MIVOICE OFFICE 400

VIRTUAL APPLIANCE

AS OF VERSION R6.0

SYSTEM MANUAL

syd-0590_en / 2.0 – R6.0 – © 09.2018

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Virtual Appliance
syd-0590/2.0 – 09.2018

Content

1 Product and Safety Information

Here you will find information relating to safety, data protection and legal matters besides product and documentation information.

Please read through the product and safety information carefully.

1. 1 About MiVoice Office 400

Purpose and function

MiVoice Office 400 is an open, modular and comprehensive communication solution for the business sector with several communication servers of different performance and expansion capacity, an extensive telephone portfolio and a multitude of expansions. They include an application server for unified communications and multimedia services, an FMC controller for mobile phone integration, an open interface for application developers, and a multitude of expansion cards and modules.

The business communication solution with all its components was developed to cover in full the communication requirements of businesses and organisations, in a way that is both user- and maintenance-friendly. The individual products and components are coordinated and must not be used for other purposes or replaced by third-party products or components (unless it is to connect other approved networks, applications and terminals to the interfaces certified specially for that purpose).

User groups

The design of the phones, softphones and PC applications of the MiVoice Office 400 communication solution is particularly user-friendly, which means they can be operated by all end users without specific product training.

The phones and PC applications for professional applications, such as the operator console or call centre applications require training of the personnel.

Specialist knowledge of IT and telephony is assumed for the planning, installation, configuration, commissioning and maintenance. Regular attendance at product training courses is strongly recommended.

User information

MiVoice Office 400 products are supplied with the necessary safety/legal information and user documents. All user documents such as user guides and system manuals are available for download from the MiVoice Office 400 document portal as individual documents or as documentation sets. Some user documents are accessible only via a partner login.

It is your responsibility as a specialist retailer to keep up to date with the scope of functions, the proper use and the operation of the MiVoice Office 400 communication solution and to inform and instruct your customers about all the user-related aspects of the installed system:

- Please make sure you have all the user documents required to install, configure and commission a MiVoice Office 400 communication system and to operate it efficiently and correctly.
- Make sure that the versions of the user documents comply with the software level of the MiVoice Office 400 products used and that you have the latest editions.
- Always read the user documents first before you install, configure and put a MiVoice Office 400 communication system into operation.
- Ensure that all end users have access to the user guides.

Download the MiVoice Office 400 documents from the internet:
http://www.mitel.com/docfinder or from http://edocs.mitel.com

1. 2 Safety Information

Reference to hazards

Hazard warnings are affixed whenever there is a risk that improper handling may put people at risk or cause damage to the MiVoice Office 400 product. Please take note of these warnings and follow them at all times. Please also take note in particular of hazard warnings contained in the user information.

⚠ DANGER!
Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING!
Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION!
Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or damage to the equipment or property.

These symbols may appear on the product:

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product

Indicates ESD components. Failure to observe information identified in this way can lead to damage caused by electrostatic discharge.

The ground symbol within a circle identifies the product to be connected to an external conductor. Connect this product to earth ground before you make any other connections to the equipment.

Operating safety

MiVoice Office 400 communication servers are operated on 115/230 VAC mains power. Communication servers and all their components (e.g. telephones) will not operate when mains power fails. Interruptions in the power supply will cause the entire system to restart. A UPS system has to be connected up-circuit to ensure an uninterruptible power source. Up to a specific performance limit a Mitel 470 communication server can also be powered redundantly using an auxiliary power supply. For more information please refer to your communication server's system manual.

When the communication server is started for the first time, all the configuration data is reset. You are advised to backup your configuration data on a regular basis as well as before and after any changes.

Installation and operating instructions

Before you begin with the installation of the MiVoice Office 400 communication server:

- Check that the delivery is complete and undamaged. Notify your supplier immediately of any defects; do not install or put into operation any components that may be defective.
- Check that you have all the relevant user documents at your disposal.
- Configure this product with only the assemblies specified and in the locations stated in the user documentation.
- During the installation follow the installation instructions for your MiVoice Office 400 product in the sequence that is given and observe to the safety warnings they contain.

⚠ CAUTION!
Failure to follow all instructions may result in improper equipment operation and/or risk of electrical shock.

- Install all wiring according to local, state, and federal electrical code requirements.
- Do not connect telecommunications cabling to the system, service the system, or operate the system with the grounding conductor disconnected.
- Ensure the AC receptacle is installed near the equipment and easily accessible.
- Use only Mitel approved power adapters.

Any servicing, expansion or repair work is to be carried out only by trained technical personnel with the appropriate qualifications.

1. 3 Data protection

Protection of user data

During operation the communication system records and stores user data (e.g. call data, contacts, voice messages, etc.). Protect this data from unauthorised access by using restrictive access control:

- For remote management use SRM (Secure IP Remote Management) or set up the IP network in such a way that from the outside only authorised persons have access to the IP addresses of the MiVoice Office 400 products.
- Restrict the number of user accounts to the minimum necessary and assign to the user accounts only those authorisation profiles that are actually required.
- Instruct system assistants to open the remote maintenance access to the communication server only for the amount of time needed for access.
- Instruct users with access rights to change their passwords on a regular basis and keep them under lock and key.

Protection against listening in and recording

The MiVoice Office 400 communication solution comprises features which allow calls to be monitored or recorded without the call parties noticing. Inform your customers that these features can only be used in compliance with national data protection provisions.

Unencrypted phone calls made on the IP network can be recorded and played back by anyone with the right resources:

- Use encrypted voice transmission (Secure VoIP) whenever possible.
- For WAN links used for transmitting calls from IP or SIP phones, use as a matter of preference either the customer's own dedicated leased lines or with VPN encrypted connection paths.

1. 4 About this document

This document contains information on the expansion stages, system capacity, installation, configuration, running and maintenance as well as the technical data of the MiVoice Office 400 communication servers. The system functions and features, the DECT planning and the possibilities for networking several systems into a private network (PISN) or an Mitel Advanced Intelligent Network (AIN) are not part of this Manual; they are described in separate documents.

Note

In this document, it is presumed, that the Mitel SMB Controller is loaded with a MiVoice Office 400 application software. This assumption is always valid, even the expression Mitel SMB Controller, SMBC or communication server is used.

MiVoice Office 400 Virtual Appliance is a software-based, hardware-independent communication server. It is also Mitel Standard Linux (MSL) based, and runs on a virtual machine (VMware®). The expansion possibilities for the Virtual Appliance communication server include an FMC Controller for integrating mobile/external phones and an open interface for application developers.

The document is intended for planners, installers and system managers of phone equipment. Basic knowledge of phones, especially ISDN and IP technology, is required to understand the content.

The system manual is available in Acrobat Reader format and can be printed out if necessary. Navigation in PDF format is based on the bookmarks, table of contents, cross references and index. All these navigation aids are linked, i.e. a mouse click takes you directly to the corresponding places in the Manual. We have also ensured that the page numbering in the PDF navigation corresponds to the page numbering of the Manual, making it much easier to jump to a particular page.

Referenced menu entries and parameters appearing on terminal displays or on the user interfaces of the configuration tools are *highlighted* in italics and in colour for a clearer orientation.

Document information

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- In PDF viewer, click on this link to download the latest version of this document: *https://pbxweb.aastra.com/doc_finder/DocFinder/syd-0590_en.pdf?get&DNR=syd-0590*

General Considerations

Special symbols for additional information and document references.

Note

Failure to observe information identified in this way can lead to equipment faults or malfunctions or affect the performance of the system.

Tip

Additional information on the handling or alternative operation of equipment.

See also

Reference to other chapters within the document or to other documents.

Mitel Advanced Intelligent Network

Particularities that have to be observed in an AIN.

References to the MiVoice Office 400 configuration tool WebAdmin

If an equals sign is entered in the WebAdmin search window (🔍), followed by a two-digit navigation code, the view assigned to the code is directly displayed.
Example: *Licence overview* (🔍 *=q9*) view
The corresponding navigation code is available on the help page of a view.

2 System Overview

This chapter provides a brief overview of the Virtual Appliance communication server with its positioning within the MiVoice Office 400 series and the networking possibilities. It also features the system phones, the applications and the application interfaces. If you are setting up an communication system for the first time, it may be useful to set up a test system step by step on site. At the end of the chapter you find a useful getting started guide for this purpose.

2. 1 Introduction

MiVoice Office 400 is a family of IP-based communications servers for professional use in companies and organizations operating as small and medium-sized businesses in all industries. The family consists of four systems with different expansion capacities. The systems can be expanded using cards, modules and licences, and adapted to the specific requirements of companies.

The family covers the growing demand for solutions in the area of unified communications, multimedia and enhanced mobile services. It is an open system that supports global standards and is therefore easily integrated into any existing infrastructure.

With its wide range of networking capabilities the system is particularly well suited for companies that operate in several locations. Coverage can even be extended to the smallest branch offices at low cost.

MiVoice Office 400 communication systems handle “Voice over IP” technology with all its benefits. What’s more, the systems operate just as easily with traditional digital or analogue phones and public networks.

With the integrated Media Gateways any hybrid forms of an IP-based and digital or analogue communication environment are also possible. This enables customers to make the switch from traditional telephony to IP-based multimedia communication either in just one step or, gradually, in several stages.

2. 2 Communication server

MiVoice Office 400 Virtual Appliance is a software-based, hardware-independent communication server. It is also Mitel Standard Linux (MSL) based, and runs on a virtual machine ESXi (VMware)™ or Hyper-V (Microsoft).

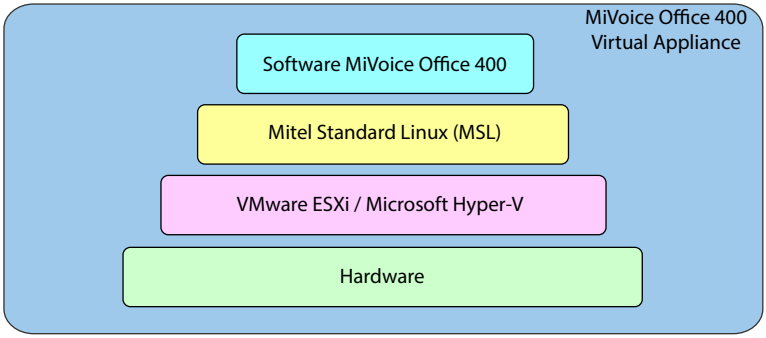

Fig. 1 MiVoice Office 400 Virtual Appliance

The integrated Mitel Media Server is responsible for switching the IP media channels. Analogue and digital interfaces are available via a networked, hardware-based Mitel 415, Mitel 430, Mitel SMBC or Mitel 470 satellite.

2. 2. 1 Positioning

Applications range from small businesses and branches to large companies at one or more locations. Up to 1200 users can be operated on the Virtual Appliance communication server. One licence is required for each user.

The diagram below shows the MiVoice Office 400 communication servers with their expansion capacity for users with SIP/IP phones and TDM extensions (FXS, DSI, BRI-S).

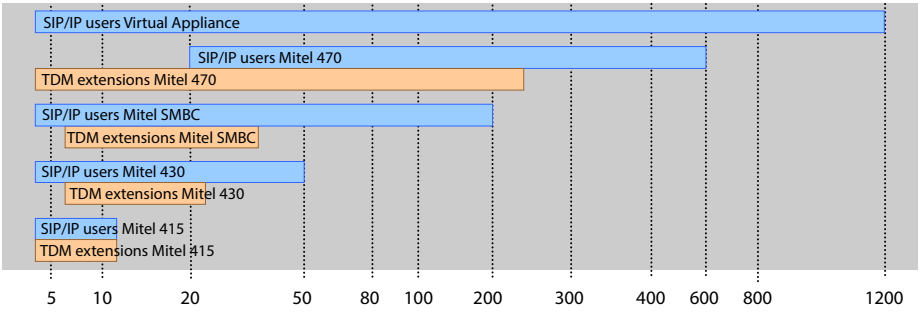

Fig. 2 Max. expansion capacity for users with SIP/IP phones and TDM extensions (FXS, DSI, BRI-S)

2. 3 Networking Possibilities

MiVoice Office 400 communication servers at different company locations, even beyond national borders, can be linked together to form an enterprise-wide private com-

munication network with a common numbering plan. The following networking types are possible:

Mitel Advanced Intelligent Network (AIN)

In an AIN several communication servers of the MiVoice Office 400 series can be connected up to form a homogeneous communication system. The single systems are connected with one another via the IP network, thereby forming the nodes of the overall AIN system One node acts as the Master and controls the other (satellite) nodes. All the features are then available at all the nodes.

No call charges are incurred as the internal voice traffic between locations is routed via the system's own data network. All the AIN nodes are configured and set up centrally via the Master.

If a node is isolated from the rest of the AIN by an interruption in the IP connection, it restarts with an emergency configuration after a set amount of time. The connections are then routed to the public network via local links, for example with ISDN or SIP connections, until contact with the AIN is restored.

For the Virtual Appliance communication server, AIN networking (Virtual Appliance as master) with at least one satellite is mandatory.

SIP networking

Networking based on the open global SIP protocol is the universal way of connecting several systems with one another via the private data network or the internet. MiVoice Office 400 communication platforms can be used to network up to 100 other Mitel systems or SIP-compatible third-party systems. All the main telephony features such as call number and name display, enquiry call, hold, brokering, call transfer and conference circuits are supported. The transmission of DTMF signals and the T.38 protocol for Fax over IP between the nodes is also possible.

Virtual and leased-line networking via BRI/PRI interfaces

With this type of connection the nodes are connected via basic rate interfaces (BRI) or primary rate interfaces (PRI).

With virtual networking all the nodes are connected via the public ISDN network. This type of networking is particularly well suited for geographically dispersed locations which have such a low volume of calls between locations that leased lines or setting up a private data network are not worthwhile. The range of services available in a virtual network depends on the range of services offered by the network provider. The DSS1 ISDN protocol is the main protocol used.

With leased line networking the nodes are connected via dedicated or leased lines. One advantage of leased line networking are the fixed costs, regardless of the number of call connections. The most common protocol used is QSIG/PSS1, which supports several more features than the DSS1 protocol.

Virtual and leased-line networking can also be used in combination. Mitel systems are well as third-party systems can be used.

2. 4 Mitel system phones and clients

Mitel system phones stand out by virtue of their high level of user convenience and their attractive design. The broad range of products ensures there is a suitable model for every use.

Tab. 1 Mitel 6900 SIP series SIP phones

Product	Principal common features	Additional model-specific features
 Mitel 6920 SIP Phone  Mitel 6930 SIP Phone  Mitel 6940 SIP Phone	• User-friendly registration, configuration and operation of system features through MiVoice Office 400 integration. • XML browser compatible • Automatic update of the terminal software • Web-user interface • Integrated 1 Gbit Ethernet switch for connecting a PC • Hearing Aid Compatible (HAC) handset • Headset port convertible to DHSG/EHS capable headset port • Excellent voice quality due to Mitel Hi-Q™ wideband audio technology • Full-duplex hands-free operation (speakerphone) • Backlit display • Up to 3 expansion key modules can be connected • Three-party conference possible locally on the phone • Wall mounting possible • Power over Ethernet	Mitel 6920 SIP: • Corded speech optimized handset • MobileLink mobile device integration through optional USB Bluetooth Dongle • Magnetic keyboard connector • USB port 2.0 (100 mA) • Can be used as auxiliary reception phone (reduced functionality) in hospitality environments Mitel 6930 SIP: • Corded speech optimized handset • Support for optional cordless speech optimized handset • Magnetic keyboard connector • Can be used as auxiliary reception phone (reduced functionality) in hospitality environments Mitel 6930 SIP and Mitel 6940 SIP: • Cordless speech optimized handset • Mobile phone charging point • MobileLink mobile device integration • Bluetooth 4.1 interface • USB port 2.0 (500 mA) • Can be used as operator console • Mitel 6940 SIP • LCD touch display • Can be used as reception phone in hospitality environments General: • Additional model-specific features include the resolution, the display type and size, and the number of configurable or fixed function keys.

Tab. 2 Mitel 6800 SIP series SIP phones

Product	Principal common features	Additional model-specific features
 Mitel 6863 SIP Phone  Mitel 6865 SIP Phone  Mitel 6867 SIP Phone  Mitel 6869 SIP Phone  Mitel 6873 SIP Phone	• User-friendly registration, configuration and operation of system features through MiVoice Office 400 integration. • XML browser compatible • Automatic update of the terminal software • Web-user interface • Excellent voice quality due to Mitel Hi-Q™ wideband audio technology • Full-duplex hands-free operation (speakerphone) • Several configurable line keys • Three-party conference possible locally on the phone • Wall mounting possible • Power over Ethernet	Mitel 6863 SIP: • Integrated 10/100 Mbit Ethernet switch for connecting a PC Mitel 6865 SIP, Mitel 6867 SIP, Mitel 6869 SIP and Mitel 6873 SIP: • Integrated 1 Gbit Ethernet switch for connecting a PC • Backlit display • Expansion key modules can be connected • Headset socket (DHSG standard) Mitel 6867 SIP and Mitel 6869 SIP: • Magnetic keyboard connector • Can be used as auxiliary reception phone (reduced functionality) in hospitality environments Mitel 6867 SIP, Mitel 6869 SIP and Mitel 6873 SIP: • USB Interface • Replaceable keyboard covers Mitel 6869 SIP and Mitel 6873 SIP: • Can be used as operator console Mitel 6873 SIP: • Bluetooth interface • Can be used as reception phone in hospitality environments • LCD touch display General: • Additional model-specific features include the resolution, the display type and size, and the number of configurable or fixed function keys.
Note: The phones of the Mitel 6700 SIP series (Mitel 6730 SIP, Mitel 6731 SIP, Mitel 6735 SIP , Mitel 6737 SIP , Mitel 6739 SIP, Mitel 6753 SIP, Mitel 6755 SIP and Mitel 6757 SIP) are supported as before (not all system features can be used).		

Tab. 3 IP system phones (softphones) and clients

Product	Main features
 Mitel BluStar for PC	• Autonomous and powerful SIP-based BluStar PC phone with video functionality • Can be used with headset or handset via PC audio interface, USB or Bluetooth • Graphical user interface with mouse and keyboard operation • User-friendly contact search • HD audio and HD video calls • Outlook integration • Link to e-mail client • Click to Call • Connection to an MS Lync server or an IBM Sametime server
 MiVoice 2380 Softphone	• Autonomous and powerful, IP-based PC system phone with intuitive user interface • Can be used with headset or handset via PC audio interface, USB or Bluetooth • Graphical user interface with mouse and keyboard operation • Displayable expansion keypad for team keys, functions and phone numbers • Displayable keypad • Ring tones expandable using .mp3, .mid and .wav files • Call contacts directly from Outlook • All the system features can be used
 MiVoice 1560 PC Operator	• OIP client application for a professional PC operator console • Can be used purely as an IP softphone (MiVoice 1560) or together with a system phone (MiVoice 1560) • Graphical user interface with mouse and keyboard operation • Can be used in an AIN as a network-wide PC operator console • Call management with internal and external queues • Presence indicator, presence profiles, phone book and journal • Operator groups and agent control • Line keys and calendar functions • Possibility of synchronisation with a Microsoft Exchange server • All the system features can be used
 Mitel Office Suite	• OIP client application for PC-based call management • Used in conjunction with a system phone • Graphical user interface with mouse and keyboard operation • Configuration of the coupled system phone • Call manager with extensive functions and options • Presence indicator of other users • Configurable presence profiles • Phone book with address books and personal contacts • Journal with call lists, text messages and notes • Workgroups (agent control) • Possibility of synchronisation with a Microsoft Exchange server • Possibility of displaying various additional windows • All the system features can be used

Product	Main features
 Mitel Mobile Client (MMC)	• FMC client for mobile phones (runs on various operating systems) • Integrates the mobile phone into the Mitel communication system • User is always reachable under the same call number (One Number concept) • Various telephone functions can be menu-operated both in the idle state and during a call • Other system features can be used via function codes • With MMC Controller handover is possible between internal WLAN and mobile radio network.

Tab. 4 MiVoice 5300 IP series IP system phones (hardphones)

Product	Principal common features	Additional model-specific features
 MiVoice 5361 IP Phone  MiVoice 5370 IP Phone  MiVoice 5380 IP Phone	• Intuitive and user-friendly menu prompting with Foxkey and central navigation key • All the system features can be used • Excellent voice quality due to Mitel Hi-Q™ wideband audio technology • Automatic update of the phone software • Connection via Ethernet • Powered via Ethernet (POE) or power supply • Wall mounting possible • Web configuration interface	MiVoice 5370 IP/MiVoice 5380 IP: • Expansion key modules can be connected • Headset socket with DHSG standard • Integrated switch for connecting a PC MiVoice 5380: • Backlit display • Optional Bluetooth module • Can be used as reception phone in hospitality environments • Can be used as operator console when combined with expansion key module
Note: The MiVoice 5360 IP IP system phone is supported as before.		

Tab. 5 Digital system phones of the MiVoice 5300 family

Product	Principal common features	Additional model-specific features
 MiVoice 5361 Digital Phone  MiVoice 5370 Digital Phone  MiVoice 5380 Digital Phone	• Intuitive and user-friendly menu prompting with Foxkey and central navigation key • All the system features can be used • Automatic update of the phone software • Connection via DSI interface • Two phones can be connected per DSI interface • Powered via DSI bus or power supply • Wall mounting possible	MiVoice 5370/MiVoice 5380: • Expansion key modules can be connected • Headset socket with DHSG standard MiVoice 5380: • Backlit display • Optional Bluetooth module • Can be used as operator console when combined with expansion key module

Tab. 6 Cordless system phones of the Mitel 600 DECT family

Product	Principal common features	Additional model-specific features
 Mitel 612 DECT Phone  Mitel 622 DECT Phone  Mitel 632 DECT Phone  Mitel 650 DECT Phone	• Intuitive and user-friendly menu prompting with Foxkey and central navigation key • Colour display • All the system features can be used • Automatic update of the phone software • Backlit display and keyboard • Headset socket • Automatic handover and roaming • Can be operated on both the DSI radio units SB-4+, SB-8, SB-8ANT and the SIP-DECT® radio units RFP L32 IP, RFP L34 IP and RFP L42 WLAN	Mitel 622 DECT/Mitel 632 DECT/Mitel 650 DECT: • 3 configurable side keys • Vibra call • Bluetooth interface • USB Interface • micro-SD card interface • Power battery (optional) Mitel 632 DECT: • Complies with industry standard (IP65) • With emergency button and sensor alarms, suitable for personal protection Mitel 650 DECT: • Supports the DECT standard CAT-iq (Cordless Advanced Technology – internet and quality) for high-quality broadband telephony (can be used with Mitel SIP-DECT only).
Note: The Mitel 610 DECT, Mitel 620 DECT, Mitel 630 DECT, Office 135/135pro and Office 160pro/Safeguard/ATEX cordless system phones are supported as before (not all system features can be used).		

Tab. 7 Analogue Mitel phones

Product	Principal common features	Additional model-specific features
 Mitel 6710 Analogue Phone  Mitel 6730 Analogue Phone	• Destination dialling keys • Frequency dialling or pulse dialling • Handsfree • Adjustable volume (handset and loudspeaker) • System features can be used via function codes • Headset connection • Wall mounting possible • Functions controllable via communication server: Message display on/off, delete redial key memory. • Ideally suited for hospitality and hotel environments	Mitel 6730 Analogue: • Three-line display • 100 phone book contacts • 50 entries each on call list and redial list • Number/name display for incoming calls • Clock with wake-up function • Functions controllable via communication server: Delete call lists and local phone book, set date, time and language.
Note: The Aastra 1910 and Aastra 1930 analogue phones are still supported.		

2. 5 Various phones, terminals and equipment

Thanks to the use of international standards other clients, terminals and phones, Mitel and third-party, can be connected and operated on the communication server:

- SIP-based phones
  With the integrated SIP protocol SIP-based phones (softphones, hardphones) - or via an SIP access point also WLAN and DECT phones - can be connected to the communication server. Besides the basic telephony functions, features such as call transfer, conference calls or CLIP/CLIR are also supported. Function codes can also be used to operate various system functions.
- Cordless phones
  The sturdy 9d DECT phones from the Ascom Wireless Solutions product portfolio can be logged on to the communication server as system phones. User-friendly messaging and alarm systems can thus be implemented in combination with the IMS (Integrated Message Server). Other DECT phones can also be operated in GAP mode.
- Analogue terminals
  All terminals (phones, fax, modem, etc.) approved by the network operator can be connected on the analogue terminal interfaces. The communication system supports pulse and frequency dialling modes.
- ISDN terminals
  ISDN terminals that comply with the Euro ISDN standard can be connected to the BRI-S terminal interfaces. The communication system provides a series of ISDN features at the S bus.
- Mobile/external phones
  Mobile/external phones can also be integrated into the communication system. They can then be reached under an internal call number, and their status is monitored and displayed. Internal/external calls can be made via the integrated mobile/external phone; system functions can also be executed using function codes. With the Mitel Mobile Client for mobile phones application all the main telephony functions are available with menu prompting (see "Mitel Applications", page 21).

2. 6 Solutions

- Alarming and Health care
  Thanks to the components Mitel Alarm Server, I/O-Gateway and the OpenCount application, flexible solutions are available for hospitals and old people's nursing homes. MiVoice Office 400 communication-server-integrated functions such as "Direct response" "Hotline alarm" or "PIN telephony" allow easy deployment of available features.

- Hospitality/Hotel
  The hospitality software package provides functions to implement a user-friendly accommodation and hotel solution in the range of 4 to 600 rooms. This solution is also ideally suited for the management of care homes and retirement homes. The functions are operated using the Mitel 6940 SIP, Mitel 6873 SIP, MiVoice 5380 / 5380 IP reception phone or the web-based Mitel 400 Hospitality Manager application. Reduced hospitality functionality are also available on Mitel 6920 SIP, Mitel 6930 SIP, Mitel 6867 SIP and Mitel 6869 SIP phones. Connection to a Property Management System (PMS) via the communication server's Ethernet interface is also possible. The commercially available FIAS protocol is provided for this purpose.
- Mobility
  Mobility solutions, especially Mitel Mobile Client (MMC), enable employees to log on to the company network using their mobile phones. The MMCC Compact and MMCC 130 controllers allow mobile users to move back and forth between the internal WLAN coverage and the mobile radio network without the call being interrupted. Moreover, with Mitel SIP-DECT and Mitel 600 DECT series phones comprehensive solutions can be provided for wireless telephony on IP-based networks. In so doing, RFP radio units are directly connected to the LAN like a VoIP device.

