MiVoice Office 400

SIP DECT Configuration Guide for MiVoice Office 400

RELEASE 7.0

January 2022

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Overview

The purpose of this document is to help installers and administrators know about the installation / configuration, administration, and maintenance of the complete SIP-DECT solutions.

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, WLAN, 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 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.
- MiVoice Office 400 Communication Server platform.

The MiVoice Office 400 Communication Server, OMM, and the RFPs communicate through the IP infrastructure. And, the RFPs and the DECT phones communicate over the air.

Mitel SIP-DECT overview

This chapter contains a brief overview of the SIP-DECT phone and the technology.

Mitel SIP-DECT is a communication system comprising radio stations (also known as RFPs, Radio Fixed Part) and controlled through an OpenMobility Manager (OMM). Communication occurs according to the Session Initiation Protocol (SIP) and serves the call control online. SIP-DECT is scalable from single-cell to large enterprise installations. One central OpenMobility Manager (OMM) can control base stations located in multiple sites.

With Mitel SIP-DECT and Mitel 600 DECT series phones, comprehensive solutions can be provided for wireless telephony on IP-based networks. This requires RFP radio units that can be directly connected to other VoIP devices on the LAN. OpenMobilityManager (OMM) installed on one of the RFP radio units or on a PC, constitutes the management interface for the Mitel SIP-DECT solution.

The SIP DECT system has the following capacities:

- When using an RFP-OMM: 256 DECT base stations (RFPs) / 512 (1024) DECT phones.
- When using a Linux-OMM: 4096 DECT base stations (RFPs) / 10000 DECT phones.

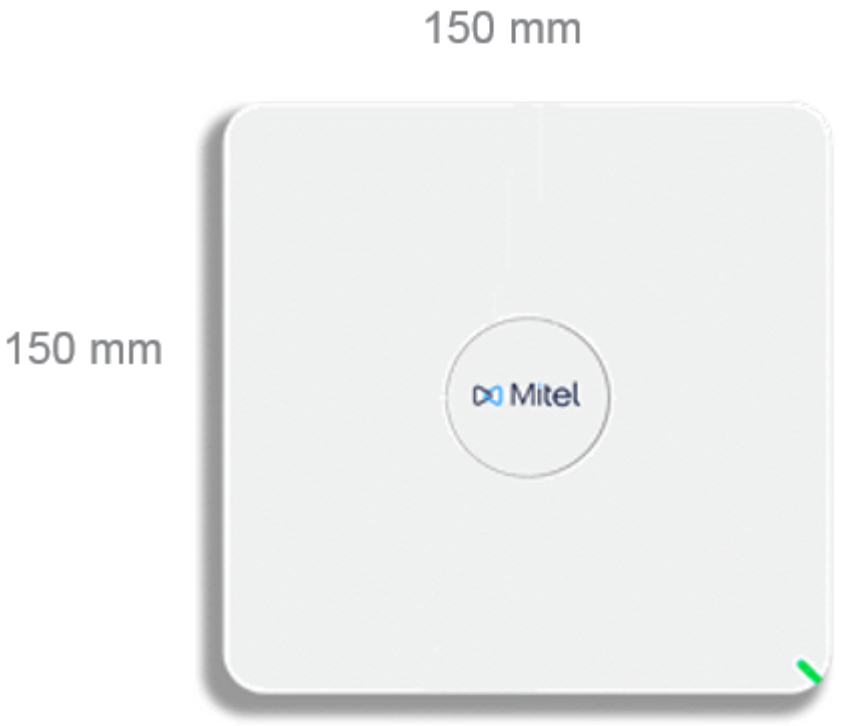
The MiVoice Office 400 supports up to 600 SIP-DECT phones. In most cases, the SIP-DECT solution includes less than 256 RFPs, the OMM is hosted on a RFP and no additional server is required.

RFP hardware support

Mitel SIP-DECT supports various RFP hardware and base stations of the fourth generation. These are as follows:

RFP 44 base stations:

RFP 44 is an indoor wall mounting RFP having a powerful CPU for fast start-up phase.



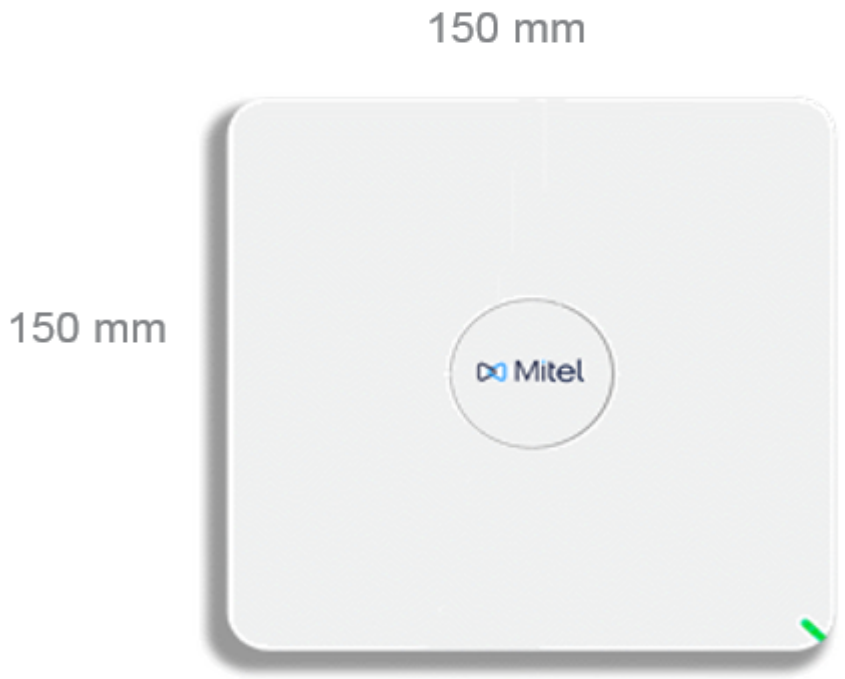
RFP 44

The RFP 44 base station has the following properties:

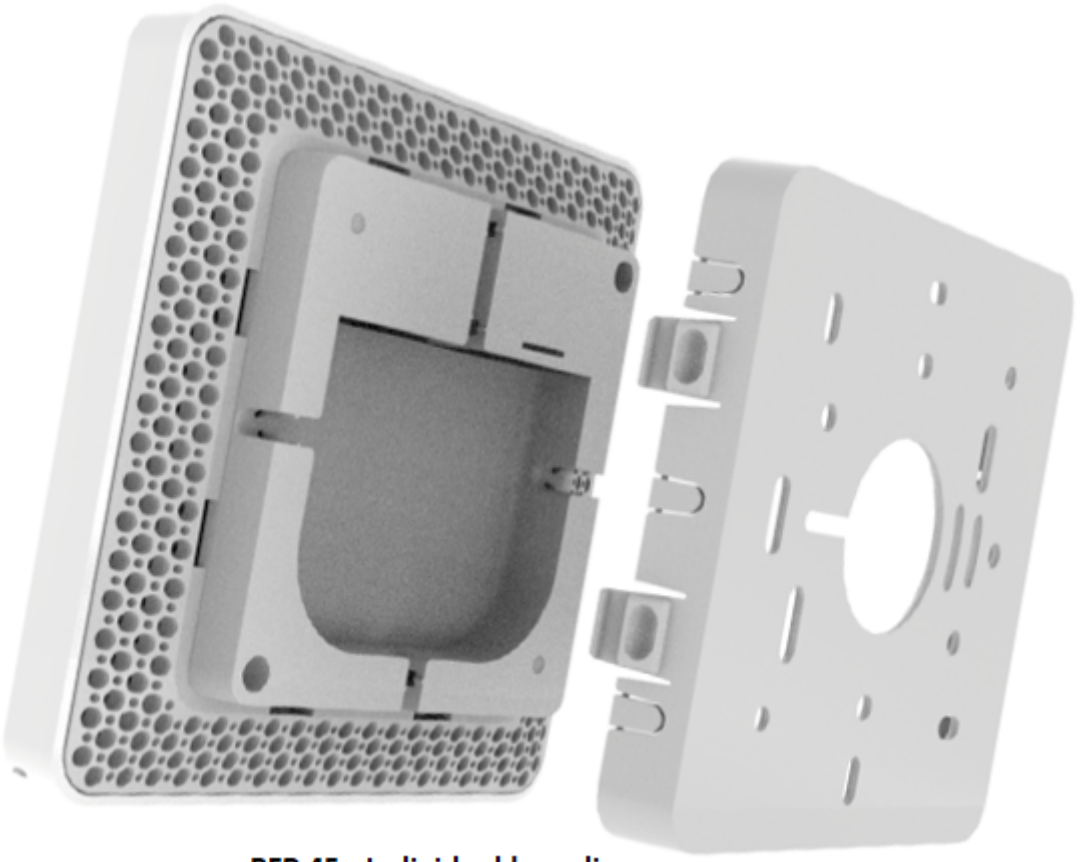
- Is a wall-mounting base station with integrated antennas.
- Has eight DECT channels; four for voice and signaling, and four for signaling.
- Supports the following Codecs: G.722, G.711, and G.729.
- Has 1x 10/100 Mbit/s LAN ports.
- Features a Configuration button.

