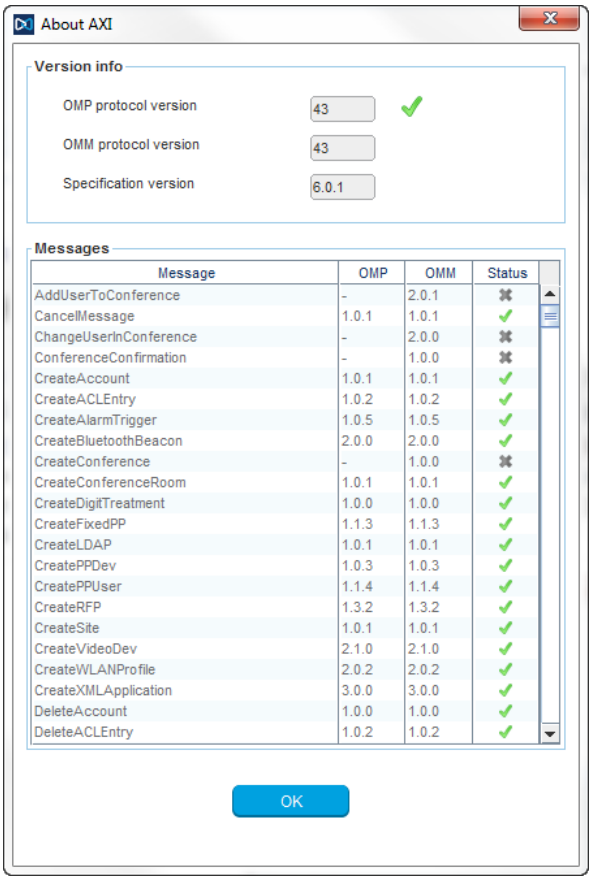


In the **Log file** tab you can enable several trace levels.

8.16 “HELP” MENU

The **Help** menu is available in all program situations. It contains following submenus:

- **Info**: Selecting this menu entry displays the End User License Agreement (EULA).
- **About AXI**: Selecting this menu entry displays the About AXI dialog. This dialog compares the protocol version numbers which are provided by the OMM with the protocol version numbers supported by the OMP. The warning icons ⚠ or ✖ show a version mismatch. A version number “-” means the protocol element is not used by OMP.



- **About OMP**: Selecting this menu entry displays the OMP version info and copyright.

9 CONFIGURATION AND ADMINISTRATION

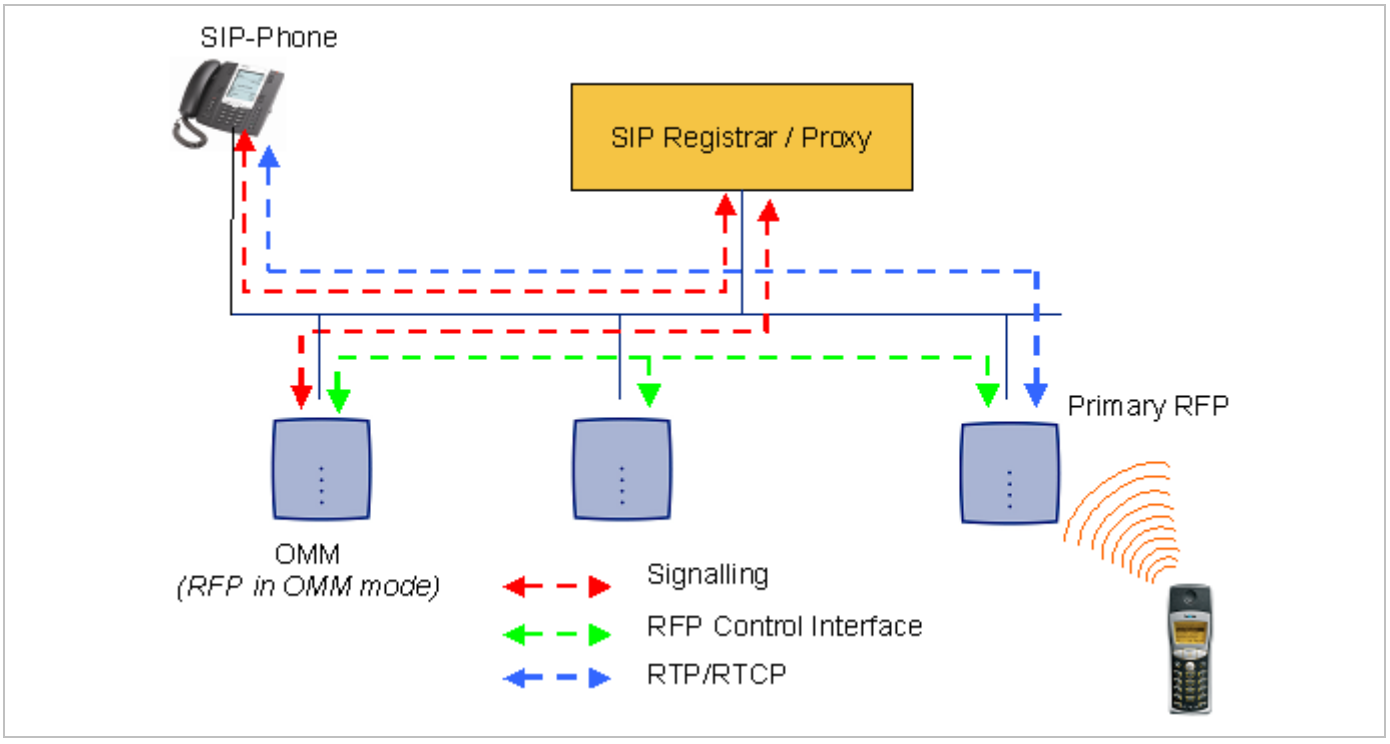
This section provides detailed information on various configuration and administration aspects of the SIP-DECT solution.

9.1 IP SIGNALING AND MEDIA STREAM

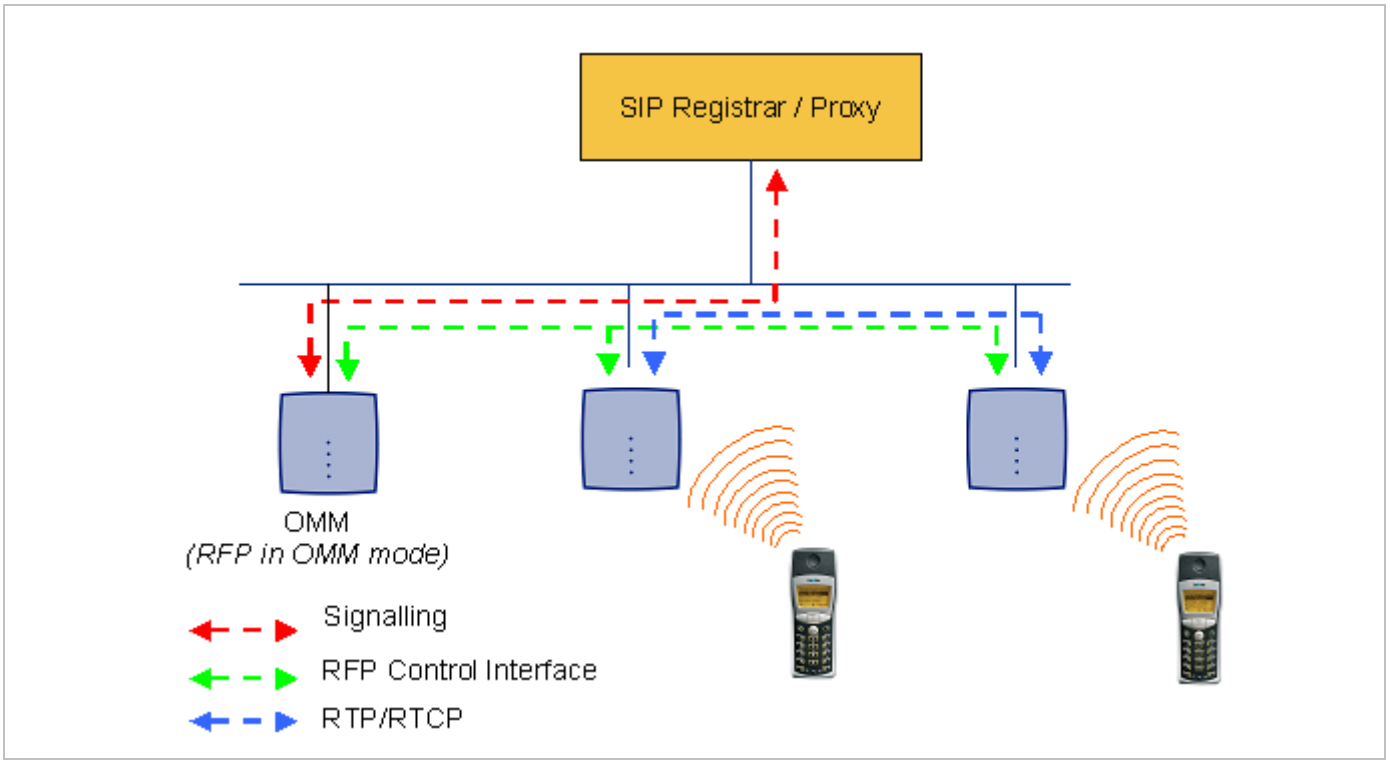
To establish a call between an IP Phone and a DECT phone (e.g. Mitel 600), the following IP streams must be established:

- A signaling channel to and from the SIP phone.
- A signaling channel to and from the OMM.
- A control interface between the OMM and the RFP that has a connection to the DECT phone (known as the primary RFP).
- A Real Time Protocol (RTP) / Real Time Control Protocol (RTCP) connection between the SIP phone and the primary RFP.

The following figure illustrates this scenario.

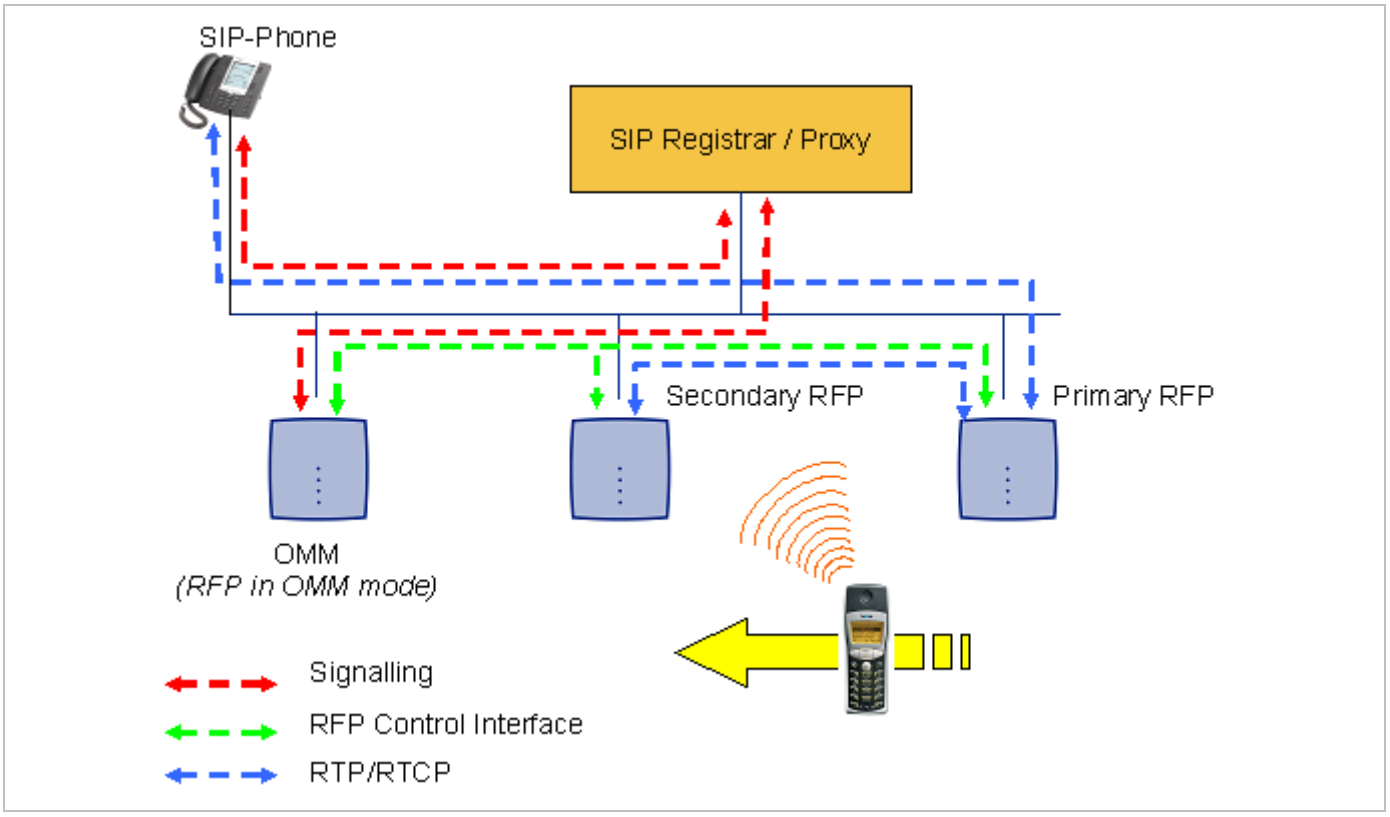


To establish a call between two DECT phones, the same IP streams must be established like in the scenario before, except the IP phone is not involved. The following figure illustrates this scenario.

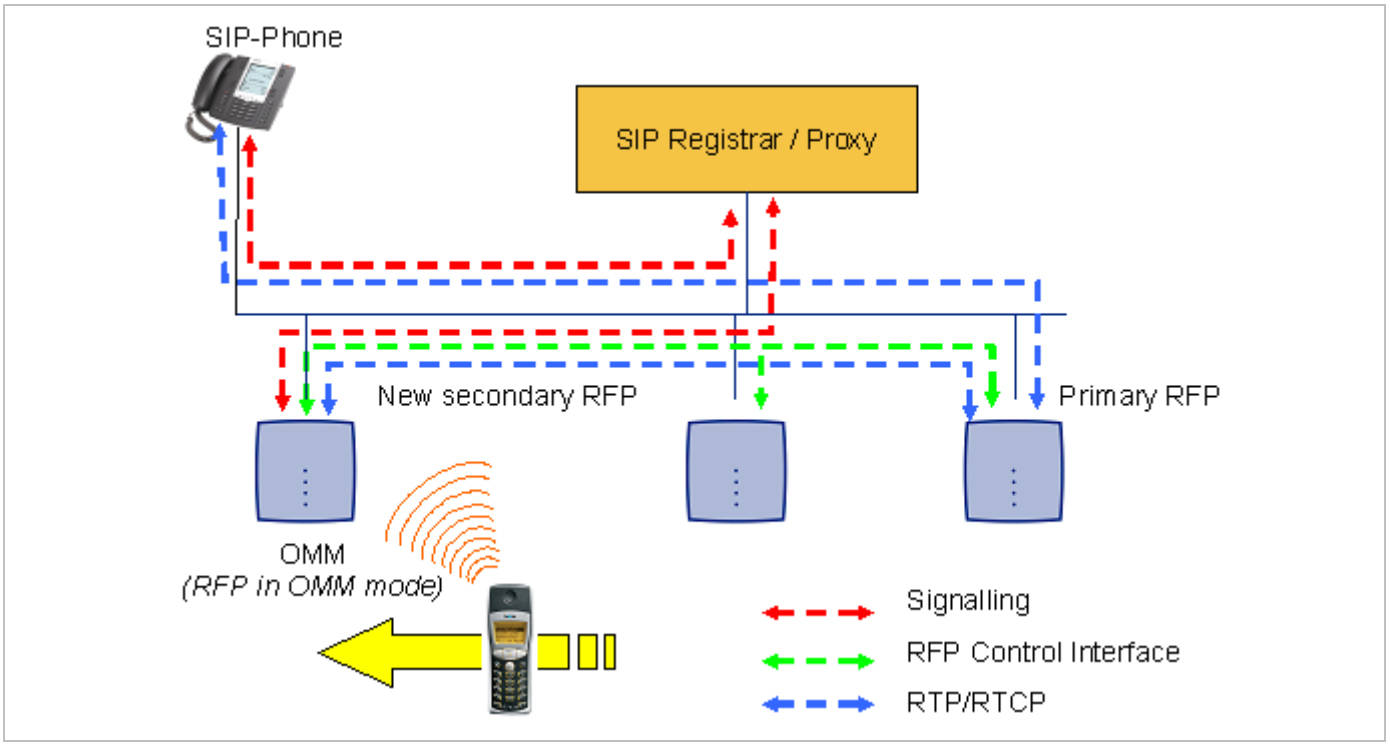


A call from one DECT phone to another that resides on the same RFP will loop back within the RFP if no media gateway is involved. So the call will not pass through to the Local Area Network (LAN). Although the voice packets will not impact LAN traffic, signal packets will.

If the DECT phone user is moving, the DECT phone detects that another RFP has a better signal strength and, therefore, it starts the handover process. The media stream from the IP phone cannot move to the secondary RFP, so the primary RFP uses the LAN to direct the voice to the secondary RFP, as shown in the following figure.



As the DECT phone user moves into the next RFP zone of coverage, the DECT phone detects that the RFP has a better signal strength. Again the media stream from the SIP phone cannot move to the secondary RFP, so the primary RFP uses the LAN to direct the voice to the new secondary RFP.

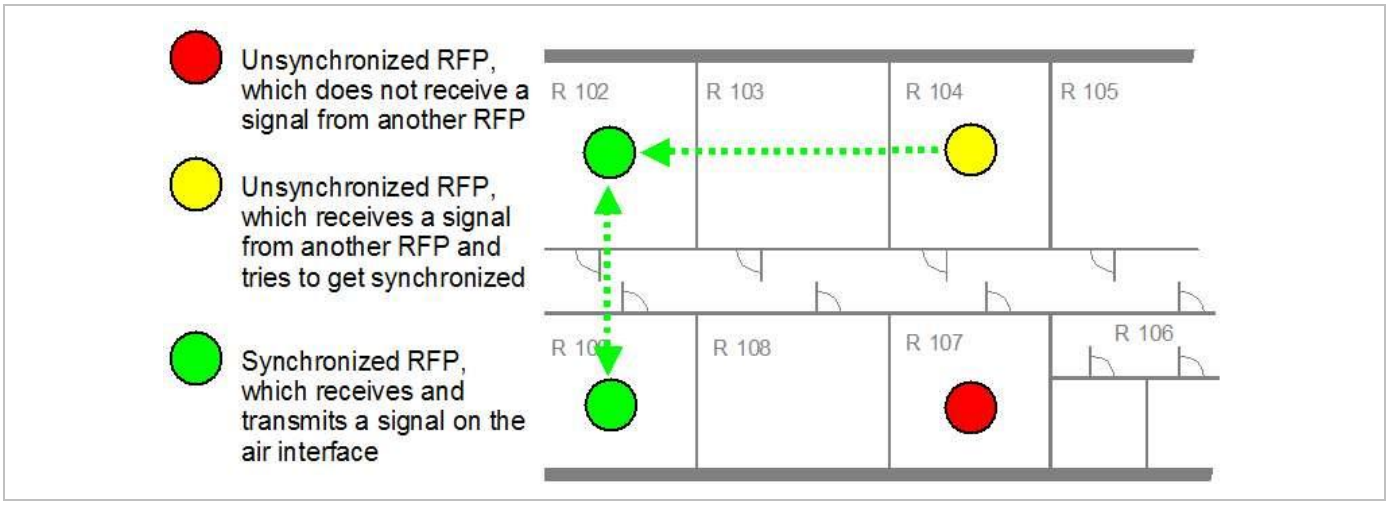


9.2 RFP SYNCHRONIZATION

To guarantee a seamless handover if a caller moves from one RFP zone of coverage to another RFP zone of coverage, an accurate synchronization of the RFPs is necessary.

The RFPs are synchronized over the air interface. The first RFP to complete startup will transmit a signal on the air for the other RFPs to synchronize from. If an RFP gets in sync, then it will transmit a signal on the air and will be the sync source for the next RFP. Only RFPs which can receive a synchronization signal will become synchronized.

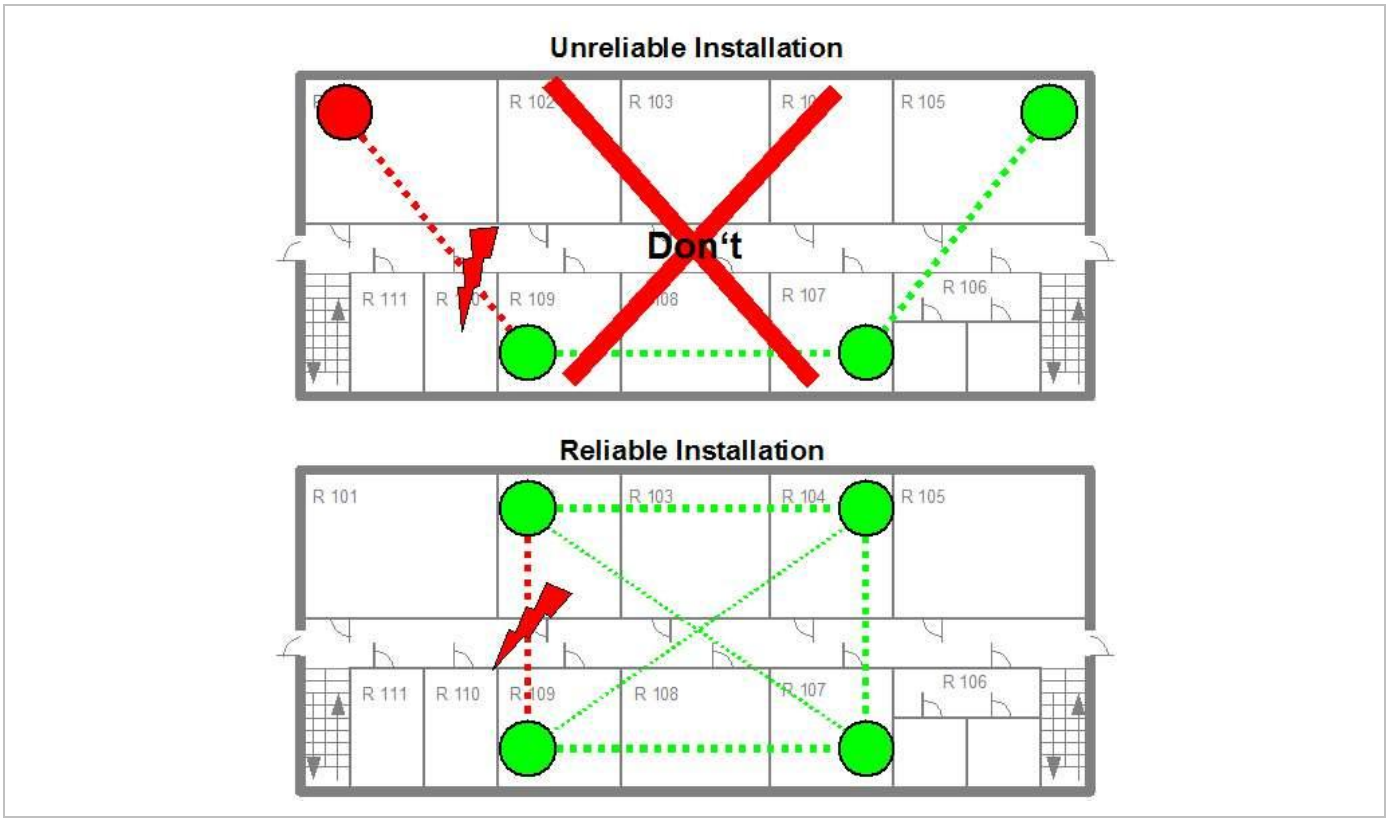
For the RFP to sync to another RFP the signal strength cannot drop below -70 dBm. You must consider this requirement during the site survey.



As long as an RFP is not in sync, no calls can be established using this RFP.

If an RFP loses the synchronization, the RFP does not accept new calls (“busy bit”). There is a delay of maximum 3 minutes until the active calls on this RFP are finished. Then it tries to get synchronized again.

A SIP-DECT installation is more reliable if an RFP can receive the signal from more than only one RFP because the other signals are also used for synchronization.



The sync-over-air solution is very reliable because all existing redundant paths are used for synchronization. Thus, hardware tolerances have only very little influence. No RFP has a key position.

Only unfavorable setups without redundant synchronization paths can cause problems.

Sometimes RFPs do not must be synchronized, e.g. if they are in different buildings. These RFPs can be put into different clusters. RFPs in different clusters will not be synchronized with each other. Different clusters start up at the same time independently.

9.2.1 INITIAL SYNCHRONIZATION PROCEDURE

To avoid synchronization problems and to speed up the synchronization on system startup, an initial synchronization procedure is used. For every cluster the following synchronization stages are defined.

- Synchronization stage 0
  - If at least one preferred RFP was configured, the synchronization process will wait up to 30 seconds for an incoming startup message of such a preferred RFP. Receiving a message will finishing stage 0 and the synchronization process jumps to stage 1.
  - If no message was received within the 30 seconds this stage will be terminated and the next stage will be started.
  - If no preferred RFP was configured, this stage will be ignored.
- Synchronization stage 1
  - If a preferred RFP was determined in stage 0, this one will be the synchronization source for the next upcoming RFPs. Otherwise the first RFP which sends a startup message will be the synchronization source for the next upcoming RFPs.
  - In this stage, only RFPs reporting an RSSI value better than -65 dBm will be permitted to do a synchronization.

  - If an RFP has done its synchronization, this RFP will be also a synchronization source for other upcoming RFPs.
  - The initial timeout for this stage is 30 seconds. Whenever an RFP has finished its synchronization in this stage a new stage timeout value will be calculated.
  - If no RFP comes up within the timeout time or if all the upcoming RFPs do not fit the RSSI threshold, this stage will be terminated and the next stage will be started.
- Synchronization stage 2
  - The behavior of this stage is identical to stage 1, but an RSSI threshold value of -70 dBm is significant.
- Synchronization stage 3
  - The behavior of this stage is identical to stage 1, but an RSSI threshold value of -75 dBm is significant.
- Synchronization finished
  - No more RSSI threshold value is significant. All the RFPs that failed the stage conditions above are now permitted to do a synchronization.

The last level “synchronization finished” will be achieved either all registered RFPs of this cluster are synchronized or the timer of stage 3 expires.

9.2.2 CHECKING THE SYNCHRONIZATION OF A NETWORK

For every cluster a periodically check of the synchronization of the network is done. If the network is split into at least two subnets, all the RFPs of the lesser subnet(s) will be resynchronized. While doing initial synchronization procedure this check is deactivated. You can check the RFP synchronization using the Sync view menu of the OM Management Portal (OMP), see section 8.7.6.

9.3 RFP CHANNEL CAPACITY

The RFP has 12 available time slots on air; eight can have associated DSP/media resources for media streams. All DECT time slots are used for control signaling, software download over air, messaging and bearer handover independent of associated DSP/media resources.

If all eight media stream channels are used, the RFP announces a “busy bit”. In that case, the DECT phones determine whether another RFP has an appropriate signal strength. If so, the DECT phone will handover to that RFP. Once the handover has been completed, the RFP will then lower its “busy bit”.

Whenever the busy state is announced a log entry is made to the system logs. If the announcement of busy raises in a specific area, a further RFP should be installed to double the number of media streams available for calls.

Notes on Hi-Q connections

Each Hi-Q connection uses, compared to conventional narrowband, the double capacity on the DECT air interface. Due to this fact, four Hi-Q connections (instead of eight) can be established via one RFP.

It is not possible to have DECT XQ audio combined with Hi-Q audio within the same connection.

9.4 NETWORK INFRASTRUCTURE PREREQUISITES

To establish and maintain an SIP-DECT installation, a network infrastructure is assumed, which comprises at least the following components:

- RFPs
- DECT phones
- IP PBX/media server (e.g. Asterisk)
- TFTP server

Depending on the operational modes the following services should be provided:

- DHCP
- TFTP
- SNTP
- DNS
- LDAP
- Syslog daemon

Notes on network infrastructure prerequisites

- In NA outdoor RFPs may only be installed with the antennas shipped with the units. No other antennas or cabling are permitted. In EMEA the outdoor RFPs are shipped without antennas and you may use the units with one of the optional antennas (separate order no.).
- A TFTP server is no longer required for boot of an RFP 35/36/37 IP or RFP 43 WLAN.
- TFTP, FTP(S), HTTP(S), SFTP are supported for RFP 35/36/37 IP or RFP 43 WLAN software update.

9.5 SIP-DECT STARTUP

This section contains detailed information on the startup (booting) process of the SIP-DECT solution.

For booting an RFP 32/34 or RFP 42 WLAN, there must be at least one TFTP server on the attached network to load the OMM/RFP application software.

RFP 35/36/37 IP or RFP 43 WLAN uses the internal flash to start the boot image. A fileserver is only needed for software update over the network.

The essential network settings can be alternatively:

- Communicated by a DHCP server at startup time.
- Configured on the RFP with the OM Configurator tool (see section 9.6). The settings made by the OM Configurator will be saved permanently in the internal flash memory of each OMM/RFP.

9.5.1 TFTP AND DHCP SERVER REQUIREMENTS

TFTP server requirements

The RFP gets the boot image file from a TFTP server. The requirement list for the used TFTP server is defined as follows:

- The support of RFC 1350 /1/ is mandatory.
- To accelerate the download of a boot image file for older 2nd generation RFPs, it is possible to increase the packet size of the transmitted TFTP packets from 512 bytes per packet to 1468 bytes per packet. To use this optional feature, the TFTP server must support RFC 2347 /3/ and RFC 2348 /4/.

- To reduce the overall download time of the older 2nd generation RFPs in a system, it is possible to use TFTP multicast download. To use this optional feature, the TFTP server must support RFC 2090 /2/ and RFC 2349 /5/.

  Note: 3rd generation RFPs operating the SIP-DECT software do not support packets larger than 512 bytes and also no multicast with TFTP.

To use the TFTP multicast option, the attached network must support multicast too. Furthermore a support of IGMP, RFC 2236 /6/ is required.

Note: If many RFPs loading the boot image simultaneously, the network load could increase significant. To balance the network load or for backup reasons, it is possible to configure more than one TFTP server in a network.

DHCP server requirements

A DHCP server needs to support RFC 2131 /9/. The TFTP and DHCP server need not to reside on the same host.

9.5.2 BOOTING STEPS

Booting is performed in two steps:

1 Starting the boot process.

2 Starting the application.

Booter startup

On startup each RFP tries to determine its own IP address and other settings of the IP interface from the configuration settings in the internal flash memory. If no settings are available or these settings are disabled, the RFP tries to determine these settings via DHCP. Depending on the RFP type, the RFP software is to be loaded:

- A 3rd generation RFP gets the application image from internal flash memory.
- An older 2nd generation RFP only has a small standalone application built into the flash. This software realizes the so-called net boot process. The RFP gets the application image file from the TFTP server.

Application startup

After starting the application image, the RFP software checks the local network settings in its internal flash memory. If no settings are available or if they are disabled, the RFP software starts a DHCP client to determine the IP address of the OMM and other application startup settings. The RFP software acquires the OMM IP address

- within the local network settings, if active
- via DHCP request
- RFP configuration file (see 9.7.7)

If the IP address of the actual RFP device matches one of the acquired OMM IP addresses, the RFP software continues in OMM mode. Otherwise, the RFP runs as normal RFP without OMM mode.

Note: Only 3rd generation RFPs are able to run in OMM mode while older 2nd generation RFPs cannot function as OMM.

9.5.3 BOOTER STARTUP

The SIP-DECT RFP software includes a booter with the following features:

- VLAN can be configured via the OM Configurator without a static IP configuration. This means that the first DHCP request will be done by using VLAN.
- To balance the network load with older 2nd generation RFP devices, up to three TFTP servers can be configured. This can be done using the OM Configurator (local setting) or using the DHCP option 150. Before starting the download, the TFTP server will be selected randomly by the booter. **But**, if the option “Preferred TFTP server” was set by the OM Configurator, the option “TFTP server address” will specify the TFTP server to use. No randomly selection will be done in this case.
- Older 2nd generation RFPs only: to reduce the number of TFTP packets sent by the TFTP server, the packet size can be increased. This will be done by using a TFTP option (see 9.5.1 “TFTP server requirements”).
- Older 2nd generation RFPs only: Multicast TFTP download is possible if the TFTP server and the connected network support this.
- To indicate the actual state of the booter, the LEDs of the RFP will be used (see 9.5.5).

9.5.3.1 DHCP Client

Within the initial boot process the DHCP client supports the following parameters:

- IP address mandatory
- Net mask mandatory
- Gateway mandatory
- Boot file name mandatory for older RFPs
- TFTP server mandatory for older RFPs
- Public option 224: “OpenMobility” / “OpenMobilitySIP-DECT” mandatory
- VLAN-ID optional
- TFTP server list optional

9.5.3.1.1 DHCP Request

The DHCP client sends the vendor class identifier (code 60) “OpenMobility3G” (3rd generation RFPs) or “OpenMobility” (older 2nd generation RFPs) and requests the following options in the parameter request list (code 55):

- Subnet mask option (code 1)
- Router option (code 3)
- VLAN ID option (code 132)
- TFTP server list (code 150)
- Public option 224 (code 224) *(string “OpenMobility” or “OpenMobilitySIP-DECT”)*
- Public option 225 (code 225) *(*VLAN ID, not relevant f*or SIP-DECT)*
- Public option 226 (code 226) *(not relevant* for *SIP-DECT*)

9.5.3.1.2 DHCP Offer

The DHCP client selects the DHCP server according to the following rules:

- The **public option 224** (**code 224**) has a value equal to the string “OpenMobility”,
  or
- the **public option 224** (**code 224**) has a value equal to the string “OpenMobilitySIP-DECT”.

If none of the two rules above match, the DHCP offer is ignored.

Information retrieved from the DHCP offer:

- The IP address to use is taken from the **yiaddr** field in the DHCP message.
- The IP net mask is taken from the **subnet mask option (code 1)**.
- The default gateway is taken from the **router option (code 3)**.
- The TFTP server IP address is taken from the **siaddr** field in the DHCP message and additionally DHCP option 150, if available.
- The boot image filename is taken from the **file** field in the DHCP message, if this field is empty, the default filename is used.

9.5.3.1.3 Retries

If the DHCP client does not get an appropriate DHCP offer, a new DHCP request is send after 1 second. After 3 DHCP requests are sent the DHCP client will sleep for 60 seconds. During this time the booter will accept a local configuration with the OM Configurator.

This cycle will repeat every 3 minutes until either **all** the required DHCP options are provided or the system is manually configured using the OM Configurator tool.

9.5.3.2 TFTP Client

The TFTP client will download the application image from the TFTP server. Both TFTP server and the name of the application image are supplied via the DHCP client. The application image is checksum protected.

Downloading the application image via TFTP is mandatory for older 2nd generation RFPs only. 3rd generation RFPs will load the application image from the internal flash, and (if configured) also download the application image via TFTP for update.

9.5.3.3 Booter Update

With older second generation RFPs, each application software image comes with the latest released booter software. The application software will update the booter automatically. With third generation RFPs, the booter will only be updated if you update the software.

If you downgrade the RFP’s application software image to an older release, the booter will not downgrade automatically. In addition, if you want to use the OM Configurator tool (see 9.7), the OM Configurator version must match the booter software version.

9.5.4 APPLICATION STARTUP

After successfully starting the application software, the RFP checks the local network settings in its internal flash. If no settings are available or if they are disabled, it starts a DHCP client to determine the IP address of the OMM and other application startup settings.

9.5.4.1 DHCP Client

The DHCP client is capable of receiving broadcast and unicast DHCP replies. Therefore the flags field is `0x0000`. The DHCP request contains the well-known magic cookie `(0x63825363)` and the end option `(0xFF)`.

Parameters

The following parameters will be supported within this step:

Option / Field	Meaning	Mandatory
yiaddr	IP address of the IP-RFP	yes
siaddr	Parameter named “Boot Server Host Name” with value as the IP address of the TFTP server	no (3G RFPs) yes (older 2G RFPs)
File	Parameter named “Bootfile Name” with value of the path (optional) and name of the application image. For example “iprfp3G.dnld “ (3rd generation RFPs) or “iprfp2G.tftp” (older 2nd generation RFPs).	no (3G RFPs) yes (older 2G RFPs)
option 1	Subnet mask	no
option 3	Default Gateway	no
option 6	Domain Name Server	no
option 15	Domain Name	no
option 42	IP address of a NTP server	no
option 43	Vendor Specific Options	yes
option 66	URL specifies the protocol, server and path to access the RFP configuration files (see 9.7.7).	no
option 132	VlanId	no
option 150	TftpServerIpList	no
option 224	Parameter named magic_str must be set to value "OpenMobility" or "OpenMobilitySIP-DECT".	yes

Vendor specific options

The Vendor Specific Options (see 0) consist of:

Vendor Specific Option	Meaning	Length	Mandatory
option 10	ommip1: Used to select the IP-RFP who should reside the Open Mobility Manager (OMM).	4	yes
option 14	syslogip: IP address of a Syslog Daemon	4	no
option 15	syslogport: Port of a Syslog Daemon	2	no
option 17	Country: Used to select the country in which the OMM resides. This enables country specific tones (busy tone, dial tone, …).	2	no
option 18	ntpservname: Name of a NTP Server	x	no
option 19	ommip2: Used to select a secondary IP-RFP who should reside the standby Open Mobility Manager (OMM). This option must be given if the OMM Standby feature should be used (see section 9.15).	4	no

Example

An example of the minimal contents for the Option 43 parameter value would be:

0a 04 C0 A8 00 01 where “C0 A8 00 01” represents “192.168.0.1” for the OMM IP.

The option 43 contains a string of codes in hex the format is “option number” “length” “value” in this example
0a = option 10 (ommip1)
04 = following value is 4 blocks long
C0 A8 00 01 = 192.168.0.1

If there is more than one option, add the next option at the end of the previous one. Depending of the DHCP server you must end the option 43 with FF.

Country specific tones

Tones for the following countries are supported:

Country code	Country
1	Germany
2	Great Britain
3	Switzerland
4	Spain
6	Italy
7	Russia
8	Belgium
9	Netherlands
10	Czechoslovakia

11	Austria
12	Denmark
13	Slovakia
14	Finland
15	Hungary
16	Poland
17	Belarus
18	Estonia
19	Latvia
20	Lithuania
21	Ukraine
22	Norway
24	Sweden
25	Taiwan
100	North America
101	France
102	Australia

9.5.4.2 Configuration using DHCP

The DHCP client of the RFP family requests several parameters that are used to configure the RFP. The DHCP client vendor class identifier (option 60) is different for the different RFP generations:

- 3rd generation RFPs (RFP 35/36/37 IP / RFP 43 WLAN) use “OpenMobility3G”.
- Older 2nd generation RFPs (RFP 32/34 / RFP 42 WLAN use) “OpenMobility”.

BOOTP/DHCP Option	Meaning	Type	Remarks
siaddr	IP address of the TFTP server	4 octets	Optional for 3G RFPs for SW update; Mandatory for older 2G RFPs because of the NETBOOT process;
File	Path to the boot image server by the TFTP server	N octets	Optional for 3G RFPs for SW update; Mandatory for older 2G RFPs because of the NETBOOT process
150	TFTP server list	N * 4 octets	Only used by the NETBOOT process of older 2G RFPs
224	Magic String	“OpenMobility” or “OpenMobilitySIP-DECT”	The client uses this option to select the server, mandatory

* The magic string “OpenMobilitySIP-DECT” instead of “OpenMobility” (as defined in SIP-DECT 2.x) makes sure that a SIP-DECT software is loaded into the RFP 35/36/37 IP/ RFP 43 WLAN even an different, non-SIP-DECT SW is previously installed and running.

9.5.4.3 Selecting the Right DHCP Server

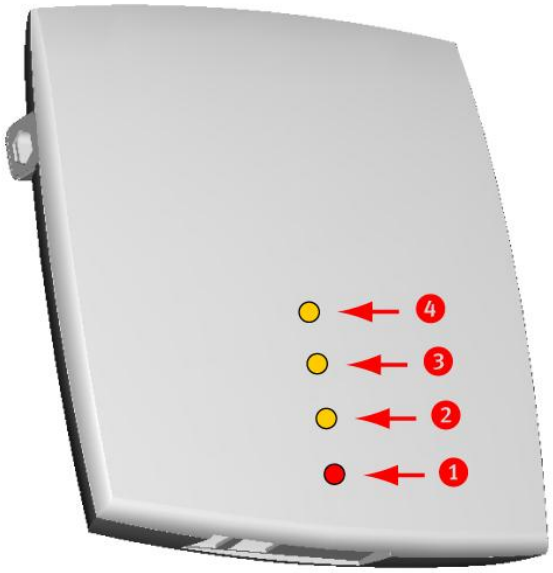
The DHCP client requests its own IP address using code 50. The DHCP client will select the DHCP server that offers the currently used IP address. Additionally the mandatory options must be offered otherwise the DHCP offer is ignored by the DHCP client.

If no matching reply was received, the DHCP client resends the request 2 times after 1 second. Then the DHCP client will wait for 1 minute before resending 3 requests again.

If the DHCP client cannot accept a DHCP offer within 30 minutes, the RFP is rebooted.

9.5.5 RFP LED STATUS

RFP 32/34 IP
RFP 32/34 NA
RFP 35/36 IP



LED 1 Info / Booter; LED 2 System;
LED 3 DECT; LED 4 (unused)

RFP 42 WLAN
RFP 43 WLAN

LED 1 Info / Booter; LED 2 System
LED 3 DECT; LED 4 WLAN

The following tables show the LED status of an RFP according to the different states.

A red respectively orange colored field in the table means that the LED glows permanently in red or orange. A split field with e.g. the specification 1s/1s means that the LED is flashing with a frequency of one second LED red on and one second LED off. Grey means that the LED is off.

9.5.5.1 Booter LED Status

RFP 35/36 IP, RFP 43 WLAN

The RFP 35/36 IP and RFP 43 WLAN booter uses LED1 for signaling its activity. After power up, the LED 1 (INFO) is red. The successful start of the boot image is signaled by the LED 1 turning orange.

RFP 32/34 IP, RFP 32/34 NA, RFP 42 WLAN

The following table illustrates the different meaning of the LEDs while the booter is active.

	LED1 (INFO)		LED2 (OMM / SYSTEM)		LED3 (DECT)		LED4 (WLAN)		
Booter	cont.								Power connected
	cont.		cont.		cont.		cont.		Wait for OMM Configurator Input
	1s	1s							DHCP
	1,9s	0,1s	cont.		cont.		cont.		DHCP failed, wait for OMM Configurator Input
	0,25s	0,25s							TFTP download after DHCP
	0,25s	0,25s	cont.						TFTP download after local configuration
	0,25s	0,25s			cont.				TFTP download after DHCP Multicast
	0,25s	0,25s	cont.		cont.				TFTP download after local configuration and multicast
	3,9s	0,1s	cont.		cont.		cont.		TFTP failed, wait for OMM Configurator Input
Now, the kernel / application is running: LED1 will never be RED									

9.5.5.2 Application LED Status

The following tables illustrate the different meaning of the LEDs while the application is starting or active.