2. 7 Applications and application interfaces

A distinction is made among applications between Mitel-specific applications and certified applications supplied by third parties.

The Mitel application Mitel Open Interfaces Platform (OIP), as well as the certified third-party applications, are installed on a customer server. They communicate with the communication server via standardised interfaces (see "Application interfaces", page 24).

Auxiliary applications for planning and the configuration and park management are available as a web application.

2. 7. 1 Mitel Applications

Tab. 8 Mitel applications

Application	Main features
Mitel Dialer	• Simple first party CTI application • Dial, answer, hang up • Integration in Outlook, Lync 2013 and Office 365 • Search in directories • Compatibility with MiVoice 5300, MiVoice 5300 IP, Mitel 6800/6900 SIP, Mitel 600 DECT series phones • Installation via SSP or WebAdmin • Click to call support (e.g. for Hospitality Manager)

Application	Main features
Mitel Open Interfaces Platform (OIP)	• Application interface for deep integration of applications by Mitel or other manufacturers (see "Application interfaces", page 24) • Easy to manage through an integrated web-based application • Integrates the MiVoice 1560 PC Operator and Mitel OfficeSuite applications • Presence-controlled communication coupled with Outlook diary entries • Integration of contact databases and directories (Outlook, Exchange, Active Directory, LDAP directories, phone book CD) • Integration of building automation equipment and alarm systems • Call centre functions with flexible routing algorithms, skill-based agent groups and emergency routing • Unified messaging with notification whenever new voice messages are received via email (incl. message attachment) • Partner program for integrating and certifying applications by other manufacturers • Also available as OIP Virtual Appliance, for installation on a VMware server.
Mitel MiCollab	Comprehensive Unified Communications and Collaboration solution: • Central software provided for industry standard servers or virtual environments • Integration of Microsoft® Outlook®, IBM® Lotus Notes® Google®, Microsoft® Lync® etc. UC clients for desktop, web and mobile applications: • Comprehensive real-time presence information • Dynamic call distribution • Real collaboration with joint use of the desktop and documents • Easy retrieval of voice messages • Secure instant messaging (IM) and data transmission • Audio, web and video conferences
Mitel 400 CCS	• Mitel 400 CCS is an additional application for the Mitel 400 Call Center, and provides statistics / reporting functions and agent monitoring (CCS = call centre supervision). The licensing of the application is made via OIP.
Mitel OpenCount	• MitelOpenCount is a software package used for the call logging management on the communication system. It consists for selected sectors of basic, comfort and premium solutions and is installed on an external server.
Mitel BusinessCTI	• Powerful Unified Communications solution • Presence management with calendar integration • Instant Messaging (chat), video, SMS and e-mail functions • Compatibility with the federation between Mitel Business CTI servers and/or Microsoft Lync and OCS • Easy integration into CRM and ERP systems • Compatible with other call managers • Clients for PC (Windows, Mac) and mobile phones/tablets (Android/IOS) available • Optional additional modules Mitel BusinessCTI Analytics

Application	Main features
MiContact Center Business	• Contact Center on a location with up to 80 agents • Progress reports • Real-time monitoring • Dynamic agents and wait loop control • Screen pop • Intelligent Messaging • Multimedia compatibility
Mitel Border Gateway (MBG)	• Highly scalable solution which offers mobile and external workers secure and seamless access to the company's voice and data applications, regardless of their location. How to deploy such a solution refer to the document “Mitel SIP Teleworker via MBG on MiVoice Office 400”.
Mitel Alarm Server	• Specially designed for use in hospitals and nursing homes, industries and businesses as well as public domains. • Mitel Alarm Server monitors processes, activates the required services, sets off alarms based on predefined samples or notifies selected recipients via paging, e-mail, SMS or voice message. • The alarm can be set off via a nurse call or fire-alarm system (ESPA interface), via a key predefined on the Mitel DECT or system phone, an alert button, web client, or by calling the alarm server (audio guide), or via e-mail (subject line analysis).

Tab. 9 Planning and configuration applications

Application	Main features
Mitel CPQ	• Web-based planning application for Mitel communication platforms (CPQ = Configuring Planning Quoting) • Uses project data to calculate the necessary communication server complete with terminals, interface cards, modules and licences • Country-specific adaptations possible for accessories • Stored price lists and configurable quote compilation • No installation necessary
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 • Special accesses for hospitality solutions • Integrated online help and configuration assistant • Integrated in the communication server software package
Mitel 400 Hospitality Manager	• Integrated web-based application used to operate functions in the hospitality sector • List view and floor-by-floor view of the rooms • Functions such as check-in, check-out, group check-in, notification, wake-up call, retrieval of call charges, maintenance list, etc.

Application	Main features
Self Service Portal (SSP)	Web-based application for end-users, which allows personalised configuration of a telephone: • Functions key assignment and printing of labels • Setting the idle text and language • Setting the presence profiles, personal call routing, voice mail, forwarding, etc. • Setting up dial-in conference rooms • Creating private phone book contacts • Managing personal data such as e-mail address, password, PIN, etc.
Secure IP Remote Management (SRM)	• Server-based solution for secure IP remote management • No router and firewall configuration or VPN connection setup required • Allows configuration via WebAdmin once the connection has been set up • No installation necessary

2. 7. 2 Application interfaces

The most important interface for own and third-party applications is the interface of the Mitel Open Interfaces Platform (OIP). This open interface allows the applications to be deeply integrated with telephony. Third-party applications can also be integrated on MiVoice Office 400 series systems via different interfaces without OIP.

2. 7. 2. 1 Mitel Open Interfaces Platform

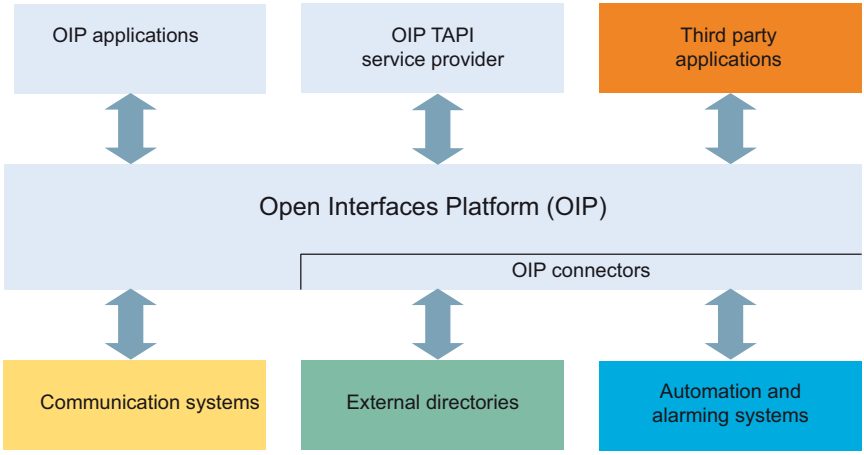

Fig. 3 OIP as middleware between communications system, external data sources and applications

OIP services

The OIP services are the central components of OIP. They are used to control the system and make the OIP features and interfaces available. Thanks to the modular organ-

isation and vast configuration possibilities, versatile and customer-specific solutions can be set up.

OIP applications

Sophisticated Softphones are available as OIP applications and are controlled as clients via OIP.

- Mitel OfficeSuite is a rich-client application, which significantly broadens the range of functions of the coupled fixed and cordless phones.
- MiVoice 1560 PC Operator is an operator application which can be used as rich-client application together with a fixed or cordless phone or alone as Softphone.

Possible OIP application fields are listed in the following sections:

OIP as directory server

Already available directories, databases and phone books are linked to OIP and made useful for name dialling and identification.

Integration is compatible with many standard databases such as Microsoft Exchange, Microsoft Outlook, Microsoft Active Directory, communication server directories, LDAP and ODBC directories and electronic phone books.

Moreover, Microsoft Exchange directories can be directly synchronised.

Unified Communications - OIP as telephony server

When OIP is used as telephony server, telephony integrates in a scalable manner into IT communication: Top-class Softphones, PC-operated fixed and cordless phones, presence-controlled call, voice mail control and calendar coupling via presence profiles, name dialling and call number identification via all linked company directories, synchronisation of Microsoft Exchange contacts, e-mail notifications, etc. facilitate daily communication.

OIP as operator centre

Several multi-functional operator applications can be organised with call centre functions in operator groups.

OIP as Free Seating Server

OIP supports and expands the MiVoice Office 400 free seating function: A user logs on at a free seating workstation and the phone automatically takes over his call number and device configuration.

OIP as call center

The powerful Mitel 400 Call Center is an integral part of OIP and provides all the main features such as flexible routing algorithms (cyclical, linear, longest time available, CLIP-based, last agent), skill-based agent groups as well as an analysis of the call centre data (online and offline) with chart-based evaluation. In the event of a network interruption the emergency routing ensures the maximum availability of the system.

The agent functionality is available on all system phones including Softphones. This applies equally to home workstations and to all the users on a Mitel Advanced Intelligent Network. The one number user concept can also be set up for agents, which provides the staff of a Call Center with maximum mobility within the company.

The Mitel 400 Call Center is easy to manage and configure thanks to OIP WebAdmin. Various monitoring functions, simple statistical evaluations and work group control can be comfortably implemented using the administration interface.

Mitel 400 CCS is an extension of the Mitel 400 Call Center and offers several possibilities of statistically evaluating the call centre operation. Offline and online reports enable the call center operator to analyse and optimise call centre operations.

OIP as application interface

Certified third-party manufacturers can, for instance, integrate sector-specific applications into the MiVoice Office 400 and OpenCom communication environment.

OIP as automaton and alarm system

External alarm systems and building automation equipment (e.g. KNX) are easily monitored through the connection to the communication system. This allows information to be exchanged in a simple way between the systems. In this way the user can use his system phone for voice communications and for monitoring external systems.

The I/O service offers a wide range of features which allows very flexible uses and versatile applications. Some of its examples are listed below:

- Alarming equipment for maintenance personnel
- Monitoring of production processes
- Forwarding messages as e-mails
- Connection to building automation systems (KNX)

With the graphical interface (tree structure) events and the relevant actions are easily linked with one another.

OIP in a networked environment

An OIP server can also be used in an AIN. To do so, it will be linked to the Master. In addition, several communication systems can also be connected to an OIP server. It is then possible for instance to obtain network-wide call logging for all the systems, to dis-

play call charge information on the system phones or to display status in the presence indicator field of a PC operator console for all the users connected.

See also:
More information can be found in the Mitel Open Interfaces Platform system manual and in the OIP WebAdminOnline help.

2. 7. 2. 2 Message and alarm systems

MiVoice Office 400 supports several message formats and message protocols for implementing messaging, monitoring and alarm systems.

Internal messaging system for system phones

The internal messaging system for system terminals allows users to exchange predefined or user-defined text messages between system phones. Text messages can also be sent to individual users or message groups.

The internal messaging system does not have an interface with which it can be addressed directly. However it can also be operated via OIP.

External messaging, monitoring and alarm systems

The powerful ATAS/ATASpro protocol is available via the communication server's Ethernet interface for applications in the security and alarming sector. This protocol can be used to implement customised alarm applications. An alarm appears on the display of system phones, complete with the freely definable user functions that apply only to that alarm. In addition the duration of the tone as well as its volume and melody can be freely defined by the user for each alarm.

The Mitel Alarm Server is a flexible solution which can be used in all sectors to process and record alarms. It can be used, for instance, in old people's nursing homes and assisted-living homes, as well as in other different facilities such as hotels, industrial plants, shopping centres, schools or administrations. When used together with Mitel SIP-DECT it is even possible to dynamically determine the environment of the alarm solution using the location feature provided by the DECT system.

The cordless DECT phone Mitel 630 DECT is specially designed for applications in the security and alarming sector. Besides a special alarm button it also features a man-down alarm, a no-movement alarm and an escape alarm. Sensors inside the phone constantly check the handset's position and motion. An alarm is triggered if the phone remains in a virtually horizontal position or motionless for some time or if the handset is shaken violently.

2. 7. 2. 3 CTI - Computer Telephony Integration

The Computer Telephony Integration (CTI) integrates telephony services in the company process. Besides conventional telephony features Mitel Open Interfaces Platform (OIP) offers many other convenient functions, which supports the employees with their daily work, for instance:

- Dialling by name for outgoing calls and CLIP display for incoming calls offers an added value by the integration of external directories and databases.
- Notification of Microsoft Outlook appointments on the system phones
- Presence-controlled communications with Busy Indicator
- Automatic Call Distribution
- Access to system configuration, what a maximum integration of different systems ensures

And of course the communication system supports also First and Third-Party CTI interfaces for commercial CTI applications based on the Microsoft TAPI 2.1 standard.

Terminal supervision/control on the communication server by third-party applications via the CSTA protocol is also supported.

First-party CTI

A first-party CTI is the direct physical connection between a phone terminal and a telephony Client (workstation PC). Telephony functions and telephone states are controlled and monitored on the telephony Client. A first-party CTI solution is ideal for a small number of CTI workstations and is easily implemented.

MiVoice Office 400 supports First-Party CTI on all system phones via the Ethernet interface. For some applications (e.g. Office eDial) the First-Party TAPI Service Provider (AIF-TSP) is required. Other applications (e.g. Mitel Dialer) use the CSTA protocol.

Application example

- Dialling from a database (phone book CD, etc.)
- Caller identification (CLIP)
- Creating a call journal
- Mitel Dialer (see Tab. 8, page 21)

Third-party CTI

Third-party CTI is an user-friendly multi-station solution. In contrast to first-party CTI, third-party CTI controls and monitors several system phones (including cordless

phones) via the central telephony server, which is connected with the communication server. In addition phones on ISDN and analogue interfaces can also be monitored. PC and phone allocation is handled by the telephony server.

The third-party CTI connection is effected via Ethernet using the Mitel Open Interfaces Platform (OIP). To this end the OIP is installed on the telephony server. Third-party connections via Ethernet with CSTA are also possible.

Application example

- Busy indicator
- Group functionality
- Networked CTI solution
- Automatic Call Distribution (ACD)

2. 7. 2. 4 ISDN interface

MiVoice Office 400 supports the ISDN protocols ETSI, DSS1 and QSIG.[1)] Besides the possibility of networking various systems into a PISN (Private Integrated Services Network) via the ISDN interface, these protocols also provide various functions that can be used for connecting external applications (e.g. IVR systems, fax server, voice mail systems, unified messaging systems, DECT radio systems).

A gateway (Mitel 415, Mitel 430, Mitel SMBC or Mitel 470) is required to use the ISDN interface.

2. 7. 2. 5 Configuration

The MiVoice Office 400 communication server is configured via the web-based WebAdmin application. Other components of the application include special accesses for hospitality and hotel solutions as well as a configuration wizard.

2. 7. 2. 6 System monitoring

The system status is monitored with event messages which can be sent to various internal or external destinations. Examples of message destinations are: system phones, events log (WebAdmin), e-mail recipients, SRM servers, alarm servers (ATAS) or SNMP destination. Event messages are also accessible via the Mitel Open Interfaces Platform for application manufacturers.

1) for USA and Canada on Mitel 470 other protocols are supported.

2. 7. 2. 7 Call logging

The Call Logging Manager includes data acquisition for incoming traffic (ICL), outgoing traffic (OCL) and the counting of the acquired call charges according to a variety of criteria. The data can be retrieved via different interfaces and subsequently processed.

2. 7. 2. 8 Hospitality/Hotel

The MiVoice Office 400 communication servers offer you several possibilities to implement a hospitality and hotel solution, with different operation applications and interfaces. Configuration is done through WebAdmin. The Mitel 6940 SIP, Mitel 6873 SIP, MiVoice 5380 / 5380 IP reception phone or the web-based Mitel 400 Hospitality Manager application is available to operate the functions. Reduced hospitality functionality are also available on Mitel 6920 SIP, Mitel 6930 SIP, Mitel 6867 SIP and Mitel 6869 SIP phones. A connection to a Property Management System (PMS) via the communication server's Ethernet interface is also possible. The commercially available FIAS protocol is provided for this purpose.

2. 7. 2. 9 Voice over IP

MiVoice Office 400 is a native VoIP solution. Apart from the possibility to operate IP system phones and SIP phones via the Ethernet interface, MiVoice Office 400 systems can also be networked over IP.

2. 8 Connection options

MiVoice Office 400 Virtual Appliance is a software-based, hardware-independent communication server. It can also be operated in an AIN with one or more satellites. The Mitel 415/430, Mitel SMBC and Mitel 470 system manuals respectively contain a diagram of all interfaces with possible terminal equipment.

2. 9 Getting started

If you are setting up an MiVoice Office 400 communication system for the first time, it may be useful to set up a test system step by step on site.

After working through the following chapters you can make internal calls between the different types of phones connected to the server. Furthermore you will have a perfect configuration platform to learn more about the system, its features and expansion possibilities.

2. 9. 1 General requirements

You need a Windows OS computer with internet access and credentials to login to Mitel Connect.

MiVoice Office 400 Virtual Appliance is installed on a virtual machine of a professional server. For the minimum requirements for the virtual machine see chapter "Installation", page 61.

To install the MiVoice Office 400 Virtual Appliance you need the IP address and the credentials of the virtual machine. You may obtain it from your IT administrator.

In order to allocate your IP and SIP phones to the communication server, DHCP service should be available in your subnet. (Your communication server has an integrated DHCP server as well, however it is switched off as per default.)

If you plan to set up a SIP trunk, you need a SIP account by a SIP provider of your choice.

For licensing reasons a communication server Virtual Appliance must either have a permanent internet access (to connect the Mitel licence server regularly) or must be operated as master in a Mitel Advanced Intelligent Network (AIN) with at least one satellite. In the second case, and without a permanent internet connection, the satellite serves both as licensee (EID card), but also as gateway for analogue and digital terminals and interfaces. The satellite may be a Mitel 415, Mitel 430, a Mitel SMB Controller or a Mitel 470. For these communication servers there are separate getting started descriptions available in the appropriate system manuals.

Required accesses

The URL's listed below refer to proprietary Mitel sites. You need a partner login to access them. If you do not have a Mitel partner login, ask your sales partner for more information.

Tab. 10 Mitel sites you need access to:

	Title	
[1]	MiVoice Office 400 DocFinder or Mitel eDocs	www.mitel.com/DocFinder or Mitel eDocs
[2]	Access to Mitel Connect (for *Mitel CPQ*, *Licences & Services* and *Software Download Center*)	https://connect.mitel.com

2. 9. 2 Plan and order

Set up your MiVoice Office 400 project in Mitel CPQ first. As a result, you will obtain a list of needed components, a slot usage layout, a DSP configuration table and a licence overview.

Mitel CPQ is designed to support you with the different activities in the sales and ordering process. It is a web-based application for online usage. You can access the application through the Mitel Connect Portal [2].

Save the component list either as Microsoft Excel or Word file and place an order with your Mitel reseller.

2. 9. 3 Download documents, system software and tools

Before you start, download the documents and applications from the proprietary Mitel sites.

Proceed as follows to organize all downloads in a common folder:

1. Download the *Documentation set* from the Mitel document portal [1], double-click the file and follow the installation wizard steps.
2. Choose *My Documents* or another suitable target directory and install the *Documentation set*. A folder named *Mitel* is created automatically.
3. Download the latest Virtual Appliance system software package (.exe) from [2] to the same target folder and double click the file.
   The system software (zip) and the release notes (pdf) will be extracted to the folder named *Mitel*.
4. The MiVoice Office 400 Virtual Appliance software and Mitel Standard Linux operating system are installed using an OVA file (for ESXi) or a VHD file (for Hyper-V). Download the latest Virtual Appliance package (.ova or .vhd file) from [2].

Note:
While the OVA file is only needed in the installation process, the VHD file represents a virtual hard disk and should be moved or downloaded directly to the final destination folder.

2. 9. 4 Installing MiVoice Office 400 Virtual Appliance

The MiVoice Office 400 Virtual Appliance software and Mitel Standard Linux operating system are installed using an OVA or a VHD file. A detailed installation description can be found here: "Installing MiVoice Office 400 Virtual Appliance", page 62.

2. 9. 5 Commissioning

There are various methods of putting Virtual Appliance without or with a satellite into operation. Please follow the detailed descriptions in chapter "Configuration", page 71.

2. 9. 6 Register and connect the phones

As you allocated phones to users in step 6 of the Setup wizard, the data instances for the phones have been automatically created. In this part of the procedure, for registering the phones, you pair the data instances with the physical phones.

Note

Mitel SIP phones get their time and date from an NTP server. To ensure this, enable the *NTP service* in *System* / *General* (=ty) and enter the IP address of the NTP server.

Register a Mitel SIP phone

1. Go to *Terminals* / *Standard terminals* (=qd) in WebAdmin and click the phone you want to register with the communication server.
   The automatically generated SIP credentials and registration credentials (*Registration user name* and *Registration password*) of the phone are displayed. You will need to provide the registration credentials later to register the phone.
2. Add one or more expansion key modules to the phone, if available.
3. Connect the phone to the IP network and to the power supply by using the optional power adapter. If your IP network supports PoE, no power adapter is required.
4. Restart the phone.
   The phone searches for the communication server. If more than one communication server is available, the phone lists them in the format <XXX–MAC address>.

   

   Tip

   You will find the MAC address of your communication server in *IP network* / *IP addressing* (=9g) of WebAdmin.
5. Choose your communication server from the list, and when prompted, enter the *Registration user name* and the *Registration password*.

   The phone registers with the communication server. If a new phone software is available, the phone automatically updates and restarts.

Register a MiVoice 5300 IP system phone

1. Add one ore more expansion key module(s) to the phone.
2. Connect the phone to the IP network and to the power supply using the optional power adapter. If your IP network supports PoE, no power adapter is required.
3. On the phone, keep the C-key pressed down to access the local *Administration* menu.

4. Set the static IP address of the communication server (*Administration* / *PBX settings* / *PBX address*). To change the settings you have to enter the administrator password first (default = *0000*).
5. Restart the phone and enter the call number of the user you want to allocate to this phone as *Registration code*.
   → The phone registers on the communication server. If a new phone software is available, it is automatically updated and the phone restarts again.

Test your configuration

Now you are able to make internal calls between the phones you connected to your communication server. Do some calling tests between the different phone types and check the audio. In the documentation set you will find the user's guides to your phones.

2. 9. 7 Make further configurations

Congratulations, you have set up the communication server for self training purposes. Now you have a perfect configuration platform to learn more about the communication server, its features and expansion possibilities.

For further configurations, use the *WebAdmin configuration assistant* and the online help. For detailed information, see the user's guides and system manuals (part of the *Documentation set*).

3 Expansion Stages and System Capacity

Since the Virtual Appliance communication server does not contain any hardware, the expansion possibilities are limited to licensed features and external equipment. The expansion of the connected satellites with interface cards and system modules is described in the Mitel 415/430, Mitel SMBC and Mitel 470 system manuals. However, the system capacity of Virtual Appliance differs from the other communication servers and is described here.

3. 1 System capacity

The system capacity of Virtual Appliance is defined by the limits set in the software and the capacity of the integrated Mitel Media Server. The software limits can be partly expandable by licences.

3. 1. 1 Media resources

Media resources are used for complex signal processing functions. They provide functions for conference circuits, DTMF sender and receiver, compression of voice data, etc.

For Virtual Appliance, the media resources of the integrated Mitel Media Server are provided.

Functions of the integrated Mitel Media Server

The table below gives an overview of the Mitel Media Serverfunctions. The functions can all be of the same type or used as a mix. Some of these functions are subject to a licence.

Tab. 11 Functions of the integrated Mitel Media Server

Max. number of simultaneous ...	Virtual Appliance
Total circuits for the functions three-party conference, six-party conference, intrusion and silent intrusion	10
switches in total for all audio services (voice mail, auto attendant, announcement service, music on hold, call recording, announcement with audio file, queue with announcement, conference bridge), for conferences, intrusion and silent intrusion, mobile and external phone integration as well as for each point-to-point connection (exchange to terminal, terminal to terminal). Two channels are required for DTP relay (indirect switching).	250[1)]
Total number of switches for the functions Call waiting, DTMF sender and DTMF receiver	400
Dial tone receiver, busy tone receiver, call signal receiver, FSK sender and FSK receiver, CAS sender/receiver	[2)]

1) For the number of switches per function (channels), see "Tab. 12 General system capacity".

2) The resources are provided by the connected satellites.

3. 1. 2 General system capacity

Tab. 12 General system capacity

Max. number...	Virtual Appliance Individual systems or AIN with Virtual Appliance as Master
Nodes in a transparent network (AIN)	50
Nodes with SIP networking	100
Users[1)]	1200
Terminals per user[2)]	16
Simultaneous connections	
• Without IP and without DECT (internal / external)	250
• IP – not IP (internal / external)	250
• IP – IP (internal)	250
• IP – IP via SIP access channels (external)	240
• DECT – not DECT (internal / external)	250
• DECT – DECT (internal)	250
• MiCollab - connections	80
VoIP voice channels G.711 / G.729 (Mitel Media Server)[3)]	250 / 50
Audio channels, call recording	8 per node[4)]
Audio channels for voice mail	16 pro node (max. 250)
Audio channels for voice mail and call recording, total	16 pro node (max. 250)
Audio channels for auto attendant	46 pro node (max. 250)
Total audio channels[5)]	46 pro node (max. 250)
Voice channels FoIP, T.38 (standard media switch)	on satellites only
Voice channels FoIP, T.38 (IP media switch)	on satellites only
CAS transmitter/receiver for PRI-E1 network interfaces[6)]	on satellites only
Configurable conference bridge	60
Active conferences	see Tab. 11
Trunk group	506
Trunk groups in route	8
Network interfaces per trunk group	64
Routes	212[7)]
B channel groups	506
SIP provider	10
SIP user account	1200
Direct dialling plans	10
Total DDI numbers[8)]	4000

Max. number...	Virtual Appliance Individual systems or AIN with Virtual Appliance as Master
SmartDDI conversion rules per DDI plan	100
SmartDDI conversion rules overall	200
Call distribution elements	4000
Queue with announcement	16
User groups	99
Members per trunk group "normal"	16
Members per trunk group "large"	1200
Abbreviated dialling numbers + PISN users	4000
Operator keys per phone on Mitel 6800/6900 SIP	10[9)]
Room keys on Mitel 6873 SIP (inclusive expansion keypad)	200
Line keys per key telephone (except Mitel 6800/6900 SIP)	39
Line keys per key telephone on Mitel 6800/6900 SIP	2...12[10)]
Line keys per CDE on Mitel 6800/6900 SIP	16[11)]
Total line keys on Mitel 6800/6900 SIP	see [12)]
Switch groups	50
Positions per switch group	3
Hotline destinations	20
Emergency destinations	50
Internal emergency numbers	10
Internal emergency response teams	50
Members of internal emergency response teams	20
Public emergency numbers	20
Allocations of external call numbers to internal call numbers	1500
External digit barring	16
Internal digit barring	16
Predefined text messages	16
Announcement / message groups	50
User per announcement / message group	16
Data service tables	32
User accounts for user access control	25
Authorization profiles for user accounts	25
Log entries per user account	20
First-party CTI users via LAN	32
First-party CTI users via Mitel Dialer	1200
Third-party CTI interfaces	1
Third-Party CTI interface (Basic, Standard)	600
Groups, Agents (OIP Call centre)	150
Agents (MiContact Center Business)	80

Max. number...	Virtual Appliance Individual systems or AIN with Virtual Appliance as Master
Mailboxes with Basic or Enterprise voice mail system	1200
Greetings per mailbox	3
Profiles per mailbox for auto attendant	3
Backup communication servers for Dual Homing	50
Primary communication servers for Dual Homing	50
Blacklist	1
Call number entries in the blacklist	3000
Number of CLIP based routing tables	20
Total call number entries in call distribution tables	1000
Call data memory internal (number of records)[13)]	1000
Private contacts	12000
Call list entries for each of the 3 call lists per phone	30
Total call list entries	60000
Busy lamp field keys on Mitel SIP phones in total	4000
Busy lamp field keys per Mitel SIP phone	50
Same users on busy lamp field keys on Mitel SIP phones	25
Configured keys	48000
Expansion key modules on DSI terminals	400
Expansion key modules on IP system phones	400
Expansion key modules on Mitel 6800/6900 SIP phones	600
Alpha keyboard Mitel K680	600
Alpha keyboard (AKB)	400

1) Each user requires a licence.