RFP 45 base stations:

RFP 45 is an indoor RFP having a powerful CPU for fast start-up phase.



RFP 45



RFP 45 - Individual branding

The RFP 45 base station has the following properties:

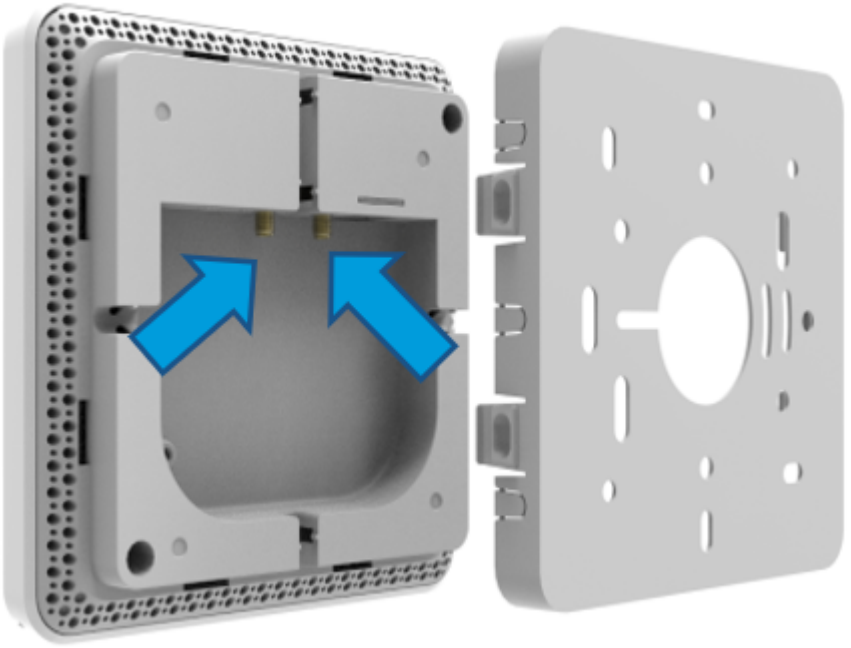
- Is a wall-mounting base station with integrated antennas and a Configuration button.
- Has 12 DECT channels; eight for voice and signaling, and four for signaling.
- Supports the following Codecs: G.722, G.711, and G.729.
- Has 1x 10/100 Mbit/s LAN ports.
- Is compatible with mobile devices (such as Mitel 602d, Mitel 600d, Mitel 650c, and Mitel 142d), CAT-iq 1.0 (Cordless Advanced Technology - Internet and Quality) Wideband Audio (such as Mitel 650c), and DECT XQ for reflective environments.
- Supports PoE 802.3af Class 2 power supply.
- Software can be downloaded through TFTP, FTP, HTTP(S), and SFTP.

RFP 47 base stations:

RFP 47 is an indoor RFP having a powerful CPU for fast start-up phase and connectors for external antennas.

RFP 47

RFP 47 - Port view



The RFP 47 has the following properties:

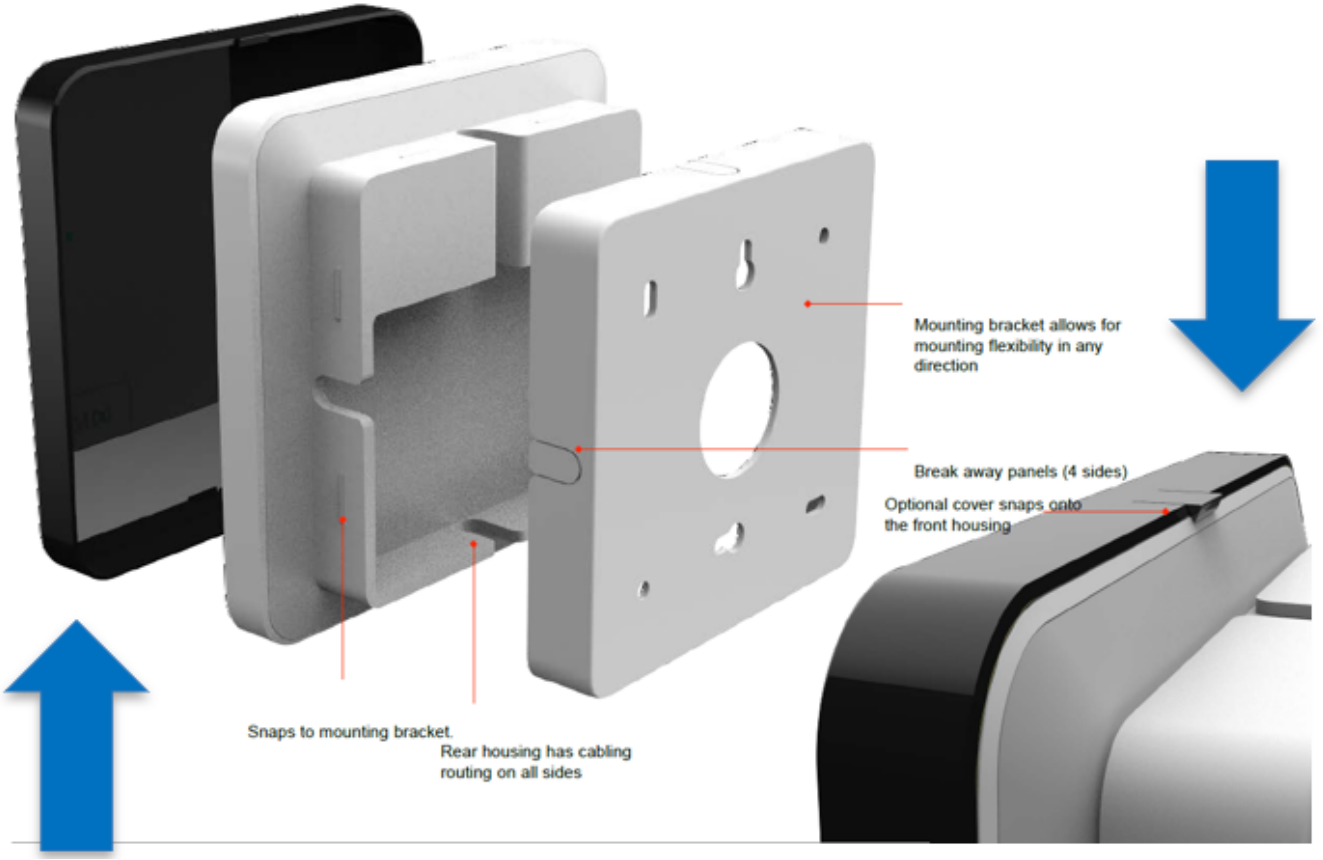
- Is a wall-mounting base station with a Configuration button.
- Has 12 DECT channels; eight for voice and signaling, and four for signaling.
- Supports the following Codecs: G.722, G.711, and G.729.
- Has 1x 10/100 Mbit/s LAN ports and 2x SMA connectors.
- Is compatible with mobile devices (such as Mitel 602d, Mitel 600d, Mitel 650c, and Mitel 142d), CAT-iq 1.0 (Cordless Advanced Technology - Internet and Quality) Wideband Audio (such as Mitel 650c), and DECT XQ for reflective environments.
- Supports PoE 802.3af Class 2 power supply.
- Software can be downloaded through TFTP, FTP, HTTP(S), and SFTP.