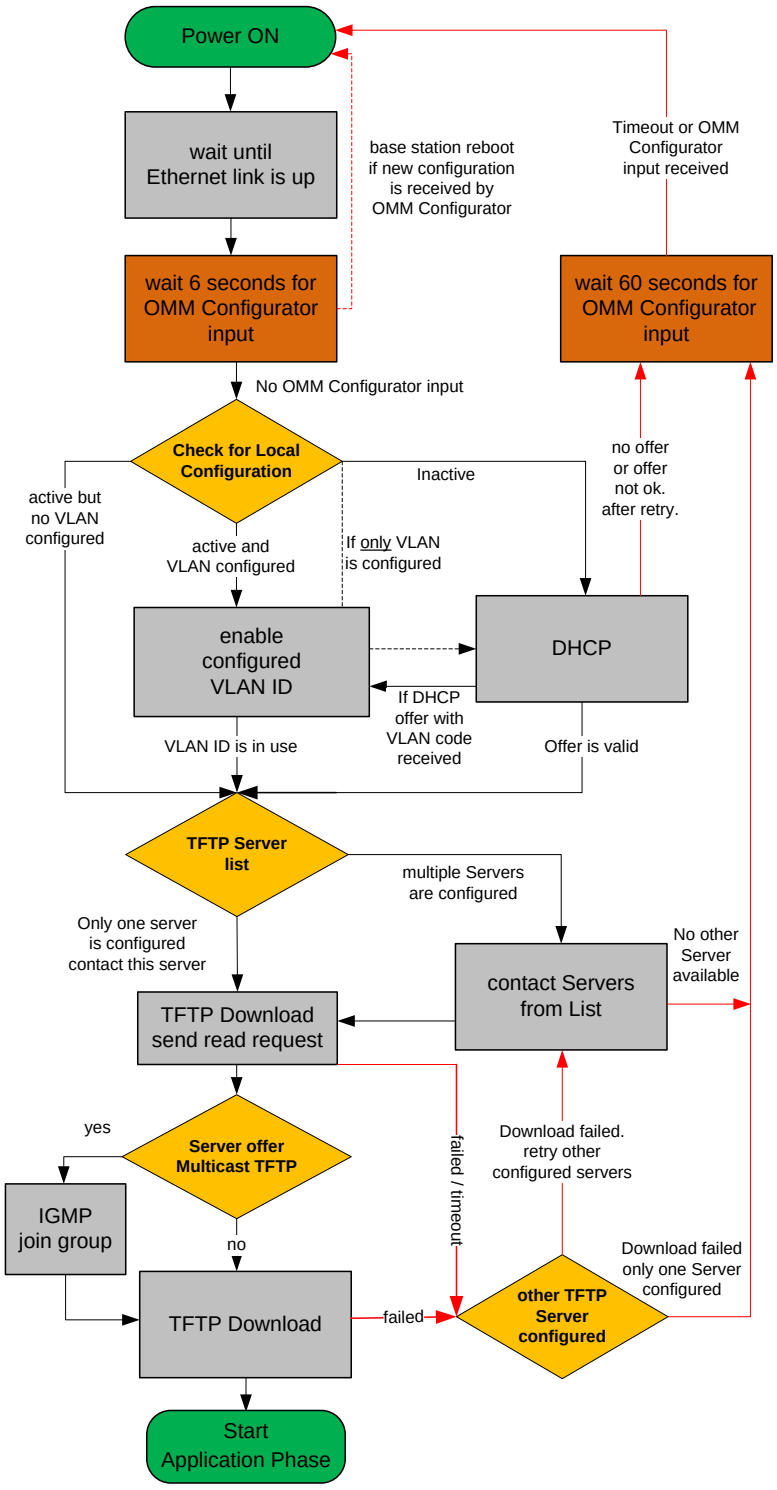
RFP 35/36 IP, RFP 43 WLAN

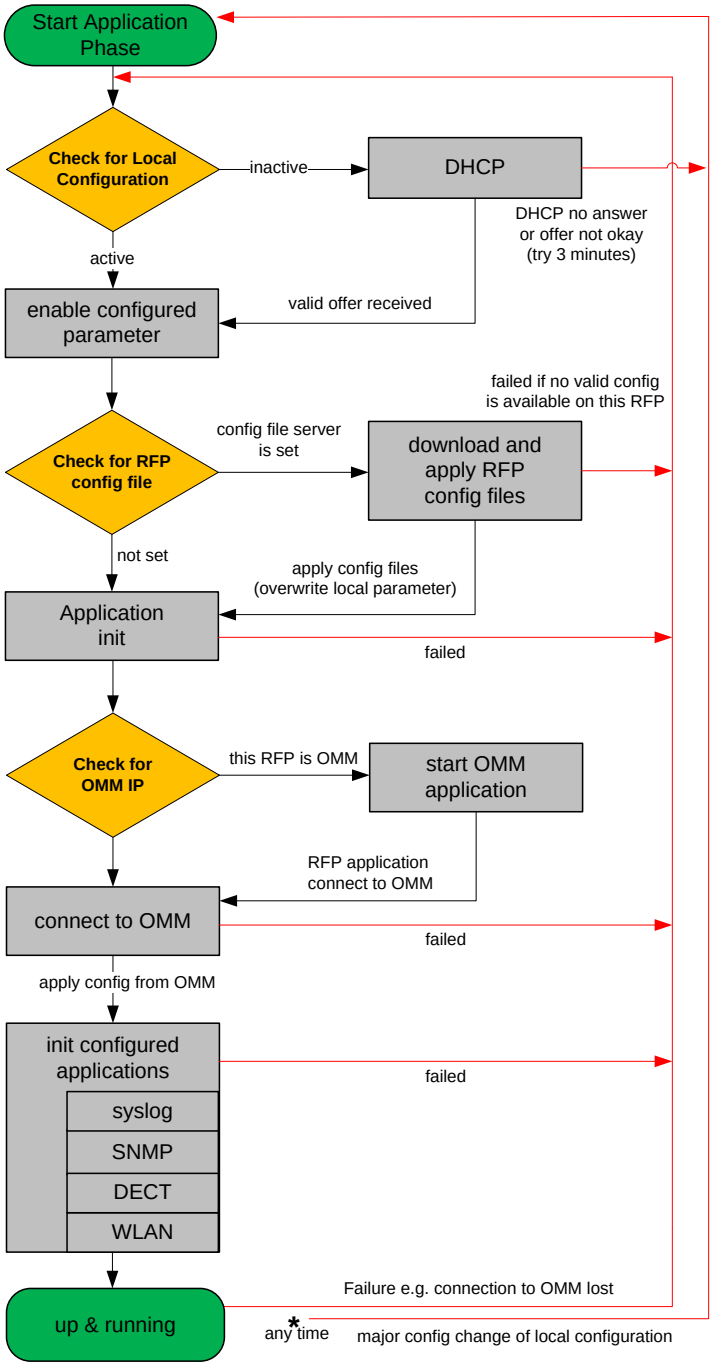
	LED1 (INFO)		LED2 (OMM / SYSTEM)		LED3 (DECT)		LED4 (WLAN)		
Kernel	cont.								kernel boot phase (inflator, …)
RFPM	1s	1s							DHCP phase
	1,85s	0,5s							DHCP failure (idle loop)
	0,5s	0,5s							obtaining external configuration
	0,85s	0,15s							external configuration failure
	cont.								Ready

	LED1 (INFO)		LED2 (OMM / SYSTEM)		LED3 (DECT)		LED4 (WLAN)		
	1,85s	0,15s							Up & running + RFP houses OMM
RFP general			1s	1s					OMM connect phase
			1,85s	0,15s					OMM connection failure (idle loop)
			cont.						Up & running (OMM connected)
			1,85s	0,15s					Up & running + OMM warning
			1,85s	0,15s					Up & running + OMM failure
RFP DECT					cont.				DECT not configured on this RFP
					1,85s	0,15s			DECT inactive (not synced yet)
					cont				DECT 'on air'
					1,85s	0,15s			DECT + call active
					1,85s	0,15s			DECT + call active +busy bit
RFP WLAN							cont.		WLAN not configured on this RFP
							1,85s	0,15s	WLAN inactive yet
							cont.		WLAN 'on air'
							1,85s	0,15s	WLAN + assoc. clients
							cont.		WLAN failure (e.g. 10 MB uplink)
Reboot request	cont.		cont.		cont.		cont.		RFP will reboot

9.6 STATE GRAPH OF THE START-UP PHASES

The following figure illustrates the start-up phase for older 2nd generation RFPs. 3rd generation RFPs use a similar start-up sequence, but they start with the application phase (see below).




Start Application Phase
Check for Local Configuration
inactive
DHCP
DHCP no answer or offer not okay (try 3 minutes)
active
valid offer received
enable configured parameter
failed if no valid config is available on this RFP
config file server is set
Check for RFP config file
download and apply RFP config files
not set
apply config files (overwrite local parameter)
Application init
failed
Check for OMM IP
this RFP is OMM
start OMM application
RFP application connect to OMM
connect to OMM
failed
apply config from OMM
init configured applications
syslog
SNMP
DECT
WLAN
failed
Failure e.g. connection to OMM lost
up & running
any time
major config change of local configuration

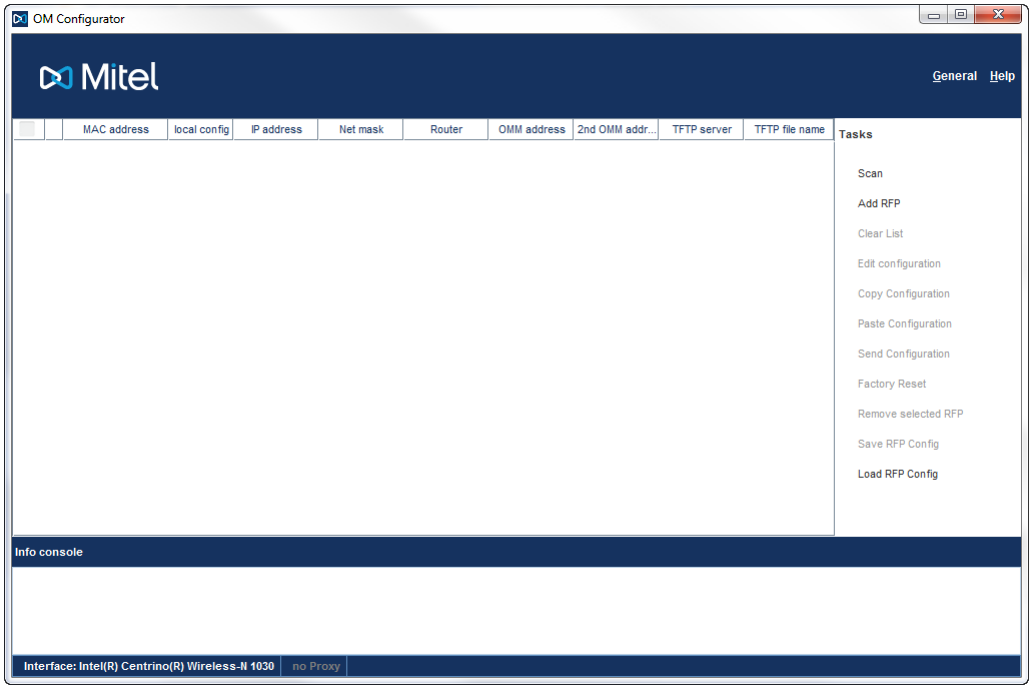
9.7 LOCAL RFP CONFIGURATION (OM CONFIGURATOR)

As an alternative to DHCP configuration, you can use the OM Configurator tool to statically configure the RFPs individually. RFP settings configured through the OM Configurator tool are saved permanently in the internal flash memory of the RFP. The OM Configurator version must match the installed SIP-DECT software version to be used for the local configuration of RFPs.

Please note: The OM Configurator requires the Java Runtime Environment version 1.7 or higher.

Please note: An initial configuration of the RFPs 35/36/37 IP / RFP 43 WLAN via the OM Configurator tool requires a login and password. The default login and password is “omm” and “omm”. No login is required for the initial configuration of the previous RFP family (RFPs 32/34 / RFP 42 WLAN. If the RFP is configured by the OMM later on, the OMM also sets the configuration password. You must enter the OMM’s full access user and password in the OM Configurator tool then.

At start-up of the OM Configurator displays a table with configuration data for all RFPs. The task bar on the right side shows permitted actions. The Info console in the lower part of the window shows information and errors as they occur during OM Configurator operation



9.7.1 SELECTING THE NETWORK INTERFACE

You can select the network interface of the computer used by the OM Configurator via the **General** -> **Options** menu. The selected interface is shown on the status line of the program.

9.7.2 ADDING RFPS FOR CONFIGURATION

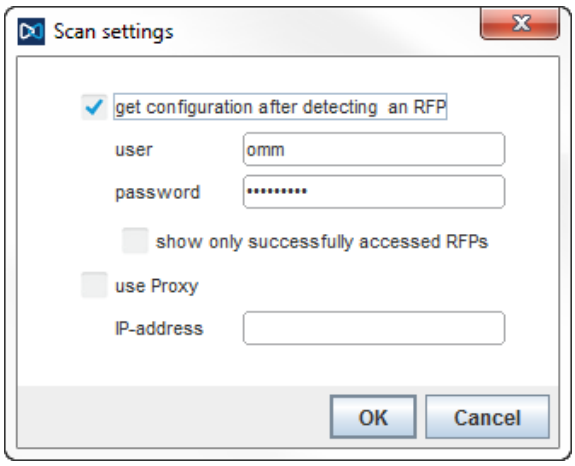
Before you can configure an RFP, you must add the RFP to the OM Configurator database. You can add an RFP record by:

- scanning for RFPs that are already attached to the network
- entering the MAC address of the RFP
- loading a configuration file that contains RFP MAC addresses and configuration parameters

> **Please note:** Adding an RFP to the OM Configurator database does not modify the RFP configuration. Configuration data must be transmitted explicitly to the RFP(s) through the **Send Configuration** option.

9.7.3 SCANNING FOR RFPS

The OM Configurator tool can scan for RFPs on the LAN segment.



- If **get configuration after detecting an RFP** is enabled, the OM Configurator attempts to fetch the local configuration settings from all RFPs that are detected during the scan. The program uses the **user**/**password** combination if an access without login data fails.
- If **show only successfully accessed RFPs** is enabled, the OM Configurator adds only RFPs that provide configuration information to its database, and displays those RFPs in the OM Configurator table.
- The **use Proxy** parameter allows access to RFPs that are located in network segments other than the segment that hosts the OM Configurator. The **IP-address** field must contain the address of a RFP located in the network segment to be scanned. This RFP works as proxy and must be up and running.

You initiate the scan process by clicking **OK** button. The OM Configurator adds the results to the table.

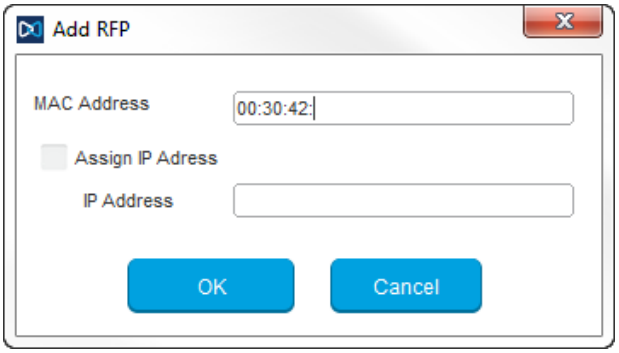
In rare cases, it is possible that a RFP is expected to appear in the table after the scan operation but does not. If this occurs, repeat the scan operation.

9.7.4 ADDING RFPS MANUALLY

You can add an RFP to the OMM Configurator database manually.

When you click the **Add RFP** option in the task bar, the OM Configurator displays the “Add RFP” dialog. You must specify the MAC address of the RFP in the **MAC Address** field.

Optionally, you can also specify an IP address. If an IP address is assigned, the OM Configurator automatically proposes an incremented IP address the next time the “Add RFP” function is invoked.



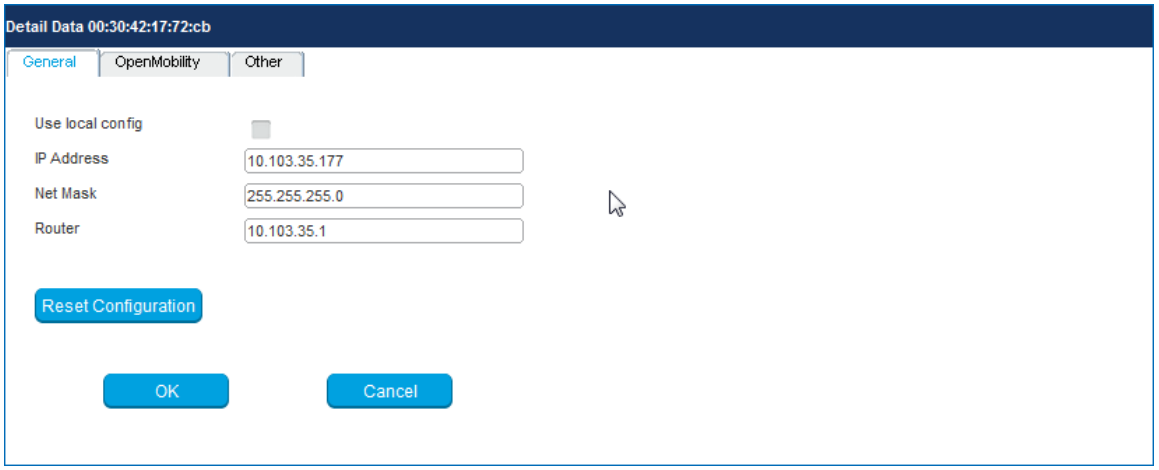
9.7.5 LOADING RFP DATA FROM FILE

You can import an RFP configuration file to the OM Configurator.

When you click on the **Load RFP Config** option, the OM Configurator opens a dialog window that prompts you to browse for the configuration file. All found valid RFP entries in the file are added to the OM Configurator database and displayed in the table.

9.7.6 EDITING RFP CONFIGURATION DATA

You can edit the configuration of an RFP stored in the OM Configurator database. When you double-click on a table row, the OM Configurator displays a Detail Data window below the table, with the “General” panel activated. You can also access this window by selecting one or more entries in the table and clicking the **Edit configuration** option in the task bar.



You can change parameters for multiple RFPs by selecting more than one RFP in the table. Parameter settings that differ between the selected RFPs are shown as “***” and retain their values if you do not make any modifications.

You cannot change the IP address value when you select more than one RFP.

If more than one parameter value is allowed (e.g. Router, DNS addresses), you must separate the values by a space.

If you click the **Reset Configuration** button, all configuration parameters are removed and local configuration in the OM Configurator is disabled. The **Send Configuration** option is also needed in this case in order to update the configuration of the RFP locally.

When you click the **OK** button, changed parameter values are committed to the database. The system performs validation checks for some parameter values. If this check fails, the system displays an error message in the Info console and the misconfigured parameter value is marked with a red frame (allowing you to correct the value). Modified RFP records are marked ( ) beside the corresponding table row.

If you press **Cancel** or select another RFP in the table, any changes are discarded.

When you press either **OK** or **Cancel**, the Detail Data panel disappears and a number of task bar options (e.g. **Send Configuration**) are re-enabled.

9.7.6.1 Other parameter panel

You can set and edit less frequently used parameters on the **Other** panel of the **Detail Data** window.

If the parameter you want to add or edit is listed in the table on the **Other** panel, click on it to display the parameter name and value in the fields on the top-right side of the panel. Click the **Change** button to commit the changed value.

If the parameter value field is empty, the parameter is cleared on the RFP when you click **Send Configuration**.

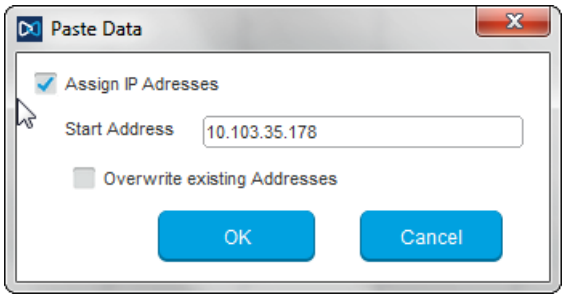
You can add a new parameter by selecting a parameter name from the drop-down list and clicking the **New** button.

9.7.6.2 Copy and Paste

You can assign parameter values from one RFP to one or more other RFPs.

To perform this operation, you must ensure that the **Detail Data** window is not active. If the **Detail Data** window is open, commit your changes or cancel to close the window.

Select an RFP in the table and click the **Copy Configuration** option in the task bar. Next, select one or more RFPs as destination RFP(s) and click the **Paste Configuration** option. The system displays the Paste Data dialog window.



If the **Assign IP Addresses** option is enabled, you must provide a valid IP address in the **Start Address** field. The system may display a suggested address, based on a previous paste or Add RFP operation. The IP address is incremented by one for each RFP.

If the **Overwrite existing addresses** parameter is not enabled, an IP address is only assigned if the IP address field of the target RFP is empty.

9.7.6.3 Configuration Parameters

The following table lists the available configuration parameters for the RFP.

Parameter	Mandatory/Optional	Description
Use local configuration	Mandatory	Specifies whether the local configuration settings should be used at boot-up or not
IP address	Mandatory	IP address of the RFP
Net mask	Mandatory	Subnet mask of the IP network
TFTP server address	Mandatory	IP address of the TFTPO server (set to 0.0.0.0 if not used)
TFTP file name	Mandatory	The boot file to be read from the TFTP server
TFTP server list	Used only by: RFP 32/34 RFP 42 WLAN Optional	List of additional TFTP servers to load the boot file
Preferred TFTP server	Used only by: RFP 32/34 RFP 42 WLAN Optional	TFTP server from which to load the boot file first
IP address	Mandatory	IP address of the OpenMobility Manager
Router	Optional	IP address of the default gateway
DNS address	Optional	IP address of the DNS server
DNS domain	Optional	Domain name of the network
Broadcast address	Optional	Broadcast address for the network
Standby OMM address	Optional	IP address of the standby OMM
VLAN ID	Optional	VLAN identifier
Use VLAN and DHCP	Optional	Specifies whether only the local VLAN configuration settings should be used when booting or not
Syslog server address	Optional	Destination IP address for the syslog file
Syslog server port	Optional	Destination port address for the syslog file
RFP configuration file server	Optional	URL of a server with RFP configuration files (ipdect.cfg|<MAC>.cfg) alternatively or in addition to OM Configurator settings. Syntax: {ftp|ftps|http|https}://[user:password@]server/[directory/] or tftp://server/[directory/]

9.7.7 APPLYING CONFIGURATION CHANGES

To apply new or changed configuration to RFP devices, select one or more RFP entries from the table and click the **Send Configuration** option in the task bar.

Note: You must close the Detail Data window to apply configuration changes to an RFP. If the Detail Data window is open, the **Send Configuration** option is disabled.

The OM Configurator displays the **Protocol settings** dialog window.

The settings in the **Protocol settings** dialog are preset to the values used for the **Scan** operation or the last **Send Configuration** operation. If the values are correct, click **OK** to transfer the data to the RFP device.

Before sending the data, the system performs a check on mandatory parameters and the validity of some parameter values. If this check fails, an error is reported in the Info console.

The system displays a message in the Info console window indicating success or failure of the data transfer operation for each RFP.

If data is transferred successfully, the OM Configurator displays a checkmark beside the row for the corresponding RFP.

The OM Configurator attempts data transfer three times (two seconds apart) before reporting an error. Depending on the network environment and current RFP status, the data transfer may fail in rare cases. If a failure to transfer data occurs, click the **Send Configuration** option again to re-initialize the data transfer.

If the data transfer fails, the OM Configurator displays an “X” beside the row for the corresponding RFP.

9.7.8 FACTORY RESET

RFPs are protected against unauthorized configuration changes by user authentication (user and password), which are also used to configure the OMM via web service or OMP.

To reset a RFP’s configuration, select the RFP entry in the table and click the **Factory Reset** option in the task bar. This option is only enabled when a single RFP entry is selected. The option is disabled if multiple RFPs are selected.

The system displays the **Factory reset settings** dialog window. Set the correct login data (user and password) and RFP proxy address (if required). The system auto-fills the fields with the values used for previous **Scan**, **Send Configuration** or **Factory Reset** operations.

If the specified login (“omm”/”omm”) does not work and the login credentials of the last system the RFP was used with are unknown, you can reset the RFP to factory settings by sending a cookie string to the OpenMobility manufacturer support and entering the received reset key. The OM Configurator copies the cookie string to the clip board.

9.7.9 SAVING AND LOADING AN RFP LIST

You can save the configuration of one or more RFPs to a RFP configuration file. Select the RFP entries in the table and click the **Save RFP Config** option in the task bar. (Note that if the **Detail Data** window is active, the **Save RFP Config** option is disabled.)

RFP configuration data is loaded from the file and added to the OM Configurator database via the **Load RFP config** option. You must initiate the **Send Configuration** operation after executing the **Load RFP config** operation for the configuration to take effect on the select RFPs.

> **Please note:** The data sequence has been changed from previous releases of the SIP-DECT OM Configurator. Import of files based on the old data sequence format may result in import errors or the incorrect assignment of parameter values.

9.7.10 REMOVING RFP ENTRIES

You can remove all RFP data records from the OM Configurator database through the **Clear List** option in the OM Configurator task.

You can remove one or more RFP records from the OM Configurator database by selecting one or more entries in the table and clicking on the **Remove selected RFP** option.

Ensure that you do not remove data records before configuration is sent to the RFP device (via the **Send Configuration** operation). Changes made to RFP configuration data but not sent to RFP device are lost on the remove operation.

You can add RFP configuration data again through the operations described above.

9.7.11 COMPATIBILITY WITH PREVIOUS SIP-DECT RELEASES

It is not recommended to use the SIP-DECT 6.0 OM Configurator for configuration of RFPs with software from an earlier SIP-DECT release (i.e., SIP-DECT 5.0 or older).

Configured parameters of an RFP which are unknown to actual OM Configurator are shown in the “Other parameter” panel with the name used at the protocol level. In most cases, this name will be different from the display name known from previous versions of OM Configurator.

You can edit or remove such parameters and new values will be transferred to the RFP when you execute the **Send configuration** operation.

9.8 OMM CONFIGURATION AND RESOURCE FILES

The OMM supports certain configuration files containing commands in AXI style, to support auto-configuration of small and simple installations in provider environments. It is assumed that the configuration files are automatically generated in a standardized way, to prevent configuration failures.

The following list summarizes all of the configuration and resource files related to the provisioning of a SIP-DECT system:

- **ipdect.cfg / <MAC>.cfg / <PARK>.cfg**

  These files contain configuration parameters and are used to configure the OMM automatically. There is one common file “ipdect.cfg” for all RFPs and one file “<MAC>.cfg” for every single IP-RFP. The RFP specific <MAC>.cfg is requested if indicated in the common “ipdect.cfg” file. It is possible that all RFPs request “ipdect.cfg” and only selected RFPs request the <MAC>.cfg (for specific configuration on some RFPs).

- **usr_common.cfg / <user>.cfg**

  These files are related to the “External User Data Provisioning” feature, whereby <user> refers to <Number/SIP user name> or <LoginID>.

  <user>.cfg can also refer to user.cfg, a common file name for all users. This concept allows a provisioning server to provide user-specific settings on demand using one file name based on the specific user credentials.

- **ima.cfg**

  This file includes the configuration for Integrated Messaging & Alerting Application, and can be loaded permanently.

- **iprfp3G.dnld**

  This file includes the software image for RFP 35/36/37 IP / RFP 43 WLAN. This file also includes the software images for the Mitel 600 DECT phone family. RFPs can load their software image directly from the RFP OMM.

- **license.xml**

  This file includes the license for a specific SIP-DECT system.

- **customer_image.png**

  This resource file can include a customer logo displayed to display on the OMM Web service.

As of SIP-DECT 6.0, all of these files can be loaded from the same external file server, if configured (see section 9.8.1).

9.8.1 CONFIGURATION FILE URL

SIP-DECT supports provisioning through external configuration files. As of SIP-DECT 6.0, you can configure a URL for an external file server, from which all configuration files can be downloaded. The configuration file server URL (ConfigURL) can be configured in the OMM (**System** -> **Provisioning** -> **Configuration file URL**), via DHCP or the Redirection and Configuration Service (RCS).

The following files are automatically requested if a provisioning server is set:

- Configuration files supporting startup parameters and OM AXI code for the OMM configuration
  - ipdect.cfg
  - <mac>.cfg (note that if a standby OMM is set, two MACs are present)

  - <PARK>.cfg (PARK in MAC address format: e.g. 001F11234001)
- User configuration files (for user login on DECT phone)
  - user_common.cfg
  - <user.cfg>
  - user.cfg
- Integrated Messaging and Alerting Service (IMA) (for alarm scenarios, email accounts, RSS feeds) - ima.cfg
- OMM license file - license.xml
- Logo for OM Web-Portal (Branding) - customer_image.png

You can also configure individual URLs for most configuration files. If present, the individual URL is used for the configured feature.

At startup, the OMM tries to retrieve the configuration file URL (ConfigURL) from the following sources, in the order listed. The OMM uses the first URL it finds to load the configuration and resource files.

The URL can be set through the following methods (in order of priority):

1 OMM database (e.g. **System** > **Provisioning** > **Configuration file URL** in either OMM Web service or OMP)

2 DHCP vendor specific option 43 - code 2

3 DHCP option 234

4 Redirection and Configuration Service (RCS) – on initial setup only

Once a URL is set, it is stored in the OMM database. The URL can be overwritten at a later time e.g. during provisioning after authentication.

Note: The ConfigURL only applies to the RFP OMM, which must be running SIP-DECT 6.0 or higher.

Other DECT Base stations only apply the ipdect.cfg and <mac>.cfg files without OM AXI.

9.8.1.1 Syntax

The ConfigURL has the following syntax:

```
<protocol>://<user>:<password>@<server>/<path>?<parameter>
```

- Supported protocols: ftp,ftps,tftp,sftp,http,https
- Credentials should be secured by transport protocol or digest authentication.

The ConfigURL supports additional parameters to modify the certificate validation behavior for the configuration file server:

- **cm:** <https client method > - TLS1.0, TLS1.1, TLS1.2 or AUTO (AUTO= all)
- **vc:** <validate certificates> - valid settings are: 0 or 1
  The OMM includes a list of trusted CA's (Mozilla CA certificate list)
- **ve:** <validate expires> - validation of certificate expiry: 0 or 1
- **vh:** <validate hostname> - validation of hostnames: 0 or 1
- **uc:** allow un-configured trusted certificates> - allow untrusted certs: 0 or 1
  If set to 1, validation is disables as long as no trusted certificate was imported.
- **ic:** <import certificate> - import server certificate as trusted: 0 or 1
  If ic=1 + uc=1, the trusted certificate will be imported without any validation, as long as no trusted certificate was imported previously.

You can view and change the ConfigURL via the OMM Web service (see section 7.4.2) or the OMP (see section 0).

9.8.2 SPECIFIC CONFIGURATION URLS

In addition to the common ConfigURL, you can configure specific URLs for individual configuration and resource files in the OMM database. As soon as a specific URL is set, the OMM uses that URL to load the appropriate configuration/resource file during startup.

Note that the user_common.cfg file is loaded from the ConfigURL and the specific URL when both URLs are set.

Configuration / Resource File	Location of Specific URL	
	OMM Web Service	**OMP**
user_common.cfg / <user>.cfg	N/A	**System** > **Data management** > **User data import** See section 8.5.7.2.
ima.cfg	**System** > **System settings** > **OM Integrated Messaging & Alerting service** See section 7.4.1.	**System** > **Advanced settings** > **IMA** See section 8.5.2.4.
iprfp3G.dnld	**System** > **System settings** > **Software update URL** See section 7.4.1.10.	**System** > **Basic settings** > **Software Update URL** See section 0
600.dnld	**System** > **System settings** > **DECT phone's firmware update** See section 7.4.1.6.	**System** > **Advanced settings** > **PP firmware** See section 8.5.2.3.
customer_image.png	N/A	**System** > **Advanced settings** > **Special Branding** See section 8.5.2.7

9.8.3 RELOAD OF CONFIGURATION AND RESOURCE FILES

The OMM automatically tries to load all configuration and resource files (ipdect.cfg, <MAC>.cfg, PARK.cfg, ima.cfg, user_common.cfg, update check for iprfp3G.dnld, etc) from the retrieved ConfigURL or specific URL (if present in the OMM database) at startup.

In addition, the OMM supports several mechanisms for updating the configuration by triggering a reload of the configuration and resource files:

- **DHCP lease time**

  If the OMM is running on a RFP and DHCP is used, all configuration and resource files are reloaded when half of the DHCP lease time has elapsed.
- **Daily automatic reload of configuration and firmware files**

  You can enable this option and specify a specific time of day to reload configuration files via the OMM Web service or the OMP (System -> Provisioning -> Daily automatic reload of configuration and firmware files).
- **Manual reload via Update button**

You can trigger a manual reload of all configuration and resource files by clicking the **Update** button in the OMM Web service (**System** ->**System settings** page) or OMP (**System** -> **System settings** -> **General** tab).

- **600 DECT phone Administration menu**
  - When a user with a 600 DECT Phone selects the **Sync system data** option in the **Administration** menu, the OMM reloads all configuration and resource files.
  - When a user with a 600 DECT Phone selects the **Sync user data** option in the **Administration** menu, the OMM reloads the <user>.cfg file for that user.
- **SIP Notify message**
  - When the OMM receives a SIP Notify message with the "**check-sync**" event for a user, the OMM reloads the configuration file <user>.cfg for that user.
  - When the OMM receives a SIP Notify message with the "**prov-sync**" event for any user, the OMM reloads all configuration and resource files.

9.8.4 AXI COMMANDS IN CONFIGURATION FILES

As of SIP-DECT 6.0, the OMM supports configuration files containing commands in AXI style, for OMM configuration.

The OMM attempts to load the following files from the Configuration File URL, and processes them in this order:

1. ipdect.cfg
2. <MAC>.cfg (RFP OMM only)
3. <PARK>.cfg (PARK in MAC address format: e.g. PARK: 1F11234001; MAC address format 001F11234001)

Note that the actual file name of the <MAC>.cfg depends on MAC address of the RFP where the OMM is running.

The active OMM and the standby OMM request different files, even if they belong to one system. To ensure that both OMMs can retrieve the same file independent of which one is active, each OMM requests the <PARK>.cfg. The PARK identifies a SIP-DECT system in a unique way.

None of the files are mandatory and they can be empty. The AXI commands can be all in one file or split up as needed.

Example configuration file

The following example shows how to include AXI commands in a configuration file.

```
### SIP-DECT OMM Config example – pls. be aware that some commands cannot be applied to SIP-DECT with Cloud-ID e.g. request PARK from server, set regulatory domain etc. and some commands depend on the actual use case/setup

### Confirm EULA

<SetEULAConfirm confirm="1" />

### Set full access account

<SetAccount plainText="1" > <account id="1" password="Sip!12" active="1" aging="none" /> </SetAccount>

### Set root account

<SetAccount plainText="1" > <account id="2" password="Sip!12" active="1" aging="none" /> </SetAccount>

### Set system name
```

```
<SetSystemName name="6.0 NB" />

### Tone scheme

<SetSysToneScheme toneScheme="DE" />

### OMP web start #####

<SetOMPURL> <url enable="1" protocol="FTP" host="ber-rd5014" path="/pub/SIP-DECT/Linux"
/></SetOMPURL>

### Enable SSH ###

<SetRemoteAccess enable="1" />

### Request a valid PARK from a Server ####

<PARKFromServer />

### Set DECT Regulatory Domain ###

<SetDECTRegDomain regDomain="EMEA" />

### Set WLAN Domain/contry ###

<SetWLANRegDomain regDomain="DE" />

### Enable Auto-create on subscription ####

<SetDevAutoCreate enable="1" />

### Set DECT AC ####

<SetDECTAuthCode ac="35239" />

### Set specific user data URL ####

<SetUserDataServer plainText="1" useCommonFileNameOnServer="1" ><url enable="1"
protocol="HTTPS" host="wwww.domain.de" path="/lpueschel/test/" username="lpueschel"
password="lpueschel" validateCerts="0" /></SetUserDataServer>

### Set SIP Proxy and Registrar ###

<SetBasicSIP transportProt="UDP" proxyServer="172.30.206.9" proxyPort="5060"
regServer="172.30.206.9" regPort="5060" regPeriod="3600" />

### use addId="" for Login at DECT DECT phone ####

<SetDECT phoneLoginVariant login="ID" />

#### Set Portrange 17000 - 32767 ####

<SetPortRangeSIP ><userUdpTcp startPort="17000" endPort="17511" /><userTls
startPort="18000" endPort="18511" /></SetPortRangeSIP>

#### Set SOS/ManDown emergency number ####

<SetAlarmTrigger><trigger id="0" triggerId="SOS" fac="SOS" comment="" num="110"
/></SetAlarmTrigger>

<SetAlarmTrigger><trigger id="1" triggerId="MANDOWN" fac="MANDOWN" comment="" num="112"
/></SetAlarmTrigger>

### Set common voice mail number ###

<SetSysVoiceboxNum voiceboxNum="6333" />
```

WARNING: **Configuration files must be automatically generated in a standardized way to avoid configuration failures. Configuration failures could cause a SIP-DECT system outage.**

Please be aware that this configuration file approach has limitations. For example:

- insufficient for managing data objects that are dynamically created and addressed by an index (e.g. RFPs)

- no administrator feedback for commands that cannot be processed (e.g., unknown commands, invalid parameter, conflicts which other configuration settings)

9.8.4.1 User Data in Configuration Files

Configuration files are generally insufficient for managing data objects that are dynamically created and addressed by an index. Therefore, it is necessary to configure user data also. This allows providers to manage the user data (to a limited extent) without using the <user>.cfg files.

The <user>.cfg concept supports the complete range of user-related SIP-DECT functions, including a user-specific DECT phone configuration. The user data in configuration files as described here supports only a limited set of parameters.

To allow user data in configuration files, the following rules must be applied:

1 Initialize all possible data sets with default values Number/SIP user name is automatically set to uid<X> (e.g,. uid1):

```
<CreateDECT phoneUser plainText=1 replaceData=1><user uid="1" name="" num="" addId=""
sipAuthId="" sipPw="" pin="" fixedSipPort="0" /> </CreateDECT phoneUser>

…

<CreateDECT phoneUser plainText=1 replaceData=1><user uid="512" name="" num="" addId=""
sipAuthId="" sipPw="" pin="" fixedSipPort="0" /> </CreateDECT phoneUser>
```

2 To “add” a user, set appropriate data:

```
<CreateDECT phoneUser plainText=1 replaceData=1><user uid="1" name="Account004 Mitel"
num="040226332195" addId="195" sipAuthId="040226332195" sipPw="broadnet.01" pin="195"
fixedSipPort="0" /> </CreateDECT phoneUser>
```

3 To “remove” a user, set to default data:

```
<CreateDECT phoneUser plainText=1 replaceData=1><user uid="1" name="" num="" addId=""
sipAuthId="" sipPw="" pin="" fixedSipPort="0" /></CreateDECT phoneUser>
```

This supports the use of templates such as the following:

```
<CreateDECT phoneUser plainText=1 replaceData=1><user uid="1" name="%BWNAME-1%"
num="%BWLINEPORT-1%" addId="%BWEXTENSION-1%" sipAuthId="%BWAUTHUSER-1%"
sipPw="%BWAUTHPASSWORD-1%" pin="%BWEXTENSION-1%" fixedSipPort="0" /></CreateDECT
phoneUser>
```

9.8.5 USER CONFIGURATION FILES

The user configuration files (user_common.cfg and <user>.cfg) enable the “External User Data Provisioning” feature, which allows customers to import user data from a provisioning server. See the *SIP-DECT OM DECT Handset Sharing & Provisioning Installation & Administration User Guide* for a full description of that feature.

In addition <user>.cfg can also refer to user.cfg, a common file name for all users.

SIP-DECT 6.0 introduces the *UDS_CommonUserFileName* configuration attribute. When enabled, the OMM tries to fetch the same user.cfg file from the provisioning server for each user executing the login procedure, such that the login credentials of each user are used to access the provisioning server. This means that the provisioning server executes user authentication and provides a user-specific user.cfg when the user is authorized.

The *UDS_CommonUserFileName* attribute is enabled/disabled via the user_common.cfg file.

Please note: The common user file name feature is only applicable in combination with the file transfer protocols FTP, FTPS, HTTP, HTTPS or SFTP, which may require user/password credentials. Changing this attribute might cause login/logout problems for the users, because of changed authentication. It is up to the administrator to force user logouts (delete users) optionally. In any case, the administrator must publish new authentication data to users for their logins and logouts.

Note that the *OM_UniqueId=NUMBER/UID* variable in the user_common.cfg file is no longer supported.

The following table summarizes the combinations of provisioning server access and type of user validation supported:

Provisioning Server access	Requested files	User validation	Supported DECT phones
• User data import URL • User data import credentials • No certificate validation	• <number | SIP user name>.cfg • <loginID>.cfg	OMM authenticates user against PIN from .cfg files	• GAP • Mitel 142d • Mitel 600
• User data import URL • User data import credentials • System Provisioning Certificate validation	• <number | SIP user name>.cfg • <loginID>.cfg	OMM authenticates user against PIN from .cfg files	• GAP • Mitel 142d • Mitel 600
• System Provisioning URL • System Provisioning credentials • System Provisioning Certificate validation	• <number | SIP user name>.cfg • <loginID>.cfg	OMM authenticates user against PIN from .cfg files	• GAP • Mitel 142d • Mitel 600
• User data import URL • User credentials (UDS_CommonUserFIleName=YES) • No certificate validation	• user.cfg	Provisioning server authenticates user at file request with user credentials	• Mitel 600
• User data import URL • User credentials (UDS_CommonUserFIleName=YES) • System Provisioning Certificate validation	• user.cfg	Provisioning server authenticates user at file request with user credentials	• Mitel 600
• System provisioning URL • User credentials (UDS_CommonUserFIleName=YES) • System Provisioning Certificate validation	• user.cfg	Provisioning server authenticates user at file request with user credentials	• Mitel 600

9.8.6 DIGEST AUTHENTICATION AND CERTIFICATE VALIDATION

The OMM supports system credentials for provisioning to retrieve configuration and resource files from a server that requires user/password authentication.

System credentials are used to retrieve files from the external provisioning server defined by the configuration file URL, for protocols supporting authentication or servers requesting authentication. For HTTP/HTTPS, basic and digest authentication are supported.

You can set the system credentials via:

- OMM Web service **System** -> **Provisioning** -> **System credentials** page (see section 7.4.2.2)
- OMP **System** -> **Provisioning** -> **System credentials** tab (see section 8.5.5.3)
- Mitel 600 DECT phone user interface (through Feature Access Code or the Administration menu)

System credentials are also inherited if sources other than the configuration file URL are configured for specific configuration or resource files, without credentials. The system credentials are used only if requested by the file server.

9.8.6.1 System credentials via Mitel 600 DECT Phone user interface

A Mitel 600 DECT phone user can set, change or delete system credentials from the Mitel 600 DECT phone via:

- a configured feature access code (FAC)
- the **Administration** menu on the user interface

Note: The user must log in to OMM before being allowed to change valid credentials. If credentials are not set or are invalid (indicated by a health state), the OMM login is omitted.

Setting the credentials via feature access codes requires configuration of a FAC number through the **System Features** -> **Feature Access Codes** menu of the OMM web service (see section 7.9.3) or the OMP (see section 8.12.2).

When the user dials the configured feature access code, the user can select between the “Create/Change” and “Delete” options. The Administration menu additionally offers a health indication (ok or not ok). Depending on the health state, the user may be forced to login to the OMM first.

9.8.7 RFP SOFTWARE IMAGE FROM RFP OMM

To simplify the upgrade process for existing SIP-DECT installations in provider environments, SIP-DECT 6.0 provides support for a feature that allows the RFP 35/36/37 IP / RFP 43 WLAN to load their software image directly from the connected OMM.

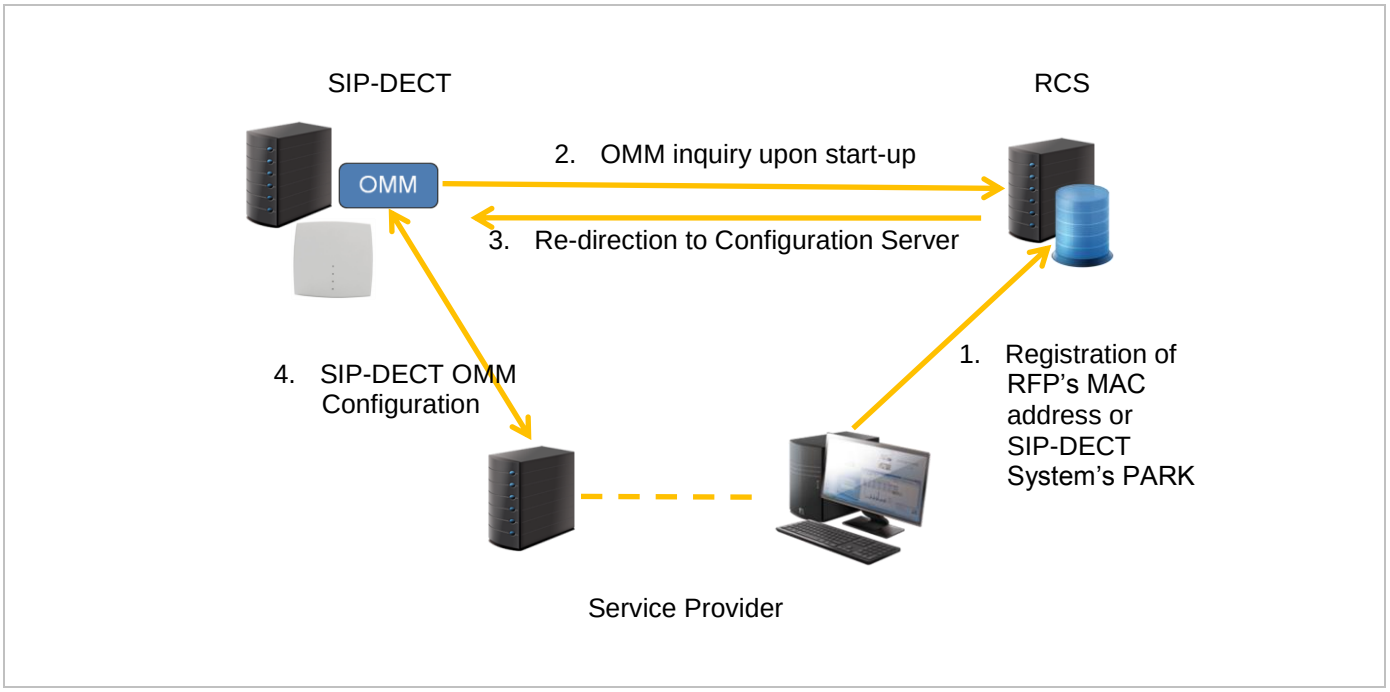
If the RFP 35/36/37 IP / RFP 43 WLAN has no valid URL from which to load the software, they attempt to load the software from the connected OMM. If the OMM is running on a RFP, the RFP OMM delivers the software to the connected RFPs.

