MiVoice Office 400

System Manual for Mitel 415/430

RELEASE 7.0

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Notice

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Contents

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.

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 Document Center

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.

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.

About this document

The expansion possibilities for the Mitel 415/430 communication server include an FMC Controller for integrating mobile/external phones, an open interface for application developers and a multitude of expansion cards and modules.

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.

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.

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.

System Overview

This chapter provides a brief overview of the Mitel 415 and Mitel 430 communication servers with the installation versions, the 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.

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 licenses, 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.

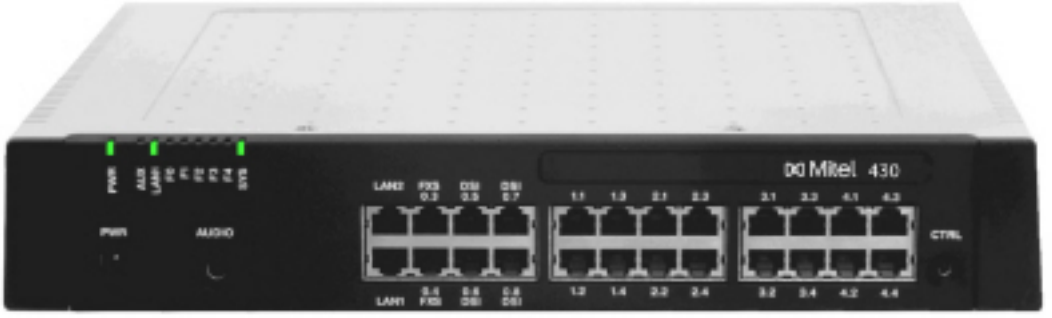
With the integrated Media Gateways any hybrid forms of an IP-based and digital or analogue communication environment are also possible. This enables customers to make the switch from traditional telephony to IP-based multimedia communication either in just one step or, gradually, in several stages.

Communication server

The Mitel 415 and Mitel 430 communication servers are at the lower end of the MiVoice Office 400 family in terms of system capacity and expansion possibilities. However all MiVoice Office 400 communication servers are equipped with the same system software and offer the full scope of performance.

All the connections and control elements are accessible from the front. The display elements are arranged so that they remain visible whatever the installation position.

Figure 2.1: Mitel 430

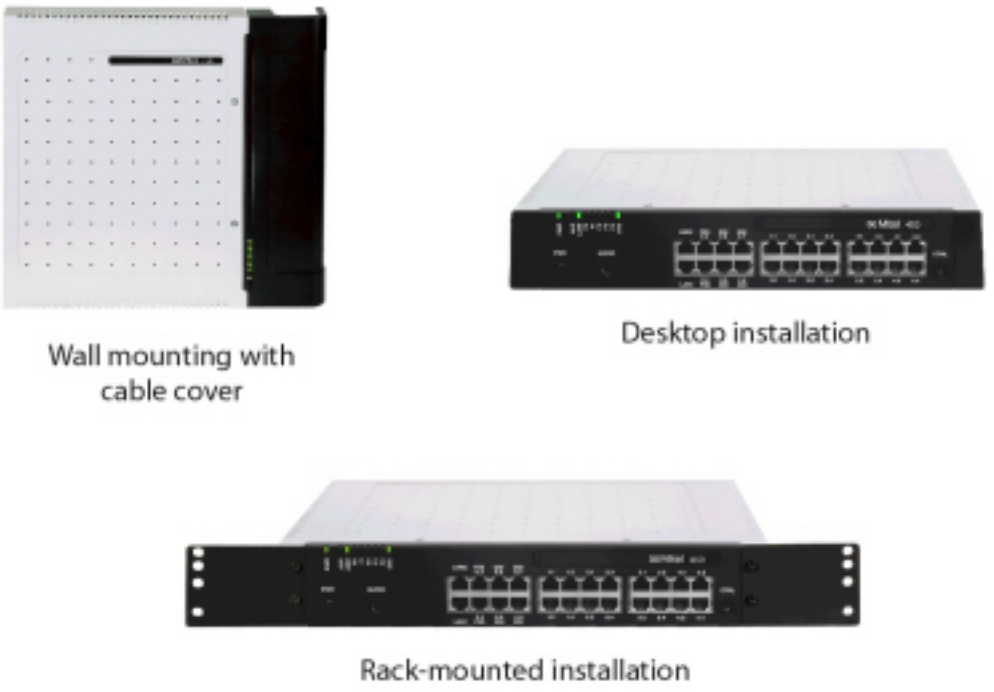


The communication server can be expanded using interface cards and system modules. The number of available slots and sockets depends on the type of communication server.

Installation versions

Mitel 415 and Mitel 430 are suitable for both desktop installation, wall mounting and installation in a 19" rack. Covers for connecting cables and special installation covers for rack installation are available separately.

Figure 2.2: Installation versions

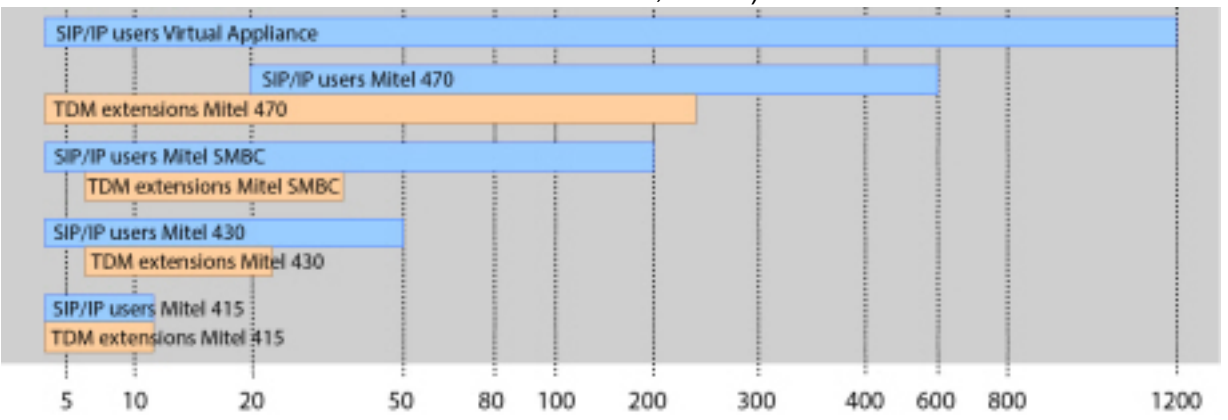


Positioning

Applications range from very small offices and branches (Mitel 415) to small and medium-sized companies (Mitel 430).

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).

Figure 2.3: Max. expansion capacity for users with SIP/IP phones and TDM extensions (FXS, DSI, BRI-S)



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 communication 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.

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.

Table 2.1:Mitel system phones and clients

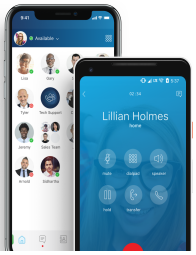
Product	Principal common features	Additional model-specific features
 Mitel One (listed as Mitel One in the app store) Not supported with Mitel 415-430 platform	• Features of a desk phone include make and receive calls, blind call transfer, hold and make another call. • Do Not Disturb (DND) for mobile app • Secure personal 1:1 and group chat • Live status (presence) of users and extensions • Dynamic call history • Contact synchronization and management (business and personal). Mitel One displays only internal contacts. • Simple admin controls • Can be used as VoIP Softphone or to control (CTI) a deskphone.	

Table 2.2:Mitel 6900 SIP series SIP phones (Sheet 1 of 4)

Product	Principal common features	Additional model-specific features

Table 2.2:Mitel 6900 SIP series SIP phones (Continued) (Sheet 2 of 4)

 Mitel 6905 SIP Phone	• Connection for wall mounting • Excellent voice quality due to Mitel Hi-Q™ wideband audio technology • Data/voice encryption • HD handset and speaker-phone provide wideband audio quality	• Dual Ethernet ports, three programmable Personal Keys and a large 2.75" LCD display • HD handset and speaker-phone provide wideband audio quality • Dual 10/100 Ethernet ports for PC and LAN •
 Mitel 6910 SIP Phone		• Dual Gigabit Ethernet ports for PC and LAN • DHSG/EHS headset support • Large 3.4" 128x48 pixel LCD display

Table 2.2:Mitel 6900 SIP series SIP phones (Continued) (Sheet 3 of 4)

 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	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

Table 2.2:Mitel 6900 SIP series SIP phones (Continued) (Sheet 4 of 4)

	• Wall mounting possible • Power over Ethernet	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.
		• LCD touch display • Meeting centre enables access to the MiCollab Audio, Web, and Video conferencing

Table 2.3:Mitel 6800 SIP series SIP phones (Sheet 1 of 3)

Product	Principal common features	Additional model-specific features

Table 2.3:Mitel 6800 SIP series SIP phones (Continued) (Sheet 2 of 3)

 Mitel 6863 SIP Phone  Mitel 6865 SIP Phone  Mitel 6867 SIP Phone  Mitel 6869 SIP Phone  Mitel 6873 SIP Phone	• User-friendly registration, configura-tion and opera-tion 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 stan-dard) Mitel 6867 SIP and Mitel 6869 SIP: • Magnetic keyboard connector • Can be used as auxiliary reception phone (reduced functionality) in hospi-tality environments

Table 2.3:Mitel 6800 SIP series SIP phones (Continued) (Sheet 3 of 3)

		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).		

Table 2.4:IP system phones (softphones) and clients (Sheet 1 of 3)

Product	**Main features**

Table 2.4:IP system phones (softphones) and clients (Continued) (Sheet 2 of 3)

 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 sys-tem 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 Micro-soft Exchange server • All the system features can be used

Table 2.4:IP system phones (softphones) and clients (Continued) (Sheet 3 of 3)

 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 Micro-soft Exchange server • Possibility of displaying various additional windows • All the system features can be used

Table 2.5:MiVoice 5300 IP series IP system phones (hardphones) (Sheet 1 of 2)

Product	Principal common features	Additional model-specific features

Table 2.5:MiVoice 5300 IP series IP system phones (hardphones) (Continued) (Sheet 2 of 2)

 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.		

Table 2.6: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

Table 2.7:Cordless system phones of the Mitel 600 DECT family

Product	Principal common features	Additional model-specific features
	• 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).		

Table 2.8:Analogue Mitel phones (Sheet 1 of 2)

Product	Principal common features	Additional model-specific features

Table 2.8:Analogue Mitel phones (Continued) (Sheet 2 of 2)

 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 communi-cation 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 func-tion • Functions controllable via communi-cation 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.		

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.

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/Cloud application

  Mobility/Cloud solutions, especially Mitel One, enable employees to log on to the company network using their mobile phones/PC.

  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.

Applications and application interfaces

A distinction is made among applications between Mitel-specific applications and certi-fied 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*).

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

Mitel Applications

Table 2.9:Mitel applications (Sheet 1 of 5)

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)

Table 2.9:Mitel applications (Continued) (Sheet 2 of 5)

Mitel Open Interfaces Platform (OIP)	• Application interface for deep integration of applications by Mitel or other manufacturers (see *Application interfaces*) • 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.

Table 2.9:Mitel applications (Continued) (Sheet 3 of 5)

Mitel MiCollab	Comprehensive Unified Communications and Collaboration solution: • Central software provided for industry standard servers or virtual environ-ments • Integration of Microsoft® Outlook®, IBM® Lotus Notes® Google®, Micro-soft® 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 applica-tion for the Mitel 400 Call Center, and provides statistics / reporting functions and agent monitoring (CCS = call centre supervision). The licensing of the appli-cation is made via OIP.
Mitel OpenCount	• MitelOpenCount is a software package used for the call logging manage-ment on the communication system. It consists for selected sectors of basic, comfort and premium solutions and is installed on an external server.

Table 2.9:Mitel applications (Continued) (Sheet 4 of 5)

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
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”.

Table 2.9:Mitel applications (Continued) (Sheet 5 of 5)

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).
Mitel CloudLink Integration	Mitel CloudLink Integration is a solution that enables the communication server to connect to the CloudLink platform using Cloudlink gateway that connects Mitel One.

Table 2.10:Planning and configuration applications (Sheet 1 of 2)

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

Table 2.10:Planning and configuration applications (Continued) (Sheet 2 of 2)

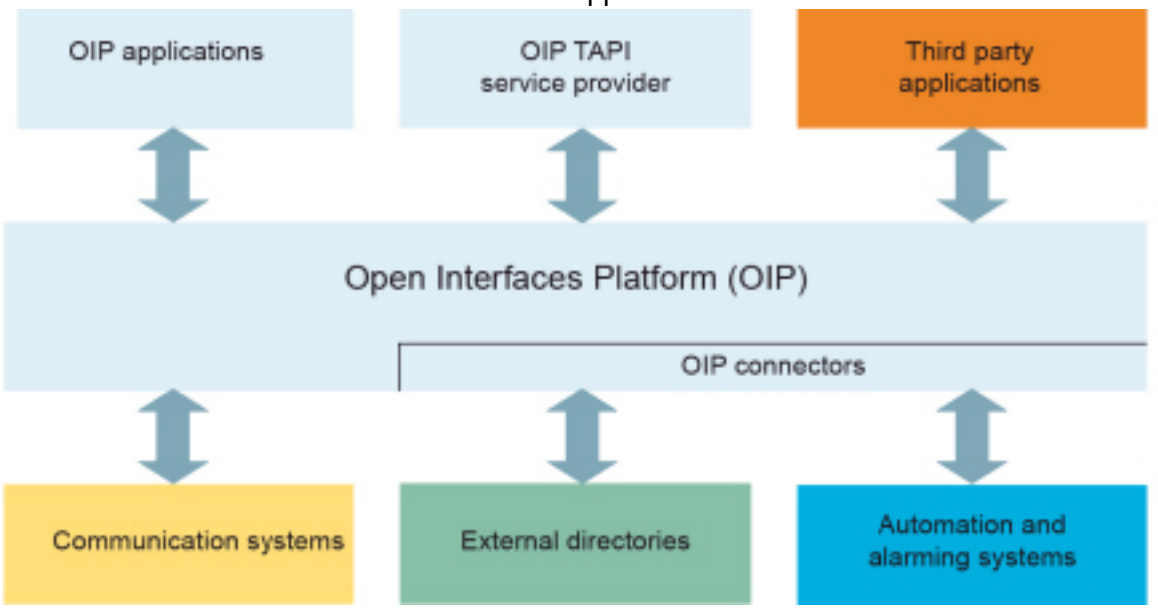
WebAdmin	• Web-based configuration tool for configuring and monitoring a single system or an entire network (AIN) • Access control with user accounts and predefined authorization profiles • Special accesses for hospitality solutions • Integrated online help and configuration assistant • Integrated in 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.
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

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.

Mitel Open Interfaces Platform

Figure 2.4: 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 organisation 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 display 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.

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.

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 *Mitel applications*

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)

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).

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.

System monitoring

The system status is monitored with event messages which can be sent to various in-ternal 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 acces-sible via the Mitel Open Interfaces Platform for application manufacturers.

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 cri-teria. The data can be retrieved via different interfaces and subsequently processed.

Hospitality/Hotel

The MiVoice Office 400 communication servers offer you several possibilities to imple-ment a hospitality and hotel solution, with different operation applications and inter-faces. 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.

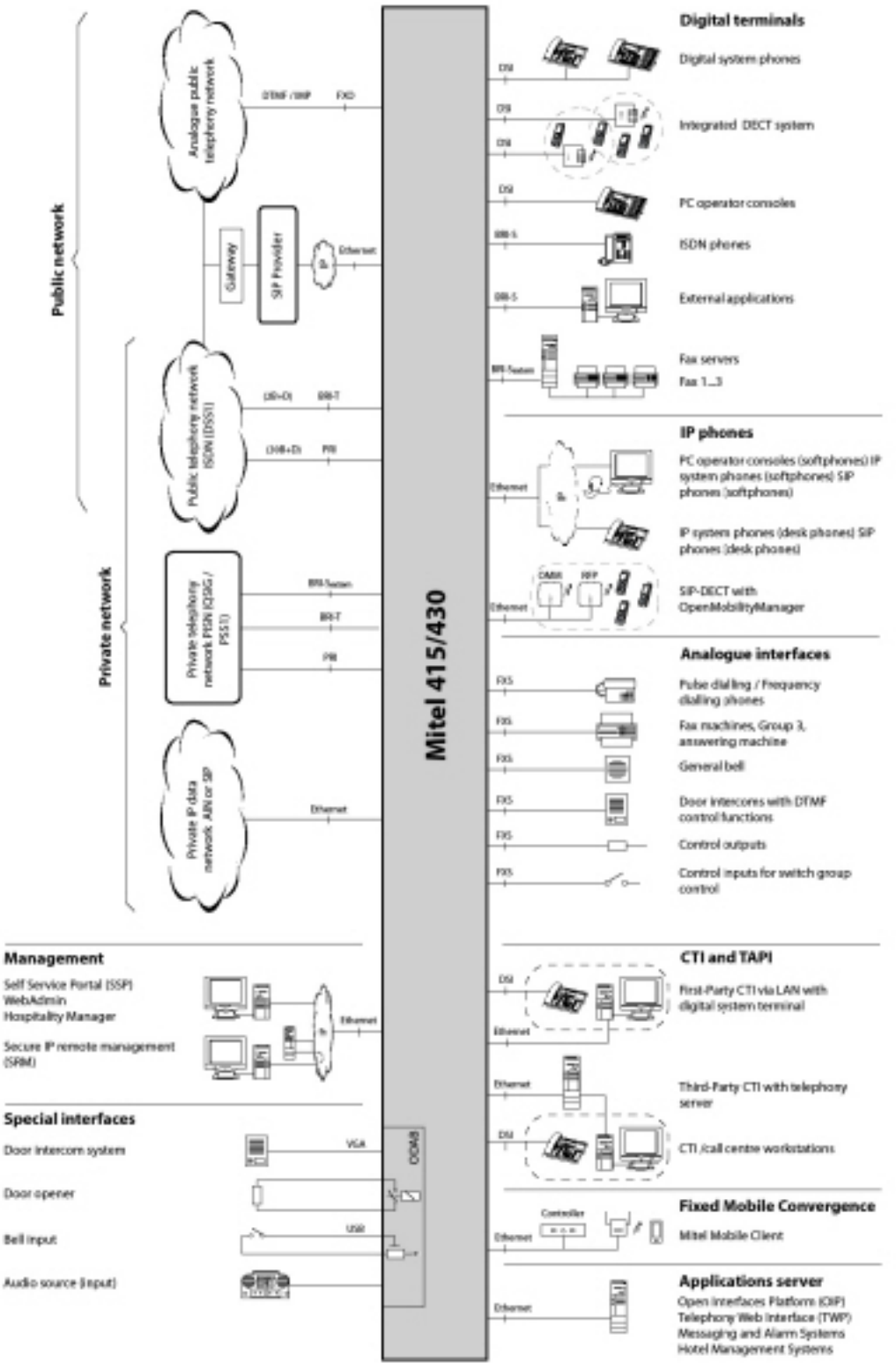
Voice over IP

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.

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

Connection options

Figure 2.5: Overview of interfaces with possible terminal equipment



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.

General requirements

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.

Table 2.11:Mitel sites you need access to:

	Title	
[1]	Document Center	https://www.mitel.com/document-center/business-phone-systems/mivoice-office-400
[2]	Access to Mitel MiAccess (for *Mitel CPQ, Licences server; Services* and *Software Download Center*)	https://miaccess.mitel.com/

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 MiAccess Portal *[2]*.

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

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]*
2. Download the latest system software from *[2]* into the same folder and double click the file. The software (zip) and the release notes (pdf) will also be extracted to the folder named *Mitel*.

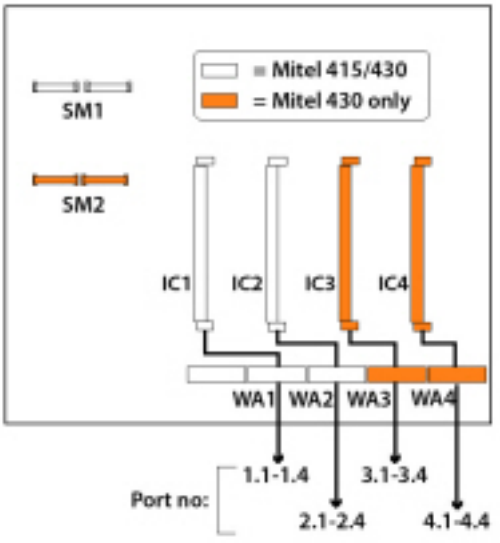
Equip, connect and power on

The Mitel 415 and the Mitel 430 communication servers are based on the same basic system, they differ in terms of the components fitted to the mainboard, the expansion possibilities and the system capacities.

With the build in mainboard and the available interfaces they are ready to use as basic systems. All other equipment is optional.

CAUTION:

- Before you begin, read the product information and safety instructions carefully (see the PDF included in the *Documentation set* or the printed sheet included in the delivery package).
- To prevent ESD damage to the components, always touch the earthed metal case of the communi-cation server before carrying out work inside the housing. This also applies to handling interface cards, proces-sor cards, and system modules that are not packed inside the ESD protective wrap-ping.



1. Ensure that the communication server is disconnected from the power supply.
2. Remove the housing cover.
3. Connect the earthing wire on the ground terminal of the bottom plate.
4. Assemble interface cards (if any):
   - Fit interface cards into the IC1...IC2 slots (Mitel 415) or into the IC1...IC4 slots (Mitel 430).
   - Fit the corresponding wiring adapters into the to WA1...WA2 sockets (Mitel415) or into the WA1...WA4 sock-ets (Mitel 430). Consider the imprint on the adapters for the plug-in orienta-tion.
5. Assemble additional DSP modules (if any):
   - Fit the DSP modules into the SM1 slot on the mainboard.
   - A maximum of three DSP modules can be stacked.
6. Fit the housing cover.

7. Connect the LAN cable to one of the LAN interfaces on the front panel.
8. Connect the power adapter to the socket on the front panel and to the power supply (100...240 VAC / 48...62 Hz).

   When the start-up is finished the communication server runs in normal operating mode. The PWR LED lights up and the SYS LED is blinking slowly. DHCP is switched on by default.

Put into operation

Configure the basic settings using the Setup wizard

TIP: If you need help while going through the steps of the wizard, click *Help* in the upper right of the *Setup wizard*.

A new help window appears. You can leave the help window open, while going through the steps.

1. On the first page of the *Setup wizard*, you register or activate the communication server by uploading a valid *Licence file*.
   - Copy the *Equipment ID (EID)* to the clipboard.
   - In a new browser window, log in to the Mitel MiAccess portal *[2]* and open the *Licences amp; Services* section.
   - Option 1: If you have a voucher, enter the voucher number in the *Voucher edit field*, click *Register Voucher* and follow the instructions. You need to enter the *Equipment ID (EID)* during the procedure. On completing the procedure, you will obtain a *Licence file*.
   - Option 2: If you have no voucher, enter the *Equipment ID (EID)* in the *Activate product* edit field, click *Activate product* and follow the instructions. On completing the procedure, you will obtain a *Licence file*.
   - Upload the *Licence file* in the WebAdmin *Setup wizard*.

   Your communication system is now registered and activated.

   The new licences are enabled. You can see them on the licence overview page.

   NOTE: If you do not activate the communication server, it will switch to a restricted operating mode after four hours.
2. Click *Apply and Next*.

   The second page, *Setting up the IP addressing*, opens.

   Set the *Gateway* address and a *Primary DNS server*.

   NOTE: If you do not set these parameters, you cannot load audio guides or update Mitel SIP phone strings from the Mitel download server.
3. Click *Apply and Next*.

   The third page, *Configuring media resources*, opens.

   On this page, the system proposes to configure the DSP resources automatically. You can use this configuration to begin with. You can always change the DSP settings under *Configuration - System - Media resources* (=*ym*). Check the options for FoIP and DECT resources, if applicable.
4. Click *Apply and Next*.

   The fourth page, *Setting up the numbering plan*, opens.

This page displays the predefined call numbers of the internal numbering plan. You can edit or delete these numbers.

5. Click *Apply and Next*.

   The fifth page, *Setting up SIP providers*, opens.

   This page allows you to set up a SIP provider profile or import a predefined SIP provider profile from an XML file. If your communication system will not be connected to the public network through a SIP provider, skip this step.

6. Click *Apply and Next*.

   The sixth page, *Setting up users, terminals and DDIs(DIDs)*, opens.

   On this page, you set up users, terminals and DDIs(DIDs).

7. Click *Apply and Next*.

   The seventh page, *Setting up the auto attendant*, opens.

   This page allows you to set up an auto attendant, if needed. The auto attendant enables you to specify, what options are offered to a caller while greeting the caller. The caller can select any of the options by dialing a single digit.

8. Click *Apply and Next*.

   This completes the setup. Click *Restart* for the configurations to take effect.

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 lt;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.

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*).

Expansion Stages and System Capacity

The basic system can be expanded using interface cards, system modules and licences. The expansion possibilities available and the maximum system capacities need to be known so the communications system can be ideally adapted to customer requirements. With the project data the optimum hardware configuration is easily determined using the project planning application Mitel CPQ.

This is transition session.

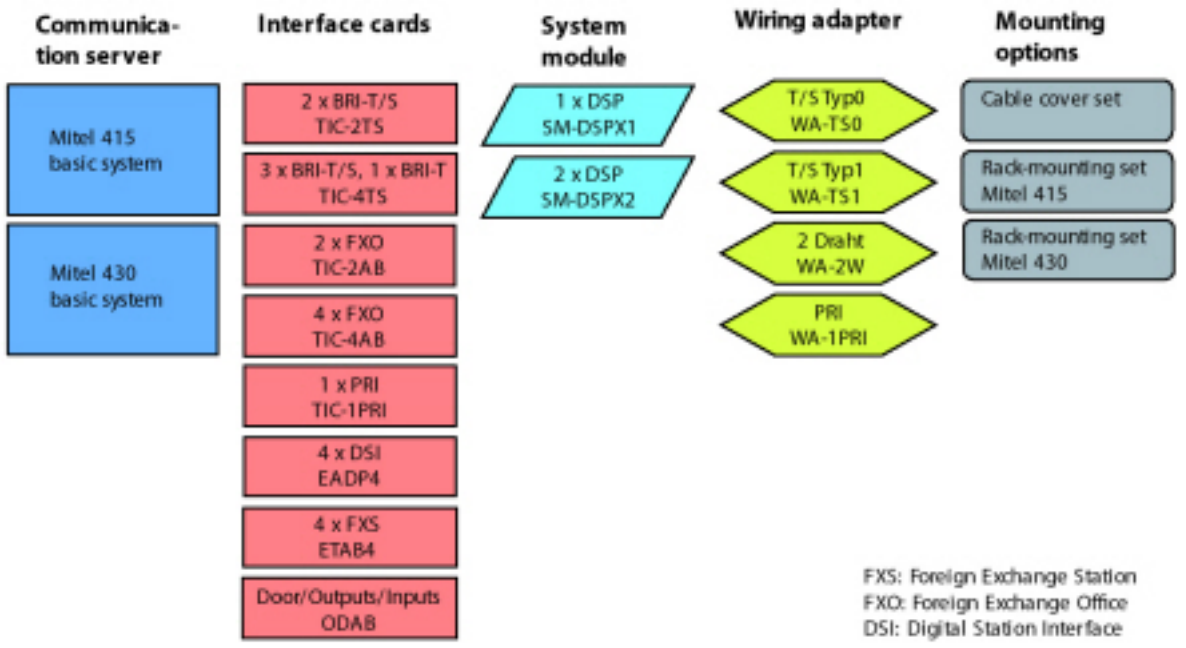
Summary

The expansion possibilities of the basic systems Mitel 415 and Mitel 430 at a glance.

The equipment is powered by an external power supply. The same power supply unit is used for Mitel 415 and Mitel 430.

The mounting options are described in the Chapter *Fitting the communication server*.