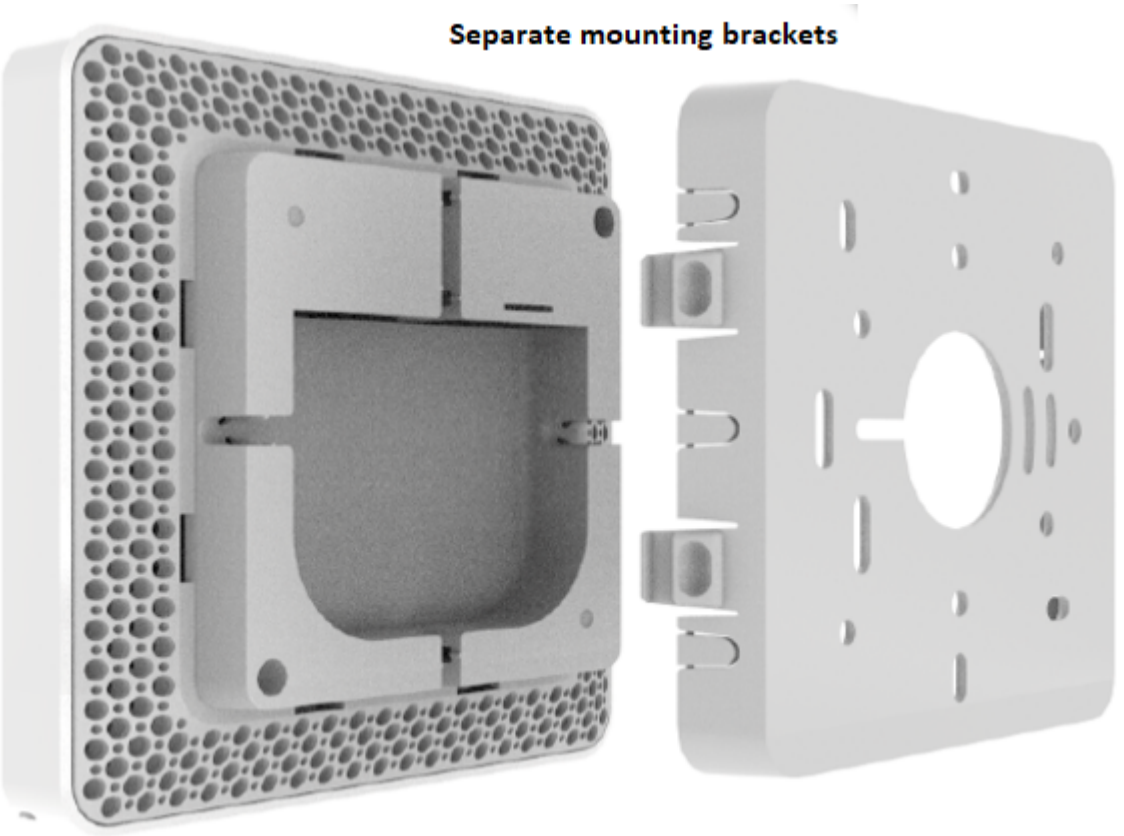
RFP 48 base stations:

RFP 48 is an indoor RFP having a powerful CPU for fast start-up phase.

RFP 48

Options for individual branding





The RFP 48 has the following properties:

- Is a wall-mounting RFP with an integrated WLAN access point conforming with IEEE 802.11abg/n/ac (MIMO 3x3).
- Features integrated antennas (DECT / WLAN), a Configuration button, and operates in the frequency range of 2.4 GHz to 5 GHz.
- Supports the following Codecs: G.722, G.711, and G.729.
- Has 12 DECT channels: eight for voice and signaling, and four for signaling.
- Ports 1x 10/100/1000 Mbit/s LAN.

PoE classes of RFP:

RFP Type	PoE class 802.3af	Interface IEEE 802.3	Note
RFP 44	2	1x 10/100Mbit/s	RFP 4th Generation
RFP 45	2	1x 10/100 Mbit/s	RFP 4th Generation
RFP 47	2	1x 10/100 Mbit/s	RFP 4th Generation
RFP 48	3	1x 10/100/1000 Mbit/s	RFP 4th Generation

Preparation and planning

This chapter includes preparation and planning steps to be completed prior to installation.

Introduction

This chapter covers detailed information about preparation and planning a SIP-DECT installation. It provides you with the information you need to make the best choices for the SIP DECT configuration that guarantee good communication quality. To begin with, it is necessary that you gather relevant information about the available network infrastructure.

Planning number and position of DECT RFPs for synchronisation

The number and the position of the RFPs is determined by the area to cover and by the necessity for RFPs to be synchronised between each other. To ensure a seamless communication experience, the SIP-DECT system switches an ongoing DECT phone call from one DECT base station to another if the radio communication quality drops below a certain threshold handover. The seamless handover is possible only if the participating DECT base stations are synchronized. DECT base station synchronization is performed via radio communication between DECT base stations (synchronisation over the air), which in turn requires an effective radio coverage planning. The distribution of the locations that your system need to cover determines how you deploy the network.

Clustering and 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*). The RFPs are assigned to the respective cluster by configuration. Note that overlapping clusters in an area must be avoided. The handover between RFPs in different clusters is not supported.

A separate cluster number is required for a remote site (for example, for a single DECT base station servicing an office abroad). Also, if the network connection to the isolated site's DECT base station cannot transport DHCP, you may use static IP address configuration for the single DECT base station.

If your SIP-DECT system includes large number of DECT base stations, you should configure the paging area size to optimize the signalling necessary for paging a DECT phone throughout the SIP-DECT system.

DECT base station synchronisation

The first DECT base station to complete the start-up transmits a signal on the air for the other DECT base stations to synchronize with. A DECT base station that gets in sync transmits a signal on the air and

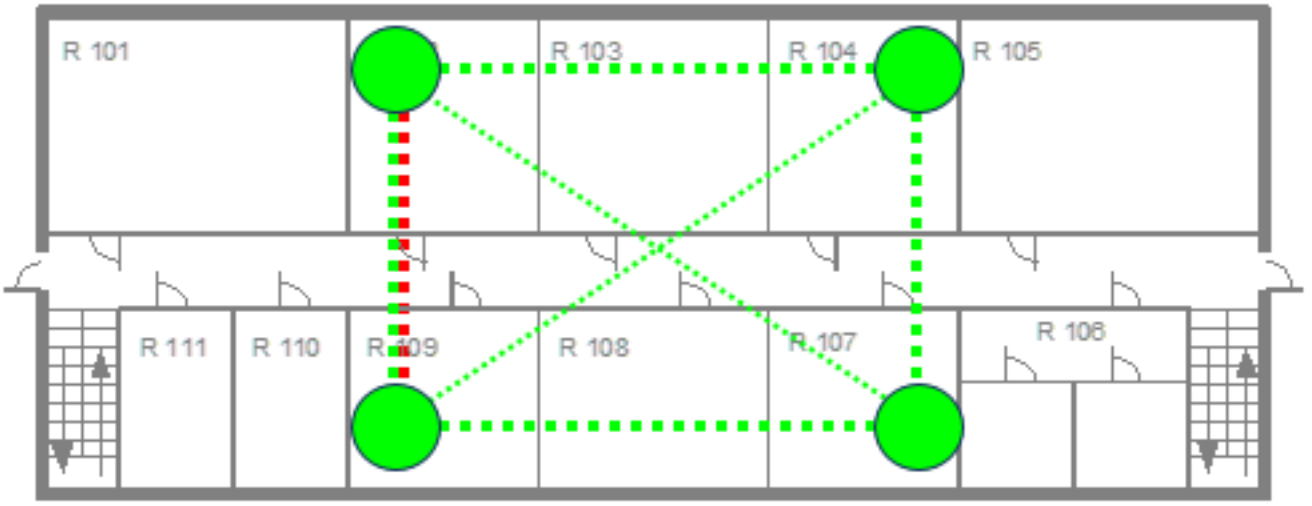
becomes the sync source for the next DECT base station. Only DECT base stations that can receive a synchronization signal are synchronized.