A new software image for the RFP OMM can be provided as a iprfp3G.dnld file on an external file server. The software update URL can be configured via the OMM Web service (see section 7.4.1.10) or OMP (see section 0).

9.8.8 REDIRECTION AND CONFIGURATION SERVICE (RCS)

The Redirection and Configuration Service (RCS) simplifies SIP DECT installation and management. When the MAC address of a SIP-DECT OMM is entered in the RCS server, a SIP-DECT OMM is routed to its assigned server for configuration upon initial start-up.

If the OMM does not find a ConfigURL during initial setup, the OMM contacts the RCS to request a ConfigURL, using its RFP MAC address. If the RFP MAC Address is configured in the RCS, the RCS provides a ConfigURL that points to an external provisioning server. The OMM attempts to load all configuration and resource files from the ConfigURL received from RCS.



Note: The SIP-DECT OMM only uses the ConfigURL from RCS. Other information provided from RCS is not supported.

The OMM requests information from RCS only if no information has been retrieved from RCS prior to the request. The response is stored permanently in the OMM. To force a new RCS request, the OMM must be reset to default settings, through the **Discard OMM DB and configuration files** or **Reset OMM RFP(s) to factory defaults** on restart (see section 7.4.1.14).

9.8.9 CUSTOMER LOGO ON OMM WEB SERVICE

SIP-DECT 6.0 supports the integration of a customer-specific logo on the OMM Web service interface. If a customer_image.png file is available on an external file server, customers can integrate their own logo into the OMM. This logo is displayed beside the Mitel logo on the top bar.

This image can be imported by:

- configuration of a branding image URL to a file server using OMP (see section 8.5.2.7)
- automatic search for a file named 'customer_image.png' on the provisioning server

The branding image is stored permanently in the OMM database, ensuring that the image is available even if a configured file server or provisioning server is not reachable. The file is deleted automatically from the server on a "file not found" response or by disabling the branding image URL configuration.

The picture should not be larger than 50 pixels high and 216 pixels wide.

9.9 RFP CONFIGURATION FILES

IP-RFPs support two RFP configuration files (downloaded from a server) to get configuration settings. There is one common file “ipdect.cfg” for all RFPs and one file specific file “<MAC>.cfg” for every IP-RFP. The RFP requests the “ipdect.cfg” file if a URL is provided. The RFP specific <MAC>.cfg is requested if this is indicated in the common “ipdect.cfg” file. It is possible that all RFPs request “ipdect.cfg” and only selected RFPs request the <MAC>.cfg to obtain a specific configuration on some RFPs.

9.9.1 STANDARD IP SETTINGS

Standard IP settings (which are necessary for access to the RFP configuration files) are configured via DHCP (see section 9.5) or OM Configurator (see section 9.6). These are:

- IP address
- Net mask
- Gateway (i.e. router)
- Boot file name
- TFTP server
- Public option 224: “OpenMobility” or “OpenMobilitySIP-DECT” (to identify the relevant DHCP offer)
- Domain Name Server (optional)
- Domain Name (optional)
- URL to the RFP configuration files

All other parameters can be set by using an RFP configuration file even if standard DHCP options or OM Configurator parameters exist.

9.9.2 CONFIGURATION FILE SOURCE

A TFTP / FTP(S) / HTTP(S) URL specifies the protocol, server and path to access the RFP configuration files. The URL can include account data if appropriate.

Syntax:

{ftp|ftps|http|https}://[user:password@]server/[directory/]

or

tftp://server/[directory/]

The URL configuration is done via DHCP option code 223 (prio1) or DHCP option code 66, or the OM Configurator.

- “ipdect.cfg” is mandatory if an URL is given by DHCP option code 66 or local static configuration via the OM Configurator.
- “<MAC>.cfg” is mandatory if it is indicated in the “ipdect.cfg” that a “<MAC>.cfg” exists for the RFP. (There is a key word to indicate that a “<MAC>.cfg” exists for every RFP.)

Mandatory means that if a file cannot be loaded, the RFP will not start. This is relevant for the following scenarios:

- RFP boot / startup (after power on, software update, etc)
- a change of the URL

9.9.3 PARAMETER SETTINGS PRIORITY

Some parameters can be set via DHCP / OM Configurator or by using the files “ipdect.cfg” or “<MAC>.cfg”. If a parameter is provided through more than one of the possible ways, the last setting has priority. There is the following order:

- DHCP / OM Configurator
- ipdect.cfg
- <MAC>.cfg

It is also possible to remove settings.

9.9.4 SOFTWARE UPDATE SETTINGS FOR 3RD GENERATION RFPS

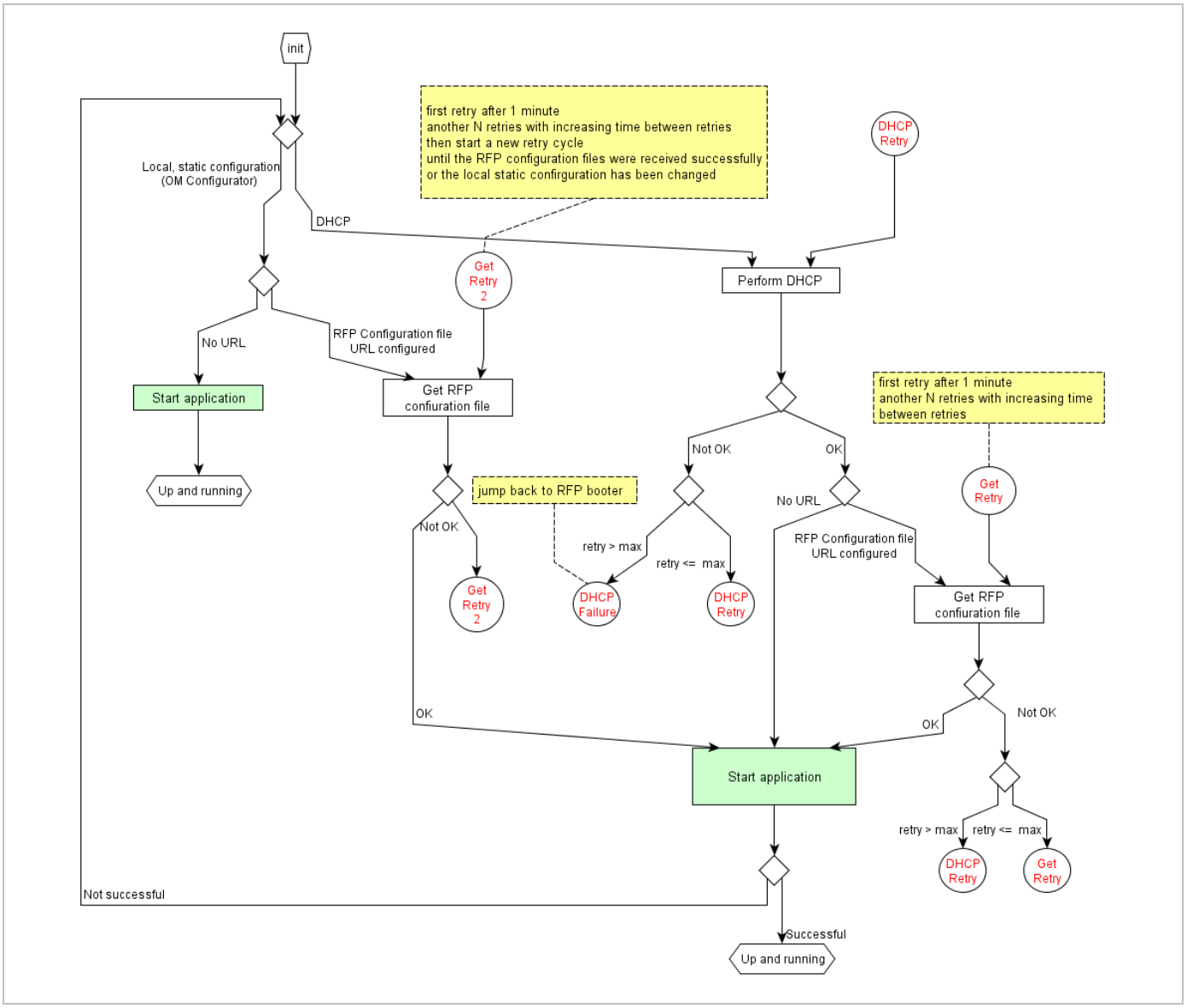
A configuration parameter specifies the location of the software that will be installed into the flash of an RFP 35/36/37 IP / RFP 43 WLAN and activated by the OpenMobility Manager.

OM_SwImageUrl=ftp://172.30.207.21/openmobility/iprfp3G.dnld

TFTP, FTP(S), HTTP(S) are supported for an RFP 35/36/37 IP / RFP 43 WLAN software update.

9.9.5 TIMES WHEN RFP CONFIGURATION TIMES ARE READ

The configuration files are read by the RFP application e.g. during startup as shown in the following figure.



Configuration files are read by the RFP application at the following times:

- RFP reboot
- Restart of an application e.g. OMM
- DHCP renew and DHCP bound
- Configuration changes via OM Configurator
- RFP configuration file update check

9.9.6 RFP CONFIGURATION FILE UPDATE CHECK

RFP configuration file update check has the following characteristics:

- The interval is configurable in the RFP configuration files (minimum interval: 5 minutes; maximum interval: 7 days).
- Default interval: 24 hours.
- Both RFP configuration files are checked if relevant.

If the configuration file(s) cannot be retrieved …

- The RFP continues operation with the last successfully retrieved configuration file(s).
- The RFP will try to retrieve the configuration files again, starting with an interval of one minute and doubling this interval with each retry, not exceeding the update check interval (either default or configured).
- If the RFP is using DHCP, a renewal of the lease is scheduled so that possible changes in DHCP configuration will be detected.
- Failure to retrieve the configuration files is reported via Syslog.

9.9.7 HANDLING OF PARAMETER CHANGES

A change of a parameter (DHCP / OM Configurator, RFP configuration files) does not necessarily mean a change to the RFP's configuration because the parameter could be covered up or previously set using an alternative way.

Example 1:
IP address of a Syslog Daemon has been changed in "ipdect.cfg" but is covered up by "<MAC>.cfg" in which this parameter has not been changed.

Example 2:
A parameter is new in "<MAC>.cfg" but has been set previously in "ipdect.cfg" with the same parameter value.

Only if a parameter change causes a change in RFP configuration (as a sum of e.g. DHCP / OM Configurator, "ipdect.cfg" and "<MAC>.cfg" files) will the RFP perform a configuration update procedure.

Depending on the changed parameter, an RFP configuration update is done:

- On the fly without any service interruption e.g. IP address of a Syslog Daemon has been changed.
- With an application restart e.g. OMM IP address has been changed.

9.9.8 CONFIGURATION FILE SYNTAX

```
##############################################################################
# sample configuration file for the OpenMobility system
# retrieved via the net using file transfer protocols
# like tftp, ftp, http, https, ftps
#
##############################################################################
# comments start with the hash sign: "#"
#
##############################################################################
# BOOL variables support the following values
# YES Y 1 TRUE (case does not matter)
# NO  N 0 FALSE (case does not matter)
# other values are interpreted as false
#
##############################################################################
```

```
# personal configuration files
#
# personal configuration files have the following name
# <OWN-MAC>.cfg, where <OWN-MAC>.cfg is of the form
# e.g. 003042ABCDEF.cfg

# all RFPs will also load the <OWN-MAC>.cfg file
OM_PersonalConfigAll=1 # BOOL

# DO load the individual file for the RFP with mac 003042FFF0D0
#   no matter what OM_PersonalConfigAll says
OM_PersonalConfig_003042FFF0D0=y

# DO NOT load the individual file for the RFP with mac 003042ABCDEF
#   no matter what OM_PersonalConfigAll says
OM_PersonalConfig_003042ABCDEF=n # BOOL

# time interval for checking the remote cfg files in seconds
# minimum value is 300   (5 minutes)
# maximum value is 604800 (7 days)
OM_ConfigCheckInterval=500


##############################################################################
# OpenMobility system
#
# the OpenMobilityManager ip addresses
OM_ManagerIpAddress1=172.30.205.17
OM_ManagerIpAddress2=172.30.205.18

# path to the software image
OM_SwImageUrl=ftp://172.30.207.21/openmobility/sw/iprfp3G.dnld

##############################################################################
# SYSLOG
#
OM_SyslogIpAddress=172.30.207.20
OM_SyslogPort=10115

##############################################################################
# transfer core files to the following directory
#
OM_CoreFileSrvUrl=ftp://10.103.35.20/corefiles
```

9.10 CONSOLIDATED CERTIFICATE MANAGEMENT

SIP-DECT has various secured interfaces to support secure connections for file imports from local servers or provisioning servers. By default, the OMM Web server uses the hardcoded self-signed OMM certificate as local certificate for encrypted AXI connections, for provisioning (mutual authentication), and for SIP-over-TLS connections.

Certificate and authentication validation settings for these secure connections can be inherited from the configuration file URL (see section 9.8.1).

9.10.1 SIP OVER TLS CERTIFICATES

SIP over TLS certificates are used for secure SIP connections. The hard coded self-signed OMM certificate is used by default, however you can import trusted certificates, a local certificate chain and a private key file (optionally password-protected) via:

- OMP (**System** -> **SIP** -> **Security** tab)
- OMM Web service (**System** -> **SIP** -> **Security**)
- a certificate server (usually running on a Mitel call server)

9.10.2 OMM CERTIFICATE (WEB SERVICE / AXI)

The OMM Web server uses the hard coded self-signed OMM certificate by default as the local certificate for encrypted AXI connections.

You can overwrite the hard coded OMM certificate by importing a local certificate chain and a private key file (optionally password-protected) via the OMP (**System** -> **Advanced settings** -> **OMM Certificate** tab).

The OMM certificate will be used for incoming AXI and HTTPS connections to the OMM services. If the OMM can be reached from the internet by a domain and an appropriate CA certificate has been imported, no security warnings are displayed in web browsers trusting the CA root certificate.

9.10.3 PROVISIONING CERTIFICATES

Provisioning certificates are used for secure connections to configuration or firmware file servers with support for mutual authentication (i.e., for FTP, FTPS, and HTTPs protocols).

The OMM uses a trusted certificate chain to validate the server. This is required if the server has no certificate derived from a trusted CA root certificate, where the OMM uses the Mozilla CA Certificate List. If no server certificate is available, you can disable the validation against trusted and CA certificates.

By default, the hard-coded self-signed OMM certificate is used for mutual authentication. You can overwrite the hard coded OMM certificate by importing trusted certificates, a local certificate chain and a private key file (optionally password-protected) via:

- OMM Web service **System** -> **Provisioning** -> **Certificates** page (see section 7.4.2.5)
- OMP **System** -> **Provisioning** -> **Provisioning Certificates** menu (see section 8.5.5.2)

The OMM provides the local certificate chain and the private key to servers requesting mutual authentication. The private key file may be password protected.

The system credentials can be inherited if specific sources for configuration and resource files are configured, where the ‘Use common certificate configuration’ option is enabled.

9.10.4 CERTIFICATE VALIDATION

If the HTTPS or FTPS protocol is used to retrieve files from the configured provisioning server, the OMM validates the server certificates according to the certificate validation settings.

You can configure the certificate validation settings via OMP (**System** -> **Provisioning** -> **Provisioning – SSL settings**) or the OMM Web service (**System** -> **Provisioning** -> **Certificates**). Certificate validation settings can also be part of the ConfigURL provided by the RCS or via DHCP.

If you want to use the same validation settings for a specific URL (i.e., other than the configuration file URL), enable the “Use common certificate configuration” parameter when configuring the URL (unless the “Import certificates with first connection” parameter is enabled).

9.11 RFP 35/36/37 IP / RFP 43 WLAN SOFTWARE UPDATE

The software checks several locations for a software update. If found, the software is copied to the flash, leaving the running software intact. After successful installation, the OMM is notified about the new software. Activation of the software is then managed by the active OMM. RFPs that do not have a connection to the OMM activate and start the software immediately.

Locations for software updates:

- Attached USB mass storage device with a software image **iprfp3G.dnld** in its root directory. The USB mass storage device must be formatted using the vfat32 file system.
- If ipdect.cfg supplies the **OM_SwImageUrl** variable, the URI is used to get the boot image. Please see section 9.7.7.
- TFTP server, path and file configured using the OM Configurator or via DHCP.

9.12 802.1Q SUPPORT

The IP RFPs support VLANs according to IEEE 802.1Q. VLAN can be administered

- on a per port basis of the LAN switch assuming that the IP RFPs are connected to a single port of a switched Ethernet environment, or
- by assigning a VLAN ID to the IP RFP matching the VLAN they should operate in.

VLAN tagging has only to be set to IP RFPs’ in the last case. The whole section refers to that case. With this, also 802.1p priority within Ethernet frames is enabled.

The scope of the following description is restricted to VLAN tagging and obtaining the VLAN ID. Quality of Service mechanisms like 802.1p priority and DiffServ are not described in this section.

VLAN implementation notes referring to IP RFPs:

- IP RFPs are not able to support VLAN ID 0 as described later in this section. Any other valid VLAN ID can be configured.
- If a VLAN ID is configured, all traffic from an IP RFP will be tagged with this VLAN ID.
- The VLAN ID configured for an IP RFP is also used for the OMM running on this IP RFP.

- Once a VLAN ID is set to the IP RFP, incoming frames are only accepted if they are tagged as well. Therefore the switch port must be configured as a tagged trunk for this VLAN.
- The VLAN configurations can be done using DHCP or the interface for the local static configuration, the OM Configurator.
- The use of VLAN does influence the boot up process of the IP RFP because the VLAN configuration takes place during the boot up phase.
- The default setting is not to tag the traffic. 802.1Q tagging is enabled if the VLAN ID is set. If no VLAN ID is set 802.1Q is disabled.

Why not VLAN ID 0 ?

VLAN ID 0 means that the IP RFP's traffic belongs to the port/native VLAN. The Ethernet switch port to which the IP RFP is connected must be configured to accept 802.1Q tagging for this to work and the switch must interpret VLAN ID 0 as the port/native VLAN ID per the IEEE 802.1Q standard.

The packets from the IP RFP are tagged with VLAN ID 0 and the packets sent to the IP RFP are tagged with the port/native VLAN ID. This scenario does not work, because the IP RFP supports only one VLAN ID in both directions. That means the VLAN ID in the receive direction must be the same as the send direction.

9.12.1 BOOT PHASE OF IP RFPS (DHCP)

Because the IP RFP does not know about VLAN at the beginning of the start up, two DHCP scopes are required. This applies regardless of the Ethernet switch being used. The following scenario with arbitrary VLAN Ids' details the steps an IP RFP would go through in a typical dual-VLAN implementation.

Step A. DHCP scope within the native VLAN:

1 IP RFP boots up and obtains an address on the native VLAN.

2 The data VLAN DHCP option 132 directs the IP RFP to go to voice VLAN.

Step B. DHCP scope within the voice VLAN:

1 IP RFP releases the data VLAN address and obtains an address on the voice VLAN and all other parameters.

The voice VLAN does not have the DHCP option 132, because an IP RFP already on the voice VLAN does not need to be directed to go there.

2 IP RFP is operational on the voice VLAN.

If a reboot or power cycle occurs, the IP RFP returns to step A.

If an IP RFP cannot obtain an address on the voice VLAN, due to network or DHCP problems then the IP RFP falls back automatically to untagged frames (native VLAN).

To avoid the DHCP scope within the native VLAN the VLAN ID to be used can be set permanently via OMC without losing the ability to provide other parameter via DHCP, please see section 9.7.

9.12.2 BOOT PHASE OF IP RFPS (LOCAL CONFIGURATION)

The PC running the OM Configurator must be a member of the native VLAN for the first configuration, later on within the voice VLAN set.

If a wrong or unknown VLAN ID is set, you can overwrite or read the configuration using no VLAN tag on the switch port in the first six seconds after the RFP is connected to a power supply / PoE. After six seconds the RFP applies the local configuration and starts using the parameters.

9.13 INSTALLING OMM IN HOST MODE

In this case, the OMM software must be installed on a PC running Red Hat© Enterprise Linux 6 for x86 server. The network parameters with which the OMM works in this mode depend on this PC's network configuration.

Once started, OMM works permanently on the PC. In case of fatal error or PC restart, OMM will restart automatically.

Please note: Check that the versions of the OMM and RFP software on your SIP-DECT installation are the same. The OMM in host mode is not supported on virtual machines.

9.13.1 SYSTEM REQUIREMENTS

The PC-based OMM requires the following configuration:

- Red Hat© Enterprise Linux 6 for x86 server
- Server hardware minimum:
  - Processor : Dual Core Intel® Xeon® 3065, 2.33GHz, 4MB cache
  - Bus 1333 MHz
  - Memory : 2GB DDR2 SDRAM 667 MHz
  - Hard disk: 80 GB SATA 7200 rpm
  - 1 GB/s Ethernet interface

9.13.2 INSTALLING THE OMM SOFTWARE

The OMM software for Linux Redhat x86 server is provided in the form of a self-extracting executable file e.g. "SIP-DECT_6.0.bin". This binary file contains two Red Hat© packages:

- SIP-DECT-OMM-<*SIP-DECT-version*>.i586.rpm
  OpenMobility Manager software.
- SIP-DECT-HANDSET-<DECT phone-version>.i586.rpm
  Software for Mitel 600 DECT phones

The Mitel 600 DECT phone software can be updated via the Air interface, see section 9.19. A separate software package can also be provided for specific updates of the DECT phone software.

IMPORTANT : Log on as "root" to install and/or update OMM. If you do not login as root to open the OMM console, the path to ommconsole is not set and you must enter the whole path "/usr/sbin/ommconsole" to start the OMM console.

Command syntax

For extraction and automatic standard installation
sh **SIP-DECT_<version>.bin**

For extraction and automatic standard installation
sh **SIP-DECT_<version>.bin -f**

For extraction of RFP packages only
sh **SIP-DECT_<version>.bin –x**

RPM packages can also be installed manually.

For a first OMM type installation
rpm –i SIP-DECT-OMM-<version>.i586.rpm

For an OMM software update (see section 9.14)
rpm –U SIP-DECT-OMM-<version>.i586.rpm

For Mitel 600 DECT phone software installation
rpm –i SIP-DECT-HANDSET-<version>.i586.rpm

To delete a software release

rpm –e SIP-DECT-HANDSET and
rpm –e SIP-DECT-OMM

To check an installed release
rpm –qi SIP-DECT-OMM
or
rpm –qi SIP-DECT- HANDSET

After the installation phase, start OMM by running the command
"/etc/init.d/sip-dect-omm start"

9.13.3 CONFIGURING THE START PARAMETERS

The basic data for initializing OMM is stored in the file "/etc/sysconfig/SIP-DECT". It can be edited to modify the OMM interface.

```
##############################################
# OMM configuration file
##############################################
# if you use a different interface for omm  activate/correct parameter below
#OMM_IF="eth0"
#
OMM_CONFIG_FILE=/opt/SIP-DECT/tmp/omm_conf.txt
#
#if you use OMM resiliency for OMM activate parameter below with OMMs IP adresses
#OMM_RESILIENCY="192.168.0.1:192.168.0.2"
#
```

```
# Automatic OMM database import:

# TFTP / FTP  / HTTP(S) URL specifies the import server and file

#RST_URL=ftp://download-url.com/directory/file.dat

# country tones:

#  VS_COUNTRY_DEU = 1,  VS_COUNTRY_GBR = 2,  VS_COUNTRY_CHE = 3, VS_COUNTRY_ESP = 4,
VS_COUNTRY_FRA = 5, VS_COUNTRY_ITA = 6,

#  VS_COUNTRY_RUS = 7,  VS_COUNTRY_BEL = 8,  VS_COUNTRY_NLD = 9, VS_COUNTRY_CZE = 10,
VS_COUNTRY_AUT = 11, VS_COUNTRY_DNK = 12,

#  VS_COUNTRY_SVK = 13, VS_COUNTRY_FIN = 14, VS_COUNTRY_HUN = 15, VS_COUNTRY_POL = 16,
VS_COUNTRY_BLR = 17, VS_COUNTRY_EST = 18,

#  VS_COUNTRY_LVA = 19, VS_COUNTRY_LTU = 20, VS_COUNTRY_UKR = 21, VS_COUNTRY_NOR = 22,
VS_COUNTRY_EUN = 23, VS_COUNTRY_SWE = 24,

#  VS_COUNTRY_TWN = 25

COUNTRY="2"
```

Parameters	Description
OMM_IF	Interface for communicating with the RFPs (by default: eth0)
OMM_CONFIG_FILE	File that contains the OMM configuration (by default: /opt/SIP-DECT/tmp/omm_conf.txt)
OMM_RESILIENCY	In case of OMM redundancy, enter the two IP addresses of the OMMs. See also section 9.15.
Restore URL	Restore URL for an automatic OMM database import (see section **Error! Reference source not found.**)
COUNTRY	Country tone schema

9.13.4 SPECIFIC COMMANDS – TROUBLESHOOTING

The OMM software is installed but does not work automatically when the PC starts. The command below stops or starts OMM manually (User root):

/etc/init.d/sip-dect [start|stop|restart].

The command line interface for OMM is accessible via telnet on port 8107.

Malfunction

To check whether OMM is working, see the list of procedures for the “SIP-DECT” process. If OMM does not start, delete the lock file “/var/lock/subsys/SIP-DECT”.

To delete the OMM configuration remove the OMM configuration file “/opt/SIP-DECT/tmp/omm_conf.txt” (by default).

9.14 UPDATING THE OMM

The procedures for updating an existing DECT installation with new software depend on

- whether a single OMM or standby OMM installation is used
- whether the OMM is running on an RFP or PC

The OMM “standby” feature is described in section 9.15.

The update mechanism allows an update of the RFPs with minimum impact to DECT services, especially for installations with a standby OMM.

All RFPs check the availability of a new boot image file automatically when:

- the DHCP lease is refreshed,
- the RFP lost the connection to the OMM,
- one of the service applications running on the RFP must be restarted, and
- an RFP configuration file update check is done (see section 9.7.7).

> **Please note:** Make sure that all configured software sources point to the same software version, so that the OMM and all RFPs are running the same software version.
>
> **Please note:** RFPs without a configured software image URL (via DHCP, OMC or ipdect.cfg/<mac>.cfg) retrieve their software directly from the OMM. In this case, the RFP activates the software immediately. This feature is only available with 3G RFPs.

As soon as an RFP detects a new boot image file on the TFTP server it notifies the OMM. The OMM keeps track when it is safe to restart an RFP in order to leave the DECT service synchronized.

RFPs scheduled for restart are marked with a yellow sign within the Web service (see section 7.6.1) or in a separate column within the OM Management Portal (OMP), see section 8.7.1.

> **Please note:** Only software upgrades from the preceding two releases are tested for upgrade to the current release. Additional steps may be required to upgrade systems with software that is three or more releases behind the current release.

9.14.1 UPDATING A SINGLE OMM INSTALLATION

In the case of a single OMM installation, a DECT network outage during the update procedure is unavoidable.

> **Please note:** Updating a single OMM installation results in a DECT network outage during the update procedure.

For the update, replace the boot image file on the TFTP server(s) with the new one.

OMM in RFP mode

If the OMM is running on an RFP, force the update of this RFP by pressing the **Update** button on the **System settings** web page (see section 7.4.1.15). The RFP checks the boot image file on the TFTP server and reboots if a new one is found.

OMM in host mode (on Linux x86 server)

If the OMM is running on a dedicated Linux x86 server, install the new software as described in section 9.13.2 on that PC with the command "**SIP-DECT_<version>.bin**". This stops the running OMM automatically and installs the new software. After the installation phase, restart the OMM by executing the command "**/etc/init.d/sip-dect-omm start**".

As soon as the RFPs lose the connection to the OMM (because of the update), the RFPs detects that a new image file is on the TFTP server and reboot with the new image file.

9.14.2 UPDATING A STANDBY OMM INSTALLATION

> **Please note:** Updating a standby OMM installation causes a switch over between both OMMs. All active calls will be dropped.

For the update replace the boot image file on the TFTP server(s) with the new one.

OMM in RFP mode

Force the update by pressing the **Update** button on the **System settings** web page (see section 7.4.1.15). The OMM-RFP checks the boot image file on the TFTP server and initiates an update procedure, if a new image file has been found. The automated update procedure performs the following steps:

1. Reboot the RFP residing the standby OMM.
2. Reboot the RFP residing the active OMM which causes a failover to the standby OMM.
3. Reboot all other RFPs that are able to find the new boot image file one by one. This is managed by the new active OMM.

This procedure reduces the downtime of the SIP-DECT system to a minimum due to the optimized failover.

> **Please note:** Please be aware that a minimum downtime of the system can only be reached if the system was in a stable working state when initiating the update and the IP infrastructure guarantees a fast update of the OMM RFPs (e.g., no 64kbit/s line to download the SW into the RFP). A RFP typically loads the software from a server within 12 seconds in a LAN environment.

OMM in host mode (on Linux x86 server)

For an update with a minimum impact to the DECT service do the following:

1. Replace the boot image file on the TFTP server(s).
2. Manually update the standby OMM.
   a) Stop the OMM service.
   b) Install the new software.
   c) Start the OMM service.

d) Wait at least 30 seconds before you go on with updating the active OMM.

3 Manually update the active OMM.

a) Stop the OMM service.

b) Install the new software.

c) Wait at least 30 seconds.

d) Start the OMM service.

> **Please note:** A one-by-one update of RFPs is not possible if the signaling interface between the OMM and the RFP has been changed. Please see the release notes delivered with the software.

To enforce an update of the whole DECT system at once, deactivate / update both OMMs simultaneously. The RFPs will lost the connection to both OMMs and will automatically restart with the new boot image file.

9.15 OMM STANDBY

To perform OMM standby, two OpenMobility Managers must be provided in an OMM network. One is working as the active OMM, and the other one is working as the standby OMM.

In the event that the RFP designated as the OMM fails, the other RFP, designated as the secondary OMM automatically assumes the role of the OpenMobility Manager.

How OMM Standby Works

During system start-up, each IP-RFP retrieves either one (if no standby OMM is configured) or two (if OMM Standby is configured) OMM IP addresses and both try to connect to each other. The active OMM will serve all connections from RFPs or DECT phones.

During normal operations, both the active and the standby OMM are in contact and monitor each other's operational state. They continually exchange their current standby states and the standby OMM receives a copy of any configuration changes on the active OMM. Provided that both OMMs are in contact with each other, their databases are synchronized automatically.

If the primary OMM fails, the OMM responsibilities are taken over by the standby OMM to maintain operation. A "No Standby" warning is displayed on the OMM web interface, indicating that there are no longer two functioning OMMs in the network or cluster. Configuration changes are done unsafe in this situation.

If the active OMM fails, the inactive OMM recognizes this and begins to act as the active OMM, and the web service is started.

If the connection between the two OMMs fails, the network or cluster essentially breaks into two operational parts. The standby OMM now becomes the active OMM. At this point, the two OMMs cannot detect one another and, therefore, cannot synchronize. When the connection between the two OMMs is re-established, the synchronization of the OMMs forces one OMM to become the standby OMM again. Once the recently failed OMM returns to service and becomes the inactive OMM, it does not resume the role of active OMM.

9.15.1 CONFIGURING OMM STANDBY

Each RFP of the DECT system must be configured with two OMM IP addresses. This both OMM addresses can be either configured via DHCP (see section 9.5.1) or with the OM Configurator (see section 9.6).

9.15.2 FAIL OVER SITUATIONS

Fail over occurs under following circumstances:

- An OMM error occurs on the active OMM.
- The RFP acting as the active OMM is shut down or rebooted at the SSH console.
- The OMM is rebooted in the web browser menu.
- The active OMM is unreachable.

The standby OMM becomes the active OMM under following circumstances:

- The configured SIP Proxy/Registrar is reachable.
- The other OMM has a larger IP Address while no OMM is active and both OMMs are in contact with each other (normally at system startup).

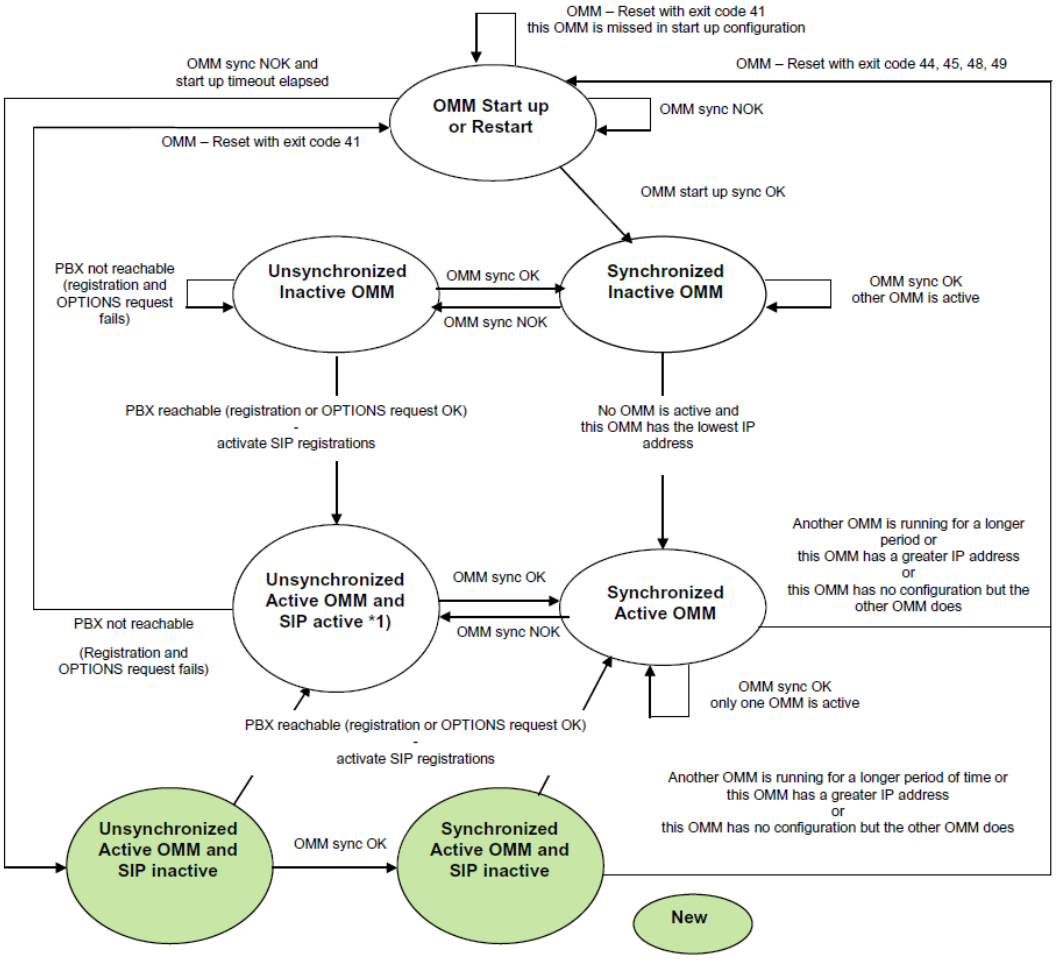
When the OMMs get in contact again:

- Both OMMs check which one ran for a longer period. That one will become the active OMM. The other one falls back to the standby one.

9.15.3 FAIL OVER FAILURE SITUATIONS

Fail over failure occurs under following circumstances: The IP connection between OMMs fails and the configured SIP Proxy/Registrar is unreachable. In this case the active OMM shall wait until the SIP Proxy/Registrar is reachable.

The following state diagram shows the OMM Standby states:



165-omm-standby-states.tif

"**OMM sync OK**" means: OMMs are synchronized with each other and are able to exchange their operational states

"**OMM sync NOK**" means: OMMs are not synchronized with each other and are not able to exchange their operational states

*1) In this state the DECT air interface might not be in a definite state as both OMMs are active but cannot connect with each other! This is caused by IP network failures and cannot be handled by the SIP-DECT system in a proper automatic way. In such a scenario it is not predetermined which RFP connects with which of the 2 OMMs. The DECT network can split-up into two unsynchronized DECT sub-networks. This can cause voice quality and handover problems.

With these new states ("… SIP inactive") the OMM standby mechanism takes care in the start up phase that all SIP users does not become active if the PBX is not reachable. This avoids a possible double SIP registration when the PBX and the other OMM is reachable again before both OMMs negotiate with each other which OMM becomes the active one.

The double SIP registrations might cause a user not to be reachable when his latest SIP registration came from that OMM that was negotiated to be the inactive one and the SIP registrar cannot handle 2 or more simultaneous registrations (non-forking proxy).

9.15.4 SPECIFIC STANDBY SITUATIONS

Some aspects must be described in case of OMM state changes when they are unsynchronized.

9.15.4.1 How A Standby OMM Becomes Active

As the above figure shows in case of an unsynchronized OMM state the standby OMM must decide whether to become active or not.

For this purpose the OMM tries to contact the configured SIP proxy and registrar. The OMM starts a SIP registration for the DECT phone with the lowest phone number and sends an OPTIONS request to the configured proxy. If there is an answer the SIP proxy/registrar will be considered as reachable and the OMM becomes active.

9.15.4.2 When Both OMMs Are Not Synchronized

In an unsynchronized OMM Standby state, the connection between the OMMs is broken. In case of a network problem, both OMMs might be in this state. During this time an inconsistent OpenMobility system is working with some constraints.

The Web service will warn with the message “No Standby” for both OMMs in this situation and it is possible that configuration changes made are not saved.

In any case, when both OMMs get in contact again with each other, the longer running one becomes the active one and that will overwrite the database file in the standby OMM. Configuration changes made in this OMM instance are lost.

9.15.4.3 Two DECT Air Interfaces

When both OMMs are in an unsynchronized and active state, they are fully working. RFPs that lose their connection to the OMM because of a network outage might connect to the other OMM. Two DECT air interfaces are present and work in parallel.

Note: Since both air interfaces use the same PARK, it is impossible to determine on which OMM a location registration succeeds.

For DECT phones different situations are possible:

- They do not notice this situation:
  - active calls stay established, depending on network conditions;
  - DECT phones can make and receive new calls, depending on an available PBX connection;
  - DECT phones can do handover to RFPs connected to the same OMM;
  - DECT phones can call DECT phones that are registered to the other OMM
- They lose their RFP base station and perform a new location registration:
  - active calls are broken;
  - DECT phones can make and receive new calls, depending on an available PBX connection;
  - DECT phones can do handover to RFPs connected to the same OMM;
  - DECT phones can call DECT phones that are registered to the other OMM;
- They lose their RFP base station and search the DECT network without finding another one:
  - active calls are broken;

- DECT phones stay in searching for network until an air interface is available again.

Note: Handover between DECT phones located to RFPs which are controlled by different OMMs is not possible.

When the OMMs get in contact again with each other this inconsistent OpenMobility system situation will end.

9.16 MANAGING ACCOUNT DATA FOR SYSTEM ACCESS

Each RFP provides different independent access types:

- the OMM Web service/HTTPS interface (see section 7);
- the OMP (see section 8);

  The OMM Web service and the OMP are mainly used for configuration and administration.
- the OM Configurator (see section 9.6);

  The OM Configurator is mainly used for static local configuration of an RFP.
- the SSH user shell (see section 10.3.5).

  The SSH user shell is mainly used from experts for diagnosis.

Each of this these access types uses the same account data.

The account data can be altered at the **User account** page of the OMM Web.

The OMM delivers all the necessary account data to all connected RFPs. The RFPs save the account data inside their permanent memory. This has some implications:

- An RFP out of the box uses the default account data as long as this RFP is not connected to the OMM.
- An RFP which was connected for at least one time with the OMM uses the account data from the OMM.
- When the account data are changed on the OMM, any not connected RFPs will continue to use the older passwords.

9.16.1 ACCOUNT TYPES

There are three different account types:

- **Full access**: This access type is the “normal” access for the configuration. Using this access it is allowed to configure the OMM and each RFP. On the SSH interface of an RFP this access type allows login for debug information e. g. “pinging” another RFP to check visibility.

  The factory setting for this account is
  Name: 'omm'
  Password: 'omm'
  Active: 'n/a'
- **Read-only access**: As the name suggests this access type is not allowed to configure any item of the OMM installation. This access type can only be used on the OM Web service. The account can be deactivated.

  The factory setting for this account is
  Name: 'user'
  Password: 'user'
  Active: 'yes

- **Root (SSH only) access**: This access type is only applicable on the SSH interface of an RFP. Its purpose is to get detailed information e. g. parameters from the kernel. The access using this account type is not reachable from other hosts hence a login using the full access type is necessary.

  The factory setting for this account is
  Name: 'root'
  Password: '22222'
  Active: 'n/a'

> **Please note:** It is highly recommended not to use the “Root (SSH only) access” account type. It is meant for technical support only.

9.16.2 POTENTIAL PITFALLS

When an RFP is configured via the OM Configurator and is taken out of an installation, the RFP may become unusable:

- When this RFP comes up, it finds a valid configuration in its permanent memory. It will hence skip DHCP for booting.
- But when this configuration is not valid anymore (e.g. the TFTP server has a new IP address meanwhile), the RFP isn't able to complete the boot and is hence not able to connect to the OMM.
- The RFP will not get newer passwords from the OMM.

It is therefore recommended to switch of the OM Configurator before taking an RFP out of an installation. But nevertheless the OM Configurator allows to reset the permanent memory of an RFP (the Mitel support must be connected).

9.17 WLAN CONFIGURATION (RFP 42 WLAN / RFP 43 WLAN ONLY)

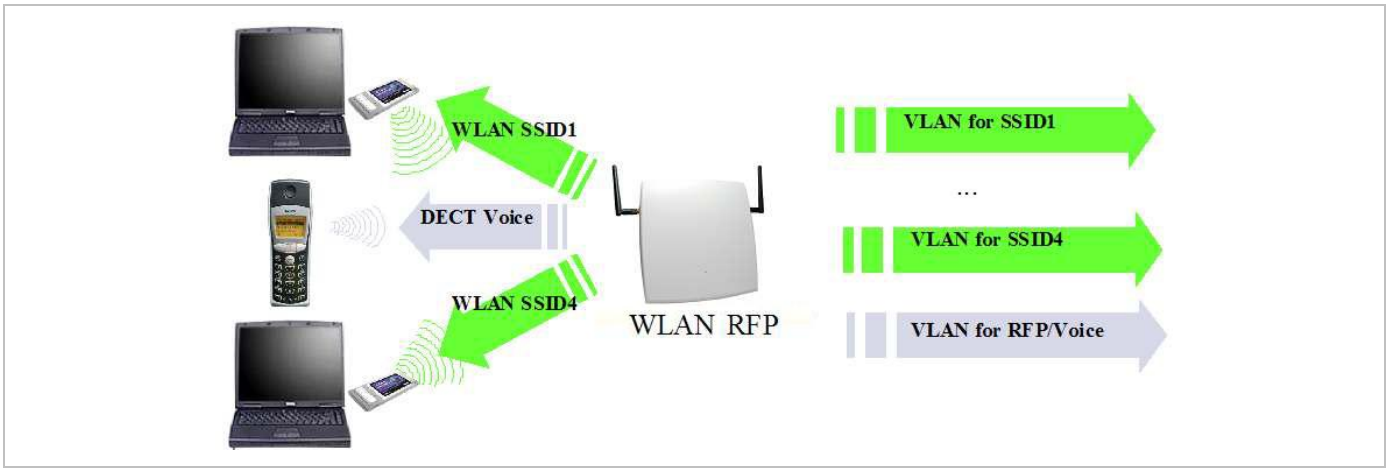
9.17.1 WLAN CONFIGURATION STEPS

The correct configuration of an RFP with a WLAN interface requires the correct configuration of the DECT part. The second step is to specify the **Regulatory domain** of the WLAN network at the **System settings** page of the OMM web service (see section 7.4.1.3).