2) Only 1 operator console, 1 MiVoice 2380 IP, 1 BluStar 8000i , 1 Mitel BluStar for PC, 1 Mitel SIP-DECT, 2 DECT-cordless phones and 1 MiCollab client (3 MiCollab clients with MiCollab version 8.1) are possible for each user.

3) Applies also to Secure VoIP modes

4) For IP-IP connections maximum 8

5) Audio channels can be used for voice mail, auto attendant, queue with announcement, call recording, announcement with audio file, or conference bridge. Announcement service and music on hold use their own resources.

6) Of relevance only to certain countries such as Brazil

7) 12 of them are masked (not configurable)

8) In USA/Canada the abbreviation DID (Direct Inward Dial) is used instead of DDI (Direct Dialling In)

9) Only 6 on Mitel 6940 SIP/Mitel 6873 SIP if phone is also used as reception phone.

10)Depending on the phone type: Aastra 6730i/31i: 6 keys; Mitel 6735/37/39/53/55/57 SIP: 9 keys; Mitel 6863 SIP: 2 keys; Mitel 6865/67 SIP: 9 keys; Mitel 6869/73 SIP: 12 keys; Mitel 6900 SIP: 12 keys

11)The value applies to CDE with destination KT line. With multiple destinations (User + KT or KT + UG) the value is reduced to 8.

12)Depending on the highest number of line keys, configured for the same line. The following pairs apply (line keys per line / total line keys): (16/48), (14/56), (12/72), (10/100), (8/160), (6/240), (4/320), (2/400).
Example: The following line keys are configured on different Mitel SIP phones: 8 keys for line 1, 14 keys for line 2, 10 keys for line 3, 10 keys for line 4.
→ Highest number of keys per line: 14
® total 56 line keys are allowed
® Configured line keys: 8 + 14 + 10 + 10 = 42 ® OK

13)The call data memory is only used if the output destination is blocked (e.g. printer jam).

3. 1. 3 Terminals

Tab. 13 Maximum number of terminals per system and interface

Inter-face	Terminal type	Terminal	Virtual Appliance Individual sys-tems	per AIN with Virtual Appli-ance as Master	per inter-face
Miscella-neous	Terminals (including virtual terminals and integrated mobile/external phones)		2400	2400	
Miscella-neous	Terminals (excluding virtual terminals and integrated mobile/external phones)		2400	2400	
Miscella-neous	Free seating pools		2400	2400	
DSI-AD2	Terminals on DSI-AD2 interfaces (total)		–	1200	
DSI-AD2	Digital system phones	MiVoice 5360 MiVoice 5361 MiVoice 5370 MiVoice 5380	–	1200	2
DSI-AD2	Operator consoles / operator applications	MiVoice 5380 MiVoice 1560	–	32	2
DSI-AD2	Cordless system	SB-4+ radio unit	–	255[1)]	1
DSI-AD2	Cordless system	SB-8 / SB-8ANT radio units	–	255[1)]	[2)]
DSI-DASL	Digital system phones	Dialog 4220 Dialog 4222 Dialog 4223	–	1200	1
DECT	Cordless phones	Mitel 610/612 DECT Mitel 620/622 DECT Mitel 630/632 DECT Mitel 650 DECT Office 135 Office 160 GAP terminals	–	1200	
LAN	Terminals on LAN interfaces (total)		2400	2400	
LAN	DHCP clients on the internal DHCP server		400	400	
LAN	IP terminals	MiVoice 2380 IP MiVoice 5360 IP MiVoice 5361 IP MiVoice 5370 IP MiVoice 5380 IP	1200	1200	

Inter-face	Terminal type	Terminal	Virtual Appliance Individual sys-tems	per AIN with Virtual Appli-ance as Master	per inter-face
LAN	IP operator consoles / IP operator applica-tions	Mitel 6930 SIP Mitel 6940 SIP Mitel 6869 SIP Mitel 6873 SIP	4	4	
		MiVoice 5380 IP MiVoice 1560	32	32	
LAN	Reception/Front desk	Mitel 6940 SIP Mitel 6873 SIP	4	4	
LAN	Mitel SIP terminals	Mitel 6920 SIP Mitel 6930 SIP Mitel 6940 SIP Mitel 6863 SIP Mitel 6865 SIP Mitel 6867 SIP Mitel 6869 SIP Mitel 6873 SIP	2400	2400	
LAN	Mitel SIP-DECT Cordless phones		2400	2400	
LAN	Standard SIP terminals		1200	1200	
LAN	Mitel BluStar Softphones		1200	1200	
LAN	Mitel Mobile Client Controller		10	10	
–	Virtual terminals		1200	1200	
–	Integrated mobile/external phones		1200	1200	
–	Integrated mobile phones with MMC		800	800	
–	Integrated mobile phones per MMCC Compact		50	50	
–	Integrated mobile phones per MMCC 130		250	250	
BRI-S	Terminals on BRI-S interfaces (total)		–	512	8[3)]
BRI-S	Terminals as per ETSI standard • ISDN terminals • ISDN PC cards • ISDN LAN routers • ISDN Terminal Adapters		–	512	
FXS	Terminals on FXS interfaces (total)		–	1200	1
FXS	Analogue, nationally approved terminals • Pulse dialling (PUL) • Frequency dialling (DTMF) • Radio units for cordless phones • Door intercoms with DTMF control functions • Group 3 fax machines[4)] • Answering machines • Modems		–	1200	
FXS	External audio equipment with line output		–	1 per node	

Inter-face	Terminal type	Terminal	Virtual Appliance Individual sys-tems	per AIN with Virtual Appli-ance as Master	per inter-face
FXS	External equipment can be switched via control out-puts		–	1200	
FXS	External switches for controlling internal switch groups via control inputs		–	1200	
FXS	General bell		–	1 per node	

1) Maximum 64 radio units per location area if 4 location areas are defined, or maximum 128 radio units per location area if 2 location areas are defined.

2) Operation on 2 DSI interfaces in each case

3) Maximum of 2 simultaneous call connections.

4) Transmission with the T.38 protocol is recommended for Fax over IP. The corresponding media resources need to be allocated.

3. 1. 4 Terminal and network interfaces

Tab. 14 Terminal and network interfaces

Max. number...	Virtual Appliance Individual systems	AIN with Virtual Appliance as Master
Ethernet interfaces	1	per node
Network interfaces, total (FXO, BRI-T, PRI, BRI-Sext.)	–	288
Terminal interfaces, total (DSI, FXS, BRI-S)	–	1200
DSI terminal interfaces	–	1200
Analogue terminal interfaces FXS	–	1200
BRI-S terminal interfaces	–	224
Analogue network interfaces FXO	–	64
Basic rate interfaces BRI-T	–	256
Basic accesses BRI-S ext.	–	256
Primary rate interfaces PRI	–	32[1)]
SIP access	10	10
SIP access channels[2)]	240	240

1) 10 B channels per PRI network interface can be used without licence

2) Licences required

3. 1. 5 Software assurance

Software Assurance (SWA) is Mitel's comprehensive support offer which gives access to new software releases, support services and SRM remote access to the communication server.

The software assurance agreement has a fixed runtime and defines the number of authorised users on the communication system. You can see at a glance whether a valid

(active) SWA is available for the communication server, via the SWA state in the WebAdmin title bar.

The SWA state is retrieved via an encrypted direct link on the licence server. If there is no connection to the licence server, the last known state is displayed

The number of users covered via SWA and the number of configured users requiring SWA can be seen in the *System information* (🔍 *=1v*) view. SWA becomes invalid if the number of configured users exceeds the number of users covered via SWA.

3. 1. 6 Licences

Use of the call manager software requires a licence. Additional licences are required in order to use a number of enhanced functions and protocols, to enable voice channels or to operate certain terminals. The Mitel CPQ application automatically plans the necessary licences, which are then enabled on the communication server using a licence file.

The licence file contains all the enabled licences. When you purchase a new licence from your authorised dealer, you obtain a new licence file in return. Upload this file in WebAdmin in the *Licences* (🔍 *=q9*) view.

Notes:

– A licence file is not transferable to another communication server.

– If you receive a voucher instead of a licence file, log on with your partner login at Mitel Connect https://connect.mitel.comand generate the licence file yourself using the EID number. Detailed instructions about this can be found in the WebAdmin help on the *Licences* (🔍 *=q9*) view.

3. 1. 6. 1 Description of available licences

Software

- *Software Release*
  Updating to a new software release requires a licence. A valid software assurance (SWA) entitles you to upgrade the communication server to a new software level for a specific period., and to operate it with a specific number of users.

  A valid software assurance is the prerequisite for being able to acquire an update licence (*Software Release* licence) for a particular software version. Without a valid *Software Release* licence you can update the communication server to a new software level, but after four hours of operating time it will switch over to the restricted operating mode (see "Restricted operating mode", page 50). The communication server will switch back to normal operation as soon as you upload a licence file that comprises the *Software Release* licence. You do not need to restart the communication server.

Note:

The purchase of a new communication server also includes a software assurance for a specific period. Log on with your partner login to Mitel Connect https://connect.mitel.com and obtain a new licence file using the EID number and the voucher. The licence file issued as a result contains the appropriate *Software Release* licence (and any other licences you may have acquired). You can now activate the communication system with this licence file. Detailed instructions about this can be found in the WebAdmin help on the *Licences* (🔍 *=q9*) view.

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In an AIN, a valid *Software Release* licence must be available on the master only. Exception: For long-term offline mode, for operation with Secure VoIP and use as backup communication server, the satellite must also have a valid *Software Release* licence.

– Behaviour of satellites in online mode:
  Although satellites must also have a release licence, they must not necessarily match the current software status. If satellites do not have any release licence, they restart every four hours.
– Behaviour of satellites in offline mode:
  Satellites with an incorrect release licence change over to restricted operating mode after thirty-six hours. Satellites without any release licence change over to restricted operating mode after four hours.

Users

- *User*
  Virtual Appliance requires a *User* licence for each user in the system.
  Exception: A user without a terminal or with a virtual terminal only does not need a licence.
- *Basic User* (licence bundle)
  With this licence bundle an additional user is available who can assign any type of terminal including the appropriate phone licence, if needed. This allows the user to change the phone type without changing the licensing. Note that with this licence bundle only one terminal can be assigned to an user. The licence bundle is explicitly assigned to an certain user.
- With the following UCC licence bundles an additional user is available who can assign 8 terminals of any type including the appropriate phone licences and video licences for all phones, if needed. The licence bundles are explicitly assigned to an certain user:
  – *Entry UCC User*
    This licence bundle contains the licences described in the above section and activates MiCollab functions for the MiCollab role *UCC Entry*.
  – *Standard UCC User*
    This licence bundle contains the licences described in the above section and activates MiCollab functions for the MiCollab role *UCC Standard*.

– *Premium UCC User*
This licence bundle contains the licences described in the above section and activates MiCollab functions for the MiCollab role *UCC Premium*.

With a specific number of UCC licence bundles, users with SIP terminal licences for using with MiCollab AWV are added.
The formula is: **10 + [Standard UCC User] / 10 + [Premium UCC User] / 5**
Example: Entry UCC User: 12, Standard UCC User: 22, Premium UCC User: 14
Formula: 10 + 22 / 10 + 14 / 5 = 14 users with SIP terminals.

With a specific number of UCC licence bundles more voice mail channels licences are added.
The formula is: **([UCC licence bundles of any type] - 10) / 10**
Example: Entry UCC User: 12, Standard UCC User: 22, Premium UCC User: 14
Formula: UCC licence bundles: 48: (48 - 10) / 10 = 3 additional voice mail channels

Terminals

- *MiVoice 2380 IP Softphones*
  One licence per terminal is required to operate the IP softphones MiVoice 2380 IP. The licences are needed to register the terminals on the system.
- *MiVoice 5300 IP Phones*
  One licence per terminal is required to operate the IP system phones MiVoice 5360 IP, MiVoice 5361 IP, MiVoice 5370 IP and MiVoice 5380 IP. The licences are needed to register the terminals on the system. If the required licences are missing, the relevant event message is output on the system. The licences can also be used if the *Mitel SIP Terminals* licences are missing (but not the other way round).
- *Mitel SIP Terminals*
  To operate Mitel SIP terminals of the Mitel 6800/6900 SIP series, for cordless terminals logged on via Mitel SIP-DECT or Mitel SIP WLAN base stations, one licence is required per terminal or user. The licences are needed when registering the terminals or the user on the system. If the licences are missing, Mitel SIP terminals can also be operated with *SIP Terminals* or *MiVoice 5300 IP Phones* licences (but not the other way round).
- *Mitel Dialog 4200 Phones*
  One licence per phone is required to operate Dialog 4220, Dialog 4222 and Dialog 4223 digital phones. The licences are needed to register the phones on the system.
  Note: Dialogue phones can be connected to Mitel 470 and Mitel SMBC only.
- *MMC Extension*
  With this licence mobile phones can be integrated into the communication system together with an Mitel Mobile Client Controller and Mitel Mobile Client. The MMC

Controller allows mobile users to move back and forth between the internal WLAN coverage and the mobile radio network without the call being interrupted.

- *Dual Homing*
  In the event of failure of the primary communication server or an interruption in the IP connection to the primary communication server, SIP phones in the Mitel 6800/6900 SIP series can automatically register on a backup communication server. On the **backup communication server one licence** is required per phone. The licences are needed to register the clients on the system.
- *Mobile or External Phone Extension*
  With this licence it is possible to integrate mobile phones or other external phones into the communication system. One licence has to be purchased for each phone.

  
  Note:
  This licence does **not** allow comfortable integration with the Mitel Mobile Client application.
- *SIP Terminals*
  One licence is required per terminal to operate standard SIP terminals. The licences are needed when registering the terminals on the system and can be used even if *Mitel SIP Terminals* licences are missing (but not the other way round).
- *Video Terminals*
  To be able to use the video functionality of a standard SIP video terminal you need to acquire a Video Terminals licence in addition to a *SIP Terminals* licence.

BluStar

- *BluStar Softphones*
  This is a BluStar client licence. One licence per client is required to operate BluStar softphones. The licences are needed to register the clients on the system.
- *BluStar Softphone Video Options*
  This licence is required for using the video functionality of a BluStar softphone. A BluStar client licence must be in place.

Audio services

- *Conference Bridge* (Dial-In conference)
  This licence allows the use of a conference bridge. The internal or external conference participants choose a specific call number and are connected with the conference after entering a PIN. One licence is required per system /AIN.
- *Number in Queue*
  This licence is required for using the functionality of "Queue with announcement". The *Auto Attendant* licence is required here. One licence is required per system /AIN.

- *Auto Attendant*
  This licence enables the use of the auto attendant function and is independent of the Enterprise Voice Mail licence. It means it can also be used in conjunction with basic voice mail. One licence is required per system /AIN.
- *Enterprise Voice Mail*
  If the functionality of the basic voice mail system is insufficient, the voice mail system can be expanded. This licence provides 2 audio channels for recording or playing back audio data for voice mail, auto attendant or call recording. The licence also increases the voice memory capacity and allows e-mail notification whenever new voice messages are received as well as the forwarding of voice messages and call recording.

  

  Note
  Additional audio channels require additional *Audio Record & Play Channels* licences. An *Auto Attendant* licence is required to use the auto attendant function.
- *Audio Record & Play Channels*
  This licence enables an additional audio channel for recording or playing back audio data for voice mail, auto attendant or call recording. This licence can only be used in conjunction with the *Enterprise Voice Mail* licence.

  

  Mitel Advanced Intelligent Network
  In an AIN the Enterprise Voice Mail and Audio Record & Play Channels licences are all acquired for the Master. The number of Audio Record & Play Channels licences determines the maximum number of simultaneously active audio channels, regardless of the nodes on which they are currently being used. Requirement: The media resources on each node must be available and allocated accordingly.

Features

- *Analogue Modem*
  This licence allows remote maintenance of an Mitel 415/430 using an analogue modem. For this the *Modem* function must be allocated to the mainboard DSP. Transmitting event messages via an analogue modem is also possible.

  

  Mitel Advanced Intelligent Network
  In an AIN the licence is always acquired on the Master. The licence allows the remote maintenance of the AIN via any Mitel 415/430 node.
  Note: The master node can also be of Mitel SMBC, Mitel 470 or Virtual Appliance type.
- *Secure VoIP*
  This licence allows encrypted VoIP connections with the aid of SRTP (Secure Real-Time Transport Protocol) and/or encrypted SIP signalling data using TLS (Transport Layer Security).

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For legal reasons (Trade Control Compliance) in an AIN a *Secure VoIP* licence is required for both the Master and for each satellite.

- *Silent Intrusion*

  This licence is needed for the *Silent intrusion* feature, which is similar to the *Intrusion* feature. The difference is that the user intruded upon receives neither a visual nor an acoustic signal of the intrusion. The feature is used mainly in call centres. One licence is required per system /AIN.

Resources

- *Base licence Virtual Appliance*

  This basic licence is required for Virtual Appliance. For each user a *User* licence (see page 43) is required additionally. With this basic licence no other licences are needed for setting up a Mitel Advanced Intelligent Network (AIN).

- *VoIP Channels for Standard Media Switch*

  

  Note:

  This licence is required for Mitel 415/430, Mitel SMBC and Mitel 470 only. For Virtual Appliance, the VoIP channels of the integrated Mitel Media Server are made available and do not require any licences.

  This licence enables the conversion of voice channels for VoIP-non-VoIP connections and is used for IP terminals, SIP terminals, SIP access channels or to operate an Mitel Advanced Intelligent Network. High voice data compression is possible with the G.729 VoIP channels. An additional voice channel is activated with each licence.

  

  Notes:

  – If VoIP mode is set to G.711, two G.711 VoIP channels per system can be used without a licence.
  – Theoretically there are no VoIP channel licences in a pure VoIP environment (only IP/SIP phones on the system and connection to the public network via an SIP provider). However, as soon as voice mail functions, the announcement service or music on hold is used, VoIP channel licences are required as the use of these functions entails a conversion of the voice data.

  

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  In an AIN the licence can also be used for the connections between the nodes. Two VoIP channel licences are required for each node connection. The licences are always acquired for the Master. The number of licences determines the maximum number of simultaneously active conversions, regardless of the nodes on which they are currently being used.
  Requirement: The media resources on each node must be available and allocated accordingly.
  If Virtual Appliance is used as Master, the VoIP channels of the master node are made available without a licence from the integrated Mitel Media Server. However, for the satellites' VoIP channels, the licences must be purchased.

Networking

- *B-Channels on PRI Cards*
  10 B-channels can be used without licences for each PRI interface. These channels cannot be transferred to other PRI interfaces. An additional channel is activated with each licence. These licences are in a pool and are used from any PRI interface, if necessary (per call).

  Mitel Advanced Intelligent Network
  In an AIN the licence is always acquired on the Master. For each licence an additional B channel is available on a PRI interface of any node, depending on where the B channel is currently being used.
- *SIP Access Channels*
  The connection of the system to a SIP service provider or the networking of the systems via SIP requires one licence per channel.

  Mitel Advanced Intelligent Network
  In an AIN all the SIP licences are always acquired for the Master. The number of licences determines the maximum number of simultaneously active voice channels, regardless of the nodes on which they are currently being used. Requirement: The media resources on each node must be available and allocated accordingly.

Private networking

QSIG Networking Channels
These licences are used to implement a private leased-line network with QSIG by enabling a specific number of simultaneously outgoing QSIG channels. Two licence levels are available (see Tab. 15).
Note: For Virtual Appliance this licence is only relevant to the QSIG networking of an AIN satellite.

Applications

- *Advanced Messaging*
  Enables the SMPP protocol to be used for integrating an SMS server and 9d DECT and DT DECT cordless phones to be logged on as system phones). User-friendly messaging systems can then be implemented. One licence is required per system/AIN.
- *CTI First Party via LAN*
  This basic licence enables the CTI basic functions via Ethernet interface (e.g. for using a PC dial help) for a specific number of users (see "General system capacity", page 36). It cannot be combined with CTI third-party licences.
- *Dialers*
  This licence allows you to use the Mitel Dialer CTI application. The number of li-

cences determines the simultaneously active, user-assigned Mitel Dialer applications.

- *Hospitality Manager*
  This licence allows you to use the Mitel 400 Hospitality Manager. The Mitel 400 Hospitality Manager is a web-based application for receptionists in the hospitality sector. One licence is required per system /AIN.
- *Hospitality PMS Interface* and *Hospitality PMS Rooms*
  The *Hospitality PMS Interface* licence is used to connect the communication server to a hotel management system using the FIAS protocol. One licence is required per system /AIN. Moreover, one *Hospitality PMS Rooms* licence is required per room.
- OpenCount licences
  MitelOpenCount is a software package used for the call logging management on the communication system. It consists for selected sectors of basic, comfort and premium solutions and is installed on an external server. The licences are stored in MiVoice Office 400. OpenCount obtains the licences via the XML based interface Open Application Interface.
  - *Mitel OpenCount Basic Package*
    This basic licence is a prerequisite for all OpenCount additional licences. The licence contains the “Company” branch package, enables the connection to MiVoice Office 400 and allows basic functions to be used.
  - *Mitel OpenCount Healthcare Branch Package*
    This additional licence offers extra functions for care and retirement homes.
  - *Mitel OpenCount Public Authorities Branch Package*
    This additional licence offers extra functions for municipalities, communities and ministries.
  - *Mitel OpenCount Functional Upgrade to Comfort*
    This additional licence offers extra functions such as PIN telephony.
  - *Mitel OpenCount Functional Upgrade to Premium*
    This additional licence offers extra functions such as intermediate statements, invoicing etc.
  - *Mitel OpenCount Users*
    This additional licence enables a defined number of users to be monitored via OpenCount. All OpenCount users must be licensed, otherwise a warning is generated.

Note:
Either the OpenCount application or a third party application can use the Open Application Interface.

Interfaces

- *ATAS Interface / ATASpro Interface*
  With ATAS licences external alarm and messaging sources can be connected via

the Ethernet interface. The licences also offer additional possibilities compared with ATPCx
ATAS Interface: Many commands available for messaging (displaying text and presenting softkeys on system phones), emergency number called alarm, safeguard basic with Redkey, charging bay monitoring etc.
ATASpro Interface: Additional functions available like DECT localization, public emergency number called alarm, evacuation alarm, enhanced safeguard with alarm trigger, get rooms and room state.

Note:
If you use the Mitel Open Interfaces Platform, OIP takes the licences from the communication server. So always acquire these licences for the communication server so you can use ATAS even without OIP.

- *BSS Licence*
  This licence allows a BluStar server to be connected.
- *BSS-Lync Interface*
  This licence allows the use of the BluStar Lync interface.
- *CSTA Sessions*
  This licence allows third-party applications to monitor/check a terminal on the communication server using the CSTA protocol. If a terminal is monitored or checked by several applications or instances, one licence is required for each monitoring/check.
- *Presence Sync. via SIMPLE and MSRP*
  SIMPLE (Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions) is a protocol for exchanging presence information, and is used between SIP endpoints (terminals, network interfaces and nodes). MSRP (Message Session Relay Protocol) is a protocol used for exchanging data between SIP clients (e.g. for chats). This combined licence defines the number of users who can use one or both protocols for third-party applications. Only one licence is needed for a user with several SIP phones.
- *Basic User*
  This licence allows third-party applications to use the Open Application Interface.

Note:
Either the OpenCount application or a third party application can use the Open Application Interface.

3. 1. 7 Restricted operating mode

Without a valid *Software Release* licence the communication server switches over to a restricted operating mode four hours after each restart. The restriction concerns the following aspects:

Restricted operating features:

- No call information for incoming calls and during the call connection.
- Dialling by name is deactivated.
- Functions cannot be invoked via the menu or function key (likewise no enquiry calls can be made).
- The team keys do not work.
- Functions codes are not carried out (except remote maintenance on/off).
- Dialling from PC and other CTI functions are not supported.

Restricted services and routing functions:

- Calls are not routed to integrated mobile/external phones.
- Call centre functions are out of service (no routing to ACD).
- Voice mail functions are out of service (no call routing to voice mail).
- The announcement service is out of service.

3. 1. 8 Temporary offline licences

If the connection to the master is interrupted in an AIN, the satellites restart in offline mode. The licences acquired on the master are no longer visible for the satellites in offline mode. To ensure autonomous VoIP and QSIG traffic temporarily, certain licences are enabled in the satellites concerned for the duration of offline operation or for a maximum of 36 hours (the licences are not visible in WebAdmin). The licence overview (Tab. 15) shows which licences are affected. To ensure longer offline operation, the necessary licences must also be acquired on the satellites.