For the DECT base station to sync with another DECT base station, the signal strength cannot drop below -70 dBm. While a DECT base station is not in sync, no calls can be established using that DECT base station. If a DECT base station loses the synchronization, the DECT base station does not accept new calls (“busy bit”). There is a delay (of maximum 3 minutes) until the active calls on this DECT base station end. Then it tries to get synchronized again.

A SIP-DECT installation is more reliable if a DECT base station can receive signals from more than one DECT base station because the other signals are also used and provide redundant paths for synchronisation. See the examples below:

Unreliable installation

Reliable installation



Only unfavorable setups that do not provide for redundant synchronization paths encounter synchronization issues.

Sometimes DECT base stations do not need to be synchronized (for example, if they are in different buildings). Such DECT base stations can be put into different clusters. DECT base stations in different clusters are not synchronized with each other. Different clusters start up at the same time independently.

Checking the synchronization of a network

For every cluster, a periodical check of the synchronization of the network is done. If the network is split into at least two subnets, all the RFPs of the subnet(s) are resynchronized. During the initial synchronization, this check is deactivated. You can check the DECT base station synchronization from the **Sync View** menu of the MiVoice Office 400 WebAdmin.

DECT base station channel capacity

The DECT base station has 12 available time slots on air; of these, 8 can have associated DSP/media resources for media streams. All DECT time slots are used for control signalling, software download over air, messaging, and bearer handover independent of associated DSP/media resources.

If all the 8 media stream channels are used, the DECT base station announces a *busy bit*. In that case, the DECT phones determine whether any other DECT base station has an appropriate signal strength. If there is one, the DECT phone performs a handover to that DECT base station. Once the handover is complete, the DECT base station lowers its *busy bit*.

Whenever the busy state is announced, a log entry is made in the system logs. If the announcement of busy raises in a specific area, an additional DECT base station must be installed to double the number of media streams available for calls.

Field strength

For a handover, the field strength threshold values between neighbouring RFPs must be within –60 dBm and –65 dBm.

For sync over air, the field strength between RFPs must be at least -70 dBm.

RFP Positioning

A minimal distance must be maintained between RFPs to avoid interferences. The recommended minimum distance between RFPs is approximately 2.5m horizontally and 1m vertically. The RFP must not be closer than 0.5m to the ceiling and not farther than 1.5m from the ceiling. A safe distance from other radio equipment should be mentioned. Antennas should maintain a safety distance of at least 0.5m from persons.

Customer IP infrastructure

Prerequisites

To establish and maintain a SIP-DECT installation, the network infrastructure must include at least the following components:

- VoIP capable IP network
- Switches supporting PoE for DECT base stations

Make sure, you must do the following:

- Defining number and position of the DECT RFPs. In case of complex building or reflective environment, a site survey might be done.

NOTE: The Mitel KMS knowledge base document HO1712, *600 DECT Phones site survey mode* gives you hint for using the survey mode of 600d handsets.

- Understanding the customer IP network to chose the best IP addressing method for that project.

Understanding the customer network

Understanding the network topology is necessary for choosing the most effective IP addressing method for RFPs. You must keep the following in focus:

- Will all RFPs be connected in the same subnet?
- Will the RFPs be connected to different segments in bridge mode (within the same subnet)?
- If the customer requires a VLAN for voice, will the MiVoice Office 400 communication server be connected to this VLAN?

If multiple sites or multiple networks are involved, or if CTI solutions or PC client applications are required, we recommend setting up a workshop with the customer and the IT responsible. Mitel professional services can provide assistance.

Choice of IP addressing method

There are several methods for allocating IP Addresses to the SIP-DECT RFPs. The selection of the method for allocating IP Addresses to the SIP-DECT RFPs depends on the IP network of the customer.

Using MiVoice Office 400 DHCP Server (recommended):

This method is the simplest and must be the first one to be considered for the following reasons:

- The MiVoice Office 400 DHCP server provides by default all the necessary parameters to the SIP-DECT RFPs (IP addresses of OMMs, configuration file server, firmware server, and so on).
- No configuration is required in the customer’s DHCP server.

The MiVoice Office 400 DHCP server can manage up to 3000 IP addresses (SMBC: 500 IP addresses, Mitel 470: 400 IP addresses, Mitel 417/430: 50 IP addresses, and virtual appliances: 3000) which is

enough for projects in the Small and Medium Enterprise segment. The embedded DHCP server can be configured to serve only Mitel equipment.

Regardless of whether the internal MiVO 400 DHCP server or an external one is used, we recommend allocating fixed IP addresses to the RFPs defined as OMM (primary and secondary) and dynamic IP addresses to all other RFPs.

Alternative solution: Static IP addressing (manual configuration of RFPs):

If the MiVoice Office 400 DHCP server cannot be used (because of IT policies), the simplest alternative is to use static IP addressing of RFPs. This method is effective if the number of RFPs is limited. The IP address of each RFP must be configured manually using the OM Configuration (OMC) tool.

Alternative solution: Using a third-party DHCP server:

Another option is to use a third-party DHCP server for setting up Mitel SIP-DECT with MiVoice Office 400 communication server.

IT requirements:

- Configuration of the DHCP server to provide the necessary information to the RFPs (vendor options). See the appendix for the mandatory parameters to be configured for Mitel SIP-DECT with MiVoice Office 400.
- *Recommended*: Require IT to allocate static IP addresses for the RFPs defined as OMM (primary and secondary). These addresses are required to configure the MIVO 400.

The following table summarizes the different situations:

Scenario	Static IP	MiVoice Office 400 DHCP server	External DHCP server	LLDP
MiVoice Office 400 and all RFPs in the same subnet	OK[1]	OK; recommended	OK[4]	Not supported
MiVoice Office 400 and RFPs in several segments in *Bridge Mode* (in the same subnet)	OK[1,2]	OK; recommended DHCP request Forwarding must be configured	OK[4]	Not supported
MiVoice Office 400 and RFPs in different subnets	OK[1,2]	Supported[3]	OK[4]	Not supported

Scenario	Static IP	MiVoice Office 400 DHCP server	External DHCP server	LLDP
VLAN	OK[1,2]	OK; if the MiVoice Office 400 and the RFPs are in the same VLAN	OK[4]	Not supported
VLAN and RFPs connected to *Trunk Port*	OK[1,2]	OK under conditions. See[5]	OK[4]	Not supported

[1] Configure RFPs using the OM Configuration tool (Java Tool).

[2] Hint: use an RFP as Proxy Server to configure all RFPs of the subnet.

[3] The MiVoice Office 400 DHCP server supports upto 100 subnets.

[4] For the compulsory parameters, see the table in the Appendix.

[5]If the external DHCP server in the native LAN replies with the corresponding VLAN ID and the MiVoice Office 400 is in the same VLAN as the MiVoice Office 400 DHCP server.

Configuration of SIP-DECT solution on MiVoice Office 400

This chapter describes how to set up a SIP-DECT system. This covers various tools used for configuration, license requirement, configuring an RFP-based OMM, and setting up basic DECT telephony service.

Prerequisites

For configuring Mitel SIP-DECT on MiVO400, you need some configuration tools and license. These are briefly explained in this section.

Configuration Tools

The following table describes the tools used for configuration of Mitel SIP-DECT:

Tools	Description
MiVoice Office 400 WebAdmin	• Web-based configuration tool for configuring and monitoring a single system or an entire network (AIN). • Access control with user accounts and predefined authorization profiles. • Integrated online help and configuration assistant.
OMM	• OMM stands for Open Mobility Manager. • Web service for system configuration. • Management and signaling software for the SIP-DECT solution.
OMP	• OMP stands for OM Management Portal. • Java tool used to view and configure OMM system data. • OMP is provided as an AdoptOpenJDK JAVA 11 application. • With MiVoice Office 400, OMP is required to configure only for troubleshooting.