> **WARNING:** **Please note that selecting the incorrect regulatory domain may result in a violation of applicable law in your country!**

Select one of the two-letter country codes. This setting depends on the country and is prescribed by the laws of that country. Only the setting prescribed for that country must be used.

The third step is to specify the WLAN parameters in a profile (see section 7.8.1). The WLAN profile determines the name (SSID) of the WLAN network and other parameters. The encryption and authentication procedures are especially important and must be planned carefully beforehand.



The access point can be assigned to a VLAN that conforms to 802.1q. All the data that is received from and that is to be forwarded to the WLAN clients is then carried by the configured VLAN. All other data, such as VoIP packets, configuration data or authentication data (Radius), is given the VLAN tag configured for the RFP. The switch port of the network component to which the access point is connected must be configured as a trunk port.

Note: The RFP 42 WLAN and RFP 43 WLAN must be connected at least via a 100BaseT Ethernet link in order to activate the RFP's WLAN function.

As a forth step, you must assign a WLAN profile to a configured RFP. This can be done on the **DECT base stations** page of the OMM web service or on the OMP **DECT base stations** -> **Device list** page. Note that specific radio settings for the RFP, such the channel-, 802.11abgn mode-, or antenna settings, are also done in this step.

9.17.2 OPTIMIZING THE WLAN

Beacon Interval

Transmitting beacons requires transmission channel capacity. A shorted beacon interval increases the WLAN network's ability to detect signals, thus improving its availability. At the same time, it increases the network's ability to adjust the mutually negotiated signal strength. A longer beacon interval saves WLAN air time and also reduces the power consumption of mobile WLAN clients.

RTS Threshold

If the network throughput is low or if many retransmissions occur, the RTS/CTS handshake can be activated by reducing the RTS threshold value below 1500 byte. This can improve throughput, especially in environments where reflection and attenuation cause problems for HF.

Fragmentation Threshold

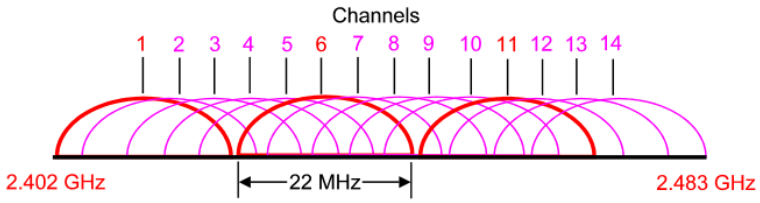
In environments where there is lot of interference and poor radio quality, reducing the fragment size below 1500 bytes can improve the effective throughput. However, transmitted data frames must be fragmented, which means a higher load on the RFP's processor.

DTIM Period

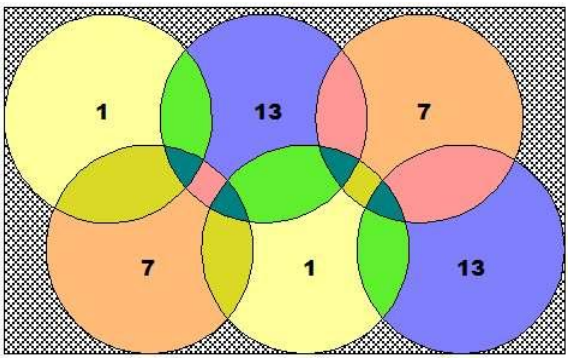
The DTIM period specifies the interval between transmissions of the broadcast and multicast packets. All WLAN clients must be active during this interval. Increasing the DTIM period lowers the client's power consumption slightly. Not all programs can manage the increase in response times, however.

Channel Allocation

Every WLAN RFP must be configured to a channel. You should ensure that the channel settings do not overlap. WLAN RFPs within range of each other should be configured at least five channels apart. When the radio field is planned, the WLAN RFPs of foreign WLANs that may be operating in the vicinity must be taken into account.



When planning the radio coverage for a two-dimensional area, please bear in mind that the distance between any two base stations operating on the same frequency must be at least twice their range. The range can be adjusted by lowering the output power level.



802.11i: WPA2-Enterprise Pre-Authentication for fast Roaming

WLAN stations (e.g. laptop) which decide to roam to another WLAN access point (AP) must perform the full authentication process with the new AP. In 802.1X (RADIUS) networks this can take a long time resulting in network dropouts during the roam.

The AP share authentication information with other APs, so the station can authenticate faster (pre-auth) when roaming to a new AP. This method reduces network dropouts significantly.

The RFP43 automatically enables pre-authentication for WPA-Enterprise enabled WLANs. The RFP42 does not support this feature.

Channel Configuration Feedback for HT40 and Transmit Power

The HT40 channel configuration in 802.11n enabled networks may not always become active because of other access points that use channels that would overlap. In this case, the RFP43 will fall back to HT20.

The effective channel configuration and the transmit power are reported to the OpenMobility Manager.

Users can inspect these parameters using the WEB interface and the OMP and may change the channel to a frequency without overlapping APs.

9.17.3 SECURING THE WLAN

In order to ensure that communication in the WLAN network is secure, several measures must be taken. Firstly, data packets transmitted via the openly visible radio interface must be encrypted, and secondly, all WLAN components that provide services should must authenticate themselves.

There are different encryption methods available that you configure within the WLAN profile (see section 7.8.1). However, only the recent WiFi protected access (WPA) encryption offers sufficient security against possible intruders. You should not use the (older) WEP encryption for your company LAN.

Especially with larger WLAN installations, the single shared secret offered by WPA-personal may not be sufficient for your security requirements, because any person that connects to the WLAN needs to know the same shared secret. For this reason, you should also setup RADIUS authentication that is supported by all RFP 42 WLAN and RFP 43 WLAN devices.

A Radius Server (Remote Authentication Dial In User Service) handles 802.1x Authentication, thus authorizing different WLAN clients with an individual username / password combination to log in. We recommend to use a Radius Server with EAP-TLS (e.g. FreeRadius or MS Windows 2003 IAS Server) and a Certificate Authority (CA).

The RADIUS authentication takes place between the RADIUS server and the RADIUS client, with the WLAN RFP to pass-through this communication. You should refer to the documentation that comes with your RADIUS product for details on how to setup, maintain and operate the RADIUS system.

9.18 SNMP CONFIGURATION

To manage a larger RFP network, an SNMP agent is provided for each RFP. This will give alarm information and allow an SNMP management system (such as “HP Open View”) to manage this network. The SNMP agents can be configured in the **SNMP** menu of the OM Web service (see section 7.4.6).

All SNMP agents are configured by the OMM. Additional parameters that are valid for the individual RFP (e.g. “sysLocation” and “sysName”) are generated. The “sysLocation” parameter corresponds to the location configured via the OMM web interface. The “sysName” parameter is generated using the MAC address and the RFP device type (e.g. RFP 43 WLAN). The RFP uptime can be requested by reading the “sysUpTime” parameter. This value indicates how long the RFP application software is running. It does not indicate the uptime of the operating system which does not correspond to the operational RFP state.

The SNMP agent responds to SNMPv1-read and SNMPv2c-read requests for the standard MIB-II objects. The Management Information Base (MIB-II) contains 11 object groups. The agent receives both SNMPv1 and SNMPv2c traps. It sends a “coldStart” trap when it first starts up. It also sends an enterprise-specific trap “nsNotifyShutdown” when it stops. When the SNMP agent receives an SNMP request using an unknown community name, it sends an “authenticationFailure” trap. The SNMP agent also generates an enterprise-specific trap “nsNotifyRestart” (rather than the standard “coldStart” or “warmStart” traps) after being reconfigured.

9.19 BACKUP SIP PROXY/REGISTRAR

This section provides an overview about the supported redundancy concepts with SIP-DECT to realize a high availability solution together with IPBX redundancy mechanism.

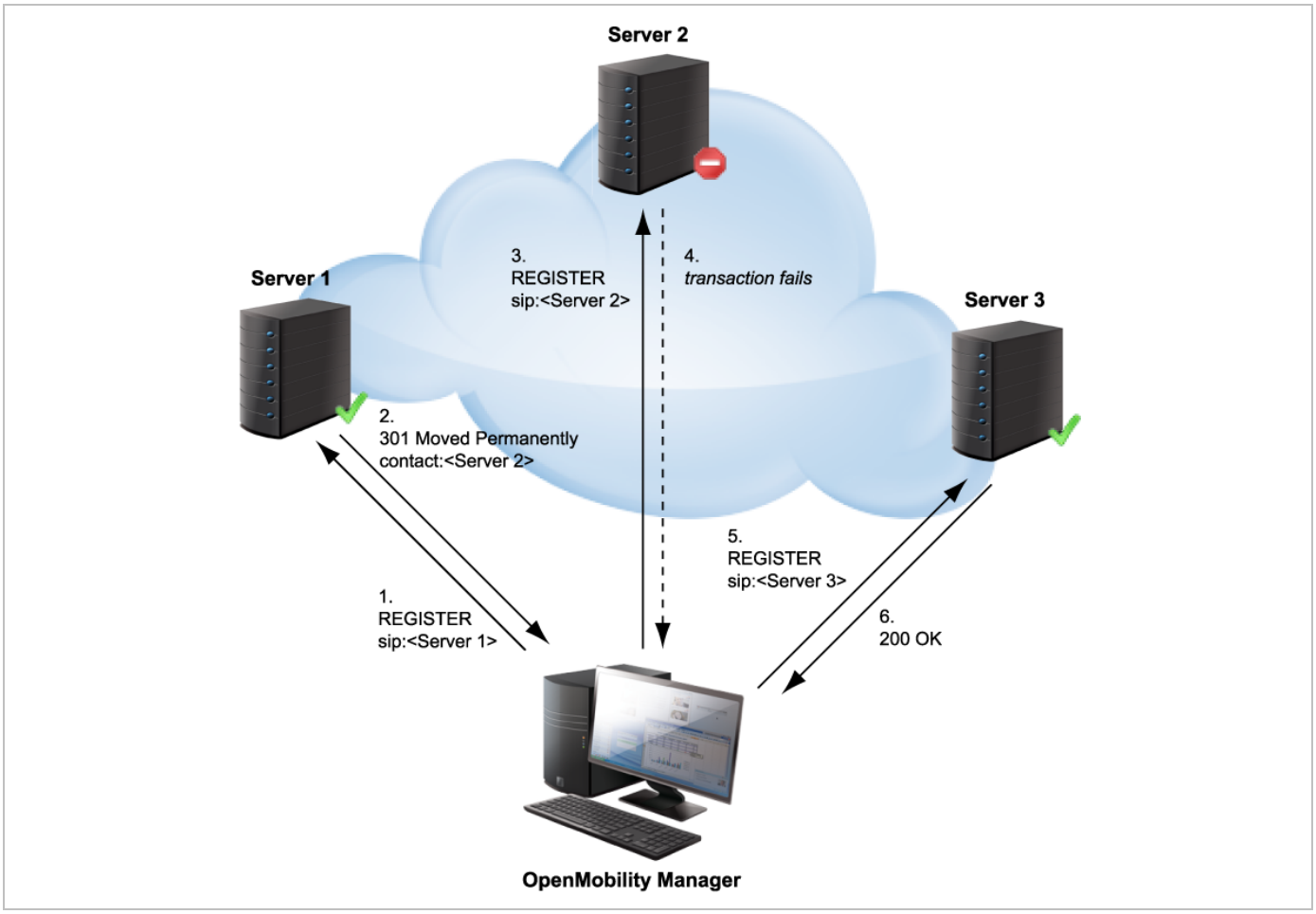
The focus of this section is IPBX redundancy. For information regarding OMM redundancy, please refer to section 9.15.

9.19.1 REGISTER REDIRECT

To allow IPBX systems to spread the registration and call traffic over different servers the OMM supports 301 (Moved Permanently) or 302 (Moved Temporarily) responses for registrations.

When a 301 or 302 response is received, the OMM follows the redirect and registers the concerning user to the given address. If more than one contact address are given in the 301/302 response, the OMM tries to contact the registrars successively until the registration succeeds.

If the redirected register succeeds and if the configured proxy and registrar are identical, all subsequent INVITE requests are sent to the redirected server. In the other case all subsequent INVITE requests will be sent to the (outbound) proxy or secondary/tertiary (outbound) proxy.

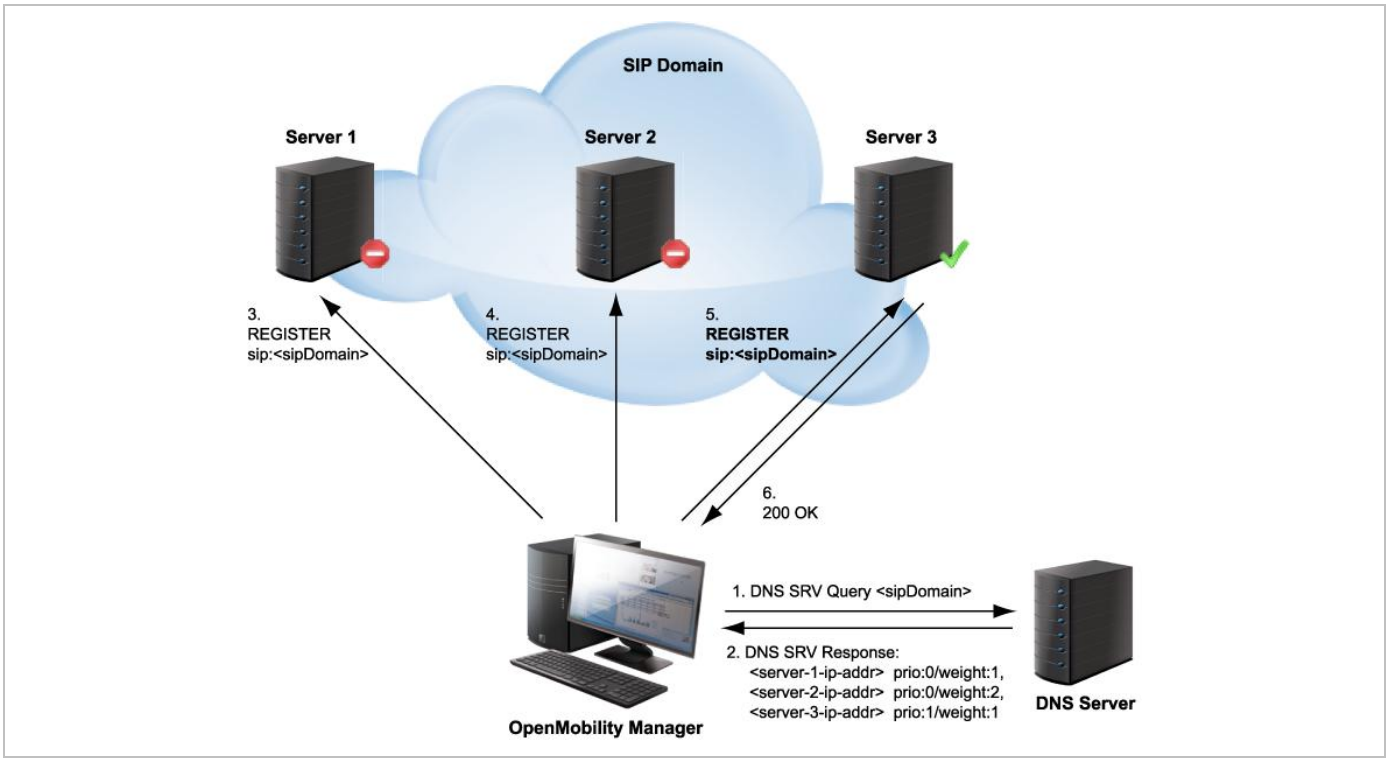


9.19.2 DNS SRV

If a full qualified domain name is configured as proxy, outbound proxy or registrar server and the respective port setting is set to zero (“0”), the OMM performs a DNS SRV query before an appropriate SIP transaction is started. Herewith the OMM locates a list of servers responsible for the given SIP domain. With this configuration, the default port (“5060”) is used for every server address acquired with this mechanism.

The DNS SRV results are sorted by priority and weight in ascending order by the OMM. As soon as the DNS SRV query succeeds, the OMM starts the appropriate SIP transaction by sending the request to the server with the uppermost priority and weight of the DNS SRV result.

If there is no answer from the first SIP server in a configurable time frame (“Transaction Timer” parameter), it will be assumed as unreachable and the OMM tries to contact the next server of the DNS SRV result. Therefore the request will be send to the second server of the DNS SRV query result. If there is also no answer in the given time frame from the second server, the request will be send to the third server and so on. When there is an answer from one of the contacted servers, this server will be used for this transaction.



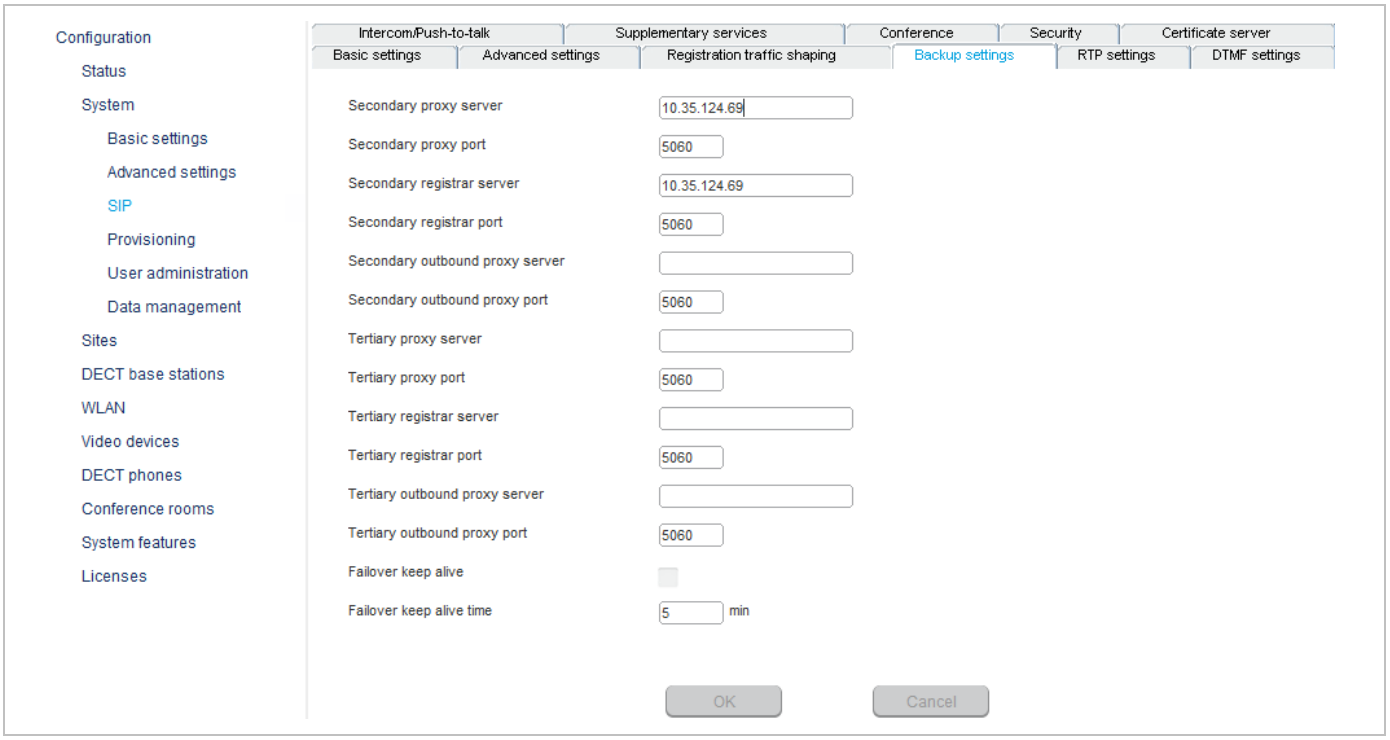
To prevent situations where the OMM tries to contact with each new transaction servers which are unreachable (out of service), the OMM offers a blacklist feature. If there is no answer from a SIP server, this specific server can be put into a blacklist and will not be contacted anymore for a configurable time of “Blacklist time out” minutes by all adjacent SIP transactions.

In differentiation to the concepts described in the following sections note that independent of which SIP server is used, all requests send by the OMM carry the same sender Address-of-Record (AOR)[1]. This means that the sender URI consisting of user-ID and domain is not changed during a failover to another server.

[1] RFC 3261: An address-of-record (AOR) is a SIP or SIPS URI that points to a domain with a location service that can map the URI to another URI where the user might be available. Typically, the location service is populated through registrations. An AOR is frequently thought of as the “public address” of the user.

9.19.3 BACKUP SIP SERVERS

The SIP-DECT solution allows configuration of two additional levels of backup servers, in addition to the primary proxy, outbound proxy and registrar server. These two additional levels of backup servers are referred to as secondary and tertiary servers in the following sections.



SIP backup servers can be configured in the **System** -> **SIP** menu of the OM Management Portal (OMP), see also section 8.5.4.

You can configure IP addresses, names or full qualified domain names as server addresses. It is also possible to configure a mixture of IP addresses, names or full qualified domain names for the different servers.

If full qualified domain names are configured and the respective port setting is configured to zero (“0”), DNS SRV queries will be performed to locate a list of servers in the domain (see 9.19.2). To ease the following descriptions, it is assumed that all server addresses are given by name or IP address. In case of full qualified domain names the behavior described in section 9.19.2 will be performed additionally to contact the SIP servers in the given domain.

This redundancy mechanism is based on a failover concept where the OMM first tries to contact the primary server. If the primary server fails, the OMM tries to contact the secondary server and if the secondary server fails also, the OMM tries to contact the tertiary server.

The OMM failover behavior in detail depends on the backup server settings.

9.19.3.1 No Secondary/Tertiary Proxy, Outbound Proxy and Registrar Configured

In this case is no failover to a secondary/tertiary (outbound) proxy / registrar is possible.

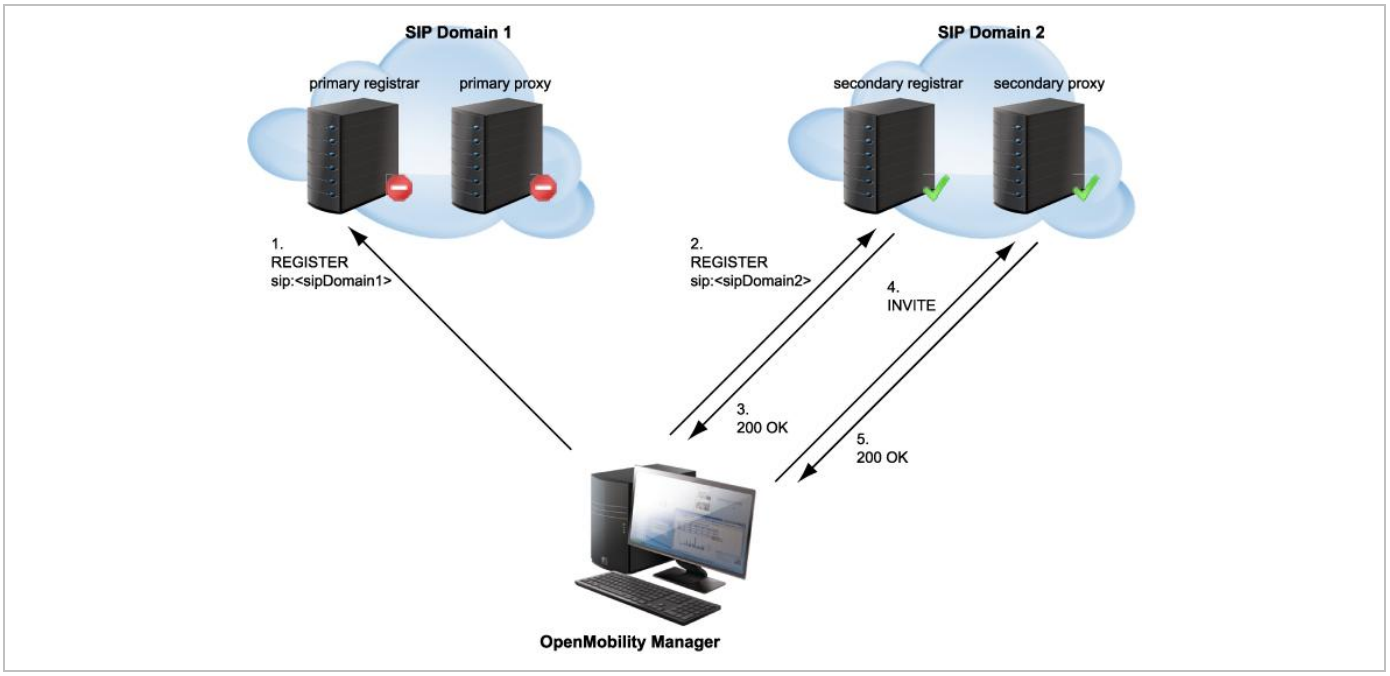
9.19.3.2 Secondary/Tertiary Proxy and Registrar Configured

All REGISTER and re-REGISTER requests attempt to use the primary registrar first.

If the primary registrar fails (e.g. no answer in “transaction timer” time frame), the user is tried to register with the secondary/tertiary registrar using as AOR the secondary/tertiary proxy address.

When the registration with the secondary/tertiary registrar succeeds:

- the MWI subscription is moved to the secondary/tertiary proxy,
- all subsequent INVITE requests attempt to use the secondary/tertiary proxy,
- the registration of all other users currently registered with the failed server will be automatically refreshed if the “Failover keep alive” setting is enabled (see page 126). For this purpose, the re-register requests will be queued and proceed according to the settings for “Registration traffic shaping” (see section 7.4.3.5).



If a user was registered successfully with the secondary/tertiary registrar and can be registered again with the primary registrar e.g. during a re-registration:

- the MWI subscription is moved back to the primary (outbound) proxy,
- all subsequent INVITE requests attempt to use the primary (outbound) proxy again,
- the registration of all other users currently registered with the secondary/tertiary registrar will be automatically refreshed.

As long as no successful registration exists, all INVITE requests attempt to use the primary (outbound) proxy as first.

If the INVITE request to the primary proxy fails, the INVITE request attempts to use the secondary/tertiary proxy. If an INVITE request fails (no answer in “transaction timer” time frame) send to a proxy identical with own registrar, the registration will be refreshed.

9.19.3.3 Secondary/Tertiary Proxy, Registrar and Outbound Proxy Configured

In this case, the OMM behavior is as described in section 9.19.3.2 but all requests for the secondary/tertiary proxy/registrar are sent through the outbound proxy.

9.19.3.4 Secondary/Tertiary Proxy Configured Only

All REGISTER, INVITE and SUBSCRIBE requests attempt to use the primary proxy or registrar first.

If an INVITE/SUBSCRIBE request fails, the INVITE/SUBSCRIBE request attempts to use the secondary/tertiary proxy.

9.19.3.5 Secondary/Tertiary Outbound Proxy Configured Only

The OMM behavior is as described in section 9.19.3.2 but

- all requests for the secondary/tertiary proxy/registrar are send through the outbound proxy;
- if the registration with the primary registrar fails, the registration is re-tried using the primary proxy address as AOR sent through the outbound proxy.

9.19.3.6 Secondary/Tertiary Registrar Configured Only

All REGISTER, INVITE and SUBSCRIBE requests attempt to use the primary proxy or registrar first.

If a REGISTER request fails, the request attempts to use the secondary/tertiary registrar.

9.19.4 KEEP ALIVE MECHANISM

A keep-alive mechanism implemented in the OMM allows the automatic failover to secondary/tertiary servers or automatic coming back to primary servers. The keep-alive mechanism is based on the registration process and utilizes the special behavior that all REGISTER and re-REGISTER requests are sent to the primary registrar first.

The following configuration parameters are introduced: **Failover keep alive** and **Failover keep alive time**. These parameters are set in the OM Management Portal (OMP) on the **Backup settings** tab of the **System**: **SIP** menu (see page 126).

For each registration target, a user could be registered successful with, a keep alive procedure is started. For this purpose the first user registered successful on a registration target will be selected to re-register all “Failover keep alive time” before the registration period expires.

If the re-registration of this selected user detects that the current primary server fails, the registration of all users registered on the same server will be refreshed automatically. For this purpose the re-register requests will be queued and proceed according the settings for “Registration traffic shaping” (see pages 62 and **Error! Bookmark not defined.**).

If the re-registration of a selected user detects that the primary server is available again, the registration of all users registered on a secondary/tertiary registrar will be refreshed.

9.19.5 PRIORITIZED REGISTRATION

Depending on the settings for “Registration traffic shaping”, the registration of a high number of users could need minutes. In effect single users could not be reachable for minutes during startup.

To guarantee a minimum blackout for very important people (e.g. emergency user) the registration of such people can be prioritized. Therefore a special user attribute VIP (very important person) is introduced. The corresponding option is set in the **SIP** tab of the DECT phone **Detail** Panel (see page 169).

9.19.6 MONITORING THE SIP REGISTRATION STATUS

The SIP registration status of a DECT phone user can be monitored by using the OpenMobility Management Portal (OMP). In OMP monitor mode you can view on which registrar a specific DECT phone user is registered and whether the server is a primary, secondary or tertiary server. To monitor the SIP registration status proceed as follows:

1. Launch the OMP (see section 8.1) and navigate to the **DECT Phones** -> **Overview** menu.
2. Switch to **Monitor Mode**.
3. Activate the **Registered**, **Registrar server type**, **Registrar server** and **Registrar port** columns (see section 8.10.9).

9.19.7 CONFIGURABLE USER ACCOUNT FOR STANDBY CHECK

The “Standby OMM” feature of SIP-DECT allows configuration of the user account to be used to check iPBX availability. Such an availability check starts automatically in fail over situations.

Therefore, the OMM starts a SIP registration for a specific DECT phone user and sends an OPTIONS request to the configured SIP proxy. If there is an answer, the SIP proxy/registrar is considered reachable and the standby OMM becomes active.

With older SIP-DECT releases, the OMM used the user account with the lowest phone number for the check procedure.

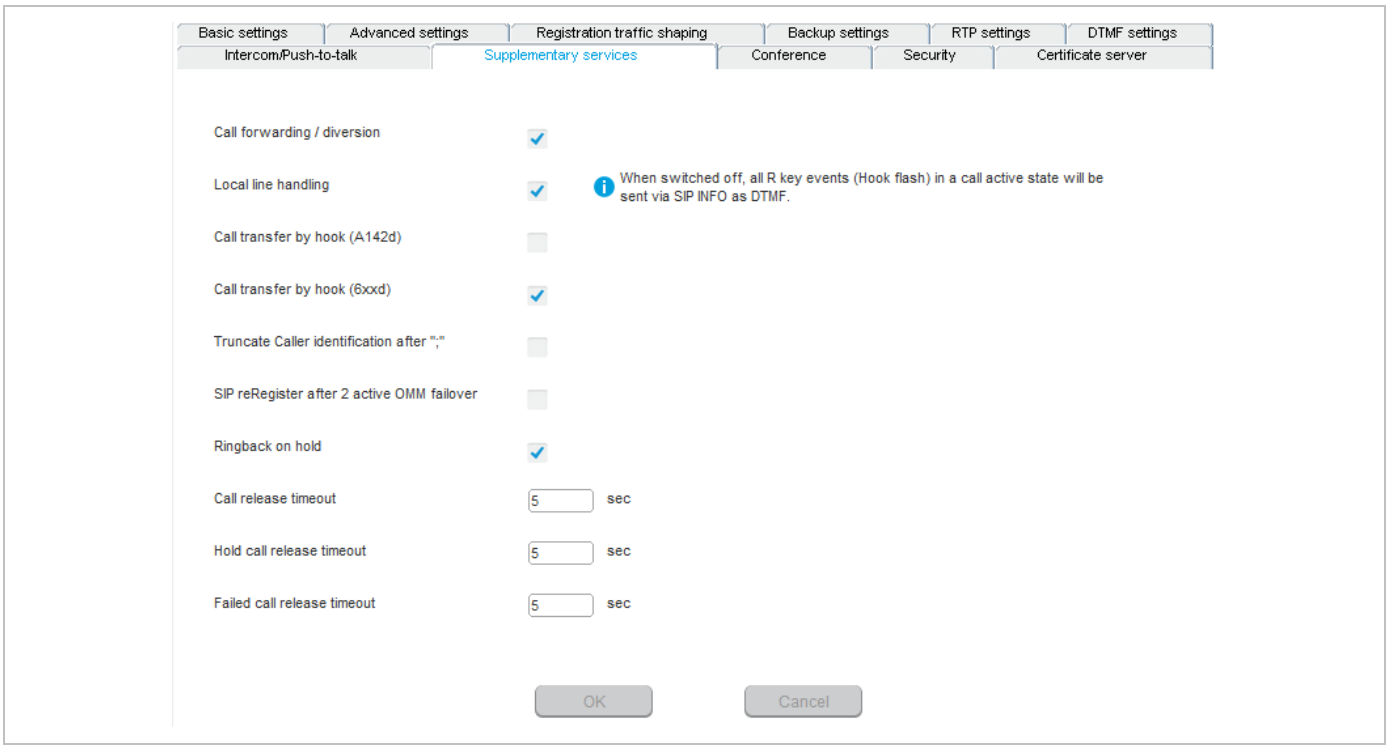
To select a specific user account for this purpose, enable the **Used for visibility checks** flag on the **SIP** tab when creating or editing a DECT phone.

> **Please note:** The “Used for visibility checks” flag can only be set for one user. The number for visibility checks is shown under **OMP**->**Status**->**Users**->**Number**.
> If the flag is not set for a specific user, the OMM uses the user account with the lowest phone number.

9.19.8 OMM STANDBY ENHANCEMENT

With SIP-DECT systems using the OMM standby feature it could happen in rare cases that both OMMs become temporarily active. In such a situation all SIP-DECT users were SIP registered from both OMMs to the configured PBX. This can cause problems, when the PBX accepts only one registration per user (non-forking proxy).
To prevent such problems a mechanism is realized to detect situations with two active OMMs. When such a situation is detected the remaining active OMM will SIP re-register all users to the PBX.

This mechanism can be enabled/disabled via the OMP **SIP**->**Supplementary Services** tab (see section 8.5.4.8).

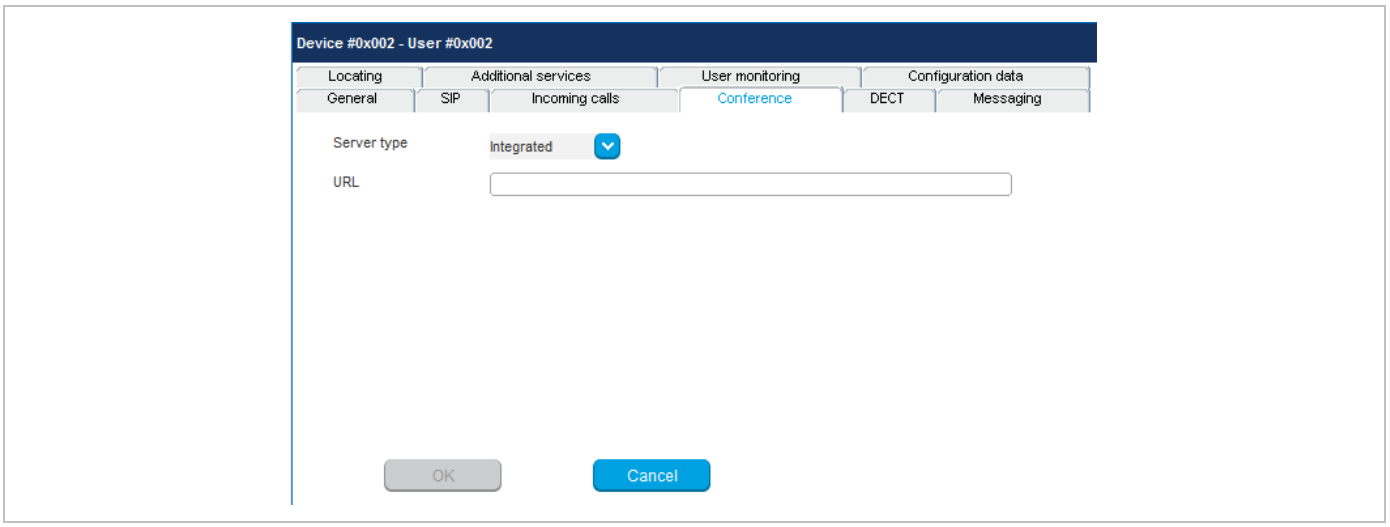


9.20 CONFERENCING

Depending on which type of conference server shall be used, SIP-DECT offers the following operational modes:

- **None**: neither external nor internal conference server is used.
- **Integrated**: the conference server integrated in SIP-DECT is used.
- **External**: an external conference server is used, e.g. Broadsoft or Sylantro.

The conference modes can be configured globally for all SIP-DECT users on the OMP **System** -> **SIP** -> **Conference** tab (see section 8.5.4.9). Alternatively, the conference mode for individual users can be configured on the OMP **DECT Phones** -> **Users** -> **Conference** tab (see section 8.10.2). When the **Global** setting is selected for a user, the global system conference mode will be used for this user.



The default for the global system conference mode is **None**. For the user-specific mode, the default is **Global**.

9.20.1 CENTRALIZED CONFERENCING

To enable SIP centralized conferencing on DECT phones select **External** as **Server type** for all users on the OMP's **System** -> **SIP** page or for specific users on the OMP's **DECT Phones** -> **Users** page.

If there is specified a proxy / registrar server, then to reach the conference media server via the proxy server, set the **URI** field to one of the following prefixes:

- **conf** (Sylantro server)
- **Conference** (Broadsoft server)

Examples

To set the **URI** field to "conf" or "Conference", specify "conf@<proxy-server-address>:<proxy-port>" or "Conference@<proxy-server-address>:<proxy-port>".

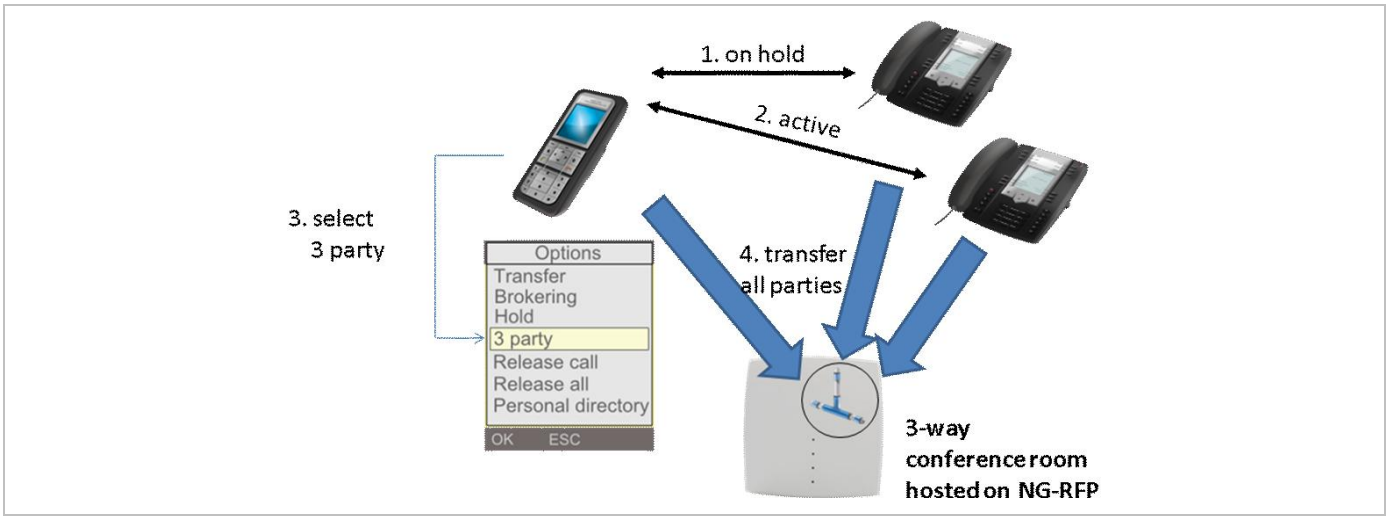
To reach the conference media server using a different address/port then that is specified by the proxy, set the **URI** field to "conf@<media-server-address>:<media-port>"

9.20.2 INTEGRATED CONFERENCE SERVER (ICS)

The conference server integrated in SIP-DECT is based on the SIP standard RFC 4579 and allows SIP-DECT users the ad-hoc initiation of 3-way conferences.

If this feature is enabled, it allows SIP-DECT users having an active call and holding another call to select **3 party** in the **Options** menu of a Mitel 600 DECT phone to initiate an ad-hoc 3-way conference. If a 3-way conference is initiated, the conference initiator and both connected parties are transferred to the next free conference room hosted on one of the RFP 35 / 36 / 37 / 43 devices.

ICS provides the full range of voice codecs (G722, G711 µ-law, G711 a-law and G729) and supports trans-coding for all parties in a three-way conference session.



Enabling the SIP-DECT integrated 3-way conferencing requires the following configuration steps:

- Enable internal conference mode
- Select RFP devices for conferencing
- Configure conference rooms

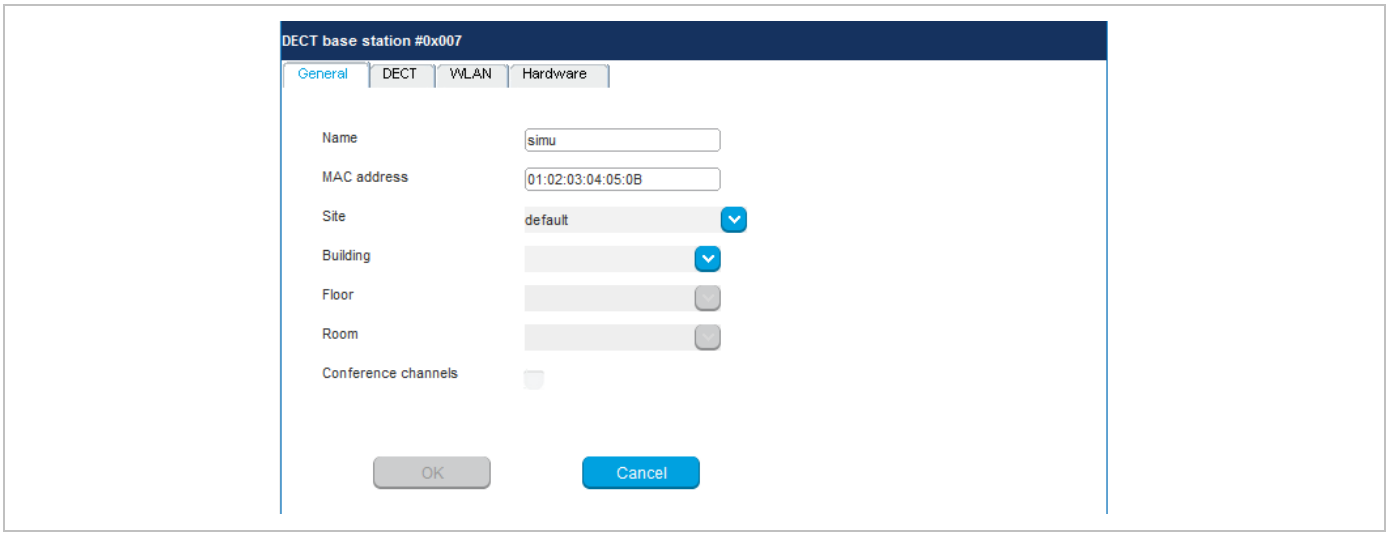
9.20.2.1 Enable internal conference mode

To enable SIP-DECT internal 3-way conferencing for DECT phones select **Integrated** as the **Server type** setting for all users on the OMP's **System**-> **SIP** page or for specific users on the OMP's **DECT Phones** -> **Users** page.

9.20.2.2 Select RFP devices for conferencing

Select some of the RFP devices from your SIP-DECT infrastructure to provide conferences. For this enable the **Conference cannels** flag for each selected RFP on the OMP's **DECT base stations** -> **Devices** -> **General** tab (see section 0).

Please note: Only RFP 35 / 36 / 37 / 43 devices support 3-way conferences.



Depending on the DECT and G.729 configuration, an RFP device enabled for conferencing provides between 3 and 24 conference channels. To compute one 3-way conference 3 conference channels are necessary.