3. 1. 9 Trial licences

Trial licences are available for some functions. This means that functions or features that require a licence can be used and tested, licence-free, for a period of 60 days. The trial licences are automatically enabled the first time a particular function is used and then listed in WebAdmin in the *Licences* (🔍 *=q9*) view, complete with the date on which they expire. This procedure can only be used once for each function or feature. Thereafter you must acquire a licence. The licence overview (Tab. 15) shows which trial licences are available.

3. 1. 10 Virtual Appliance licences

You can obtain Virtual Appliance licences in two ways:

Via the Virtual Appliance EID

For this type of licensing, your Virtual Appliance communication server must have a permanent internet access. This is necessary as the licence server regularly checks whether a second communication server with the same EID (clone) does not exist. If this is the case, the event message *Possible clone of your system detected* is displayed. If the suspicion is confirmed, the communication server switches to restricted operating mode (see "Restricted operating mode", page 50).

Restricted operating mode is also activated if the communication server remains unconnected to the licence server for a longer time (max. 72 hours), or if the licence is invalid.

Note:
If during normal operation Virtual Appliance loses contact with the licence server, a 72-hour timer is started. If the link is restored before the end of the 72 hours, the timer is not directly reset, but counts up until the 72 hours are reached again.

This licensing type can be used for an individual system or in an AIN. If a licence file of this type is loaded to the communication server, you will see the EID of Virtual Appliance in the *Licences* (🔍 *=q9*) view and the status parameter *Online licence check* is activated.

Licensing via the EID of a gateway satellite

A satellite's EIM card serves as licensee for this licensing type. Therefore the satellite's EID (Gateway EID) must be entered on the licence server configuration. If a licence file of this type is loaded to the communication server, you will see the EID of Virtual Appliance and the Gateway EID in the *Licences* (🔍 *=q9*) view and the status parameter *Online licence check* is deactivated.

If during normal operation the Master loses contact with the satellite with the gateway EID, a 72-hour timer is started. The satellite restarts in offline mode with the temporary offline licence (see "Temporary offline licences", page 51). The Master Virtual Appliance continues to run for 72 hours in normal operating mode, except that, for instance, the satellite's gateway functions can no longer be used. After the 72 hours, the Virtual Appliance communication server switches to restricted operating mode (see "Restricted operating mode", page 50).

Note:
If the link between the master and the satellite is restored before the end of the 72 hours, the timer is not directly reset, but counts up until the 72 hours are reached again.

This licensing type is only available in an AIN with Virtual Appliance as master.

Overview of licences

Tab. 15 Overview of licences

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
Software						
Software Release	Allows a particular software release to be operated	Restricted[1)]	Unrestricted	In the AIN, only on the Master; otherwise per node.	–	–
Users						
User	Allows user operation on Virtual Appliance.	Locked	1, 20, 50, 100 or 200 additional users per licence.	In the AIN, only on the Master; otherwise per node.	✓	–
Basic User	Licence bundle: 1 additional user 1 phone licence (any one) 1 phone per user only	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	✓	–
Entry UCC User	Licence bundle: • 1 additional user • 8 phone licences (any one) • 8 phones per user • Video licence for all licensed phones. • MiCollab role *UCC Entry*	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	✓	–
Standard UCC User	Licence bundle: • 1 additional user • 8 phone licences (any one) • 8 phones per user • Video licence for all licensed phones. • MiCollab role *UCC Standard*	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	✓	–

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
Premium UCC User	Licence bundle: • 1 additional user • 8 phone licences (any one) • 8 phones per user • Video licence for all licensed phones. • MiCollab role *UCC Premium*	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	✓	–
Terminals						
MiVoice 2380 IP Softphones	Number of registered MiVoice 2380 IP IP softphones	0	Per licence 1 additional IP softphone	In the AIN, only on the Master; otherwise per node.	✓	✓
MiVoice 5300 IP Phones[2)]	Number of registered , MiVoice 5360 IP, MiVoice 5361 IP, MiVoice 5370 IP and MiVoice 5380 IP IP system phones	0	1, 20 or 50 additional IP system phones per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel SIP Terminals	Number of registered phones of the Mitel 6800/6900 SIP series	0	1, 20 or 50 additional Mitel SIP phone per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel Dialog 4200 Phones[3)]	Number of registered Dialog 4220, Dialog 4222 and Dialog 4223 digital phones	0	One additional phone per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
MMC Extensions	Number of mobile phones that can be registered with Mitel Mobile Client for operation with an Mitel Mobile Client Controller (MMCC)	0	Per licence 1 additional mobile phone (with Mitel Mobile Client)	In the AIN, only on the Master; otherwise per node.	–	–
Dual Homing	Number of registered Mitel 6800/6900 SIP phones on a backup communication server	0	Per licence 1, 20 or 50 additional phones	Always on the backup communication server	–	✓

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
Mobile or External Phone Extensions	Number of mobile/external phones that can be registered (without Mitel Mobile Client)	0	One additional mobile/external phone per licence (without Mitel Mobile Client)	In the AIN, only on the Master; otherwise per node.	✓	✓
SIP Terminals	Number of registered standard SIP terminals	0	1 additional standard SIP terminal per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
Video Terminals	Use of the video functionality of a standard SIP terminal	0	Additional licence for *SIP Terminals*. 1 additional standard SIP terminal with video functionality per licence.	In the AIN, only on the Master; otherwise per node.	✓	✓
BluStar						
BluStar Softphones	Number of registered BluStar softphones	0	1, 20 or 50 additional BluStar softphones per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
BluStar Softphone Video Options	Use of the video functionality of a BluStar softphone	0	Additional licence for BluStar softphone. 1, 20 or 50 additional BluStar softphones with video functionality per licence.	In the AIN, only on the Master; otherwise per node.	✓	✓
Audio services						
Conference Bridge (Dial-In Conference)	Use of conference bridge	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	✓
Number in Queue	Use of the function 'queue with announcement '	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Auto Attendant	Use of the auto attendant function	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
Enterprise Voice Mail	Voice compression, expanded voice memory capacity, and e-mail notification whenever new voice messages are received, forwarding of voice messages, call recording.	Locked	Enabled (including 2 audio channels for voice mail, Auto Attendant or call recording)	In the AIN, only on the Master; otherwise per node.	✓	✓
Audio Record & Play Channels	Audio channels for recording or playing back audio data.	Locked	Per licence 1 additional audio channel for voice mail, Auto Attendant or call recording	In the AIN, only on the Master; otherwise per node.	–	–
Features						
Analogue Modem	Use of the modem functionality on an Mitel 415/430.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Secure VoIP	Encrypted VoIP connections using SRTP and TLS.	Non-encrypted transmission	Encrypted transmission	Per node	–	–
Silent Intrusion	Use of the Silent intrusion feature	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	–
Resources						
Base licence Virtual Appliance[4)]	Allows the operation of Virtual Appliance. No additional licences needed for setting up a AIN.	Restricted[1)]	Unrestricted (also in a AIN).	In the AIN, only on the Master; otherwise per node.	✓	–
VoIP Channels for Standard Media Switch[5)]	VoIP functionality	0 / 2 [6)]	Per licence 1 additional VoIP channel	In the AIN, only on the Master; otherwise per node.	✓	✓
Network						
B-Channels on PRI Cards	B channels that can be used simultaneously on the PRI interface	10	Per licence 1 additional B- channel	In the AIN, only on the Master; otherwise per node.	–	–

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
SIP Access Channels	Simultaneously usable channels to an SIP provider	0	Per licence 1 additional SIP access channel	In the AIN, only on the Master; otherwise per node.	✓	✓
Private networking						
QSIG Networking Channels[7)]	QSIG channels	0	Per licence 4 or n QSIG channels (n limited by the system capacity)	Per node	✓	✓
Applications						
Advanced Messaging	SMPP protocol for integration of an SMS server and registration of 9d cordless phones as system phones. (Includes licence SMPP)	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	–
CTI First Party via LAN	First-party CTI clients with basic functions on Ethernet interface	0	Enabled for a specific number of users (see "General system capacity", page 36)	In the AIN, only on the Master; otherwise per node.	–	✓
Dialers	Number of simultaneously active, user-linked Mitel Dialer applications.	0	1, 20 or 50 additional instances per licence	In the AIN, only on the Master; otherwise per node.	–	✓
Hospitality Manager	Use of Mitel 400 Hospitality Manager	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	✓
Hospitality PMS Interface	Use of the PMS interface and therefore the FIAS protocol.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	✓
Hospitality PMS Rooms	Number of rooms when using the PMS interface.	0	1, 20, 50 or 100 rooms per licence	In the AIN, only on the Master; otherwise per node.	–	✓

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
Mitel OpenCount Basic Package	Basic licence: Prerequisite for all other OpenCount licences. Enables connection to the MiVoice Office 400 and the use of basic functions.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel OpenCount Healthcare Branch Package	Additional licence: Offers extra functions for care homes and retirement homes.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel OpenCount Public Authorities Branch Package	Additional licence: Offers extra functions for municipalities, communities and ministries.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel OpenCount Functional Upgrade to Comfort	Additional licence: Offers extra functions such as PIN telephony.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel OpenCount Functional Upgrade to Premium	Additional licence: Offers extra functions such as intermediate statements, invoicing etc.	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	✓	✓
Mitel OpenCount Users	Additional licence: Enables a defined number of users to be monitored via OpenCount.	0	1, 20 or 50 additional users per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
Interfaces						
ATAS Interface	Use of the ATAS interface	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	✓
ATASpro Interface	Use of the ATASpro interface	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	✓

Licence	Licensed attributes	Without licence	With licence	Licences for networking	Offline licence	Trial licence
BSS Licence	Right to connect a BluStar server	unavailable	enabled	In the AIN, only on the Master; otherwise per node.	–	–
BSS-Lync Interface	Right to use the BluStar Lync interface	unavailable	enabled	In the AIN, only on the Master; otherwise per node.	–	–
CSTA Sessions	Number of monitored terminals via the CSTA protocol.	0	1, 20, 50 or 100 CSTA sessions per licence	In the AIN, only on the Master; otherwise per node.	✓	✓
Presence Sync. via SIMPLE and MSRP	Number of users who can use one (or both) protocols for the third-party applications.	0	1, 20 or 50 additional users per licence who may use both protocols.	In the AIN, only on the Master; otherwise per node.	✓	✓
OAI Interface	Use of the Open Application Interface	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	✓

1) 4 hours after the new software has been uploaded or after a restart operation, the communication server switches over to a restricted operating mode (see "Restricted operating mode", page 50).

2) The licences can also be used if the *Mitel SIP Terminals* licences are missing.

3) Dialogue phones can be connected to Mitel 470 and Mitel SMBC only.

4) This licence is not viewable in the licence overview in WebAdmin.

5) If Virtual Appliance is used as Master, the VoIP channels of the master node are made available without a licence from the integrated Mitel Media Server. However, for the satellites' VoIP channels, the licences must be purchased.

6) If VoIP mode is set to G.711, two G.711 VoIP channels per system can be used without a licence.

7) For Virtual Appliance this licence is only relevant to the QSIG networking of an AIN satellite.

All the licences are offered in separate licence packages. Depending on the sales channels the packages may differ from the licences in Tab. 15. The systems ship out unlicensed. Back-licensing is not provided for.However, resetting to the factory setting is possible.

OIP licences

OIP licences are managed by OIP itself. A detailed description of the OIP licences can be found in the System Manual Mitel Open Interfaces Platform.

4 Installation

This chapter defines the conditions for installing Virtual Applianceand contains detailed installation instructions. A description of how to mount, power, equip and connect the Mitel 415/430, Mitel SMBC and Mitel 470 communication servers, and how to connect the interfaces, as well as their features, is given in the corresponding system manuals.

4. 1 Introduction

The MiVoice Office 400 Virtual Appliance is provided as a preconfigured VMware compatible image (OVA file) or as virtual hard disc format (VHD file) and is installed on a virtual machine of a professional server. The server may also contain other virtual Mitel applications (e.g. OIP or MiCollab AWV) and third-party applications such as a mail server.

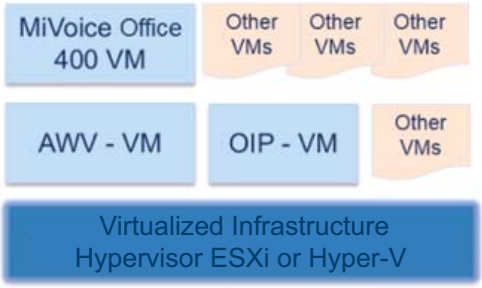


Fig. 4 MiVoice Office 400 Virtual Appliance and other virtual applications

4. 2 Abbreviations and definitions

Tab. 16 Abbreviations and definitions

VM	Virtual Machine	A virtual machine is the software implementation of a computer environment. It reflects the architecture of a real hardware PC.
OVA	Open Virtualization Archive	Image file for installing MiVoice Office 400 Virtual Appliance, including Mitel Standard Linux operating system on a virtual machine.
VHD	Virtual Hard Disc	
MSL	Mitel Standard Linux	Operating system on which MiVoice Office 400 Virtual Appliance is running.
ESXi	Hypervisor developed from VMware	Abstracting layer between the hardware and one or more virtual machines.

Hyper-V	Hypervisor developed from Microsoft	Abstracting layer between the hardware and one or more virtual machines.
vSphere® Hypervisor	Installable ISO file containing the ESXi Hypervisor and vSphere client	
vSphere client	Configuration and management fool for ESXi	

4. 3 Minimum requirements for the virtual machine

Tab. 17 Minimum requirements for the virtual machine

Platform	VMware ESXi 5.5 or higher / Microsoft Hyper-V
CPU	2 GHz, 1 core reserved for MiVoice Office 400 Virtual Appliance
RAM	2 GBytes
Free hard disk capacity	20 GBytes
Network	1 Gbit/s Ethernet
Network card	VMXNET3

4. 3. 1 Installing MiVoice Office 400 Virtual Appliance

The MiVoice Office 400 Virtual Appliance software and Mitel Standard Linux operating system are installed using an OVA file (for ESXi) or a VHD file (for Hyper-V). The guide below contains the necessary steps to take in order to install MiVoice Office 400 Virtual Appliance.

See also:

You can find more information about Mitel Standard Linux in the Installation and Administration Guide "Mitel Standard Linux".

You can find more information on how to operate virtual applications in a virtual environment in the Solutions Guide "Virtual Appliance Deployment".

Both documents are available on in the technical document portal http://edocs.mitel.com.

MiVoice Office 400 Virtual Appliance supports different virtualized infrastructures. Follow the steps in one of the following appropriate chapters:

- "Installation in a vSphere virtualized infrastructure", page 62
- "Installation in a Hyper-V virtualized infrastructure", page 64

4. 3. 1. 1 Installation in a vSphere virtualized infrastructure

Installation prerequisites:

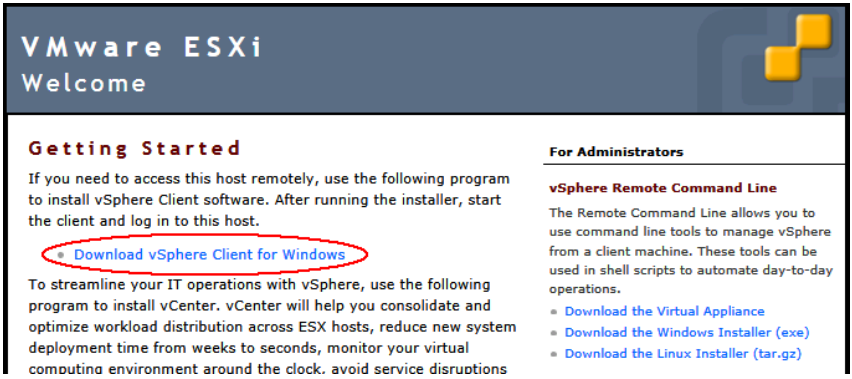
- ESXi VMware vSphere is pre-installed on an appropriate server and the registration data is known.

Note:
ESXi may only be installed by certified personnel on VMware compatible hardware. (see http://www.vmware.com/resources/compatibility/search.php)

- The OVA file used to install the virtual machine is available.
- The minimum requirements for the virtual machines are met (see Tab. 17).

Install the vSphere client on a Windows PC

1. In a browser window, enter the IP address of the server on which ESXi VMware vSphere is pre-installed.
   → The VMware ESXi website is displayed.
2. Click the *Download vSphere Client for Windows* link then install the client.



Install the virtual machine using the OVA file

Note:
If you had been deploying a Virtual Appliance communication server and wish to make a fresh installation with an OVA file, please take note of the following:
(Fresh installation resets all configuration data to the default values and deletes all audio data). First create a backup of the configuration and audio data (see Chapter "Data backup", page 93).

1. Start the vSphere client and enter the ESXi server user name and password.
2. Click *File* / *Deploy OVF Template* then browse for the storage area and the OVA file (e. g.: mlx_x50_pbx8834b1.ova).
   → An information window displays the size of the packet and the required storage capacity on the hard disk.
3. Enter a name and the storage area for the virtual machine. By default, the OVA file name is proposed.

4. *Thick Provisioning Lazy Zeroed* is recommended as hard disk format. This setting reserves approx. 15 GB storage space on the hard disk for the virtual machine.
5. End the installation wizard and wait till the installation of the virtual machine with the Mitel Standard Linux operating system and the application for MiVoice Office 400 is completed.

Starting the virtual machine

1. Open a console via the menu or by clicking .
2. Start the virtual machine via the menu or by clicking .
3. After the start sequences, a window opens so you can enter an *Application record ID*. Skip this step by pressing *Next*.
4. In the login screen that opens, log on using the following default values:
   login: *admin*
   password: *password*

Notes

- The default WebAdmin password is used here as password. Once you change the password in WebAdmin, you must henceforth use the new WebAdmin password here.
- Be careful if a new password contains some digits. When the console is active, the *Num lock* function of the digit block may be disabled and your password is not accepted. Therefore, it is better to use the digits via the normal keyboard and not via the digit block.
- If you see only a black window instead of the login, click inside the window and press *Enter*.

4. 3. 1. 2 Installation in a Hyper-V virtualized infrastructure

Installation prerequisites:

- Hyper-V manager is available on an appropriate server.
- The VHD file (e.g. mlx_x50_pbx8834b1.vhd) used to install the virtual machine is available.
- The minimum requirements for the virtual machines are met (see Tab. 17).

Create the virtual machine

Note:
If you had been deploying a Virtual Appliance communication server and wish to make a fresh installation with an VHD file, please take note of the following:
(Fresh installation resets all configuration data to the default values and deletes all audio data). First create a backup of the configuration and audio data (see Chapter "Data backup", page 93).

1. Start the Hyper-V manager on the server.

2. Create a new virtual machine, name it and click *Next*.
3. Keep the default setting for *Generation 1* and click *Next*.
4. Increase the assigned memory to 2048MB and click *Next*.
5. Select the appropriate network and click *Next*.
6. Select *Use an existing virtual hard disk*, browse for the mlx_50_...vhd file and click *Next*.
7. Check the summary of the new virtual machine and click *Finish*.

Start the virtual machine

1. Select the new virtual machine and click *Connect* (right mouse click)
   -> The virtual machine connection window opens.
2. Start the virtual machine with *Start*.
3. After the start sequences, a window opens where you could enter a *Application record ID*. Skip this step by pressing *Next*.
4. In the login screen that opens, log on using the following default values:
   login: *admin*
   password: *password*

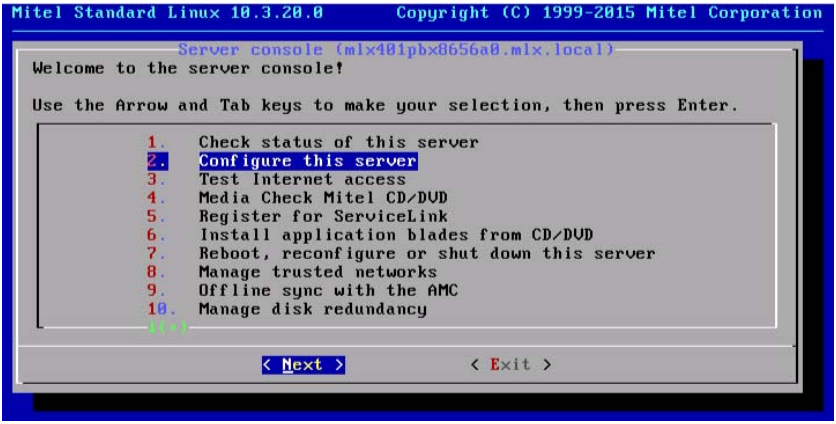
Notes

- The default WebAdmin password is used here as password. Once you change the password in WebAdmin, you must henceforth use the new WebAdmin password here.
- Be careful if a new password contains some digits. When the console is active, the *Num lock* function of the digit block may be disabled and your password is not accepted. Therefore, it is better to use the digits via the normal keyboard and not via the digit block.
- If you see only a black window instead of the login, click inside the window and press *Enter*.

4. 3. 1. 3 Configuration of MSL (vSphere and Hyper-V)

Configure the Mitel Standard Linux server

The menu below is displayed after you have logged on successfully:



1. Use the arrow keys to select the entry *Configure this server*.

Tip
When you click inside the console with the mouse, the cursor becomes invisible and you cannot use the mouse any longer (even outside the console). Navigate through the console using the keyboard. To restore the cursor, press CTRL + ALT on the keyboard.

2. Enter a domain name for the server or use the default value *mlx.local*.
3. Enter a system name for the server or use the default value (e. g. *mlx41pbx-8715a0*).
4. Overwrite the default IP address 192.168.104.13 with your communication server IP address.
5. Enter the subnet mask or use the default value 255.255.255.0.
6. Choose *IPv6 protocol = no* (default value).
7. Overwrite the default gateway IP address 192.168.104.1 with your gateway IP address.
8. Enter the DNS server IP address.
9. Select the DNS server you have just entered.
10. Restart the server with *Reboot Now*, to apply the settings.
11. Wait until the server starts up again. This is the case once the *Application record ID* entry window reappears. Click *Next* and log on again.

Note
If you wish to change the IP address of your Virtual Appliance communication server later, you must do so via the console menu. Although the IP address is visible in WebAdmin, it cannot be changed.

Activating a trusted network

Note
This step is only necessary if you wish to access this virtual machine and, thus, the Virtual Appliance communication server, from a PC located on another local area network.

1. After the server is restarted, and the login successfully implemented, select the entry *Manage trusted networks* with the arrow keys via the console menu.
2. To add a trusted network, select the entry *Add IPv4 trusted network*.
3. Enter the IP address area of the local area network, the subnet mask and the IP address of the router via which the added trusted network can be reached.
   → An information window then confirms the area of the local addresses added as trusted addresses.

Access the Virtual Appliance communication server.

Congratulations, the installation has now been completed. You can now, as usual, enter your Virtual Appliance communication server IP address in a browser window and see the entry page of WebAdmin for which the sales channel must first be chosen.

The necessary configuration steps for operating the Virtual Appliance communication server with or without satellites are described here "Configuring with WebAdmin", page 84.

Mitel Advanced Intelligent Network:
In an AIN, the Virtual Appliance communication server must always be used as master. Satellites can be deployed as gateway for analogue and digital terminals and interfaces. Satellites may be of Mitel 415, Mitel 430 or Mitel 470 type. The installation of these communication servers, as well as the equipment of interface cards and system modules, is described in the Mitel 415/430 or Mitel 470 system manual.

4. 4 Installing, powering, connecting and registering terminals

4. 4. 1 IP system phones

Accesses

Tab. 18 Socket connections of the IP system phones of the MiVoice 5300 IP series

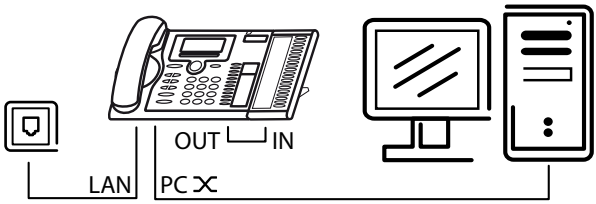
LAN	PoE Ethernet interface for connection to the IP network
PC	Socket connection for a workstation PC (integrated 100Base-T switch, available on MiVoice 5370 IP and MiVoice 5380 IP)
	Handset socket

Headset socket

Power supply socket for connecting a power supply if PoE is not available

OUT

Connect expansion key module MiVoice M530/MiVoice M535 (available on MiVoice 5370 IP and MiVoice 5380 IP)



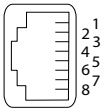
Integrated switch (MiVoice 5370 IP and MiVoice 5380 IP)

You can use the integrated 100Base-T mini-switch to connect other network terminals (e.g. PC, printer), thereby reducing the amount of cabling required.

Power supply

If your network supports Power-over-Ethernet, the IP system phone is powered directly via the LAN connection and there is no need to connect the power supply available as an option.

Tab. 19 Power over Ethernet

RJ45 socket	Pin	Signal	PoE power supply (Variant 1)	PoE power supply (Variant 2)
	1	Rx	DC+	—
	2	Rx	DC+	—
	3	Tx	DC-	—
	4	—	—	DC+
	5	—	—	DC+
	6	Tx	DC-	—
	7	—	—	DC-
	8	—	—	DC-

Depending on the power requirements different classes are defined in the IEEE 802.3af standard. The following table provides information on the class allocation of the IP system phones.

Tab. 20 PoE class allocation

Class	Max. load, PSE[1)]	Max. power requirement, PD[2)]	IP system phones
1	4.0 W	0.44...3.84 W	MiVoice 5360 IP, MiVoice 5361 IP
2	7.0 W	3.84...6.49 W	MiVoice 5370 IP[3)], MiVoice 5380 IP[4)]
3	15.4 W	6.49...12.95 W	

1) PSE (Power Source Equipment) = power supply device, e.g. a switch

2) PD (Powered Device) = power consumer, e.g. an IP system phone

3) including an MiVoice M530 or MiVoice M535 expansion keypad

4) including up to three MiVoice M530 or MiVoice M535 expansion keypads

You can obtain information on how to operate and register the IP system phones on a MiVoice Office 400 communication server in the WebAdmin online help.

4. 4. 2 Mitel 6800/6900 SIP phone series

Mitel SIP phones are platform-independent phones with a wide range of features. They can also be perfectly integrated into one of the Mitel Platforms and used as a system phone. Mitel SIP Phones on MiVoice Office 400 first support MiVoice Office 400 features and have a separate user's guide. Many of the device-specific functions are less significant or are not used at all. Please read the Mitel SIP administration instructions if you wish to carry use device-specific functions or carry out device-specific settings. Device-specific installation instructions are available for installing the phones. You can obtain information on how to register a Mitel SIP phone on a MiVoice Office 400 communication server in the WebAdmin online help.