Tools	Description
OM Configurator	• OM Configurator stands for Open Mobility Configurator. • Java tool used to manage the SIP-DECT solution. • OMC is provided as an AdoptOpenJDK JAVA 11 application. • With MiVoice Office 400, the OM Configurator is required for manual setup of the RFPs if the DHCP configuration cannot be used.

Configuration on MiVoice Office 400

This chapter covers step-by-step configuration of the SIP-DECT system on the **MiVoice Office 400** communication server. The configuration of the DHCP server depends on the analysis of the infrastructure with IT responsible of the customer. See chapter *Choice of IP addressing method* to know more about different variants of IP addressing method. This chapter describes the scenario where the MiVoice Office 400 DHCP server is used.

Configuring the MiVoice Office 400 DHCP server

Preconditions:

- The MiVoice Office 400 must have a fix IP address.
- IT administrator must provide a range of IP addresses for allocations to SIP-DECT RFPs and Mitel IP and SIP phones.

You configure the DHCP server with the following basic steps:

1. Login to MiVoice Office 400 WebAdmin using your credentials.
2. Navigate to **Configuration** >**IP Network** > **DHCP Server** > **Server Configuration**.
3. Select the **DHCP server** check-box to switch on internal DHCP server.
4. Select appropriate value in the **DHCP support** field. the recommended value in the **DHCP support** field is **Mitel devices only**.

   If you select **All**, all the devices in the subnet requesting an IP address (all DHCP clients) are provided with an IP address from the address range of the DHCP server, and the link is registered. Selecting **Mitel devices only** allows only Mitel DHCP clients such as IP-bound system phones to be provided with an IP address and get registered
5. For the **Vendor options** field, you must select the value as **Default**.
6. Specify settings for the DHCP parameters: **First IP address**, **Last IP address**, and **Lease time**. The value for the **Lease time** is set by default to 1 day. This value is fine in most cases.

7. Click the **Apply** button to save the settings.
8. Reserve one IP address for primary OMM and one for secondary OMM from the range of IPs. For this, navigate to **Configuration** > **IP Network** > **DHCP Server** > **IP addresses**. Click **Change**.
9. Select free IP address, Select the check-box **Reservation** and enter the **MAC address** of the primary OMM.
10. Repeat step 9 for secondary OMM RFP and press **Apply** to save the settings.

To know more about configuring the DHCP server, see MiVoice Office 400 WebAdmin Online Help. Keep reserve one of the IP addresses from the range to allocate to the RFP that works as primary and secondary OMM.

Specifying SIP-DECT settings

To establish the first connection between MiVoice 400 and to a new OMM, enter the following details:

1. Login to MiVoice Office 400 WebAdmin using your credentials.
2. Navigate to **Configuration** > **System** > **SIP-DECT** > **System**.
3. Select the check-box **Service enabled** to activate Mitel SIP-DECT system together with MiVoice Office 400.
4. In the **Primary OMM IP address** field, enter the IP address of the primary OpenMobilityManager server (OMM server). Note that this is one of the reserved IP addresses from the DHCP range that you allocated while configuring MiVoice Office 400 DHCP server.
5. In the **Secondary OMM IP address** field, enter the IP address of the secondary OMM server. This is one of the reserved IP addresses from the DHCP range that you allocated while configuring MiVoice Office 400 DHCP server. Note that it is relevant only if two OMM servers are available.
6. Enter **User name (Default: omm)**.
7. Enter **Password (Default: omm)**.
8. Click the **Apply** button to save the settings.

Starting up RFP

Connect the RFP(s) to your LAN and power up the units to start it up and running. After the RFPs are connected to LAN and powered up, the RFPs do a software update which might take some time.

If the connection is already established, perform the following steps:

1. Login to MiVoice Office 400 WebAdmin using your credentials.
2. Navigate to **Configuration** > **System** > **SIP-DECT** > **System**.
3. Select the check-box **Service enabled** to activate Mitel SIP-DECT system together with MiVoice Office 400.

4. If you want to change the password, perform the following steps; otherwise, skip Step 4.
   a. In the **Current Password** field, enter the default password.
   b. In the **New password** field, change the default password.
   c. In the **Password confirmation** filed, enter the password again.
5. In the **System name** field, enter the name of the SIP-DECT system. It is displayed on the phone screen after a SIP-DECT cordless phone is registered.
6. **PARK** - If the license file is not fetched, click **PARK** button. If the license file is already fetched, the PARK will be included in the license file.

   For more information on PARK, see *Importing license file and enabling PARK service*.
7. Enter a value of your choice in the field **Authentication code (AC)**. Alternatively, you can also press the button **Create new AC** to allow the MiVoice Office 400 WebAdmin tool define a value. This same authentication code will be used for subscribing the terminals.
8. Click the **Apply** button to save the settings.

To know more about configuring SIP-DECT settings, see **MiVoice Office 400 WebAdmin Online help**.

SIP-DECT RFPs

SIP-DECT RFPs also called base stations are distributed over an IP network and offer DECT, WLAN, and IP interfaces

To add a new base station, perform the following steps.

1. Login to MiVoice Office 400 WebAdmin using your credentials.
2. Navigate to **Configuration** > **System** > **SIP-DECT** > **Base stations**.
3. Click **New**.
4. Enter **Name** of the base station.
5. Enter **MAC Address** of the base station.
6. Select **DECT On** check-box. This allows only one RFP to switch on/off.
7. Enter **Cluster** id. By default, the value is 1.
8. **Reflective environment** check-box is enabled only if the system is in a building with a heavy metallic structure.
9. Select **Conferences** check-box to enable additional conference channels on RFPs.
10. Click **Apply**.

For more details on how to search for base stations, delete base station(s), refer *WebAdmin Online* help document.

Subscribing SIP-DECT phones

Each SIP-DECT phone created under Terminals must be subscribed. Subscribed DECT-phones are displayed here. For more information on how to subscribe a SIP-DECT terminal, see **Subscription of a new DECT phone section** in the *MiVoice Office 400 WebAdmin online help*.

Configuring phones and users

This chapter explains steps about creating user and assigning SIP-DECT terminal in the MiVoice Office 400.

Follow these basic steps to create a new user:

1. Login to the MiVoice Office 400 webadmin portal using your credentials.
2. Navigate to **Configuration** > **Users** > **User list**.
3. Click the **New** button and follow the input prompts.
4. To edit a user's properties, click the user's name or call number.
5. Click **Create and assign**.
6. Select the terminal interface as **Mitel SIP** and press **Apply**.
7. Select **Terminal type** as **Mitel SIP-DECT**. Note that no terminal license is required for Mitel SIP-DECT phones.

To know more about creating user and assigning a SIP DECT terminal, refer to the MiVoice Office 400 WebAdmin online help.

Importing license file and enabling PARK service

A Portable Access Rights Key (PARK) is required to operate a SIP-DECT system. The license file is uploaded using the MiVoice Office 400 WebAdmin. For systems with more than five RFPs, the license file generated by the SLS contains the PARK code. For license-free systems (up to five RFPs), a PARK code valid for up to 256 RFPs can be retrieved from the Mitel Park Server.

For uploading the PARK license file, follow these steps:

1. Navigate to **Configuration** > **System** page of the MiVoice Office 400 WebAdmin.
2. Click the **Upload License** button and select the license file. The PARK code is displayed next to the **PARK** text-box.

User Login to DECT phone

Repeat the following login procedure to link each SIP-DECT phone with the MiVoice Office 400 user.

1. In the Idle screen login, there are two ways to login.
   – Press **Log in** softkey.

OR

– Press **Menu** softkey, select **Log in**, and click **Ok**.

Hint: the feature access code prefix and login codes are defined in the MiVoice Office 400 WebaAdmin under **Configuration** > **System** > **SIP-DECT** > **System**.

2. Enter **Log in** user-number (of the MiVoice Office 400 user) and click **Ok**.
3. Enter **Login Password** and click **Ok**.

Configuration for SIP-DECT conference

The SIP DECT System supports integrated conference through Integrated Conference Server (ICS), which allows a user to initiate a three-party conference. For this, some configurations must be done both in OpenMobilityManager and on the MiVoice Office 400 communication server. The ICS provides the full range of voice codecs (G722, G711, G729, and so on) and supports trans-coding for all parties in a three-way conference session.