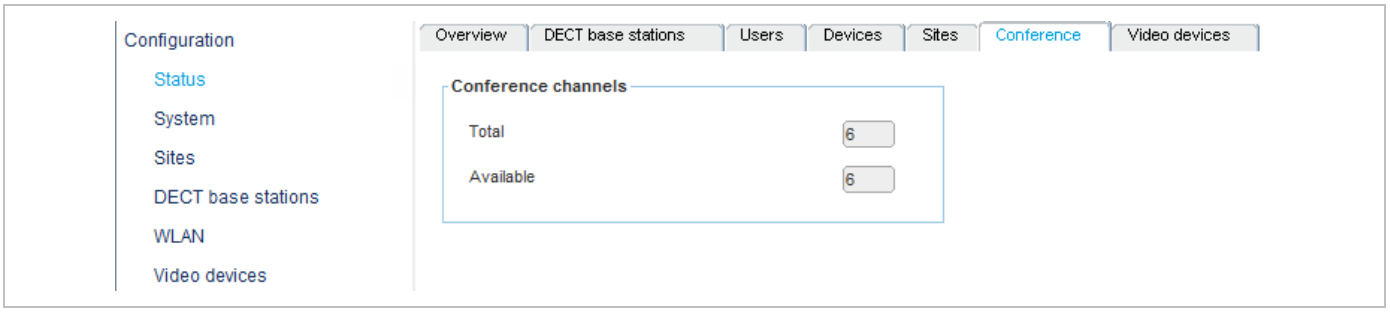
In particular, the G.729 codec, with its high consumption of computing time, reduces the number of available conference channels according to the following table.

DECT enabled	Conferencing enabled	G.729 enabled	Conference channels	DECT voice channels
Yes	No	Yes/No	0	8
Yes	Yes	No	15	8
Yes	Yes	Yes	3	5
No	Yes	No	24	0
No	Yes	Yes	9	0

Please note: Activating the **Conference channels** option on an RFP with enabled DECT and in a system with enabled G.729 reduces the available DECT channels on that RFP from 8 to 5.

If the G.729 codec is not necessary on your iPBX platform, disable the G.729 codecs on the OMP's the **System**: **SIP** page / **RTP settings** tab to obtain the maximum number of conference channels.

The total number of conference channels in the SIP-DECT system is presented the OMP's **Status** -> **Conference** tab. The **Total** parameter provides the total number of conference channels in the system and the **Available** parameter provides the current number of available conference channels.

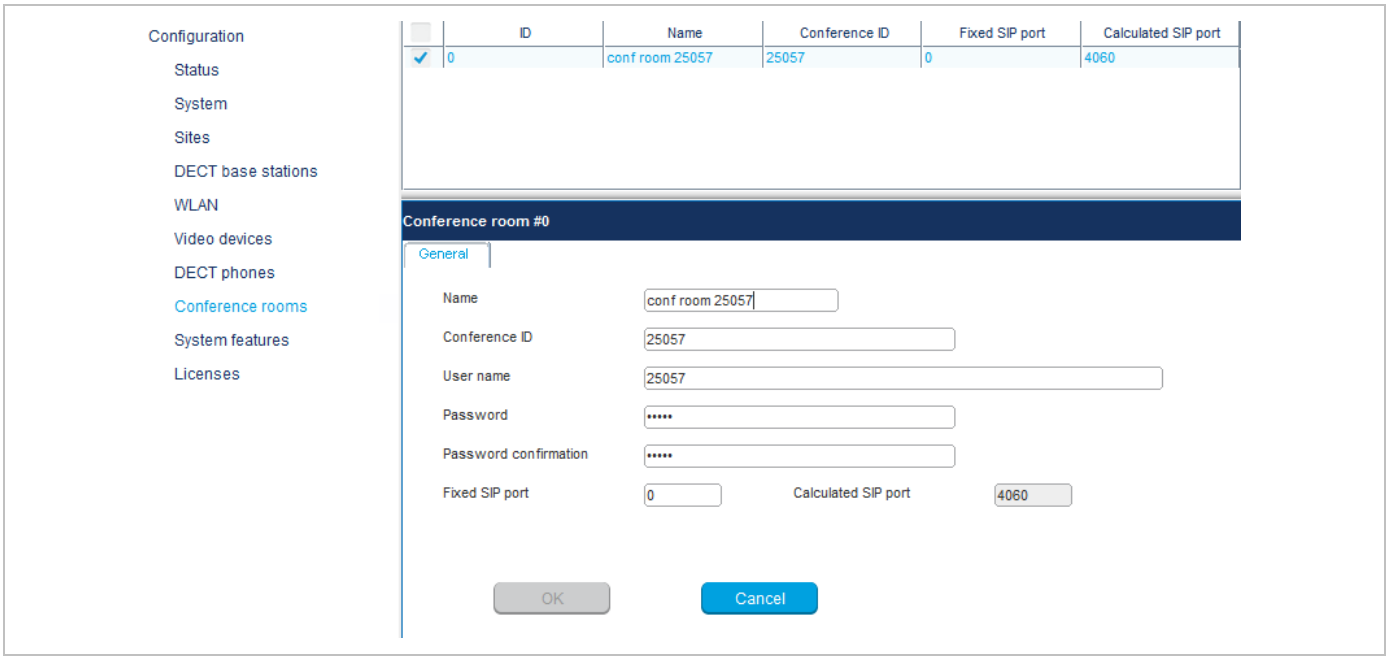


9.20.3 CONFIGURE CONFERENCE ROOMS

When a 3-way conference is initiated by a SIP-DECT user, the initiator and the connected parties will be transferred to the next free conference room using SIP signalling. These conference rooms must be configured on the OMP's **Conference rooms** page with their SIP user id and SIP password (see section 8.11).

Configure as many conference rooms as necessary and as conference channels are available (3 channels per conference).

These conference rooms will be SIP registered on the configured SIP registrar and must be reachable via the configured SIP proxy for SIP signalling.

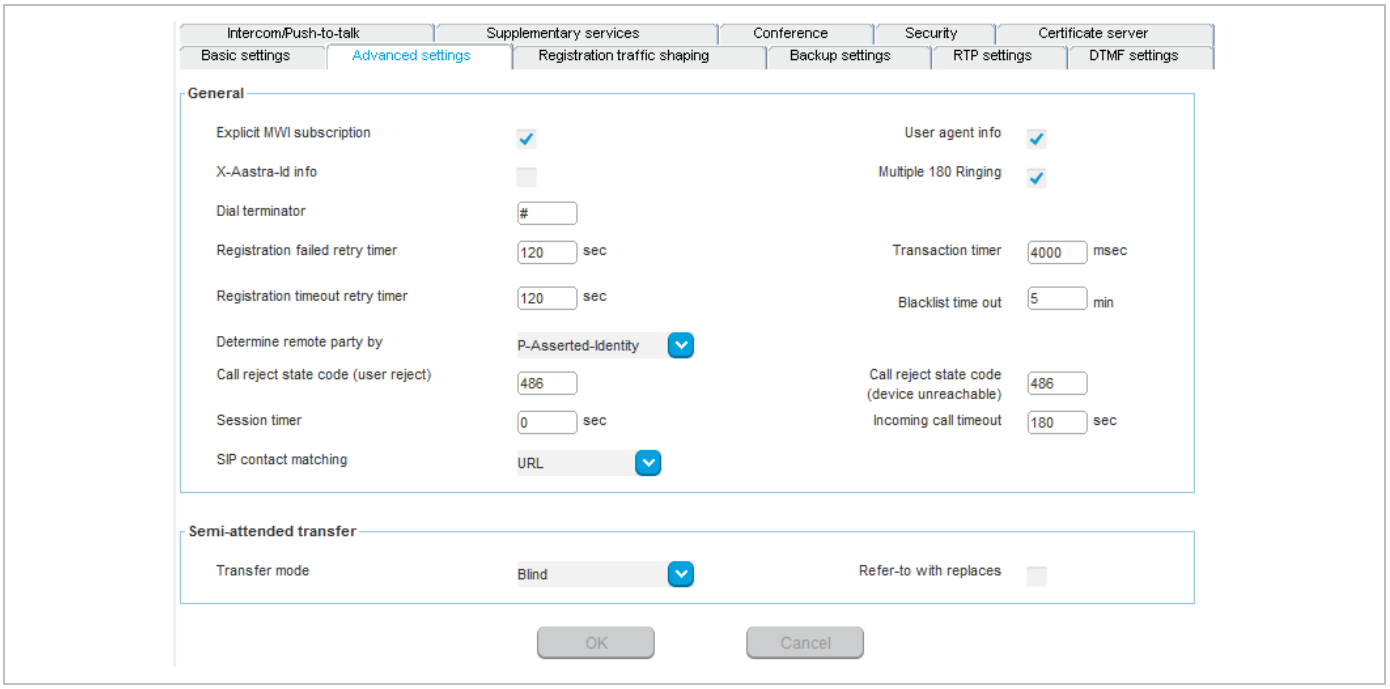


The following parameters can be configured for each conference room

- **Name**: SIP display name
- **Conference ID**: SIP user id
- **User Name**: SIP authentication name
- **Password**: SIP password
- **Fixed SIP port**: port used explicitly for SIP signaling. If set to 0 (default), an automatically calculated port is used for this conference room. See section 3.8 for more information.

- **Calculated port**: auto-calculated port used for SIP signaling (read-only). Only used if no value is specified for **Fixed SIP port**.

All configured conference rooms will be registered on the registrar / iPBX configured in OMM. If the **X-Aastra-Id Info** option is enabled on the OMP's **System**: **SIP** -> **Advanced settings** tab, a private X-Aastra-Id header is sent out which identifies that these are conference rooms.



The X-Aastra-Id header has the following format for all conference rooms:

```
X-Aastra-Id: type="29" model="01" version="1.0.0"
```

The header's attributes have the following properties:

type

- the type parameter contains the phone type
- the value for all SIP-DECT conference rooms is "29"
- type = DQUOTE (1*2HEXDIG) DQUOTE

model

- it's the model of the terminal
- the value for all SIP-DECT conference rooms is "01"
- model = DQUOTE (1*2HEXDIG) DQUOTE

version

- the version is intended for later releases
- the value for all SIP-DECT conference rooms is "1.0.0"
- version = DQUOTE (1*16token) DQUOTE

9.21 DOWNLOAD OVER AIR

The “Download Over Air” feature allows updating the DECT phone firmware without any user interaction or interruption of the telephony services over the existing DECT air interface. This feature is currently available for the Mitel 600 DECT Phones.

As of SIP-DECT 6.0, the SIP-DECT RFP software image (iprfp3G.dnld) contains the Mitel 600 DECT phone software. If the RFP houses the OMM, the OMM uses this software to update the DECT phones. The RFP OMM no longer automatically attempts to load a DECT phone software image from a RFP software URL when provided via DHCP or local configuration.

For specific maintenance purposes only, SIP-DECT allows configuration of a URL via the OMM Web service or OMP to use an alternative DECT phone software image (see section 7.4.1.6). The Mitel 600 DECT phone firmware packages are delivered in the “600.dnld” file for the OMM running on an RFP.

9.21.1 HOW “DOWNLOAD OVER AIR” WORKS

If the “Download over Air” feature is activated (see section 7.4.1.6), the OMM acts as a download server that provides the firmware for downloads.

The DECT phone sends its firmware version within the DECT attachment procedure. If the firmware version does not match the version provided by the OMM, the DECT phone will be queued into the update-queue. Later on the queued DECT phones will be paged to establish a download connection. After the connection is established, the OMM sends its actual DECT phone firmware version and the DECT phone will request a DECT phone description file. After receiving the DECT phone description file, the DECT phone decides which files are missing or must be updated. If files are missing or must be updated the DECT phone initiates the download procedure.

The OMM takes care of the following download scenarios automatically:

- If a DECT phones becomes unreachable e.g. when the DECT phone is switched off, the OMM will update the DECT phone when the DECT phone becomes available again.
- The OMM will take care of the software download while the user is moving between base stations (roaming) and location areas.
- The OMM has the capability of resuming a download from the point where it was last interrupted (e.g., the user leaves the coverage area during download or the DECT phone runs out of battery power).
- The OMM updates new DECT phones subscribed to the system.
- While the DECT phone is barred (e.g. low battery or “Download over Air“ is disabled at the local menu), the download will be postponed.

The download happens without any user intervention. During the download, the telephony services, the roaming- and handover procedures are still available. The download stops automatically when e. g. the DECT phone leaves the coverage area or the RFP gets busy. The download resumes automatically when the stop cause is solved.

The Mitel 600 DECT phones have two partitions in the internal flash memory to hold 2 different software versions. During the download the new firmware is written to one partition and the DECT phone is running from the other partition.

After the download is successfully completed, the new firmware will be activated when the DECT phone is in the idle state.

The download of a single DECT phone with a firmware of 1 MB takes approximately 90 minutes. The number of DECT phones which can be downloaded depends on the available system resources.

The number of simultaneous downloads is limited per OMM (RFP: 30, PC: unlimited) and per RFP (6, decreased with each call).

The “Download over Air” service is delayed after a system startup for a while to allow the whole DECT system to become active. This may last several minutes.

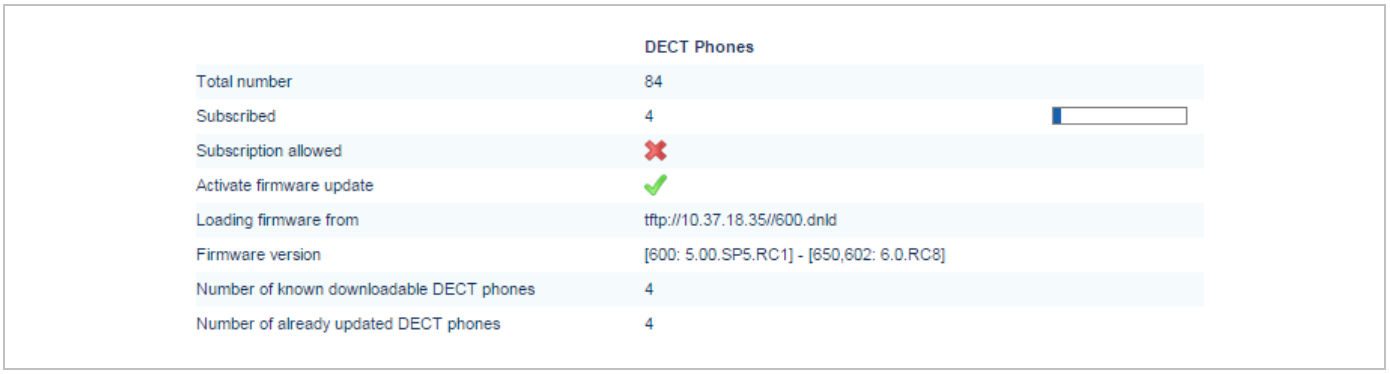
9.21.2 HOW TO CONFIGURE “DOWNLOAD OVER AIR”

This section describes configuration of the “Download Over Air” feature via the OM Web service. The feature can also be configured using the OM Management Portal (OMP).

The “Download over Air” feature can be activated or deactivated on the **System Settings** web page (see section 7.4.1.6).

In the OMP, you can enable the “Download over Air” feature in the **System** -> **Advanced settings** -> **PP firmware** tab (see section 8.5.2.3).

If the “Download over Air feature” is activated, the status of the **Activate firmware update** parameter is shown as enabled, service together with some statistics is displayed in the **DECT phones** section of the **Status** web page.

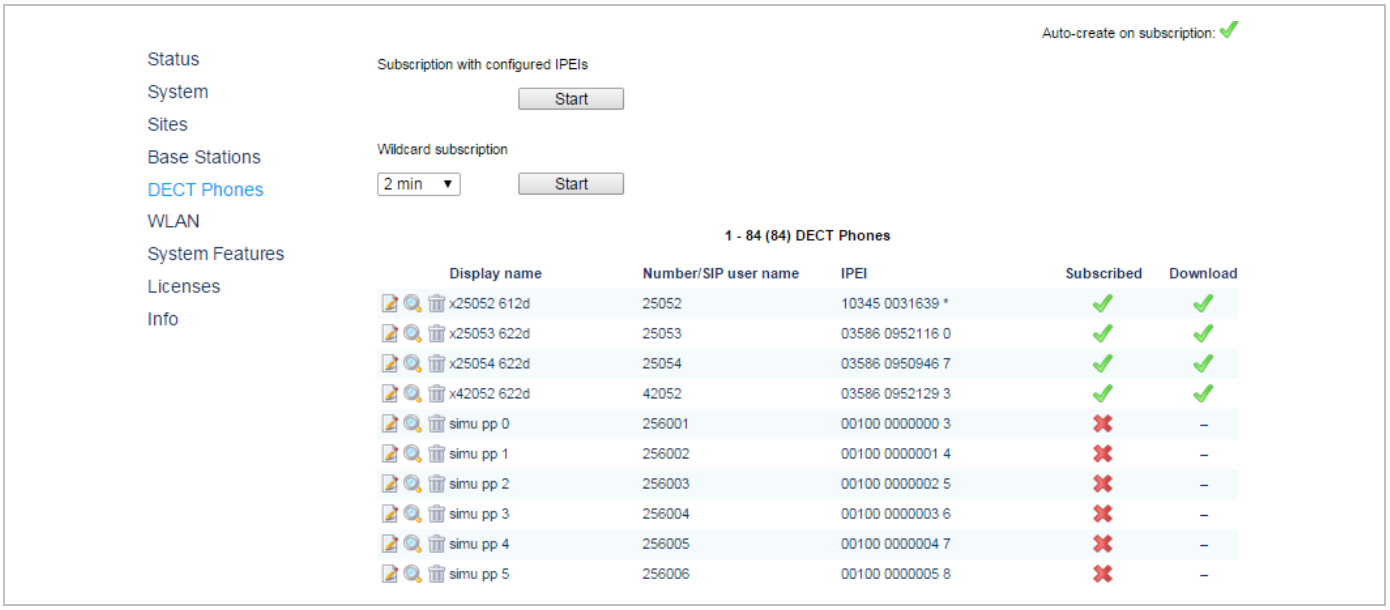


DECT Phones	
Total number	84
Subscribed	4
Subscription allowed	✖
Activate firmware update	✔
Loading firmware from	tftp://10.37.18.35//600.dnld
Firmware version	[600: 5.00.SP5.RC1] - [650,602: 6.0.RC8]
Number of known downloadable DECT phones	4
Number of already updated DECT phones	4

The DECT phone firmware container for DECT phone firmware update over the air includes packages for the Mitel 600 DECT phones. The available versions are also displayed on the **Status** web page.

Please note: The “Loading firmware from” on the OpenMobility Manager **Status** web page is only updated on restart of the OpenMobility Manager. Changing the location while the OpenMobility Manager is running has no effect.

The individual download status of each DECT phone is shown on the **DECT Phones** web page.



The details in the **Download** column have the following meaning:

Icon	Meaning
-	Impossible to download the firmware to that DECT phone (e.g. not a Mitel 600 DECT phone)
	The DECT phone is paged to establish a download connection. In case of a successful connection establishment the DECT phone calculates the number of bytes to download. This may take several seconds.
xx kbytes left	The download is ongoing and xx kbytes are left.
	The firmware of this DECT phone is up to date.
	The DECT phone is queued in the update-queue for updating (pending).
	Warning The download is barred because of one of the following reasons: – The DECT phone is busy (temporary status). – The battery power is lower than 50% and the DECT phone is not connected to the docking station or the USB interface. – This is not the master download system. A DECT phone can be enrolled on several OpenMobility systems. The first system to which the DECT phone will be enrolled is the “master system”. The DECT phone downloads only from the “master system”. A different “master system” can be chosen inside the local menu of the DECT phone. – The download is disabled in the local menu of the DECT phone. The specific reason is shown as a tooltip.
	Error The download failed because of one of the following reasons: – checksum error, – file system error, – error while writing firmware to flash, – version mismatch, – error while expanding firmware container. The specific reason is shown as a tooltip.

Icon	Meaning
	Info The download is not possible because: – the DECT phone is not reachable – the DECT phone is detached The specific reason is shown as a tooltip.

In the OMP, the “Download over Air” service status is displayed in the **Status** menu (see section 8.4).

9.22 CENTRAL DECT PHONE CONFIGURATION OVER AIR (COA)

Centralized DECT phone configuration over the air is supported for Mitel 600 DECT phones. Configurable parameters include:

- settings (loudness, contrast, etc)
- menu items (switch on or off, enable password protection)
- key assignments

DECT phone configuration over air (CoA) is useful for deployment of special configuration to a single DECT phone or a large number of DECT phones. No local access to the DECT phone is required.

DECT phone CoA is implemented by providing additional configuration information to the well-known configuration files or providing profiles via OMP. Configuration can be changed at the device level (DECT subscription) or the user level (based on login).

Configuration of all DECT phones with a predefined default profile is also available. Up to 20 possible DECT phone profiles make it easy to adapt to different usage scenarios for heterogeneous user groups (e.g., nurses and doctors in hospital environments).

IMPORTANT : This feature requires 6.00 DECT phone software or later.

IMPORTANT : Centralized DECT phone configuration over the air is only available on the Download over Air (DoA) master system.

You can use three kinds of configuration files:

- **Default DECT phone configuration profile**

  Default configuration file used for all suitable DECT phones. The configuration is loaded into the DECT phone when subscription is complete, even if a user has not logged in to the device.
- **DECT phone configuration profiles**

  User-focused DECT phone configuration file used for a group of users. The configuration is loaded into the DECT phone when a user belonging to this group logs in to the device.
- **DECT phone user individual configuration settings**

  Individual DECT phone configuration settings used for a single user. The configuration is loaded into the DECT phone when the user logs in to the device.

The system consolidates the DECT phone settings before loading the configuration settings for a logged-in user into the DECT phone. Settings from DECT phone profiles overwrite default configuration settings, and individual user configuration settings overwrite DECT phone profiles and default configuration settings. For a complete list of supported settings, see section 11.7.

Configuration can be completed by using OMP (file import and download configuration settings) and user configuration files (user_common.cfg and <user.cfg files), wherein a list of user friendly settings can be used for the DECT phone configuration.

> **Please note:** Deleting or overwriting configurations files on a DECT phone does not restore configuration to default or previous settings. Configuration elements that are not part of the new downloaded configuration file persist. To restore all settings, the administrator must initiate a power off/on at the DECT phone or use a default configuration file that contains all relevant settings.

To avoid interfering with the telephony or message service (especially with respect to alarm messages within the SIP-DECT system), only one configuration data download to the DECT phone is performed at a time. Therefore, changing the default profile settings or other profile settings may take some time in a large system, until all the related DECT phones are updated.

9.22.1 DOWNLOAD OF CONFIGURATION FILES TO DECT PHONES

Profiles are downloaded to the DECT phone via the messaging mechanism, in conjunction with the internal message type “CONF_OVER_AIR”. This occurs in parallel with general message transfer to the DECT phone, and the lowest priority is used to ensure that the download does not interfere with the delivery of urgent messages. The message mechanism is also used to confirm a successful profile download, through AXI events.

Profile downloads to DECT phones are limited system-wide to a maximum of one download at a time to ensure no interference with OMM system operation. You can view the download on the OMM console (console command `hcm`).The download state is also part of the system dump.

9.22.1.1 Download Triggers

The OMM maintains a profile download list for all DECT phones that have configuration data to be set. These DECT phones are stored with the checksum of configuration data to be set. A DECT phone is included in this list when:

- the OMM system starts up and the associated DECT phone has configuration data to be set
- the associated DECT phone’s configuration data changes (this is communicated via AXI), such as:
  - change in the default configuration profile
  - change in the configuration profile for the user of the associated DECT phone
  - change in the individual user configuration profile for the user using the associated DECT phone
  - change in the configuration profile assigned to the user using the associated DECT phone

Profile downloads to the DECT phones (as maintained in the profile download list) are scheduled at regular intervals. A new download to DECT phones in the profile download list is scheduled when:

- a configuration change occurs on the DECT phone (via AXI notification)
- a location registration is received, and the checksum of the configuration data stored in the profile download list is different from the checksum sent in the location registration
- a download to a DECT phone completes

9.22.2 COA CONFIGURATION USING OMP

OMP configuration of DECT phones is restricted. You can do the following through OMP:

- list the current user and device state via the **DECT Phones** -> **Overview** menu and **DECT Phones** -> **Devices** -> **Configuration data** tab (in Monitoring mode)
- import the default profile and one to 20 individual profiles via the **System features** -> **COA profiles** menu (see section 8.13.3)
- assign one of 20 profiles to an internal user via the **DECT Phones** -> **Users** -> **Configuration data** tab (see section 8.10.4.10)

The syntax of the profiles that can be imported by the OMP is the same as that specified for the user_common.cfg and <user>.cfg files.

Note: CoA configuration via OMM Web service is not supported. You can only list the current user and DECT phone state in the “User and DECT phone configuration and status data summary”.

9.22.3 CONFIGURATION USING USR_COMMON.CFG/<USER>/CFG FILES

The user_common.cfg and <user>.cfg configuration files are used for DECT phone configuration. The following configuration attributes in the user_common.cfg file control central DECT phone configuration:

- **Default profile settings**

```
OM_Profile.0.Default.<key>=<values>
 …
OM_Profile.0.Default.<key>=<values>
```

Where “Default” is the reserved name for the default profile, and <key> is one of the configuration settings with its <values> to be set.

Example:

```
OM_Profile.0.Default.UD_DispLang=”en”
OM_Profile.0.Default.UD_DispFont=”large”
OM_Profile.0.Default.UD_DispColor=”black”
```

- one of up to 20 profile settings

```
OM_Profile.<no>.<name.<key>=<values>
…
OM_Profile.<no>.<name>.<key>=<values>
```

Where <no> is the number of the profile, <name> is the name of the profile to be configured, and <key> is one of the configuration settings with its <values> to be set.

Example:

```
OM_Profile.5.Doctor.UD_DispLang=”en”
OM_Profile.5. Doctor.UD_DispFont=”large”
OM_Profile.5. Doctor .UD_DispColor=”black”
```

Please note: To assign a profile to a user, you can use the setting UD_PpProfileId= <profileNo> in <user>.cfg files. When 0 is used for <profileNo>, no profile or (depending on configuration) the default profile is used. The default profile is defined in user_common.cfg.

Please note: A complete removal of a profile from user_common.cfg does not remove the profile in the OMM database. It must be explicitly deleted in the OMM database.

For individual user DECT phone configuration settings, the following configuration attributes are available in the <user>.cfg file:

- User configuration settings

```
<key>=<values>
…
<key>=<values>
```

Where <key> is one of the configuration settings with its <values> to be set.

Example:

```
UD_DispLang=”en”
UD_DispFont=”large”
UD_DispColor=”black”
```

9.22.3.1 CoA Example

`UD_ConfigurationName = "omm-test"`	Configuration file is named “omm-test”
`UD_DispLang="en"`	Language is set to English
`UD_DispFont="small"`	Display font is set to small
`UD_DispColor="black"`	Display color scheme is set to black
`UD_RingerMelodyIntern="ringing_1"`	Internal call melody is set to melody “ringing_1”
`UD_RingerMelodyExtern="ringing_2"`	Internal call melody is set to melody “ringing_2”
`UD_RingerVolumeIntern="increasing"`	Internal call ringer volume is set to increasing
`UD_RingerVolumeExtern="increasing"`	External call ringer volume is set to increasing

9.23 EXTENDED DECT PHONE INTERFACE

As of SIP-DECT 6.0, the Mitel 600 DECT phones include an **Administration** menu that offers administrative functions to the user such as login, logout, and configuration and status summary display. The menu is available as an option under the **System menu** which can be accessed via the main menu of the DECT phone, or directly by a long press of the right soft key “>>>”.

Please note: The **Administration** menu is only available on Mitel 600 DECT phones, version 4.0 or higher.

The following table summarizes the options under the **Administration** menu. The menus allow basic OMM configuration and require a login (the same account and password as used for administrative access via OMP or Web service).

	Menu option	Description	OMM login
1.	**Login**	User can log in to the DECT phone (free DECT phone only)	
2.	**Logout**	User can log out of the DECT phone (free DECT phone only)	
3.	**PP state**	Display user/device configuratoin and status data summary	

		(see section 7.7.6 for details)	
4.	**Sync user data**	Refresh SIP registration and synchronize user data, if they are stored externally (see section 9.8.3)	
5.	**Sync system data**	Reload configuration and resource files (see section 9.8.3)	Yes
6.	**System credentials**	Set authentication for provisioning servers (see section 9.8.6.1)	Conditional
7.	**Status**	Display basic OMM network settings (e.g., DHCP, IP addresses)	
8.	**System**	Set basic OMM system data	Yes
9.	**SIP users/devices**	Perform basic configuration of users and DECT phones	Yes
10.	**Version**	Display current OMM software version	

The options available depend on the DECT phone state and the OMM platform (i.e., RFP OMM or Linux Server). The following table summarizes the options under the **Administration** menu according to device state and OMM platform.

	Menu option	**Fixed device**	**Logged out**	**Logged in**	**RFP OMM**	**Linux Server OMM**
1.	**Login**		√		√	√
2.	**Logout**			√	√	√
3.	**PP state**	√		√	√	√
4.	**Sync user data**	√		√	√	√
5.	**Sync system data**	√	√	√	√	√
6.	**System credentials**	√	√	√	√	√
7.	**Status**	√	√	√	√	
8.	**System**	√	√	√	√	√
9.	**SIP users/devices**	√	√	√	√	√
10.	**Version**	√	√	√	√	√

The following table summarizes the submenus available according to the OMM platform.

	Submenu	**SIP-DECT**	**RFP OMM**	**Linux Server OMM**
1.	**System name**	√	√	√
2.	**Date and Time**	√	√	
3.	**SIP**	√	√	√

4.	**User administration**	√	√	√
5.	**Restart**	√	√	√

9.24 OMM/DECT PHONE LOCK WITH BRANDING ID

As of SIP-DECT 6.0, customers can use a specific branding key to lock the OMM. The key must be branded to all DECT phones before they can be subscribed.

Note: This feature is only available by special request. Please contact your Mitel representative for more information.

You generate the branding key using the `DECTSuiteBrandingInstallation.exe` tool (provided by Mitel on special request). When you have the generated keys, you set the branding key in the OMP, via the **System** -> **Advanced Settings** -> **Special branding** tab (see section 8.5.2.7).

The branding key can be only removed from the OMM system by using a special key, also generated with the DECT-Suite PC Tool and entered in the OMP Special branding tab. You must remove the branding key before changing to a different brand.

9.24.1 SUBSCRIBING THE DECT PHONE

The user who subscribes the DECT phone must explicitly invoke the transfer of the branding key (done in the AC-Editor).

Add “R*” (or “R<additional_id>” in one case) as a suffix to the typed AC code (or just R*, if there is no AC code).

- Type R* for normal subscription for fixed devices.
- Type R* for auto-create by subscription.
- Type R* for wildcard subscription without DECT phone data record selection.
- Type R<additional_id> for wildcard subscription with record selection by the additional id.

9.25 DEVICE PLACEMENT

The OM Locating application uses small graphic maps for visualization of DECT base station placement. From SIP-DECT release 3.1 on, these graphics can be created with the OMP in **Planning Mode**.

9.25.1 “PLACEMENT” VIEW

By using the mouse with drag and drop, you can move RFP icons to their correct mounting position on the loaded background image. Note that you must provide background images first (see also /27/).

A DECT base station is drawn as green circle with its ID number inside.

Background images can be loaded into the application on the **Image Management** panel (see section 9.25.3).

The assignment of devices to the currently active image must be done on the **DECT base stations** page.

9.25.1.1 Functionality of the “Placement” View

- Left mouse click selects/deselects the DECT base station the mouse is pointing to. A selected device is shown with thicker border.
- Drag and drop functionality: a device can be moved while the left mouse button is pressed and hold.
- If left mouse button is hold and no device is selected, the complete view content gets moved.
- By turning the mouse wheel the view gets scaled up or down depending from the direction of turning.
- By pressing the right mouse button a pop-up menu is displayed:
  - **Move selected RFPs**: All selected devices (drawn with a thick border) will be moved to the current position of the mouse pointer. Distances between the devices are not changed as long as all devices can be drawn inside the background image. Moving devices to the area outside the upper or left border of the image is not possible.
  - **Reset selection**: The selection is canceled for all currently selected devices.
  - **Remove selected device(s)**: Selected devices are removed from the current image after confirmation in a dialog box. Those devices can be assigned to an image again via the **DECT base stations** menu (see also section 9.25.2).
    If no devices are selected but the mouse is pointing to a device, that device is removed from the image without further inquiry.
  - **Reset view**: The view is redrawn in its original appearance. Any translation and scaling applied to the view is cancelled.
  -

9.25.1.2 Activation of the “Placement View”

The **Placement view** can be activated by:

- Selecting the **Placement view** menu entry. The currently loaded image with its assigned devices is displayed. If no image is currently loaded, the view is empty.
- Double-clicking on a table row in the **DECT base stations** view. This activates the placement view with the image the clicked device is assigned to.
- Selecting the **Assign to active image** task in the **DECT base stations** view. The selected devices are assigned from the table to the current image.
  If a selected device was already assigned to another image, the assignment is changed upon confirmation in a dialog window.
- Selecting an image table entry in the **Image management** view (double-click or click on **Show image** task).

9.25.2 “DECT BASE STATIONS” VIEW

The view shows a table based list of RFP.

When you select table rows and click **Assign to active image**, the selected devices are assigned to the currently active image. Devices already assigned are tagged with a green sign in the table column **Positioned**.

If a selected device was already assigned to another image, the assignment will be changed when confirmed through a confirmation dialog.

9.25.3 "IMAGE MANAGEMENT" VIEW

With the **Image management** view all background images assigned to the SIP-DECT system can be managed. Also, the generation of the graphic maps used by the OM Locating application can be started by this view.

If the user activates this view and a background image was loaded, the OMP automatically creates a project file the current SIP-DECT system on the PC. This file contains references to the background image files and the device assignment and placement coordinates. It automatically gets reloaded to the application if the OMP user enters the **Device Placement** menu again during a connection to the same SIP-DECT system.

The images and placement coordinates are stored only on the local PC and not together with the SIP-DECT system configuration (due to storage size limitations). Therefore it is recommended to export the project and save the project data at a secure place after finishing the placement of devices for a SIP-DECT system.

9.25.3.1 "Show image" Task

After selecting an image entry from the table with a left mouse click and then selecting the **Show image** task, the image will be displayed with its assigned devices in the **Placement view**.

A left mouse double click on a table entry also opens the **Placement view**.

9.25.3.2 "Add image" Task

With the **Add image** task, the user calls up a File Open dialog which allows the addition of one or more background images stored on the PC to the system.

The OMP supports *.jpg and *.png image files. A maximum of 800 images can be managed by the OMP.

The maximum size per image is limited to 3000 pixel in both height and width.

9.25.3.3 "Remove image" Task

The selected image table entries will be removed from the current project after an inquiry dialog. All devices which were already assigned to one of the removed images will be reset to unassigned state.

9.25.3.4 "Generate" Task

By choosing this task the user can start the generation of the graphics data needed by the OM Locating application. The OMP will only create graphics data for selected image table.

In a file save dialog the user can select a storage directory for the generated graphics data. A progress dialog informs about the actual status of the generation process. If the process is canceled by the user, the OMP will finish generation of graphics data for the actual background image before stopping the process.

9.25.3.5 "Import project" Task

With the **Import project** task the user can load a previously exported project. Images and device placements done before importing a project will be substituted by the data contained in the project.

The system name and the PARK are not checked during this operation. It is possible to import a project created for another system or after the system name or PARK was changed.

Devices are managed by their IDs. If a device ID from imported data cannot be matched with a device ID from the system the OMP is currently connected to, the placement data for such a device will not be imported.

The image files will not be copied. The actual project will save references to the storage place of the images.

9.25.3.6 “Export project” Task

With the **Export project** task, the user opens a File Save dialog where the user can select a directory for the exported data, or create a new one.

The OMP exports the project file and copies all background image files to the chosen destination.

A project exported with this task can be imported again via the **Import project** task.

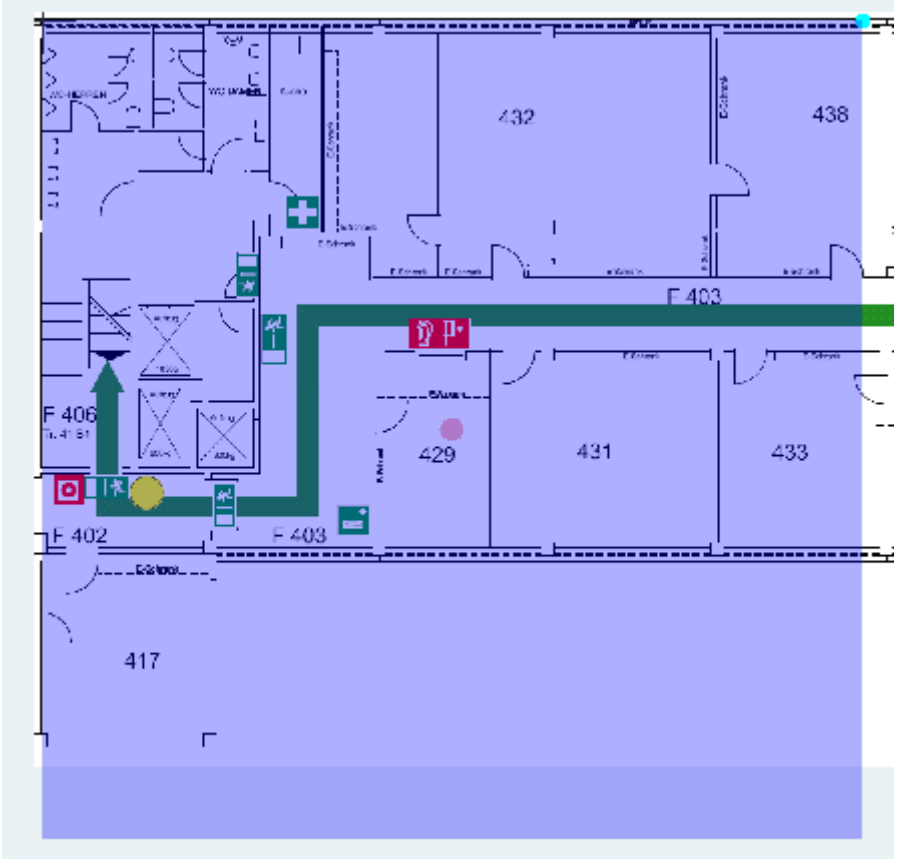
9.25.3.7 “Adjust overview size” Task

The OM Locating application needs two graphic maps for each device:

- One detail map image showing the position of an RFP in same scale as the background image on which the device was placed.
- An overview map showing a bigger area of the background image down scaled and the position of the RFP.

There is no special requirement to the scale of the used background images. The selection of the overview scale may differ depending from building or area proportions.

With the **Adjust overview zoom** task the user can adjust the down scale zoom factor for the overview map images (2) individually for the currently selected background image.



The content of an area generated as overview map is shown by the transparent overlay square. Changing the size of this area can be done by grabbing the light blue point at the right upper edge and moving the edge to (or away from) the center of the area.

By grabbing the red point in the middle of the overlay square it is possible to move the overlay square around.

For generation of the overview map images the position of overlay square does not matter. Only the size is important to calculate the scale ratio for down scaling.

9.25.3.8 "Set overview size" Task

Instead of adjusting the scale factor for down scaling on generation of overview maps with the method described in section 9.25.3.7 it is possible to set a scale factor for the selected images.

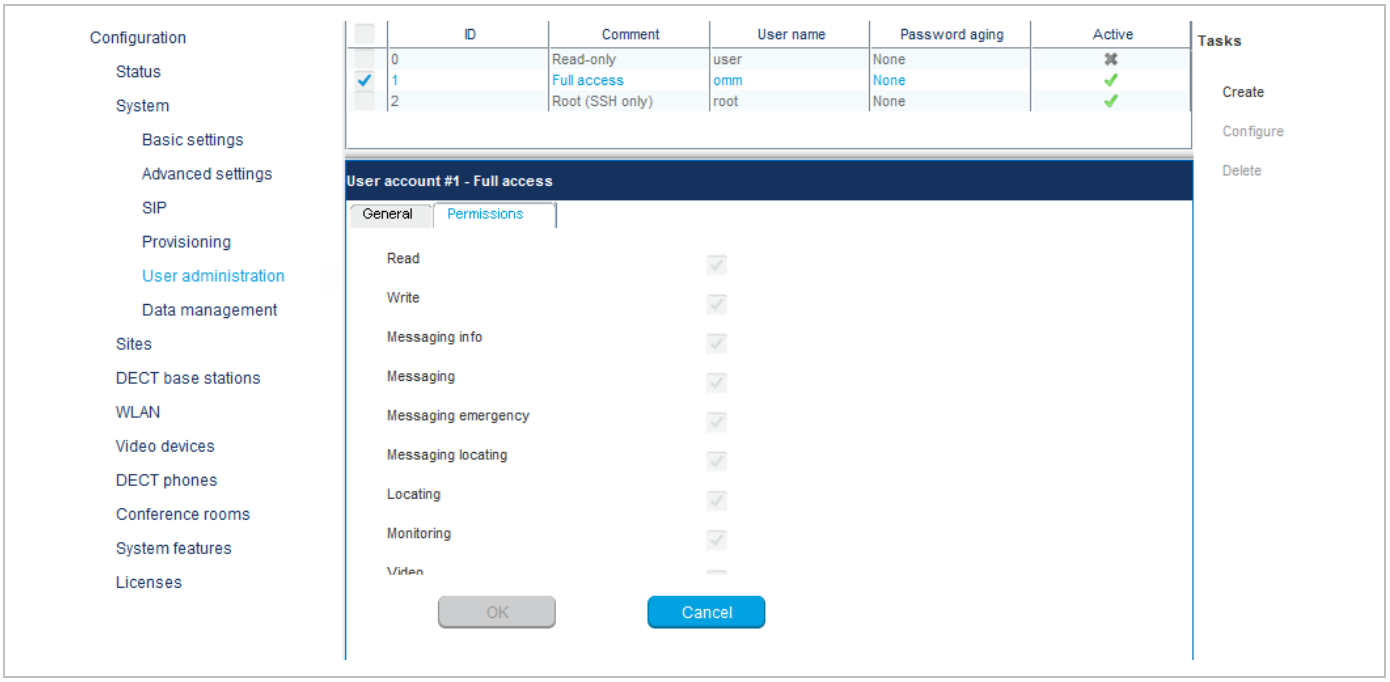
The value of the scale factor must be chosen with the slider **Overview size** in the task panel prior to assign it to one, several or all images with the **Set overview size** task.

9.26 MONITORING WITH USB VIDEO DEVICES

To use an USB video device in interaction with the OM Locating application, a video user account must to be configured. In addition the configuration and activation of a video device ("USB Web Cam") itself is needed.

9.26.1 CONFIGURATION OF A VIDEO USER ACCOUNT

An active user account with at least read and video permissions must to be configured, to use it inside the OM Locating application.



Please note: If you have already configured the OMM's "Full access" account within the OM Locating application to access OMM service, you must change this account to the video-enabled account created in this step.

9.26.2 CONFIGURATION OF USB VIDEO DEVICES

You configure video devices on the OMP's **Video devices** page (see section 8.9). The **Video devices** page contains a list of known video devices and you can access the configuration window for the video devices by double-clicking on an entry. Use the left side of the panel to enter a description of the camera and its position. On the right side of the window, you can set the parameters for **Resolution**, **Frame rate** and **Rotation**.

Keep in mind that the chosen parameters for resolution and frame rate must fit the parameter specifications of the camera device and that changes on this parameters are not possible on cameras which have the state "started" (i.e. viewed in the OM Location application).

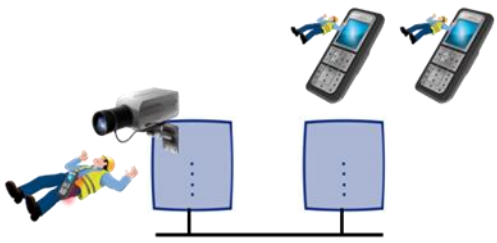
If a camera is installed in a way that the images which are sent by the camera are rotated (e.g. upside down), use the parameter **Rotation** to have the right view on the images inside the OM Locating application. By setting the **Active** option the video device is permitted to send images.

9.26.3 MONITORING WITH USB VIDEO DEVICES

Using the OMP monitoring mode for a video device opens a window with two tabs, the **General** tab and the **Status** tab. On the **General** tab the actual configuration of the video device will be shown. On the **Status** tab the actual status of the camera device will be shown. The tag is an internal identifier of a video device, the **RFP ID** is the identifier of the RFP the video device is plugged in, **USB path** is an identification of the plug-in position and **State** is the actual state of the video device.

9.27 TERMINAL VIDEO

As of SIP-DECT 5.0, Mitel 600 DECT phones support video streams from cameras connected to SIP-DECT® RFP 35/43 base stations. When a user has video stream permission, he can choose in the system menu from a list of cameras to connect.



Video Streaming is only available when the DECT phone is connected to a RFP 35/36/37/43 and the permission is set for the site and the DECT phone.