Figure 3.1: Overview of the expansion possibilities



Basic system

Mitel 415 and Mitel 430 are based on the same basic system, they differ in terms of the components fitted to the mainboard, the expansion possibilities and the system capacities. The basic systems consists of the following components:

- Mainboard with front panel, screw covers and designation label integrated in metal housing with detachable plastic cover
- Power supply unit with power cord

Interfaces, display and control elements

The following mainboard interfaces can be accessed only when the housing cover of the communication server is open:

Table 3.1:Mainboard

Interfaces	Mitel 415	Mitel 430	Designation / Remarks
Slots for interface cards	2	4	IC1...IC4 / with snap mechanism
Slots for system modules, type 1	1	1	SM1 / three system modules, stackable
Slots for system modules, type 2	–	1[1]	SM2
Slots for wiring adapters	2	4	WA1...WAx / one slot per wiring adapter
Slot for EIM card	1	1	EIM / card holder
Fan interface[2]	–	1	FAN / 3-pin connector (Mitel 430 only)

1. Not used at the moment
2. The fan is required only if the Mitel 430 is rack-mounted

The following interfaces, display and control elements of the mainboard are routed to the front panel:

Table 3.2:Front panel (Sheet 1 of 2)

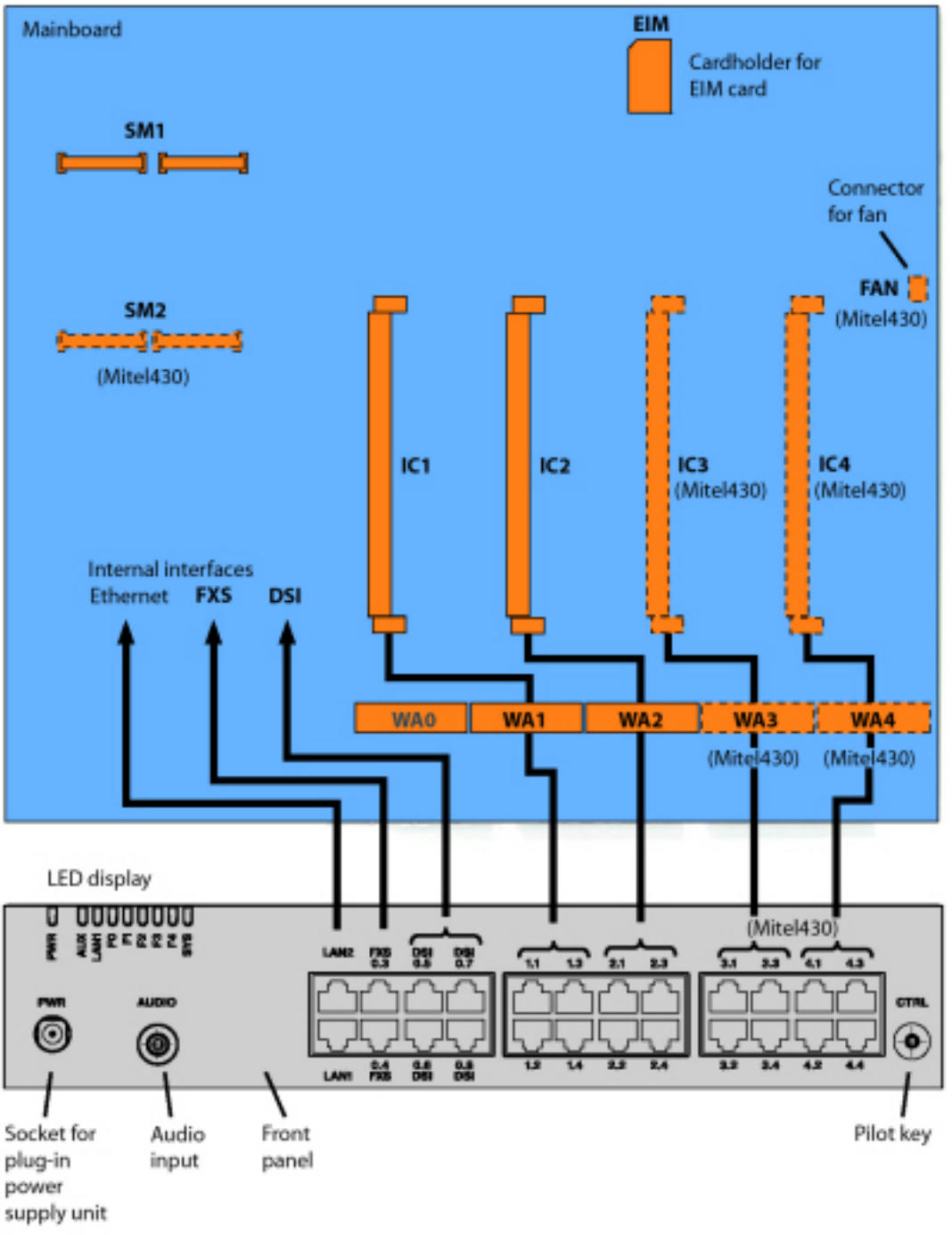
Interfaces	Mitel 415	Mitel 430	Note
DSI terminal interfaces	2	4	RJ45 socket
FXS terminal interfaces	2	2	RJ45 socket
Ethernet interfaces 10/100BaseT, half/full-duplex	2	2	RJ45 socket
RJ45 sockets on front panel, total	16	24	RJ45 socket
Audio input	1	1	3-pin jack socket
Supply input	1	1	2-pin supply socket

Table 3.2:Front panel (Continued) (Sheet 2 of 2)

Pilot key	1	1	
LED display	1	1	

The diagram below shows the position of all the interfaces and slots on the mainboard display and control elements and on the front panel.

Figure 3.2: Mainboard interfaces, display and control elements and front panel



Legend:

IIC1...4 Slots for interface cards (trunk cards, terminal cards and options cards)

WA1...4 slots for wiring adapters

SM1 Slot for stackable system modules, type 1 (DSP(X) modules)

SM2 Slot for stackable system modules, type 2 (not used for the moment)

Power supply

The system is powered as standard with 230 VAC or 115 VAC using the supplied power supply. The communication server is powered with 19V DC from the power supply. All other voltages are generated directly on the mainboard. To ensure that its operation is maintained even in the event of a mains outage, an external uninterruptible power supply (UPS) must be used. For more details about the power supply see *Powering the communication server*.

Media resources

Media resources are used for complex signal processing functions, and made available by DSP chips. (DSP stands for Digital Signal Processor). They provide functions for conference circuits, DTMF sender and receiver, compression of voice data, etc. A DSP chip is fitted permanently to the mainboard.

Part of these media resources is allocated to fixed functions and can be used without licences (see *Fixed functions of the mainboard DSP*). Another part is allocated to selectable functions, according to requirements. These functions are partly subject to licence (see *Selectable functions of the mainboard DSP*).

The basic resources of the communication server can be expanded by fitting DSP modules. The functions of the DSP chips on the modules can also be configured (see *Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2* and *Max. number of channels per DSP chip on SM-DSP1 or SM-DSP2*).

Fixed functions of the mainboard DSP

The table below provides an overview of the fixed functions of the mainboard DSP. No licences or additional hardware is required to use the functions.

Table 3.3:Fixed functions of the mainboard DSP (Sheet 1 of 2)

Max. number of simultaneous ...	**Mitel 415**	**Mitel 430**
Total circuits for the functions[1] three-party conference, six-party conference, intrusion and silent intrusion.[2]	4	4
Circuits for the Call Waiting function	2	2
DTMF sender	3	3
DTMF receiver for voice mail or auto attendant	2	2

Table 3.3:Fixed functions of the mainboard DSP (Continued) (Sheet 2 of 2)

DTMF receiver for analogue terminals	4	4
Dialling tone receiver	2	4
Busy tone receiver	4	4
Ring receiver	2	2
FSK receiver for CLIP detection on analogue network interfaces	2	2
FSK transmitter for CLIP display on analogue terminals	2	2
Total audio channels for basic voice mail (G.711)[3] or auto attendant[b]	2	2

1. The functions can all be of the same type or used as a mix.
2. Licence required
3. Can be used without licence subject to the following restrictions: Voice memory capacity approx. 20 minutes, no e-mail notification in the event of new voice messages, no forwarding of voice messages, no call recording, restricted voice mail menu by remote retrieval.

Selectable functions of the mainboard DSP

The DSP on the mainboard provides selectable functions. A description of the individual functions can be found as of *Allocatable functions*.

The functions are determined in the *Media resources* (=*ym*) view. In the following table, all the possible combinations are listed, with the maximum number of channels. For this the DSP chip on the mainboard has to be loaded with different firmware. Additional functions require the use of one or more DSP modules. Some of these functions are subject to a licence.

Table 3.4:Selectable functions of the mainboard DSP (Sheet 1 of 2)

DECT	VoIP[1]	Audio[a]	GSM[a]	CAS[2]	Modem	Remarks
4						Standard configuration
2		2	8			
2		2		30		
		4	8			
		4		30		

Table 3.4:Selectable functions of the mainboard DSP (Continued) (Sheet 2 of 2)

	3					G.711 VoIP channels only, two of them can be used licence--free.
					1	

1. Licences required (see also *Licences*)
2. Of relevance only to certain countries such as Brazil

NOTE:

To be able to configure VoIP channels on the mainboard's DSP, make sure that in the *Media resources* (=*ym*) view the *VoIP mode* parameter is set to *G.711*.

The configured VoIP mode is valid for all the DSP chips of a node. The following also applies to this mode:

Two G.711 VoIP channels per system can be used without a licence.

The G.711 VoIP channels of the mainboard can be combined with G.711 VoIP channels ofz DSP modules.

If voice mail channels are configured and licensed, the two G.711 basic voice mail channels that can be used without a licence are redundant (see *Fixed functions of the mainboard DSP*).

Voice mail channels can only be configured on one DSP chip per node.

The *Modem* function is used for remote maintenance via an analogue modem and can only be configured on the mainboard's DSP.

The system has to be restarted for the configuration changes of the DSP to take effect.

Expansion with cards and modules

A basic system can be individually expanded using interface cards and system modules. The number of available expansion slots depends on the type of the basic system (see *Interfaces, display and control elements*).

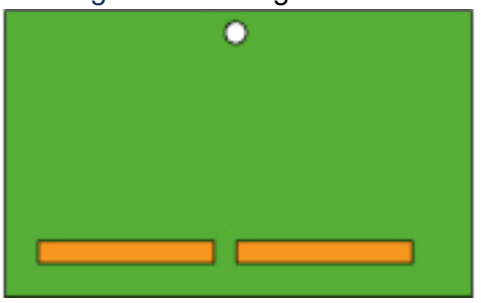
System modules

System modules expand the resources of the communication server, allowing the system to be expanded step by step in line with requirements.

DSP modules

Processor-intensive system functions require media resources. The communication server's DSP capacity increases through the use of DSP modules.

Figure 3.3: Design of the DSP module



DSP modules belong to the category of system modules 1 and are stacked to the SM1 slot (see *Mainboard interfaces, display and control elements and front panel*). The different types of modules can be used as a mix.

NOTE: The SM1 and SM2 slots are not identical (the space between the two connector rails is different). Fitting DSP modules on the SM2 slot is thus not mechanically possible.

Table 3.5:DSP modules

Type	Number of DSP chips per module	Max. number of Mitel 415 modules	Max. number of Mitel 430 modules
SM-DSPX1	1	3	3
SM-DSPX2	2		
SM-DSP1	1		
SM-DSP2	2		

Compared with DSP modules, modules with the designation DSPX are fitted with more powerful DSP chips. They are used to transmit VoIP data among others using the SRTP protocol (Secure VoIP).

Allocatable functions

One or more functions can be allocated to the individual DSP chips on the DSP modules. For this the DSP chips have to be loaded with different firmware. The additional media resources can be used for DECT telephony, Voice over IP, fax transmissions, audio services, integrated mobile/external phones or for remote maintenance via modem. This means that for each DSP chip a specific number of channels is available for the corresponding functions. Some of these functions are subject to a licence (see also *Licences*).

Functions are allocated in WebAdminin the *Media resources* (=*ym*) view.

- *DECT*

  Operation of a DECT system on DSI interfaces with cordless phones. The voice data must be transformed on connections between DECT and non-DECT end-points. This process requires DSP capacity.

  Purely DECT-DECT connections set up already do not require any media resources. On the other hand, media resources are required to set up connections.

  DECT channels can be used without a licence.

- VoIP

Connections between IP and non-IP endpoints are made via an IP media gateway. This is carry out by the integrated standard media switch that switches VoIP channels for call connections in the IP network. The Standard Media Switch uses media resources for the real-time processing of the call data. VoIP channels are always required between IP and non-IP endpoints, e.g. for internal connections between an SIP/IP phone and a digital system phone or e.g. for an external user who is routed to the internal Voice Mail System via an SIP network interface. In an AIN VoIP channels are also used for call connections between the nodes (see *Use of VoIP channels* for an overview).

The number of configurable VoIP channels depends on both the type of DSP chip (see **Configuration of DSP chips**) and the configured mode (see **Standard Media Switch modes of operation**).

If the VoIP mode is set to G.711, two G.711 VoIP channels per system can be used without a licence. One *VoIP Channels for Standard Media Switch* licence is required for each additional VoIP channel.

- *FoIP*

  For reliable real-time fax transmissions via an IP network using the T.38 fax protocol (ITU-T). FoIP channels are not separately licensed. Systems just need an appropriate number of VoIP channels. .

- *Audio services*

  The audio channels are used to play back and record audio data. Additionally, each audio channel is assigned a DTMF receiver for enabling user inputs during playback. Licences (*Enterprise Voice Mail, Audio Record amp; Play Channels, Auto Attendant*) and media resources are required for this.

  Audio channels can be used for voice mail, auto attendant, queue with announcement, call recording, announcement with audio file, or conference bridge. The allocation is configurable (see **Configuration of DSP chips**). Announcement service and music on hold use their own resources.

  The number of configurable audio channels depends on both the configured mode (see *Voice-mail system modes of operation*) and the type of DSP chip (see **Configuration of DSP chips**).

- GSM

  Enhanced functionality is achieved for integrated mobile/external phones by providing special DTMF receivers during the call connection. Suffix dialling functions (such as enquiry calls or setting up a conference with function codes) can be carried out as a result. The number of GSM channels – and therefore the number of DTMF receivers – depends on the number of users with integrated mobile/external phones who want to use this functionality simultaneously.

  One *Mobile or External Phone Extension* licence is required for each integrated mobile/external phone.

- CAS

  CAS (Channel-associated signaling) is a signalling protocol for PRI-E1 network interfaces used in certain countries (e.g. Brazil). This setting provides the tone sender and receiver for transmitting signalling information.

Use of VoIP channels

VoIP channels are always required between IP and non-IP endpoints. They are freely available, i.e. they are always used wherever they happen to be needed. The figure below gives an overview of the cases where VoIP channels are needed and how many of them.

Table 3.6:Required VoIP channels between two possible endpoints (Sheet 1 of 2)

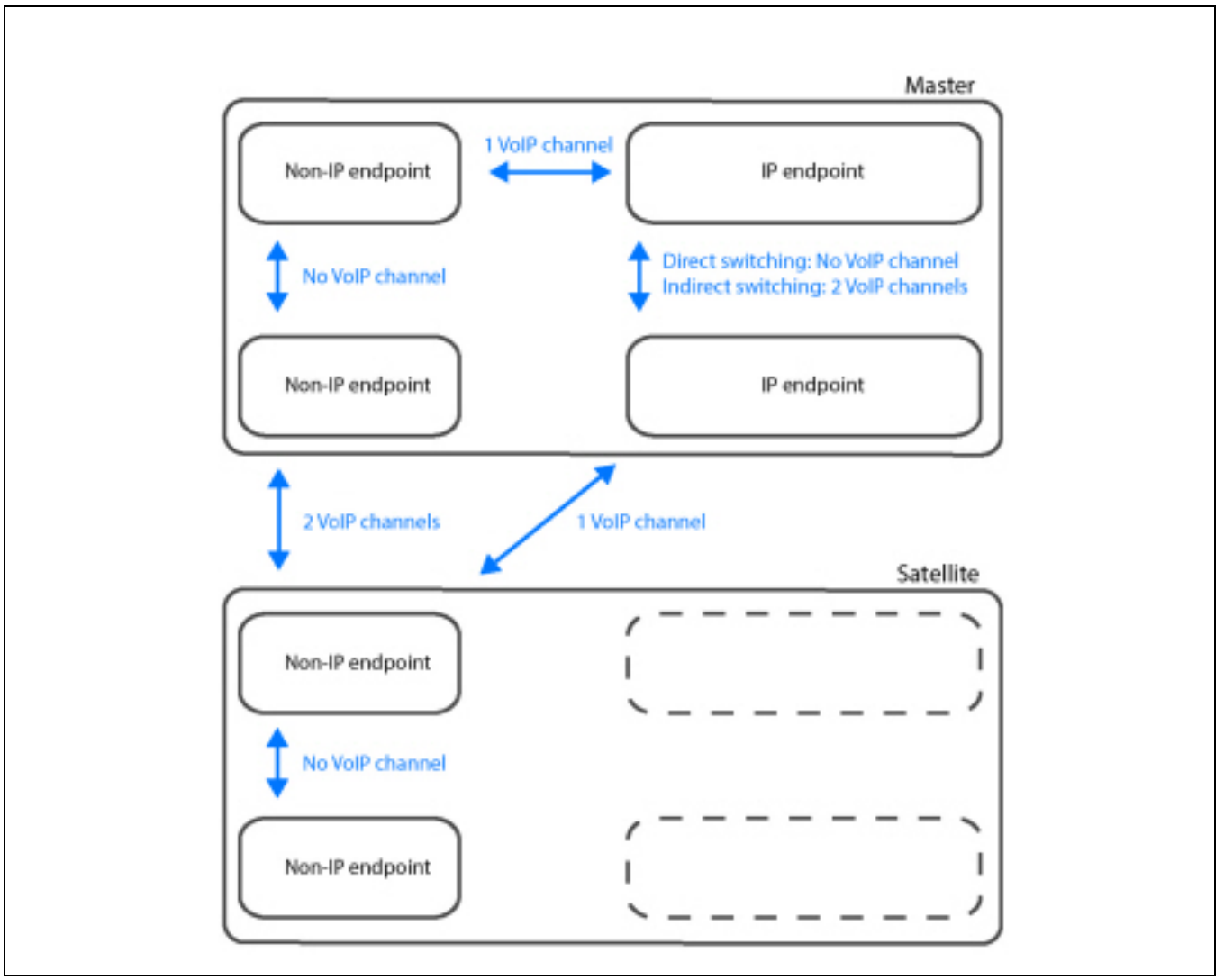


Table 3.6:Required VoIP channels between two possible endpoints (Continued) (Sheet 2 of 2)

Non-IP endpoints: • Analogue terminal (FXS) • Digital system terminal (DSI) • DECT cordless phone (DSI) • ISDN phone (BRI-S) • External via analogue exchange (FXO) • External via ISDN exchange (BRI-T/PRI) • Internal voice mail system • Auto attendant • Internal announcement service • Music on hold • Conversation recording • Announcement with audio file • Queue with announcement • Conference bridge	IP endpoints • IP system phone • Mitel SIP terminal • Standard SIP terminal • DECT cordless phone via SIP-DECT • WiFi cordless phone via SIP-DECT • WiFi cordless phone via SIP access point • External via SIP provider IP endpoints on satellites: In normal operation all IP endpoints are registered with the master, even if they are located on the satellite.

Standard Media Switch modes of operation

The operation mode of the integrated standard media switch is defined with the *VoIP mode* parameter in the *Media resources* (=*ym*) view. The configured mode is always valid for the entire node.

Table 3.7:Integrated Standard Media Switch modes of operation (Sheet 1 of 2)

VoIP mode	Explanation	Licences
No VoIP	No VoIP channels can be configured.	
G.711	Although more voice channels are available per DSP in mode *G.711* than in hybrid mode, the volume of voice data is greater and requires a greater bandwidth.	Two VoIP channels per system can be used without a licence. One *VoIP Channels for Standard Media Switch* licence is required for each additional VoIP channel.
G.711/G.729	The VoIP hybrid mode *G.711/G.729* handles both G.711 and G.729 for coding voice data.	One *VoIP Channels for Standard Media Switch* licence is required for each VoIP channel.

Table 3.7:Integrated Standard Media Switch modes of operation (Continued) (Sheet 2 of 2)

Secure G.711	Same as *G.711* but with a more secure data transmission using the SRTP protocol.	One *VoIP Channels for Standard Media Switch* licence is required for each VoIP channel. The Secure VoIP licence, valid right across the system, is also required.
Secure G.711/G.729	Same as *G.711/G.729* but with a more secure data transmission using the SRTP protocol.	One *VoIP Channels for Standard Media Switch* licence is required for each VoIP channel. The *Secure VoIP* licence, valid right across the system, is also required.

Reserving audio channels

The allocation of audio channels between voice mail, auto attendant, call recording and announcements is set in the general voice mail settings (=*u1*).

An audio channel is always used for Auto attendant when an incoming call triggers greetings from mail-boxes which are assigned an Auto Attendant profile. Audio channels of auto attendant are also used for queues with announcement. In all other cases one audio channel is used for voice mail in connection with the voice mail system.

Audio channels for call recording are used exclusively for the manual or automatic recording of phone calls.

Audio channels for announcements are used if the announcements have audio files. No audio channels are required for normal announcements by phone.

If no audio channel is reserved for any of the functions described above, or if all reserved audio channels are already used, audio channels from the *Non-reserved/shared* pool are used.

No audio channels can be reserved for conference bridges. Audio channels from the *Non-reserved/shared* pool are always used for the conference bridge.

Announcement service and music on hold use their own resources.

Table 3.8:Reserving audio channels (Sheet 1 of 2)

Parameter	**Explanation**
Available audio channels	Maximum available audio channels on this node. This value depends on the configuration of the media sources.
Reserved for Auto-Attendant	Number of audio channels on this node used for auto attendant and queue with announcement only.
Reserved for voice mail	Number of audio channels on this node that can be used exclusively for voice mail.

Table 3.8:Reserving audio channels (Continued) (Sheet 2 of 2)

Reserved for call recording[1]	Number of audio channels on this node that can be used exclusively for call recording.
Reserved for announcements	Number of audio channels on this node that can be used exclusively with audio file.
Non-reserved/shared	Number of audio channels on this node which can be used by voice mail, auto attendant, queue with announcement, call recording, announcement with audio file or conference bridge, depending on how they are needed at that time. Announcement service and music on hold use their own resources.

1. Note for *Voice mail mode = Extended (G.729 only)*: For each audio channel reserved for call recording, the number of possible audio channels reserved for voice mail is reduced by 3. The possible combinations of voice mail/call recoding are as follows: 12/0, 9/1 and 6/2.

No audio channels are reserved after a first start and they can be used for voice mail, auto attendant, call recording or announcement.

Voice-mail system modes of operation

The voice mail system mode of operation is set in the *Media resources* (=*ym*) view using the *Voice mail mode* parameter. The configured mode is always valid for the entire node.

Table 3.9:Voice-mail system modes of operation

Voice mail mode	Explanation	Licences
Normal *(G.711 or G.729)*	The Normal *(G.711 or G.729)* hybrid mode handles both audio formats; however, the number of audio channels per node is limited to 4.	Two voice mail channels are available with the *Enterprise Voice Mail* licence. Each additional voice mail channel requires an additional Audio Record amp; Play Channels licence.
Expanded (G.729 only)	In *Expanded (G.729 only)* mode there are more audio channels available per node than in hybrid mode. However the quality of the audio data is somewhat poorer as a result of the compression.	Two voice mail channels are available with the *Enterprise Voice Mail* licence. Each additional voice mail channel requires an additional *Audio Record amp; Play Channels* licence.

Configuration of DSP chips

The functions which can be allocated to each DSP chip are determined in the *Media resources* (=*ym*) view. The DSP modules provide additional functions as indicated in the following table. All the possible combinations are listed, with the maximum number of channels.

Table 3.10:Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2 (Sheet 1 of 2)

DECT	VoIP[1]	FoIP	Audio[a]	GSM[a]	CAS[2]	Remarks
8			2			
8				8		
6			4			
6			2	8		
4			4/6	8		6 channels if *Voice mail mode* = *Expanded (G.729 only)*
4			6			
4	2		2	8		
	5...8					Depends on the parameter VoIP mode: • *G.711*: 8 channels • *Secure G.711*: 7 channels • *G.711/G.729*: 6 channels • *Secure G.711/G.729* : 5 channels
	4		2		30	
	4		4			Only for *VoIP mode* = *G.711* or *G.711/G.729*
	4		2	8		Only for *VoIP mode* = *G.711* or *G.711/G.729*

Table 3.10:Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2 (Continued) (Sheet 2 of 2)

DECT	VoIP[1]	FoIP	Audio[a]	GSM[a]	CAS[2]	Remarks
	3	1/2				1 channel for Mitel 4152 channels for Mitel 430

1. Licence(s) required (see also *Licences*)
2. Of relevance only to certain countries such as Brazil

Table 3.11:Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2 (Sheet 1 of 2)

Dect	***VoIP***[1]	***FoIp***	***Audio***[a]	***GSM***[a]	***CAS***[2]	***Remarks***
8			2			
8				8		
6			4			
6			2	8		
4			4/6	8		6 channels if *Voice mail mode = Expanded (G.729 only)*
4			6			
4			8			Only if *Voice mail mode = Expanded (G.729 only)*
4	2		2	8		
	5...8					Depends on the parameter VoIP mode: • *G.711*: 8 channels • *Secure G.711*: 7 channels • *G.711/G.729*: 6 channels • *Secure G.711/G.729*: 5 channels
	4		2		30	
	4		4			Only for *VoIP mode = G.711* or *G.711/G.729*

Table 3.11:Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2 (Continued) (Sheet 2 of 2)

	4		2	8		Only for *VoIP mode* = *G.711* or *G.711/G.729*
	3	1/2				1 channel for Mitel 4152 channels for Mitel 430
			12	8		Only if *Voice mail mode* = *Expanded (G.729 only)*
			12		30	Only if *Voice mail mode* = *Expanded (G.729 only)*

1. Licence(s) required (see also *Licences*)
2. Of relevance only to certain countries such as Brazil

Table 3.12:Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2 (Sheet 1 of 2)

DECT	***VoIP***[1]	***FoIP***	***Audio***[a]	***GSM***[a]	***CAS***[2]	**Remarks**
8			2			
8				8		
6			4			
6			2	8		
4			4/6	8		6 channels if *Voice mail mode* = *Expanded (G.729 only)*
4			6		30	
4			8			Only if *Voice mail mode* = *Expanded (G.729 only)*
4	2		2	8		
	5...8					Depends on the parameter VoIP mode: • *G.711*: 8 channels • *Secure G.711*: 7 channels • *G.711/G.729*: 6 channels • *Secure G.711/G.729*: 5 channels
	4		2		30	
	4		4			Only for *VoIP mode* = *G.711* or *G.711/G.729*

Table 3.12:Max. number of channels per DSP chip on SM-DSPX1 or SM-DSPX2 (Continued) (Sheet 2 of 2)

	4		2	8		Only for *VoIP mode* = *G.711* or *G.711/G.729*
	3	1/2				1 channel for Mitel 4152 channels for Mitel 430
			12	8		Only if *Voice mail mode* = *Expanded (G.729 only)*
			12		30	Only if *Voice mail mode* = *Expanded (G.729 only)*

1. Licence(s) required (see also *Licences*)
2. Of relevance only to certain countries such as Brazil

Table 3.13:Max. number of channels per DSP chip on SM-DSP1 or SM-DSP2[a]

DECT	***VoIP***[1]	***FoIP***	***Audio***[a]	***GSM***[a)]	**Remarks**
8				8	
6			2	8	
4			4/6	8	6 channels if *Voice mail mode= Expanded (G.729 only)*
4			8		Only if *Voice mail mode* = *Expanded (G.729 only)*
	4/8				4 channels if *VoIP mode= G.711/G.729* 8 channels if *VoIP mode* = *G.711*
	2		4		
			12	8	Only if *Voice mail mode* = *Expanded (G.729 only)*
		1/2			1 channel for Mitel 4152 channels for Mitel 430

1. Licences required (see also *Licences*).

NOTE:

- To configure VoIP channels on the DSP chip of a DSP module, make sure the *VoIP mode* parameter in the *Media resources* (=*ym*) view is not set to *No VoIP*. The setting is valid for all the DSP chips of a node. If *VoIP mode* is set to *G.711*, two G.711 VoIP channels per system can be used without a

licence. The G.711 VoIP channels of the mainboard can be combined with G.711 VoIP channels of DSP modules.

- If audio channels are configured and licensed, the two basic audio channels that can be used without a licence are redundant (see *Fixed functions of the mainboard DSP*).
- Audio channels and FoIP channels can only be configured on one DSP chip per node.
- The *Modem* function is used for remote maintenance via an analogue modem and can only be configured on the mainboard's DSP.
- The system has to be restarted for the configuration changes of the DSP to take effect.
- After a first start all the DSP chips are configured on *DECT*.

Interface cards

Interface cards can be assigned to three categories:

- Trunk cards

  These cards provide interfaces for connection to public dial-up networks or for networking systems to create a private telephony network.
- Terminal cards

  These cards provide interfaces for connecting digital and analogue voice and data terminals.
- Options cards

  This category comprises the ODAB card, the interfaces for connecting a door intercom, for controlling external devices, and for switching over internal switch groups.

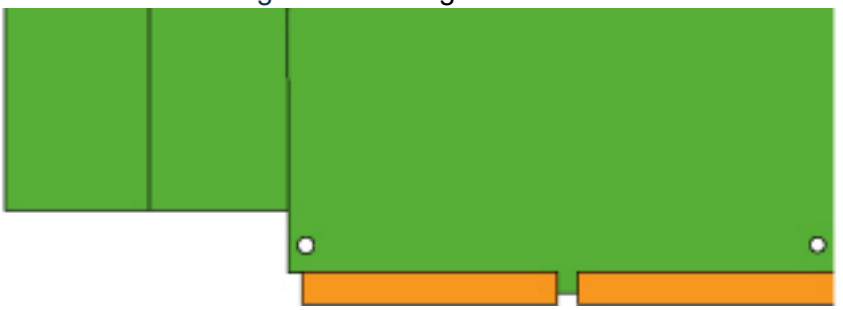
On some cards some of the interfaces are configurable (BRI-S/T). This means that these cards cannot be clearly assigned to any particular category. They are listed both among the trunk cards and the terminal cards.

Interface cards are fitted into slots IC1...IC4 (see *Mainboard interfaces, display and control elements and front panel*).

The interfaces are routed to the front panel using the wiring adapters (see *Wiring adapter*).

The length varies depending on the type of interface card. For precise dimensions see the Chapter *Technical data*.