The SIP-DECT 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.

To facilitate the configuration, you can open up-to 10 SIP-DECT conferences with a call number. For each call number, a user is then automatically opened with a predefined permission set and assigned a SIP terminal.

Configuring conference rooms in MiVoice Office 400

SIP-DECT conference rooms must be created to enable a SIP-DECT phone user to setup a conference. As many conference rooms as the number of simultaneous conference calls initiated by SIP-DECT phones are required. Note that each conference room requires a MiVoice Office 400 **User** license or **Basic User** license.

You can enable SIP-DECT conference channels for each RFP through the MiVoice Office 400 WebAdmin (except the OMM-RFP since the conference channel is enabled by default). Additionally, the RFP overview page shows whether conference is enabled or disabled.

To configure conference rooms in MiVoice Office 400, follow these basic steps:

1. Log-in to the MiVoice Office 400 WebAdmin using your credentials
2. Navigate to **Configuration** > **System** > **SIP-DECT** > **System** to view the SIP-DECT configuration settings.
3. Click + under **Conferences** to add SIP-DECT conferences details. Enter calling number of the conference and select the license type.

Enabling SIP-DECT internal 3-way conferencing

you are required to install the OMP tool, see *Appendix A - Using OM Management Portal (OMP)*.

To enable SIP-DECT internal 3-way conferencing for DECT phones, follow these basic steps:

1. Open the OMP application and login to it using your credentials.
2. Navigate to **System** -> SIP page.
3. Go to the **Conference** tab and select **Integrated** as the **Server type** setting.
4. Select **Integrated** as the **Server type** setting for all users.
5. Click **OK** to save the settings.

Configuring conference channels

If you want to change the default settings, perform the following procedure:

you are required to install the OMP tool, see *Appendix A - Using OM Management Portal (OMP)*.

To enable **Conference channels** flag, follow these basic steps:

1. Open the OMP application and login using your credentials.
2. Navigate to **DECT base stations** > **Device list** page.
3. Select the RFP device from the list.
4. Click **Configure** to view the configuration details.
5. In the **General** tab, select the **Conference channels** check-box.
6. Click **OK** to save the settings.

The G.729 codec, with its high consumption of computing time, reduces the number of available conference channels. To compute one 3-way conference, three conference channels are necessary.

SIP-DECT Conference without G.729 Codec

By default, only three conference channels (for 1 conference) are created through the config file in the first DECT base station (RFP with the ID 0). Additional conference channels must be switched on manually. If the G.729 codec is not necessary, you can manually disable the G.729 codecs in the OMP application to reduce the performance impact on the RFPs. To do so, follow these basic steps:

1. Open the OMP application and login using your credentials.
2. Navigate to **System** > **SIP** page.
3. Open **RTP settings** tab.
4. Select **None** as the value for the **Preferred codec 4** field.
5. Click **OK** to save the settings.

Now, there are 15 channels (for five conferences) available in the first DECT RFP (RFP with the RFP ID 0). You can view the same in the **Status** page of OMP application.

To view the total number of conference channels in the SIP-DECT system, follow these steps:

1. Open the OMP application and login using your credentials.
2. Navigate to **Status** page.
3. Open the **Conference** tab to view the conference channel information.

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.

If more than five simultaneous three-party conferences are required, you need to enable conference channels and disable G.729 codec in a second RFP.

Verifying SIP-DECT conference

If you are able to create a three party conference and are connected to a conference on a participant-to-participant basis, your SIP-DECT conference is established successfully. The participants in the conference are called one after the other and connected individually.

DECT phone and SIP state verification

If you are able to make normal voice calls or conference calls and can perform other related activities from your DECT phone, it means the DECT phone is registered and is up and running.

Alternatively, you can also check the DECT phone state and SIP registration status from the MiVoice Office 400 WebAdmin.

1. Login to **MiVoice Office 400** using your credentials.
2. To check DECT phone status (subscription state), perform the following step:
   - Navigate to **Configuration** > **System** > **SIP-DECT** > **DECT Phones**.
3. To check SIP-DECT status, perform the following step:
   - Navigate to **System overview** > **State**.
4. Click on any of the registered phone to view details of the SIP registration status.

System menu and key configuration

After the DECT phone is subscribed and running, the end user can use their phone to make and receive calls.

The DECT phone comes with some default key configuration. The system administrator might use the MiVoice Office 400 WebAdmin to change the default definitions of the keys. The user can use the Self Service Portal (SSP) web service of MiVoice Office 400 to define personal phone-book, voice-mail greetings, call forwarding and so on. In addition, the user can define favorite numbers in the VIP list. Note that the numbers in the VIP list are stored only on the phone itself and are not synchronized with the user's

personal phone-book on MiVoice Office 400. You can access the VIP list on the phone by selecting Menu > Directories.

To know more about the overview of the keys, display, and menu available on your phone and their usage, see, DECT Phones User's Guide.

Data backup

This chapter explains about the procedure to backup data on MiVoice Office 400 communication server and MiVoice Office 400 WebAdmin Online Help.

The data backup function lets you create backup files of the configuration and audio data and store them on any data carrier of your choice.

MiVoice Office 400 back-up

You can create a backup of your files and data in two ways:

- Automatic data backup
- Manual backup

The automatic data backup function creates a backup of the configuration data at regular intervals and saves the backup files on the communication server's file management system. You can use the distribution service to automatically copy the backup files to an FTP server or e-mail them.

The manual backup function lets you create backup files of the configuration and audio data manually and store them on any data carrier of your choice.

You can use the **Export/Import** function to export, edit and import configuration data again into an Excel table.

To know more about data backup, refer to the MiVoice Office 400 WebAdmin Online Help under **Maintenance** > **Data backup**.

SIP-DECT/OMM back-up

The OMM database contains all configuration settings which are configurable through the MiVoice Office 400.

To backup SIP-DECT/OMM, perform the following steps:

1. Login to MiVoice Office 400 WebAdmin using your credentials.
2. Navigate to **Configuration** > **System** > **SIP-DECT** > **System**.
3. Click the **Download** button next to the **Backup** field to create backup of the OMM database.

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.

For advanced OMM backup option, see *Appendix E: Advanced OMM Backup Capability*

Appendix A - Using OM Management Portal (OMP)

The OM Management Portal (OMP) is a Java tool used to manage the SIP-DECT solution. OMP 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. OMP is provided as an AdoptOpenJDK JAVA 11 application.

To configure the OMP and review the settings, follow these basic steps:

1. In MiVoice Office 400 WebAdmin, navigate to **Configuration** > **System** > **SIP-DECT** > **System**.
2. Click **OMP Download** button at the top of the page. The **OMP_Installer_SIP-DECT** exe file starts downloading.
3. Click on the downloaded file (**OMP_Installer_SIP-DECT.exe**) and follow the instructions to setup the OMP.
4. The OM Management Portal starts and prompts for login credentials.
5. Login to OMP application using your credentials. (The same credentials, as for OMM web portal, is applicable here.)
6. To review or configure the global settings for SIP signalling and RTP voice streams, navigate to **Configuration** > **System** > **SIP** menu. The **SIP** menu has the following tabs:
   - **Basic settings**
   - **Advanced settings**
   - **Registration traffic shaping**
   - **Backup settings**
   - **RTP settings**
   - **DTMF settings**
   - **Intercom Push-to-talk**
   - **Supplementary services**
   - **Conference**
   - **Security**
   - **Certificate server**
7. To review or configure the import and export features settings, navigate to **Configuration** > **System** >**Data management.** The **Data management** menu contains the following tabs:
   - **Auto DB export**
   - **User data import**
   - **DECT phones synchronization**
   - **Manual DB import**
   - **Manual DB export**

- **Maintenance**
- **IMA**

8. Click the **User data import** tab to view the import settings. This feature allows the import of user data from an external provisioning server.

9. To review or configure the system features settings, navigate to **Configuration** > **System features** page. The **System features** provides the following entries: **General settings**, **Feature access codes**, **Alarm triggers**, **Digit treatment**, **Directory**, **XML applications**, and **CoA profiles**.