Video streams are treated like a call by the DECT phone, which require two (of eight) air channels on the RFP for each stream. The DECT phone can also perform handover between RFPs with an active video connection.

A video connection is automatically terminated by the system in case that any related capability (e.g. video stream permission) is changed.

9.27.1 TECHNICAL DETAILS

Terminal video resolution and framerate are independent from the configured camera resolution and framerate.

The resolution of the terminal video stream is automatically downscaled to 176 * 144 pixels (QCIF) with a frame rate of approximately 2 frames per second.

The resulting overall delay is below 2 seconds.

The maximum number of simultaneous terminal video streams per camera is restricted to 10.

9.27.2 OMP CONFIGURATION STEPS

Connection and configuration of cameras is similar to the already known steps referring to the locating application. Special steps necessary for terminal video are:

- Enable all sites, which have the technical capability (only RFP 35/36/37/43 are referred to it), via OMP for terminal video.
- Enable via OMP (**DECT Phones** -> **Users** -> **Additional services**) by setting the “Video stream permission” for those users who are allowed to use this feature.

> **Please note:** It is strongly recommended to set the DECT base station attributes “building”, “floor” and “room”, if you configure a huge system with a large number of cameras. This will ease the selection of cameras on the DECT phone menu.

9.27.3 CAMERA SELECTION VIA HANDSET MENU

The selection of the menu “Cameras” is offered in the Mitel 600 DECT phone “System menu” (e.g. long press on Menu >>>), if

- at least one camera is plugged and activated by the enable flag
- the DECT phone user has the permission to select cameras
- the DECT phone is located within a site, which allows terminal video

Navigation within the camera menu will be done by OK (and ESC) keys. To establish a video stream, press “hook off” if the name of your camera is selected.

If the number of cameras exceeds the visible lines of the DECT phones display, the presentation is arranged hierarchically. At least one sublevel must be selected in this case before camera names are offered. The hierarchy of the referred radio fixed parts (site, building, …) is inherited for that purposes.

The destination of a video call is added to the DECT phone internal redial list.

> **Please note:** During an established video link, audio calls or any system service activities are not possible.

Any kind of auto callback (initiated by a message by a message or pushed by xml notification to direct dial) is not supported.

9.28 USER MONITORING

To check the availability of a user in terms of the possibility to receive calls or messages, the OMM monitors the status of the user's DECT device.

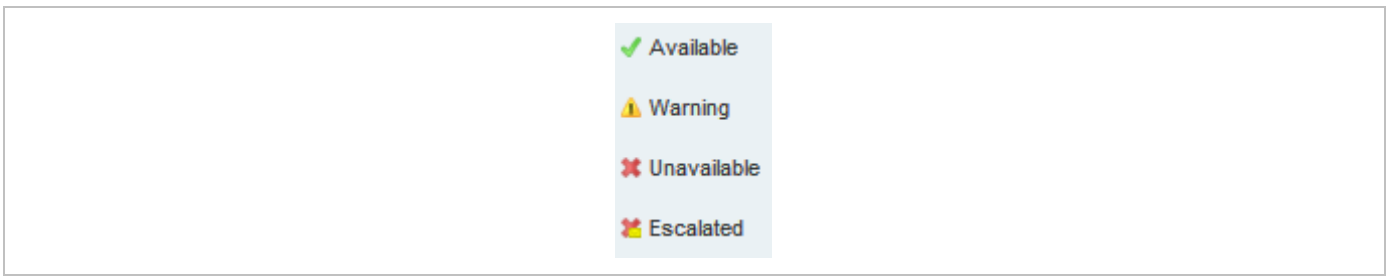
9.28.1 OVERVIEW

With the "user monitoring" feature the following fixed set of status information is monitored:

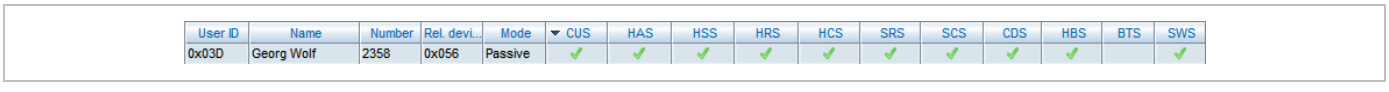
Is a DECT phone assigned to the user?	Handset assignment status (HAS)
Is the DECT phone subscribed to the DECT system?	Handset subscription status (HSS)
Is the DECT phone currently registered /signed in?	Handset registration status (HRS)
Are there DECT phone activities within a specific timeframe?	Handset activity status (HCS)
Is the user registered at the SIP registrar?	SIP user registration status (SRS)
Is the DECT phone not in silent charging mode (silent charging option active and in the charger cradle)?	Silent charging status (SCS)
Is the feature "immediate call diversion" inactive?	Call diversion status (CDS)
Is the battery charge higher than the configured threshold?	Handset battery state (HBS)
Does the DECT phone have the minimum required software version?	Software Status (SWS)

If all questions can be answered with "Yes" then the user status is set to "Available". This set of status information is monitored if user monitoring is enabled for a user.

The status of all monitored users is displayed in the **DECT Phones** -> **User monitoring** menu (see also section 9.28.7.3). The status information can have one of the following values:



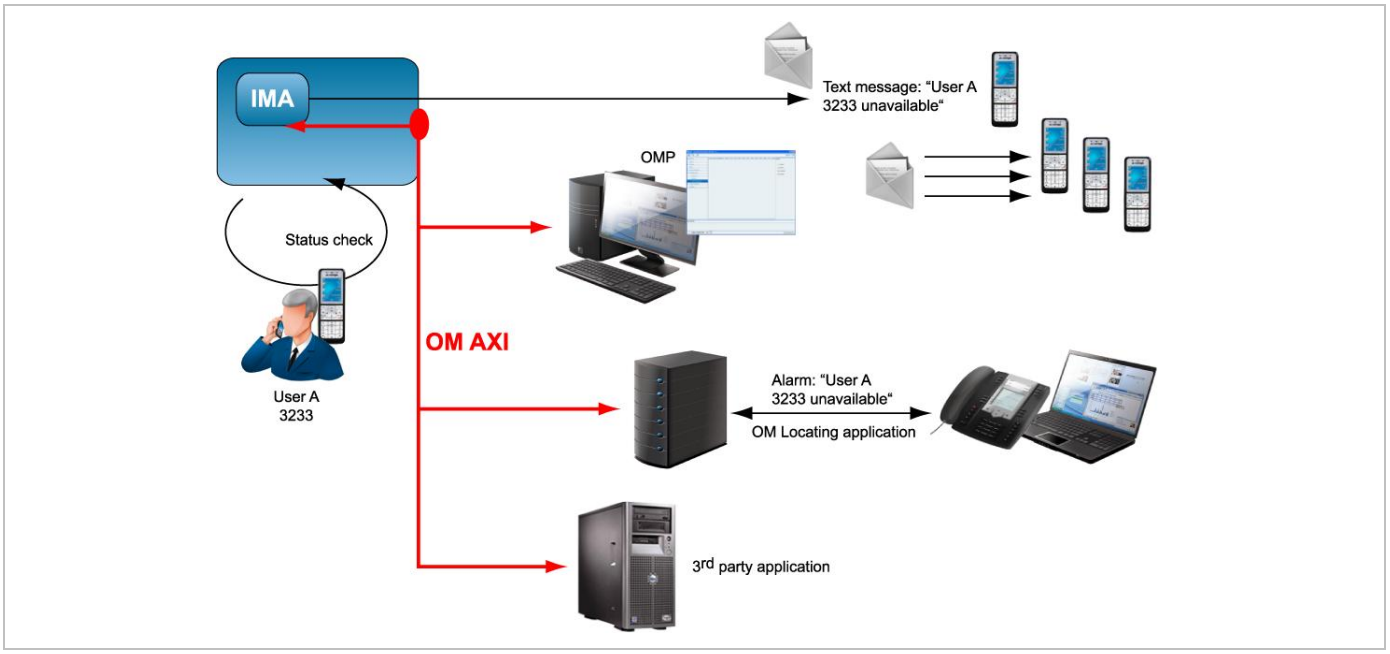
The sum of all specific states is presented by the "Combined User Status".



If one of the states is set to unavailable, the resulting Combined User Status is set to unavailable as well.

Because of dependencies between the states, some states cannot be determined if a higher level state is not fulfilled. For example, if the user has no DECT phone assigned, the DECT phone registration status cannot be determined. If a status cannot be determined, the status value is set to "Unknown" (empty in OMP).

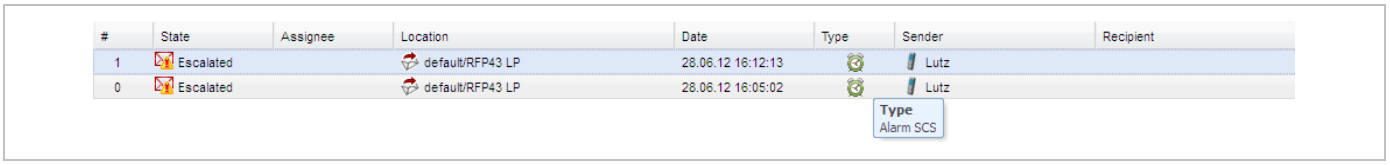
The status information is available via OM AXI and OMP.



IMPORTANT : To address customer specific requirements, external applications, e.g. 3rd party SW, can provide an addapted functionality of the user monitoring or even more just by using OM AXI. This can be completed by the use of the XML terminal interface.

In addition to the standard request, response and notification messages, the OMM generates alarm triggers if a user becomes unavailable. The alarm triggers can be consumed by the OM IMA, OM Locating or another application using OM AXI. If a user becomes available again, the OMM informs about this status change by sending an additional alarm trigger.

The specific alarm trigger "LOC-ERR-USERSTATE" is defined for locating. This alarm trigger is displayed in the OM Locating application with the icon.



IMPORTANT : The OM Locating application does not list users who are not locatable, e.g. locating not enabled for the users or because they have no DECT phone assigned. Therefore, the OM Locating application can not handle the LOC-ERR-USERSTATE with the escalation of the DECT phones assignment state (HAS).

9.28.2 STATUS ATTRIBUTES AND VALIDATION MECHANISMS

The combined user status (CUS) is the sum of the specific status information.

The CUS is calculated based on the flowing rules:

- Specific states which are set to “Unknown” are ignored.
- CUS is set to “Available” if none of the specific states is set to “Warning”, “Unavailable” or “Escalated”.
- CUS is set to “Warning” if at least one of the specific states is set to “Warning” and none of the other states is set to “Unavailable” or “Escalated”.
- CUS is set to “Unavailable” if at least one of the specific states is set to “Unavailable” and none of the other states is set to “Escalated”.
- CUS is set to “Escalated” if at least one of the specific states is set to “Escalated”.

The status “Unavailable” is changed to “Escalated” after the escalation timeout has elapsed and an alarm trigger has been generated.

9.28.2.1 Handset Assignment Status (HAS)

A DECT phone must be assigned to the user otherwise the status is “Unavailable”.

Fixed user device relation

A DECT phone can be assigned permanently to a user (fixed user device relation). Then the status is always “available”.

Dynamic user device relation

A DECT phone can be dynamically assigned to a user (dynamic user device relation) and login and logout on a DECT phone is used.

If the user is logged out (unbound), the status is “Unavailable”. If the user is logged in (dynamic), the status is “available”. Login and logout also change the SIP registration.

Precondition: The user must exist in the OMM database.

9.28.2.2 Handset Subscription Status (HSS)

The DECT phone must be subscribed otherwise the status is “Unavailable”.

Precondition: A DECT phone must be assigned to the user.

9.28.2.3 Handset Registration Status (HRS)

The DECT phone must be attached / signed in (successful location registration) otherwise the status is “Unavailable”

The DECT phone may sent a detach message if it is switched off.

Precondition: A DECT phone must be assigned to the user (fixed, logged in) and the DECT phone is subscribed.

9.28.2.4 Handset Activity Status (HCS)

A communication over the air must occur regularly otherwise the status is “Unavailable”.

Passive monitoring

With every activity between DECT phone and the DECT system (e.g. call setup) the activity information will be updated (last activity, current activity status). This indicates when the DECT phone was the last time able to communicate with the DECT system i.e. within the area of coverage, sufficient battery level, etc. There must be an activity within the timeframe defined by the Activity timeout 1 (min. 30 minutes, max. 1440 minutes).

Any activity between the DECT phone and the systems sets the status to “available”.

Active monitoring

Each DECT phone, that shall be monitored actively, will refresh its registration automatically within the “Activity timeout 2” (min. 5 minutes, max. 60 minutes). Each activity sets the status to “available”.

Active and passive monitoring

If the DECT phone was not active for the period of time defined by the activity timeout, the OMM automatically initiates an activity between the DECT phone and the DECT system to check the DECT connectivity. If this fails, the OMM sets the status to “Unavailable” but tries to connect to the DECT phone two times more within the next 2 minutes.

The OMM then continues to check the DECT connectivity base on the configured time frame. If the status is already “Unavailable”, the OMM does not verify the status by two additional tests within 2 minutes. If a check was successful, the status is set to “available”.

If a DECT phone could not be reached (e.g. during call setup or messaging delivery), the OMM tries to connect to the DECT phone two times more within the next 2 minutes before the status is set to “Unavailable”.

Precondition: A DECT phone must be assigned to the user (fixed, logged in). The DECT phone is subscribed and attached (at least once).

9.28.2.5 SIP User Registration Status (SRS)

The user must be successfully registered at the configured SIP registrar otherwise the status is “Unavailable”.

A SIP registration is initiated automatically by the OMM during start-up if the user’s DECT phone was attached to the DECT system before restart/failover.

The SIP registration will not initiated automatically by the OMM during start-up if

- the user has no assigned DECT phone (fixed user device relation, login),
- the DECT phone is not subscribed or
- the DECT phone was detached (e.g. switch off) before restart/failover.

A user will be deregistered if

- the DECT phone subscription is deleted/terminated,
- the user logs off from a DECT phone or
- the DECT phone is detached (e.g. switch off).

Precondition: A DECT phone must be assigned to the user (fixed, logged in). The DECT phone is subscribed and attached (at least once).

9.28.2.6 Silent Charging Status (SCS)

If silent charging is enabled and the DECT phone is put into the charger, the DECT phone is in silent charging mode and does not indicate incoming calls with an audible signal. The DECT phone must not be in silent charging mode otherwise the status is “Unavailable”.

Precondition: A DECT phone must be assigned to the user (fixed, logged in). The DECT phone is subscribed and attached/signed in to the DECT system.

9.28.2.7 Call Diversion Status (CDS)

The user has no immediate call diversion (unconditional call forwarding) configured otherwise the status is “Unavailable”.

If the user has configured a call diversion for “No answer” / “Busy no answer” with a forward time ‘0’, this will be handled by user monitoring like unconditional call forwarding.

Precondition: The user must exist in the OMM database. The SIP supplementary service “Call forwarding / Diversion” is enabled in the OMM (see pages 63 and 128).

9.28.2.8 Handset Battery Status (HBS)

The battery level of the DECT phone must be greater than the configured threshold value, otherwise the status is set to “Warning”.

Precondition: A DECT phone must be assigned to the user (fixed, logged in). The DECT phone is subscribed and attached. Delivery of battery level is supported.[1]

9.28.2.9 Software Status (SWS)

The DECT phone software must provide the minimum of required features which could be controlled by the current OMM version. Therefore the appropriate minimum DECT phone software version is hard coded in the OMM and validated by user monitoring. The status will be set to “Warning” if the DECT phone software version is less than the hard coded value of the OMM.

Delivery of the software version is supported only by Mitel 600 devices.

Precondition: A DECT phone must be assigned to the user (fixed, logged in). The DECT phone is subscribed and attached.[2]

9.28.3 ESCALATION

If the OMM detects the unavailability of a user (marked as “unavailable”), this will be escalated only once by submitting a warning alarm trigger via OM AXI.

If the OMM detects finally the unavailability of a user (marked as “unavailable/escalated”), this will be escalated only once by submitting an alarm trigger via OM AXI.

The user must become available again before the unavailability of a user will be escalated the next time.

---

[1] The Mitel 600 DECT phone family provides battery status information if the DECT phones are updated to the current software version.

[2] The Mitel 600 DECT phone family provides software version information if the DECT phones are updated to the current software version.

9.28.4 ALARM TRIGGERS

- The “UMON-WARNING-USERSTATE” alarm trigger is used to escalate the detection of the unavailability.
- The alarm triggers “UMON-ERROR-USERSTATE” and “LOC-ERROR-USERSTATE” are used to escalate the final detection of the unavailability.
- The “UMON-OK-USERSTATE” alarm trigger is sent by the OMM if a user becomes available again.

These are static, predefined alarm triggers like “SOS” and “MANDOWN” which do not have a telephone number to call.

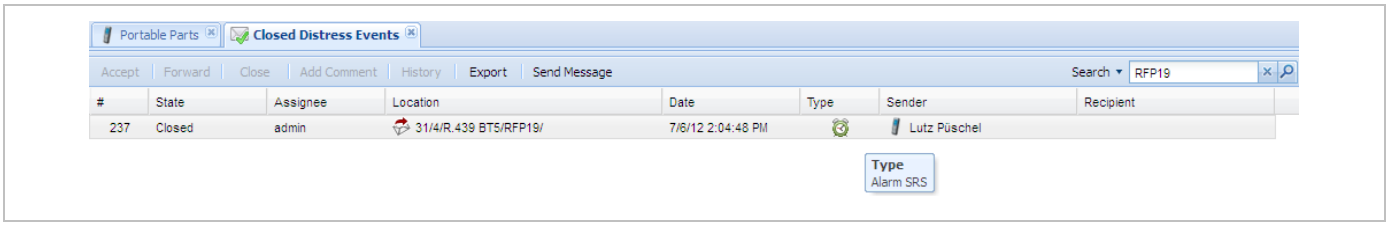
The alarm triggers “UMON-WARN-USERSTATE”, “UMON-ERR-USERSTATE” and “LOCERR-USERSTATE” provide information about the cause why the user became unavailable (one or more of status attribute IDs: HAS, HSS, HRS, HCS, SRS, SCS, CDS, …).

9.28.5 OM LOCATING APPLICATION

To be visible in the OM Locating application, the monitored user must be locatable. Tracking can be enabled.

The alarm trigger “LOC-ERR-USERSTATE” is handled like SOS (), ManDown () but no voice call will be established.

The alarm trigger “LOC-ERR-USERSTATE” will be displayed as a Customer specific event ().



9.28.6 LICENSING AND SYSTEM CAPACITIES

The “User monitoring” feature does not require a specific license. However, if the OM Locating application is used to receive the OML specific alarm trigger “LOC-ERR-USERSTATE”, the OML application license (OM Locating Server License) must be available.

The number of monitored users is limited, as follows:

RFP OMM

- Passive monitored users: 30
- Active monitored users: 20

PC OMM

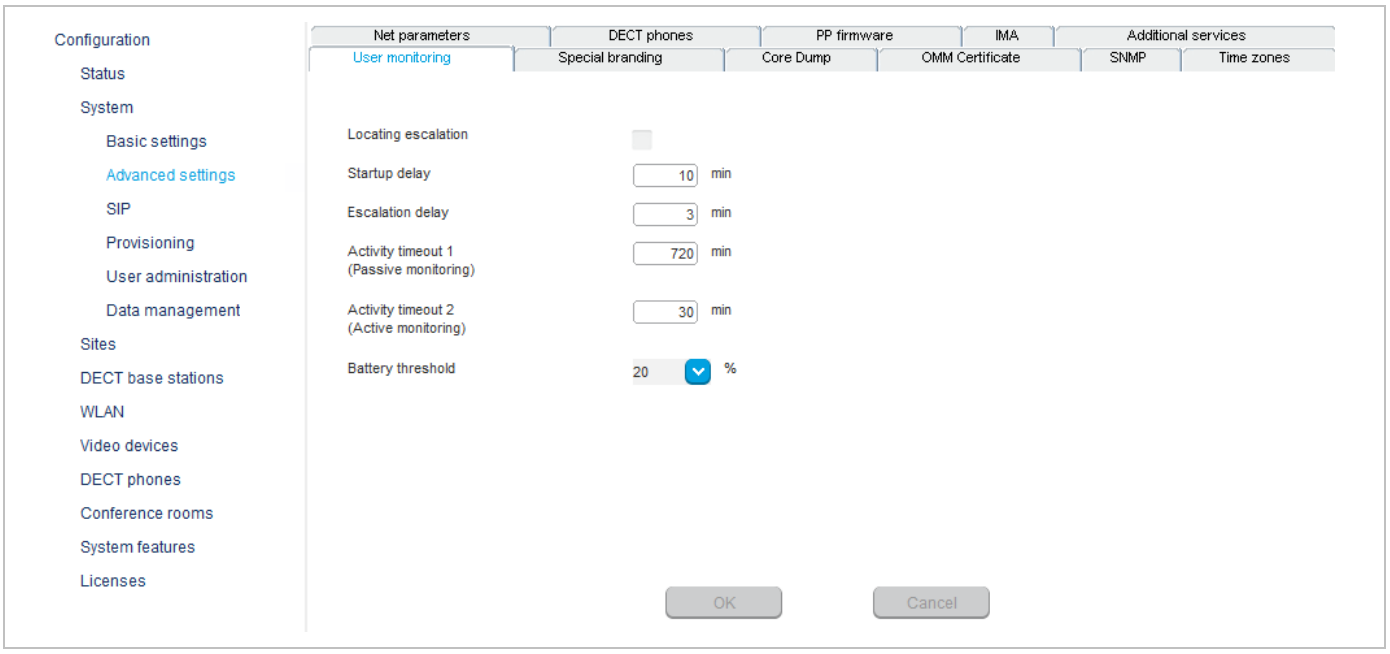
- Passive monitored users: 300
- Active monitored users: 200

An OMM system health state will be set if the number of monitored users exceeds the system capabilities. In this case also an associated health state alarm trigger will be generated.

9.28.7 CONFIGURATION

User monitoring can be administered via the OMP.

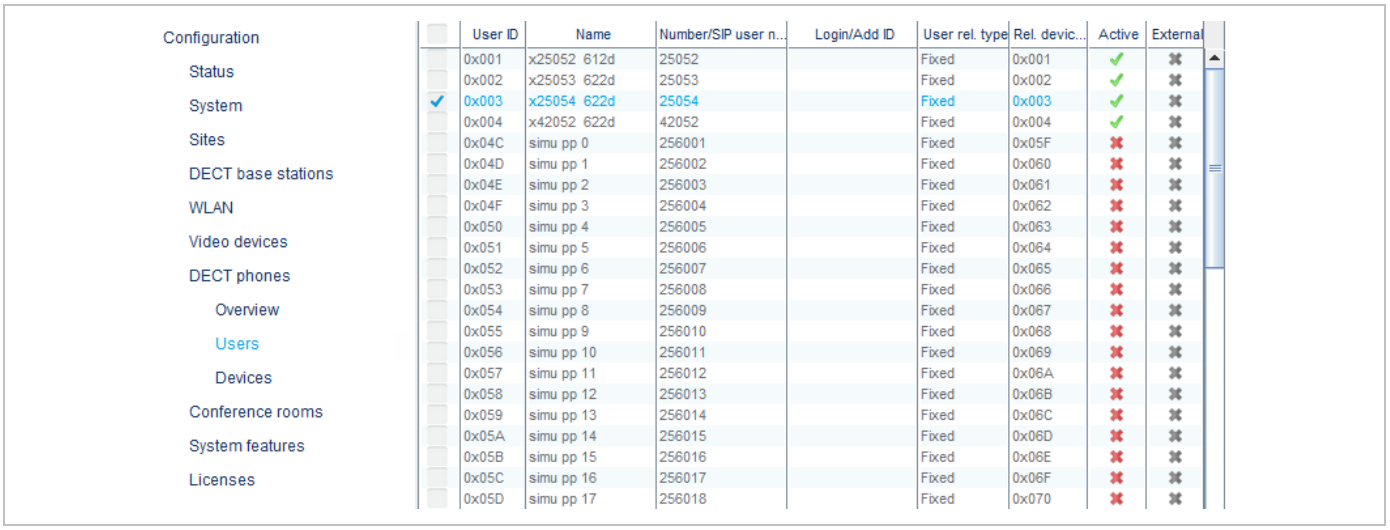
9.28.7.1 “System settings: User monitoring” Menu



The following parameters can be configured on system level.

- **Locating escalation**: If this option enabled, the alarm trigger “LOC-ERR-USERSTATE” will be generated by the OMM. Default setting is “off”.
- **Start-up delay**: The start-up delay defines the period of time the user monitoring start-up is delayed (between 2 and 15 minutes) after failover or system start-up.
- **Escalation delay**: The escalation delay defines the period of time the user monitoring will wait before the unavailable status is escalated.
- **Activity timeout 1**: The activity timeout 1 defines the maximum time (between 30 and 1440 minutes) between user activities in passive monitoring mode.
- **Activity timeout 2**: The activity timeout 2 defines the maximum time (between 5 and 60 minutes) between user activities in active monitoring mode.
- **Battery threshold**: The battery threshold defines the minimum battery load (between 0 and 100% in steps of 5%).

9.28.7.2 “DECT Phones” Menu



The following parameter can be configured on user level.

Monitoring mode: The user monitoring mode can be set to **Off**, **Passive** or **Active**. **Off** disables user monitoring. **Passive** and **Active** enable user monitoring and control the mode of the DECT phone activity status supervision. Default setting is **Off**.

If user monitoring is activated, the **VIP** option in the **DECT Phones** -> **Users** -> **SIP** tab for the user will be set automatically (see page 170). The **VIP** option will not be reset if the user monitoring mode is set to “Off”.

9.28.7.3 “DECT Phones -> User monitoring” Menu

The status of all monitored users is presented by the OMM in the **DECT Phones** -> **User monitoring** menu.

9.28.7.4 User Configuration Files

The parameter “UD_UserMonitoring” controls the monitoring for a user. The parameter can be set to “Off”, ”Passive” or ” Active”.

9.28.7.5 OM IMA Application

If messages shall be sent out by the OM IMA application, the administrator must configure appropriate alarm scenarios for the alarm triggers in the OM IMA configuration file:

- UMON-OK-USERSTATE
- UMON-WARN-USERSTATE
- UMON-ERR-USERSTATE

9.28.8 START AND FAILOVER

The availability status is set to “Unknown” at start-up.

The monitoring feature does not escalate any user status during start-up until a configurable delay of min. 2 minutes and max. 15 minutes has elapsed.

The start-up delay should be adjusted according to the system start-up. The system start-up depends on the actual physical configuration, infrastructure components and parameter settings.

The statistic counter “Sync RFP start-up time” and “Sync Cluster start-up time” help to find an appropriate value for the start-up delay.

As soon as the start-up delay has elapsed, the status attributes are checked and the availability status will be determined. If the result is “Unavailable”, the status will be escalated.

The SIP registration process runs independently from the user monitoring start-up and infrastructure start-up. Monitored users as well as other users, who have the VIP flag set, are registered first.

9.28.9 SUPPORTED HANDSETS

The Mitel 600 DECT phone family is fully supported.[1]

The following states are managed independent of the DECT phone type:

- Handset assignment status (HAS)
- Handset subscription status (HSS)
- Handset registration status (HRS)
- Handset activity status (HCS)[2]
- SIP user registration status (SRS)
- Call diversion status (CDS)

Notes on Mitel 142d

The Mitel 142d DECT phones are supported by SIP-DECT and have an enhanced feature set compared to GAP DECT phones. For Mitel 142d the availability status is always set to “Warning” because of the limited feature set.

User ID	Name	Number	Rel. devi...	Mode	CUS	HAS	HSS	HRS	HCS	SRS	SCS	CDS	HBS	BTS	SWS
0x001	142d	3000	0x001	Active	⚠	✓	✓	✓	✓	✓		✓			⚠

The following states are not supported:

- Handset battery state (HBS)
  always set to “Unknown”
- Software Status (SWS)
  always set to “Warning” to indicate the limited feature set
- Silent charging state (SCS)
  always “Unknown”

If the DECT phone is put into silent charging mode then it sends a “Detach”, like it is switched off.

---

[1] The DECT phones must be equipped with the software version that corresponds to the SIP–DECT® release. Otherwise, functionality may be limited.

[2] GAP devices do not support the active monitoring.

Comments on GAP DECT phones

GAP DECT phones are supported by SIP-DECT with a basic feature set. The availability status is always set to “Warning” because of the limited feature set.

User ID	Name	Number	Rel. devi...	Mode	CUS	HAS	HSS	HRS	HCS	SRS	SCS	CDS	HBS	BTS	SWS
0x001	GAP	3000	0x001	Passive	⚠	✓	✓	✓	✓	✓		✓			⚠

The following states are not supported:

- Handset battery state (HBS)
  always “Unknown”
- Software Status (SWS)
  always set to “Warning” to indicate the limited feature set
- Silent charging state (SCS)
  always “Unknown”

GAP DECT phones do not support the active monitoring (Handset activity status /HCS). In general, there is no guarantee for the correct interworking of the 3rd party DECT phone with SIP-DECT.

9.28.10 RESTRICTIONS

The described mechanisms check the status information in the OMM. Therefore the solution has certain limitations.

The OMM determines the availability of the DECT device which does not necessarily represents the availability of the user.

- It is not possible to determine whether a user actually carries his device with or not.
- The check of the availability does not include the infrastructure to which the OMM is connected (e.g. call manager, etc.). A user appears as available even if the call manager fails.
- Feature (especially call diversion) when managed by the call server can undermine the monitoring.
- If a user is removed from the OMM, the monitoring stops without escalation. It cannot be checked if the user belongs to an alarm scenario configured in the alarm server or any other application scenario.

9.29 SRTP

Together with the new RFP 35/36/37 IP and 43 WLAN, SIP-DECT supports SRTP to encrypt the RTP voice streams and SDES for the SRTP key exchange.

There are three options for SRTP:

- **SRTP only**: only SRTP calls will be accepted, all other will be rejected (the audio part of the SDP contains RTP/SAVP)
- **SRTP preferred**: all calls will be initiated as secured, but accepted if they are not secured (the audio part of the SDP contain RTP/AVP)
- **SRTP disabled**: only RTP calls will be initiated as not ciphered and incoming ciphering algorithm will be not accepted. All communications are established unencrypted.

SIP-DECT provides the cipher suite AES_CM_128_HMAC_SHA1_80.

SRTP calls from DECT phones with DECT handover require that the SRTP functionality must be homogenously available on all effected RFPs. To allow mixed installations with the older RFP types 32/34 and 42 WLAN, the SRTP feature can be enabled or disabled per site. Whereby, SRTP can only be activated on sites with only RFPs 35/36/37/43 included.

IMPORTANT : A handover of an SRTP call to a site with disabled SRTP will drop the call.

IMPORTANT : SDES specifies as key exchange method the negotiation over SDP included in the SIP signaling. Therefore, we recommend to use TLS to encrypt the key exchange.

IMPORTANT : Please enable "SRTP = only" mode exclusively when all communication can be established with SRTP. Depending on the call server some features or gateways may not offer SRTP.

9.30 SIP OVER TLS

The transport protocol modes "TLS" or "Persistent TLS" enable a private and authenticated signaling, including safe key exchange for SRTP encryption.

The transport protocol and all further security settings can be set via the OMP **System** -> **SIP**-> **Security** tab and the OMP **System** -> **SIP**-> **Certificate Server** tab.

The following parameters can be set:

General

- **Transport protocol**: The protocol used by the OMM to send/receive SIP signaling. Default is "UDP".
- **Persistent TLS Keep alive timer active**: When enabled and "Persistent TLS" is selected as transport protocol, the OMM sends out keep alive messages periodically to keep the TLS connection open.
- **Persistent TLS Keep alive timer timeout**: Specifies the time, in seconds, between keep-alive messages sent out by the OMM. Valid values are "10" to "3600". Default is "30" seconds.
- **Send SIPS over TLS active**: When enabled and "TLS" or "Persistent TLS" is selected as transport protocol, the OMM uses SIPS URIs in the SIP signaling. Default is "ON".
- **TLS authentication**: When enabled and "TLS" or "Persistent TLS" is selected as transport protocol, the OMM validates the authenticity of the remote peer via exchanged certificates and the configured "Trusted certificates". Default is "ON".
- **TLS common name validation**: When enabled and "TLS authentication" is selected the OMM validates the "Alternative Name" and "Common Name" of the remote peer certificate against the configured proxy, registrar and outbound proxy settings. If there is no match an established TLS connection will be closed immediately.

PEM file import

- Allows the manual import of Trusted, Local Certificates and a Private Key in PEM file format.

The following parameters can only be read and should ease the handling of certificates:

- **Trusted Certificates**: The number of imported trusted certificates.
- **Local Certificate chain**: The number of imported certificates in the local certificate chain.

- **Private Key**: Is a private key imported or not.

Certificate server

Optionally is also an automatic import of Trusted, Local Certificates and a Private Key files from an external server possible. This can be configured on the “Certificate Server” tab.

The following parameters allow an automatic import:

- **Active**: Enable or disable the automatic import.
- **Interval**: The time interval the OMM checks modifications on the server.
- **Protocol**: Selects the preferred protocol (FTP, TFTP, FTPS, HTTP, HTTPS, SFTP)
- **Server**: IP address or name of the server
- **User Name** / **Password / Password confirmation**: The server account data if necessary.
- **Path:** The path on the server to certificate files.
- **Trusted certificate file:** The name of the PEM file on the given server including the trusted certificates.
- **Local certificate file:** The name of the PEM file on the given server including the local certificate or a certificate chain.
- **Private key file:** The name of the PEM file on the given server including the local key.

9.30.1 CERTIFICATES

The use of “TLS” or “Persistent TLS” requires the import of certificates to become operational.

Item	When Needed	Setting
Trusted Certificates	For TLS and Persistent TLS	A PEM file with a list of all (self-signed) CA certificates needed to verify remote certificates. May also contain trusted intermediate certificates instead of or in addition to self-signed certificates In many cases there is only one certificate in this list: The self-signed certificate which is used by the SIP proxy and registrar or which was used to sign that certificate.
Local Certificate	For TLS: Always	A PEM file with the OMM’s certificate chain
Private Key	For Persistent TLS: Only if the server verifies the client certificate	A PEM file with the OMM’s private key

All certificates and keys must be provided as X.509 certificates in PEM file format. They must use the RSA algorithm for their keys and signatures and MD5 or SHA-1 for their hashes.

Although PEM files usually contain a textual description of the certificate, only the Base64-encoded portions between

```
-----BEGIN CERTIFICATE-----
```

and

```
-----END CERTIFICATE-----
```

are actually evaluated. However, the files can be uploaded to the OMM with their full content.

There are two sets of certificates which can be set up in the OMM, which are described in the following sections.

Trusted Certificates

The trusted certificates are used to verify the signatures of certificates sent by remote hosts. The corresponding PEM file may contain multiple certificates. Their order is not relevant. Certificates are searched in the trust store according their subject name, the key identifier (if present), and the serial number as taken from the certificate to be verified.

Local Certificates

The local certificate or local certificate chain is sent to remote hosts for authentication.

In corresponding PEM files the host certificate must be in the first position, followed by intermediate certificates if applicable. The last certificate is the self-signed root-certificate of the CA. The root certificate may be omitted from the list, as the remote host must possess it anyway to verify the validity. This means that if there are no intermediate certificates, this file may contain only one single certificate.

9.30.2 PRIVATE KEY

The Private Key is also contained in a PEM file. The *Local Certificate* must match to the *Private Key*.

Although PEM files may contain a textual description of the key, only the Base64-encoded portions between

```
-----BEGIN RSA PRIVATE KEY-----
```

and

```
-----END RSA PRIVATE KEY-----
```

is actually evaluated. However, the file can be uploaded to the OMM with its full content.

9.30.3 TLS TRANSPORT MODE

The OMM distinguishes the both TLS transport modes **TLS** and **Persistent TLS.**

When the OMM is configured to use **TLS** (Transport protocol: TLS), TLS connections to remote peers, e.g. SIP proxies and registrars, are connected as needed. For TLS connections initiated by the OMM, it is a TLS client. If a remote peer sets up a TLS connection, the OMM is the TLS server. Connections are closed when they have not been in use for a certain time. The terms *server* and *client* refer to TLS connections below, not to SIP transactions.

The OMM always verifies the server certificate when it sets up an outgoing connection and it verifies the client certificate on incoming connections. Therefore following configuration parameters must be set for this mode: *Trusted Certificates, Local Certificate and Private Key*.

When the OMM is configured to use **persistent TLS** (Transport protocol: Persistent TLS), it sets up TLS connections to SIP Servers and keeps them connected. When a connection is closed for whatever reason, the OMM tries to re-establish it immediately. It does not accept incoming connections from remote ends. Thus the OMM is always TLS client when Persistent TLS is in use.

The advantage of Persistent TLS is a faster call setup time and lower processing power needed on both sides.

The OMM always verifies the server certificate, therefore following configuration parameters must be set for this mode: *Trusted Certificates*

If the server verifies the client certificate, additionally *Local Certificate* and *Private Key* must be set.

9.30.4 VERIFICATION OF REMOTE CERTIFICATES

When “TLS authentication” is “ON”, a remote certificate is verified by the OMM as follows:

The signature of the certificate is checked with the public key of the signing certificate. The certificate chain is checked until a *Trusted Certificate* is found. If self-signed certificate is found which is not trusted, the verification fails.

The current time must be in the validity period of the certificate. For this mechanism a correct system time must be provided (e.g. NTP).

If one or more of these checks fail, the TLS connection will be closed.

> **Please note:** All certificates are only valid for a limited time given by the issuer. As soon as the validity is expired no further communication is possible. The certificates must be replaced before to prevent a breakdown of call services.

When “TLS authentication” is “OFF”, the OMM verifies the remote certificates and logs any failure but the established TLS connection will not be closed in case of verification failures.

> **IMPORTANT : To prevent man-in-the-middle attacks we recommend not to disable the “TLS authentication” in unsecure environments. We recommend setting “TLS authentication” and “TLS common name validation” to “ON” in any unsecure environments for the best security.**

9.30.5 ADDITIONAL SECURITY CONSIDERATIONS

For highest security requirements there are additional considerations to be taken into account when enrolling an OpenMobility system.

To prevent manipulations during the initial upload of certificates and keys to the OMM completely, this should be done in a small private network without a physical connection to an insecure network.

> **IMPORTANT : To prevent manipulation of certificates and keys in unsecure environments we recommend not to use the automatic import of certificates and keys. Especially the unsecure protocols TFTP, FTP and HTTP must be avoided. It is also recommended to protect the selected protocol with a login to prevent unauthorized access to the private key file.**

Furthermore, it is important that the root and administrator passwords of the OpenMobility system are safe, because with these passwords an attacker could change the configuration to manipulate the system in various ways.

Although all keys and certificates in the database are encrypted, an automated database backup or download could be a security leak if the network, transport protocol or servers used are not protected against manipulations.

9.31 DECT ENHANCED SECURITY

Security aspects in the DECT standard have been improved after concerns were raised in the market in recent years. Therefore various enhancements have been introduced.

The usage of many security features, which were already available in the DECT standard (respectively GAP) from the beginning, was left optional for the devices. These mechanisms became mandatory together with CAT-iq. Almost each of these functionalities was present and used within SIP-DECT right from the start.

Furthermore, some new features have been added to GAP:

- Encryption of all calls (not only voice calls)
- Re-keying during a call
- Early encryption

Each procedure brings additional guarantee on security and is an integral part of the SIP-DECT solution.

The feature set can be enabled or disabled per site. This distinction is necessary due to the fact, that enhanced security is available with RFPs 35/36/37/43 only.

From release 5.0 on, when DECT enhanced security is enabled, every connection will be encrypted, not only voice calls, but also such as service calls (e.g. list access) or messaging.

Additionally, the cipher key used for encryption during an ongoing call is changed every 60 seconds.

Finally, every connection is encrypted immediately upon establishment to protect the early stages of the signaling such as dialing or CLIP information.

DECT enhanced security is only supported together with Mitel 600 DECT phones. Older terminals (e.g. 6x0d or 142d) or GAP phones will still operate as ever, but not provide the new security mechanisms.

9.32 MIGRATION OF AN RFP SL35 IP FROM SIP-DECT™ LITE 3.1 TO SIP-DECT 3.1

The SIP-DECT™ Lite solution realizes a single-cell DECT network that offers only limited radio coverage and is operated with one RFP SL35 IP. The SIP-DECT™ Lite solution is part of the SIP-DECT product family that offers larger radio coverage by realizing multi-cell DECT networks with up to 2.048 RFPs.

You can integrate the RFP SL35 IP to a multi-cell SIP-DECT network. The migration from SIP-DECT™ Lite to standard SIP-DECT must be within the same SW version, i.e. SIP-DECT™ Lite 3.1 shall be migrated to SIP-DECT 3.1. After migration, the system can be updated to later versions of SIP-DECT. During the migration the SIP-DECT™ Lite SW is replaced by the standard SIP-DECT SW on the RFP SL35 IP and a reset to the factory setting is performed. All configuration data are removed from the RFP.

The following migration process must be performed.

Precondition: Unique UNLOCK.xml file is available for the specific RFP SL35 IP.

1 SIP-DECT™ Lite: Execute a manual DB export to an external storage (not USB flash memory).[1]

2 Remove the USB flash memory from the RFP SL35 IP and plug it into your computer.

3 Copy the unlock.xml file onto the USB flash memory.

4 Copy the standard SIP-DECT SW (iprfp3G.dnld) onto the USB flash memory of the RFP.

5 Check if the following files are on the USB flash memory (no other files should be on the USB flash memory except SIP-DECT™ Lite DB backup field “omm_conf.txt” which is not relevant).

a. PARK.xml

b. UNLOCK.xml

c. iprfp3G.dnld

6 Remove the USB flash memory from your computer and plug into the RFP SL35 IP.

7 The migration process starts automatically after plugging the USB flash memory into the RFP.

8 Wait for the RFP reboot and start-up. Do not interrupt the electric power during this process.

9 The SW update for RFPs in standard SIP-DECT installations are provided by other means than to copy the SW on the USB flash memory. Therefore the iprfp3G.dnld must be removed from the USB flash memory.
Make sure that the PARK.xml and UNLOCK.xml remain on the USB flash memory.

10 Also after the migration, make sure that the USB flash memory is always plugged in the RFP.

11 Now, the RFP SL35 IP has the standard SIP-DECT SW and the UNLOCK.xml file and can be operated in standard SIP-DECT installations. Please follow the standard procedures to setup a SIP-DECT installation.

The same process must be performed and the same conditions and rules must be applied to migrate back to SIP-DECT™. However, the appropriate SIP-DECT™ SW file (iprfp3G.dnld) must be used.

[1] You need the database backup if a fall back to the SIP-DECT™ Lite will be performed. The database backup file is not accepted by the standard SIP-DECT® software. Additionally, the database file is a text file and the most important parameters can be read using a text editor. It is planned for future releases that a SIP-DECT™ database can be applied to a standard SIP-DECT® installation to restore specific configuration settings.

10 MAINTENANCE

10.1 SITE SURVEY MEASUREMENT EQUIPMENT

If a SIP-DECT installation must be planned, a sufficient distribution of the RFPs is necessary which fulfills the requirements for reliable synchronization and connectivity to the Portable Parts. The site survey kit may help you. It comprises:

- One measuring RFP with its own power supply.
- A tripod and a battery for the RFP.
- Two reference DECT phones with chargers.
- Battery chargers.
- Optional a measuring DECT phone which can monitor other makers DECT radio sources.

10.2 CHECKING THE MITEL HANDSET FIRMWARE VERSION

You can display the version information of a Mitel 600 or Mitel 142d DECT phone with a few keystrokes. Check the firmware version to determine whether an update is required to overcome any user issues.

1 Press the **Menu** soft key.

2 Select **System** (only to highlight).

3 Press **OK**.

4 Select **Version Number**.

5 Press **OK**.

The display shows the software and the hardware version of the Mitel DECT phone.

10.3 DIAGNOSTIC

10.3.1 MITEL DECT PHONE SITE SURVEY MODE

You can switch a Mitel 600 or Mitel 142d DECT phones into “site survey mode” with a few keystrokes. In this mode the phone will display the RFPs and the actual field strength of the receiving signal in dBm.