Figure 3.4: Design of the interface cards



Trunk cards

The trunk cards contain interfaces for connection to the analogue public network (PSTN), the digital public network (ISDN) or for networking systems to create a private telephony network (PISN). The trunk cards can be used and operated on any slots for interface cards.

Some trunk cards contain both network interfaces (BRI-T) and terminal interfaces (BRI-S). On these cards the ratio of BRI-S interfaces to BRI-T interfaces is determined by the use and plug-in orientation of the wiring adapters (see *Fitting a wiring adapter*).

NOTE: On the ESST terminal card the jumper must always be fitted in position T (see *Jumper position on ESST card*).

Table 3.14:Trunk cards

Type	Network interfaces per card	Max. number of Mitel 415 cards	Max. number of Mite 430 cards	Remarks
TIC-1PRI	1 PRI-E1	2	2	• Contains 30 B channels • 10 B channels can be used licence-free
TIC-4TS	3 BRI-S/T + 1 ´ BRI-T	2	4	• Three BRI-T interfaces configurable to BRI-S • One fixed BRI-T interface
TIC-2TS	2 BRI-S/T	2	4	• Both BRI-T interfaces configurable to BRI-S
ESST[12]	1 BRI-S/T + 1 ´ BRI-S	2	4	• One BRI-T interface configurable to BRI-S, one fixed BRI-S interface • The jumper on this card must always be fitted to position T.
TIC-4AB	4 FXO	1	2	
TIC-2AB	2 FXO	2	4	
EAAB2[b]	2 FXO	2	4	

1. Cards with hardware version "-2" only. The ESST-1 card is not operational in Mitel 415/430.
2. Although no longer available, the card is still supported.

Terminal cards

Terminal cards are used for connecting digital and analogue voice and data terminals.

FXS cards are an exception. Their analogue interfaces are multifunctional. In addition they provide interfaces for controlling external devices and switching over internal switch groups. Depending on the

terminal or function, the interfaces are configured individually and switched over internally accordingly (see *Multifunctional FXS interfaces*).

DSI cards are used for connecting digital system terminals such as phones. 2 terminals can be connected to each DSI interface.

Terminals to ETSI standard are connected via BRI cards. The cards contain both terminal interfaces (BRI-S) and network interfaces (BRI-T). On these cards the ratio of BRI-S interfaces to BRI-T interfaces is determined by the type and plug-in orientation of the wiring adapters (see *Fitting a wiring adapter*).

Table 3.15:Terminal cards

Type	Terminal interfaces per card	Max. number of cards per Mitel 415	Max. number of cards per Mitel 430	Remarks
EADP4	4 DSI	2	4	
EAD4V[1]	4 DSI	2	4	• Voice mail functionality of the card cannot be used • Cannot be fitted to slot IC4 on Mitel 430
EAD4C[a]	4 DSI	2	4	• Announcement service functionality of the card cannot be used • Cannot be fitted to slot IC4 on Mitel 430
ETAB4	4 FXS	2	4	• Interfaces individually configurable
TIC-4TS	3 BRI-S/T 1 ´ BRI-T	2	4	• Three BRI-S interfaces configurable to BRI-T • One fixed BRI-T interface
TIC-2TS	2 BRI-S/T	2	4	• Both interfaces configurable to BRI-T
ESST[a2]	1 BRI-S/T 1 BRI-S	2	4	• One BRI-S interface configurable to BRI-T, one fixed BRI-S interface • The jumper on this card must always be fitted to position T.

1. Although no longer available, the card is still supported.
2. Cards with hardware version "-2" only. The ESST-1 card is not operational in Mitel 415/430.

NOTE: On the ESST terminal card the jumper must always be fitted in position T (see *Jumper position on ESST card*).

Options card

The ODAB options card contains control outputs, control inputs and an analogue terminal circuit for connecting a door intercom (TFE). The I/Os of the options card are partly configurable and can be used for the following purposes:

- The control outputs are used to switch any external devices or equipment. Any authorized user can operate the control ouputs.
- Floating contacts are connected to the control inputs. This means that the connected control inputs can control switch group positions.
- Connection of a door intercom (TFE):
  - Bell input, which can be configured to any internal destination depending on the position of a switch group.
  - Door intercom system, which can be dialled using a separate number and operated via a phone by any authorized user.
  - Door opener, which can be activated via a phone by any authorized user.
  - Input for feeding the voice path (switching the door intercom on/off).

Table 3.16:Options card

Type	Control outputs or control inputs	Analogue terminal circuit for connecting a door intercom	Max. number of Mitel415 cards	Max. number of Mitel 430 cards
ODAB	4[1]	1	1	2

1. control output or 1 control input is available in the configuration as a door intercom. If the option card is used for other purposes, 2 control outputs and 2 control inputs can be used.

NOTE: If the options card is used to connect a door intercom, it must be fitted to slot IC2 (Mitel 415) or slot IC4 (Mitel 430). This means that only one options card can be used for this purpose on each communication server. If using control outputs and control inputs only, use the slots IC1 slots (Mitel 415) or IC1, 2 and 3 (Mitel 430).

Mitel Advanced Intelligent Network:

A total of 22 ODAB options cards can be used in an AIN with Mitel 430 as Master. However the maximum number of cards per communication server has to be taken into account. An authorized user has the possibility of operating all the door openers, door intercom system and control outputs in an AIN. One of the switch groups can be switched over using the switch group interface on the options cards.

Wiring adapter

The wiring adapters route the interfaces of the various interface cards with the right connection diagram to the RJ45 sockets on the front panel. The adapters are fitted to WA1...WA4 sockets.

Figure 3.5: Types of wiring adapters

There are different types of wiring adapters, of which two (WA-TS0 and WA-TS1) have different plug-in orientations. This determines the ratio of BRI-S interfaces to BRI-T interfaces.

NOTE: A configuration with wiring adapter is mandatory. An incorrect or missing configuration generates the corresponding error display on the LED display (F1...F4).

Table 3.17:Wiring adapter

Type	Use with...	Remarks
WA-TS0	TIC-4TS, TIC-2TS, ESST[1]	Included in the equipment supplied with TIC-4TS and TIC-2TS
WA-TS1	TIC-4TS, TIC-2TS, ESST[a], ODAB	Included in the equipment supplied with ODAB
WA-2W	Mainboard interfaces, TIC-4AB, TIC-2AB, ETAB4, EAAB2, EADP4, EAD4C, EAD4V	Included in the equipment supplied with TIC-4AB, TIC-2AB, ETAB4 and EADP4 (with ETAB4 and EADP4 only with order variant Mitel 415/430).
WA-1PRI	TIC-1PRI	Included in the equipment supplied with the interface card

1. On the ESST terminal card the jumper must always be fitted in position T (see *Jumper position on ESST card*)

The assignment to the RJ45 sockets depending on the wiring adapters is shown in *Combinations of wiring adapters / interface cards*.

System capacity

System capacities are defined on the one hand by the existing hardware with its expansion possibilities and on the other by the limits set in the software. The software limits can be partly expandable by licences.

Table 3.18:Mitel One - required resource reservation and allocation

Test Environment	Release	Mitel One Users	Max Simultaneous call (Direct Switching)	CPU Average Utilization in %						Network IO in Kbps				Network IO Total (Kbps)
				CPU0	CPU1 (CL)	CPU2 (FS)	CPU3 (MiVo400)	Disk Avg. %	Memory Avg. in %	Mitel One Users Uplink	Mitel One Users Down-link	CloudLink Process Uplink	CloudLink Process Downlink	
Virtual Appliance - Virtualized Cloud Link Gateway	R6.3 or higher	300	25 Mitel One to Mitel One 50 Mitel One to Internal 50 Mitel One to PSTN 16 Mitel One to Mitel One (GSM) 12 Mitel One (GSM) to Mitel One (GSM)											

Media resources

General system capacity

The number of slots, interface cards and system modules per communication server have already been mentioned in the previous chapters and are not listed separately in this chapter.

Table 3.19:General system capacity (Sheet 1 of 6)

Max. number...	Mitel 415	Mitel 430	AIN with Mitel 430 as Master
Nodes in a transparent network (AIN)	–	–	11
Nodes with SIP networking	100	100	100
Users	12[1]	50[2]	50[b]
Terminals per user[3]	16	16	16
Simultaneous connections			
• Without IP and without DECT (internal / external)	10[4]	30	50
• IP – not IP (internal / external)	8	18	50
• IP –IP (internal)	6[d]	25[d]	50
• IP – IP via SIP access channels (external)	12	32	32
• DECT – not DECT (internal / external)	10[d]	20	per node
• DECT – DECT (internal)	5[d]	20	per node
Voice channels VoIP (Standard Media Switch[5])	8	18	per node

Table 3.19:General system capacity (Continued) (Sheet 2 of 6)

Audio channels, call recording	2	2	per node[6]
Audio channels in *Normal (G.711 or G.729)* voice mail mode[7]	4	4	per node
Audio channels in *Extended (G.729 only)* in total [g]voice mail mode	12	12	per node
Voice channels FoIP (T.38)	1	2	per node
CAS transmitter/receiver for PRI-E1 network interfaces[8]	60	60	per node
Configurable conference bridge	24	24	24
Active conferences	see *Fixed functions of the mainboard DSP*		
Trunk group	200	200	200
Trunk groups in route	8	8	8
Network interfaces per trunk group	8	8	8
Routes	136[9]	136[i]	136[i]
B channel groups	200	200	200
SIP provider	10	10	10
SIP user account	500	500	500
Direct dialling plans	10	10	10
Total DDI numbers[10]	500	500	500
SmartDDI conversion rules per DDI plan	100	100	100
SmartDDI conversion rules overall	200	200	200

Table 3.19:General system capacity (Continued) (Sheet 3 of 6)

Call distribution elements	500	500	500
Queue with announcement	8	8	8
User groups	21	21	21
Members per user group "normal"	$8^{11}/16$	$8^{k}/16$	$8^{k}/16$
Members per user group "large"	20	100	100
Abbreviated dialling numbers + PISN users	1500	1500	1500
Operator keys per phone on Mitel 6800/6900 SIP	10^{12}	10^{i}	10^{i}
Room keys on Mitel 6873 SIP (inclusive expansion keypad)	10	50	50
Line keys per key telephone (except Mitel 6800/6900 SIP)	39	39	39
Line keys per key telephone on Mitel 6800/6900 SIP	$2...12^{13}$	$2...12^{m}$	$2...12^{m}$
Line keys per CDE on Mitel 6800/6900 SIP	8^{14}	8^{n}	8^{n}
Total line keys on Mitel 6800/6900 SIP	see [15]	see [o]	see [o]
Switch groups	50	50	50
Positions per switch group	3	3	3
Hotline destinations	20	20	20
Emergency destinations	50	50	50
Internal emergency numbers	10	10	10

Table 3.19:General system capacity (Continued) (Sheet 4 of 6)

Internal emergency response teams	5	5	5
Members of internal emergency response teams	20	20	20
Public emergency numbers	20	20	20
Allocations of external call numbers to internal call numbers	50	300	300
External digit barring	8	8	8
Internal digit barring	8	8	8
Barred list	50	50	50
Free list	50	50	50
Predefined text messages	16	16	16
Announcement / message groups	16	16	16
User per announcement / message group	16	16	16
Data service tables	8	8	8
User accounts for user access control	25	25	25
Authorization profiles for user accounts	25	25	25
Log entries per user account	20	20	20
First-party CTI users via LAN	10	32	32
First-party CTI users via Mitel Dialer	10	32	32
Third-party CTI interfaces	1	1	1

Table 3.19:General system capacity (Continued) (Sheet 5 of 6)

Third-Party CTI interface (Basic, Standard)	10	50	50
Groups, Agents (OIP Call centre)	10	30	50
Mailboxes with Basic or Enterprise voice mail system	20	100	100
Greetings per mailbox	3	3	3
Profiles per mailbox for auto attendant	3	3	3
Backup communication servers for Dual Homing	50	50	50
Primary communication servers for Dual Homing	50	50	50
Blacklist	1	1	1
Call number entries in the blacklist	1000	1000	1000
Number of CLIP based routing tables	10	10	10
Total call number entries in call distribution tables	250	250	250
Call data memory internal (number of records)[16]	300	300	300
Private contacts	8000	8000	8000
Call list entries for each of the 3 call lists per phone	30	30	30
Total call list entries	15000	15000	15000
Configured keys	4000	4000	4000

Table 3.19:General system capacity (Continued) (Sheet 6 of 6)

Busy lamp field keys on Mitel SIP phones in total	200	200	200
Busy lamp field keys per Mitel SIP phone	50	50	50
Same users on busy lamp field keys on Mitel SIP phones	10	10	10
Expansion key modules on DSI terminals	30[d]	60	100
Expansion key modules on IP system phones	30[d]	60	100
Expansion key modules on Mitel 6800/6900 SIP phones	30[d]	60	100
Alpha keyboard Mitel K680	10	50	50
Alpha keyboard (AKB)	10	40	50

1. Up to 20 users are possible with virtual terminals and integrated mobile/external phones.
2. Up to 100 users are possible with virtual terminals and integrated mobile/external phones.
3. Only 1 operator console, 1 MiVoice 2380 IP, 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.
4. Limited by the maximum number of terminals
5. In the Secure VoIP modes the maximum values cannot be achieved with the selection in the DSP settings:

Mitel 415: *Secure G.711:* 1 7 = 7 channels, *Secure G.711/G.729:* 1 5 = 5 channels.

Mitel 430: *Secure G.711:* 2 7 = 14 channels, *Secure G.711/G.729:* 3 5 = 15 channels.

6. For IP-IP connections maximum 8
7. 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.
8. Of relevance only to certain countries such as Brazil
9. 12 of them are masked (not configurable)
10. In USA/Canada the abbreviation DID (Direct Inward Dial) is used instead of DDI (Direct Dialling In)
11. With global call distribution
12. Only 6 on Mitel 6940 SIPMitel 6873 SIP if phone is also used as reception phone.
13. 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
14. The value applies to CDE with destination KT line. With MiVoice Office 400 multiple destinations (User + KT or KT + UG) the value is reduced to 4.
15. Depending on the highest number of line keys, configured for the same line. The following pairs apply (line keys per line / total line keys): (8/24), (7/28), (6/36), (5/50), (4/60), (3/60), (2/60), (1/60).Example: The following line keys are configured on different Mitel SIP phones: 4 keys for line 1, 7 keys for line 2, 5 keys for line 3, 5 keys for line 4.

Highest number of keys per line: 7

Total 24 line keys are allowed

Configured line keys: 4 + 7 + 5 + 5 = 21 -> OK

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

Terminals

Table 3.20:Maximum number of terminals per system and interface (Sheet 1 of 3)

Interface	Terminal type	Terminal	Mitel 415	Mitel 430	AIN with 430 as Master	per interface
Miscellaneous	Terminals (including virtual terminals and integrated mobile/external phones)		20	100	100	
Miscellaneous	Terminals (excluding virtual terminals and integrated mobile/external phones)		12[1]	50	50	
Miscellaneous	Free seating pools		20	100	100	
DSI	Terminals on DSI interfaces (total)		10	40	50	
DSI	Digital system phones	MiVoice 5360 MiVoice 5361 MiVoice 5370 MiVoice 5380	10	40	50	2
DSI	Operator consoles / operator applications	MiVoice 5380 MiVoice 1560	4	8	16	2
DSI	Cordless system	SB-4+ radio unit	10	20	32	1
DSI	Cordless system	SB-8 / SB-8ANT radio units	5	10	32	2

Table 3.20:Maximum number of terminals per system and interface (Continued) (Sheet 2 of 3)

DECT	Cordless phones	Mitel 610/612 DECT Mitel 620/622 DECT Mitel 630/632 DECT Mitel 650 DECT Office 135 Office 160 GAP terminals	10	50	50	
LAN	Terminals on LAN interfaces (total)		12[1)]	50	50	
LAN	DHCP clients on the internal DHCP server		50	50	50	
LAN	IP terminals	MiVoice 2380 IP MiVoice 5360 IP MiVoice 5361 IP MiVoice 5370 IP MiVoice 5380 IP	12	50	50	
LAN	IP operator consoles / IP operator applications	Mitel 6930 SIP Mitel 6940 SIP Mitel 6869 SIP Mitel 6873 SIP	1	1	1	
		MiVoice 5380 IP MiVoice 1560	4	8	16	

Table 3.20:Maximum number of terminals per system and interface (Continued) (Sheet 3 of 3)

LAN	Reception/ Front desk	Mitel 6940 SIP Mitel 6873 SIP	1	1	1	
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	10	50	50	
LAN	Mitel SIP-DECT Cordless phones		10	50	50	
LAN	Standard SIP terminals		10	50	50	

1. Of which at least 2 are IP system phones
2. Operation on 2 DSI interfaces in each case

Terminal and network interfaces

Table 3.21:Terminal and network interfaces (Sheet 1 of 2)

Max. number...	**Mitel 415**	**Mitel 430**	**AIN with Mitel 430 as Master**
Ethernet interfaces	2	2	per node
Network interfaces, total (FXO, BRI-T, PRI, BRI-Sext.)	4	8	20
Terminal interfaces, total (DSI, FXS, BRI-S)	12	22	50

Table 3.21:Terminal and network interfaces (Continued) (Sheet 2 of 2)

DSI terminal interfaces	10[1]	20[a]	50
Analogue terminal interfaces FXS	10[a]	18[a]	50
BRI-S terminal interfaces	6[a]	12[a]	64
Door intercom (with ODAB card)	1	1	11
Analogue network interfaces FXO	4	8	20
Basic connections, total (BRI-T, PRI, BRI-Sext.)	4	8	20
Primary rate interfaces PRI[2]	2	4	20
SIP access	10	10	10
SIP access channels[3]	16	32	32

1. In maximum expansion network access is possible only via IP
2. 10 B channels per PRI network interface can be used without licence
3. Licences required

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.

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.

NOTE:

- 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 MiAccess https://miaccess.mitel.com/and 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.

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*). 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 MiAccess https://miaccess.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.

  – **Mitel Advanced Intelligent Network**

    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.

User

- *IP User* (licence bundle)

  With this licence bundle, a user 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. The licence bundle is explicitly assigned to a 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, and Mitel One feature for a user.
  - *Standard UCC User*

    This licence bundle contains the licences described in the above section and activates MiCollab functions for the MiCollab role UCC Standard, and Mitel One feature for a user.
  - *Premium UCC User*

    This licence bundle contains the licences described in the above section and activates MiCollab functions for the MiCollab role UCC Premium, and Mitel One feature for a user.

  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 termi-nals 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).

- *MMC Extension*

  With this licence, a mobile phone with the Mitel One application can be integrated into the communication system together.

- *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.

- *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).

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.

  NOTE: In a VoIP environment VoIP channel licences are also required for converting the voice data when using the auto attendant.

- *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 amp; Play Channels* licences. An *Auto Attendant* licence is required to use the auto attendant function.

– In a VoIP environment VoIP channel licences are also required for converting the voice data when using the internal voice mail system.

- *Audio Record amp; 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 amp; Play Channels licences are all acquired for the Master. The number of Audio Record amp; 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

  NOTE: 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 that 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).

  Mitel Advanced Intelligent Network

NOTE: 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

- *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.

NOTE: 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.
- **Mitel Advanced Intelligent Network**

  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).

  NOTE: 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.

  NOTE: 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 *Overview of licences*).

  NOTE: For Virtual Appliance this licence is only relevant to the QSIG networking of an AIN satellite.
- *Base Mitel AIN*

  This licence allows a Mitel Advanced Intelligent Network to be set up and operated with one Master and one satellite.

  NOTE: This licence is not available for Mitel 415.
- *Mitel AIN Satellites*

  An upgrade licence for each additional satellite is required to integrate more than one satellite in an Mitel Advanced Intelligent Network. An existing basic AIN licence has to be in place already.

  NOTE: This licence is not available for Mitel 415.

Applications

- *Advanced Messaging*

  Enables the SMPP protocol to be used for integrating an SMS server and 9d cordless phones to be logged on as system phones (Ascom Wireless Solutions products). User-friendly messaging systems can then be implemented. One licence is required per system/AIN.

  NOTE: This licence is not available for Mitel 415.

- *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*). It cannot be combined with CTI third-party licences.

- *Dialers*

  This licence allows you to use the Mitel Dialer CTI application. The number of licences 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

  Mitel OpenCount 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, in-voicing 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.

- *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.

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.

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 (*Overview of licences*) shows which licences are affected. To ensure longer offline operation, the necessary licences must also be acquired on the satellites.

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 shows which trial licences are available.

Overview of licences

Table 3.22:Overview of licences (Sheet 1 of 10)

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						

Table 3.22:Overview of licences (Continued) (Sheet 2 of 10)

IP User	Licence bundle: 1 additional user 8 phone licences (any type except Mitel One/MOMA/MOWA) 8 phones per user Video licence for all phones	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	yes	–
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.* • 1 MiVoice Office Mitel One client license per user	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	yes	–

Table 3.22:Overview of licences (Continued) (Sheet 3 of 10)

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.* • 1 MiVoice Office Mitel One client license per user.	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	yes	–
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* • 1 MiVoice Office Mitel One client license per user	0	1 additional user per licence.	In the AIN, only on the Master; otherwise per node.	yes	–

Table 3.22:Overview of licences (Continued) (Sheet 4 of 10)

Terminals						
MiVoice 2380 IP Softphones	Number of registered MiVoice 2380 IP IP soft-phones	0	Per licence 1 additional IP softphone	In the AIN, only on the Master; otherwise per node.	yes	yes
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.	yes	yes
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.	yes	yes
MMC Extensions	Number of mobile phones that can be registered with MiVoice Office Mitel One client.	0	Per licence 1 additional mobile phone (with Mitel One)	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	–	yes
Mobile or External Phone Extensions	Number of mobile/external phones that can be registered (without Mitel One)	0	One additional mobile/external phone per licence (without Mitel One)	In the AIN, only on the Master; otherwise per node.	yes	yes

Table 3.22:Overview of licences (Continued) (Sheet 5 of 10)

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.	yes	yes
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.	yes	yes
Audio services						
Conference Bridge(Dial-In Conference)	Use of conference bridge	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	yes
Number in Queue	Use of the function 'queue with announcement '	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	yes	yes
Auto Attendant	Use of the auto attendant function	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	yes	yes

Table 3.22:Overview of licences (Continued) (Sheet 6 of 10)

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.	yes	3
Audio Record amp; 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.	yes	yes
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						

Table 3.22:Overview of licences (Continued) (Sheet 7 of 10)

VoIP Channels for Standard Media Switch[3]	VoIP functionality	0 / 2 [4]	Per licence 1 additional VoIP channel	In the AIN, only on the Master; otherwise per node.	yes	yes
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.	–	–
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.	yes	yes
Private networking						
QSIG Networking Channels[5]	QSIG channels	0	Per licence 4 or n QSIG channels (n limited by the system capacity)	Per node	yes	yes
Base Mitel AIN	Operation of an AIN	Locked	AIN with master and one satellite	Only on the Master	–	–
Mitel AIN Satellites	Additional satellite in an AIN	0	Additional licence for *Base Mitel AIN*. 1 additional satellite per licence	Only on the Master	–	–
Applications						

Table 3.22:Overview of licences (Continued) (Sheet 8 of 10)

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*)	In the AIN, only on the Master; otherwise per node.	–	yes
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.	–	yes
Hospitality Manager	Use of Mitel 400 Hospitality Manager	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	yes
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.	–	yes
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.	–	3

Table 3.22:Overview of licences (Continued) (Sheet 9 of 10)

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.	yes	yes
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.	yes	yes
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.	yes	yes
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.	yes	yes
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.	yes	yes
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.	yes	yes
Interfaces						

Table 3.22:Overview of licences (Continued) (Sheet 10 of 10)

ATAS Interface	Use of the ATAS interface	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	yes
ATASpro Interface	Use of the ATASpro interface	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	yes
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.	yes	yes
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.	yes	yes
OAI Interface	Use of the Open Application Interface	Locked	Enabled	In the AIN, only on the Master; otherwise per node.	–	yes

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*).
2. The licences can also be used if the *Mitel SIP Terminals* licences are missing.
3. 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.
4. If VoIP mode is set to G.711, two G.711 VoIP channels per system can be used without a licence.
5. For Virtual Appliance this licence is only relevant to the QSIG networking of an AIN satellite.

Power supply capacity

The maximum number of terminals connected to the system can be limited by the supply power available for terminals. It is also important to take note of the maximum load per terminal interface.

Supply power available for terminals

The 40 VDC power supply required for the connected terminals is rated for the power requirements of a typical system configuration.

Table 3.23:Power output of the 40 VDC power supply

	Power output of the 40 VDC power supply
Available power output	24 Watt

The number of permissible terminals per system depends on the power requirements of the individual terminals. To check the power requirements refer to *Average power requirements of terminals* for details of the average power requirements of the terminals.

The total power requirements of all connected terminals must not exceed the available power output of the power supply.

NOTE: The actually required power supply depends strongly on the call traffic, the wire diameter and the line length to the connected terminals. The values in the following table are average values under the following assumption:

- Phones traffic volume: Call Connection 38%, Ringing 2%
- SB-4+ radio unit: Active call connection on 2 channels
- SB-8 radio unit: Active call connection on 4 channels
- Background lighting MiVoice 5380: 30% active
- LEDs on terminals and expansion key modules: 20% active
- Wire diameter: 0.5 mm
- Line length: 200 m

The table below shows the average power requirements of the terminals for a line length of approx. 200 m and a wire diameter of 0.5 mm.

Table 3.24:Average power requirements of terminals (Sheet 1 of 2)

Terminals	Socket	Output P [mW]
MiVoice 5360[1]	DSI-AD2 interface	280
MiVoice 5361	DSI-AD2 interface	680
MiVoice 5370	DSI-AD2 interface	680
MiVoice 5380	DSI-AD2 interface	820
MiVoice 5370, MiVoice 5380 with power supply unit	DSI-AD2 interface	0
Expansion key module MiVoice M530	MiVoice 5370	110
Expansion key module MiVoice M530	MiVoice 5380	120

Table 3.24:Average power requirements of terminals (Continued) (Sheet 2 of 2)

Expansion key module MiVoice M535	MiVoice 5370, MiVoice 5380	0 [2]
Radio unit without power supply unit SB-4+	DSI-AD2 interface	1500 [3]
Radio unit without power supply unit SB-8	2 DSI-AD2 interfaces	1350 [4]
Radio unit with power supply unit SB-4+/SB-8	1 or 2 DSI-AD2 interfaces	lt; 100
ISDN terminal	BRI-S interface	approx. 500 [5]
Analogue terminals	FXS interface	approx. 500

1. Although no longer available, the phone is still supported.
2. An MiVoice M535 always requires a power supply unit
3. The value applies to radio units with hardware version "-2". The value for hardware version “-1” is 300 mW lower.
4. The value applies to each interface and to radio units with hardware version “-2”. The value per interface for radio units with hardware version “-1” is 150 mW lower.
5. The value depends greatly on the terminal type.

TIP: With the planning application Mitel CPQ the power supply available for terminals is checked automatically.

Overload shut-down

If the rated power is exceeded the power supply is disconnected. It is restored after approx. 20 s.

If an overload occurs, reduce the required supply power (e.g. by powering DECT radio units and/or system phones locally).

Power supply per terminal interface

The power supply per terminal interface is determined by the interface type. The interface load depends on the following variables:

- Terminals used incl. auxiliary devices
- Bus configuration
- Line length and conductor cross-section

For information on the calculations refer to *Terminal interfaces*.

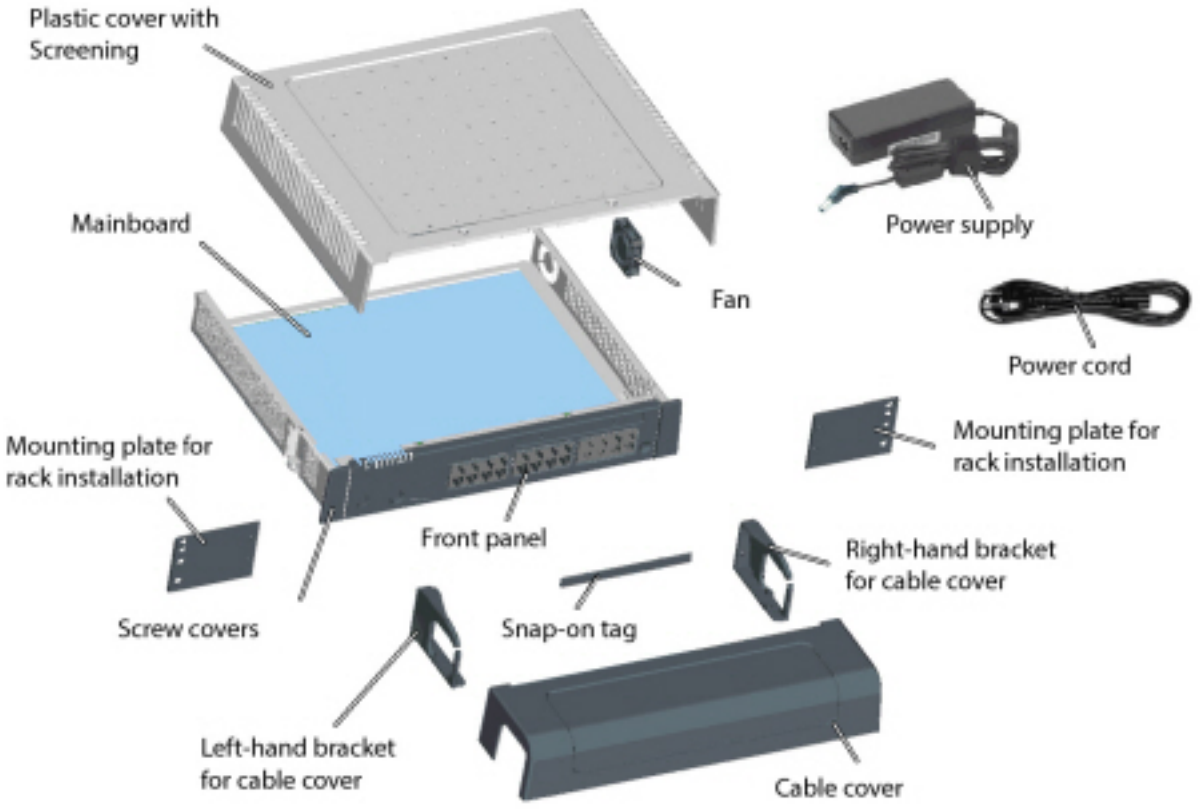
Installation

This Chapter tells you how Mitel 415/430 can be installed and the conditions to be observed. It also includes the mounting into a 19” rack, the correct way to connect the earthing, and the power supply. Other topics described in this chapter comprise fitting with system modules, interface cards and the relevant wiring adapters. Finally the chapter also describes the network and terminal-side connection of the interfaces and the installation, powering and connection of system terminals.