4. 4. 3 Standard SIP phones and standard SIP terminals

For information on installation, powering and connection, please refer to the installation instructions of the corresponding phones and terminals. Information on how to register Mitel or third-party standard SIP phones and standard SIP terminals as internal users in MiVoice Office 400 is given in WebAdmin.

4. 4. 4 Mobile/external phones

The integration of mobile/external phones in the MiVoice Office 400 communication system is described in the System Manual "System Functions and Features".

4. 4. 5 OIP and other applications

Mitel Open Interfaces Platform (OIP) is also available as OIP Virtual Appliance and can be installed on the same server as the Virtual Appliance communication server. The operating requirements and installation instructions for the OIP applications

MiVoice 1560 PC Operator and Mitel OfficeSuite are described in the "Mitel Open Interfaces Platform" System Manual.

4. 4. 6 Digital system phones and terminals

You can find information on how to install MiVoice 5300-series system phones, DECT radio units and some analogue Mitel phones in the Mitel 415/430, Mitel SMBC or Mitel 470 system manuals.

5 Configuration

This chapter describes the web-based configuration tool WebAdmin as well as some additional options.

With WebAdmin the installer configures and maintains the MiVoice Office 400 communication server and its auxiliary equipment, and is supported in the process by a set up and configuration assistant. WebAdmin offers different user interfaces for administrators, system assistants and end-users as well as a special application for accommodation and hotels. A context-sensitive online help provides valuable instructions on configuration, and step-by-step instructions.

The chapter ends with valuable information and instructions on how to configure your MiVoice Office 400 communication system.

5. 1 WebAdmin Configuration Tool

This web-based configuration tool is available for the online configuration of MiVoice Office 400 series communication servers. It offers a simple, user-friendly interface and an online help, and with its different authorization levels it is aimed at different user groups:

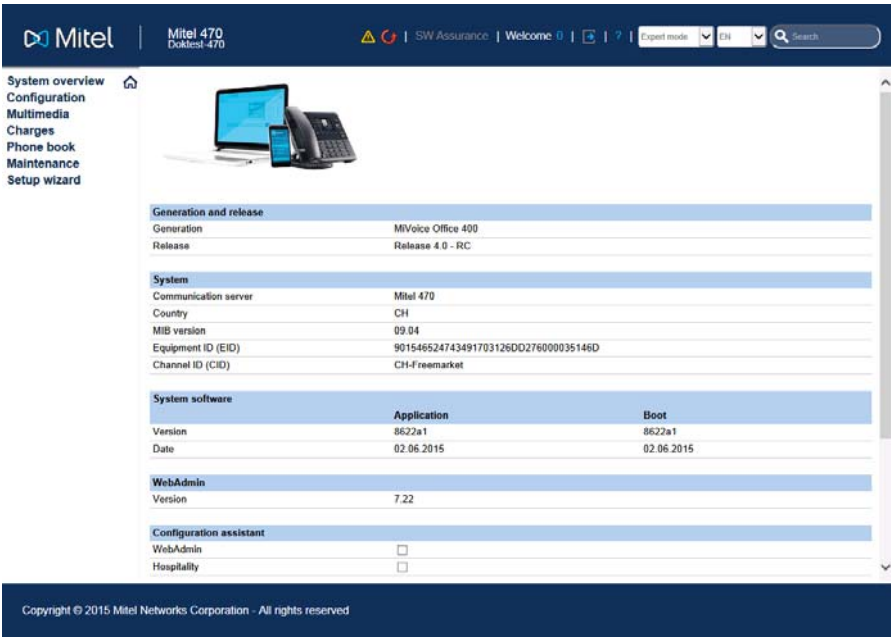


Fig. 5 WebAdmin Configuration Tool

Administrator authorization level:
The Administrator has access to all the views and functions of the configuration tool (*Expert mode*). He can call up a set-up assistant, show a general configuration assistant and a special hospitality configuration assistant, and configure all system parameters. The administrator can switch back and forth between *Expert mode* and *Standard mode* at any time.

Authorization level *Administrator (Standard mode only)*:
In Standard mode the administrator has access to all the main views and functions of the configuration tool. He can call up a set-up assistant, show a general configuration assistant and configure the most needed system parameters.

System assistant authorization level:
The System Assistant only sees selected views of the configuration tool, and the scope of functions is limited.

Hospitality-Administrator authorization level:
The Hospitality Administrator features all the views required to set up the Mitel 400 Hospitality Manager and the reception menu of the Mitel 6940 SIP, Mitel 6873 SIP or MiVoice 5380 / 5380 IP and specify its default settings. A link can also be used to start the Mitel 400 Hospitality Manager (see "Mitel 400 Hospitality Manager", page 74).

Receptionist authorization level:
This access starts the Mitel 400 Hospitality Manager directly (see "Mitel 400 Hospitality Manager", page 74).

The WebAdmin is included in the file system of each communication server of the MiVoice Office 400 family and does not have to be installed separately.

Access:
To access the login page of WebAdmin, enter the communication server IP address in your browser. You can find the registration data of a new communication server in the chapter "Default user account for initial access", page 79.

Note:
With the web-based administration two users are able to access the same communication server simultaneously (and no fewer than five users at the Receptionist authorization level). This can cause confusion if a configuration is being carried out in the same places.

5. 1. 1 Integrated and auxiliary applications

Mitel 400 Hospitality Manager

The Mitel 400 Hospitality Manager is a web-based application for receptionists in the hospitality sector. It provides a clear, at-a-glance list view or floor-by-floor view of the rooms and features functions such as check-in, check-out, notification, wake-up call, retrieval of call charges, maintenance list, etc.

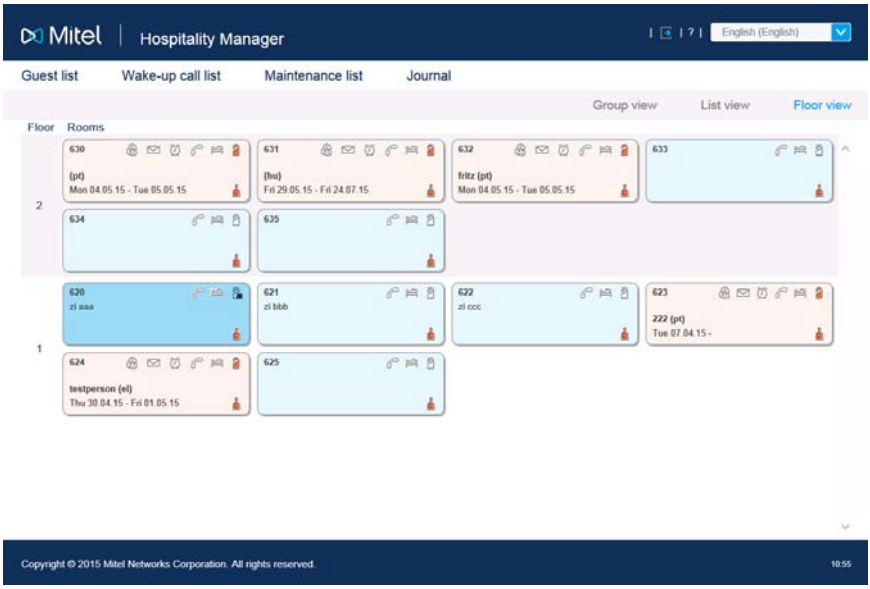


Fig. 6 Mitel 400 Hospitality Manager

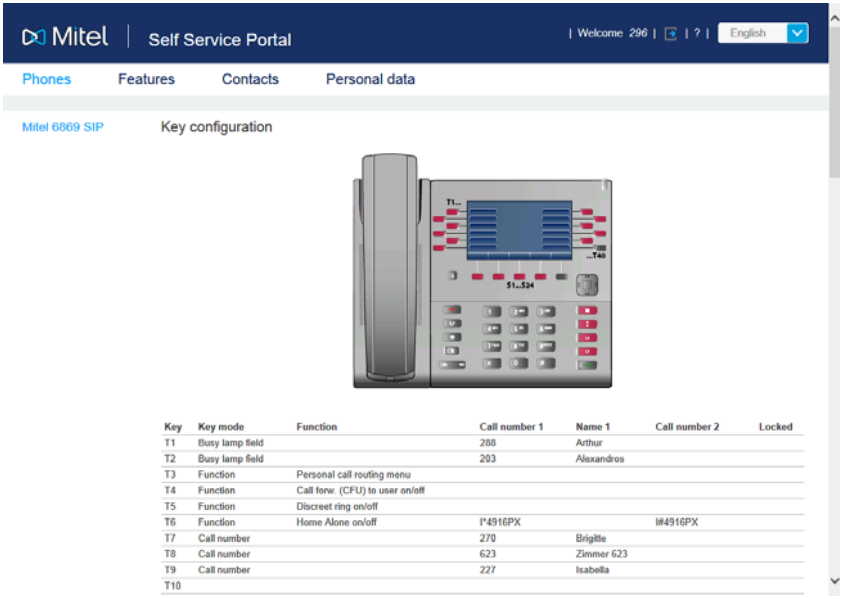
Mitel 400 Hospitality Manager is integrated into WebAdmin and subject to a licence.

Access:
You have access to two types in Mitel 400 Hospitality Manager:

- Register on the WebAdmin registration page with the access data of a user account to which an authorisation profile with the WebAdmin authorisation level *Receptionist* has been assigned. This starts Mitel 400 Hospitality Manager directly.
- Register on the WebAdmin registration page with the access data of a user account to which an authorisation profile with the WebAdmin authorisation level *Hospitality administrator* has been assigned. Click the menu tree on the left side on the *Hospitality Manager* input.

Self Service Portal

With the Self Service Portal, users can configure and adjust personal phone settings, such as key configuration, labels, display language, directly and independently on the PC. Users also have access to their personal mail boxes; they can configure and control presence profiles, personal call routing and call transfers, and create or search for private phone book contacts.



Key	Key mode	Function	Call number 1	Name 1	Call number 2	Locked
T1	Busy lamp field		288	Arthur		
T2	Busy lamp field		203	Alexandros		
T3	Function	Personal call routing menu				
T4	Function	Call forw. (CFU) to user on/off				
T5	Function	Discreet ring on/off				
T6	Function	Home Alone on/off	I*4916PX		I#4916PX	
T7	Call number		270	Brigitte		
T8	Call number		623	Zimmer 623		
T9	Call number		227	Isabella		
T10						

Fig. 7 Self Service Portal

The Self Service Portal application is integrated into WebAdmin.

Access:
You can access a user's Self Service Portal by entering any of the following combinations (registration data) on the WebAdmin registration page:

- Call number + PIN
- Windows user name + PIN
- Windows user name + password

The standard PIN "0000" is accepted, but must be changed during first login. You can choose any 2 to 10-digit number combination.

System Search

The auxiliary application System Search is an independent help tool for detecting MiVoice Office 400 series communication servers on the IP network. System Search MiVoice Office 400 finds all communication servers connected to the IP network, provided they are located on the same subnet as the PC and are at least compatible with Software release 1.0. (does not apply to Virtual Appliance). With System Search you can also see the name, type, sales channel, EID number and operating mode of a selected communication server. You can modify its IP address or directly start the WebAdmin administration tool.

Moreover, with System Search you can load language files for the audio guide, Mitel phones as well as for the user interface and online help of WebAdmin, Hospitality Manager and Self Service Portal via MiVoice Office 400 FTP server onto your PC and upload them afterwards to the communication server with WebAdmin. Thus, an update or an upload of new languages is possible without an internet connection of the communication server.

With System Search you can also upload system software in boot mode (Emergency Upload). This is particularly useful if the current software application on the communication server is no longer able to run or if you wish to load an older software application (does not apply to Virtual Appliance).

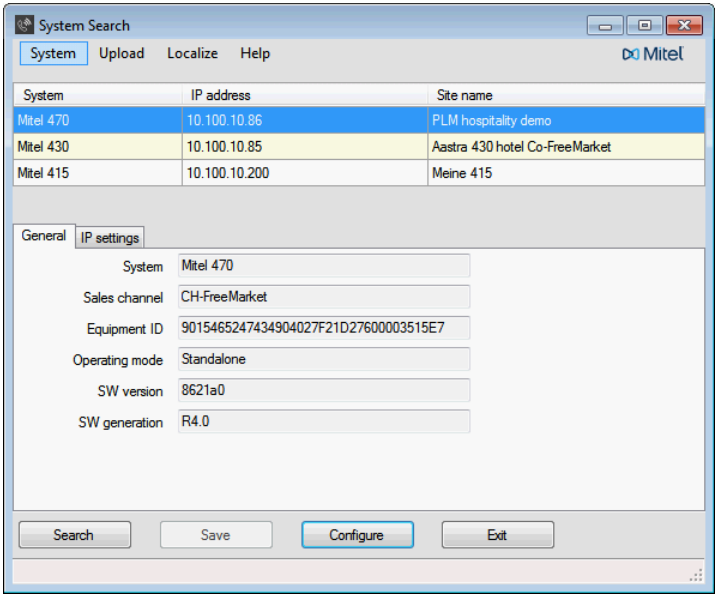


Fig. 8 System Search

You can download the System Search application via Software download server. For this, you must first log on to the Extranet with your partner login. The application must not be installed but is started with a double-click.

Note:
For Virtual Appliance and SMB Controller, System Search is only available for downloading language files for the audio guide, Mitel SIP terminals as well as for the WebAdmin, Hospitality Manager and Self Service Portal user interfaces and online help.

Mitel 400 WAV Converter

The auxiliary application Mitel 400 WAV Converter is an independent help tool for compressing audio data. If the integrated voice mail system is operated in expanded mode (Mitel 415/430 only), all the audio data must be available in compressed G.729 format. To be able to continue using existing, uncompressed greetings in G.711 format, you need to compress them first. Mitel 400 WAV Converter is available for this.

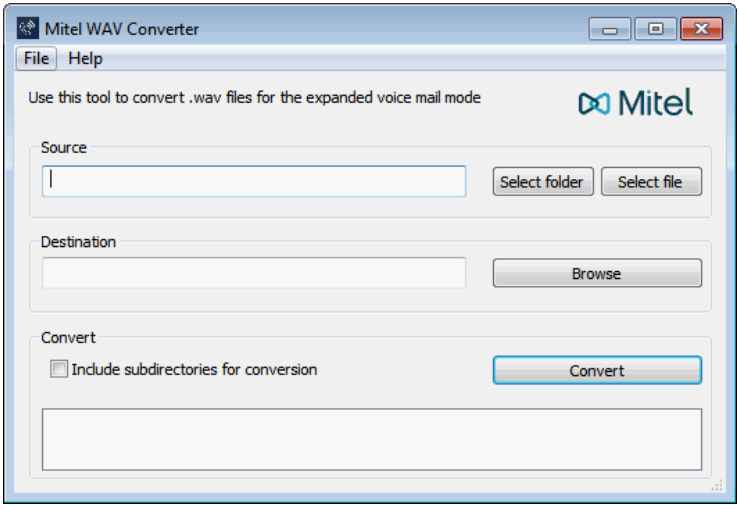


Fig. 9 Mitel 400 WAV Converter

You can download the application via Software download server. For this, you must first log on to the Extranet with your partner login.

The application must not be installed but is started with a double-click.

5. 2 Access types with WebAdmin

There are the following possibilities to access the MiVoice Office 400 communication server with WebAdmin:

- In the LAN with an Ethernet cable (via a switch)
- Externally via SRM (secure IP remote management)

Note:
External access (ISDN/analogue) with a dial-up connection in a AIN via a Mitel 415/430, Mitel SMBC or Mitel 470 Satellite is only recommended on some conditions, for performance reasons.

Accessing the communication server on the LAN

If the communication server IP address is known, it can be entered directly in the address line of a web browser. WebAdmin is started after the access data is entered. The computer only needs to be located on the same LAN, but not necessarily on the same subnet.

Accessing the communication server from outside

For remote access to the communication server, we recommend SRM (Secure IP Remote Management) secure IP remote management. For this, you need to install an SRM agent on your computer with which you can set up a connection to the SRM server. Thereafter, the SRM server calls the communication server via PSTN and sends it the connection parameters. The communication server now sets up a secure connection to the SRM server which switches together them with the connection to the SRM agent.

See also:
You can find instructions on how to set up Secure IP Remote Management in the WebAdmin help on the *IP remote management (SRM)* view (*=mw*).

5. 3 User access control

Access to the configuration is password-protected. Any user wanting to log in to a communication server is prompted for his user name and password (access data).

5. 3. 1 WebAdmin User accounts and authorization profiles

A user's authorizations are regulated by authorization profiles, which are assigned to the user accounts.

5. 3. 1. 1 User accounts

Default user account for initial access

When a new communication server is opened or after a first start, the default user account (*admin*) and several authorization profiles are created. The default user account is linked with the authorization profile *Administrator*. This authorization profile is assigned the administration rights for the *User access control* for *Audio services* and for WebAdmin at the *Administrator* authorisation level.

The required user accounts and authorization profiles can be set up using the default user account.

To access the default user account (*Default User Account*) enter the following:

Tab. 21 Standard user account and standard password

User name	admin
Password	password

Notes:

- To prevent unauthorised access to the communication server, it is necessary to modify the default password during first access. For password selection and input, see "Password syntax", page 80.
- The password change is also applied to the login on the virtual machine for the configuration of the Mitel Standard Linux server (see "Installing MiVoice Office 400 Virtual Appliance", page 62).

Other predefined user accounts

The predefined user account *amcc* is meant for operating a Mitel Mobile Client Controller.

The two predefined user accounts *blustar* and *bucs* are meant for BluStar terminals and for a BluStar server.

Furthermore there are predefined user accounts for the Mitel Dialer for MiCollab and for OpenMobilityManager (OMM).

You can see the predefined user accounts in the *User account* (🔍 *=a7*) view.

Note:
The predefined user accounts cannot be deleted.

Personal user accounts

Subject to the administration right for user access control, personal user accounts can be created in user access control (🔍 *=a7*) and assigned some authorisation profiles. The following rules apply to user names selection and spelling:

- An user name must consist of a minimum of 1 and a maximum of 25 alphanumerical characters.

- Unlike the passwords, the user names are **not** case sensitive.
- The following special characters can be used: ?, /, <, >, -, +, *, #, =, full stop, comma and space.
- German umlauts (e.g. ä, ö, ü) and other diacritical characters (e.g. é, à, â) are not permitted.
- User names must be unique throughout the system.
- The user name and password must not be identical.

5. 3. 1. 2 Authorization profiles

Predefined authorization profiles

The predefined authorization profiles are assigned administration rights and interface user rights. An overview of all predefined authorisation profiles with their administration and access rights is available in the WebAdmin help on the *Authorization profile* view(🔍 *=u5*).

Personal authorisation profiles

Subject to administration right for the administration right for user access control, no personal authorisation profiles can be protected and assigned the desired rights. A description of the various administration and access rights is available in the WebAdmin help on the *Authorisation profile* view(🔍 *=u5*).

Note:
Authorization profiles can only be viewed or created by *Administrators* in *Expert mode*.

5. 3. 1. 3 Passwords

To ensure that the communication server can only be configured by authorized personnel, access to the configuration is password-protected.

Password syntax

The following rules apply to password selection and spelling:

- A password must consist of a minimum of 8 and a maximum of 255 characters.
- Unlike the user names, the passwords are case sensitive.
- The passwort must contain at least one uppercase letter A - Z.
- The passwort must contain at least one lowercase letter a - z.
- The passwort must contain at least one digit 0 - 9.

- The passwort must contain at least one of the following special characters: ?, /, <, >, -, +, *, #, =, full stop, comma and space.
- German umlauts (e.g. ä, ö, ü) and other diacritical characters (e.g. é, à, â) are not permitted.
- The default password *password* is not permitted.
- The password must not be the same as the user name.
- It is not allowed to use the last 4 historic passwords.

Change password

Any user who has been assigned an authorisation profile in which the *User access control* administration right is released is authorised to modify the passwords of all user accounts. It is therefore advisable to assign this administration right restrictively.

Users whose password has been changed are prompted to enter their newly assigned password the next time they log in. The same applies to users whose accounts have been newly created.

Users without the administration right *User access control* can only change their own password.

Access with incorrect password

After 15 failed login attempts using incorrect passwords the corresponding user account is blocked; it can then only be reactivated by a user with the *User access control* administration right. He then replaces the old password with a new one. The next time he logs in, the corresponding user is prompted to change the password and enter the new one he has been assigned.

Lost password

If another user has also been defined with the *User access control* administration right released, he can simply overwrite with a new password the password lost by another user. The next time he logs in, the corresponding user is prompted to change the password and enter the new one he has been assigned.

Note:
For security reasons, there is no password-free access for Virtual Appliance. Be careful with your passwords.

5. 3. 2 Automatic exit from the configuration

Access to the configuration is interrupted if no changes are made to a parameter value or the navigation system is not used during a specific timeout.

5. 3. 3 WebAdmin access log

An access log with 20 entries is drawn up for each user account so that the history of accesses to the configuration can be tracked. Denied access attempts using erroneous or incorrectly type passwords are also logged. The logs can be read by each user (authorization level) *Administrator* in *Expert mode* required).

Retrieving the log data

The system monitors all the accesses and failed access attempts and saves them in the file system of the communication server. These lists can be retrieved locally or remotely. (🔍 *=ez* or 🔍 *=z3*).

CLIP verification

If in the general maintenance settings (🔍 *=t0*) of the parameter *CLIP required* is activated, remote maintenance is only possible if the retrieving party is using a CLIP. The CLIP number is also recorded by the access log.

Entering the processes in the log

Each access attempt generates an entry in the corresponding list.
In case of remote maintenance an entry will not be generated if remote maintenance is barred or if *CLIP required* is activated in the configuration and no CLIP is received.

5. 4 WebAdmin remote access

With a remote maintenance access the user is authenticated using his user name and password. The user account must also be assigned an authorization profile in which the interface access *Remote maintenance dial-up access* is enabled. This also applies to SRM (Secure IP Remote Management), secure IP remote management.

5. 4. 1 Access enabled by local users

Remote maintenance access can be enabled in two ways:

- Using function codes (see page 83)
- With WebAdmin

It can be revoked again automatically or manually.

All enabling types have equal authorization status. This means that remote maintenance access can be enabled using a function code for example, and then barred again using the WebAdmin in general maintenance settings (🔍 *=t0*).

When remote maintenance access is activated, the event message *Remote maintenance on* is sent to all message destinations where the corresponding filter criteria in the assigned event table is set accordingly (see chapter "Event tables", page 121).

If remote maintenance is released, this can be recognised in the WebAdmin title bar of the 🔓 symbol.

Remote maintenance access can be enabled or barred using the function codes both from the idle state and the talk state, e.g. after an enquiry.

The authorisation to activate or bar remote maintenance access using the function code is defined and granted to the user with the parameter *Remote maintenance access* in a permission set (🔍 *=cb*).

After a first start of the communication server, the authorizations of all users are restricted.

Note:
It is advisable not to keep the remote maintenance access permanently activated. This ensures that the communication server data cannot be manipulated from a remote location by unauthorized persons.

5. 4. 2 Function code for remote maintenance access

Tab. 22 Function code for remote maintenance access

Enable/bar a one-off remote maintenance access	*754 / #754
Enable/bar a one-offpermanent maintenance access	*753 / #753

When remote maintenance access is enabled using function code *754, access will automatically be barred again once the remote maintenance process has been completed. It is possible to bar remote maintenance manually using #754 before it is initiated.

Remote maintenance access can be enabled permanently using the function code *753. To bar access, the authorized user must enter the function code #753 manually.

The enabling or barring of remote maintenance access using the function code is signalled in each case by an acknowledgement tone.

Remote maintenance access can also be enabled or barred in WebAdmin, if the relevant authorization has been given.

Note:
In a QSIG network it is important to ensure that the authorization to change the remote maintenance access is also denied to unauthorized PISN users. Otherwise, a PISN user would be able to use an abbreviated dialling number defined for the destination PINX and containing the appropriate function code to change the remote maintenance access to the destination PINX.

Mitel Advanced Intelligent Network:
In an AIN the remote maintenance access of all the nodes depends on the setting in the Master. If remote maintenance access is enabled in the Master, both the AIN configuration and the offline configuration of the satellites are enabled.

Remote maintenance access via an external dial-up connection to the AIN is also protected and has to be explicitly enabled via the control panel on the front panel (Mitel 470) or via the control key (Mitel 415/430).

5. 4. 3 Function keys for remote maintenance access

On system phones the function code for enabling/barring remote maintenance access can be stored under a function key, provided the user has the appropriate authorization.

The relevant LED lights up if remote maintenance access is enabled once or permanently.

The relevant LED goes off as soon as remote maintenance access is denied again, either automatically or manually, using the function code or WebAdmin.

5. 5 Configuring with WebAdmin

The configuration steps are based on the information determined during the planning and, where applicable, the installation.

Whenever possible, use the planning and ordering software Mitel CPQ, to set up your communication system. Mitel CPQ can be operated online after logging in at Mitel Connect https://connect.mitel.com. Mitel CPQ not only calculates the required hardware – it also lists the required licences for the planned operation.

See also:
If you are setting up an MiVoice Office 400 communication system for the first time, read the chapter "Getting started", page 30.

Putting Virtual Appliance into operation

There are various methods of putting Virtual Appliance without or with a satellite into operation. Below is a summary of a possible procedure for both cases.

Operating without a satellite

Requirements:

- Your communication server Virtual Appliance has permanent internet access. This is required, because the communication server regularly sends messages to the Mitel licence server, to maintain the permission for the unrestricted operating mode.
- You have received a licence file and an EID for Virtual Appliance via Mitel Connect (https://connect.mitel.com) with the help of the voucher.

Recommendation:

Download the latest MiVoice Office 400 software for Virtual Appliance from the *Software Download Center* in Mitel Connect (https://connect.mitel.com) and store it.