1 Press the **Menu** soft key.

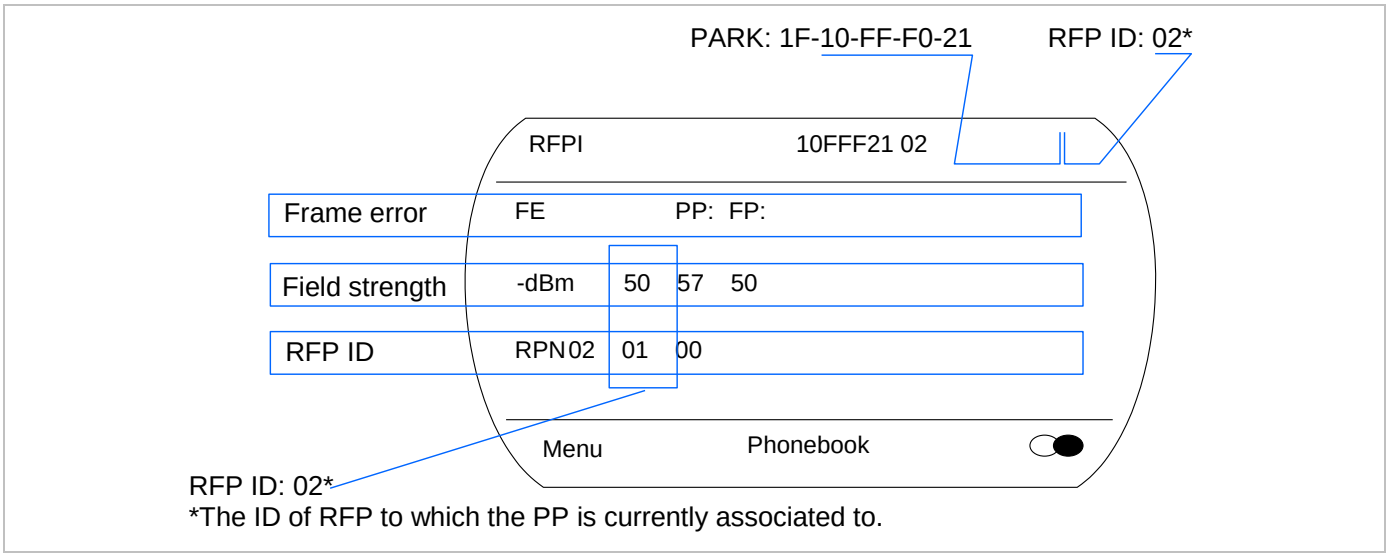
2 Enter the following key sequence “***76#” (Mitel 600) or “R***76#” (Mitel 142d).

3 Select Site Survey.

4 Press OK.

5 To leave the site survey mode switch the phone off and on again.

The following display is shown on the Mitel DECT phone:



In this example the DECT phone is currently connected to the RFP with the number 02. The RFPs 01 and 00 are also visible. The number “10FFF221 02” on the upper right side refers to the PARK (Example 1F-10-F2-21) of the SIP-DECT system and to the RFP to which the phone is currently connected to.

10.3.2 MITEL HANDSET AUTO CALL TEST MODE

You can switch a Mitel 600 or Mitel 142d DECT phones into “auto call test mode” with a few keystrokes. In this mode the phone will call a specified number cyclically. You can use this feature to generate traffic for test purposes. This mode is also active if the phone is on the charger.

1. Press the **Menu** soft key.
2. Enter the following key sequence “***76#” (Mitel 600) or “R***76#” (Mitel 142d).
3. Select Auto Call Test.
4. Press OK.
5. Enter the phone number to call.
6. Press OK.
7. Enter a number of seconds between two calls.
8. Press OK.
9. Enter a number of seconds a call shall be active.
10. Press OK. The test will be started automatically.
11. To stop the test, switch the phone off and on again.

10.3.3 MITEL HANDSET AUTO ANSWER TEST MODE

You can switch a Mitel 600 or Mitel 142d DECT phone into “auto answer test mode” with a few keystrokes. In this mode, the phone answers incoming calls automatically. You can use this feature together with phones in the “auto call test mode” (see section 10.3.2) for test purposes. This mode is also active if the phone is on the charger.

1. Press the **Menu** soft key.
2. Enter the following key sequence “***76#” (Mitel 600) or “R***76#” (Mitel 142d).

3 Select Auto Answer.
4 Press OK.
5 Enter a number of seconds the phone shall ring before it will answer the call.
6 Press OK.
7 Enter a number of seconds a call shall be active.
8 Press OK. The test will be started automatically.
9 To stop the test switch the phone off and on again.

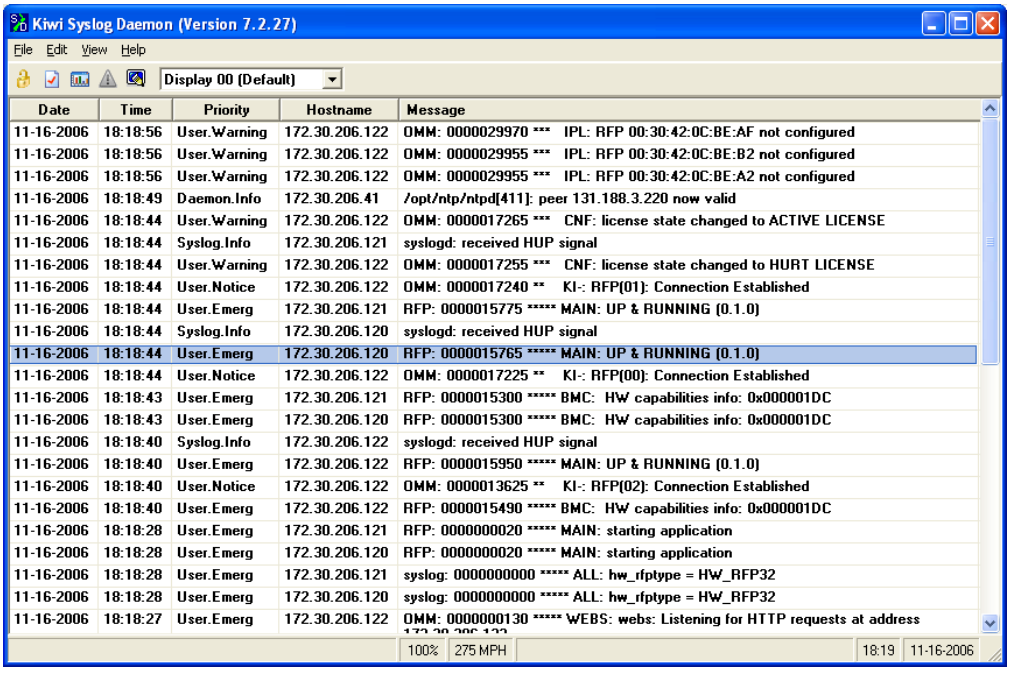
10.3.4 SYSLOG

The OpenMobility Manager and the RFPs are capable of propagating Syslog messages conforming to RFC 3164 (see /13/). This feature together with the IP address of a host collecting these messages can be configured.

Syslog must be enabled by:

- DHCP using the public options 227 and 228.
- Setting the syslog daemon server and port via the web interface.

To set up the syslog via DHCP or the OM Configurator has the advantage that syslogs are available in earlier states of the RFP startup.



The level of syslog messages in the default state allows the user to have control over the general system state and major failures.

10.3.5 SSH USER SHELL

Each RFP offers a lot of commands within the SSH shell. Most of them are useful for diagnostics and may help experts to resolve failures.

Note: Some commands can harm the system operation.

The SSH access of an RFP is open if

- the RFP is connected to an OMM and the “Remote Access” is switched on or
- the RFP is not connected to an OMM.

To activate the SSH access of an RFP that has a connection to an OMM, enable the **Remote access** checkbox on the OMM **System settings** web page (see section 7.4.1.1). In the OMP, the SSH access is activated/deactivated in the **General** tab of the **System** -> **Basic settings** menu (see section 8.5.1).

10.3.5.1 Login

To log into the SSH user shell:

1 Open an SSH session to the IP DECT base station with the “Full access” user name.

2 Enter the password for the “Full access” account (see also 9.16.1).

The output should look like:

```
Welcome to IP RFP OpenMobility SIP Only Version 2.1.x

last reset cause: hardware reset (Power-on reset)

omm@172.30.206.94's password:
omm@172.30.206.94 >
```

10.3.5.2 Command Overview

Type `help` to get a command overview:

Command	Description
exit,quit,bye	Leave session
ommconsole	OMM console
ip_rfpconsole	RFP console
rfpmconsole	RFP manager console
wlanconsole	WLAN console
wpaconsole	WPA console
flash	Shows information from flash
link	Shows status of Ethernet interface
ldb	View / set local configuration (OmConfigurator)
setconsole	Duplicate messages to console
noconsole	Do not duplicate messages to console
dmesg	Messages from last boot
logread	Last messages

su	Switch to user root
ping	Well known ping
traceroute	Well known traceroute
free	Well known free
ps	Well known ps
top	Well known top
ifconfig	Well known ifconfig
uptime	Well known uptime
reboot	Well known reboot
date	Well known date (time in UTC)
rfpm_console	RFP manager console
wlan_console	WLAN console

10.3.5.3 OMM Console On Linux x86 Server

You can call the OMM console on the Linux x86 server which runs the OMM using the “ommconsole” command. Log on as root as it is necessary to install and/or update OMM.

> **IMPORTANT : If you not login as root to open the OMM console then the path to ommconsole is not set and you must enter the whole path “/usr/sbin/ommconsole” to start the OMM console.**

10.3.5.4 RFP Console Commands

If you type `ip_rfpconsole` you are able to use the following commands on each RFP:

Command	**Description**
?	Displays Command Help Table
help	Displays Command Help Table
logger	Send a string to the syslog daemon
deftrc	Resets all trace settings to default
dsp	Shows channel config
dump	Creates system state dump file /tmp/sys_dump.txt.gz
mem	Show memory and heap
exit	Leave this console
heap	Shows heap buffer statistics
lec	Adjust linear echo canceler parameters
media	Display state of media channels
mutex	Lists all created MXP mutexes
omms	Shows connection status to OMM(s)

Command	Description
queues	Lists all created MXP queues
reset	Resets the IPRFP application
resume	Resume bmc activity
rsx	Allows RSX connection to BMC via TCP
sem	Lists all created MXP semaphores
spy	Set/display spy levels: [<key #> <level #>]
suspend	Suspend bmc activity
tasks	Lists all running MXP tasks
voice	Displays the state of voice handling
wlan	Configure wlan card on cmdline
runtime	Report the process runtime
lu10	Lu10 SDU <-> PDU converter (RFP 35/36/37 IP and RFP 43 WLAN only)
mroute	Display media routes

Please note: The “spy” command enables you to increase the level of syslog messages. This should be only used by instructions of the support organization because it can harm the system operation.

10.3.5.5 OMM Console Commands

If you have opened the session on the OMM RFP and you type “ommconsole”, you are able to use the following OpenMobility Manager (OMM) related commands:

Command	Description
?	Displays Command Help Table
adb	Automatic DB export and import (ADB) console
axi	AXI commands
axic	Task console for AXI command processing of provisioning files
cert	Certificate import console
cmi	CMI commands
cnf	Show configuration parameters
cron	Display pending cron jobs
help	Displays Command Help Table
logger	Send a string to the syslog daemon
deftrc	Resets all trace settings to default
dlc	DECT Data Link Control
dm	Download Over Air Manager

Command	Description
dsip	DSIP commands
epr	External provisioning task (EPR) console and dynamic users console
runtime	Report the process runtime
mem	Show memory and heap
exit	Leave this console
gmi	DECTnet2 Inter Working Unit
hcm	Handset configuration management task (HCM) console
heartbeat	Configure heartbeat mechanism for IP-RFPs
ima	IMA commands
inspect	Display information of a user
ipc	Display socket communication
ipl	Display connected RFPs
iplfilter	Configure which RFPs spy messages are generated for
lic	LIC commands
loc	Info about locating extension
mon	Toggle monitor functionality
msm	Display states within MediaStreamManagement
msmtrc	Display / modify list of traced DECT phoneNs
mutex	List all created MXP mutexes
nwk	DECT network layer
prov	Prov-related commands
queues	List all created MXP queues
rcmd	Remote command on RFPs shell
rfp	Radio Fixed Part Control
rfpd	Radio Fixed Part Debug
rfps	Radio Fixed Part Statistic
rping	Request one or more RFPs to ping a host
rspy	Remote configure spy levels on IP-RFPs
rsx	Toggle RSX debug port on RFPs
rtt	Set event flag for high RTT values / clear values
sem	List all created MXP semaphores
spy	Set/display spy levels: [<key #> <level #>]
standby	Displays redundant OMMs
stat	Statistic
sync	Commands for RFP synchronisation

Command	Description
tasks	List all running MXP tasks
tzone	Time zone commands
umo	UMO commands
upd	Display update status of RFPs
update	Force all connected RFPs to search for new software
uptime	Display OpenMobility Manager uptime
ver	Version information
video	Command for video devices
wlan	Display states within Wireless LAN Management
xml	XML browser task (XML) console
xsc	XSC commands

Please note: The “spy” command enables you to increase the level of syslog messages especially for subsystems of the OMM. This should be only used by instructions of the support organization because it can harm the system operation.

10.3.6 CORE FILE CAPTURING

Fatal software problems may result in memory dumps, so called core files. These core files are helpful in analysing the problem that caused the abnormal termination of the program. The IP RFP is capable of transferring the core files to a remote fileserver. Without any special configuration the files are transferred to the TFTP server that is used to get the system software. The path used is the directory of the boot image. These two configuration items are retrieved from DHCP or via local configuration using the OM Configurator.

The URL to a writable directory is also configurable using the ipdect.cfg configuration files. The relevant variable is “OM_CoreFileSrvUrl”.

Please note: The TFTP server must allow writing new files, this is usually not standard.

10.3.7 DECT MONITOR

Please note: The DECT Monitor has been replaced by OMP but the DECT Monitor can still be used without warranty for SIP-DECT installations with a standard PARK and up to 256 RFPs all within paging area 0.

For better error detection in the SIP-DECT system the DECT Monitor can be used. The DECT Monitor is an MS Windows based stand-alone program. It provides the possibility to give a real-time overview of the current IP DECT base station and telephone states in the SIP-DECT system.

The following features are provided by the DECT Monitor:

- Reading out of the DECT configuration of an SIP-DECT system.
- Configuration can be stored in an ASCII file.
- Display of DECT transactions IP DECT base station <–> telephone in clear tabular form with highlighting of handover situations. Real-time display.
- Display of further events concerning the status or actions of IP DECT base stations and telephones of the SIP-DECT system.
- All events can also be recorded in a log file.
- Display of the synchronization relations between the RFPs.
- Monitoring of systems with up to 256 IP DECT base stations and 512 DECT phones.
- Reading out and display of IP DECT RFP statistics data, either for a single IP DECT RFP or for all IP DECT RFPs.
- Display of DECT central data of the SIP-DECT system.

The DECT Monitor program can only be used when the **DECT monitor** checkbox is activated on the flag in the OMM **System settings** web page.

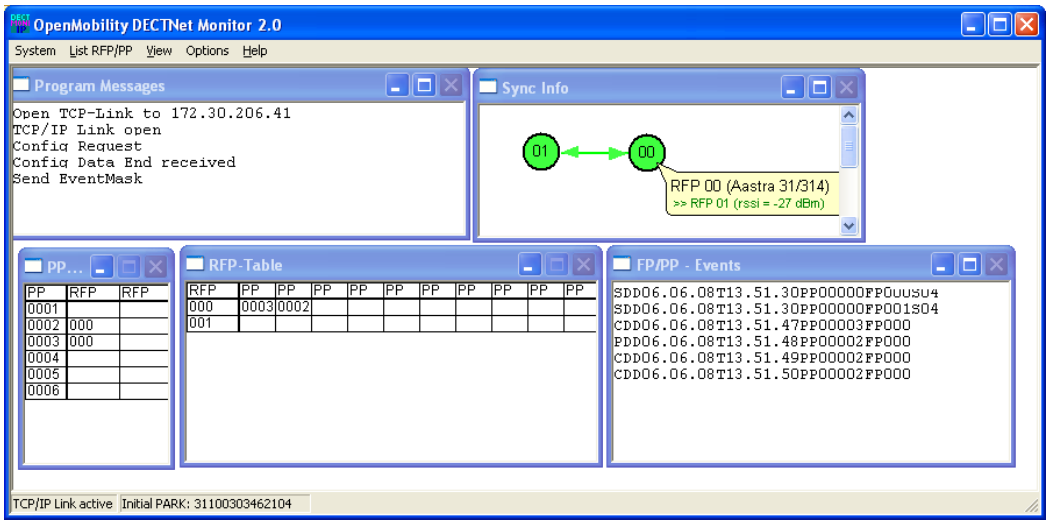
> **Please note:** Because of security, the DECT monitor flag is not stored permanently in the internal flash memory of the OMM/RFP. After a reset the DECT monitor flag is disabled.

The DECT monitor program is used together with the SIP-DECT system. When the program is started, the user is requested to enter the IP address of the IP DECT RFP or the server running the OpenMobility Manager (OMM) software.

There can be several reasons for an unsuccessful link establishment:

- Operation of DECT monitor is not enabled inside the OMM. Use the OMM web service to enable DECT monitor operation.
- IP address is not correct. It must be the address of the RFP the OMM is running on.
- A link routed to the RFP is not supported.

The program displays the IP address which was used last time. When the program is started, a link to the OMM is automatically established and the program window shows all user configured child windows and tables. When all links have been established, the DECT data of the system are automatically read out and entered in the tables “RFP-Table” and “DECT phone-Table”. This procedure is called “Config Request”.



Next, the defined trace options (Event Mask) are sent to the OMM. The options which are sent to the OMM are always those which were active the last time the program was exited.

If the trace option “Transaction establish/release” is activated, the OMM will deliver all existing transactions.

Following this, the OMM system delivers the desired trace data. The user can either communicate with the program interactively (see below) or he can simply activate a log file in which to record the data.

Following this initialization, the user can carry out the following modifications:

- The trace settings can be modified using the menu item **Options-Event Mask**. Transmission to the OMM takes place after confirmation of the settings with **OK**.
- A Config Request can be sent again to the OMM.
- A log file can be activated.
- By means of various dialogs, the configuration data of the telephones, RFPs and control modules can be displayed and stored in ASCII files.

The following information is displayed dynamically in the tables:

- Transactions between telephone and DECT system. These are displayed in both tables. Simple transactions are displayed in black on a white background; during handover, both transactions involved are displayed in white on a red background.
- The Location Registration and Detach events are displayed in the tables for approx. 1-2s after their occurrence (light green background), if possible. There is no display in the FP table if there is no column free for display. If the event has already been displayed, it can be overwritten at any time. The events are not displayed if they occur during an on-going transaction. Irrelevant of whether the events are displayed in the tables, they are always entered in the **FP/DECT phone-Events** window and in the log file (provided that this is open).

The following color scheme is used for display of the RFPs in the RFP table:

- RFP gray-blue: IP DECT base station is not active (not connected or disturbance).
- RFP black: IP DECT base station is active.

The data of an RFP are displayed in a dialogue box after clicking on the respective RFP field in the RFP table. The statistics data of the RFP can be called up from this dialogue box.

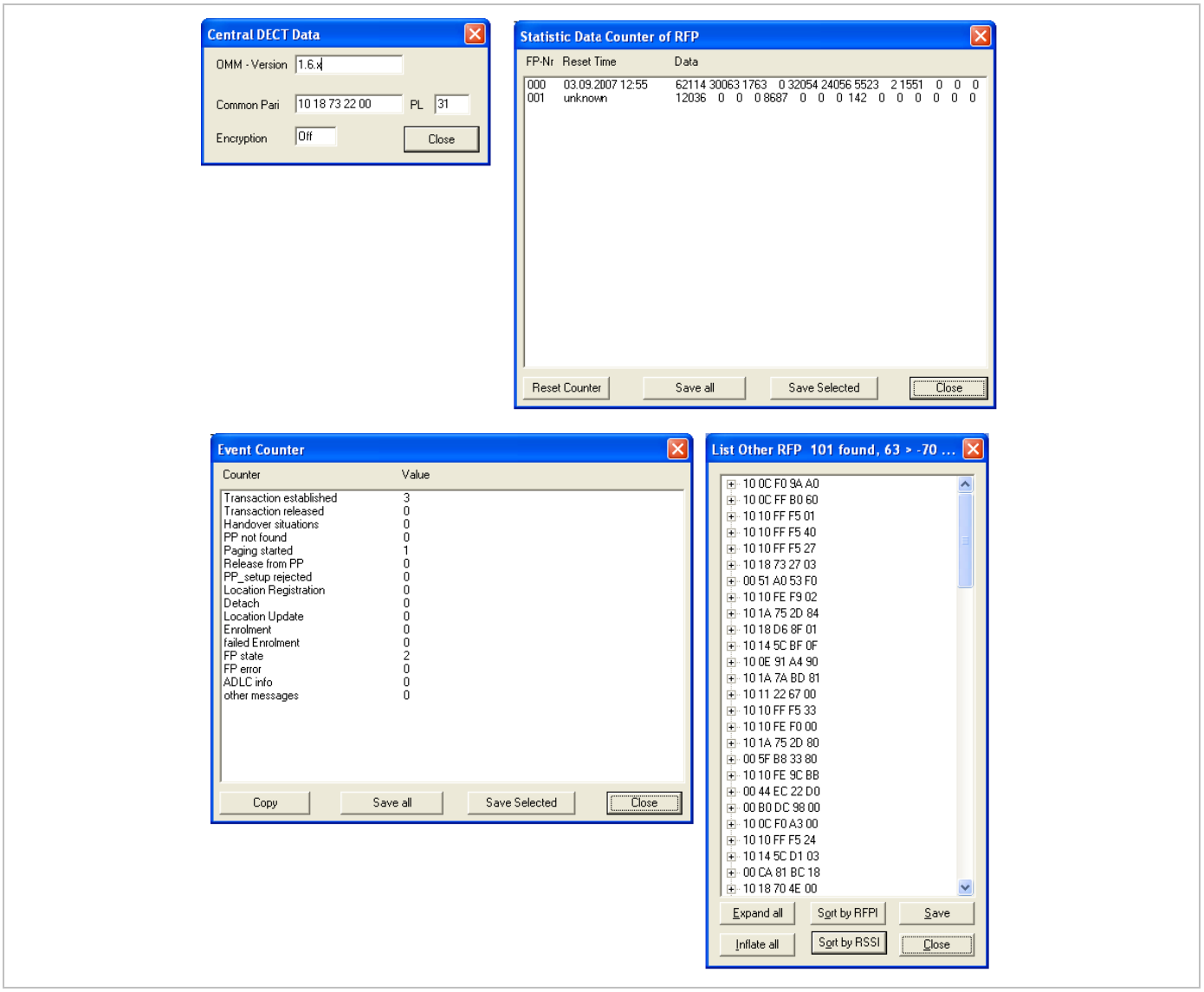
The following color scheme is used for display of the telephone in the DECT phone table:

- DECT phone black: Handset is enrolled. It is assumed that the telephone can be reached.
- DECT phone blue: Handset can presumably not be reached. Detach was received, or when an attempt was made to reach a telephone, the DECT phone did not answer.
- DECT phone gray blue: Handset not enrolled.

The data of a telephone are displayed in a dialog box after clicking on the respective telephone field in the FP table.

The **Sync Info** child window contains all IP DECT base stations and shows their synchronization and relation states to each other. Selecting the IP DECT base stations with the right mouse button, the user can change visibility views and can even force a resynchronization of an IP DECT base station.

There are several optional child windows selectable. They are all listed below and give some more information about the SIP-DECT systems. Mostly they are statistics and for internal use only.



11 APPENDIX

11.1 DECLARATION OF CONFORMITY

The CE mark on the product certifies its conformity with the technical guidelines for user safety and electromagnetic compatibility, valid from the date of issue of the relevant Declaration of Conformity pursuant to European Directive 99/5/EC.

11.2 COMMUNICATIONS REGULATION INFORMATION FOR MITEL 142D, MITEL 600

11.2.1 FCC NOTICES (U.S. ONLY)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifications not expressly approved by this company could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Health and Safety Information

Exposure to Radio Frequency (RF) Signals:

The wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on the safety standards previously set by both U.S. and international standards bodies. These standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

This EUT has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE Std. C95.1-1992

and had been tested in accordance with the measurement procedures specified in FCC/OET Bulletin 65 Supplement C (2001) and IEEE 1528-2003.

11.2.2 INDUSTRY CANADA (CANADA ONLY, NOT FOR MITEL 600)

Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Privacy of communications may not be ensured when using this telephone.

Exposure to Radio Frequency (RF) Signals:

The wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limit for exposure to radio frequency (RF) energy set by the Ministry of Health (Canada), Safety Code 6. These limits are part of comprehensive guidelines and established permitted levels of RF energy for the general population. These guidelines are based on the safety standards previously set by international standard bodies. These standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment / general public exposure limits specific in ANSI/IEEE C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2003.

11.3 COMMUNICATIONS REGULATION INFORMATION FOR RFP 32, RFP 34 AND RFP 35

11.3.1 FCC NOTICES (U.S. ONLY)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifications not expressly approved by this company could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Exposure to Radio Frequency (RF) Signals:

The wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on the safety standards previously set by both U.S. and international standards bodies. These standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

The radiating element of the RFP should be installed during operating at a separation distance greater than 20 cm between user and device. The device complies with the requirements for routine evaluation limits.

11.3.2 INDUSTRY CANADA (CANADA ONLY)

Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Privacy of communications may not be ensured when using this telephone.

Exposure to Radio Frequency (RF) Signals:

The wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limit for exposure to radio frequency (RF) energy set by the Ministry of Health (Canada), Safety Code 6. These limits are part of comprehensive guidelines and established permitted levels of RF energy for the general population. These guidelines are based on the safety standards previously set by international standard bodies. These standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

The radiating element of the RFP should be installed during operating at a separation distance greater than 20 cm between user and device. This device complies with the requirements for routine evaluation limits.

11.4 PRE-CONFIGURATION FILE RULES

The following file format description can be used to administrate the RFP and DECT phone configuration with external applications, e.g. an external configuration management tool or a PBX communications system.

The framework of the text file follows strictly defined rules. The main framework is divided in two parts:

1. An **instruction section** is used to drive a generic data creation for those fields not filled within data sequence section.
2. A data sequence section defines data record fields. Each of them are explicitly set.

Layout rules in detail are:

- Comments start with “**#**”.

- Each record is terminated by the regular expressions “\r” or “\n”.
- Instruction settings are made like: <tag> = <value>.
- Data sequence sections start with the key word “data_sequence”. This key word is **mandatory** for file processing to proceed. All instructions must be written before this row.
- Data sequence record fields are separated by colon “;”. Colons have also to be set for empty fields if at least one follows which is not empty. Otherwise a position mismatch of fields will occur.
- If fields have several values assigned (that may be true for a few local RFP configuration fields like “ntp_address”), they must be separated by comma “,”.

Notes:

- Because data sequence fields are separated by a colon, the content of that section can be generated by a *.csv export of Excel Sheet and copied into the configuration file.
- Instructions are only processed on those fields that are left empty within the data sequence section.

11.4.1 DECT PHONE CONFIGURATION FILE (OMM DATABASE)

11.4.1.1 Supported Instructions

Instruction	Explanation
start_number	Numbers can be generated automatically. This instruction defines the start value.
no_of_number	If “start_number” is given, this instruction defines the maximum of numbers which are generated.
ac (authentication code)	If set to “number”, “ac” will be equal to number. If a value is advised, it will be taken as a start number which will be increased for each new record.
additional_pin	
sip_user	
sip_pw	
sos_number	If these instructions are set, the value will be taken as default value for the empty corresponding field within the data sequence section records. SOS/Mandown denote the user specific numbers. The Locatable, Localization, and Tracking flags are ignored by Web import.
mandown_number	
locatable	
localization	
tracking	

11.4.1.2 Data Section Fields

The data section contains the following field order:

1 Number
2 Name
3 AC
4 IPEI
5 Additional ID
6 Sip user name
7 Sip password
8 SOS number

9 Mandown number

10 Locatable (ignored by Web import and always set to “inactive”)

11 Localization (ignored by Web import and always set to “inactive”)

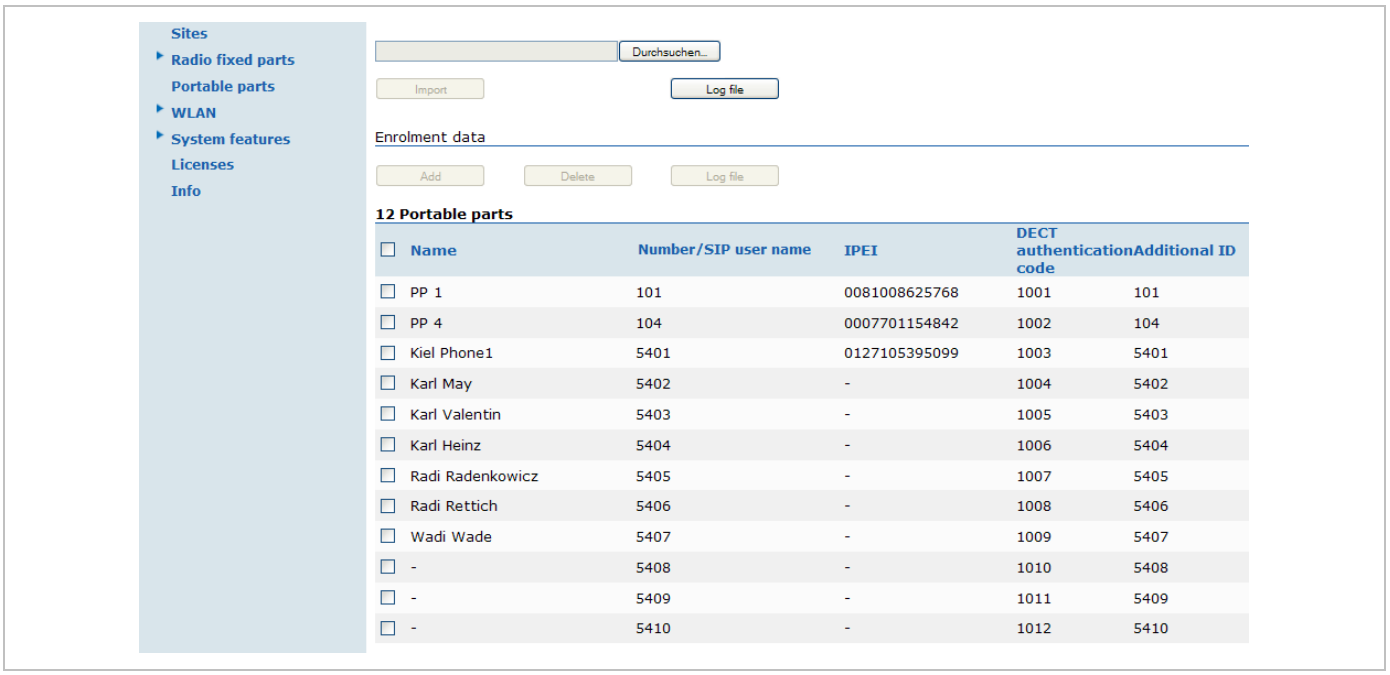
12 Tracking (ignored by Web import and always set to “inactive”)

13 Description1 (ignored by Web import and always set to “”)

14 Description2 (ignored by Web import and always set to “”)

11.4.1.3 Example

The following screen shot shows a DECT phone configuration. This corresponds to the given configuration file.



DECT phone configuration file:

```
# ----------------------#
# instruction section:
# ----------------------#
# -- start_number    = {<start value for numbers to be generated>}
# -- no_of_number    = {<maximum of generated numbers>}
# -- ac   = {<""number"">, <start value for ac's to be generated>}
# -- additional_pin = {<""number"">, <start value for id's >}
# -- sip_user       = {<""number"">, <start value for id's >}
# -- SIP password    = {<""number"">, <start value for id's >}
# -- SOS number      = {<common default>)
# -- Mandown number
# -- Locatable (ignored by Web import and always set to inactive)
# -- Localization (ignored by Web import and always set to inactive)
# -- Tracking (ignored by Web import and always set to inactive)
```

```
start_number = 5401
no_of_number = 10
ac  = 1001
additional_pin = number
sip_user = number
sip_pw = number
sos_number=5002
mandown_number=5002



# ---------------------#
# data sequence:
# ---------------------#
# 1. number
# 2. name
# 3. AC
# 4. IPEI
# 5. additionalId
# 6. SIP user
# 7. SIP password
# 8. sos no
# 9. mandown no
# 10. locatable (ignored by Web import and always set to inactive)
# 11. localization (ignored by Web import and always set to inactive)
# 12. tracking (ignored by Web import and always set to inactive)
# 13. descr1 (ignored by Web import and always set to "")
# 14. descr2 (ignored by Web import and always set to "")


data_sequence;;;;;;;;;;;;
# 1. number;2. name;3. AC;4. IPEI ;5. additionalId;6. SIP user;7. SIP password;8. sos
no;9. mandown no;10. locatable;11. localization;12. tracking;13. descr1;14. descr2
101;DECT phone 1;;0081008625768;;;;;;;;;;
104;DECT phone 4;;0007701154842;;;;;;;;;;
;Kiel Phone1;;0127105395099;5401;5401;5401;30;30;;;;;
;Karl May;;;;;;;;;;;;
;Karl Valentin;;;;;;;;;;;;
;Karl Heinz;;;;;;;;;;;;
;Radi Radenkowicz;;;;;;;;;;;;
;Radi Rettich;;;;;;;;;;;;
;Wadi Wade;;;;;;;;;;;;
```

Parse log about import / instruction processing

```
OK: start_number = 5401
OK: ac = 1001
OK: additional_pin = number
OK: sip_user = number
OK: sip_pw = number
OK: sos_number = 5002
OK: mandown_number = 5002

OK: no_of_number = 10

Section processing:

[…]
```

11.5 RFP CONFIGURATION FILE / CENTRAL (OMM DATABASE)

Import of RFP configurations using files is possible with Web Service or OMM Management portal.

11.5.1.1 Supported Instructions

All instructions are taken as a common value and are applied to all records in the data sequence section of that file if the corresponding field is empty.

Instruction	Explanation
active	Activation of DECT: {‘0’ or ‘false ’= inactive, ‘1’ or ‘true’ = active }
cluster	Cluster, the RFP is referred to - RFP-OMM: {1..256}, PC-OMM: {1..4096}
paging_area	Paging area, the RFP is referred to: {‘unassigned, ’0’..’127’} Ignored by WEB import and always set to ‘0’ (Paging area 0)
sync_source	Synchronization source: {‘0’ or ‘false ’= inactive, ‘1’ or ‘true’ = active }
refl_env	Reflective environment: {‘0’ or ‘false ’= no, ‘1’ or ‘true’ = yes }
site	Site Id: {1..250}
wlan_profile	Reference key to an existing WLAN profile
wlan_antenna	Antenna settings: {0=diversity, 1, 2}
wlan_channel_bg	WLAN channel: {0..14 (size depends on regulatory domain) }
wlan_power	WLAN power: {6, 12, 25, 50,100 (in percent)}
wlan_act	Activation of WLAN: {‘0’ or ‘false ’= inactive, ‘1’ or ‘true’ = active }

Note: Web import allows currently only ‘0’ or ‘1’ for Boolean parameters.

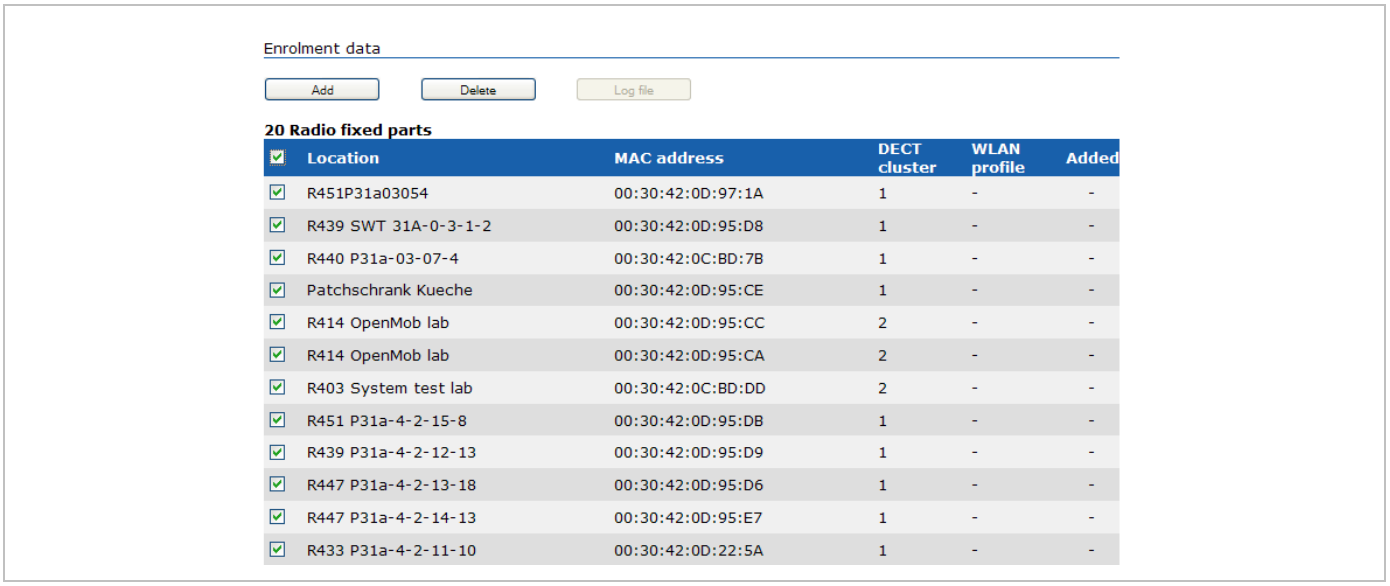
11.5.1.2 Data Section Fields

The data section contains the following field order:

1 MAC address
2 Name
3 DECT activated
4 DECT cluster
5 Paging area (ignored by Web import and always set to “0”, PA0)
6 Preferred sync.
7 Reflective env.
8 Site ID (if left empty then set to the lowest Site ID)
9 Building (ignored by Web import and always set to “”)
10 Floor (ignored by Web import and always set to “”)
11 Room (ignored by Web import and always set to “”)
12 WLAN profile
13 WLAN antenna
14 WLAN channel
15 WLAN power
16 WLAN activated

11.5.1.3 Example

The following screenshot shows an RFP enrolment data import dialog that is shown if the corresponding configuration file is imported.



Enrolment data

Add | Delete | Log file

20 Radio fixed parts

	Location	MAC address	DECT cluster	WLAN profile	Added
☑	R451P31a03054	00:30:42:0D:97:1A	1	-	-
☑	R439 SWT 31A-0-3-1-2	00:30:42:0D:95:D8	1	-	-
☑	R440 P31a-03-07-4	00:30:42:0C:BD:7B	1	-	-
☑	Patchschrank Kueche	00:30:42:0D:95:CE	1	-	-
☑	R414 OpenMob lab	00:30:42:0D:95:CC	2	-	-
☑	R414 OpenMob lab	00:30:42:0D:95:CA	2	-	-
☑	R403 System test lab	00:30:42:0C:BD:DD	2	-	-
☑	R451 P31a-4-2-15-8	00:30:42:0D:95:DB	1	-	-
☑	R439 P31a-4-2-12-13	00:30:42:0D:95:D9	1	-	-
☑	R447 P31a-4-2-13-18	00:30:42:0D:95:D6	1	-	-
☑	R447 P31a-4-2-14-13	00:30:42:0D:95:E7	1	-	-
☑	R433 P31a-4-2-11-10	00:30:42:0D:22:5A	1	-	-

RFP configuration file/central:

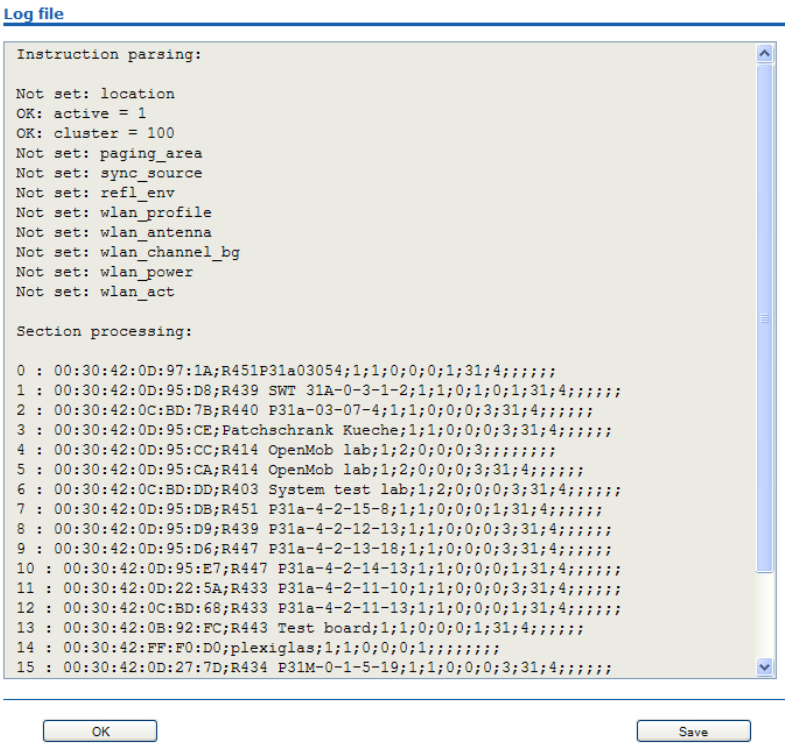
```
################################################################################
# instruction section:
################################################################################
#active
#               Activation of DECT:
#               {'0' or 'false '= inactive, '1' or 'true' = active}
#cluster
#               Cluster, the RFP is referred to:
#               {1..256} (RFP OMM) or {1..4096} (PC OMM)
#paging_area
#               Ignored by Web import and always set to "0" (PA0)
#               Paging area, the RFP is referred to: {'unassigned, '0'..'127'}
#sync_source
#               Synchronisation source:
#               '0' or 'false '= inactive, '1' or 'true' = active}
#refl_env
#               Reflective environment:
#               '0' or 'false '= no, '1' or 'true' = yes}
#site
#               Site Id: {1..250}
#wlan_profile
#               Reference key to an existing WLAN profile
#wlan_antenna
#               Antenna settings: {0=diversity, 1, 2}
```

```
#wlan_channel_bg
#               WLAN channel: {0..14 (size depends on regulatory domain) }
#wlan_power
#               WLAN power = { 6, 12, 25, 50,100 (in percent)}
#wlan_act
#               Activation of  WLAN:
#               '0' or 'false '= inactive, '1' or 'true' = active}
#Note: Web import allows only "0" or "1" for Boolean
###############################################################################


active=1
cluster=100
refl_evc=1
site=1


###############################################################################
data_sequence
###############################################################################
#MAC address;Name;DECT activated;DECT cluster;Paging area;Preferred sync.;
#Reflective env.;Site ID;Building;Floor;Room;WLAN profile;WLAN antenna;
#WLAN channel;WLAN power;WLAN activated
00:30:42:0D:97:1A;R451P31a03054;1;1;0;0;0;1;31;4;;;;;;
00:30:42:0D:95:D8;R439 SWT 31A-0-3-1-2;1;1;0;1;0;1;31;4;;;;;;
00:30:42:0C:BD:7B;R440 P31a-03-07-4;1;1;0;0;0;3;31;4
00:30:42:0D:95:CE;Patchschrank Kueche;1;1;0;0;0;3;31;4
00:30:42:0D:95:CC;R414 OpenMob lab;1;2;0;0;0;3;;
00:30:42:0D:95:CA;R414 OpenMob lab;1;2;0;0;0;3;31;4
00:30:42:0C:BD:DD;R403 System test lab;1;2;0;0;0;3;31;4
00:30:42:0D:95:DB;R451 P31a-4-2-15-8;1;1;0;0;0;1;31;4
00:30:42:0D:95:D9;R439 P31a-4-2-12-13;1;1;0;0;0;3;31;4
00:30:42:0D:95:D6;R447 P31a-4-2-13-18;1;1;0;0;0;3;31;4
00:30:42:0D:95:E7;R447 P31a-4-2-14-13;1;1;0;0;0;1;31;4
00:30:42:0D:22:5A;R433 P31a-4-2-11-10;1;1;0;0;0;3;31;4
00:30:42:0C:BD:68;R433 P31a-4-2-11-13;1;1;0;0;0;1;31;4
00:30:42:0B:92:FC;R443 Test board;1;1;0;0;0;1;31;4
00:30:42:FF:F0:D0;plexiglas;1;1;0;0;0;1;;
00:30:42:0D:27:7D;R434 P31M-0-1-5-19;1;1;0;0;0;3;31;4
00:30:42:0A:C9:62;R439 Decke re.;1;1;0;0;0;1;;
00:30:42:0D:E3:F6;R436 Wand oben ln;1;1;0;0;0;1;;
00:30:42:08:31:5F;R434 Decke ln. Tür;1;1;0;0;0;1
00:30:42:08:31:64;R440  Decke re Fnstr;1;1;0;0;0;1
```

Parse log about import / instruction processing



11.5.2 RFP CONFIGURATION FILE / LOCAL (OM CONFIGURATOR)

11.5.2.1 Supported Instructions

All instructions are taken as a common value and are applied to all records in the data sequence section of that file if the corresponding field is empty.