System components

The figure below shows the components of the Mitel 415/430 communication server complete with mounting options.

Figure 4.1: System components with mounting options



Fitting the communication server

The communication server is suitable for both wall and desktop installation as well as for mounting in a 19” rack. Different mounting sets are available in each case.

Equipment supplied

The equipment supplied with the communication server includes:

- Mitel 415 or Mitel 430 communications server
- Set of screws for wall or desktop installation and earthing connection
- Snap-on tag
- Power supply
- Power cord
- Product information

Mounting options

Mitel 415/430 includes all the materials required for wall or desktop installation. Additional rack installation sets are required for a 19” rack installation. These sets for Mitel 415 and Mitel 430 are different.

For wall mounting all the connecting cables can be concealed behind a cable cover. This set can be ordered as an option.

Cable cover set

Equipment supplied:

- Cable cover
- Left-hand bracket for cable cover
- Right-hand bracket for cable cover
- Screw set

Mitel 415 rack-mounting set

Equipment supplied:

- 2 mounting plates for rack installation
- Screw set

Mitel 430 rack-mounting set

Equipment supplied:

- 2 mounting plates for rack installation
- Screw set
- Fan

Location requirements

The following location requirements must be observed when positioning the communication server.

WARNING: Failure to observe the location requirements can cause the communication server to overheat, damaging electrical components and/or the surrounding area.

An event message is generated if the heat dissipation is insufficient. Appropriate measures must be taken immediately to improve the heat dissipation, e.g. by providing the required clearances or lowering the ambient temperature.

For Mitel 430 install the fan from the rack-mounting set.

Table 4.1:Location requirements

Heat radiation	• Do not position in direct sunlight, near radiators or near other heating sources
EMC	• Do not position in strong electromagnetic fields of radiation(e.g.near x-ray equipment, welding equipment or similar).
Heat dissipation	• Do not place any objects on top of the communication server. • Observe the clearance requirements for wall mounting and desktop installation (see *Minimum distances for wall mounting (front panel facing to the right)* and *Minimum distances for wall mounting (front panel facing downwards)*). • In a rack-mounted installation the space to the left and right between the communication server and the wall of the 19” rack must remain empty. • The installation of a fan is also mandatory for the Mitel 430.
Environment	• Ambient temperature 5 °C...45 °C • Relative humidity 30…80%, non-condensing

Safety regulations

Wall mounting

There are two possibilities for wall mounting. In the first variant the front panel faces right (see *Minimum distances for wall mounting (front panel facing to the right)*); in the second, it faces downwards (see *Minimum distances for wall mounting (front panel facing downwards)*). The wall-mounting option chosen will depend on the way the cables are routed. The LED display remains visible whatever the mounting position, even when the cable cover is fitted.

CAUTION: A wall-mounting option in which the front panel faces upwards or to the right is not permitted. Inadequate heat dissipation can damage the communication server.

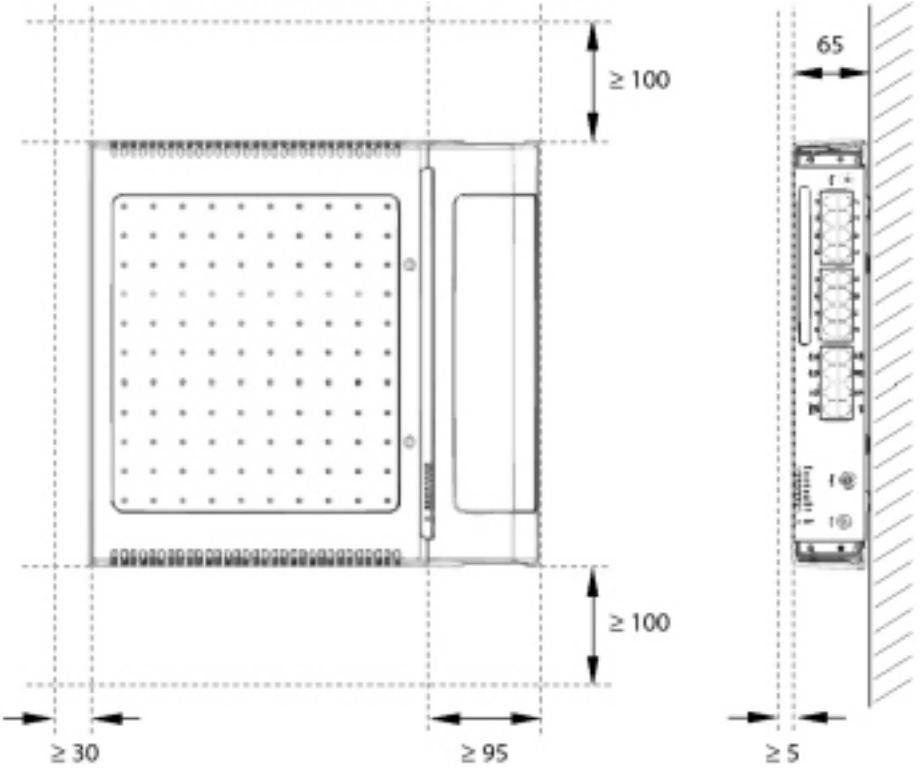
Minimum distances

To ensure adequate heat dissipation, minimum distances need to be maintained with other objects such as cable ducts, cabinets or mobile objects. Maintaining minimum distances also allows the installation of

the cable cover and the possibility of suspending the communication server into and out of the wall-mounted screws.

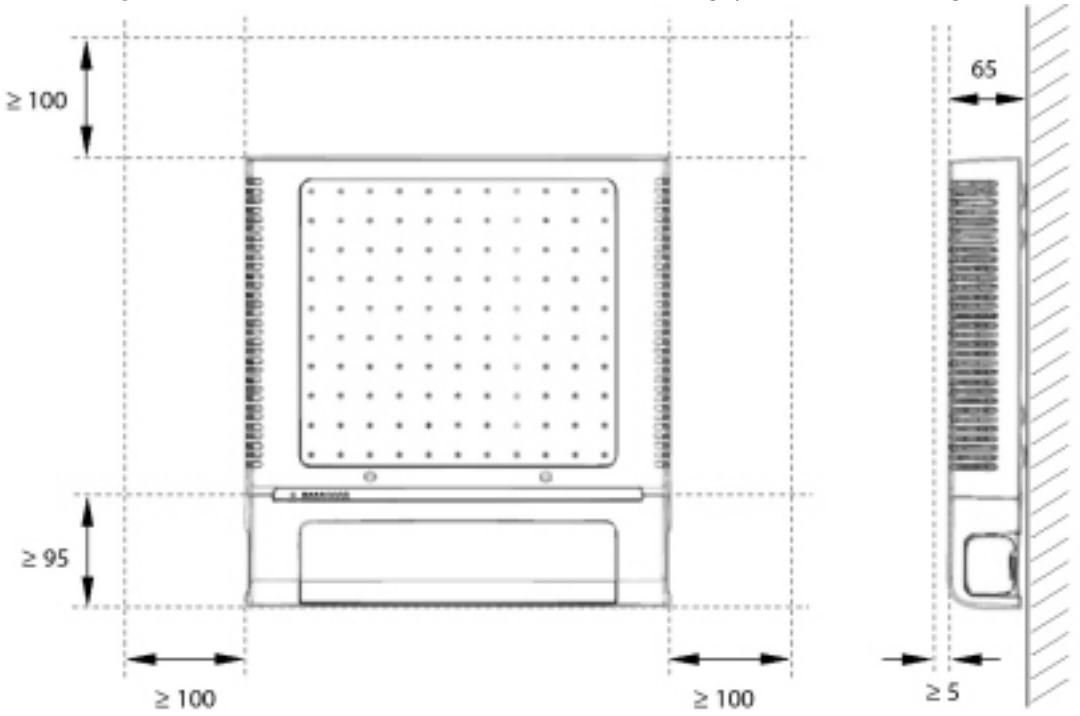
The two diagrams below illustrate the two wall-mounting possibilities.

Figure 4.2: Minimum distances for wall mounting (front panel facing to the right)



All dimensions in mm

Figure 4.3: Minimum distances for wall mounting (front panel facing downwards)

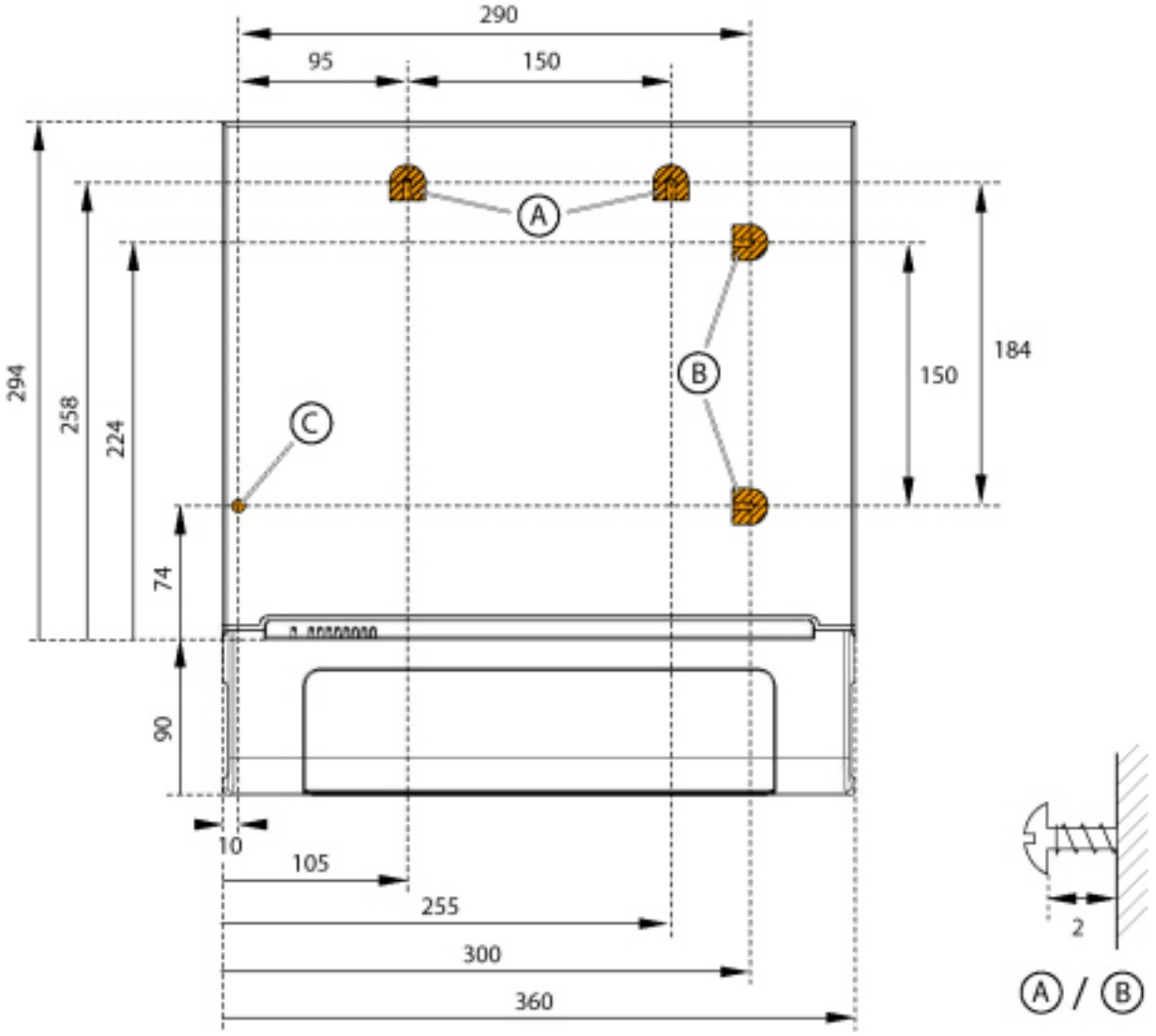


All dimensions in mm

Drilling plan

The communication server is suspended into two pre-mounted wall screws using the suspension points in the housing base. Depending on the type of mounting, these are the suspension points marked under position A or B on the drilling plan. The communication server is secured with a third screw to prevent it from being dislodged accidentally (position C).

Figure 4.4: Drilling plan for wall mounting



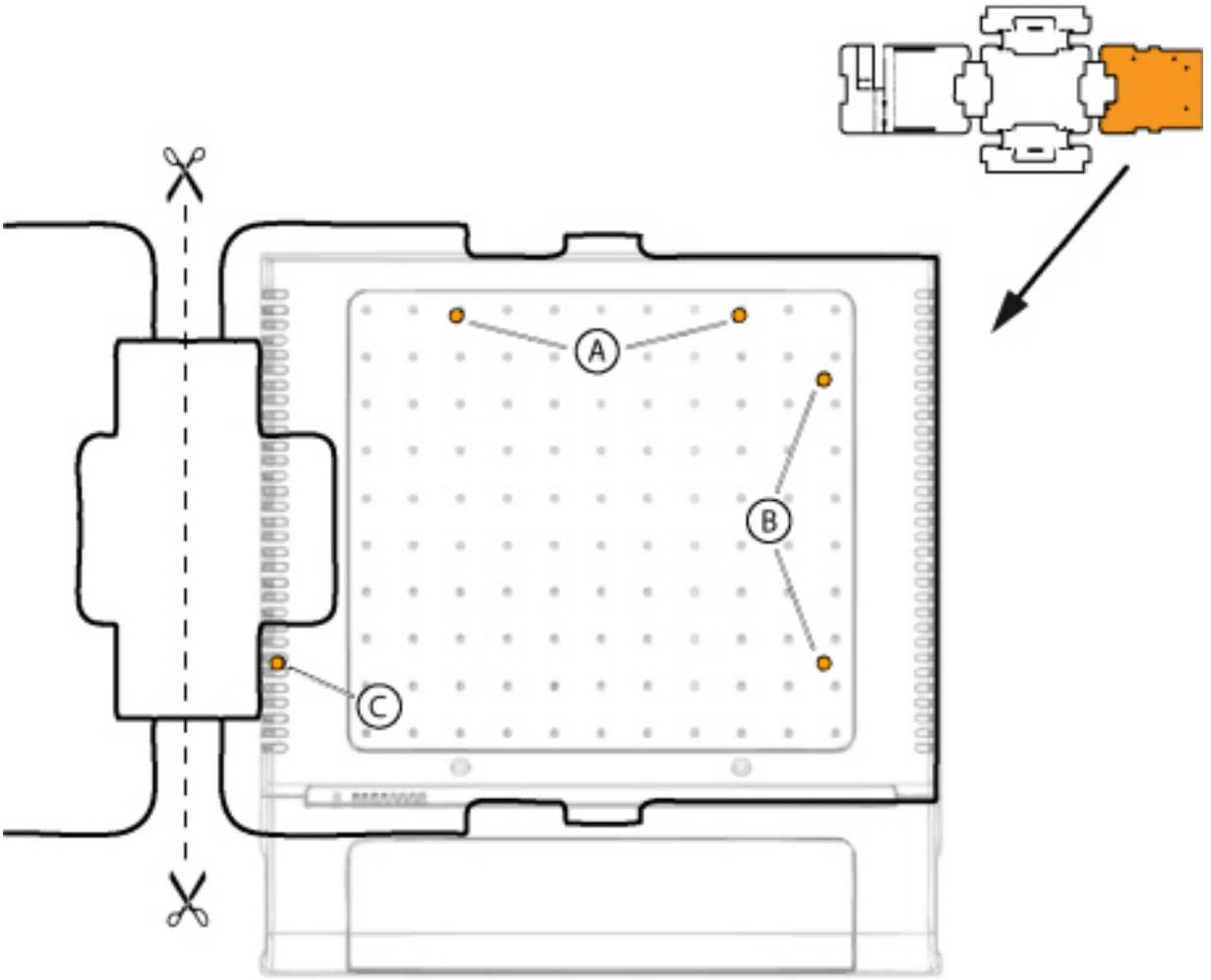
All dimensions in mm

Drilling template

The packaging box of the communication server can also be used for marking out the drill holes. To do so it is best to detach the part of the inner packaging box that contains the drill holes.

NOTE: The holes on the cardboard box are not labelled.

Figure 4.5: Drilling template



Wall-mounting procedure

Materials required:

- Screw set for wall/desktop installation
- 6 mm drill
- Screwdriver

To mount the communication server to the wall, proceed as follows:

1. Using the drill template or the instructions on the drill plan to mark out the three drill holes. Make sure you observe the minimum distances to other objects, walls or ceilings as shown in *Minimum distances for wall mounting (front panel facing to the right)* and *Minimum distances for wall mounting (front panel facing downwards)*.
2. Drill the three dowel holes.
3. Insert the dowel plugs.
4. Screw in the two shorter upper dowel screws (position A or B). Observe the distance between the screw heads and the wall as shown in *Drilling plan for wall mounting*.

5. Shut down the communication server (see *Shut-down Mode*) and disconnect it from the power supply.
6. Remove the housing cover.
7. Connect the earthing (see *Connecting the earthing wire*).
8. Suspend the housing of the communication server onto the screws.
9. To secure the communication server screw in the long lower dowel screw (position C).
10. Fit the housing cover.
11. Secure the snap-on tag to the front panel or to a suitable position on the housing cover. The holes in the housing cover are spaced in such a way that the snap-on tag can be secured both lengthways and crossways.
12. Reconnect the communication server to the power supply.

Desktop installation

To protect the cable connections the communication server can also be secured using three screws. The same drilling plan (see *Drilling plan for wall mounting*) and the same procedure apply as for wall mounting (see *Wall-mounting procedure*).

CAUTION: To ensure adequate heat dissipation make sure that no objects are placed on top of the communication server (see also *Location requirements*). Minimum distances must also be observed as shown in *Minimum distances for wall mounting (front panel facing to the right)*.

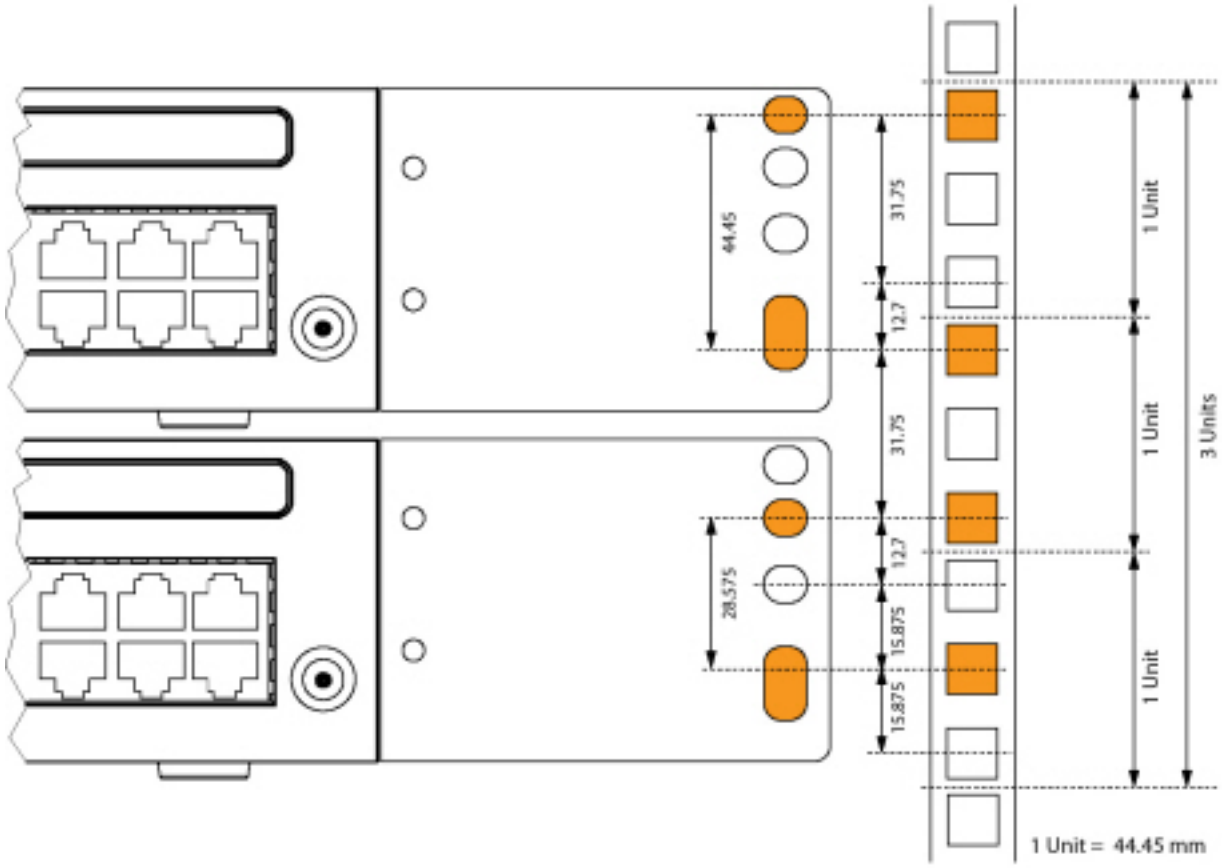
Rack-mounting

The rack-mounting set allows the communication server to be installed horizontally into a 19” rack. Be sure to observe the following:

- The communication server takes up the space of 1.5 height units inside the 19” rack. (1 Unit corresponds to 44.45 mm).
- The holes in the mounting plates allow two communication servers to be placed directly above each other with a space requirement of three units. Different holes in the mounting plates are used for this purpose (see below figure).
- The space on the left and right between the communication server and the panels of the 19” rack is for heat dissipation and must remain clear.
- The installation of a fan is mandatory whenever an Mitel 430 is rack-mounted; the fan is included in the Mitel 430 rack-mounting kit.

  NOTE: The rack-mounting set always includes fastening screws for the fan. On the Mitel 415 these two screws are superfluous.

Figure 4.6: Placing two communication servers above each other inside a 19” rack



Rack-mounting procedure

Materials required:

- Rack-mounting kit
- Screw set for wall/desktop installation
- Screwdriver

To rack-mount a communication server proceed as follows:

1. Pull off the screw covers on the left and right of the front panel.
2. Secure the mounting plates to the communication server using the M4 screws. Make sure the front panel and the mounting plate are aligned.
3. Shut down the communication server (see *Shut-down Mode*) and disconnect it from the power supply.
4. Remove the housing cover.
5. Mitel 430 only:

   Install the fan (see *Installing the fan*).
6. Connect the earthing (see *Connecting the earthing wire*).
7. Fit the housing cover.

8. Secure the cage nuts in the appropriate positions in the rack's fastening rails (see *Placing two communication servers above each other inside a 19" rack*).
9. Secure the communication server to the rack's fastening rails using the M6 screws, the plastic washers and the cage nuts.
10. Fasten the snap-on tag to the front panel.
11. Reconnect the communication server to the power supply.

Installing the fan

Materials required:

- Fan from the Mitel 430 rack-mounting kit
- 2 screws from the Mitel 430 rack-mounting set
- Screwdriver

To install the fan proceed as follows:

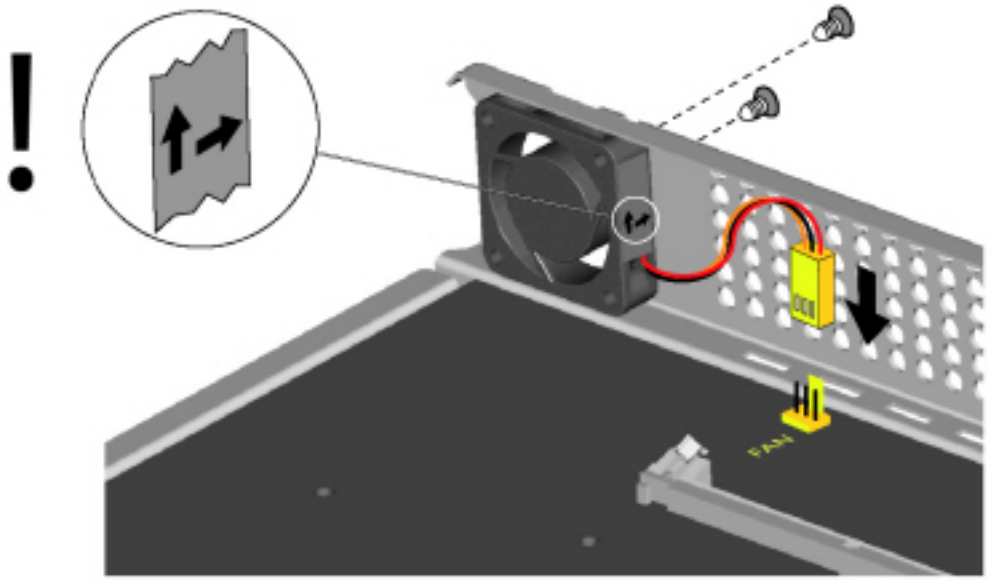
1. Shut down the communication server (see *Shut-down Mode*) and disconnect it from the power supply.

CAUTION: Be sure to observe the *Safety regulations*.

2. Remove the housing cover.
3. Use the two screws to fit the fan to the inside of the housing. Take note of the arrows on the fan. They indicate the direction of rotation and the air flow. The air must flow out of the housing of the communication server (see *Installing the fan in Mitel 430*).
4. Plug the fan connector into the socket marked "FAN" on the mainboard.
5. Fit the housing cover.
6. Reconnect the communication server to the power supply.

NOTE: The fan only turns if required by the equipment temperature.

Figure 4.7: Installing the fan in Mitel 430



Installing the cable cover

Materials required:

- Cable cover set
- Screwdriver

To install the cable cover proceed as follows:

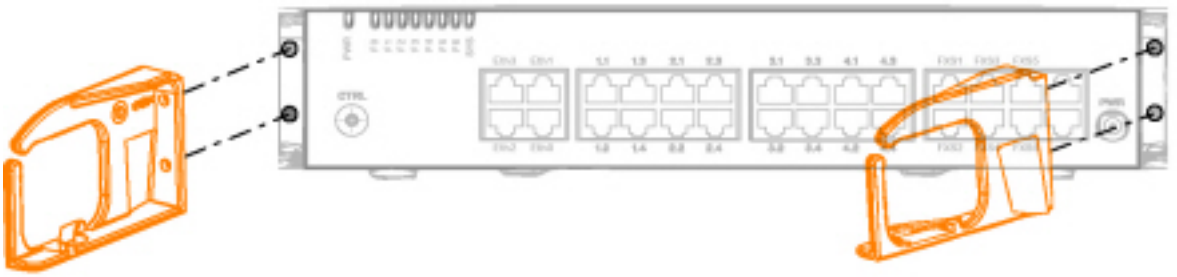
1. Pull off the screw covers on the left and right of the front panel.
2. Use the M4 screws of the cable cover set to secure the brackets for the cable cover to the communication server.

NOTE: The two brackets are not identical. Compare the cable brackets with the ones in *Installing the brackets for the cable cover*.

3. Fit the cable cover over the brackets from above until they are felt to engage.

Figure 4.8: Installing the brackets for the cable cover

Figure 4.9: Installing the brackets for the cable cover



TIP: To remove the cable cover reach into the side openings of the cover, gently press the two (engaged) lugs outwards and remove the cover.

Powering the communication server

The communication server is powered as standard with 230 VAC or 115 VAC. To ensure that its operation is maintained even in the event of a mains outage, an external uninterruptible power supply (UPS) must be used.

115/230 V power supply

The communication server is powered by the supplied power supply unit. The power supply unit is connected to the mains using a two-pin standard power cable.

WARNING: Hazard due to heat generation in the event of short-circuits. The mains power supply connection must be protected with 16 A maximum in countries with 230 V mains power (for instance in Europe), and with 20 A maximum in countries with 115 V mains power (e.g. in North America).

Please also note the following points:

- The mains connector acts as a disconnecting device and must be positioned so that it is easily accessible.
- Only ever use the supplied power supply unit.

Uninterruptible power supply (UPS)

The use of an external uninterruptible power supply (UPS) guarantees operation even in the event of a mains outage.