For the operation, proceed as follows:

1. Enter the IP address of your Virtual Appliance communication server in a browser.
   → WebAdmin is opened in your web browser and shows the *Sales channel selector* view. The sales channel determines the country specific settings of the communication server and ensures the reliable operation with the local PSTN. Choosing the correct *Sales channel* is also important because it is mapped to the licence code.
2. Select your sales channel. If your country code is not listed, ask your Mitel representative, which sales channel you should select.
3. Click the *Next* button.
   → The *Software update* view is opened. We highly recommend updating the communication server to the latest software release.
4. Choose the *Manual software upload* entry in the drop down list and upload the system software which you have already saved to your hard disc.
   → During the software update (or if you chose not to update the software after you click the *Next* button) a first start is executed to set the sales channel and the country specific settings.
5. Click the *Next* button.
   → The *Upload audio guides* view is opened. The communications server uses spoken text for several purposes like voice mail, presence information or auto attendant. These texts are stored in audio files. You can download audio guide languages via the menu *Localize* in *System Search* and then upload them to the communication server in this view. You can skip this step, because the audio guides can be loaded later from a Mitel FTP-Server via the *Localization* view in WebAdmin much more comfortable.
6. Click the *Next* button.
   → The *First access* view is opened and you are asked to change the default password of the administrator account, to choose the *System language* and to enter a *Site name*.

7. Click the *Next* button.
   The WebAdmin *Setup wizard* is opened. Skip the setup wizard. You can call it up later at any time from WebAdmin.
8. You are asked to select the WebAdmin mode. Click on *Expert mode*.
9. Change to the *System overview* / *Licences* (🔍 *=q9*) view.
10. Enter the *Equipment ID (EID)* of Virtual Appliance and upload the licence file.
    → The state of *Online licence check* checkbox should be ticked.
11. Enable the *NTP service* in the *System* / *General* (🔍 *=ty*) view.
12. Change to the *System* / *Media resources* (🔍 *=ym*) view. Make sure the media switch of the master Virtual Appliance is enabled and select the *VoIP mode*.
13. Restart the communication server in the *Maintenance* / *File management* / *System reset* (🔍 *=4e*) view, to make the changes take effect.
14. Log on again and change to the *System* / *Media resources* (🔍 *=ym*) view.
    → The state of the media switch has changed to *Operational*.
15. Now, carry out the configuration procedures to set up the numbering plan, the SIP providers, users, phones and DDIs[1)]. For this you can call up the set-up wizard, the configuration wizard or use your own methods.

Operating with a satellite

If Virtual Appliance is operated with one or more satellites in a AIN you have two possibilities regarding licensing:

Variant 1: The EID of a satellite and the EID of Virtual Appliance is used to generate the licence. As long as the satellite and the master are connected, the unrestricted operation is ensured. This variant is especially useful, if no permanent internet access for Virtual Appliancecan be ensured.
Variant 2: Only the EID of Virtual Appliance is used to generate the licence. This requires a permanent internet access of the communication server Virtual Appliance, because it regularly sends messages to the Mitel licence server in order to maintain the permission for the unrestricted operating mode.

Below the operating with variant 1 is described:

Requirements:

- The installation of the virtual machine has been completed; the Mitel Standard Linux server has been configured and you can access the Virtual Appliance communication server from your local area network (see "Installing MiVoice Office 400 Virtual Appliance", page 62).

1) In USA/Canada the abbreviation DID (Direct Inward Dial) is used instead of DDI (Direct Dialling In).

- You have successfully set up a communication server Mitel 415, Mitel 430, Mitel SMBC or Mitel 470 as a satellite with a static IP address in the same range as the one of the communication server Virtual Appliance.
- You have received a licence file and an EID for Virtual Appliance via Mitel Connect (https://connect.mitel.com) with the help of vouchers and EID of the satellite (gateway EID).

Recommendation:

Download the latest MiVoice Office 400 software for Virtual Appliance from the *Software Download Center* in Mitel Connect (https://connect.mitel.com) and store it. The master Virtual Appliance and the satellite must run with the same software release.

For the operation, proceed as follows:

1. Enter the IP address of your Virtual Appliance communication server in a browser.
   → WebAdmin is opened in your web browser and shows the *Sales channel selector* view. The sales channel determines the country specific settings of the communication server and ensures the reliable operation with the local PSTN. Choosing the correct *Sales channel* is also important because it is mapped to the licence code.
2. Select your sales channel. If your country code is not listed, ask your Mitel representative, which sales channel you should select.
3. Click the *Next* button.
   → The *Software update* view is opened. We highly recommend updating the communication server to the latest software release.
4. Choose the *Manual software upload* entry in the drop down list and upload the system software which you have already saved to your hard disc.
   → During the software update (or if you chose not to update the software after you click the *Next* button) a first start is executed to set the sales channel and the country specific settings.
5. Click the *Next* button.
   → The *Upload audio guides* view is opened. The communications server uses spoken text for several purposes like voice mail, presence information or auto attendant. These texts are stored in audio files. You can download audio guide languages via the menu *Localize* in *System Search* and then upload them to the communication server in this view. If your communication server has internet access, you can skip this step, because the audio guides can be loaded later from a Mitel FTP-Server via the *Localization* view in WebAdmin much more comfortable.
6. Click the *Next* button.
   → The *First access* view is opened and you are asked to change the default password of the administrator account, to choose the *System language* and to enter a *Site name*.

7. Click the *Next* button.
   The WebAdmin *Setup wizard* is opened. Skip the setup wizard. You can call it up later at any time from WebAdmin.
8. You are asked to select the WebAdmin mode. Click on *Expert mode*.
9. Change to the *System overview* / *Licences* (🔍 *=q9*) view.
10. Enter the *Equipment ID (EID)* of Virtual Appliance, and upload the licence file.
    → The status of *Online licence check* checkbox should be unticked and the *Gateway EID* of the Satellite should be shown.
11. Enable the *NTP service* in the *System* / *General* (🔍 *=ty*) view.
12. Change to the *Private networking* / *AIN* / *General* (🔍 *=3q*) view, add a satellite then enter the *Equipment ID* and the gateway satellite *IP address*.
    → The satellite is being added.
13. In the same view, on the added satellite's line, click the *WebAdmin* button.
    → A new browser window opens.
14. Log on to the satellite and change to the same *Private networking* / *AIN* / *General* (🔍 *=3q*) view. Select *AIN satellite* as *operating mode* and indicate the *Master IP address* of the Virtual Appliance communication server.
15. Restart the satellite directly in the popup window or in the *Maintenance* / *File management* / *System reset* (🔍 *=4e*) view.
16. Wait until the satellite is running again. Then change to the WebAdmin configuration of the master Virtual Appliance, refresh the *Private networking* / *AIN* / *General* (🔍 *=3q*) view and confirm the satellite.
    → Master and satellite are now networked.
17. Change to the *System* / *Media resources* (🔍 *=ym*) view. Make sure the media switch of the master Virtual Appliance is enabled and select the *VoIP mode*. Enable the *Standard media switch* of the satellite, select the *VoIP mode* and allocate some audio channels to *VoIP*.
18. Restart the master Virtual Appliance in the *Maintenance* / *File management* / *System reset* (🔍 *=4e*) view, to make the changes take effect.
    → The master Virtual Appliance and the satellite restart.
19. After master and satellite are running again, log on master Virtual Appliance and change to the *System* / *Media resources* (🔍 *=ym*) view.
    → The state of the media switch of Virtual Appliance and the standard media switch has changed to *Operational*.
20. Now, carry out the configuration procedures to set up the numbering plan, the SIP providers, users, phones and DDIs[1)]. For this you can call up the set-up wizard or configuration wizard, or even use your own methods.

1) In USA/Canada the abbreviation DID (Direct Inward Dial) is used instead of DDI (Direct Dialling In).

Setup wizard

The WebAdmin setup wizard takes you step by step through the setup of a basic configuration and is suitable for initial communication server setup. The setup wizard is automatically called up when a new communication server is installed. Logging on as administrator in WebAdmin (expert or default mode) allows you to also start the setup wizard directly from the WebAdmin navigation tree.

The setup wizard comprises the following steps:

1. Activating licences
2. Viewing the IP addressing
3. Configuring media resources
4. Setting up the numbering plan
5. Setting up SIP providers
6. Setting up users, terminals and DDIs
7. Setting up the auto attendant

For each step you can display a help page or see it in the lower part of the window where it is already displayed. You can skip individual steps of the setup wizard or exit the setup wizard at any time in order to return to the WebAdmin start page.

Configuration assistant

The configuration assistant goes further than the setup wizard and helps you to configure a communication system in sequence, from scratch. Logging on as administrator in WebAdmin (expert or default mode) allows you to display the configuration assistant on the WebAdmin start page.

The configuration assistant comprises the following steps:

1. Viewing the IP addressing
2. Regulating access control
3. Checking licences
4. Configuring media resources
5. Setting time and date
6. Checking network interfaces
7. Setting up SIP providers and accounts
8. Specifying user permissions
9. Create users and DDI[1)] numbers
10. Checking outgoing routing

1) In USA/Canada the abbreviation DID (Direct Inward Dial) is used instead of DDI (Direct Dialling In).

11.Setting up the auto attendant

12.Setting up music on hold

13.Setting up an announcement service

14.Entering abbreviated dialling contacts

15.Saving configuration data

For each step, the upper half of the screen displays the configuration overview; the right-hand side contains notes and instructions about the step you have selected. The WebAdmin online help can be called up for further help.

You can skip individual configuration assistant steps or call up additional views of the WebAdmin navigation tree. To hide the configuration assistant again, untick the control box on the WebAdmin start page.

5. 6 WebAdmin Configuration Notes

The sections below contain information that may be useful before, during or after a configuration with WebAdmin.

5. 6. 1 Licences

All the features (even those subject to licences) can be configured without a valid licence.

If you use a function or feature that requires a licence but do not actually have the relevant licence, a trial licence is acquired automatically; it is also shown in the overview of activated licences (*Licences* =*q9* view). With a trial licence you can now use the function or feature free of charge for 60 days. The trial licence's expiry date is indicated under *Status*. This procedure can only be used once for each function or feature. Thereafter you must acquire a licence. The licence overview (Tab. 15) shows which trial licences are available.

All licences are stored in a licence file, which you can obtain from your authorised dealer. Each licence file can only be used for one communication server. To licence several communication servers, you will obtain separate licence files to match the licence information of the individual communication server. If a communication system consists of several communication servers (e.g. in a AIN), normally only one licence file is required on the Master.

A new communication system must be activated first after commissioning. Otherwise, the communication server changes after 4 operating hours to limited operating mode.

Upload the licence file in the *Licences* (=*q9*) view.

If you have received a voucher (or with the help of the *Equipment ID*), you can also obtain the licence file via Mitel Connect https://connect.mitel.com (partner login required). You can find instructions about this in WebAdmin help.

If you wish to use Virtual Appliance in an AIN, you can choose whether licensing will be carried out via *Equipment ID*. (see "Virtual Appliance licences", page 51).

See also:
"Licences", page 42

5. 6. 2 File management

The file management of the MiVoice Office 400 application is done via WebAdmin:

- *Localization* (🔍 *=e6*)
  You can adapt the communication system to your country's specifications, with the help of localization. In this view language files can be manually or automatically loaded for Mitel 6800/6900 SIP phones via FTP server. Moreover, you can manually or automatically load the languages for the WebAdmin, Hospitality Manager and Self Service Portal user interface and online help, as well as an external numbering plan for the SIP connection via the FTP server.
- *File system state* (🔍 *=e3*)
  In this view you can see the thematically structured file system's memory load. In an AIN the file systems for all nodes can be viewed.
- *File browser* (🔍 *=2s*)
  With the file browser you have access to the communication server file system and create new folders as well as view, import, replace or delete files in the file system.

Note:
File management is only accessible for *Administrators* in *Expert mode*.

See also:
You can find detailed information about the functions in WebAdmin help for the corresponding view.

5. 6. 3 System reset

5. 6. 3. 1 Restart

Restart via WebAdmin

A restart via WebAdmin is triggered in the maintenance settings with the *Restart* button in the *System reset*(🔍 *=4e*) view.

A restart via WebAdmin reboots the MiVoice Office 400 application only. The configuration data is preserved.

Note:
- The restart is triggered immediately. All the active call and data connections are interrupted.
- With a restart via WebAdmin you only restart the Virtual Appliance communication server application. In some rare cases, it is necessary to also restart the corresponding virtual machines. Restarting the virtual machine also restarts the Virtual Appliance communication server application.

Restarting the virtual machine

Should the virtual machine stop running (correctly) for whatever reason, it must be restarted. To do so proceed as follows:

Note:
Restarting the virtual machine also restarts the communication server. The restart is triggered immediately. All the active call and data connections are interrupted.

vSphere virtualization:

1. Start the vSphere client and enter the ESXi server user name and password.
2. Select your virtual machine from the list.
3. Choose via the menu *Restart guest* or click on .
   → The virtual machine restarts, together with the communication server.
   → After approx. two minutes, WebAdmin can again be used to access the Virtual Appliance communication server.

Hyper-V virtualization:

1. Start the Hyper-V manager on the server.
2. Select your virtual machine from the list.
3. Choose *Restart* via the menu.
   → The virtual machine restarts, together with the communication server.
   → After approx. two minutes, WebAdmin can again be used to access the Virtual Appliance communication server.

5. 6. 3. 2 First start

A first start has the effect of resetting the MiVoice Office 400 communication server from scratch. The system-specific data such as the system ID, system type, sales channel, licence file, software generation and IP address of the system are preserved.

Notes:
- A first start deletes all the configuration data already stored and replaces it with the default values of the sales channel. Therefore, back up your configuration data before a first start.

– The first start is triggered immediately. All the active call and data connections are interrupted.

First start via WebAdmin

A first start via WebAdmin is triggered in the maintenance settings with the *First start* button in the *System reset*(=4e) view.

First start and reset sales channel via WebAdminl

With the *First start and reset sales channel* button in the maintenance settings of the WebAdmin *System reset* (=4e) view, you have the possibility not only to execute a first start but also to delete the sales channel. During the next start, you will be prompted for the sales channel and licence file. Note that the licence file is dependent on the sales channel. This means you can no longer use the existing licence file, if you choose another sales channel.

Note:
This function is only accessible for Administrators in Expert mode.

5. 6. 4 Data backup

With a configuration data backup all the MiVoice Office 400 configuration data of the communication server is stored in a compressed file in ZIP format. You can let the configuration data backup run automatically (*Auto backup*) or as required (*Manual backup*).

You can automatically copy the backup files to an FTP server or e-mail them.

With an audio data backup all the audio data of the communication server is backed up in a compressed file in ZIP format. The backup of the audio data can only be done manually.

You can find the automatic data backup and distribution service settings in the WebAdmin *Maintenance* / *Data backup* (=um) view where you can also test the configuration. Moreover, in this view, you can see the automatically and manually created backup files and also restore or delete them.

The configuration backup and the audio data backup are always stored in a encrypted format.

Note:
The backup may consist of several files. They are compiled by the communication server and compressed into a ZIP file. During the Restore process the ZIP file is extracted by the communication server itself. To ensure the restore process to run smoothly, make sure you do not modify the ZIP file. Never extract or modify a backup file yourself.

5. 6. 4. 1 Auto backup

The automatic data backup function creates a backup of the MiVoice Office 400 configuration data at regular intervals and saves the backup files on the communication server's file management system.

The Auto Backup function creates a backup of the configuration data at daily, weekly and monthly intervals:

- Everyday at the set time a backup is created and stored in the *..\backup\day* directory.
- When the week changes, a copy of the backup is stored in the *..\backup\week* directory.
- When the month changes, a copy of the backup is stored in the *..\backup\month* directory.

The backup directories are located on the file system of the communication server and are directly accessible via the *File browser* (🔍 =2*s*) or with an FTP connection.

A backup remains stored until the set storage time has expired; the .zip file is then deleted from the file system.

5. 6. 4. 2 Distribution service

You can use the distribution service to automatically copy the backup files to an FTP server or e-mail them.

- The e-mail distribution service sends a copy of each backup file created to a preconfigured e-mail address.
- The FTP distribution service stores a copy of each backup file created on an FTP server.

5. 6. 4. 3 Manual backup

Configuration and audio data must be stored separately and stored as .zip files on any data carrier you want. The configuration data is also backed up automatically as copy on the communication server file system.

Situations in which you have to create a manual backup:

- Before running a first-start of the communication server (a first start resets all the configuration data to their default values and deletes all audio data).
- Before making a new installation of the virtual machine (a new installation resets all configuration data to the default value and deletes all audio data).
- Before and after any major configuration changes.

5. 6. 4. 4 Restore backup

The available MiVoice Office 400 configuration data and audio data backup files can be restored at any time.

Note:

- Restoring a backup irretrievably overwrites the current configuration data or audio data.
- Restoring a backup also resets the users' presence status, the personal routing settings and any activated CFUs to the backup status.
- Some configuration changes only take effect after a restart. The communication server is restarted after the configuration data is restored.

See also:

The procedure for creating and restoring a backup is described in detail in the WebAdmin help in the *Data backup* (=*um*) view.

5. 6. 5 Importing and exporting configuration data

You have the possibility to edit various configuration data outside WebAdmin, or to import configuration data from other MiVoice Office 400 series communication systems. Here you can create, with the help of the export function, a specific Excel file hereinafter referred to as *Export file*. The export file contains several spreadsheets. Each sheet covers a specific configuration area. Subsequently, edit then re-import the export file. Only the data belonging to the view, on which you have activated the import function, will be imported. Example: The import function in the *Phone book* / *Public* view imports only the data from the export file located on the spreadsheet *Abbreviated dialling list*.

Exception: The export function in the *Backup* view imports the data in all spreadsheets.

You can find the export function in the following views:

- *Overview* (user data and key configuration of the terminals)
- *Abbreviated dialling numbers*
- *PISN user*
- *Time controlled functions*
- *Ext./Int. Allocation*
- *LCR*
- *Blacklist*
- *CLIP based routing*
- *Data backup*

Note:
You can activate the *Replace existing configuration* option with the import function. Activate this function only if you are setting up the communication server from scratch. This action deletes all previously configured user data and all user associated settings such as DDI numbers, CDE targets, user group entries, assigned phones, configured keys, etc.

5. 6. 6 Mitel 6800/6900 SIP phones

Prior to the registration, reset any phones that were already in operation back to the factory setting. For security reasons, delete the phone's MAC address in WebAdmin. This prevents problems during registration.

Use these procedures in the following cases:

- Assigning the phone to another user on the same system
- Transferring the phone to another system with the same software release
- Changing the software release to an earlier release
- Changing the communication server IP address

6 Operation and Maintenance

This chapter describes maintaining the system and configuration data as well as updating the system software. Moreover, operations supervision is described with the event message concept.

6. 1 Data Maintenance

6. 1. 1 File system of the communications server

The file system of the communication server comprises the system software, the software for system phones, the system and terminal configuration data, the audio data, system logs, data for WebAdmin, etc. With WebAdmin you have access to the file system via the menu item *File management*. You can see the file system memory load and then load audio data, languages for the user interface and online help, language files for Mitel 6800/6900 SIP phones as well as an external numbering plan for SIP connection. Moreover, with the file browser you have the possibility to view, upload, replace or delete the folders and files in the file system.

Functions for backing up and restoring configuration data and audio data are available in the WebAdmin *Maintenance* / *Data backup* (=*um*) view (see also "Data backup", page 93).

Usually there is no need to access the MiVoice Office 400 file system directly as all needed functions are available in WebAdmin. For special cases you can access the MiVoice Office 400 file system also with a SSH session via the folder */home/mivo400*.

Note:
Modifying or deleting files on the file system can result in a system that is no longer able to run.

6. 1. 2 Updating configuration data

There are system-wide, user-related and terminal-related configuration data:

- System-wide configuration data can only be modified with WebAdmin.
- Terminal configuration data such as key assignments or ringing melodies can be modified either directly on the terminal, with Self Service Portal or with WebAdmin. With some system phones configuration is also possible using the web user interface or with the help of configuration files.
- User-related configuration data such as private contacts or CFUs is valid for all the terminals assigned to the user and can be configured using WebAdmin, partly via Self Service Portal, or directly on the terminal itself.

Access to the configuration data via WebAdmin is regulated by a User Access Control with user accounts, authorization profiles and authorization levels. More information can be found in the Chapter "User access control", page 78.

6. 2 Update Software

6. 2. 1 System software

MiVoice Office 400 application software

The MiVoice Office 400 application software is normally updated with WebAdmin. In some exceptional cases, it is necessary to reinstall the entire virtual machine via an OVA file or a VHF file (see page 62).

Note:

Fresh installation with an OVA file or a VHF file resets all configuration data to the default values and deletes all audio data. First create a backup of the configuration and audio data (see Chapter "Data backup", page 93).

Firmware for system terminals

The firmware for MiVoice 5300/MiVoice 5300 IP, Mitel 600 DECT phones, DECT phone Office 135/135pro, DECT radio units SB-4+/SB-8/SB-8ANT and WebAdmin is also available in the MiVoice Office 400 application software.

Tip

The communication server software version can be displayed as follows on MiVoice 5300/MiVoice 5300 IP phones:

1. Access the configuration menu *Settings*.
2. Long-click on the * key

Information can be retrieved on Mitel 6800/6900 SIP phones as well as on Mitel 600 DECT DECT phones via the menu.

Depending on the phone, additional information is displayed.

Providing the MiVoice Office 400 system software and licence file

The new MiVoice Office 400 system software and the relevant licence file are provided by your sales dealer. In most cases you will download the software from an internet site specified by your sales partner. You will also receive a voucher. With this you can generate the new licence file through the Mitel Connect internet portal https://connect.mitel.com and upload it to your communication system. You need a login to access Mitel Connect (user name and password).

Load new MiVoice Office 400 system software with WebAdmin

New MiVoice Office 400 system software can conveniently and safely be loaded on the communication server file system in the WebAdmin *Maintenance* / *System software*

(🔍 =m7) view. The activation point of the new software is selectable. (Exception: The activation time on the satellites AIN always depends on the master's demand).

In newly delivered systems it is possible to directly load new system software after choosing the sales channel.

Notes:

- Most times a new licence file is also required for new system software. You can also install and start up the new software without specifying the licence file. However, once you have started to use the software you will need to enter the licence file within 4 hours; otherwise the communication server will switch over to the restricted operating mode. In this mode, only the basic functions of the communication server are available.
- Please read the chapter “Important hints and restrictions” in the release notes to the software to be loaded.

See also:

A detailed description of the software upload procedure with WebAdmin is available in the online help.

6. 2. 2 Firmware for corded system phones

The MiVoice Office 400 application software package contains the software for certain system phones (DSI and IP), which is updated in each case along with the application software. For other system phones (SIP) the firmware is located on a firmware server.

The MiVoice 5360 system phones do not have their own memory. All other system phones have a Flash memory.

SIP system phones

The firmware for Mitel 6800/6900 SIP phones as well as for Mitel BluStar clients and Mitel Dialer is preferably located on a firmware server. In the WebAdmin *Configuration* / *IP network* / *Firmware server* (🔍 =yv) view Mitel FTP servers are already predefined. Various firmware releases are stored on this server, according to different communication server software releases. The predefined entry in WebAdmin is adjusted to each communication server release if necessary. You can also indicate the address of another firmware server.

Whenever the phones are started the phone firmware version is compared with the version on the firmware server. If the versions differ, the firmware is downloaded from the firmware server to the phones.

DSI and IP system phones with Flash memory

The flash memory contains the boot software and the application software. DSI phones also have an area with the interface software.

The firmware for the phones MiVoice 5370, MiVoice 5380 as well as for all MiVoice 5300 IP series phones is contained in the MiVoice Office 400 application soft-

ware package. The firmware versions are compared when the phones are started. If the versions differ, the firmware is downloaded from the communication server to the phones. When updating the system software this can take several minutes for each DSI phone.

The expansion key modules MiVoice M530 and MiVoice M535 also have a flash chip containing firmware. The update mechanism is the same as the one described above. However a local power supply is always required (Power over Ethernet is also possible with IP terminals).

6. 2. 3 Firmware System MiVoice Office 400 DECT

DECT radio units SB-4+, SB-8 and SB-8ANT

The Flash memory on the radio units contains an area that cannot be modified. It is used for starting the radio unit and receiving the firmware for the radio unit.

The actual firmware for the radio unit is contained in the MiVoice Office 400 application software package. The loaded firmware is tested when the radio unit starts up. If the loaded firmware is not identical to the version in the system software, the firmware will be downloaded from the communication server on to the radio unit and stored in the Flash memory of the radio unit.

Cordless DECT phones of the Mitel 600 DECT family

The firmware for the Mitel 600 DECT cordless phones, is updated via radio (Air-Download). The update can be enabled or disabled individually for each cordless phone using the menu *System* - *Download server* on the cordless phones. If the cordless phone is logged on to several systems, this menu defines which system the firmware update is relevant to.

There is only one firmware for the cordless Mitel 600 DECT series phones. It is included in the MiVoice Office 400 application software package and stored in the file system of the communication server.

DECT cordless phones Office 135 and Office 160

The firmware for the Office 135 and Office 160 cordless phones, is updated via radio (Air-Download). This requires the cordless phone to be logged on to system A.

The memory in the cordless phones is a Flash memory. The Flash memory contains an area that cannot be modified. This area contains the cordless phone's boot software.

The firmware for the cordless phones is contained in the MiVoice Office 400 application software package. The loaded firmware is tested when the cordless phone starts up. If the loaded firmware is not identical to the version in the system software, the system will initiate an Air-Download. The firmware is loaded from the communication server onto the cordless phones via radio and stored in the Flash memory.

To be able to run an Air-Download, you need to ensure that the cordless phone contains a functional firmware.

The cordless phone remains fully functional during an Air-Download. The new loaded firmware is activated only once the Air-Download has been successfully completed. A restart is carried out on the cordless phone.

6. 2. 4 Firmware System Mitel SIP-DECT

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) is installed on one of the RFP radio units or on a PC, which constitutes the management interface for the Mitel SIP-DECT solution.
Mitel 600 DECT phones have loaded a different firmware in an Mitel SIP-DECT system from the one in an MiVoice Office 400 DECT system.

The firmware for the RFP radio units and for the Mitel 600 DECT cordless phones is preferably located on a firmware server. Automatic firmware update is then possible. The WebAdmin *Configuration* / *System* / *DECT/SIP-DECT* / *SIP-DECT* (🔍 *=9y*) view contains a global predefined Mitel FTP server. Various firmware versions are stored on this server, according to different communication server software releases. The predefined entry in WebAdmin is adjusted to each communication server release if necessary. You can also indicate the address of another firmware server.

Firmware designations for Mitel SIP-DECT (examples):

aafon6xxd.dnld:
Firmware for Mitel 600 DECT cordless DECT phones.

iprfp3G.dnld:
Firmware for OpenMobilityManager (OMM).