Instruction	Explanation
active	Local configuration active: {0=inactive(use DHCP instead), 1=active}
net_mask	Net mask
tftp_server	IP address of TFTP server
tftp_file	Path and name of boot file
omm_1	OMM IP address
omm_2	IP address of backup OMM
gateway	Default gateway
dns_server	Up to two DNS server IP addresses
dns_domain	local DNS domain
ntp_address	Up to two NTP server IP addresses
ntp_name	Up to two NTP server names
syslog_addr	IP address of syslog daemon

Instruction	Explanation
syslog_port	Listen port of syslog daemon
core	Flag to enable core dumps
use_vlan	VLAN is enabled
srvlst	List of further tftp server
broadcast_addr	local broadcast address
vlan_id	VLAN Id
country	Country code
preferred_tftp	tftp_server is preferred
import_url	URL
config_file_server	configuration server

11.5.2.2 Data Section Fields

The data section contains the following field order:

1 MAC address of RFP
2 Local configuration active flag
3 IP address of RFP
4 Net mask
5 TFTP server
6 TFTP_FILE
7 OMM IP address
8 IP address of backup OMM
9 Default gateway
10 DNS server
11 DNS domain
12 NTP server IP address
13 NTP server name
14 Syslog daemon IP address
15 Syslog listen port
16 Core
17 Use VLAN
18 Server list
19 Broadcast address
20 VLAN Id
21 Country code
22 Preferred TFTP server
23 Import URL
24 Configuration file server

11.5.2.3 Example

RFP configuration file/local (OM Configurator):

```
# --------------------#
# instruction section #
# --------------------#

active     = 1
net_mask   = 255.255.0.0
tftp_server= 172.30.200.92
tftp_file  = iprfp2G.tftp
omm_1      = 172.30.111.188
omm_2      = 172.30.11.181
gateway    = 172.30.0.2
dns_server = 172.30.0.4,172.30.0.21
dns_domain = aastra.de
ntp_addr   = 192.53.103.108,192.53.103.104
ntp_name   = ptbtime1.ptb.de,ptbtime2.ptb.de
syslog_addr= 172.30.200.92
core = 0
use_vlan = 1
srvlist = 172.30.0.4,172.30.0.21
broadcast_addr = 172.30.255.255
vlan_id = 4
country = 1
preferred_tftp = 1
import_url = https://server/importfiles/ommxy_conf.gz

config_file_server = https://server/configfiles/

# --------------#
# data sequence #
# --------------#
# 1. MAC_ADDR           ! no instruction supported !
# 2. ACTIVE_FLAG
# 3. RFPADDR            ! no instruction supported !
# 4. NET_MASK
# 5. TFTP_SERVER
# 6. TFTP_FILE
# 7. OMM1
# 8. OMM2
# 9. GATEWAY
#10. DNS_SERVER
```

```
#11. DNS_DOMAIN
#12. NTP_ADDR
#13. NTP_NAME
#14. SYSLOG_ADDR
#15. SYSLOG_PORT
#16. CORE
#17. USE_VLAN
#18. SRVLIST
#19. BROADCAST_ADDR
#20. VLAN_ID
#21. COUNTRY
#22. PREFERRED_TFTP
#23. IMPORT_URL
#24. CONFIG_FILE_SERVER

data_sequence
00-30-42-01-01-01;;172.30.111.1
00-30-42-02-02-02;;172.30.111.2
```

Parse log about import / instruction processing

```
 ok: active = 1
 ok: net_mask = 255.255.0.0
 ok: tftp_server = 172.30.200.92
 ok: tftp_file = iprfp2G.tftp
 ok: omm_1 = 172.30.111.188
 ok: omm_2 = 172.30.11.181
 ok: gateway = 172.30.0.2
 ok: dns_server = 172.30.0.4,172.30.0.21
 ok: dns_domain = mitel.com
 ok: ntp_addr = 192.53.103.108,192.53.103.104
 ok: ntp_name = ptbtime1.ptb.de,ptbtime2.ptb.de
 ok: syslog_addr = 172.30.200.92
 not set: syslog_port
 ok: core = 0
 ok: use_vlan = 1
 ok: srvlist = 172.30.0.4,172.30.0.21
 ok: broadcast_addr = 172.30.255.255
 ok: vlan_id = 4
 ok: country = 1
 ok: preferred_tftp = 1
 ok: import_url = https://server/importfiles/ommxyz_conf.gz
 ok: config_file_server = https://server/configfiles/
```

```
 :parsing ok:

 processing of section: data_sequence

[…]

create data:

[…]

RFP configuration:

[…]
```

11.6 RFP EXPORT FILE FORMAT

General

RFP export files are created by OMM Management Portal in ‘csv’-file format which can be easily viewed by a spreadsheet application. Export file contains all or a part of the following parameters:

- MAC address
- Location name
- DECT active
- Cluster
- Paging area
- Synchronisation source
- Reflective environment
- Site
- Building
- Floor
- Room
- WLAN profile reference
- WLAN antenna
- WLAN Channel_bg
- WLAN power
- WLAN active

Example

Following example RFP export file contains all exportable RFP parameters and is re-importable by OMM Management Portal.

```
################################################
# RFP data export file: '/home/user/example.csv'
# Date: 24.09.10  Time: 15:58:19
################################################
#
# Exported parameters:
#
# MAC address
# Name
# DECT activated
# DECT cluster
# Paging area
# Preferred sync.
# Reflective env.
# Site ID
# Building
# Floor
# Room
# WLAN profile
# WLAN antenna
# WLAN channel
# WLAN power
# WLAN activated
#
################################################


MAC address;Name;DECT activated;DECT cluster;Paging area;Preferred sync.;Reflective
env.;Site ID;Building;Floor;Room;WLAN profile;WLAN antenna;WLAN channel;WLAN power;WLAN
activated


data_sequence


00:30:42:0E:71:41;License RFP 1;
true;1;0;false;true;1;B1;F1;R1;1;0;;100;false


00:30:42:0E:26:F1;License RFP 2;
true;1;0;false;false;1;B1;F2;R1;1;0;;100;false


00:30:42:0E:75:59;License RFP 3;
true;1;0;true;false;1;B1;F2;R2;1;0;;100;false
```

11.7 COA CONFIGURATION PARAMETERS

In addition to the information provided in section, the following sections provide an example of a CoA configuration file, and an overview of all supported parameters.

11.7.1 EXTENDED COA EXAMPLE

```
UD_ConfigurationName = "omm-test"   # name of the configuration file
### message options
UD_MessageMelodyNormal = basic_1
UD_MessageMelodyUrgent = basic_2
UD_MessageMelodyAlarm = basic_3

UD_MessageVolumeNormal = level_1
UD_MessageVolumeUrgent = level_2
UD_MessageVolumeAlarm = level_3

UD_MessageOverwrite = true

### ringer melody options
UD_RingerMelodyIntern = butterfly
UD_RingerMelodyExtern = barock
UD_RingerMelodyUnknown = ballade
UD_RingerMelodyCallback = fancy
UD_RingerMelodyRecall = comelody
UD_RingerMelodyVip = easy_groove
UD_RingerMelodySpecial = happy_fair
UD_RingerMelodyAlarm = kitafun
UD_RingerMelodyAppointment = latin_dance

### ringer volume options
UD_RingerVolumeIntern = off
UD_RingerVolumeExtern = increasing
UD_RingerVolumeUnknown = level_1
UD_RingerVolumeCallback = level_2
UD_RingerVolumeRecall = level_3
UD_RingerVolumeVip = level_4
UD_RingerVolumeSpecial = level_5
UD_RingerVolumeAlarm = level_6
UD_RingerVolumeAppointment = level_7

### ringer settings
UD_RingMode = repeat
UD_RingBuzz = true
```

```
UD_RingVibra = true
UD_RingHeadset = false

### attention tones
UD_ToneKey = inactive active
UD_ToneCnf = active
UD_ToneMnend = active no_speaker
UD_ToneAccu = active vibra
UD_ToneRange = inactive active no_speaker vibra
UD_ToneOutrange = inactive

### audio
UD_AudioNoisedetect = true
UD_AudioLoudenv = false
UD_AudioSpkCharger = handsfree

### Systems/Subscription/<System X>
UD_DialCharset = ABC_123
UD_DialCodeImax = 3
UD_DialCodeSys = "6"

### display
UD_DispLang=en
UD_DispFont=large
UD_DispColor=black

### illumination
UD_LightDim = 2h
UD_LightDisp = 2m
UD_LightKey = 45s
UD_LightKeyoptIncom = true
UD_LightKeyoptAlarm = false
UD_LightKeyoptCharge = false
UD_LightCharge = 60s
UD_LightCall = 30s
UD_LightMsgMsg = 10s
UD_LightMsgInf = 20s
UD_LightMsgJob = 30s
UD_LightMsgSos = 60s

### led indications
UD_LedAlive = true
UD_LedIncom = true
```

```
UD_LedRange = false
UD_LedCharge = true
UD_LedInfo = false
UD_LedSpk = true
UD_LedAutoans = false
UD_LedAppoint = false
UD_LedAlarm = false

### list access
UD_ListmodeRedial = pbx
UD_ListmodeCaller = pbx
UD_ListmodeFilter = block_list

### device options
UD_ModeSilentcharge = true
UD_ModeChargeranswr = false
UD_ModeAutoanswr = true
UD_ModeAutoquickhook = false
UD_ModeKey = oem

### phone lock
UD_LockKeyAuto = true
UD_LockKeyTime = 30s
UD_LockKeyPin = true
UD_LockPin = "1234"
UD_LockAdmin = "4711"

### SOS call
UD_SosNumber = "4711"
UD_SosMelody = weekend
UD_SosVolume = increasing
UD_SosHandsfree = true

### alarm sensor
UD_SosMdNumber = "0815"
UD_SosMdAutoanswr = true
UD_SosMdModePre = false
UD_SosMdModeDown = true
UD_SosMdModeNomove = true
UD_SosMdModeEsc = false
UD_SosMdModeRep = false
UD_SosMdSenseAngle = flat
UD_SosMdSenseMove = high
```

```
UD_SosMdSenseEsc = medium
UD_SosMdNomoDown = conversation system_menu local_menu
UD_SosMdNomoNomove = conversation
UD_SosMdNomoEsc = idle conversation system_menu local_menu
UD_SosMdDelayDown = 20s
UD_SosMdDelayNomove = 30s
UD_SosMdDelayEsc = 45s
UD_SosMdTimePre = 30s
UD_SosMdTimeRep = 60s
UD_SosMdTone = true
UD_SosMdVibra = false

### function/feature access
UD_FunctionMenuHide=active_features true
UD_FunctionMenuHide=prog_x TRUE
UD_FunctionLocked=time_x true
UD_FunctionUserProtected=system_x true
UD_FunctionUserProtected=dir_x true
UD_FunctionAdminProtected=system_x true
UD_FunctionGrayed=system_x true

### assignment of keys
UD_KeyAssignmentIdle=side1 caller
UD_KeyAssignmentIdle=ok MenuInfNew
UD_KeyAssignmentIdle=long.ok inf
UD_KeyAssignmentIdle=esc gappp_directory
UD_KeyAssignmentIdle=long.esc directories

UD_KeyAssignmentActive=esc nop

UD_KeyAssignmentIdle=side1 sos_loc
UD_KeyAssignmentIdle=side2 shock
UD_KeyAssignmentIdle=side3 sensor_menu
```

11.7.2 SUPPORTED COA PARAMETERS

The following keys and values are supported in the CoA configuration files:

```
UD_ConfigurationName=

UD_DispLang=
        "default"           // default
        "de"                // D – Deutsch
        "en"                // GB – English
        "fr"                // FR – Français
        "es"                // ES – Español
        "it"                // I – Italiano
        "nl"                // NL – Nederlands
        "sv"                // S – Svenska
        "da"                // DK – Dansk
        "pt"                // P – Português
        "no"                // N – Norsk
        "cs"                // Cz – Cesky
        "sk"                // SK - Sloven\u010dina – Slovensky
        "fi"                // Su – Suomi
        "hu"                // H - Magyar – Hungarian
        "ru"                // RU - \u0420\u0443\u0441\u0441\u043a\u0438\u0439
– Russian
        "tr"                // TURK – Türkçe
        "pl"                // PL – Polski
        "et"                // EST - Esti

UD_DispFont=
        "small"             // Small
        "normal"            // Normal
        "large"             // Large

UD_DispColor=
        "gray"              // Gray
        "black"             // Black
        "business"          // Business
        "future"            // Future
        "plain"             // Plain
        "sweet"             // Sweet

### ringer settings
UD_RingMode = repeat
        "repeat"            // repeat
        "once"              // once
UD_RingBuzz=                // true/false
UD_RingVibra=               // true/false
UD_RingHeadset=             // true/false

### attention tones
UD_ToneKey=
UD_ToneCnf=
UD_ToneMnend=
UD_ToneAccu=
UD_ToneRange=
```

```
UD_ToneOutrange=
        "inactive"          // inactive
        "active"            // active
        "no_speaker"        // without Loudspeaker
        "vibra"             // Vibration

### audio
UD_AudioNoisedetect=        // true/false
UD_AudioLoudenv=            // true/false
UD_AudioSpkCharger=
        "release"           // Release
        "handsfree"         // Handsfree

### Systems/Subscription/<System X>
UD_DialCharset=
        "123_"              // 123...
        "ABC_123"           // ABC...123
        "123_ABC_äöü"       // 123...ABC...äöü
        "ABC_äöü_123"       // ABC...äöü...123
        "123_ABC"           // 123...ABC
UD_DialCodeImax=
        "automatic"         // automatic
        "1"                 // 1
        "2"                 // 2
        "3"                 // 3
        "4"                 // 4
        "5"                 // 5
        "6"                 // 6
        "7"                 // 7
        "8"                 // 8
UD_DialCodeSys=             // <digit-string>

### illumination
UD_LightDim=
        "off"               // off
        "1m"                // 1 min
        "10m"               // 10 min
        "1h"                // 60 min
        "2h"                // 120 min
        "4h"                // 240 min
        "10h"               // 600 min
        "on"                // on
UD_LightDisp=
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "4m"                // 240 sec
UD_LightKey=
        "off"               // off
        "1s"                // 1 sec
        "3s"                // 3 sec
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
```

```
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "4m"                // 240 sec
UD_LightKeyoptIncom=        // true/false
UD_LightKeyoptAlarm=        // true/false
UD_LightKeyoptCharge=       // true/false
UD_LightCharge=
        "off"               // off
        "1s"                // 1 sec
        "3s"                // 3 sec
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "4m"                // 240 sec
UD_LightCall=
        "off"               // off
        "1s"                // 1 sec
        "3s"                // 3 sec
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "3m"                // 180 sec
        "4m"                // 240 sec
        "on"                // on
UD_LightMsgMsg=
        "nochange"          // No change
        "dimmed"            // Light dimmed
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "4m"                // 240 sec
UD_LightMsgInf=
        "nochange"          // No change
        "dimmed"            // Light dimmed
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "4m"                // 240 sec
```

```
UD_LightMsgJob=
        "nochange"          // No change
        "dimmed"            // Light dimmed
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "4m"                // 240 sec
UD_LightMsgSos=
        "dimmed"            // Light dimmed
        "30s"               // 30 sec
        "60s"               // 60 sec
        "2m"                // 120 sec
        "3m"                // 180 sec
        "4m"                // 240 sec
        "5m"                // 300 sec

### led indications
UD_LedAlive=                // true/false
UD_LedIncom=                // true/false
UD_LedRange=                // true/false
UD_LedCharge=               // true/false
UD_LedInfo=                 // true/false
UD_LedSpk=                  // true/false
UD_LedAutoans=              // true/false
UD_LedAppoint=              // true/false
UD_LedAlarm=                // true/false

### list access
UD_ListmodeRedial=
UD_ListmodeCaller=
        "local"             // local
        "automatic"         // automatic
        "pbx"               // PBX
UD_ListmodeFilter=
        "accept_list"       // Accept list
        "block_list"        // Block list
        "filter_off"        // Filter off

### device options
UD_ModeSilentcharge=        // true/false
UD_ModeChargeranswr=        // true/false
UD_ModeAutoanswr=           // true/false
UD_ModeAutoquickhook=       // true/false
UD_ModeKey=
        "emo"               // Esc  >>>  Ok
        "oem"               // Ok  Esc  >>>
        "eom"               // Esc  Ok  >>>
        "meo"               // >>>  Esc  Ok
        "EMO"               // Esc  Menu Ok
        "OEM"               // Ok  Esc Menu
        "EOM"               // Esc  Ok Menu
        "MEO"               // Menu Esc  Ok
```

```
### phone lock
UD_LockKeyAuto=              // true/false
UD_LockKeyTime=
        "5s"                 // 5 sec
        "10s"                // 10 sec
        "20s"                // 20 sec
        "30s"                // 30 sec
        "40s"                // 40 sec
        "50s"                // 50 sec
        "60s"                // 60 sec
        "90s"                // 90 sec
        "120s"               // 120 sec
UD_LockKeyPin=               // true/false
UD_LockPin=                  // <digit-string>
UD_LockAdmin=                 // <digit-string>

### SOS call
UD_SosNumber=                // <digit-string>
UD_SosHandsfree=             // true/false

### alarm sensor
UD_SosMdNumber=              // <digit-string>
UD_SosMdAutoanswr=           // true/false
UD_SosMdModePre=             // true/false
UD_SosMdModeDown=            // true/false
UD_SosMdModeNomove=          // true/false
UD_SosMdModeEsc=             // true/false
UD_SosMdModeRep=             // true/false
UD_SosMdSenseAngle=
        "steep"              // Steep
        "medium"             // Medium
        "flat"               // Flat
UD_SosMdSenseMove=
        "steep"              // Steep
        "medium"             // Medium
        "flat"               // Flat
UD_SosMdSenseEsc=
        "low"                // Low
        "medium"             // Medium
        "high"               // High
UD_SosMdNomoDown=
UD_SosMdNomoNomove=
UD_SosMdNomoEsc=
        "idle"               // in idle
        "conversation"       // during conversation
        "local_menu"         // in local menu
        "system_menu"        // in system menu
UD_SosMdDelayDown=
        "1s"                 // 1 sec
        "2s"                 // 2 sec
        "5s"                 // 5 sec
        "10s"                // 10 sec
        "20s"                // 20 sec
        "30s"                // 30 sec
        "45s"                // 45 sec
        "60s"                // 60 sec
```

```
        "75s"               // 75 sec


UD_SosMdDelayNomove=
        "1s"                // 1 sec
        "2s"                // 2 sec
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "75s"               // 75 sec
UD_SosMdDelayEsc=
        "1s"                // 1 sec
        "2s"                // 2 sec
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "75s"               // 75 sec
UD_SosMdTimePre=
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "75s"               // 75 sec
UD_SosMdTimeRep=
        "5s"                // 5 sec
        "10s"               // 10 sec
        "20s"               // 20 sec
        "30s"               // 30 sec
        "45s"               // 45 sec
        "60s"               // 60 sec
        "75s"               // 75 sec
        "120s"              // 120 sec
        "240s"              // 240 sec
UD_SosMdTone=               // true/false
UD_SosMdVibra=              // true/false

UD_MessageMelodyNormal=
UD_MessageMelodyUrgent=
UD_MessageMelodyAlarm=
UD_RingerMelodyIntern=
UD_RingerMelodyExtern=
UD_RingerMelodyUnknown=
UD_RingerMelodyCallback=
UD_RingerMelodyRecall=
UD_RingerMelodyVip=|UD_RingerMelodySpecial=
UD_RingerMelodyAlarm=
UD_RingerMelodyAppointment=
UD_SosMelody=
        "weekend"           // Weekend
        "butterfly"         // Butterfly
        "barock"            // Barock
```

```
"ballade"            // Ballade
"fancy"              // Fancy
"comelody"           // Comelody
"easy_groove"        // Easy groove
"happy_fair"         // Happy fair
"kitafun"            // Kitafun
"latin_dance"        // Latin dance
"little_asia"        // Little asia
"mango_selassi"      // Mango selassi
"parka"              // Parka
"remember"           // Remember
"rocky_lane"         // Rocky lane
"ringing_1"          // Ringing 1
"ringing_2"          // Ringing 2
"ringing_3"          // Ringing 3
"ringing_4"          // Ringing 4
"ringing_5"          // Ringing 5
"ringing_6"          // Ringing 6
"ringing_7"          // Ringing 7
"ring_vintage"       // Ring vintage
"vibes"              // Vibes
"attack"             // Attack
"doorbell"           // Doorbell
"boogie"             // Boogie
"polka"              // Polka
"classical_1"        // Classical 1
"classical_2"        // Classical 2
"classical_3"        // Classical 3
"classical_4"        // Classical 4
"alla_turca"         // Alla turca
"entertainer"        // Entertainer
"jollygood"          // Jollygood
"in_the_saints"      // In the saints
"drunken_sailor"     // Drunken sailor
"mary_had"           // Mary had
"shell_be_walking"   // Shell be walking
"pippi_longstocking" // Pippi longstocking
"policehorn"         // Policehorn
"synthesizer"        // Synthesizer
"after_work"         // After work
"beep"               // Beep
"basic_1"            // Basic 1
"basic_2"            // Basic 2
"basic_3"            // Basic 3
"basic_4"            // Basic 4
"basic_5"            // Basic 5
"basic_6"            // Basic 6
"basic_7"            // Basic 7
"basic_8"            // Basic 8
"alarm_1"            // Alarm 1
"alarm_2"            // Alarm 2
"alarm_3"            // Alarm 3
"alarm_4"            // Alarm 4
"alarm_5"            // Alarm 5
"alarm_6"            // Alarm 6
"alarm_7"            // Alarm 7
"6700_one"           // 6700 One
```

```
        "6700_two"           // 6700 Two
        "6700_three"         // 6700 Three
        "6700_four"          // 6700 Four
        "6700_five"          // 6700 Five
        "1_attention_tone"   // 1 Attention tone
        "2_attention_tones"  // 2 Attention tones
        "3_attention_tones"  // 3 Attention tones
        "4_attention_tones"  // 4 Attention tones
        "5_attention_tones"  // 5 Attention tones
        "6_attention_tones"  // 6 Attention tones
        "7_attention_tones"  // 7 Attention tones
        "8_attention_tones"  // 8 Attention tones
        "9_attention_tones"  // 9 Attention tones
        "10_attention_tones" // 10 Attention tones
UD_RingerVolumeIntern=
UD_RingerVolumeExtern=
UD_RingerVolumeUnknown=
UD_RingerVolumeCallback=
UD_RingerVolumeRecall=
UD_RingerVolumeVip=
UD_RingerVolumeSpecial=
UD_RingerVolumeAlarm=
UD_RingerVolumeAppointment=
UD_MessageVolumeNormal=
UD_MessageVolumeUrgent=
UD_MessageVolumeAlarm=
UD_SosVolume=
        "off"                // off
        "increasing"         // increasing
        "level_1"            // Level-1
        "level_2"            // Level-2
        "level_3"            // Level-3
        "level_4"            // Level-4
        "level_5"            // Level-5
        "level_6"            // Level-6
        "level_7"            // Level-7

UD_MessageOverwrite=         // true/false

UD_FunctionMenuHide=       // VAL_FUNCTION_xxx and true/false
UD_FunctionLocked=         // VAL_FUNCTION_xxx and true/false
UD_FunctionGrayed=         // VAL_FUNCTION_xxx and true/false
UD_FunctionUserProtected=  // VAL_FUNCTION_xxx and true/false
UD_FunctionAdminProtected= // VAL_FUNCTION_xxx and true/false
        "inf"                // >>> Info (menu item only)
        "caller"             // Caller list
        "redial"             // Redial list
        "box_x"              // >>> Voice box
        "box_set_x"          // Voice box settings
        "active_features"    // >>> Active features
        "msg_x"              // >>> Text message / Jobs / Mails
        "omm_def_msg"        // Pre-defined messages
        "msg_opt_x"          // Message options
        "mel_msg_x"          // Melodies
        "mel_msg"            // Normal message
        "mel_msgurg"         // Urgent message
        "mel_msgsos"         // Alarm  message
        "vol_msg_x"          // Volume
```

```
        "vol_msg"             // Normal message
        "vol_msgurg"          // Urgent message
        "vol_msgsos"          // Alarm  message
        "msg_pop"             // Popup
        "msg_ovwr"            // Overwrite
        "msg_del"             // Delete/Delete all
        "directory_x"         // >>> Directories
        "vip"                 // VIP list
        "vip_x"               // Edit/Add VIP list entry
        "dir_x"               // Personal directory
        "book_x"              // Edit/Add personal directory entry
        "quick_x"             // Quick call
        "add_to"              // Add to...(VIP/Filter/Personal/Central
Directory)
        "time_x"              // >>> Time functions
        "alarm_x"             // Alarm clock 1...3
        "appointment_x"       // Appointment 1...3
        "tea_timer"           // Timer
        "audio_x"             // >>> Audio
        "volume_menu"         // Volume settings
        "tone_menu"           // Attention tones
        "tone_key"            // Key click
        "tone_cnf"            // Confirm tones
        "tone_end"            // End of menu
        "tone_bat"            // Battery warning
        "tone_charger"        // Charger beep
        "tone_cov"            // Coverage warning
        "tone_range"          // Out of range
        "tone_wait"           // Call waiting
        "tone_sensor"         // Pre alarm (63x only)
        "load_environment"    // Loud environment
        "audio_hd"            // Audio quality (only 650)
        "ring_x"              // >>> Ringing
        "ring_mel_x"          // Ringer melodies
        "mel_int"             // Internal call
        "mel_ext"             // External call
        "mel_unk"             // Unknown number
        "mel_nym"             // Anonymous
        "mel_ccbs"            // Callback
        "mel_recall"          // Recall
        "mel_vip"             // VIP call
        "mel_special"         // Special call
        "mel_sos"             // Emergency call
        "mel_alarm"           // Alarm
        "mel_app"             // Appointment
        "ring_volume"         // Ringer volume
        "vol_int"             // Internal call
        "vol_ext"             // External call
        "vol_unk"             // Unknown number
        "vol_nym"             // Anonymous
        "vol_ccbs"            // Callback
        "vol_recall"          // Recall
        "vol_vip"             // VIP call
        "vol_special"         // Special call
        "vol_sos"             // Emergency call
        "vol_alarm"           // Alarm
        "vol_app"             // Appointment
```

```
"ring_type_x"         // Ringer type
"play_once"           // Play melody once on/off
"silent_charging"     // Silent charging
"noise_detection"     // Noise detection on/off
"ring_device_x"       // Ringer device
"ring_off"            // Ringer/Buzzer on/off
"ring_hs"             // Corded headset-ring on/off
"ring_vibra"          // Vibrator-ring on/off
"datamanagment"       // >>> Data management / SD Card
"filter_xx"           // >>> Call filter
"filter_x"            // Edit call filter
"system_x"            // >>> System/Subscription
"start_enrol"         // <New system>
"subs_auto"           // Auto search
"subs_sel"            // Select subscription
"subs_stop"           // Stop searching
"subs_opt"            // >Edit subscription
"no_plan"             // Number plan
"ehs_x"               // >>> Enhanced security
"bt_x"                // >>> Bluetooth (only 62x/63x/65x)
"bt_edit_x"           // >Edit Bluetooth
"set_xx"              // >>> User settings
"prog_x"              // Key programming
"disp_x"              // Display settings
"language"            // Language
"font"                // Font settings
"color"               // Color schemes
"scheme"              // Menu structure
"pic_x"               // Idle picture
"illu_x"              // Illumination/Light
"disp_dim"            // Display dimming
"disp_light"          // Display
"disp_key"            // Keyboard
"disp_charger"        // Charger
"disp_call"           // Conversation
"disp_inf"            // Info message
"disp_msg"            // Text message
"disp_job1"           // Job
"disp_sos"            // SOS alarm
"disp_led"            // LED indications
"led_alife"           // Life indication
"led_incom"           // Incoming call
"led_range"           // Out of range
"led_charge"          // Charge indication
"led_inf"             // Infos
"led_spk"             // Handsfree
"led_app"             // Appointment
"led_alarm"           // Alarm
"list_settings"       // List access
"device_opt"          // Device options
"security_x"          // >>> Security
"lock_x"              // >>> Lock
"keylock"             // Key lock
"pinlock"             // Phone lock
"change_pin"          // Change PIN
"sos_x"               // >>> SOS call
"tms_x"               // >>> Alarm sensor (63x only)
"set_pre_alarm"       // Pre alarm
```

```
        "set_mandown"          // Mandown
        "set_no_move"          // No movement alarm
        "set_shock"            // Shock alarm
        "set_rep_alarm"        // Repeat alarm
        "tms_opt_x"            // >Sensor options
        "rst_x"                // >>> Reset to default
        "off_menu"             // >>> Off menu
        "off"                  // Power off
        "menu"                 // Menu
        "ring_toggle"          // Ringer/Buzzer on/off
        "profile_x"            // >>> Profiles
        "prof_no"              // <No profile>
        "prof_norm"            // Normal
        "prof_hs"              // Headset
        "prof_meet"            // Meeting
        "prof_loud"            // Loud
        "prof_my"              // <Profile 05>
        "prof_ed_x"            // Edit profiles
        "prof_ed_norm"         // Edit Normal
        "prof_ed_hs"           // Edit Headset
        "prof_ed_meet"         // Edit Meeting
        "prof_ed_loud"         // Edit Loud
        "usb_mode"             // USB mode
        "doa_master"           // DOA master
        "menu_x"               // All menus
        "opt"                  // All dial/call options

UD_KeyAssignmentIdle=   // VAL_KEY_xxx and VAL_FKT_IDLE_xxx
UD_KeyAssignmentDial=   // VAL_KEY_xxx and VAL_FKT_DIAL_xxx
UD_KeyAssignmentAlert=  // VAL_KEY_xxx and VAL_FKT_ALERT_xxx
UD_KeyAssignmentActive= // VAL_KEY_xxx and VAL_FKT_ACTIVE_xxx

        "sos"                  // SOS-key (sos)
        "side1"                // Side key up (side1)
        "side2"                // Side key middle (side2)
        "side3"                // Side key down (side3)
        "vip"                  // Hotkey (vip)
        "ok"                   // Softkey left (ok)
        "esc"                  // Softkey middle (esc)
        "opt"                  // Softkey right (opt)
        "left"                 // Navi. left (left)
        "right"                // Navi. right (right)
        "up"                   // Navi. up (up)
        "down"                 // Navi. down (down)
        "green"                // Hook off (green)
        "red"                  // Hook on (red)
        "long.sos"             // SOS-key long (long.sos)
        "long.side1"           // Side key up long (long.side1)
        "long.side2"           // Side key middle long (long.side2)
        "long.side3"           // Side key down long (long.side3)
        "long.vip"             // Hotkey long (long.vip)
        "long.ok"              // Softkey left long (long.ok)
        "long.esc"             // Softkey middle long (long.esc)
        "long.opt"             // Softkey right long (long.opt)
        "long.left"            // Navi. left long (long.left)
        "long.right"           // Navi. right long (long.right)
        "long.green"           // Hook off long (long.green)
```

```
    "long.red"            // Hook on long (long.red)
    "long.d0"             // Key 0 long (long.d0)
    "long.d1"             // Key 1 long (long.d1)
    "long.d2"             // Key 2 long (long.d2)
    "long.d3"             // Key 3 long (long.d3)
    "long.d4"             // Key 4 long (long.d4)
    "long.d5"             // Key 5 long (long.d5)
    "long.d6"             // Key 6 long (long.d6)
    "long.d7"             // Key 7 long (long.d7)
    "long.d8"             // Key 8 long (long.d8)
    "long.d9"             // Key 9 long (long.d9)
    "long.star"           // Star key long (long.start)
    "long.hash"           // Hash key long (long.hash)
    "d0"                  // Key 0 (d0)
    "d1"                  // Key 1 (d1)
    "d2"                  // Key 2 (d2)
    "d3"                  // Key 3 (d3)
    "d4"                  // Key 4 (d4)
    "d5"                  // Key 5 (d5)
    "d6"                  // Key 6 (d6)
    "d7"                  // Key 7 (d7)
    "d8"                  // Key 8 (d8)
    "d9"                  // Key 9 (d9)
    "star"                // Star key (star)
    "hash"                // Hash key (hash)
    "del"                 // C-key (del)
    "spk"                 // Handsfree (spk)
    "long.del"            // C-key long (long.del)
    "long.spk"            // Handsfree long (long.spk)

// functions available in IDLE state
    "default"              // <default>
    "nop"                  // <no function>
    "prog"                 // <key programming>
    "menu"                 // >>>Menu
    "dyn_pbx_option"       // >>>System options / main menu
    "pbx_server_menu"      // >>>Server menu
    "alarm_time"           // Time/Alarms
    "alarm"                //     Alarm clock
    "appointment"          //     Appointment
    "tea_timer"            //     Timer
    "directories"          // Directories (Personal/Central/VIP-list)
    "get_name"             //     Get name from personal directory
    "book"                 //     Personal directory
    "gappp_directory"      //     Central directory
    "vip"                  //     VIP list
    "sos_menu"             // SOS call: with confirmation
    "sos"                  // SOS call
    "sos_loc"              // Localisation alarm
    "shock"                // Shock detection
    "alarm_call"           // Alarm call
    "sensor_menu"          // Alarm sensor
    "navi"                 // Navigation key
    "inf"                  // (i) Info menu
    "MenuInfNew"           // (i) New infos
    "voice_box"            //     Voice box
    "caller"               //     Caller list
    "redial"               //     Redial list
```

```
        "omm_jobs"              //     Job list
        "BestMsg"               //     Text messages
        "omm_inbox"             //     Inbox/Text messages
        "omm_outbox"            //     Outbox/Text messages
        "omm_def_msg"           //     Pre-defined messages
        "txt_send"              //     Send new text message
        "active_features"       // Active DECT phone features
        "feature_access_code"   // Feature access code
        "locating_editor"       // Locating
        "pbx_presence"          // Presence
        "gappp_call_forward"    // Call diversion
        "pbx_fkeys"             // Applications
        "f_1"                   //     App 1
        "f_2"                   //     App 2
        "f_3"                   //     App 3
        "f_4"                   //     App 4
        "f_5"                   //     App 5
        "f_6"                   //     App 6
        "f_7"                   //     App 7
        "f_8"                   //     App 8
        "f_9"                   //     App 9
        "f_10"                  //     App 10
        "profile"               // Profile
        "datamanagment"         // Data managment
        "keylock"               // Key lock
        "pinlock"               // Pin/Phone lock
        "light_toggle"          // Light on/off
        "bt"                    // Bluetooth settings
        "bt_state"              // BT status (on/off)
        "ring_off"              // Ringer on/off
        "vol_ok"                // Volume settings
        "audio_hd"              // HiQ audio on/off
        "off"                   // Power off
        "predial"               // Please dial editor
        "version"               // Version info
        "filter_menu"           // Call filter
        "filter_state"          // Call filter state

    // functions available in DIAL state
        "default"               // <default>
        "nop"                   // <no function>
        "sk_dyn1"               // <dynamic soft-key>
        "caller"                // Caller list
        "redial"                // Redial list
        "get_name"              // Get name from personal directory
        "book_req"              // Personal directory
        "pbx_directory"         // Central directory
        "vip"                   // VIP list
        "add_to"                // Add to... (VIP-, Filter-list, Personal
directory)

    // functions available in ALERTING state
        "default"               // <default>
        "nop"                   // <no function>
        "na"                    // <not available>
        "sk_dyn1"               // <dynamic soft-key>
        "opt"                   // >>>Call options
```

```
        "acc"                   // Accept call / Hook off
        "rej"                   // Reject call / Hook on
        "ring_off"              // Ringing off
        "add_to"                // Add to... (VIP-, Filter-list, Personal
directory)

     // functions available in ACTIVE state
        "default"               // <default>
        "nop"                   // <no function>
        "sk_dyn1"               // <dynamic soft-key>
        "opt"                   // >>>Call options
        "pbx_server_menu"       // >>>Server menu
        "feature_access_code"   // >>>Feature access code
        "dial_r"                // (R) Register recall
        "opt_ect"               // Transfer call
        "opt_brokering"         // Brokering
        "opt_hold"              // Hold call
        "opt_3pty"              // Conference start/stopp
        "rel"                   // Release call / Hook on
        "add_to"                // Add to... (VIP-, Filter-list, Personal
directory)
        "book"                  // Personal directory
        "pbx_directory"         // Central directory
        "vip"                   // VIP list
        "filter"                // Call filter list
        "caller"                // Caller list
        "redial"                // Redial list
        "txt_send"              // Send new text message
        "quick0"                // Quick call list
        "quick1"                //     Quick call 1
        "quick2"                //     Quick call 2
        "quick3"                //     Quick call 3
        "quick4"                //     Quick call 4
        "quick5"                //     Quick call 5
        "quick6"                //     Quick call 6
        "quick7"                //     Quick call 7
        "quick8"                //     Quick call 8
        "quick9"                //     Quick call 9
        "opt_functions"         // Applications
        "f_1"                   //     App 1
        "f_2"                   //     App 2
        "f_3"                   //     App 3
        "f_4"                   //     App 4
        "f_5"                   //     App 5
        "f_6"                   //     App 6
        "f_7"                   //     App 7
        "f_8"                   //     App 8
        "f_9"                   //     App 9
        "f_10"                  //     App 10
        "vol_ok"                // Volume settings
        "vol_up"                // Volume +
        "vol_down"              // Volume -
        "mute"                  // Microphone on/off
        "audio_hd"              // HiQ audio on/off
        "bt_toggle"             // Transfer BT <-> DECT phone
```

11.8 PROTOCOLS AND PORTS

Protocol		OpenMobility Manager	
		Server port	Client port
HTTPS server	tcp server	443 or as configured	any
HTTP server (redirect to https)	tcp server	80 or as configured	any
HTTP/HTTPS client for the SIP-DECT XML terminal interface	tcp	80/443	> 1024
RFP control protocol	tcp server	16321	any
OMM Standby	tcp server	16322	any
OM AXI	tcp server	12622	any
DECTnet monitor	tcp server	8106	any
LDAP	tcp client	389 or as configured	>=1024 (see note)
TFTP client	udp	69 / given by server	>=1024 (see note)
HTTP client	tcp	80 or as configured	>=1024 (see note)
HTTPS client	tcp	443 or as configured	>=1024 (see note)
explicit FTPS client	tcp	21 or as configured	>=1024 (see note)
implicit FTPS client	tcp	990 or as configured	>=1024 (see note)
OM AXI server TCP	tcp server	12621	Any
OM AXI server TLS	tcp server	12622	Any
SIP	udp	5060	as configured
Integrated Conference Server (ICS)	udp	5062	as configured
Telnet (OMM console, Linux x86 server based OMM only)	tcp server	localhost 8107	localhost any

Note: Unbound ports start at port 1024.

Protocol		IP-RFP	
		Server port	Client port
HTTP/HTTPS client for the SIP-DECT XML terminal interface	tcp	80/443	> 1024
RFP control protocol	tcp client	16321	>=1024 (see note)
HTTP server (redirect to OMM web server (http))	tcp server	80 or as configured	Any
SSH server	tcp server	22	Any

Protocol		IP-RFP	
		Server port	Client port
DHCP client	udp	67	68
TFTP client	udp	69 / given by server	>=1024 (see note)
OMCFG server	udp	64000	64000
NTP client	udp	123	123
Syslog client	udp	514 or as configured	514
DNS client	udp	53	>=1024 (see note)
SNMP agent (server)	udp	161	Any
SNMP trap agent (client)	udp	>=1024 (see note)	162
RSXport (debug only)	tcp server	38477	Any
RTP/RTCP (server)	udp	Range of [RTP port base + 71] even ports for RTP, odd ports for RTCP. Port base is 16320 or as configured.	Any
RTP/RTCP (client)	udp	any	Range of [RTP port base + 71] even ports for RTP, odd ports for RTCP. Port base is 16320 or as configured.
Integrated Conference Server (ICS) RTP/RTCP (server)		Range of [ICS RTP port base + 2 * no. conf. channels] even ports for RTP, odd ports for RTCP. ICS Port base is end of RTP range plus 1.	Any
Integrated Conference Server (ICS) RTP/RTCP (client)		any	Range of [ICS RTP port base + 2 * no. conf. channels] even ports for RTP, odd ports for RTCP. ICS Port base is end of RTP range plus 1.
Network Analysis Probe	tcp server	18215	Any

Note: Unbound ports start at port 1024.

11.9 ABBREVIATIONS

AC	Authentication Code
ADPCM	Adaptive Differential Pulse Code Modulation
COA	Configuration Over Air
DECT	Digital Enhanced Cordless Telecommunication
DHCP	Dynamic Host Configuration Protocol
DSP	Digital Signal Processor
FCC	Federal Communications Commission
FTP	File Transfer Protocol
FTPS	File Transfer Protocol Secure
GAP	Generic Access Profile
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
IMA	Integrated Messaging and Alerting Service
IPBX	IP PBX, a telephony system using IP / VoIP
IPEI	International Portable Equipment Identity
OAM&P	Operation, Administration, Maintenance & Provisioning
OM	OpenMobility
OM AXI	OM Application XML Interface
OMC	OM Configurator
OML	OM Locating
OMM	OpenMobility Manager
OMP	OM Management Portal
PARK	Portable Access Rights Key
PBX	Private Branch Exchange, a customer premises telephony system
PP	Portable Part (DECT phone or device)
RCS	Redirection and Configuration Service
RFP	Radio Fixed Part (DECT base station)
RTCP	Real Time Control Protocol
RTP	Real Time Protocol
SNMP	Simple Network Management Protocol
TFTP	Trivial File Transfer Protocol

11.10 DEFINITIONS

Asterisk	Asterisk is a complete Open Source PBX in software. It runs on Linux, BSD and MacOSX and provides many features. Asterisk supports voice over IP in many protocols, and can interoperate with almost all standards-based telephony equipment.
Base station	Please see: RFP or Radio Fixed Part
DECT	**D**igital **E**nhanced **C**ordless **T**elecommunication The standard (ETS 300 175) essentially specifies the air interface, known as the radio interface. Voice and data can both be transmitted via this interface. Its technical key characteristics for Europe are: Frequency range: approx. 1880 – 1900 MHz (approximately 20 MHz bandwidth) carrier frequencies (1728 kHz spacing) with 12 time slots each Doubling the number of time slots (to 24) using the TDMA process Net data rate per channel of 32 kbps (for voice transmission using ADPCM) Voice coding using the ADPCM method Its technical key characteristics for North American are: Frequency range: approx. 1920 – 1930 MHz (approximately 10 MHz bandwidth) 5 carrier frequencies (1728 kHz spacing) with 12 time slots each) Doubling the number of time slots (to 24) using the TDMA process Net data rate per channel of 32 kbps (for voice transmission using ADPCM) Voice coding using the ADPCM method
GAP	**G**eneric **A**ccess **P**rofile The GAP standard (ETS 300 444) is based on the same technology as DECT, but is limited to the most important basic features. This standard was created in order to allow telephones of different vendors to be used on any type of DECT system. It thus represents the smallest common denominator of all manufacturer-specific variants of the DECT standard. An important limitation in the GAP standard is that external handover is not possible. For this reason connection handover is used, which is supported by GAP terminals. The operation of GAP-capable telephones is comparable to that of analogue terminals. For example, features can be called up via '*' and '#' procedures.
Handover	A handover is similar to roaming, but occurs during an ongoing call. A handover normally takes place "in the background", without disrupting the call (seamless handover).

IPEI	**I**nternational **P**ortable **E**quipment **I**dentity 13-digit identification code for DECT phones Example: 00019 0592015 3 (the final digit is the checksum). The code is represented in decimal form. This code is globally unique.
PARK	**P**ortable **A**ccess **R**ights **K**ey Access code for the Portable Part. This code determines whether a DECT phone can access a particular DECT system. Used for unique selection of a dedicated the system from a DECT phone at enrolment/subscription time. Provided via the PARK online service and unique to each SIP-DECT deployment.
Radio Fixed Part (RFP)	An RFP provides a DECT radio cell and terminates the radio link from the portable DECT device. One or more RFPs build the area of radio coverage.
Roaming	While in motion, the DECT phone performs ongoing measurements to determine which RFP is best received. The one that can be best received is defined as the active RFP. To prevent the DECT phone from rapidly switching back and forth between two RFPs that have similar signal strength, certain threshold values are in effect.

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12 INDEX

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