The UPS battery capacity is rated according to the communication server's primary power requirements and the required bridging time. The table below shows the maximum power requirements of the communication server in its maximum configuration and maximum traffic volume.

Table 4.2:Maximum power requirements of the communication server (Sheet 1 of 2)

Communication server	Maximum power requirements
Mitel 415	100 VA
Mitel 430	150 VA

Table 4.2:Maximum power requirements of the communication server (Continued) (Sheet 2 of 2)

	150 VA

The battery capacity required [Ah] can be calculated using the battery voltage and the maximum bridging time. It is important to note that the battery must never be allowed to become completely discharged and that in typical conditions only approx. 60% of the maximum power requirements is needed.

NOTE: The uninterrupted operation of the communication server is ensured if the UPS takes over the power supply within 20ms of the mains outage.

See also

For more technical details see *Network interfaces*.

Earthing and protecting the communication server

The protective earth and equipotential bonding are important integral parts of the safety concept: Standard EN 60950 relevant to safety matters stipulates protective earthing.

CAUTION: High leakage currents can occur as a result of connecting to the communication network. Establish an earth connection before connecting to the communications network.Disconnect the communication server from the communications network before carrying out maintenance work.

CAUTION: Transient overvoltage can occur on the mains and on the communications network. Protect each line installation leading from the building by using one surge voltage protector per core at the isolating point (main) distribution frame or entry point into the building.

Operation on an IT current distribution system:

The communication server can be operated on an IT power distribution system as per EN/IEC 60950 with voltages of up to 230 VAC.

Connecting the earthing wire

The communication server's earthing connection is located at the front left on the underside and can only be connected once the housing cover has been removed. The earthing wire is secured by a screw, spring washer and serrated lock washer, which are included in the screw set of the communication server. The serrated lock washer must rest against the metal housing of the communication server.

Figure 4.10: Earthing connection

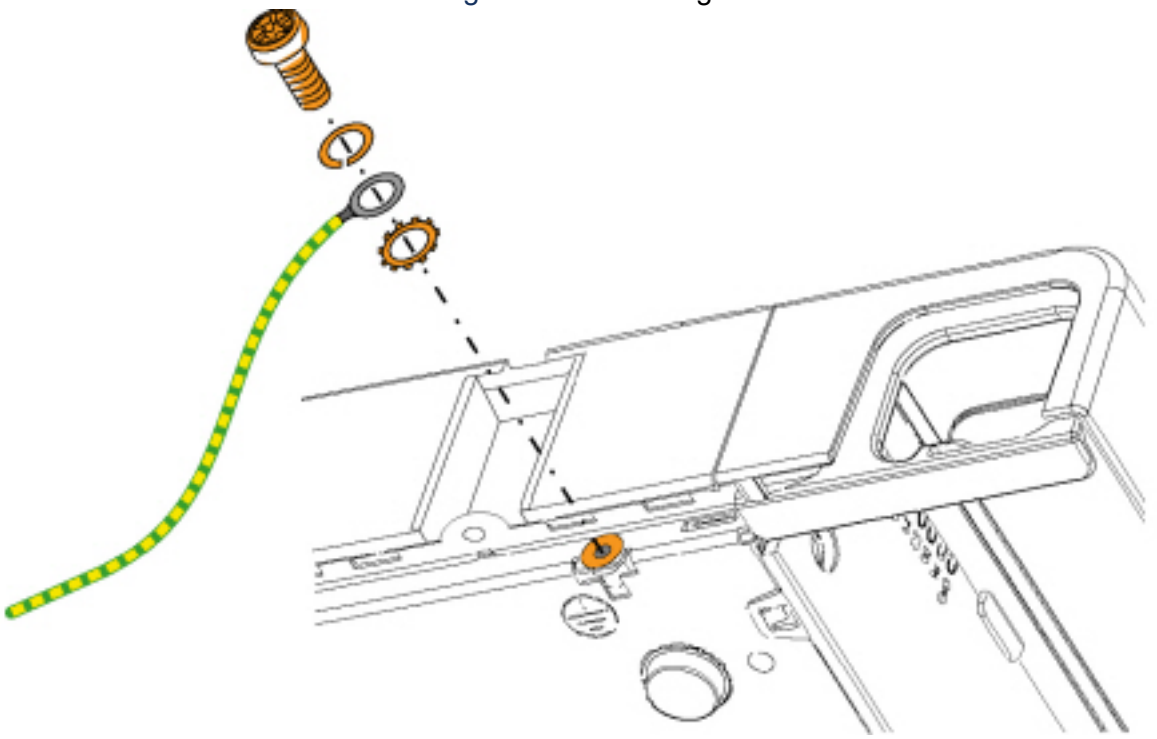
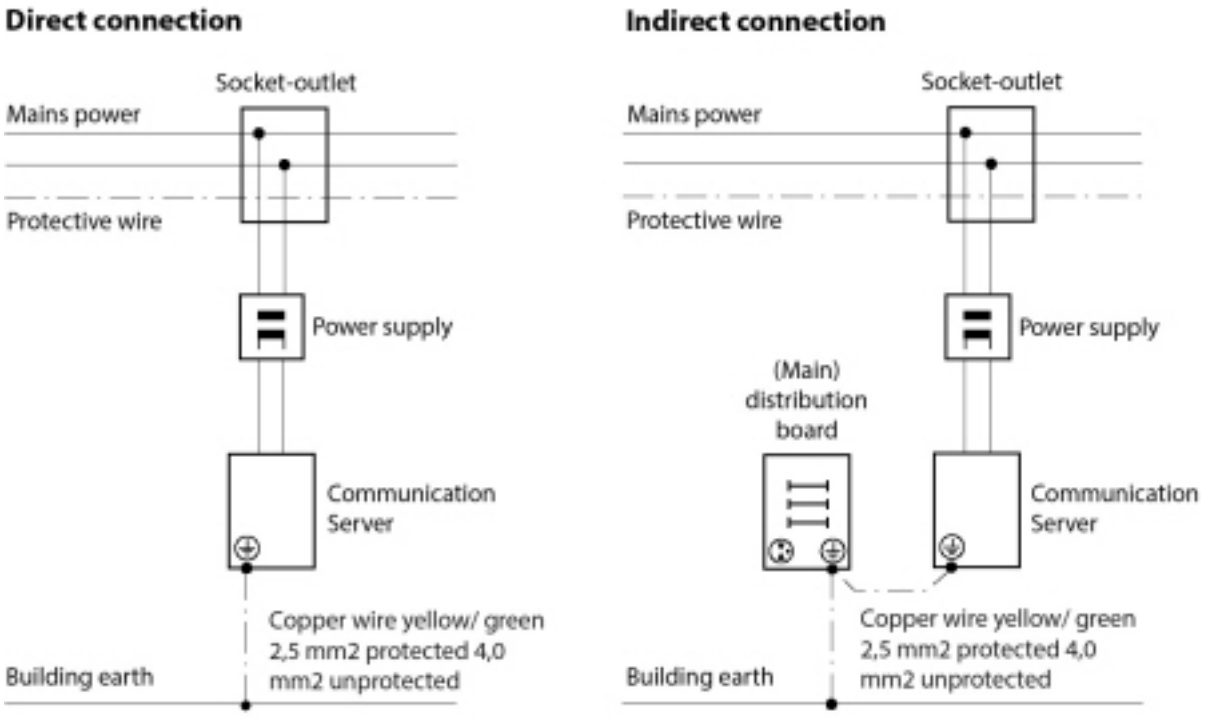


Figure 4.11: Earthing of the communication server in the case of an indirect cabling and direct cabling



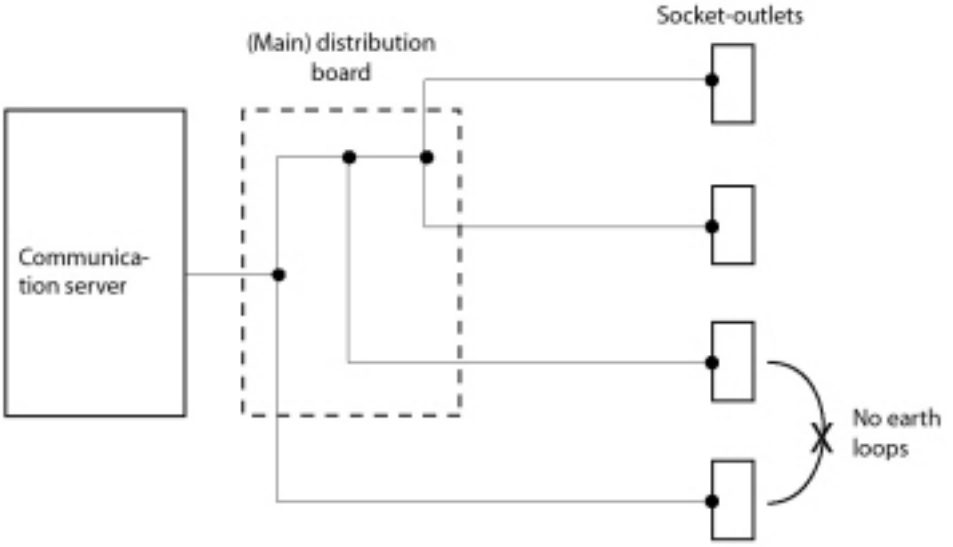
NOTE: In the case of an indirection connection make sure that the communication server's earthing wire does not form any earth loops with the earthed cable screenings of the installation cables leading up to the (main) distribution frame. The cables should be kept as short as possible and laid out in parallel.

Connecting the cable screening

When using shielded installation cables also use shielded RJ45 connectors. In this way the shielding of the installation cables is automatically connected with the housing of the communication server and therefore with the building earth.

NOTE: Connect the cable screens to one another at the splitting point only. Observe the tree structure principle to prevent earth loops.

Figure 4.12: Tree structure principle



Equipping the Basic System

For an individual expansion the basic system can be equipped with interface cards, the appropriate wiring adapters and system modules. An overview can be found in the Chapter*Expansion Stages and System Capacity*.

Fitting an interface card

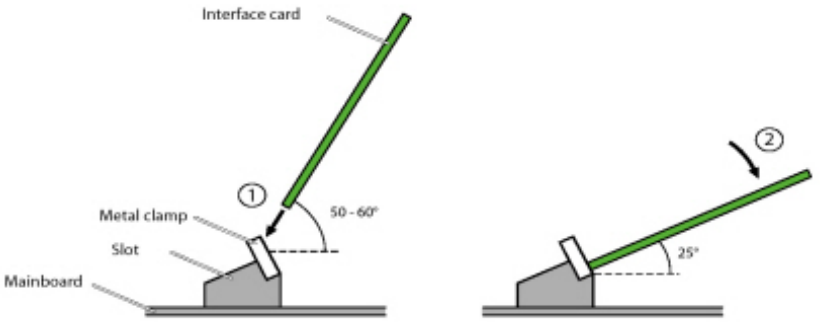
Interface cards are fitted to slots IC1…IC4. IC3 and IC4 can be found only on the Mitel 430 (see *Mainboard interfaces, display and control elements and front panel*).

CAUTION: Be sure to observe the *Safety regulations*.

1. Shut down the communication server (see *Shut-down Mode*) and disconnect it from the power supply.
2. Remove the housing cover.
3. Place the interface card at a slight angle into the required slot (see *Fitting an interface card*). Make sure the angled side of the interface card is facing backwards (i.e. it must not project over the wiring adapter slots).
4. Carefully press the interface card downwards until the two lateral metal clamps engage.

5. Fit the corresponding wiring adapter (see *Fitting a wiring adapter*) into the appropriate wiring adapter slot WA1…WA4.
6. Fit the housing cover.
7. Reconnect the communication server to the power supply.

Figure 4.13: Fitting an interface card



NOTE:

– The ODAB options card must be fitted to slot IC2 (Mitel 415) or slot IC4 (Mitel 430) if it is to be used for connecting a door intercom (see *Equipment on the ODAB options card*).
– The interface cards EAD4V and EAD4C cannot be fitted to slot IC4 of an Mitel 430 due to their mechanical dimensions.

Fitting a wiring adapter

Wiring adapters are used to route the interfaces of the interface cards to the RJ45 sockets on the front panel and are fitted to slots WA1…WA4. The WA0 slot is never equipped. Slots WA3 and WA4 are to be found only on the Mitel 430 (see also *Mainboard interfaces, display and control elements and front panel*).

The table below provides an overview of the combinations of wiring adapters and interface cards. Unless specified otherwise, the corresponding wiring adapter is included in the equipment supplied with each interface card.

Table 4.3:Combinations of wiring adapters / interface cards (Sheet 1 of 2)

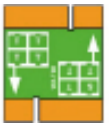
Wiring adapter	Interface card	Plug-in orientation	Port number			
			X.1	X.2	X.3	X.4
WA-TS0 	TIC-4TS	TTTT	T	T	T	T
	TIC-4TS	STTT	S	T	T	T
	TIC-2TS	TTTT	T	T	–	–
	TIC-2TS	STTT	S	T	–	–
	ESST[12]	STTT	S	T	–	–

Table 4.3:Combinations of wiring adapters / interface cards (Continued) (Sheet 2 of 2)

WA-TS1 	TIC-4TS[a]	SSTT	S	S	T	T
	TIC-4TS[a]	SSST	S	S	S	T
	TIC-2TS[a]	SSTT	S	S	–	–
	TIC-2TS[a]	SSST	S	S	–	–
	ESST[a2)]	SSTT	S	S	–	–
	ESST[1)2)]	SSST	S	S	–	–
	ODAB	SSTT	I/O 1,2	I/O 3,4	ab/Door Intercom	–
WA-2W 	ETAB4[3]	–	FXS	FXS	FXS	FXS
	EADP4[c]	–	DSI	DSI	DSI	DSI
	EAD4C[a]	–	DSI	DSI	DSI	DSI
	EAD4V[a]	–	DSI	DSI	DSI	DSI
	EAAB2[a]	–	–	–	FXO	FXO
	TIC-4AB	–	FXO	FXO	FXO	FXO
	TIC-2AB	–	FXO	FXO	–	–
WA-1PRI 	TIC-1PRI	–	PRI	Test [4]	–	–

1. The wiring adapter is not part of the equipment supplied with this interface card and must be ordered separately.
2. On the ESST terminal card the jumper must always be fitted in position T (see).
3. The wiring adapter is only part of the equipment supplied with order variant Mitel 415/430.
4. For test purposes the PRI interface is also routed in parallel to port X.2.

Fitting DSP modules

DSP modules belong to the category of system modules and are fitted to the SM1 slot (see *Mainboard interfaces, display and control elements and front panel*). Three DSP modules are stackable.

CAUTION: Be sure to observe the *Safety regulations*.

1. Shut down the communication server (see *Shut-down Mode*) and disconnect it from the power supply.
2. Shut down the communication server (see *Shut-down mode*) and disconnect it from the power supply.
3. Remove the housing cover.
4. Remove the fastening screw from the DSP module slot.
5. Instead of the fastening screw, screw in the spacer sleeve enclosed with the module.
6. Place the module on the DSP slot (or onto a module already fitted in that slot) and press down evenly on both connectors as far as the stop.
7. Secure the module with the fastening screw.
8. Fit the housing cover.
9. Reconnect the communication server to the power supply.

Component mounting rules

The component mounting rules mentioned in the previous chapters are listed here in an overview:

- In principle the interface cards can be used in all the card slots.

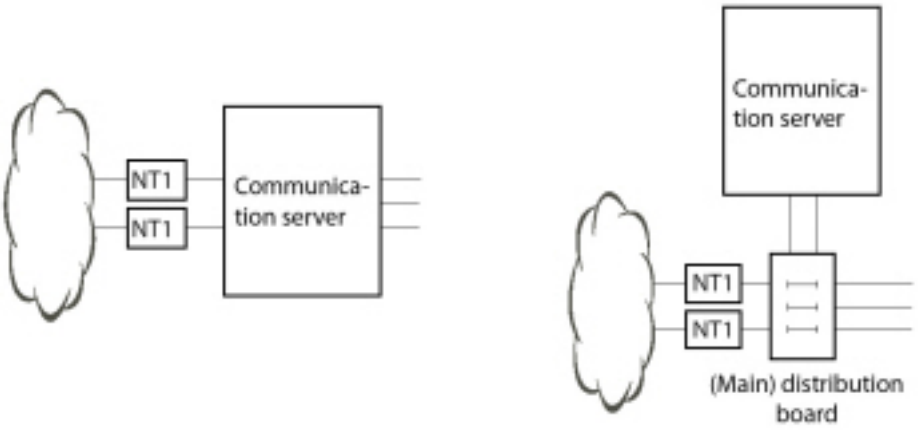
  Exceptions:
  - The interface cards EAD4V and EAD4C cannot be fitted to slot IC4 of an Mitel 430 due to their mechanical dimensions.
  - If the ODAB options card is used to connect a door intercom, it must be fitted to slot IC2 (Mitel 415) or slot IC4 (Mitel 430).
  - If the ODAB options card is used to control switch group positions and external devices, it must be fitted to slot IC1 (Mitel 415) or slot IC1, 2 or 3 (Mitel 430).
- DSP modules are stackable and must always be fitted to slot SM1. Slot SM2 on the Mitel 430 communication server is not supported.
- On the ESST terminal card the jumper must always be fitted in position T (see).
- The interfaces are enabled sequentially when the communication server is started up. The following rules apply:
  - The number of interfaces actually enabled is determined in each case by the system capacity (see *System capacity*). If a limit value is reached, all the interface cards or all the interfaces of the last card may not be enabled.
  - The interfaces are enabled in accordance with their designation, starting with the lower designations. This means that the terminal interfaces on the mainboard are always enabled before those on the interface cards.

Connecting the communication server

There are two possibilities for connection to the telephone network and the terminal-side cabling:

- Direct connection
- Indirect cabling via (main) distribution frame and any universal building cable installation (UBC) (see also *Connecting to a UBC via a (main) distribution board (example)* and *Connecting to a UBC via wiring centre (example)*).

Figure 4.14: Direct cabling (left) and indirect cabling (right)



On the front panel all the connections are made using RJ45 connectors.

Direct connection

Standard commercial cables are used to connect directly to the telephone network. Details can be found in the Chapter *Network interfaces*.

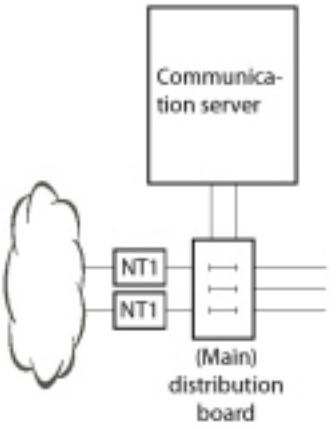
Indirect connection

There are two possibilities for connecting the communication server indirectly to the telephone network and terminal-side cabling:

- Connection via main distribution board
- Connection to a universal building cable installation (UBC)

Connection via main distribution board

Figure 4.15: Connection via main distribution board



The interface sockets on the front panel are connected with the (main) distribution frame or the patch panels using either patch cables or prefabricated system cables (see *Equipment Overview*).

Prefabricated system cable 12 x RJ45[1]

The cable is 6 m long and, at one extremity, has 12 RJ45 connectors for the interfaces on the front panel. Two of them have 4 cores; the others, 2 cores. This means the cable is suitable for connecting the following interfaces:

- 2 network interfaces BRI-T or 2 terminal interfaces BRI-S or a combination thereof.
- 10 terminal interfaces (DSI, FXS) or a combination thereof.

NOTE:

– This cable cannot be used to connect PRI and Ethernet interfaces (see also *Connection of PRI primary rate interface* and *Connection of Ethernet interfaces*).

– It is not possible to connect an ODAB door intercom interface with only one cable (see also *Connection of a door intercom (TFE)*).

TIP: Use standard commercial connecting cables not just for the PRI and Ethernet interfaces but also for connecting the BRI-T interfaces.

Table 4.4:Schematic diagram of prefabricated system cable 12 x RJ45 (Sheet 1 of 2)

Stranded element	Core colour	Cable designation	RJ45	Signal	
			Pin	Connection four-wire	Two-wire connection
1	white	1	4	f	a
	blue		5	e	b
	turquoise		6	d	–
	violet		3	c	–

1. Not valid for USA/Canada.

Table 4.4:Schematic diagram of prefabricated system cable 12 x RJ45 (Continued) (Sheet 2 of 2)

2	white	2	4	f	a
	orange		5	e	b
	turquoise		6	d	–
	violet		3	c	–
3	white	3	4	–	a
	green		5	–	b
	turquoise	4	4	–	a
	violet		5	–	b
4	white	5	4	–	a
	brown		5	–	b
	turquoise	6.	4	–	a
	violet		5	–	b
5	white	7	4	–	a
	grey		5	–	b
	turquoise	8	4	–	a
	violet		5	–	b
6	red	9.	4	–	a
	blue		5	–	b
	turquoise	10	4	–	a
	violet		5	–	b
7	red	11	4	–	a
	orange		5	–	b
	turquoise	12	4	–	a
	violet		5	–	b

Connection to a universal building cable installation (UBC)

Figure 4.16: Connecting to a UBC via a (main) distribution board (example)

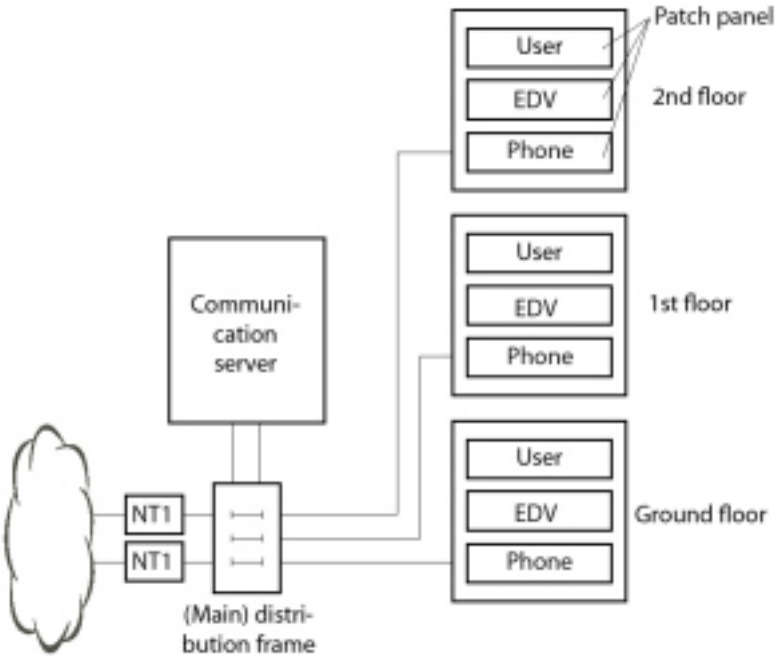
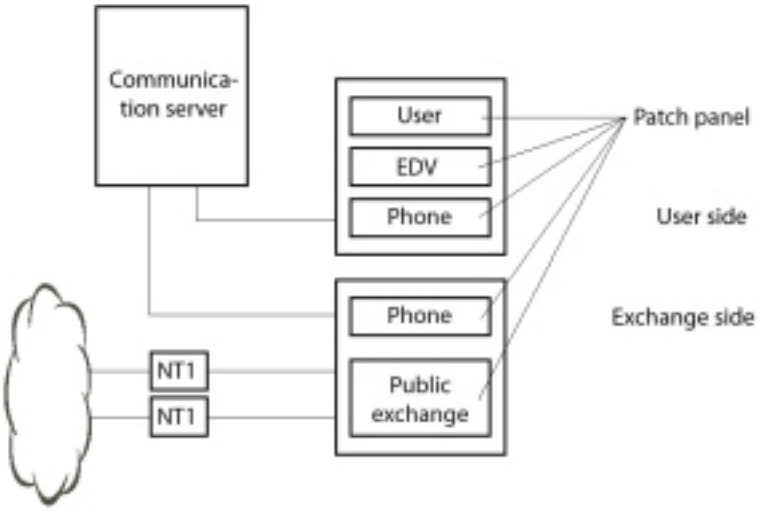


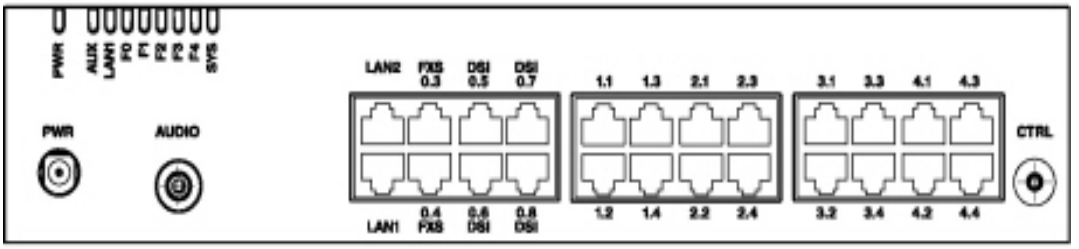
Figure 4.17: Connecting to a UBC via wiring centre (example)



Cabling interfaces

All the interfaces are routed to the front panel and are therefore accessible without opening the communication server.

Figure 4.18: Interfaces on the front panel with port designation (Mitel 430)



Port addressing

A port address is always of the type x.y. (x is the number of the card slot, and y, the port number.)

The slot numbering begins with 0 (=mainboard) and ends with 2 (for Mitel 415) or 4 (for Mitel 430).

With BRI-S interface and DSI interface addresses, the terminal selection digit (TSD) is relevant, in addition to the slot and port numbers. This is always -1 in analogue terminal interfaces.

Table 4.5:Examples of interface addressing

Slot	Port address
Mainboard; DSI interface x.5	0.5
Interface card on slot IC1; interface x.3	1.3
Terminal with TSD2 on interface card in IC3; interface x.4	3.4-2

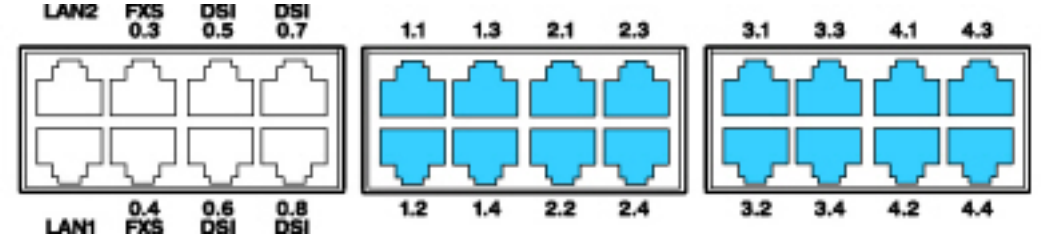
Network interfaces

Equipping the system with interface cards provides the necessary network interfaces. With the exception of the Ethernet interface, which also represents a network interface via SIP access, there are no network interfaces on the Mitel 415/430 mainboard.

Basic rate interface BRI-T

With the appropriate interface cards and wiring adapters, BRI network interfaces can be made available at RJ45 sockets 1.x...4.x (for Mitel 415 1.x and 2.x only). The possible RJ45 sockets are highlighted in colour in the figure below.

Figure 4.19: Connection possibilities for BRI network interfaces



NOTE:

- The interfaces can be configured on BRI-S using the wiring adapters (see *Fitting a wiring adapter*).
- The maximum number of interfaces per communication server has to be taken into account (see *Terminal and network interfaces*).
- Circuit type as per EN/IEC 60950: SELV

The connection from the front panel to the NT1 (Network Termination) is via standard commercial straight patch cables with 8-pin RJ45 connectors on both sides. With the appropriate tools you can also create your own cables.

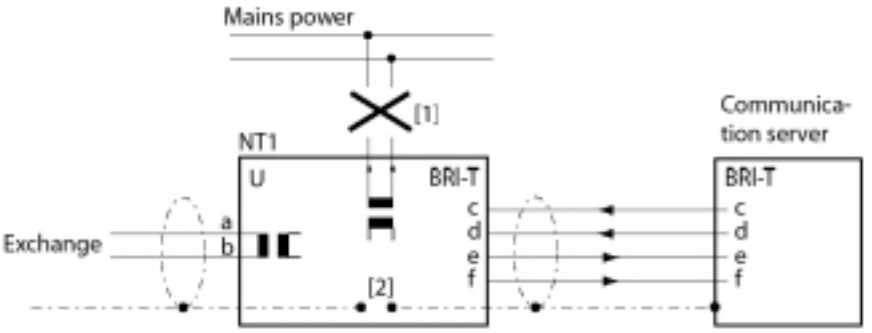
Cable Requirements

Table 4.6:Cable requirements for basic rate interface BRI-T

Core pairs X cores	1 X 4 o 2 X 2
Stranded	yes
Wire diameter, core	0.4…0.6 mm
Screening	recommended
Characteristic impedance	lt; 125 W (100 kHz), lt; 115 W (1 MHz)
Wave attenuation	lt; 6 dB/km (100 kHz), lt; 26 dB/km (1 MHz)
Near/crosstalk attenuation	> 54 dB/100 m (1 kHz to 1 MHz)

BRI basic rate interface network-side

Figure 4.20: Basic access on NT1



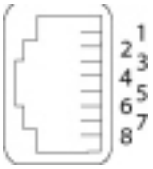
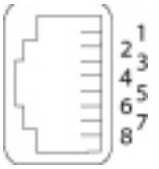
1. Do not connect power supply NT1
2. Do not fit the jumper

The assignment of the RJ45 connector is identical on the NT-side and on the side of the communication server.