6. 3 Operations supervision

6. 3. 1 Event message concept

The system generates an event message every time an event or error occurs. The event tables are used to specify how often an event message of a particular type may be generated by the system over a given period before the event message is sent to the allocated signal destinations.

There are 7 event tables that can be allocated to 8 signal destinations:

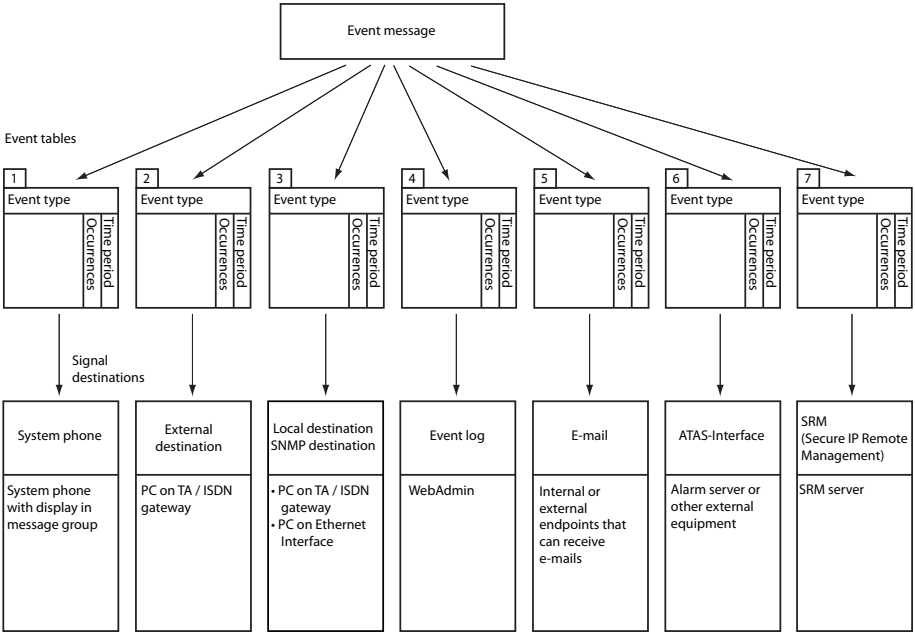


Fig. 10 Distribution principle for an event message

6. 3. 1. 1 Event types

Event messages have a certain severity level: *Normal* (blue), *Serious* (yellow) and *Critical* (red). Many event messages have both a negative impact (error occurred) and a positive impact (error corrected). Some event messages have no impact and, thus, no match. Severity level, positive or negative impact (if any) and the information, if there is a match or not, are indicated in the event table.

If an SRM server is indicated as signal destination, the event message severity level results in a change of system status. This can be seen in the SRM agent and is displayed with the corresponding colour (see also section "SRM destination", page 126).

Tab. 23 Event types, in alphabetical order

Event message	Trigger condition	Details[1)]	Severity
ATAS: Connection established	ATAS: connection (re) established	Date, time	critical (positive, with match)
ATAS: Connection lost	ATAS: connection lost	Cause (0: Logoff, 1: missing cycle signal), date, time	critical (negative, with match)
BluStar Client back within the licence limit	A sufficient number of licences is now available again for BluStar clients. Parameter 1: 0 (not used) Licence type: 0 and 1: (not used), 2: BluStar CTI, 3: BluStar Softphone, 4: BluStar Video option, 5: BluStar Presence option	Parameter 1, licence type, total purchased licences, date, time	Serious (positive, with match)
Card in service	A card that was previously out of service is back in service again.	Number of the expansion slot, date, time	critical (positive, with match)
Card out of service	A card previously in operation has stopped functioning.	Number of the expansion slot, date, time	critical (negative, with match)
Card reset	A reset was carried out for one card	Number of the expansion slot, date, time	Serious (without match)
Charge counter overflow	Individual cumulative counter or cost centre counter overflow	Cause (0: User / 1: Cost centre / 2: Exchange line / 3: Room), number, date, time	Serious (without match)
CL printer available again	Printout on the system printer available once again	Date, time	Serious (positive, with match)
CL printer blocked	• No response from system printer for past 4 minutes • Printer out of paper or switched off	Interface, interfaces/card number, port number, date, time	Serious (negative, with match)
Compatible PMS application	The external hotel management system (PMS application) is suitable for communicating with the communication server.	Date, time	critical (positive, with match)
Configuration template available	The missing configuration template for a Mitel SIP terminal is now available in the communication server file system.	Date, time	Serious (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
Connection to IP remote management (SRM) failed	IP remote management connection set up (SRM = Secure IP Remote Management) has failed. Cause parameter: 1: Connection attempt failed, 2: Authentication failed, 3: File upload rejected	Cause, date, time	Normal (negative, with match)
Connection to IP remote management (SRM) restored	IP remote management connection has been (SRM = Secure IP Remote Management) successfully restored.	Date, time	Normal (positive, with match)
Connection to PMS system established	A connection with a hotel management system (PMS system) has now been successfully established.	Date, time	critical (positive, with match)
Connection to PMS system failed	An unsuccessful attempt was made to establish a connection with a hotel management system (PMS system). Reason: 1: Call rejected, 2: Destination unobtainable, 3: Destination busy, 4: Connection timeout, 5: Wrong address, 6: Unknown error	Error, date, time	critical (negative, with match)
CPU2 applications card Data communication out of service	Data communications with the CPU2 applications card have been interrupted for an unusually long period of time (> 1 hour) due to an error (after a Windows update or for other reasons).	Date, time	critical (negative, with match)
CPU2 applications card Data communications back in service	Data communications with theCPU2 applications card have been restored.	Date, time	critical (positive, with match)
Creation instance on backup communication server failed	The backup communication server was unable to create or modify a user or terminal instance with the received configuration data. Note: This event message is generated by the backup communication server.	Instance type (0: User, 1: terminal), user number or terminal ID, date, time	critical (negative, with match)
Creation instance on backup communication server successful	The backup communication server was able (following one or more previous failed attempts) to create or modify a user or terminal instance with the received configuration data. Note: This event message is generated by the backup communication server.	Instance type (0: User, 1: terminal), user number or terminal ID, date, time	critical (positive, with match)
CSTA sessions within the licence limit again	*CSTA Sessions* licences are now available again.	Number of licences, date, time	Serious (positive, with match)
CTI first party Connection established	The first-party link was (re-)established	User number, terminal ID, protocol type (0=ATPC3, 1=CSTA) date, time	critical (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
CTI first party Connection lost	The first-party link was interrupted because the cycle signal is missing.	User number, terminal ID, protocol type (0=ATPC3, 1=CSTA) date, time	critical (negative, with match)
CTI third party: Connection established	The third-party link was (re-)established	IP address, protocol type (0=ATPC3, 1=CSTA), date, time	critical (positive, with match)
CTI third party: Connection lost	The third-party link was interrupted	Cause (0=Logoff, 1= missing cycle signal), IP address, protocol type (0=ATPC3, 1=CSTA) date, time	critical (negative, with match)
Definitive activation licence missing	The initial temporary activation of the communication server for a certain duration (e.g. 90 days) was started. After this period, the communication server switches to restricted operating mode (see "Restricted operating mode", page 50).	Date, time	critical (negative, with match)
Definitive activation licence now present	A licence file with a definitive activation licence was uploaded.	Date, time	critical (positive, with match)
Dual Homing back within the licence limit	There are now enough licences available for registering SIP phones in the Mitel 6800/6900 SIP series on a backup communication server. Note: This event message is generated by the backup communication server.	Date, time	Serious (positive, with match)
E-mail successfully sent	The system has now successfully sent an e-mail. Meaning of the parameter values in Tab. 24	Cause/action=0000, e-mail client, additional information, date, time	critical (positive, with match)
Emergency call ended	The emergency call has been confirmed by a responsible person.	Date, time	critical (positive, with match)
Emergency call started	An emergency number out of the public emergency number list has been dialled. Note: If an emergency number of the internal numbering plan has been dialled, no event message will be generated.	Dialled number (the first 4 digits), user number, terminal ID (if user number ≠ 0) or trunk group ID (if user number = 0), date, time	critical (negative, with match)
ESME reachable	The LAN connection between the SMSC and the ESME is now available	IP address, date, time	critical (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
ESME unreachable	The LAN connection between the SMSC and the ESME is interrupted	IP address, date, time	critical (negative, with match)
Ethernet activated again	The overload on the Ethernet interface no longer exists. The interface has been reactivated.	Date, time	Normal (positive, with match)
Ethernet deactivated due to high load	The system has detected an overload on the Ethernet interface. The interface is temporarily deactivated.	Date, time	Normal (negative, with match)
External auxiliary power supply failed (Mitel 470 only)	The external auxiliary power supply to the communication server has failed. If the auxiliary power supply unit has been used for redundant operation, there are no short-term limitations. If the auxiliary power supply unit has been used to increase the power supply, the internal power supply unit overflow must be calculated.	Date, time	Serious (negative, with match)
External auxiliary power supply in service (Mitel 470 only)	The external auxiliary power supply to the communication server is working.	Date, time	Serious (positive, with match)
External event message destination not reachable	External signal destination not automatically reachable	Cause (0: Busy /1: Not available /2:(not used), 2: Barred /3: not defined), date, time	Serious (negative, with match)
External event message destination reachable	External signal destination is now reachable	Date, time	Serious (positive, with match)
Fan failure (Mitel 415/430 and Mitel SMBC only)	The fan is jammed or defective or the connection is no longer making contact. • Parameter = 0: No more fans in operation. –> Risk of overheating: Replace defective fan.	Parameter, date, time	critical (negative, with match)
Fan failure (Mitel 470 only)	The fan is jammed or defective or the connection is no longer making contact. • Parameter 1 = 0: No more fans in operation. –> Risk of overheating: System shut down after 2 minutes. –> Replace both fans. • Parameter 1 = 1: Only one fan left in operation. Parameter 2 = Defective fan number –> System still running with only one fan. –> Replace defective fan.	Parameter 1, parameter 2, date, time	critical (negative, with match)

Event message	Trigger condition	Details[1)]	Severity
Fan in operation (Mitel 415/430 and Mitel SMBC only)	The fan is back in service again after a failure. • Parameter = 0: Fan back in service again.	Parameter, date, time	critical (positive, with match)
Fan in operation (Mitel 470 only)	The fan is back in service again after a failure. • Parameter = 0: A fan is back in service again. • Parameter = 1: Second fan back in service again.	Parameter, date, time	critical (positive, with match)
FIAS command buffer full	The command buffer to the PMS interface is full.	Date, time	critical (negative, with match)
FIAS interface usable again	The command buffer to the PMS interface is back below the critical limit.	Date, time	critical (positive, with match)
Inactive radio unit port	Radio unit not responding Reason: 0: Startup running, 1: Not registered, 2: Various nodes, 3: Port not permitted, 4: Local power supply, 5: Not connected, 6: Port reset, 7: Startup error, 8: Unknown error	Card number, port number, radio unit ID/reason, date, time	Serious (negative, with match)
Incompatible PMS application	The external hotel management system (PMS application) is not suitable for communicating with the communication server.	PMS SW version, PMS interface version, PMS interface driver version, date, time	critical (negative, with match)
Incorrect or no wiring adapter (Mitel 415/430 and Mitel SMBC only)	There is no wiring adapter in the wiring adapter slot or the wiring adapter fitted is unsuitable.	Slot number, date, time	Critical (without match)
Insufficient bandwidth	An user in an AIN is trying to set up a connection and the bandwidth currently available with the WAN link is insufficient.	Link ID, WAN link name, available bandwidth in Kbit/s, date, clock	Serious (without match)
Internal event message destination not reachable	Local output blocked or not available	Cause (0: Busy /1: Not available /2:(not used), 2: Barred /3: not defined), date, time	Serious (negative, with match)
Internal event message destination reachable	Local output available once again	Date, time	Serious (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
Internal power supply unit failed (Mitel 470 only)	The internal power supply unit of the communication server has failed. If the auxiliary power supply unit has been used for redundant operation, there are no short-term limitations. If the auxiliary power supply unit has been used to increase the power supply, the external power supply unit overflow must be calculated.	Date, time	Serious (negative, with match)
Internal power supply unit in service (Mitel 470 only)	The internal power supply unit of the communication server is in service.	Date, time	Serious (positive, with match)
IP address added to the DoS black list	A DoS attack has taken place beyond the maximum configured admissible registration attempts or transactions. The IP address concerned has been included in the black list and will remain blocked for a set period.	IP address, Cause (0: Registration / 1: Too many transactions / 2: No session / 3: modified message), date, time	Serious (negative, with match)
IP address changed: Regenerate TLS certificates	The IP address of the communication server has changed. The TLS certificates have to be regenerated. For terminals downcircuit from a NAT without ALG the public NAT gateway address has to be configured.	Date, time	Serious (without match)
IP address removed from the DoS black list	An IP address added previously due to a DoS (Denial of Service) attack was again removed from the black list and is no longer blocked.	IP address, date, time	Serious (positive, with match)
IP phone: Connection lost	An IP system phone is no longer connected to the communication server.	User number, terminal ID, date, time	Serious (negative, with match)
IP phone: Connection re-established	An IP system phone has re-established the connection to the communication server.	User number, terminal ID, date, time	Serious (positive, with match)
IP system phone licence is now available	A sufficient number of licences is now available again for MiVoice 5361 IP / 5370 IP / 5380 IP.	Date, time	Serious (positive, with match)
Language file download failed	The downloading of a language file via FTP server for an MitelSIP terminal has failed.	Parameter 1: FTP server address, Parameter 2: Language file type and name, date, time	Serious (negative, with match)
Language file download successful	The downloading of a language file via FTP server for an Mitel SIP terminal has been successfully completed.	Parameter 1: FTP server address, Parameter 2: Language file type and name, date, time	Serious (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
LCR on alternative network provider	Automatic switch from primary network provider to secondary network provider using LCR function.	Provider ID, date, time	Normal (without match)
Licence available for configured user (Mitel 470 and Virtual Appliance only)	This event message is generated, if all configured users have a user licence (which was not the case before).	Date, time	Serious (positive, with match)
Licence for integrated mobile/external phone available	A sufficient number of licences is now available again for integrated mobile/external phones.	Date, time	Serious (positive, with match)
Licence for PMS interface available	The *Hospitality PMS Interface* licence or a sufficient number of *Hospitality PMS Rooms* licences are now available.	Date, time	Serious (positive, with match)
Licence invalid, restricted operating mode 4 hours after restart	The system software loaded requires a software release licence. Without this licence the system software's functionality is severely restricted 4 hours after the restart.	Date, time	Serious (without match)
Licence missing for configured user (Mitel 470 and Virtual Appliance only)	This event message is generated, if one or more configured users have no user licence. Note: To avoid a flood of messages this event message is generated only once (the first time a user is created without a user licence)	Date, time	Serious (negative, with match)
Licences for offline operations expired	The maximum period of 36 hours for the temporary licence activation has expired.	Date, time	Critical (without match)
Link to gateway satellite lost (Virtual Appliance only)	The communication server has lost the link to the gateway satellite. Without this link, the communication server switches to restricted operating mode after xx hours.	Number of hours until restricted operating mode, date, time	critical (negative, with match)
Link to gateway satellite restored (Virtual Appliance only)	The communication server has been able to restore the link to the gateway satellite.	Date, time	critical (positive, with match)
Link to the licence server (SLS) has failed (Virtual Appliance only)	It has been impossible for a long time to set up a link to the licence server. The system switches to restricted mode after a variable timeout (max. 72 hours).	Date, time	critical (negative, with match)
Link to the licence server (SLS) has restored (Virtual Appliance only)	It has been possible to restore a link to the licence server.	Date, time	critical (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
Local supply error on radio unit	Local power supply of a SB-4+ / SB-8 / SB-8ANT radio unit failed or unavailable	Card number, port number, date, time	critical (negative, with match)
Local supply on radio unit available	Local power supply of a SB-4+ / SB-8 / SB-8ANT is now again available	Card number, port number, date, time	critical (positive, with match)
Mains voltage failure	Event message once mains power is restored • Mains power has failed more frequently than entered in the trigger table	Date, time	Serious (without match)
Malfunction	A hardware or software error has occurred. The error ID can help Support to pinpoint the possible cause of the error.	Error ID, date, time	Serious (without match)
MiCollab: Terminal limit has been reached	A MiCollab terminal could not be linked to a user because a limit has been reached (reason). reason = 0: Too much terminals per system reason = 1: Too much terminal per user reason = 2: Too much MiCollab clients per user	User number, reason, date, time	Serious (negative, with match)
MiCollab: Within the terminal limits again	A MiCollab terminal could now be linked to a user because it is within a limit again (reason). reason = 0: Terminals per system OK again reason = 1: Terminal per user OK again reason = 2: MiCollab clients per user OK again	User number, reason, date, time	Serious (positive, with match)
Mitel Dialer within the licence limit again	*Mitel Dialer* user licences are now available again.	Date, time	Serious (positive, with match)
Mitel SIP terminals within the licence limit again	*Mitel SIP Terminals* and *Mitel 8000i Video Options* licences are now available.	Parameter 1=1: *Mitel SIP Terminals* licence, Parameter 2=1: *Mitel 8000i Video Options* licence, date, time	Serious (positive, with match)
Monitor event	Monitor event	Monitor Type, Date, Time	Normal (without match)
No configuration template	A configuration template for a Mitel SIP terminal is missing in the communication server file system. Without the configuration template, no configuration file can be generated for this terminal type.	No configuration template, date, time	Serious (negative, with match)
No DECT DSP channels available	DECT channels on DSP-0x overloaded	Date, time	Normal (without match)

Event message	Trigger condition	Details[1)]	Severity
No DTMF receiver available for integrated mobile/external phones	A permanent DTMF receiver (for detection suffix dialling function codes) could not be assigned to an integrated mobile/external phone with enhanced functionality.	BCS Ref., date, time	Serious (without match)
No other system clone detected (Virtual Appliance only)	The clone detection service on the licence server (SLS cloud) could not find any other clone (system with the same EID) for a long time (24 hours).	Date, time	critical (positive, with match)
No response from network	No answer to Call Setup on BRI-T/PRI interface	Port number of the exchange line circuit, date, time	Normal (without match)
No response from user	No answer to incoming DDI call from user on S bus or DSI	DDI No., date, time	Normal (without match)
Node: Connection lost	A node is not connected to the Master for a certain amount of time (configurable).	Node number, date, time	critical (negative, with match)
Node: Connection re-established	A node is reconnected with the Master for a certain amount of time (configurable) after an interruption.	Node number, date, time	critical (positive, with match)
Not enough licences for integrated mobile/external phones	The connection setup with an integrated mobile/external phone has failed because the number of configured mobile/external phones is greater than the number of licences available. All the integrated mobile/external phones remain blocked until a sufficient number of licences are available.	Number of licences, number of configured mobile/external phones, date, time	Serious (negative, with match)
NTP: Time synchronisation failed	Time synchronization via the NTP server (NTP = Network Time Protocol) has failed.	Date, time	Serious (negative, with match)
NTP: Time synchronisation re-established	Time synchronization via the NTP server (NTP = Network Time Protocol) has been restored.	Date, time	Serious (positive, with match)
Outgoing call rejected	Call rejected by the network • On any line: error code 34 • On required line group: error code 44	Port number of the exchange line circuit, cause, date, time	Normal (without match)
Overheat (Mitel 415/430 and Mitel SMBC only)	The temperature inside the communication server is too high. The appropriate measures must be taken immediately to improve the heat dissipation, e.g. by providing the required clearances, lowering the ambient temperature or installing the fan from the rack-mounting set (Mitel 430 only).	Card number, temperature, date, time	critical (negative, with match)

Event message	Trigger condition	Details[1)]	Severity
Overheat (Mitel 470 only)	The temperature inside the communication server is too high. Appropriate measures must be taken immediately to improve heat dissipation. Measures are automatically adopted, depending on where the overheating occurs: FXO and FXS interface card: • the ports are deactivated in groups of 4 ports. • Once they have cooled down below a defined card-specific value, the ports are automatically reactivated group by group. CPU2 applications card • The card will be completely deactivated. Once it has cooled down below a defined value, the card is automatically reactivated. Internal power supply unit PSU2U or call manager card CPU1: • the communication server will be shut down completely. **Notes:** • To prevent the system from overheating, no more than 30% of the FXS ports should be active simultaneously per 32FXS card and no more than 50 FXS ports per system. • PRI, BRI and DSI cards do not have temperature sensors and are therefore never deactivated due to overheating.	Card number, temperature, date, time	critical (negative, with match)
Overload detected on USB port (CPU2) (Mitel 470 only)	A (current) overload was detected on one of the USB interfaces on the applications card (CPU2). Note: The maximum current input at the USB interfaces varies.	Date, time	Normal (without match)
Port out of service	A port previously in operation has stopped functioning.	Number of the slot, relevant port number, date, time	Serious (without match)
Possible clone detected for your system (Virtual Appliance only)	The clone detection service on the licence server (SLS cloud) has detected a possible clone (system with the same EID).	Date, time	critical (negative, with match)
QSIG licence limit reached	Maximum number of licensed outgoing connections with QSIG protocol exceeded	Route number, user number, date, time	Serious (without match)
Radio unit port active	The radio unit is responding again	Card number, port number, date, time	Serious (positive, with match)
Register error	• Card not fitted • Card not logged on • Card defective	Card number, date, time	Normal (without match)

Event message	Trigger condition	Details[1)]	Severity
Remote maintenance disabled	Remote maintenance has been deactivated	Date, time	Normal (positive, with match)
Remote maintenance enabled	The remote maintenance has been activated (The report is output unfiltered on local destinations).	Date, time	Normal (negative, with match)
Restart of applications card CPU2 executed	The restart of applications card CPU2 was executed successfully.	Date, time	critical (positive, with match)
Restart of applications card CPU2 required	The system has detected that a manual restart of the applications card CPU2 is required (e. g. for a security update).	Date, time	critical (negative, with match)
Restricted operating mode disabled	Restricted mode could be disabled again.	Date, time	critical (positive, with match)
Restricted operating mode enabled (not valid for Virtual Appliance)	The communication server has switched to restricted mode. Cause: 0: No valid licence	Cause, date, time	critical (negative, with match)
Restricted operating mode enabled (Virtual Appliance only)	The communication server has switched to restricted mode. Cause: 0: No valid licence. 1: Link to gateway satellite lost. 2: Max. duration without link to licence server reached. 3: Your system clone confirmed. 4: Licence check mode mismatch in SLS and MiVo400. 5: Support mode enabled.	Cause, date, time	critical (negative, with match)
Satellites missing after supervision time	After an AIN update (Master and all satellites) some satellites no longer have a connection to the Master.	Total satellites missing, Satellites rolled back, Date, Time	Serious (without match)
Send e-mail failed	The system was unable to send an e-mail because an error occurred. Meaning of the parameter values in Tab. 24	Cause/action, e-mail client, additional information, date, time	critical (negative, with match)
SIMPLE/MSRP back within the licence limit	There are now enough licences available for using the MSRP and/or SIMPLE protocol for users.	Date, time	Serious (positive, with match)
SIP account available	The SIP account has successfully registered with the SIP provider.	Provider, account, date, time	critical (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
SIP account not available	The SIP account cannot register with the SIP provider for a certain reason (0: Provider unobtainable / 1: no permission). The event is triggered only if the parameter *Registration required* is configured to *Yes*.	Provider, account, date, time	critical (negative, with match)
SMS gateway reachable	External SMS gateway again reachable	Date, time	critical (positive, with match)
SMS gateway unreachable	External SMS gateway unobtainable by network provider or incorrectly configured	Date, time	critical (negative, with match)
Software upgrade IP system phone failed	The software update of an MiVoice 5361 IP / 5370 IP / 5380 IP has failed for the stated reason.	User number, terminal ID, reason, date, time	critical (negative, with match)
Software upgrade IP system phone successful	The software update of an MiVoice 5361 IP / 5370 IP / 5380 IP has now been successfully completed after unsuccessful attempt(s).	User number, terminal ID, date, time	critical (positive, with match)
Software upload	During an upload in system status: • *Update running* • *Supervision running* • *Normal operation*	Parameter 1: • 0: "New communication server software loaded, starting...", • 1: New communication server software crashed, rollback performed • 3: New communication server software started and running well Date, time	Normal (without match)
Standard SIP terminals within the licence limit again	*SIP Terminals* and *Video Terminals* licences are now available.	Parameter 1=1: *SIP Terminals* licence, Parameter 2=1: *Video Terminals* licence, date, time	Serious (positive, with match)
SX-200 call data record management system: Connection established	The connection to the SX-200 call data record management system has been successfully established.	Date, time	critical (positive, with match)
SX-200 call data record management system: Connection lost	The connection to the SX-200 call data record management system has been lost.	Date, time	critical (negative, with match)