   - The **General settings** menu allows to configure or view the FAC number prefix used for feature access codes and alarm triggers.
   - The **Feature access codes** menu is used to configure or view the feature access codes parameters.
   - The **Alarm triggers** menu allows configuration and display of numerous alarm trigger datasets.
   - The **Digit treatment** menu allows you to configure the number manipulation that is provided by the digit treatment feature for LDAP corporate directories.
   - The **Directory** menu allows configuration of LDAP, XML or XSI -based corporate directory services.
   - Navigate to the **XML applications** page to configure relevant hooks that makes the XML terminal interface applications available to the DECT phone user. The SIP-DECT XML terminal interface allows external applications to provide content for the user on the Mitel 600 DECT phone display.

Appendix B - Configuring RFP manually through OM Configurator

If DHCP server configuration method is not working for SIP-DECT solution, you can switch to an alternative method of IP addressing to assign static IP address. This alternative method allows you to configure RFP manually and assign a static IP address using the OM Configurator Java tool.

NOTE: A locally installed Java Runtime Environment (JRE) is not required to run the application package. The JRE is now delivered as part of OMC application package. The OMC for Microsoft Windows installer includes the AdoptOpenJDK (OMP_Runtime_Image_Win.zip) runtime environment file for 64-bit Windows. 32-bit versions are not supported.

Prerequisites

To configure RFP manually using the OM Configurator tool:

- Windows
  - Run the *OM_Configurator_Installer_SIP-DECT_8.3.exe* file and follow the on screen installation instructions for windows.

    *After successful installation of the application, OMC is accessible from the **Start** menu in the folder path Start Menu/Programs/Mitel/SIP-DECT 8.3 of the Windows system.*
  - Alternatively, extract the files from *OMCFG_Runtime_Image_Win.zip*to access the application. After extracting the zip files, the application can be started by running the omcfg.bat file in *OMCFG_Runtime_Image_win\bin* folder.
- Linux
  - Run the command `tar xfvz OMCFG_Runtime_Image_Linux.tar.gz` to extract the application.
  - Start OMCFG by running the script `ompcfg` in the extracted directory *OMCFG_Runtime_Image_Linux/bin.*
- The RFP and PC must be connected to the same LAN network

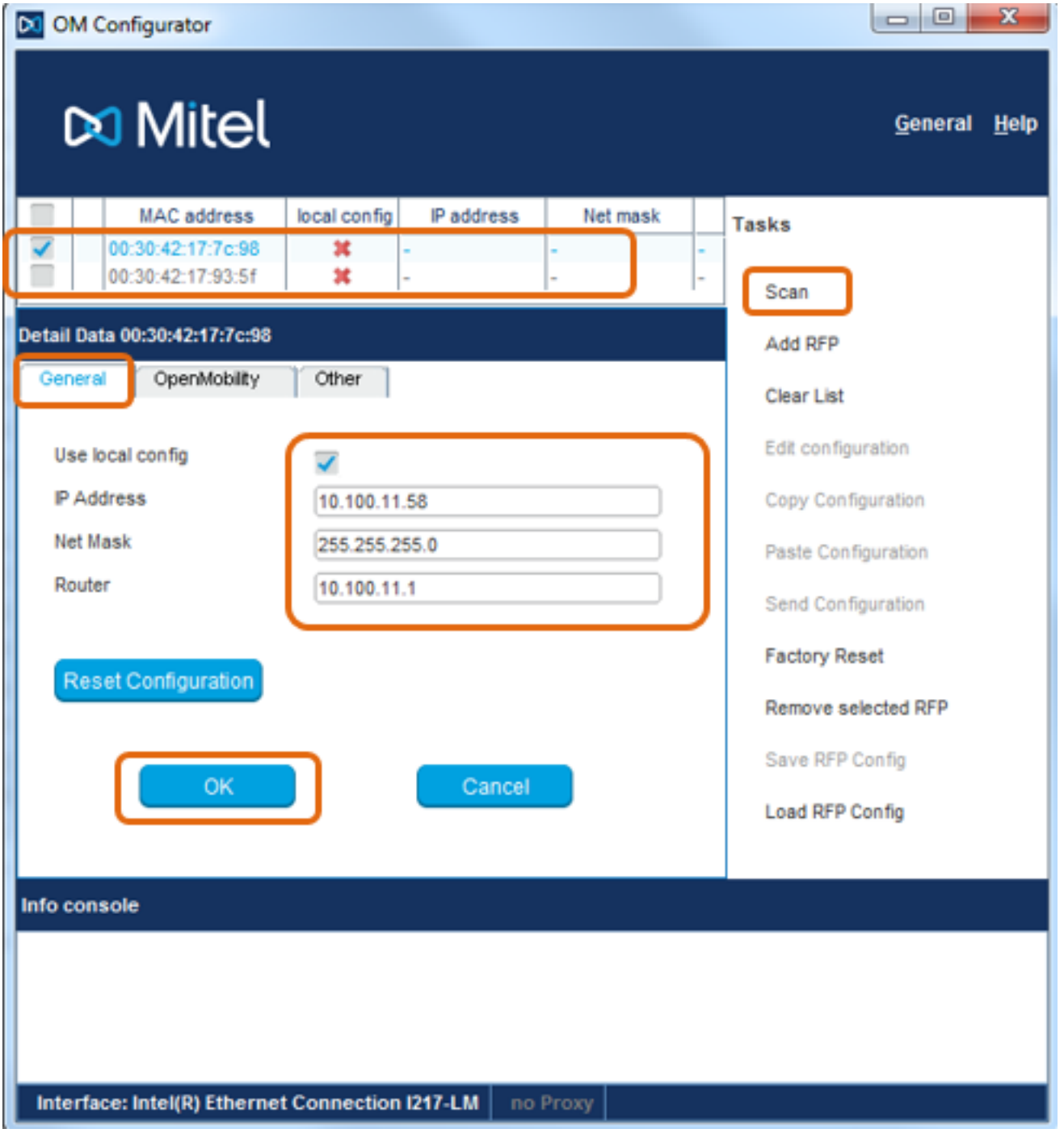
Procedure

You configure the RFPs with the following basic steps.

1. Connect the RFPs to the network (Power over LAN is needed for 4G RFP). Note that you can operate the OMM only on a current RFP.
2. Start the **OpenMobility Configurator** Java tool.
3. In the **OM Configurator** window, click the **Scan** button in the **Tasks** pane to find the connected RFPs. You will be prompted to enter login information.

4. 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.
5. Enter your login credentials (**user** / **password**: **omm** / **omm** by factory default) in the window appeared.
6. 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.
7. The **use Proxy** parameter allows access to RFPs that are located in network segments other than the segment that hosts the OM Configurator.
8. 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.
9. Click the **OK** button. A list of MAC addresses of the connected RFPs is displayed.

   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.
10. Select the appropriate MAC address from the list and click **Edit configuration** in the task bar. Note that this is the MAC address of the RFP you want to configure.
11. In the **General** tab, select the **Use local config** check-box.
12. Enter the **IP Address**, **Net Mask**, and **Router**.