Table 4.7:Wiring of the BRI basic rate interface network-side (Sheet 1 of 2)

NT1	**Cable coresStraight patch cable**	**Communication server**

Table 4.7:Wiring of the BRI basic rate interface network-side (Continued) (Sheet 2 of 2)

Socket	Pin	BRI-T signal		BRI-T signal	Pin	Socket
	1	–		–	1	
	2	–		–	2	
	3	c	←	c	3	
	4	f	→	f	4	
	5	e	→	e	5	
	6	d	←	d	6	
	7	–		–	7	
	8	–		–	8	

Basic access in the private leased-line network

Figure 4.21: BRI-S basic rate interface external, networked with copper line

Table 4.8:Connection of BRI-S basic rate interface external, networked with copper line

PINX 1 signal Basic access BRI-S ext.	Cable cores	PINX 2 signal, Basic rate interface BRI-T
c	←	c
f	→	f
e	→	e
d	←	d

Bus configuration

BRI-S ext. is subject to the conditions that apply to terminal interface BRI-S (see *BRI-S terminal interfaces*).

Figure 4.22: Basic rate interface BRI-T, networked with leased-line or dial-up connection

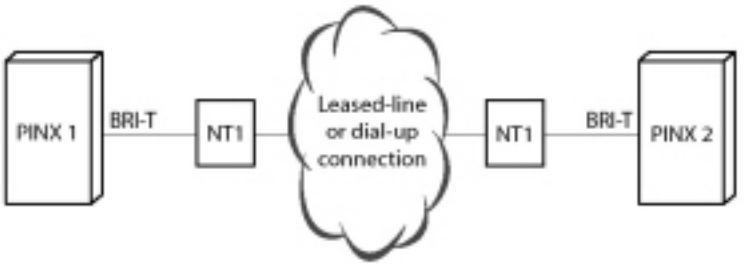


Table 4.9:Cabling for basic rate interface BRI-T, networked with leased-line or dial-up connection

PINX1 signal, basic rate interface BRI-T	Cable cores	NT1	Network	NT1	Cable cores	PINX 2 signal, basic rate interface BRI-T
c	→	c		c	←	c
f	←	f		f	→	f
e	←	e		e	→	e
d	→	d		d	←	d

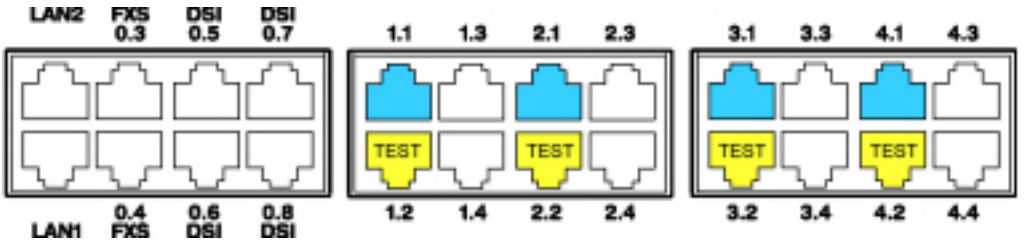
See also

Chapter "Connections with basic accesses" in the PISN/QSIG Networking System Manual.

Primary rate interface PRI

With the appropriate interface cards and wiring adapters, PRI network interfaces can be made available at RJ45 sockets 1.1, 2.1, 3.1 and 4.1 (Mitel 415 only 1.1, 2.1). For test purposes the PRI interface is also routed in parallel to ports x.2. The possible RJ45 sockets are highlighted in colour in the figure below.

Figure 4.23: Connection possibilities for PRI network interfaces



NOTE:

- In normal operation the x.2 test socket must not be connected; otherwise faults may occur.
- Circuit type as per EN/IEC 60950: SELV

Cable Requirements

The connection to NT1 (Network Termination) is implemented using commercially available screened cables with 8-pin RJ45 connectors at both ends, e.g. S-FTP 4P, PVC, Cat. 5e.

Table 4.10:Cable requirements for the primary rate interface)

Core pairs ´ cores Stranded Wire diameter, core Screening	2 ´ 2 (short distances also 1 ´ 4) yes 0.4...0.6 mm yes
Characteristic impedance Wave attenuation Near/crosstalk attenuation	90 to 130 W (1 MHz) lt; 6 dB/km (100 kHz), lt; 26 dB/km (1 MHz) > 54 dB/100 m (1 kHz to 1 MHz)

PRI primary rate interface, network-side

Figure 4.24: PRI primary rate interface on NT1

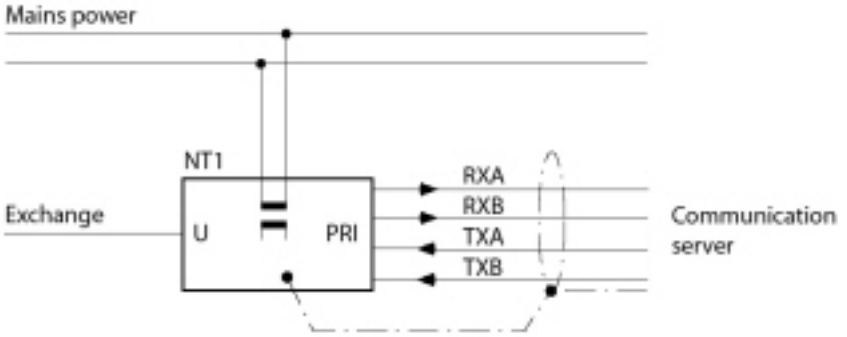
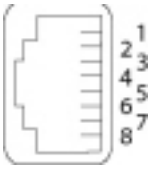
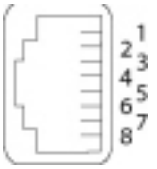


Table 4.11:Connection of PRI primary rate interface (Sheet 1 of 2)

NT1			**Cable coresStraight patch cable**	**Communication server**		
Socket	**Pin**	**PRI signal**[1]		**PRI signal**	**Pin**	**Socket**

Table 4.11:Connection of PRI primary rate interface (Continued) (Sheet 2 of 2)

	1	TxA		RxA	1	
	2	TxB		RxB	2	
	3	–		–	3	
	4	RxA		TxA	4	
	5	RxB		TxB	5	
	6	–		–	6	
	7	–		–	7	
	8	–		–	8	

1. Other designations are also possible on the NT1 such as: "S2m ab" instead of "TxA/TxB" and "S2m an" in-stead of "RxA/RxB".

Primary rate access in the private leased-line network

Figure 4.25: Primary rate access, networked with copper line

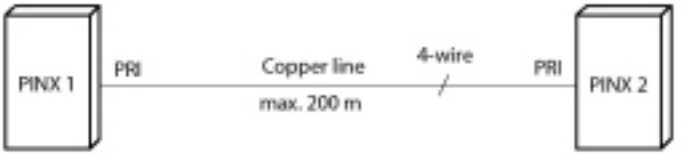


Table 4.12:Cabling for primary rate access PRI, networked with copper line (Sheet 1 of 2)

RJ45Pin	PRI PINX 1 signal	Cable coresCrossed patch cable	PRI PINX 2 signal	RJ45Pin

Table 4.12:Cabling for primary rate access PRI, networked with copper line (Continued) (Sheet 2 of 2)

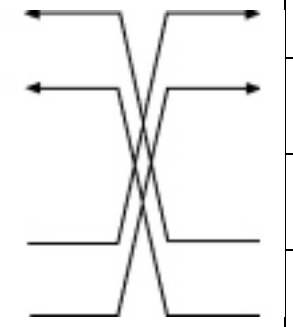
1	RxA		RxA	1
2	RxB		RxB	2
3	—		—	3
4	TxA		TxA	4
5	TxB		TxB	5
6	—		—	6
7	—		—	7
8	—		—	8

Figure 4.26: Primary rate interface, networked with transmission equipment

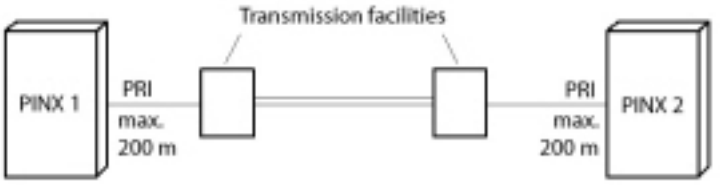


Table 4.13:Cabling for primary rate access PRI, networked with transmission equipment (Sheet 1 of 2)

RJ45Pin	PRI PINX 1 signal	Cable cores, straight patch cable	Transmission equipment signal		Transmission equipment signal	Cable coresStraight patch cable	PRI PINX 2 signal	RJ45Pin

Table 4.13:Cabling for primary rate access PRI, networked with transmission equipment (Continued) (Sheet 2 of

1	RxA		RxA		RxA		RxA	1
2	RxB		RxB		RxB		RxB	2
3	—						—	3
4	TxA		TxA		TxA		TxA	4
5	TxB		TxB		TxB		TxB	5
6	—						—	6
7	—						—	7
8	—						—	8

Figure 4.27: Primary rate access PRI, networked with leased-line or dial-up connection

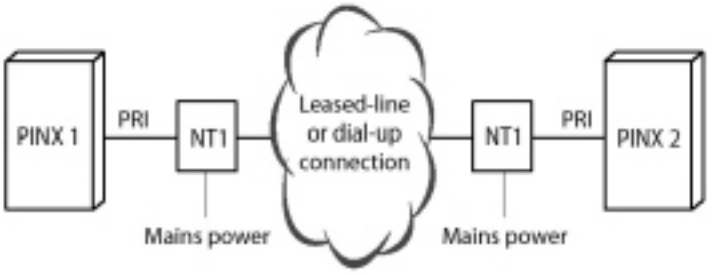


Table 4.14:Cabling for primary rate interface, PRI, networked with leased-line or dial-up connection (Sheet 1 of 2)

RJ45Pin	PRI PINX 1 signal	Cable cores, straight patch cable	PRI signalNT1	Network	PRI signalNT1	Cable coresStraight patch cable	PRI PINX 2 signal	RJ45Pin

Table 4.14: Cabling for primary rate interface, PRI, networked with leased-line or dial-up connection (Continued) (Sheet 2 of 2)

1	RxA		RxA		RxA		RxA	1
2	RxB		RxB		RxB		RxB	2
3	—						—	3
4	TxA		TxA		TxA		TxA	4
5	TxB		TxB		TxB		TxB	5
6	—						—	6
7	—						—	7
8	—						—	8

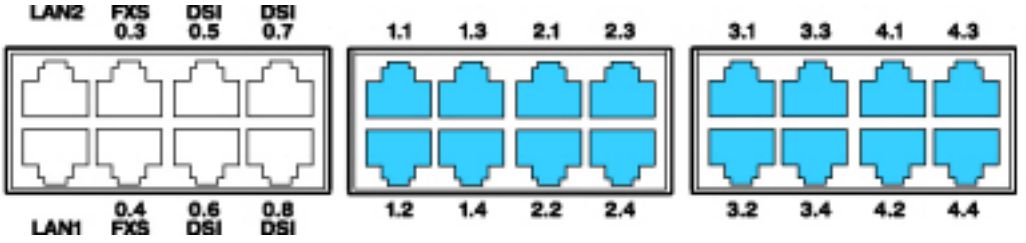
See also:

System Manual “PISN / QSIG Networking”

FXO network interfaces

With the appropriate interface cards and wiring adapters, FXO network interfaces can be made available at RJ45 sockets 1.x...4.x (for Mitel 415 only 1.x and 2.x) The possible RJ45 sockets are highlighted in colour in the figure below. The maximum number of interfaces per communication server has to be taken into account (see *Terminal and network interfaces*).

Figure 4.28: Connection possibilities for FXO network interfaces



On cards with 16 interfaces RJ45 sockets 9 to 16 are multiply assigned. The signals can be split again to individual RJ45 sockets using patch cables and the fan-out panel FOP (see *Fan-out panel FOP*) or with 8-fold assigned connecting cables (see e.g. *Prefabricated system cable 4 x RJ45*).

Multiply assigned RJ45 sockets are colour-coded in blue.

One call charge module can be fitted to each FXO card if required (see *Fitting call charge modules*).

In a direct connection the RJ45 connector is connected directly to the trunk cable using a crimp clip.

With an indirection connection you need to observe the cable requirements.

NOTE: Circuit type as per EN/IEC 60950: TNV-3

NOTE:

- Inadmissibly high temperatures can occur on the FXO card when connecting to local exchanges generating a very high loop current (up to 90mA). If so, the PCB temperature monitoring deactivates the FXO ports in groups of 4 ports. If the temperature then drops, the FXO ports are automatically reactivated group by group. This behaviour can occur particularly when the ambient temperature is higher than normal and/or with a system with maximum configuration. Normally local exchanges produce a loop current of approx. 25 mA, which does not cause any restrictions.
- Circuit type as per EN/IEC 60950: TNV-3

Connection

Assignment of the RJ45 sockets on the front panel:

Table 4.15:Connection FXO network interface

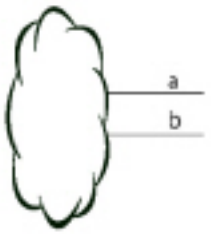
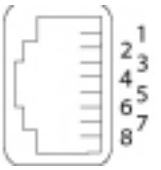
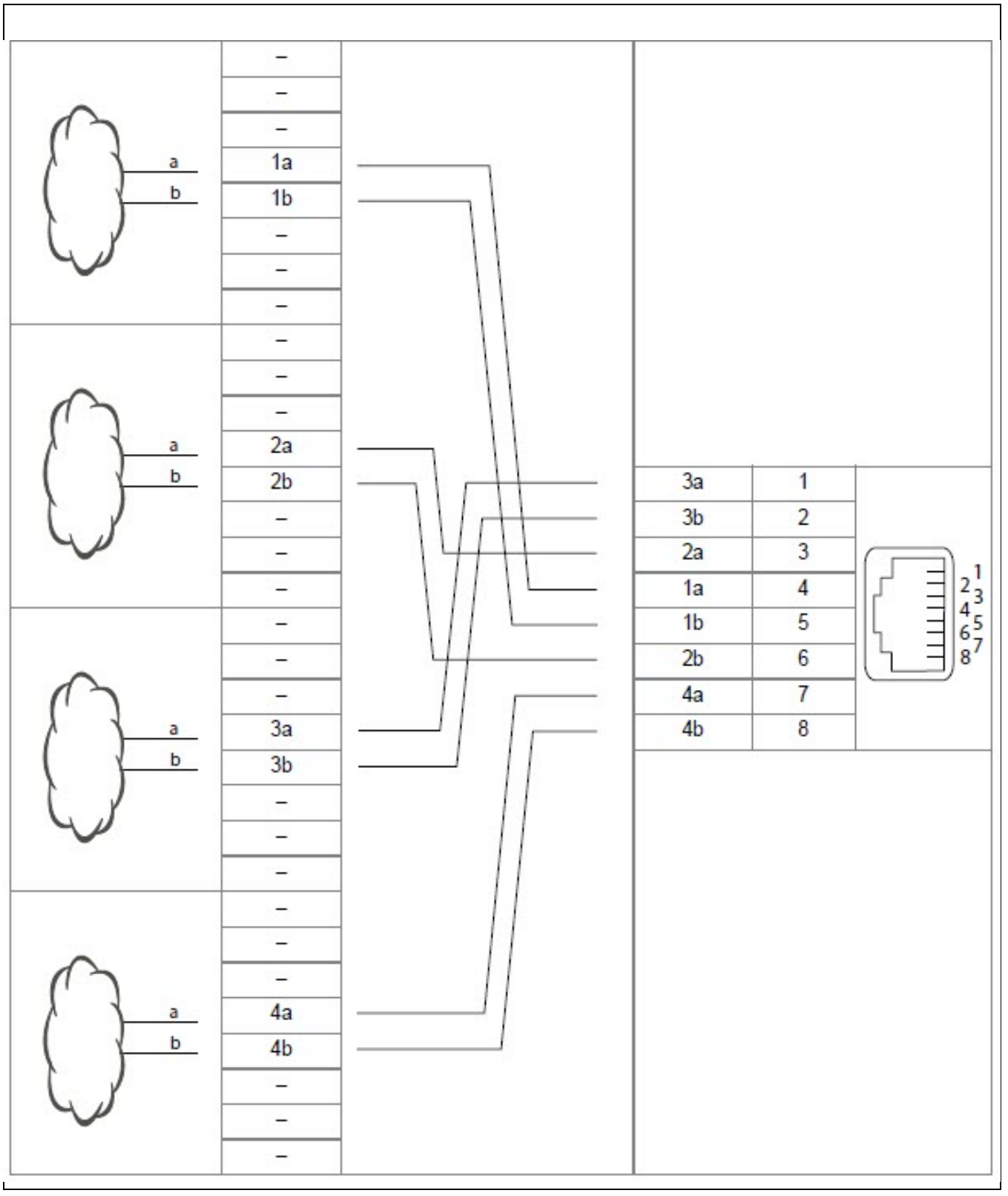
Public analogue network	**Communication server**		
	FXO signal	**Pin**	**Socket**
	–	1	
	–	2	
	–	3	
	a	4	
	b	5	
	–	6	
	–	7	
	–	8	

Table 4.16:Connection of four-fold assigned FXO network interface (Sheet 1 of 2)

Public analogue network		**Splitting with fan-out panel FOP or 8-fold assigned connecting cables**			**Communication server**
	FXO signal	**FXO signal**	**Pin**	**Socket**	

Table 4.16:Connection of four-fold assigned FXO network interface (Continued) (Sheet 2 of 2)



Cable Requirements

Table 4.17:Cable requirements for FXO network interface

Core pairs X cores	1 X 2
Stranded	not required
Wire diameter, core	0.4 … 0.8 mm
Screening	not required
Resistance	max. 2 X 250 W

Equipment on the ODAB options card

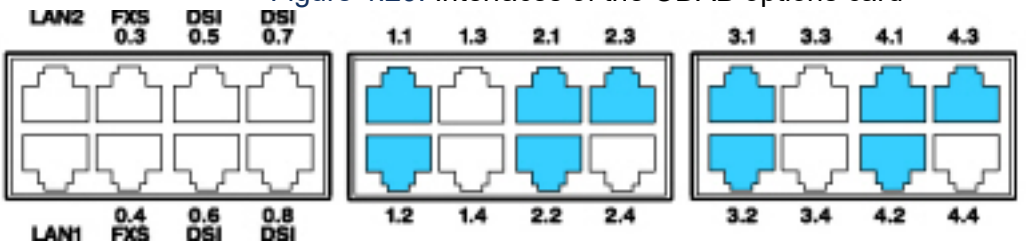
The ODAB options card contains the following equipment:

- 1 analogue terminal interface for connecting a door intercom
- Control outputs and control inputs for connecting a door intercom and/or other purposes.

With the aid of jumpers the options card is configured for connecting a door intercom or provides control inputs and control outputs:

- In the configuration as a door intercom the option card must be fitted to slot IC2 (Mitel 415) or IC4 (Mitel 430). The interfaces are then available at RJ45 sockets 2.1...2.3 (Mitel 415) and 4.1...4.3 (Mitel 430).
- If the option card is used for other purposes, it must be fitted to slot IC1 (Mitel 415) and IC1...3 (Mitel 430). The RJ45 socket x.1 then provides two control outputs and the RJ45 socket x.2 two control inputs.
- The possible RJ45 sockets are highlighted in colour in the figure below.

Figure 4.29: Interfaces of the ODAB options card



Connection of a door intercom (TFE)

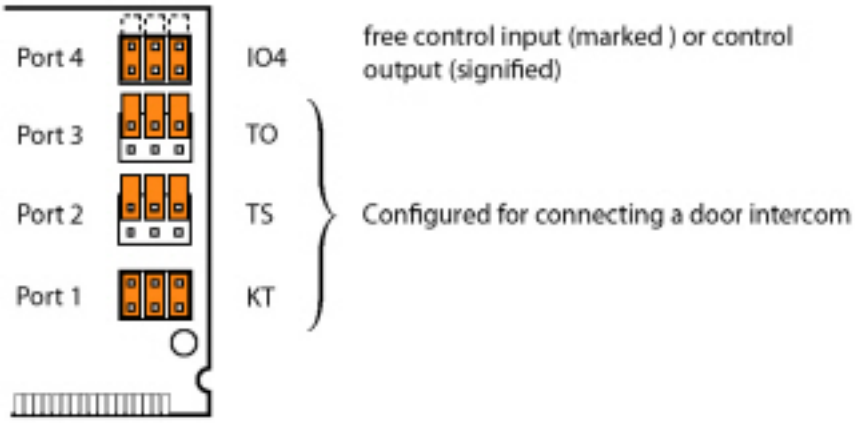
If the options card is fitted to slot IC2 (Mitel 415) or slot IC4 (Mitel 430), an analogue terminal interface is available for connecting a door intercom.

NOTE: This analogue terminal interface cannot be used for other purposes as the software does not support it.

Jumper Configuration

The jumper configuration is shown in the following diagram. Three of the four IO ports are used for connecting the door intercom. A control input or a control output is available for other purposes.

Figure 4.30: Jumper configuration for connecting a door intercom



NOTE: If the options card is fitted on slot IC2 (Mitel 415 or slot IC4 (Mitel 430), the jumpers of Ports 1, 2 and 3 must be fitted as shown in *Jumper configuration for connecting a door intercom*.

Connection

Table 4.18:Connection in Slot 2 (Mitel 415) or Slot 4 (Mitel 430) (Sheet 1 of 2)

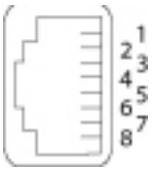
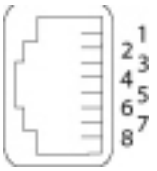
RJ45		**Communication server**	**RJ45**		**Communication server**
Socket X1	**Pin**	**Signal**	**Socket X3**	**Pin**	**Signal**
	1	–		1	–
	2	–		2	–
	3	KT1		3	Tb (without DC)
	4	TS2		4	Ta’ (with DC)
	5	TS1		5	Tb’ (with DC)
	6	KT2		6	Ta (without DC)
	7	–		7	–
	8	–		8	–
Socket X2	Pin	Signal	Socket X4	Pin	Signal

Table 4.18:Connection in Slot 2 (Mitel 415) or Slot 4 (Mitel 430) (Continued) (Sheet 2 of 2)

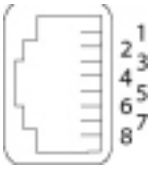
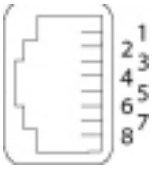
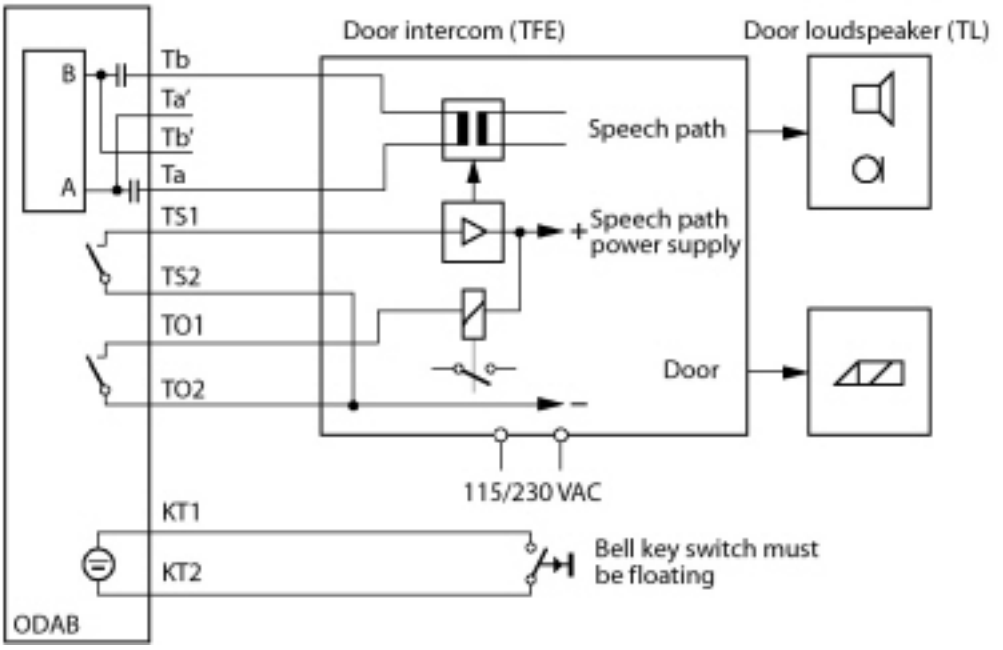
	1	–		1	–
	2	–		2	–
	3	TO2		3	–
	4	IO4		4	–
	5	IO4		5	–
	6	TO1		6	–
	7	–		7	–
	8	–		8	–

Table 4.19:Connections for the options card ODAB

IO port	Socket	Function	Value
–	Ta, Tb	Floating connection (without power supply) for 2-wire TFE signal	600 W
–	Ta', Tb'	Non-floating connection (with power supply) for 2-wire TFE signal	24 V / 25 mA / 600 W
1	KT 1, 2	Bell input	40 V / 4 mA
2	TS1, 2	Floating contact, "Switch on / off power supply for door intercom system"	max. 24 VAC, 30 VDC, 1 A
3	TO1, 2	Floating contact, "Door release"	max. 24 VAC, 30 VDC, 1 A

Connection for door intercom with 600 Ohm speech path

Figure 4.31: Schematic circuit diagram



Points to be observed for the connection as indicated in *Schematic circuit diagram*:

- The door intercom system requires an external power supply.
- The signal circuit does not require a power supply.
- The speech path (DC-free) is connected to Ta and Tb.
- The door intercom system is switched on via the TS contact output.
- The door release is actuated via the TO contact output.

CAUTION:

– The bell key switch does not require an external power supply, but must have a floating connection.

– Component damage due to double power supply:If the voice path is powered via the door intercom, it should not be connected to Ta' and Tb'.

Connection of port 4

The free port IO4 can be used as a floating control output or as a control input. Configured as a control output (O4) an external device or an external equipment can be connected. Configured as a control input (I4) one or more switch groups can be switched between position 1 and 2. Otherwise the same statements apply as described in the following Chapter *Control outputs and control inputs*.

Table 4.20:Switch group control via the control inputs

Control input I4	Switch positions of the switch groups
Passive state (Off)	Position 1
Active state (On)	Position 2

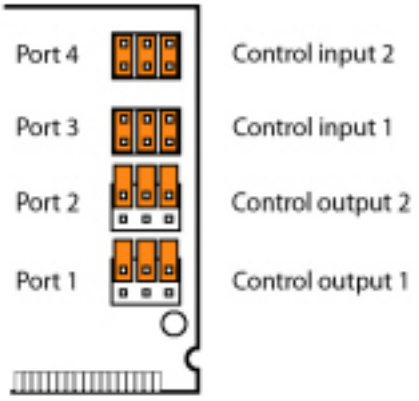
Control outputs and control inputs

If the options card is fitted to slot IC1 (Mitel 415) or slot IC1, 2 or 3 (Mitel 430), the analogue terminal interface cannot be used. However two control inputs can be used for switching a switch group and two control outputs for controlling external devices or equipment.

Jumper Configuration

The jumper configuration is shown in the following diagram.

Figure 4.32: Jumper configuration for control outputs and control inputs



NOTE: If the options card is fitted in slot IC1 (Mitel 415) or slot IC1, 2 or 3 (Mitel 430), the jumpers must be fitted as shown in *Jumper configuration for control outputs and control inputs*.

Table 4.21:Connection in slot IC1 (Mitel 415) or slot IC1, 2 or 3 (Mitel 430) (Sheet 1 of 2)

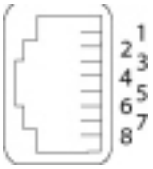
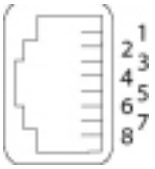
RJ45		**Communication server**	**RJ45**		**Communication server**
Socket X1	**Pin**	**Signal**	**Socket X3**	**Pin**	**Signal**
	1	–		1	–
	2	–		2	–
	3	O1-1		3	–
	4	O2-1		4	–
	5	O2-2		5	–
	6	O1-2		6	–
	7	–		7	–
	8	–		8	–
Socket X2	Pin	Signal	Socket X4	Pin	Signal

Table 4.21:Connection in slot IC1 (Mitel 415) or slot IC1, 2 or 3 (Mitel 430) (Continued) (Sheet 2 of 2)

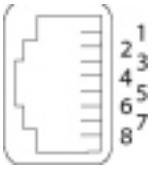
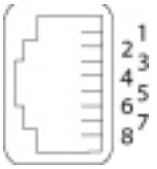
	1	–		1	–
	2	–		2	–
	3	I3-1		3	–
	4	I4-1		4	–
	5	I4-2		5	–
	6	I3-2		6	–
	7	–		7	–
	8	–		8	–

Table 4.22:Connections of control inputs and outputs

IO port	Signal	Function
1	O1-1, O1-2	Floating contact, relay 1
2	O2-1, O2-2	Floating contact, relay 2
3	I3-1, I3-2	Control input 1
4	I4-1, I4-2	Control input 2

Freely connectable relay contacts

The two freely connectable relay contacts can be used to control external devices or equipment such as heating, alarm or outdoor lighting systems (possibly via external relay for 115/230 VAC).

There are no special requirements for the cables.