Event message	Trigger condition	Details[1)]	Severity
SX-200 hotel management system: Connection established	The connection to the SX-200 hotel management system has been successfully established.	Date, time	critical (positive, with match)
SX-200 hotel management system: Connection lost	The connection to the SX-200 hotel management system has been lost.	Date, time	critical (negative, with match)
SX-200 voice mail management system: Connection established	The connection to the SX-200 voice mail management system has been successfully established.	Date, time	critical (positive, with match)
SX-200 voice mail management system: Connection lost	The connection to the SX-200 voice mail management system has been lost.	Date, time	critical (negative, with match)
Synchronisation loss on trunk	A BRI/PRI interface entered in the clock pool has lost the system clock	Port number, date, time	Serious (negative, with match)
Synchronisation re-established	Synchronization with the network has been restored on at least one BRI/PRI interface.	Date, time	Serious (positive, with match)
Synchronisation with backup communication server failed	The primary communication server was unable to transmit the configuration data to the backup communication server. Note: This event message is generated by the primary communication server.	Backup communication server ID, date, time	critical (negative, with match)
Synchronisation with backup communication server successful	The primary communication server was able (following one or more previous failed attempts) to transmit the configuration data to the backup communication server. Note: This event message is generated by the primary communication server.	Backup communication server ID, date, time	critical (positive, with match)
Synchronization on trunk re-established	A BRI/PRI interface entered in the clock pool has been successfully re-synchronized with the system clock.	Port number, date, time	Serious (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
System memory usage below the critical range again	The memory usage in the file system for a specific purpose has again fallen below a defined (*Serious* severity level) or critical (*Critical* severity level) value. Purpose (file type ID): 0: File system, 1: Application, 2: Crash-Log, 3: Monitor-Log, 4: Announcement service, 5: Voice mail, 6: Music on hold, 7: Data backup, 8: Hospitality/Accommodation, 9: User folder	File type ID, memory usage in %, date, time	Serious / Critical (positive, with match)
System memory usage over the critical range	The memory usage in the file system for a specific purpose has exceeded a defined (*Serious* severity level) or critical (*Critical* severity level) value. Purpose (file type ID): 0: File system, 1: Application, 2: Crash-Log, 3: Monitor-Log, 4: Announcement service, 5: Voice mail, 6: Music on hold, 7: Data backup, 8: Hospitality/Accommodation, 9: User folder	File type ID, memory usage in %, date, time	Serious / Critical (negative, with match)
System overload	Network access attempted when all lines are seized or the system is overloaded.	Route number, user number, date, time	Normal (without match)
System phone in service again	A system phone on the DSI bus is ready for operation again.	Card number, port number, user number, date, time	critical (positive, with match)
System phone out of service	A system phone on the DSI bus is defective or was disconnected.	Card number, port number, user number, date, time	critical (negative, with match)
Temperature within normal range again	Following overheating, the temperature inside the communication server is back in the normal operating range.	Card number, temperature, date, time	critical (positive, with match)
Temporary activation expires on	Reminder of the missing, definitive activation licence following connection set-up with the communication server.	Expiration date [DD.MM.YYYY], date, time	Serious (without match)
Terminal power supply: Overload (Mitel 470 only)	Rated output slightly exceeded for > 4 s.	Date, time	critical (negative, with match)
Terminal power supply: Shutdown (Mitel 470 only)	Rated output clearly exceeded for 4 s	Date, time	critical (negative, with match)
Terminal power supply: Switching back on (Mitel 470 only)	The power supply to the terminals was switched back on after deactivation due to overflow.	Date, time	critical (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
Terminal power supply: Within normal range again (Mitel 470 only)	The power supply to the terminals is back in the normal rated output range following a slight, preceding overflow.	Date, time	critical (positive, with match)
Test event message	The configuration of message destinations can be tested with this event message.	Date, time	Serious (without match)
The communication server has been restarted	The communication server was restarted manually or automatically due to an error.	Date, time	Critical (without match)
The licence limit for BluStar clients has been reached.	A BluStar client was unable to register because there are too few licences for this client type. Parameter 1: 0 (not used) Licence type: 0 and 1: (not used), 2: BluStar CTI, 3: BluStar Softphone, 4: BluStar video option, 5: BluStar Presence option	Parameter 1, licence type, total purchased licences, date, time	Serious (negative, with match)
The licence limit for CSTA sessions has been reached	An application is unable to set up a CSTA session to monitor/check a terminal because there are too few *CSTA Sessions* licences available.	Max. number of licences, date, time	Serious (negative, with match)
The licence limit for Dual Homing has been reached	A SIP phone in the Mitel 6800/6900 SIP series has attempted to register on a backup communication server and not enough licences are available. Note: This event message is generated by the backup communication server.	Date, time	Serious (negative, with match)
The licence limit for Mitel Dialer has been reached	Mitel Dialer could not be linked to a user because too few licences are available.	Total purchased licences, date, time	Serious (negative, with match)
The licence limit for Mitel SIP terminals has been reached	A Mitel SIP terminal is unable to register or use the video functionality because there are too few *Mitel SIP Terminals* or *Mitel 8000i Video Options* licences available.	Parameter 1=1: Missing *Mitel SIP Terminals* licence, Parameter 2=1: Missing *Mitel 8000i Video Options* licence, Parameter 3=3: Max. number of licences, date, time	Serious (negative, with match)
The licence limit for SIMPLE/MSRP has been reached	A third-party application wishes to use the MSRP and/or SIMPLE protocol for a user, but not enough licences are available.	Date, time	Serious (negative, with match)

Event message	Trigger condition	Details[1)]	Severity
The licence limit for standard SIP terminals has been reached	A standard SIP terminal is unable to register or use the video functionality because there are too few *SIP Terminals* or *Video Terminals* licences available.	Parameter 1=1: Missing *SIP Terminals* licence, Parameter 2=1: Missing *Video Terminals* licence, Parameter 3=3: Max. number of licences, date, time	Serious (negative, with match)
TLS certificate expires soon	A TLS certificate for a SIP node or SIP endpoint is about to expire (*Serious* severity level) or has just expired (*Critical* severity level) and needs to be renewed. If the endpoint type is = 0 (Mitel), then is parameter 2 = node ID. If the endpoint type is = 1 (3rd party), then the remaining parameter data contains the first eleven characters of the certificate name.	Type of endpoint (0: Mitel, 1: 3rd party), node ID or certificate name, date, time	Serious / Critical (without match)
TLS certificate update failed	The update of the TLS certificate for an SIP node or SIP endpoint via FTP has failed and needs to be renewed manually. If the endpoint type is = 0 (Mitel), then is parameter 2 = node ID. If the endpoint type is = 1 (3rd party), then the remaining parameter data contains the first eleven characters of the certificate name.	Type of endpoint (0: Mitel, 1: 3rd party), node ID or certificate name, date, time	critical (negative, with match)
TLS certificate update successful	A TLS certificate for a SIP node or SIP endpoint was successfully renewed. If the endpoint type is = 0 (Mitel), then is parameter 2 = node ID. If the endpoint type is = 1 (3rd party), then the remaining parameter data contains the first eleven characters of the certificate name.	Type of endpoint (0: Mitel, 1: 3rd party), node ID or certificate name, date, time	critical (positive, with match)
TLS certificate was generated: Upgrade non-Mitel endpoints now	A TLS certificate has been generated. If generation is manual, the certificate must be imported manually into the Mitel SIP nodes. The certificate must always be imported manually on all non-Mitel nodes and non-Mitel endpoints.	Date, time	Normal (without match)
TLS server certificate: Validation failed	While a TLS connection is established the validation of the certificate of the TLS server failed.	Service, TCP port, reason, date, time	critical (negative, with match)
TLS server certificate: Validation successful	The validation of the certificate of the TLS server was successful.	Service, TCP port, date, time	critical (positive, with match)
Too few FoIP channels	Setting up a fax connection via T.38 failed because no FoIP channel is available.	Available FoIP channels on node	Serious (without match)

Event message	Trigger condition	Details[1)]	Severity
Too few licences for IP system phones	A MiVoice 5361 IP / 5370 IP / 5380 IP was unable to register because there are too few IP system phone licences.	Date, time	Serious (negative, with match)
Too few licences for PMS interface	Either the *Hospitality PMS Interface* licence is missing or the number of *Hospitality PMS Rooms* licences available is insufficient.	Number of licensed rooms, number of configured rooms, date, time	Serious (negative, with match)
Too few VoIP channel licences	Connection setup failed because the licence limit for simultaneously active VoIP channels has been reached.	No. of licensed VoIP channels, Date, Time	Serious (without match)
Too few VoIP channels	An user is trying to set up a connection that requires one or more VoIP channels which are currently not available.	Available VoIP channels on this node, date, time	Normal (without match)
Too many errors with the same ID	An unusual amount of errors (more than 50 per hour) with the same error ID have occurred.	Error ID, date, time	Normal (without match)
Too many event messages	Number of message types exceeds limit entered in the table on: • "Synch. "Synch.loss on BRI/PRI" • "Outgoing Call Rejected" • "No response from network"	Date, time	Normal (without match)
Too much user data	System capacity exceeded	Date, time	Critical (without match)
Total synchronization loss	Network synchronisation has failed on all BRI/PRI interfaces	Date, time	Serious (negative, with match)
Trial licence expired	The duration for which a trial licence can be used for a specific feature has expired and there is no valid licence.	Licence ID, date, time	Serious (without match)
USER EVENT MESSAGE	With *77[nnnn] from a terminal	nnnn [0000...99999], user number, date, time	Serious (without match)
User memory usage below the critical range again	The memory usage in the file system for a specific user has again fallen below a defined (*Serious* severity level) or critical (*Critical* severity level) value.	User number, memory usage in %, date, time	Serious / Critical (positive, with match)

Event message	Trigger condition	Details[1)]	Severity
User memory usage over the critical range	The memory usage in the file system for a specific user has exceeded a defined (*Serious* severity level) or critical (*Critical* severity level) value.	User number, memory usage in %, date, time	Serious / Critical (negative, with match)
Wake-up call failed	The room wake-up call was not answered	Room No., date, time	Normal (negative, with match)
Wake-up order confirmed	The room wake-up call has now been answered	Room No., date, time	Normal (positive, with match)

1) The node is also always indicated in an AIN.

Tab. 24 Meaning of the parameter values for the event message ***Send e-mail failed***

	Parameter 1 (XXYY)		Parameter 2:	Parameter 3:
Value	**Reason (XX)**	**Action (YY)[1)]**	**E-mail client**	**Additional info depending on the e-mail client (XXYY)**
00	Not defined	Not defined	Not defined	
01	E-mail memory full	Connection set up to SMTP server	Voice mail	XX: Mailbox ID YY: Message ID
02	SMTP server access data invalid	Extended registration on SMTP server	Auto backup	
03	SMTP client cannot set up a connection to the server	Registration on SMTP server	Call recording	User number
04	Authentication failed	Transmission of e-mail address	Event message	
05	Continuous negative answer from SMTP server	Transmission of e-mail recipient address	Call logging for hospitality	
06	Temporary negative answer from SMTP server	Prepare data transmission	Configuration files	XX: User ID YY: Terminal ID
07	No answer from SMTP server	Data transmission in progress		
08	E-mail attachment not found	End data transmission		
09	Invalid host, domain or IP address on the communication server	Prepare authentication (LOGIN)		
10	E-mail text too long (body)	User name authentication (LOGIN)		
11	E-mail attachment too large	Password authentication (LOGIN)		
12	Format of e-mail attachment not supported	Authentication (PLAIN)		

	Parameter 1 (XXYY)		Parameter 2:	Parameter 3:
Value	Reason (XX)	Action (YY)[1)]	E-mail client	Additional info depending on the e-mail client (XXYY)
13	No e-mail recipient address	Prepare encrypted authentication (CRAM-MD5)		
14	Invalid e-mail recipient address	Encrypted authentication (CRAM-MD5)		
15	Invalid e-mail sender address	Preparing to send next e-mail		

1) Action carried out by the SMTP client at the point when the error occurred.

6. 3. 1. 2 Event tables

Event tables (🔍 *=f4*) list all the event messages the system is capable of generating (see Tab.).

There are 7 event tables. After a first start, all event tables are assigned at least one destination. This assignment can be modified in the *Message destinations* ((🔍 *=h1*)) view. Each event table can be configured individually. This means it is possible with a filter to decide which event message – if any – should be sent to a particular signal destination either immediately, with a delay or not at all.

- *No event*:
  This type of incoming event messages are **never** sent to the linked destination.
- *Every event*:
  This type of incoming event messages are **all** sent to the linked destination.
- *Custom*:
  With this setting, you can determine how often the event message may appear for each period, until they are sent to the linked destination.
  The *Frequency* of an event message may range between 2 and 20. The *Period* is indicated in hours, ranging between 1 and 672. The longest time period corresponds to 28 days or 4 weeks.

Tab. 25 Example of event table

Event type	Frequency	Time period
Total synchronization loss	10	1

In this example an event message is sent to the message destinations if there is a *Total synchronization loss* event message when the system generates the event message 10 times within 1 hour.

6. 3. 1. 3 Signal destinations

After a first start, all event tables are exactly assigned to a message destination. (Exception: *Local destination* and *SNMP destination* use this event table.) You can assign event tables to several or no message destinations

The destinations are configured in the *Message destinations* (🔍 *=h1*) view.

Signal destination system phone 1 and 2

Event messages are sent to all system phones with display and entered in the corresponding message group.

- Destination system phone 1:
  - By default allocated to event table 1, which is preconfigured for common use.
  - Fix allocated to message group 16.
- Destination system phone 2:
  - By default allocated to event table 8, which is preconfigured for front desk terminals in hospitality environments.
  - Fix allocated to message group 15.

External signal destinations

Depending on the event table allocated, event messages (normally Table 2) are sent to a specified external signal destination. Two external signal destinations can be specified:

- 1 primary external signal destination
- 1 alternative external signal destination

If the system issues an event message, the event message opens a PPP communication channel from the public network of the communication server to a terminal adapter or modem. Once the event message has been confirmed, the system clears down the PPP connection.

Signalling an event message to an external signal destination

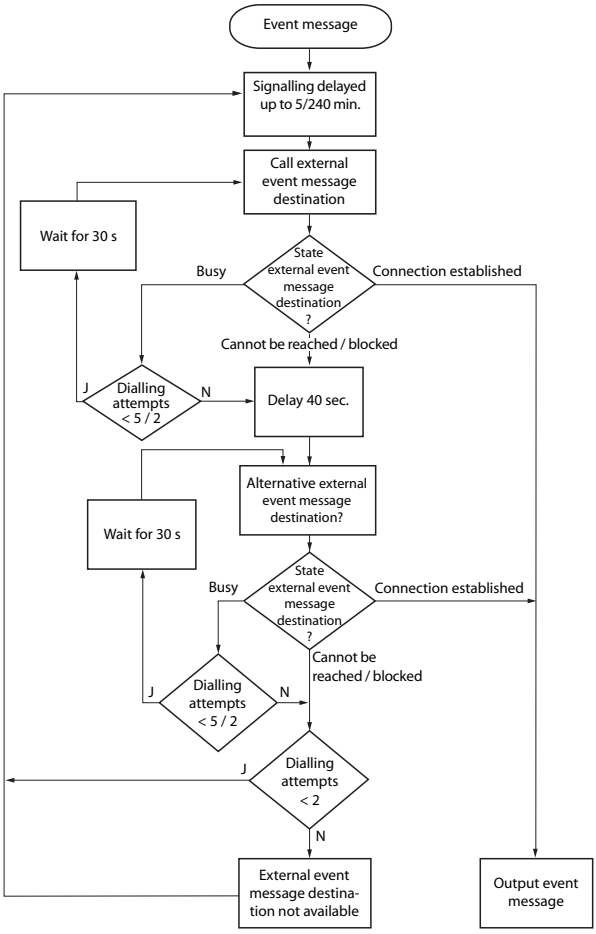


Fig. 11 Flowchart of the signalling of an event message to an external signal destination

The following principles govern the way event messages are signalled to an external signal destination:

- Individual event messages are not signalled if they occur at short intervals. The event messages are stored temporarily for 5 minutes and then sent together to the external signal destination.
- If over a period of one hour an attempt is made unsuccessfully to send the event messages to the external signal destination, the signalling period is extended from 5

minutes to 4 hours. As soon as the event messages are successfully output at the external signal destination, the time period is reset to 5 minutes.

- If over a period of 1 hour an attempt is made unsuccessfully to send an event message to an external signal destination, the number of dialling attempts is reduced from 5 to 2. As soon as an event message has been successfully sent, the number of dialling attempts is increased to 5 again.
- If the attempt to send an event message to an external signal destination was unsuccessful, the system will generate the event message *External event message destination missing*.

Note:
Event tables and signal destinations should be set in such a way that the event message *External event message destination missing* is signalled immediately to any signal destination still available.

Local signal destinations

Depending on the event table allocated, event messages (normally Table 3) are sent to a specified local signal destination.

PPP links:
Like with an external signal destination the event message opens a PPP communication channel from the communication server to a terminal adapter or modem. Once the event has been confirmed, the system clears down the PPP connection.

Ethernet link:
A PC connected either directly to the Ethernet interface or to the communication server via a LAN can be configured as the local signal destination.

Notes:
- The local destination is linked with the same event table as the SNMP destination. Any changes to the link and/or filter criteria for the linked event table also apply to the SNMP destination.
- Event tables and signal destinations should be set in such a way that the event message *External event message destination missing* is signalled immediately to any signal destination still available.

SNMP destination

Depending on the event table allocated, event messages (normally Table 3) are sent to a specified SNMP destinations.

SNMP stands for "Simple Network Management Protocol" and is used by Network Management Systems (NMS).

If the Network Management System is to know the potential events of the communication system, the corresponding system components have to be defined in the form of

configurable objects (Managed Objects: MO). These objects and the related event messages are stored in an object library referred to as the Management Information Base (MIB).

You will find the interface description and the different MIB versions on Mitel InfoChannel – Mitel Solution Alliance - API and Interface Information - MiVoice Office 400 - MiVoice Office 400 Network Management.

To access these documents, you have to be a member in Mitel Solution Alliance (MSA). If you are not a member yet, go to Mitel website and search for “Mitel Solution Alliance” where you can join. A membership on level MSA partner (MP) is sufficient.

5 SNMP destinations can be defined. Forwarding to the SNMP destinations can be activated and deactivated independently of the forwarding to the local and external signal destinations.

Notes:
The SNMP destination is linked with the same event table as the local destination. Any changes to the link and/or filter criteria for the linked event table also apply to the local destination.

Signal destination event log

Normally, the signal destination event log is assigned to Event table 4. The filter on this event table is preconfigured for most event types in such a way that event messages are entered in the event log once they arrive.

If the signal destination event log is assigned a different event table or if event table 4 is reconfigured, the event messages are entered in the event log in accordance with the new event table or the new configuration.

The last 254 event messages are recorded in the *Event log* (🔍 *=r5*). *Active event messages* (🔍 *=mr*) and the last 10 *Power failures* (🔍 *=bn*) are recorded in separate logs.

If the maximum number of entries is exceeded, the oldest entry in each case is deleted.

If active event messages are available, they are indicated in WebAdmin on the left, with the ⚠ symbol.

E-mail signal destination

With the e-mail client integrated in the communication server, event messages can be sent to internal or external e-mail destinations. Normally, the signal destination *E-mail destination* is automatically assigned to event table 5. Up to 5 e-mail destinations can be defined, and e-mail notification can be activated or deactivated globally.

For the communication server to send the e-mails the access to the e-mail service provider's SMTP server must be configured in the *SMTP server* (🔍 *=rm*) view.

Destination alarm server (ATAS)

Event messages can also be sent via the ATAS interface, for instance, to an alarm server. This may be an Mitel Alarm Server or a third-party alarm server. The use of the ATAS protocol is subject to a licence.

After a first-start of the communication server, the signal destination *Alarm server (ATAS)* is automatically allocated event table 6. The notification service via the ATAS interface to the alarm server can be globally switched on or off.

SRM destination

Event messages can also be sent to the SRM server. Depending on the severity level in the SRM agent, this changes the system status on the corresponding communication server line. The line colour changes at the same time. If the corresponding positive event message arrives later or if the event message is confirmed in WebAdmin, the status and colour are restored again. The following system statuses are defined:

- *Normal* (Blue colour):
  No active event messages with the severity level *Serious* or *Critical* is available.
- *Serious* (Yellow colour):
  At least one event message is available and needs to be closely examined. (Example: *Charge counter overflow*)
- *Critical* (Red colour)
  At least one event message is available and is hampering the system's function. (Example: *Fan failure*)

Note:
Not all negative event messages have a positive match. In this case, the event messages must be confirmed manually in WebAdmin.
Event messages, which are not *Serious* or *Critical*, are not sent to the SRM server. The severity of individual event messages is given in the Tab. 23 table.

Example:
Power output: There are no serious or critical event messages. The communication server line in the SRM agent is blue and the system status is on *Normal*.

1. The event message *Charge counter overflow* reaches the SRM server.
   → The communication server's system status in the SRM agent changes to *Serious*, and the destinations turn yellow.
2. The event message *Fan failure* reaches the SRM server.
   → The communication server's system status in the SRM agent changes to *Critical*, and the destinations turn red.
3. The event message *Charge counter overflow* is confirmed in WebAdmin in the *Active event messages view* (🔍 *=mr*).

→ The system status of the communication server in the SRM agent remains on *Critical*, and the destinations on red, because there is still an event message with this severity.

4. The event message *Fan failure* reaches the SRM server.
   → The communication server's system status in the SRM agent changes to *Normal*, and the destinations turn red.

After a first-start of the communication server, the *SRM destination* is automatically allocated event table 7. The notification service to the SRM destination can be switched on or off.

On the SRM server the status modification per communication server must be allowed and configurations are also required in WebAdmin. You can find a configuration guide in WebAdmin help under the *Message destinations* 🔍 *=h1* view.

Testing the signal destination configuration

To test the configuration, a test event message can be separately initiated for each destination in the WebAdmin configuration (*Message destinations* 🔍 *=h1* view). The event message is signalled without any delay, directly at the selected signal destination.

If the communication server is connected via a modem or terminal adapter, the test event messages will be signalled only once the connection is cleared down.

6. 3. 2 Other aids

6. 3. 2. 1 System logs

During operation or in the event of a malfunction the communication server stores the current operating data in the file system in the directory */home/mivo400/logs*.

You can open, view and back up these log files on any storage device, in WebAdmin in the *System logs*(🔍 *=1w*) view.

6. 3. 2. 2 File system state

In the *File system state* (🔍 *=e3*) view you can see the thematically structured file system's memory load. In an AIN the file systems for all nodes can be viewed.

6. 3. 2. 3 File browser

With the *File browser* (=2s) you have access to the communication server file system and you can create new folders as well as view, import, replace or delete files in the file system.

All communication server folders and files are located in the directory */home/mivo400/*.

Note:
Be extremely careful while replacing or deleting files. The absence of files can hamper or even render impossible the working of the communication server.

7 Annex

In this chapter you will find a list of functions and products not supported, licence information on third-party software products, and a table summary of related documents and online help.

7. 1 Functions and terminals no longer supported

The MiVoice Office 400 series continues to support the terminals and functions of the Aastra IntelliGate series. Exceptions include the following terminals and functions:

- IP system phones Office 35IP, Office 70IP-b
- Cordless system phones Office 100, Office 130/130pro, Office 150, Office 150EEx, Office 155pro/155ATEX
- The Aastra 6751i phone is no longer supported as an Mitel SIP phone.
- IP system softphone Office 1600/1600IP
- DECT radio unit SB-4
- Pocket Adapter V.24
- X.25 in the D channel
- Ascotel® Mobility Interface (AMI) and DCT terminals
- Universal Terminal Interface (UTI)
- AMS Hotel manager and Hospitality Mode V1.0 (hotel functions)
- Operator application Office 1560/1560IP
- Aastra Management Suite (AMS) is replaced by the web-based configuration tool WebAdmin, the remote management SRM (Secure IP Remote Management) and the application System Search.
- The external remote control (ERC) cannot be set up with WebAdmin. ERC is replaced by the possibility, to integrate mobile phones and other external phones into the system (Mobile or External Phone Extension).
- Only language package downloading is available for Virtual Appliance in System Search, Emergency Upload and the display of Virtual Appliance communication servers is not available.
- Mitel BluStar 8000i is not supported by the Virtual Appliance communication server.
- The CPU2 application card is no longer supported (only CPU2-S).
- The Telephony Web Portal (TWP) application is replaced with Mitel MiCollab Audio, Web and Video Conferencing.

7. 2 Licensing information of third-party software products

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7. 3 Documents and online help systems with further information

Product	Document
Products of the MiVoice Office 400 family	System Manual Mitel 415/430 System Manual Mitel SMBC System Manual Mitel 470 System Manual System Functions and Features SIP Access User's Guide (English) MiVoice Office 400 feature overview
Applications	System Manual Mitel Alarm Server Mitel Alarm Server User's Guide Installation Instructions Mitel OpenCount for MiVoice Office 400 Configuration Guide Mitel OpenCount for MiVoice Office 400 Installation and Administration Guide "Mitel Standard Linux" Solutions Guide "Virtual Appliance Deployment" Mitel SIP Teleworker via MBG on MiVoice Office 400
SMBC Manager	Online Help
WebAdmin	Online Help Configuration assistant Setup wizard
Self Service Portal (SSP)	Online Help
Project planning application Mitel CPQ	Online Help
DECT	Planning DECT systems User's Guide
Mitel SIP-DECT	User's Guide for Mitel 600 SIP-DECT on MiVoice Office 400
Basic/Enterprise voice mail system	User's Guide for MiVoice Office 400 voice mail system System Manual System Functions and Features
OIP	System Manual Mitel Open Interfaces Platform Online Help User's Guide Mitel OfficeSuite User's Guide for First Party TAPI Service Provider
Networking	System Manual for Mitel Advanced Intelligent Network (AIN) and IP system phones Private networking system manual
Mitel SIP phones on MiVoice Office 400 Mitel SIP phones (platform-independent)	Mitel 6730/31/53 SIP, Mitel 6735/37/55/57 SIP, Mitel 6739 SIP, Mitel 6863/65 SIP, Mitel 6867/69 SIP, Mitel 6873 SIP, Mitel 6920 SIP/Mitel 6930 SIP, Mitel 6940 SIP user's guide User's guide, short user's guide, installation instructions, administration instructions

Product	Document
IP system phones	Quick User's Guide MiVoice 5360 IP / MiVoice 5361 IP / MiVoice 5370 IP /MiVoice 5380 IP Operating Instructions for MiVoice 5360 IP / MiVoice 5361 IP / MiVoice 5370 IP / MiVoice 5380 IP / MiVoice 2380 IP
Digital system phones	Quick User's Guide Office 135/135pro / Office 160pro/Safeguard/ATEX / MiVoice 5360 / MiVoice 5361 / MiVoice 5370 / MiVoice 5380 / Mitel 610 DECT / Mitel 612 DECT / Mitel 620 DECT / Mitel 622 DECT / Mitel 630 DECT / Mitel 632 DECT / Mitel 650 DECT User's Guide Office 135/135pro / Office 160pro/Safeguard/ATEX / MiVoice 5360 / MiVoice 5361/ MiVoice 5370/ MiVoice 5380 / MiVoice 5380 / Mitel 610 DECT / Mitel 612 DECT / Mitel 620 DECT / Mitel 622 DECT / Mitel 630 DECT / Mitel 632 DECT / Mitel 650 DECT
Analogue phones	Mitel 6710 Analogue / Mitel 6730 Analogue user's guide
PC operator console	User's Guide MiVoice 1560 PC Operator Online Help

Most of the documents are accessible at http://www.mitel.com/docfinder. Many documents in the above table are summarised per language and software release in documentation sets, and can be downloaded as a .zip file. Note: Documentation sets are very large (~500 MB). The download can take some time, depending on the connection.

More documents are available on the internet:

- Environmental information for communication server and system phones
- Declarations of conformity for communication server and system phones
- Labels for system phones and expansion key modules
- Safety instructions for system phones
- Application Notes
- Product information
- Leaflets
- Brochures
- Data sheets

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