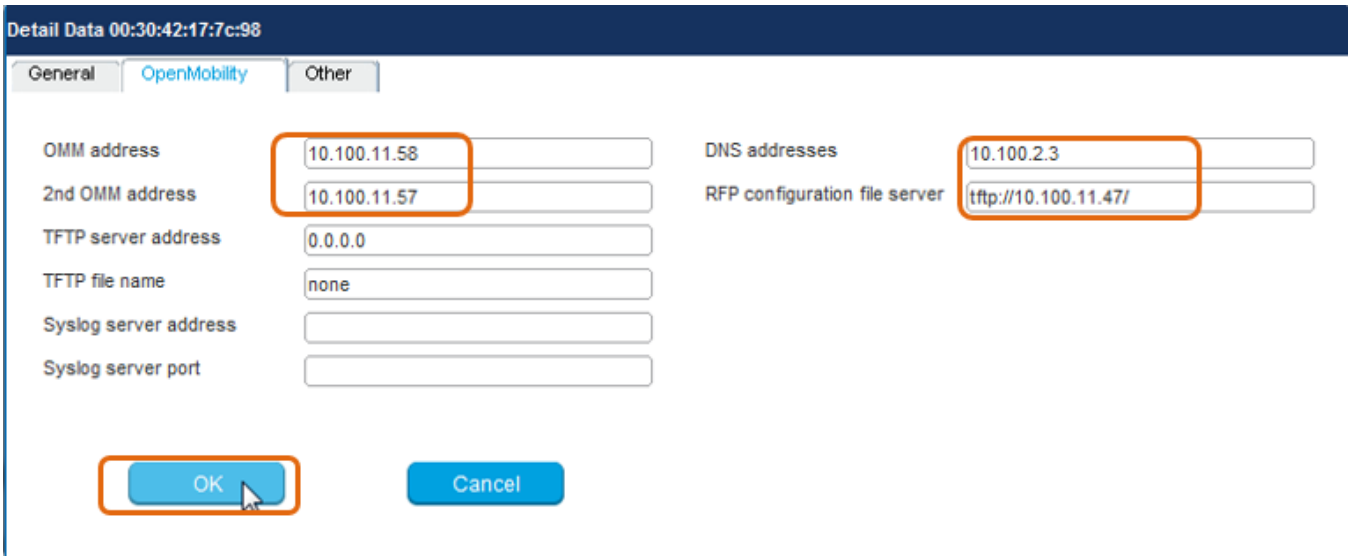


13. Click **OK** to save the settings.
14. In the **OpenMobility** tab, enter values for the following fields:
    a. **OMM address**: IP address of the OMM.
    b. **2nd OMM address**: IP address of the 2nd OMM (if applicable).
    c. **TFTP server address**: IP address of the TFTP server. In case of no TFTP server address, enter **0.0.0.0** and enter **TFTP file name** as **none**.

d. **TFTP file name**:**iprfp4G.dnld** (if using 4th generation RFPs) or **iprfp3G.dnld** (if using 3rd generation RFPs).

e. **DNS addresses**: IP address of the DNS.

f. **RFP Configuration file server**: IP address of the communication server prefixed with tftp://. For example: tftp://10.100.11.47.



15. Click **OK** to save the settings.

16. Click the **Send configuration** button to apply the configuration to the RFP. You will be asked to enter the login credentials.

17. Enter your login credentials in the window appeared and press the **OK** button.

You should see a message confirming successful configuration at the bottom of the **OM Configurator** window in the **Info console** box.

Appendix C - Hints for third party DHCP server configuration

DHCP parameters to configure in the customer's DHCP server for Mitel SIP-DECT with MiVoice Office 400:

To view full list of DHCP options, refer *SIP-DECT OM System Manual Administration Guide*.

Parameter	Description	DHCP	Mandatory	Type
IP address	RFP IP address	IP address	Yes	IP address
Net Mask	Subnet mask	option 1	Yes	IP address
Router	Default gateway	option 3	Yes	IP address
DNS address	IP address of the DNS server	option 6	No (recommended but not required by SIP-DECT RFPs)	IP address
DNS domain	Domain name	option 15	No (recommended but not required by SIP-DECT RFPs)	String
Magic String	Identifier for the RFP to accept this offer	option 224 (parameter must be set to value `OpenMobility SIP-DECT`)	Yes	String
TFTP Server address	IP address of the TFTP server with the RFP firmware	option 66	No	IP address
TFTP file name	Path to RFP image file. For example:	option 67	No	String
OMM IP address	IP address of the OpenMobility Manager	option43/code10	Optional. MiVoice Office 400 provides the OMM IP address in the `ipdect.cfg` file.	IP address

Parameter	Description	DHCP	Mandatory	Type
2nd OMM IP address	IP address of the 2nd OpenMobility Manager	option43/code19	No	IP address

Appendix D - Bandwidth

The SIP-DECT solution requires bandwidth for signalling and for voice streams. Bandwidth calculation allows to check if the network can support the load. The following table contains minimum values for calculating bandwidth demands for specific traffic scenarios. Results for a real installation will differ depending on factors such as the system size, call server type, handset types, firmware release, and network overhead.

Unit	Traffic scenario	Kbit/s	Note
OMM	OMM <> MiVoice Office 400 (communication between OMM and MiVoice Office 400) SIP Traffic per User (idle)	0.5	Registration period 300 seconds
OMM/RFP	OMM <> RFP (communication between OMM and RFP) connection Traffic per RFP (keepalive + basics)	1	Heartbeat 15 seconds (default) Ratio: 60% RFP <> OMM 40%
OMM/RFP	Traffic per handset (basic signalling) should be calculated per location.	1-3	1 = for standard users 3 = for frequent users
OMM	Connected OM AXI application	5	
OMM	Connection OMM to Standby OMM	2	Ratio: 50% OMM <> OMM 50%

Requirements per call using different codecs, include packet overhead as indicated in the following table.

VoIP codec	Bit rate (Kbit/s)	Packet size (in Bytes)	Kbit/s per stream
G.711	64	20	90.4
G.711	64	30	82.7
G.722	64	20	90.4
G.722	64	30	82.7
G.729	8	20	34.4

VoIP codec	Bit rate (Kbit/s)	Packet size (in Bytes)	Kbit/s per stream
G.729	8	30	26.7
Note: Bandwidth is required for upstream and downstream.			

Appendix E: Advanced OMM Backup Capability

The system supports the following protocols for import and export of database to or from an external server: FTP, TFTP, FTPS, HTTP, HTTPS, SFTP.

Manual database import

You can manually import database and can create backup files of the configuration settings manually. Note that a manual import of a database results in a reset of the OMM. To import the database manually, follow these steps:

1. Log in to the OMM web portal using your credentials (default credentials: **omm** / **omm**).
2. Navigate to **System** > **DB Management** menu.
3. In the Manual import section of the Database management page, enter the values for the following:
   a. **Protocol**:
      *To import a database from the web browser's file system, the **FILE** protocol must be selected.*
      *To import a database from an external server, select the preferred protocol (e.g. **HTTP**).*
   b. **Server**: IP address or the name of the external server.
   c. **User name**: Enter the user name in case of import from an external server.
   d. **Password**: Enter the password in case of import from an external server.
   e. **File**: Enter path and file name which include the OMM database. If you have selected the **FILE** protocol, the **Browse** button is displayed, and you can browse to select the file from the file system.
   f. **Use common certificate configuration**: Select the check-box to enable the use of the system-wide certificate validation settings.
4. Press the **Load** button.

The OMM performs a validation check before it accepts the database for import. If the database is verified as valid, the OMM will be reset to activate the new database. Note that 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 through the OMM Web service and are never restored by a database import.

Manual database export

To manually export the database, follow these steps:

1. Log in to the OMM web portal using your credentials (default credentials: **omm** / **omm**).
2. Navigate to **System** > **DB Management** menu.

3. In the **Manual export** section of the **Database management** page, enter the values for the following:
   a. **Protocol**: Select the preferred protocol. If you want to export the database to the web browser's file system, select the **FILE** setting.
   b. **Server**: Enter the IP address or the name of the server.
   c. **User name**, **Password**: Enter the user name and the password. If necessary, enter the account data of the server.
   d. **File**: Enter path and file name where the database is to be saved.
   e. **Use common certificate configuration**: Select the check-box to enable the use of the system-wide certificate validation settings.
4. Press the **Save** button.

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 if any configuration changes occur (e.g. DECT phone subscription). The backup file overwrites any existing backup files.

To initiate the automatic data export, follow the below steps:

1. Log in to the OMM web portal using your credentials (default credentials: **omm** / **omm**).
2. Navigate to **System** > **DB Management**menu.
3. In the **Automatic export** section of the **Database management** page, enter the values for the following:
   a. **Active**: Select this check-box to enable the automatic export feature.
   b. **Protocol**: Select the preferred protocol.
   c. **Server**: Enter the IP address or the name of the server.
   d. **Port**: Enter the port of the server.
   e. **User name**, **Password**: Enter the user name and the password of the system. If necessary, enter the account data of the server.
   f. **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 code>_omm_conf.gz`

      If the system name contains non-standard ASCII character, these characters are replaced by "_".
   g. **Use common certificate configuration**: Select the check-box to enable the use of the system-wide certificate validation settings.
4. Press the **OK** button.