Table 4.23:Relay operating data

Parameter	Value
Number of changeover switches per relay	1
Insulation between the changeover switches	0.5 kV
Type of contact	no (normally open, NO contact, make contact)
max. contact loading	24 VDC, 30 VAC, 1 A

Switch group interface

The routing elements of switch groups are controlled via control inputs I3 and I4. Control is effected using external switches (door contacts, time switches, etc.). The signal no-load voltage is approx. 40 VDC, the short-circuit current approx. 4 mA.

The permissible switch and loop resistances are as follows:

- Active state (On): lt; 4.5 kW

- Passive state (Off): > 11 kWn

  CAUTION: The control inputs do not require an external power supply but they must have a floating connection.

There are no special requirements for the cables.

Table 4.24:Switch group control via the control inputs

Control input I3	Control input I4	Switch positions of the switch groups
Off	Off	Position 1
On	Off	Position 2
any	On	Position 3

Other conditions:

- The switch group configuration determines which of the switch groups are switched.
- An options card's control inputs can control one or more switch groups.
- The same switch group can only be switched by the control inputs of one options card.
- Control of the switch groups using the control inputs takes priority over control using function codes.

Audio interface

The audio interface can be used for the following purposes:

- to play music or an announcement to connections with callers on hold ("Music on hold" function).
- to play music or an announcement for the announcement service (announcement prior to answering), voice mail greetings or for "Music on hold" and then to store it as a wave file.

Any playback equipment (tape recorder, CD player, etc.) with a line output can be used as the audio source.

The customer is responsible for all copyright matters relating to any music playback.

Figure 4.33: Audio interface

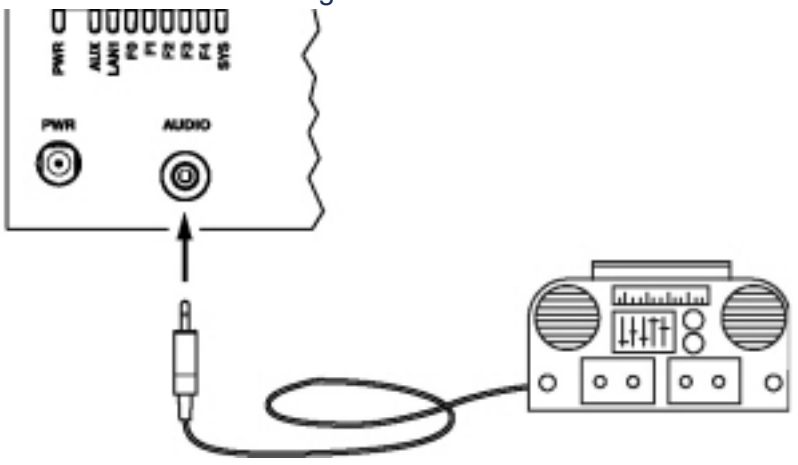


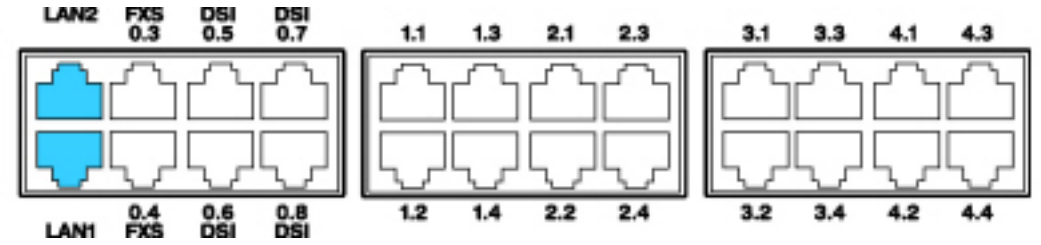
Table 4.25:Technical data of the audio interface

Input impedance	approx. 15 kW
Input level	0.1…5 V (configurable in 8 levels)
Input circuit	asymmetrical
Output resistance audio source	lt; 1 kW
Installation cable	NF cable screened (required for low levels)
Socket	3.5 mm stereo jack
Circuit type	as per EN/IEC 60950: SELV

Ethernet interfaces

The Mitel 415/430 communication servers have a 10/100BaseT 2-port LAN switch. The Ethernet interfaces are permanently routed to the front panel and labelled accordingly. The RJ45 sockets are highlighted in colour in the figure below.

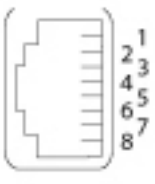
Figure 4.34: Connection possibilities for Ethernet interfaces



NOTE: Circuit type as per EN/IEC 60950: SELV

Socket

Table 4.26:Connection of Ethernet interfaces

RJ45 socket	Pin	Signal
	1	Tx+
	2	Tx–
	3	Rx+
	4	—
	5	—
	6	Rx–
	7	—
	8	—

Settings

The IP address can either be taken from a DHCP server in the IP network or configured statically. If a DNS server is used, the communication server can also be addressed via its host name.

Table 4.27:Default values, IP address

Parameter	Parameter value
Name	*Name of the LAN connection on the mainboard of the SMB Controller. Click eth0 ... eth3 to enter the edit view of the network interface. Note that eth0 interface is primarily used for the communication server application and the other interfaces are used for the multi-gateway functionality.*
Status	Connection status (Up or Down) of the Ethernet port
Carries	Physical connection status of a network cable (Plugged or Unplugged)
DHCP	Click DHCP to address the SMB Controller through DHCP. If DHCP is disabled, the network parameters must be entered manually. For static addressing of the SMB Controller (recommended), enter a fixed IP address, subnet mask, and the IP address of the default gateway in the respective fields.
IP address	IP address of the SMB Controller. For example: 192.168.104.13
Subnet mask	Range of the subnet. For example: 255.255.255.0
Gateway	IP address of the default gateway. For example: 192.168.104.1
MTU	MTU stands for Maximum Transaction Unit. It is defined as the maximum size of each packet transmitted in a single network transaction.
MAC address	MAC address of the Ethernet NIC card. There are four Ethernet ports *(eth0 ... eth3)*, each having a unique MAC address. *lt;Model name>-lt;MAC-Address>*

Subnets

You can assign up to 10 subnets that can be assigned to any network interface. Make sure that the IP address ranges of the different subnets are not overlapping.

Table 4.28:Subnets (Sheet 1 of 2)

Parameter	Parameter value

Table 4.28:Subnets (Continued) (Sheet 2 of 2)

Interface	A physical network interface from eth0-eth3.
Description	Free text that is used for subnet configuration.
IP address	IP address of the subnet.
Subnet mask	Defines the range of an IP address, which are available for this network.
Gateway	IP address of the gateway.

Static routes for eth0

You can program Static IP routes, which belong to the network interface (eth0) interface.

Table 4.29:Static routes for eth0

Parameter	**Parameter value**
Description	Free text that is used for static routes.
IP address	IP address of the static route.
Subnet mask	Defines the range of an IP address, which are available for this network.
Gateway	IP address of the gateway. Gateway has to be in the same range as the network of eth0.

First-start response

The IP addressing after a first start depends on whether a static IP addressing is already stored from a previous configuration. A static IP addressing (IP address, subnet mask, gateway) entered manually is stored and remains available after a first start. This means that the communication server remains accessible via Ethernet interface in the same way as before the first start.

If no IP addressing is entered (e.g. after initial delivery), the communication server is started with DHCP after a first start. The communication server tries to log on with the DHCP server and to enter its host name on the DNS server. If log on is successful the communication server is accessible via the host name.

If the communication server cannot find a DHCP server within 90 seconds, it deactivates the DHCP mode and is then accessible via the standard IP address (see) with a direct connection.

NOTE: DHCP is deactivated only temporarily and is reactivated after a subsequent restart.

Cable types

The Ethernet switch on the communications server features Auto MDI/MDIX. With the automatic detection straight or crossover LAN cables can be used for all connection types.

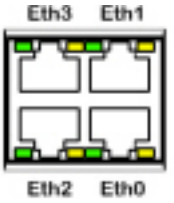
Configuration

The Ethernet interfaces routed to the front panel can be configured individually in the *IP addressing* ( *=9g*) view. In addition to Auto modes, manual settings are also possible for *Speed* and *MDI type*.

Status LED

The status of the Ethernet interface LAN1 is indicated on the LED display panel (see *LED display*,).

Figure 4.35: Status LED on the Ethernet interfaces



Cable Requirements

Use commercial Cat. 5 cable, or choose a cable type with the following characteristics:

Table 4.30:Requirements for an Ethernet cable

Core pairs x cores	2 x 2 (short distances also 1 x 4)
Core pairs x cores	4 x 2
Core pairs x cores	4 x 2
Stranded	yes
Wire diameter, core	0.4...0.6 mm
Screening	yes
Category	Cat. 5 minimum

Installing, powering, connecting and registering terminals

IP system phones

Accesses

Table 4.31:Socket connections of the IP system phones of the MiVoice 5300 IP series (Sheet 1 of 2)

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

Table 4.31:Socket connections of the IP system phones of the MiVoice 5300 IP series (Continued) (Sheet 2 of 2)

	Headset socket
	Power supply socket for connecting a power supply if PoE is not available
	Connect expansion key module MiVoice M530 MiVoice M535 (available on MiVoice 5370 IP and MiVoice 5380 IP)

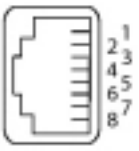
Integrated switch (MiVoice 5370 IP and MiVoice 5380 IP)

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.

Table 4.32: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.

Table 4.33: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.

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.

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.

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".

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.

Digital system phones

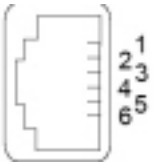
General information

Accesses

The connections on the underside of the system phones are identified by the symbols. The meaning of the symbols is described in the corresponding operating instructions.

DSI terminal interface

Table 4.34:DSI interface on the phone

RJ45 socket	Pin	Signal
	1	—
	2	—
	3	b
	4	a
	5	—
	6	—

NOTE: The total length of the cables from the communication server to the system phone must not be less than 10 m.

Terminal selection

Two system phones can be connected to a DSI interface (DSI-AD2 only). The system can only differentiate the two system phones by the position of the address switch on the phone. The following settings are possible (TSD = Terminal Selection Digit):

- TSD1
- TSD2

NOTE: In the following cases Not Configured is displayed along with the node number, the slot number and the port number. In this state the system phone is not ready for operation:

  – A terminal has been created at the connected port, but the address selection switch is incorrectly set.
  – No terminal has yet been created at the connected port.

User allocation

In the configuration each terminal is assigned to a user or a free seating pool. If a terminal has been created at the connected port and the address selection switch is correctly selected but no user or free seating pool is allocated to the terminal, the system phone display reads *No Number* and indicates the terminal ID. In this state the system phone is not ready for operation.

Terminal type

The terminal type is specified along with the configuration of the system. Lines are also assigned to the line keys there.

NOTE: If the terminal type configured is incorrect, the system phone display shows the warning *Wrong phone type*. In this situation, although the system phone can be used for basic telephone operations, none of the added features will be available. The terminal type must be entered via WebAdmin or on the terminal via login to the system configuration.

Carrying out a logon on the system phone: Long keypress (long click) on a function key. *Set new phone type* appears next. Confirm with Foxkey *Yes*.

Digital system phones

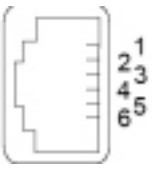
General information

Accesses

The connections on the underside of the system phones are identified by the symbols. The meaning of the symbols is described in the corresponding operating instructions.

DSI terminal interface

Table 4.35:DSI interface on the phone

RJ45 socket	Pin	Signal
	1	—
	2	—
	3	b
	4	a
	5	—
	6	—

NOTE: The total length of the cables from the communication server to the system phone must not be less than 10 m.

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Two system phones can be connected to a DSI interface (DSI-AD2 only). The system can only differentiate the two system phones by the position of the address switch on the phone. The following settings are possible (TSD = Terminal Selection Digit):

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- TSD2

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- A terminal has been created at the connected port, but the address selection switch is incorrectly set.
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In the configuration each terminal is assigned to a user or a free seating pool. If a terminal has been created at the connected port and the address selection switch is correctly selected but no user or free seating pool is allocated to the terminal, the system phone display reads *No Number* and indicates the terminal ID. In this state the system phone is not ready for operation.

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The terminal type is specified along with the configuration of the system. Lines are also assigned to the line keys there.

NOTE: If the terminal type configured is incorrect, the system phone display shows the warning *Wrong phone type*. In this situation, although the system phone can be used for basic telephone operations, none of the added features will be available. The terminal type must be entered via WebAdmin or on the terminal via login to the system configuration.

Carrying out a logon on the system phone: Long keypress (long click) on a function key. *Set new phone type* appears next. Confirm with Foxkey *Yes*.

MiVoice 5361 / 5370/ 5380

These IP system phones can be both desktop-mounted and wall-mounted.

Mounting the phone

The following points are described in detail in the User's Guides for MiVoice 5361 / 5370 / 5380:

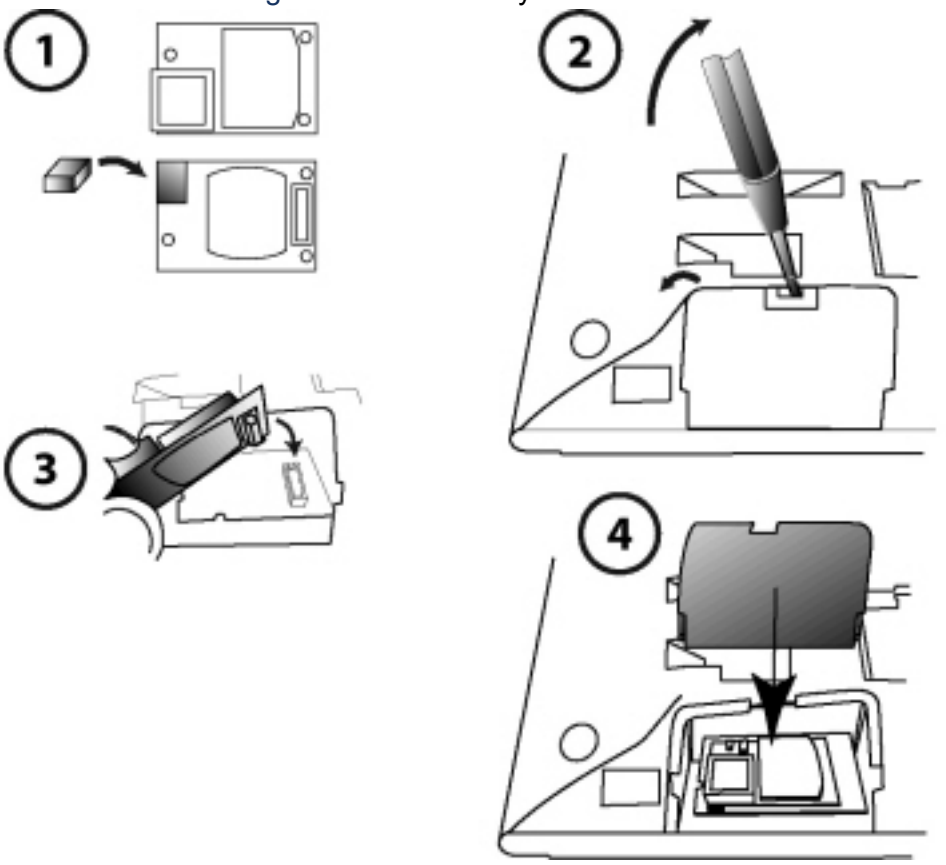
- Set-up as a desk phone (choice of two different set-up angles)
- Wall mounting
- Connecting one or more MiVoice M530 or MiVoice M535 expansion key modules.
- Connection of a headset to DHSG standard.

  NOTE: To prevent any damage to the phone, always disconnect the phone from the power supply first before connecting a headset to DHSG standard.

Mounting the Bluetooth module

The MiVoice 5380 can also be equipped with a Bluetooth module as an option. To install (see *Assembly of the Bluetooth module*), proceed as follows:

Figure 4.36: Assembly of the Bluetooth module



CAUTION: The system's reliability can be adversely affected by electrostatic discharges caused by touching electronic components and elements, and subsequent damage can result. Always observe the ESD guidelines.

1. Fit foam spacers on the connector side of the Bluetooth module (for the position of the foam spacer see [1]). The spacer ensures that the Bluetooth module sits securely.
2. Carefully remove the cover for the Bluetooth module on the underside of the phone using a suitable screwdriver (see [2]).
3. Connect the Bluetooth module. Make sure it is securely fitted (see [3]).
4. Fit the cover for the Bluetooth module back into place and press home until it snaps into place (see [4]).

Powering the phone

The MiVoice 5360, MiVoice 5361 MiVoice 5370 and MiVoice 5380 system phones are normally powered via the DSI bus. However there are several reasons that require powering with a plug-in power supply:

- Long line
- 2 phones on the same bus
- 1 or more expansion key modules on the phone
- Terminal power supply of the communication server is overloaded

Only use the corresponding plug-in power supply unit with FCC connector available as an option. It is connected either to the phone itself or, when using one or more expansion key modules, on the last expansion key module.

See also

The power available on the DSI bus depending on the line length and the wire diameter, and the power input of the system phones are described in the chapter *DSI terminal interfaces*.

Connecting the phone

1. Setting the DSI bus address on the system phone's underside:
   – TSD1 = address switch on position 1
   – TSD2 = address switch on position 2
2. Plug the connector into the socket-outlet.
3. If the system is configured, test the operation of the system phone.
4. Label the phone as indicated in the operating instructions.

DECT radio units and cordless phones

The locations determined for the cordless phones, charging bays and radio units during the planning phase need to be checked against the following criteria:

- Influence on radio operation
- Ambient conditions

Influences on radio operation

Radio operation is affected by the following influences:

- Outside interference (EMC)
- Obstacles in the surrounding area affect the radio characteristic

To achieve optimum conditions for radio operation, observe the following points:

- Optimum radio operation depends on the radio unit → cordless phone line of sight.
- Walls act as an obstacle to the propagation of radio waves. Losses depend on the wall thickness, construction material and reinforcement used.
- Do not place radio units and cordless phones in the immediate vicinity of TV sets, radios, CD players or power installations (for reasons of EMC, e.g.distribution boxes, rising power lines).
- Do not place radio units and cordless phones near X-ray installations (EMC).
- Do not place radio units and cordless phones near metal partitions.

  Observe the minimum distance requirements between adjacent radio units (see *Installation distances*).
- Minimum distance between cordless phones for fault-free operation: 0.2 m. (The charging bays of the Office 135 can be linked using connecting strips. However, operating several phones on interconnected charging bays can lead to malfunctions.)
- Minimum distance between charging bays with cordless phones on-hook for faultfree operation: 0.2 m.

Ambient conditions

- When installing: Ensure convection (space for ventilation).
- Avoid excessive dust.
- Avoid exposure to chemicals.
- Avoid direct sunlight.
- See also technical data in *Mitel DECT radio units*.

  NOTE: If these requirements cannot be met (e.g.outdoor installation), use the appropriate protective housing.

Installing the radio units

Do **not** remove the cover of the radio unit. (Warranty protection will lapse if the cover is removed)

Fit the mounting bracket (see *Dimensional drawing for wall-mounting the mounting bracket* dimensional drawing for wall mounting). Observe the minimum distances (see *Installation distances*).

Position the DSI socket(s) near the radio unit.

Each radio unit requires one DSI bus (two optional on the SB-8): Do not connect any other terminals.

The radio units can be powered from the communication server up to the maximum line length of 1200 m specified for operation (wire diameter 0.5 mm). The plug-in power supply unit for is the same as the one for the Office 135 charging bay.

Figure 4.37: Dimensional drawing for wall-mounting the mounting bracket

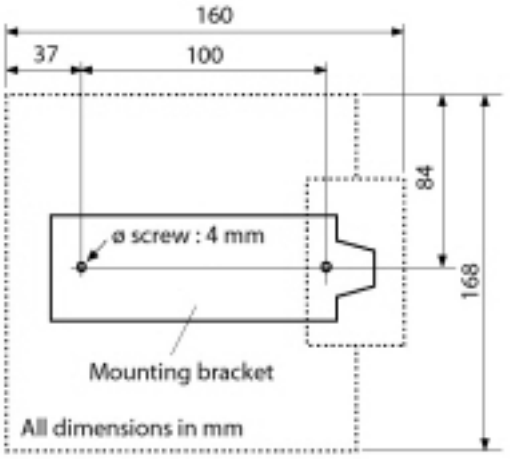
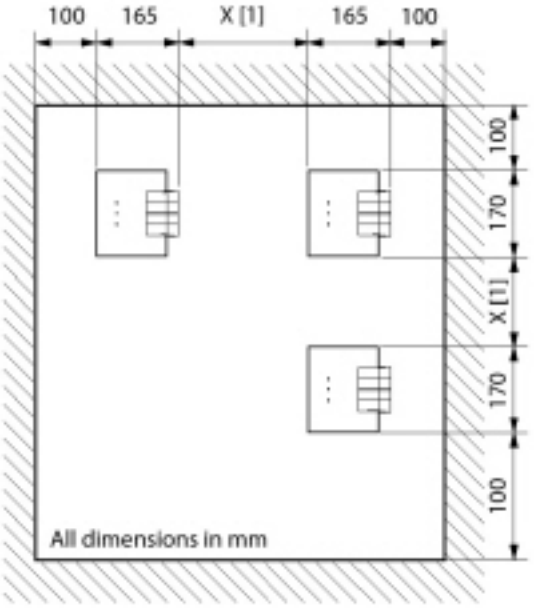


Figure 4.38: Installation distances



[1] X = 200: Minimum distance if the radio units are connected to the same communication server (synchronous)

X = 2000: Minimum distance if the radio units are not connected to the same communication server (not synchronous)

Make sure the minimum distances are observed

Connecting the radio unit

Figure 4.39: Underside of the radio units with connection points

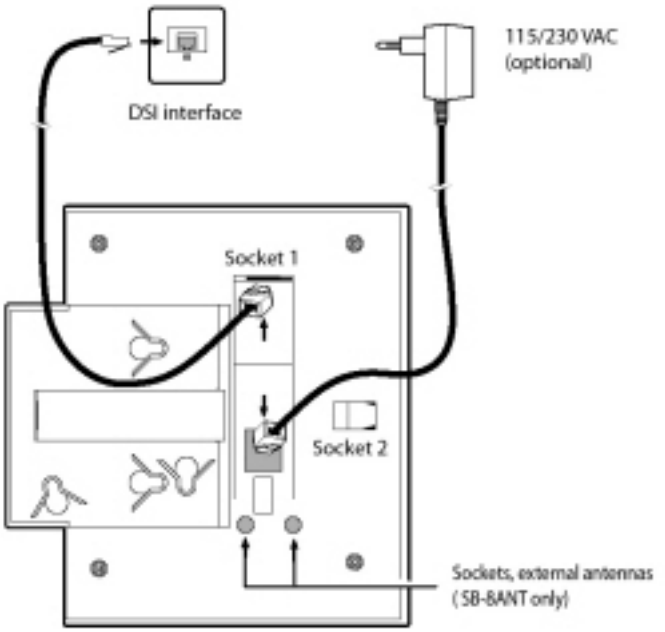
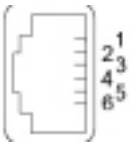


Table 4.36:Connections on the Mitel DECT radio units

RJ12 sockets	Pin	Socket 1: DSI interface		Socket 2: Power supply
		SB-4+	SB-8 / SB-8ANT	SB-4+ / SB-8 / SB-8ANT
	1	Local power supply –	Local power supply –	Local power supply –
	2	—	b2	—
	3	b1	b1	—
	4	a1	a1	—
	5	—	a2	—
	6	Local power supply +	Local power supply +	Local power supply +

If an SB-8 / SB-8ANT is operated on two DSI interfaces, it is recommended always to use two neighbouring ports.

Mitel Advanced Intelligent Network:

As the DECT systems of the individual nodes in an AIN do not run synchronously, the two DSI interfaces of an SB-8 / SB-8ANT must always be connected to the same node.

Table 4.37:Operating state display on Mitel DECT radio units

LED flashing (two LEDs on the SB-8)	Information
green	Operating state
red / green	Startup procedure running
orange	Transmission of DECT sequences
red	Fault
not flashing and not lit	LED switched off or radio unit defective or not in operation

For further display variants, see *Operating state of the Mitel DECT radio units*.

Analogue phones Mitel 6710 Analogue, Mitel 6730 Analogue

The phones can be used as desktop model or as wall model.

Connecting the phone

1. Stick the connector on the longer, straight end of the handset cord on the underside of the phone into the socket with the handset symbol until it snaps into place. Feed the cable through the strain relief and connect the other end to the handset.
2. Feed the small connector of the phone connection cable on the rear side of the phone into the socket until it snaps into place. Stick the connector on the other end into the phone cord.

Preparing the phone for message waiting indication (MWI)

The phone can detect various types of notifications (polarity reversal, high voltage and frequency shift keying (FSK). The notification type is set with the MWI switch on the underside of the phone. "0" = Off, "HV" = High voltage, "−/+" = Polarity reversal. The notification type Frequency reversal (FSK) is always active, regardless of the switch setting (Mitel\ 6730 Analogue only).

The MiVoice Office 400 communication servers support the following notification types (Parameter *MWI mode* configurable for each FXS Interface separately):

Table 4.38:Supported notification types

Notification type	MWI switch setting	Mitel 415/430	Mitel SMBC	Mitel 470
Switched off	0			
Polarity reversal	− and +	–	yes	yes
High voltage	HV	–	yes	–
Frequency reversal (FSK)	No symbol(Any switch setting)	yes	yes	yes

Tip for the setting polarity reversal:

Set the switch of the phone (e. g. Mitel 6730 Analogue) to the symbol "−". If the MWI LED is blinking when a message is available and off when no message is available, the switch is set correctly. If the MWI LED is on when a message is available and blinking when no message is available the switch must be set to “+”.

NOTE:

- For the notification type FSK, a new message with a small envelope is displayed on the screen of the phone Mitel 6730 Analogue. This variant is not recommended as the symbol can be easily over-looked.
- The information in this section basically applies to analogue phones Aastra 1910 and Aastra 1930 too. In these models the MWI switch is labelled on the rear side of the phone, and the switch settings for polarity reversal, with PR1 and PR2.
- The notification type *Low voltage* is also supported (used for other analogue phones, especially in USA and Canada).

Mounting the phone on the desktop

Feed the mounting feet into the corresponding cut-outs on the underside of the phone until they engage. 4 different set-up angles are possible, by choosing the cut-outs and turning the set-up feet.

Mounting the phone on the wall

1. Place the supplied drilling template for wall mounting on the wall position you want and mark the positions for the mounting screws. Depending on the type of wall, you may need some dowel plugs. Screws and dowel plugs are part of the delivery.
2. Put the telephone with the mounting openings over the heads of the wall screws and pull the phone downwards to stop it.
3. On the cradle is a small clamp which is flush with the cradle surface. Push it up with a small flat head screwdriver and remove it from the phone.
4. With the cleat arm towards you and the flat side of the clamp towards the phone turn the clamp 180° and push it again into the cut-out in the phone cradle. Press in the clamp till it is flush with the surface and only the feet of the clamp are protruding.

Configuring keys

Configure the keys on analogue phones Mitel 6700 Analogue in the WebAdmin terminal configuration. The phone must be connected during configuration so the key configuration can be stored on the phone immediately. If not, you can load the key configuration on the phone after connecting the phone, by clicking *Update key configuration on phone*.

To load the key configuration on all connected Mitel 6700 Analogue series phones, click *Update key configuration for all Mitel 6700 Analogue phones*.

To load the key configuration stored in the WebAdmin from the connected phone, dial the function code *#53.

Labelling the phone

1. Remove the cover with the logo on top of the control panel by pressing down slightly and pushing up.
2. Pull out the designation label on the lugs, label it then push it back again into the cut-out.
3. Carefully put back the cover with the logo, so that the paper lugs are covered.

Powering the phone

The phone is powered via the FXS line.

Configuration

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

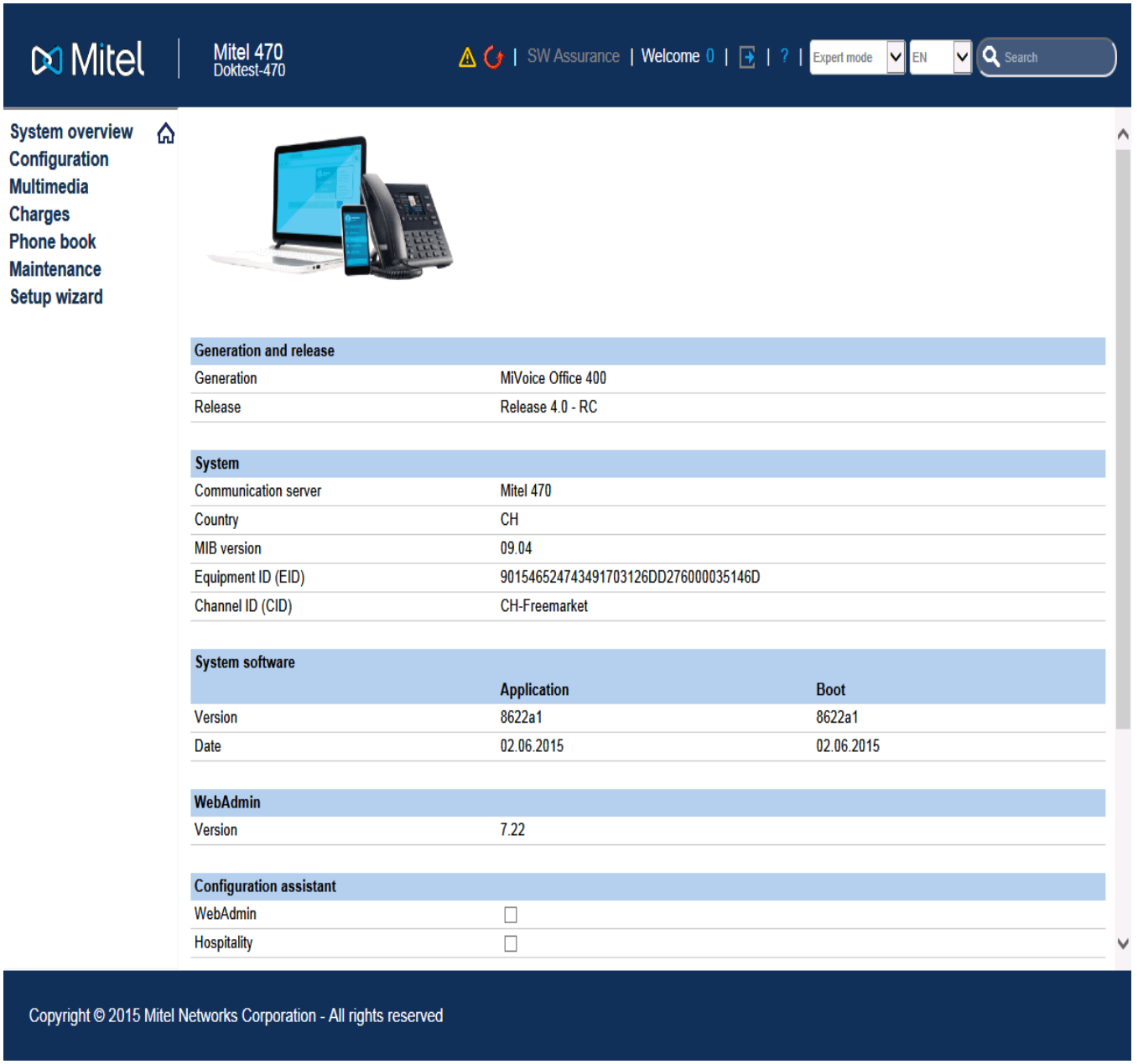
With WebAdmin the installer configures and maintains the MiVoice Office 400 communication server and its auxiliary equipment, and is supported in the process by a set up and configuration assistant. WebAdmin offers different user interfaces for administrators, system assistants and end-users as well 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.

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:

Figure 5.1: 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*).

Receptionist authorization level:

This access starts the Mitel 400 Hospitality Manager directly (see *Mitel 400 Hospitality Manager*).

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*.

If you do not know the communication server IP address, search for the communication server on the IP network with the auxiliary application System Search (see *System Search*).

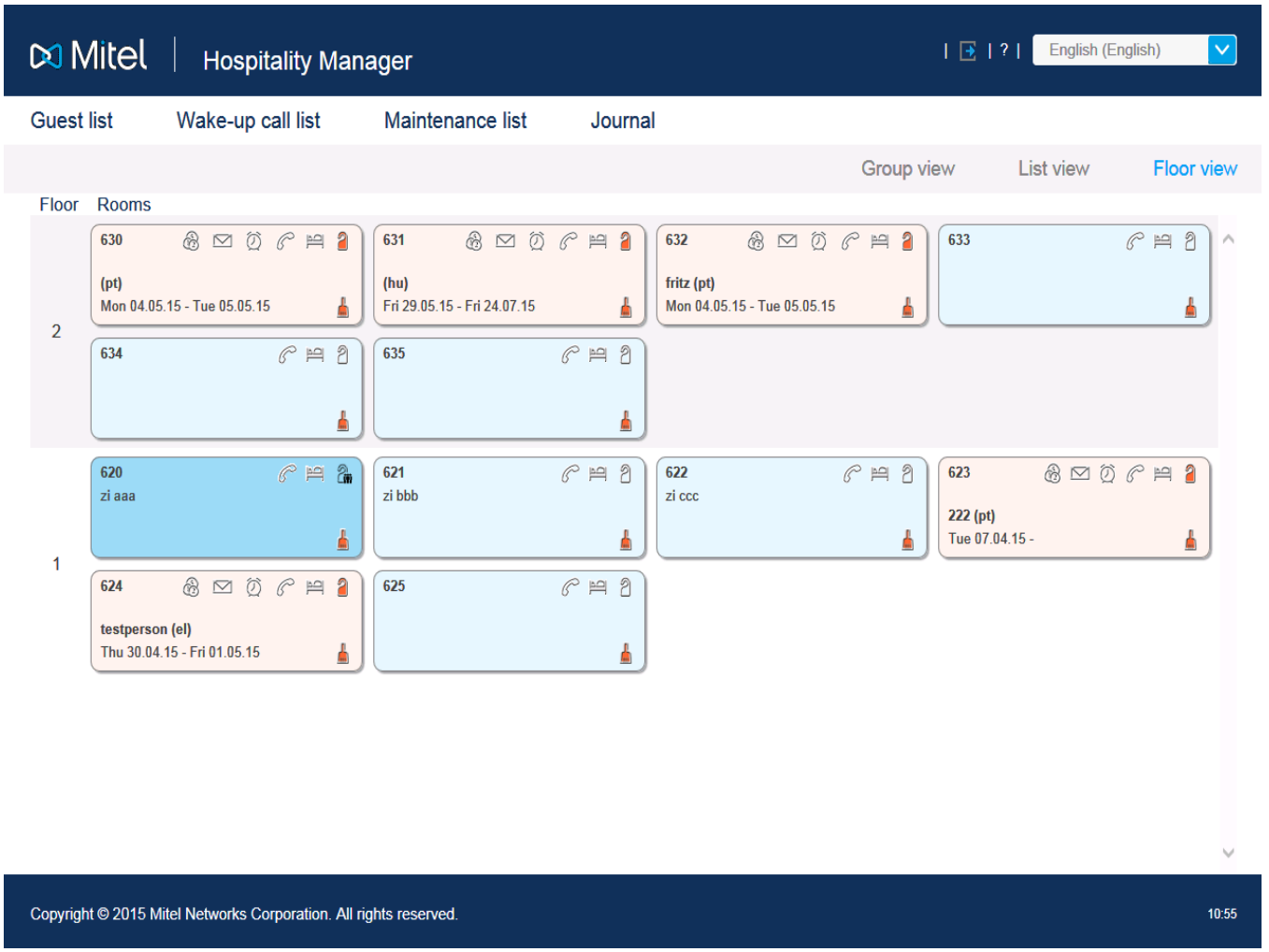
NOTE: With the web-based administration two users are able to access the same communication server simultaneously (and no fewer than five users at the Receptionist authorization level). This can cause confusion if a configuration is being carried out in the same places.

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.

Figure 5.2: 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.

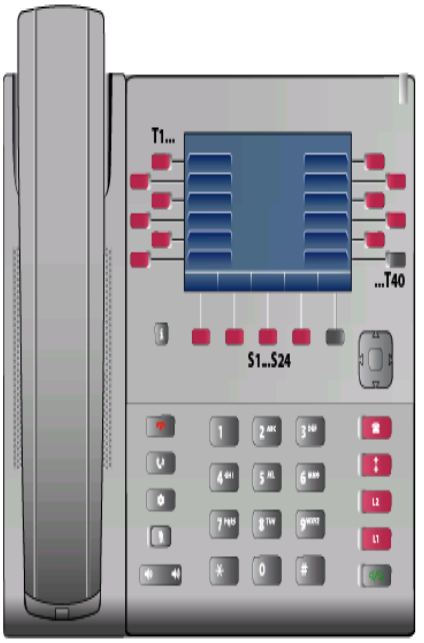
Figure 5.3: Self Service Portal

Mitel | Self Service Portal

| Welcome 296 | | ? | English

Phones Features Contacts Personal data

Mitel 6869 SIP Key configuration



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						

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.

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 (directly or via a switch)
- Externally via SRM (secure IP remote management)

  NOTE: External access (ISDN/analogue) with a dial-up connection is only recommended on some conditions, for performance reasons.

First access on LAN

For a first access to the communication server, it is easier if your computer is located on the same subnet as the PC. If this is not the case, you can also connect the computer directly to the communication server using a LAN cable.

With the auxiliary application System Search (see *System Search*) the communication server (and other MiVoice Office 400 series communication servers on the same sub-net) is searched and displayed. It is advisable to directly deactivate the normally activated communication server DHCP via System Search and to manually enter a static IP address, the subnet mask and IP gateway. After login via the standard access (see *Default user account for initial access*), the data is stored in the communication server.

See also:

If you are setting up an MiVoice Office 400 communication system for the first time, read the chapter *Getting started*).

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*).

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).

WebAdmin User accounts and authorization profiles

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

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:

Table 5.1:Standard user account and standard password

User name	admin
Password	mslmivo400 **NOTE:** For older MiVoice Office 400 Virtual Appliance deployments (that is before release 7.0), the default password is password.

NOTE: 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.

Other predefined user accounts

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

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: ?, /, lt;, >, -, +, *, #, =, 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.

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*.

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 password must contain at least one uppercase letter A - Z.
- The password must contain at least one lowercase letter a - z.
- The password must contain at least one digit 0 - 9.
- The password must contain at least one of the following special characters:?, /, lt;, >, -, +, *, #, =, 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

For user account, after a maximum of 15 unsuccessful logins, the account is disabled for 10 minutes. The account is automatically re-enabled after 10 minutes. The account does not require administrator to re-enable.

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.

If the passwords of all administrators are lost, access can still be gained locally without a password (see *Password-free access*).

Password-free access

The control pilot key on the front panel can activate a function that enables via password-free, local access via LAN with administration right *User access control*. This is useful for example if all the passwords have been lost. The procedure is described in *Enabling / disabling password-free access*.

There is no password-free access for remote maintenance.

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.

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.

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.

Access enabled by local users

Remote maintenance access can be enabled in two ways:

- Using function codes (see *Function code for remote maintenance access*)
- 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*).

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.

Function code for remote maintenance access

Table 5.2: Function code for remote maintenance access

Enable/bar a one-off remote maintenance access	*754 / #754
Enable/bar a one-off permanent 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 secured and has to be explicitly enabled (see *Enabling / disabling the dial-up connection to the AIN*). This is irrespective of whether dial-up access is via a satellite or directly to the Master.

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.

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 MiAccess https://miaccess.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*.

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. Setting up 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. Setting up the IP addressing
2. Regulating access control
3. Checking licences
4. Configuring media resources
5. Setting 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
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.

WebAdmin Configuration Notes

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

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 (*Overview of licences*) 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 MiAccess https://miaccess.mitel.com/(partner login required). You can find instructions about this in WebAdmin help.

See also:

Licences

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.

System reset

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 communication server. The configuration data is preserved.

Restart via front panel

A restart via front panel is done using the pilot key. The configuration data is preserved (see *Normal restart with database backup*).

NOTE:

- Never disconnect the communication server from the power supply to trigger a restart. This can result in data losses and prevent a restart.
- The restart is triggered immediately. All the active call and data connections are interrupted.

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, and software generation are preserved.

NOTE:

- 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 via front panel

A first start via front panel is done using the pilot key (see *Carrying out a first start*).

First start and reset sales channel via WebAdmin

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.

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.

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* (=*2s*) 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.

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.

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 and after any major configuration changes.

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.

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.

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

Operation and Maintenance

This chapter describes maintaining the system and configuration data as well as updating the system software. Replacing cards, modules and terminals are also described. The display and control panel of the communication server as well as operations supervision using the event message concept, the operating state display, and the error display are also topics covered in this chapter.

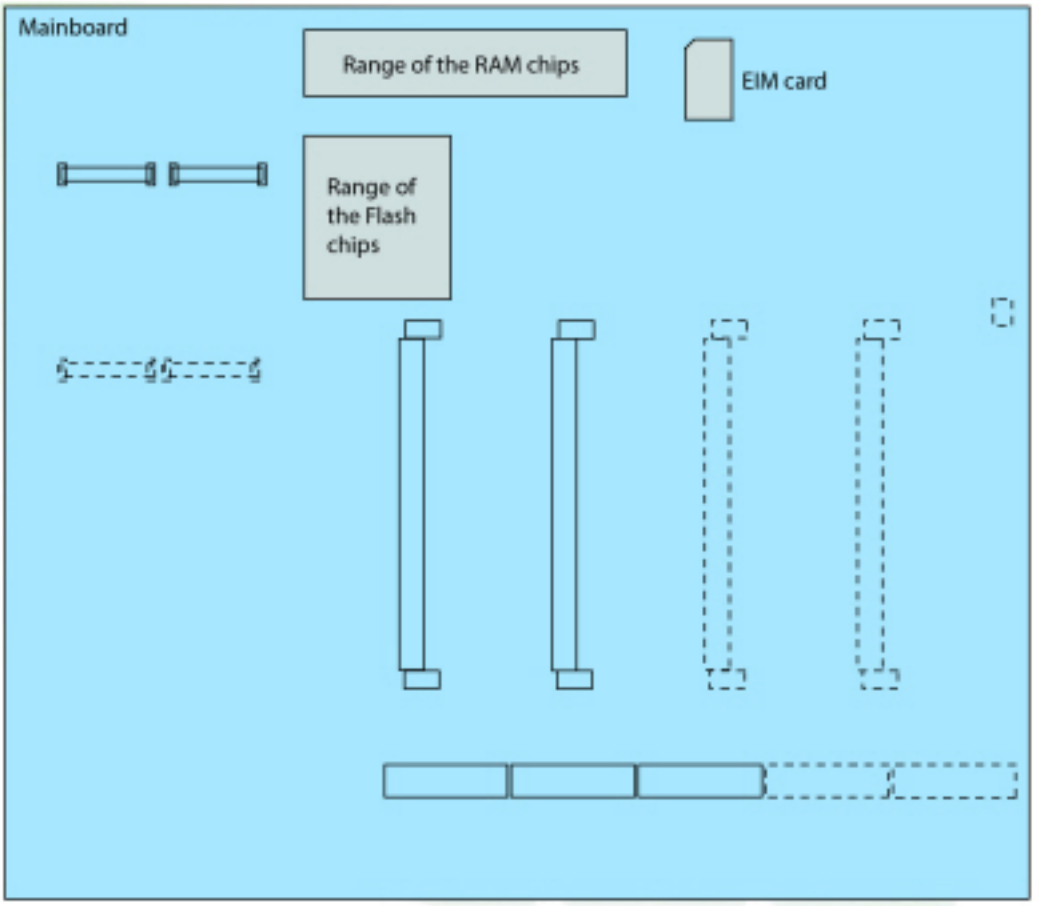
Data Maintenance

What data is stored where

The communication server's data storage system consists of different elements:

- In the Flash components are stored the system software, the boot software and the configuration data. The contents of the memory are retained even when there is no power supply.
- In the RAM components (main memory) are stored volatile data that cannot be saved. It is available only when the system is in operation.
- The EIM card (Equipment Identification Module) contains the system-specific data (system ID, system type, sales channel, generation, DECT identification numbers, IP address of the configuration server). The contents of the memory are retained even when there is no power supply.

Figure 6.1: Memories on the mainboard Mitel 415/430



System software

The communication server's entire system software package is stored in compressed form in the Flash memory.

The RAM components comprise the main memory for program data. When the communication server starts up, the software on the Flash memory is decompressed, loaded into the main memory and started.

File system

MiVoice Office 400 file system

The file system of the MiVoice Office 400 communication server comprises the MiVoice Office 400 application 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 you can load audio data, languages for the user interface and online help, language files for Mitel 6800/6900 SIP-series 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 folders and files in the file system. (see also *File management*).

Functions for backing up and restoring MiVoice Office 400 configuration data and audio data are available in the WebAdmin *Maintenance* / *Data backup* (=*um*) view (see also *Data backup*).

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 with a FTP session.

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

Boot software

The boot software is stored in a different Flash memory, which allows the communication server to start up in the boot mode, even if without executable MiVoice Office 400 application software.

System-specific data

The system-specific data (system ID, system type, sales channel, generation, DECT identification numbers, IP address of the communication server) is stored on the EIM card (chip card). This data is not deleted by a first start of the communication server, and remains available. It can be ported to a different communication server by replacing the EIM card.

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*.

Update Software

System software

MiVoice Office 400 application software

The MiVoice Office 400 application software is normally updated with WebAdmin. In exceptional cases (e.g. during downgrade), an Emergency Upload via System Search is required (see also *To perform an Emergency Upload, proceed as follows:*).

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 MiAccess internet portal https://miaccess.mitel.com/ and upload it to your communication system. You need a login to access Mitel MiAccess (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.

NOTE:

- Most times a new licence file is also required for new MiVoice Office 400 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 upload 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.
- Depending on communication server type, the upload operation (especially decompressing the software package) may take some time.
- Never disconnect the communication server from the power supply during the update process. This may prevent executable system software from being available on the communication server, and make an EUL (Emergency Upload) necessary.
- 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.

Loading new or older system software with System Search

Whenever a standard software upload is not possible, has proved faulty, or to replace a Flash card or if you wish to load an earlier system software (Downgrade), you must carry out a Emergency Upload. You need the search and help tool System Search.

NOTE: A first start of the communication server is also performed with an Emergency Upload. All the already stored configuration data is deleted and replaced with the default values of the sales channel. Therefore, before an Emergency Upload back up your configuration data (if still possible).

To perform an Emergency Upload, proceed as follows:

1. Set the communication server to boot mode using the control key (see *Boot Mode*).
2. Start System Search and select *Emergency Upload*.
3. Enter the communication server IP address.
4. Select the system software package to be uploaded (*zip file*).
5. Click the *Upload* button.
   – Emergency Upload is started.

   NOTE: During an Emergency Upload the communication pattern for the start-up state is displayed for a long time (up to 10 minutes) (Pattern *[5]*, *Combination patterns during startup*). This is normal since it takes a while to decompress the system software..

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 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).

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.

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 (Mitel 6700 SIP phones,

Mitel Blustar clients and Mitel Dialer) / HTTPS (Mitel SIP 6800/6900 phones) 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:

iprfp4G.dnld

Firmware for OpenMobilityManager (OMM).

Hardware update

Hardware maintenance comprises replacing cards, modules and terminals when there is a defect or for a generation change. Safety regulations must be observed and the step-by-step procedure must be followed.

Preparations

The following preliminary steps apply to interface cards, system cards and system modules as well as to the mainboard of the communication server itself.

First steps before cards are removed or added:

1. Inform all concerned users if the system has to be put out of operation during working time.
2. Shut down the communication server (see *Shut-down Mode*) and disconnect it from the power supply.

System information

Some system information are stored on the EIM (Equipment Identification Module) card. The information includes:

- The EID (Equipment Identification) serial number
- The sales channel identification CID (Channel Identification)
- The system type
- The application software generation
- The IP address of the MiVoice Office 400 communication server

The data is not deleted by a first start of the MiVoice Office 400 communication server, and remains available.

Licences

To expand a system already in operation or to re-order a licence for a new system, proceed as follows:

1. Order the licences you want from your authorised dealer and specify the EID number, which serves to identify the communication server.
2. The new licence file can be obtained either from your authorized dealer or via Mitel MiAccess https://miaccess.mitel.com/ using the EID (partner login required).
3. Upload the licence file in the *Licences* (*=q9*) view. The licence file is stored in the file system of the communication server in the sub directory ...\data\lic.
4. The newly licensed features are enabled. It is not necessary to restart the communication server (exception: AIN licences).

See also:

Licences

EIM card

The EIM card must be replaced in the following cases:

- The mainboard is defective
- The EIM card is defective

The mainboard is defective

If you need to replace a defective mainboard, transfer the EIM card from the defective mainboard onto the new one. For instructions on how to replace the mainboard, see *[14]*.

The EIM card is defective

In the unlikely event of a defective EIM card, contact your authorized dealer to discuss the procedure.

For the procedure for switching an EIM card see *To fit an EIM card, proceed as follows:*.

Interface cards

The different card types, the number of slots and the maximum configuration are all determined by the system capacity (see Chapter *Expansion Stages and System Capacity*).

A number of rules have to be observed when fitting the cards (see *Component mounting rules*.

All configuration data is centrally stored in non-volatile Flash memory. This means that configuration data is preserved whenever a defective interface card has to be replaced by a new one.

Replacing a defective interface card

A card is replaced by the same card type with the same number of ports.

Procedure:

CAUTION: Be sure to observe the *Safety regulations*.

1. Carry out preparations (see *Preparations*).
2. Remove the housing cover.

3. Remove the defective interface card by pressing the two lateral metal clamps outward at the same time and gently lifting the interface card.
4. Place the new interface card at a slight angle into the required slot (see *Fitting an interface card*). Make sure the angled side of the interface card is facing backwards (i.e. it must not project over the wiring adapter slots).
5. Carefully press the interface card downwards until the two lateral metal clamps engage.
6. Fit the housing cover.
7. Reconnect the system to the power supply.

New card with fewer ports

A card is replaced by a similar card with fewer ports.

Procedure:

Change the card and put the system into operation again. Similar procedure as described in *Replacing a defective interface card*.

The following data is deleted:

- The system and terminal configuration data of the terminals on the interfaces that are no longer present in the new configuration.
- The system configuration data of the network interfaces that are no longer present in the new configuration.

Table 6.1:Example: Reducing the number of terminal or network interfaces

TIC-4TS → TIC-2TS	The configuration data of terminal interfaces 3 and 4 are deleted.
TIC-4AB → TIC-2AB	The configuration data of network interfaces 3 and 4 are deleted.

NOTE: If the terminal configuration data of system terminals is deleted following the reconfiguration of a card, a warning message will appear beforehand to give you the possibility of cancelling the process. However, this is possible only if the configuration data of the original card was not already deleted beforehand.

New card with more ports

A card is replaced by a similar card with more ports.

Procedure:

1. Change the card and put the system into operation again. Similar procedure as described in *Replacing a defective interface card*.
2. In the WebAdmin view *Cards and modules* (*=4g*) *Confirm* the new cards.

3. Configure new ports.

The system configuration data (User No., User configuration, etc.) of the terminals on the new ports is created as new data (default values).

Table 6.2:Example: Expanding the number of terminal or network interfaces

TIC-2TS → TIC-4TS	The configuration data of terminal interfaces 3 and 4 are created as new.
TIC-2AB → TIC-4AB	The configuration data of network interfaces 3 and 4 are created as new.

Change slot

Interface cards can be moved to a different slot. The terminal configuration data of the system phones can be transferred.

Procedure:

1. Change the slot and put the system into operation again. Similar procedure as described in *Replacing a defective interface card*.

NOTE: The wiring adapter must also be changed to the corresponding slot. Any incorrectly fitted or missing wiring adapters are signalled by a red flashing LED on the display after start-up (see *Wiring Adapter Malfunction Mode*).

2. Connect the system terminals to the ports of the new slot.
3. Reconfigure the port assignment.
4. In the WebAdmin view *Cards and modules* (*=4g*) Confirm card in the new slot and *Delete* it from the old slot. The configuration data at the old slot location is now deleted.

   NOTE: Not all cards can be equipped on all slots (see *Component mounting rules*).

System modules

The category system modules comprises the DSP modules stacked in slot SM1. DSP modules are available in various versions (SM-DSPX1, SM-DSPX2, SM-DSP1, SM-DSP2). Compared with DSP modules, modules with the designation DSPX are fitted with more powerful DSP chips.

Changing the DSP module

The following describes how to replace a DSP module if it is defective or how to replace it for another module type.

To change a DSP module, proceed as follows:

CAUTION: Be sure to observe the *Safety regulations*.

1. Carry out preparations (see *Preparations*).
2. Remove the housing cover.
3. Remove the old or defective module by loosening the fastening screw and carefully pulling the module out vertically of the module slot.

NOTE: If there are several modules fitted and the module to be replaced is not topmost, the spacing sleeves have to be loosened and the modules pulled. The order of the modules on the slot is relevant only if different types of modules are equipped.

4. Press the new module downward evenly on both connectors to the stop.
5. Secure the module with the fastening screw.
6. Fit the housing cover.
7. Reconnect the system to the power supply.

Changing the RAM module

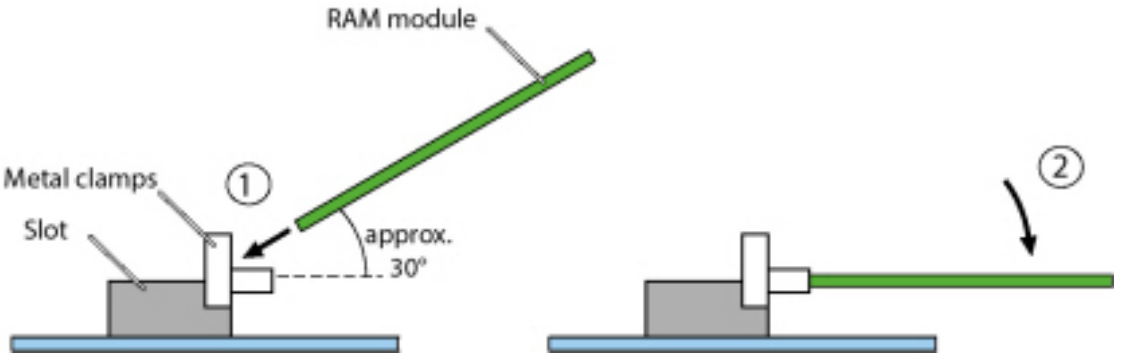
The RAM module is fitted to the CPU module and available as a spare part.

To replace a defective RAM module, proceed as follows:

CAUTION: Be sure to observe the *Safety regulations*.

1. Carry out preparations (see *Preparations*).
2. Remove the housing cover.
3. Remove the defective module by pressing the two lateral metal clamps outward at the same time and gently lifting the module.
4. Place the module at a slight angle into the slot (see *Changing the RAM module*).
5. Carefully press the module downwards until the two lateral metal clamps engage.
6. Fit the housing cover.
7. Reconnect the system to the power supply.

Figure 6.2: Changing the RAM module



Changing the CPU module

The CPU module is fitted to the mainboard and is available as a spare part. If the com-ponents on the CPU module are defective or permanently faulty, the entire call manager card must be replaced. As a spare part the CPU module does not contain any RAM module or Flash card. They can be taken from the defective CPU module and fitted to the new module.

To replace a defective CPU module, proceed as follows:

CAUTION: Be sure to observe the *Safety regulations*.

1. Back up the configuration data and audio data, if still possible.
2. Carry out preparations (see *Preparations*).
3. Remove the housing cover.
4. Remove the defective module by loosening the 4 fastening screws and carefully pulling the module out vertically of the module slot.
5. Place the new module in the slot and press it down evenly into the slot as far as the stop.
6. Fit the module on to the mainboard using the 4fastening screws.
7. Fit the housing cover.
8. Reconnect the system to the power supply.
9. Carry out a first start of the system (see *First start via WebAdmin*) and upload the configuration data from a backup file back on to the communication server.

   NOTE: When the defective CPU module was replaced by a new one, some system information is lost (IP address, sales channel, DECT identification numbers), has changed (EID) or is no longer valid (licence file). All DECT terminals must be re-registered and a new licence file is needed.

System cards

As the RAM and Flash chips are fitted directly to the mainboard, the category system cards comprises only the EIM card.

Replacing the EIM card

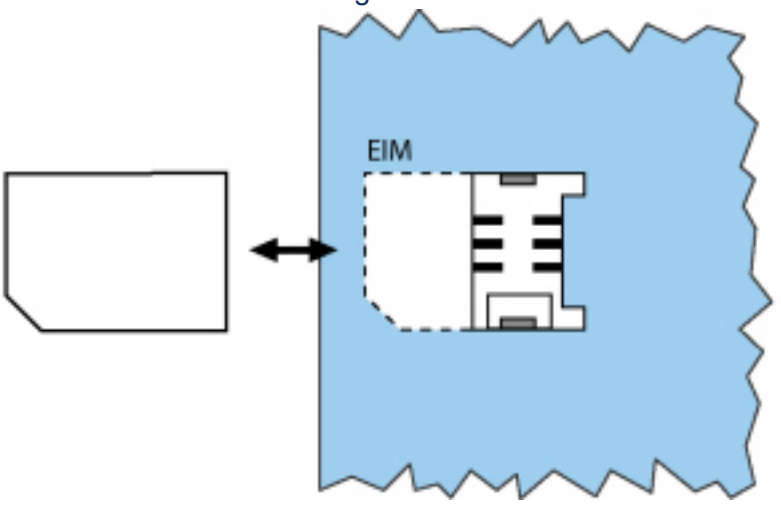
The EIM card is located in a chip-card holder that is secured directly on the mainboard. The position of the chip-card holder on the mainboard is shown in *Memories on the mainboard Mitel 415/430*.

To fit an EIM card, proceed as follows:

CAUTION: Be sure to observe the *Safety regulations*.

1. Carry out preparations (see *Preparations*).
2. Remove the housing cover.
3. Gently push the EIM card along the guide tongues out of the chip-card holder.
4. Push the new EIM card under the guide tongues and through to the stop in the chip-card holder. Make sure the contacts of the EIM card are facing downwards and the bevelled edge of the EIM card is pointing towards the edge of the mainboard (see *EIM card*).
5. Fit the housing cover.
6. Reconnect the communication server to the power supply.

Figure 6.3: EIM card



NOTE:

- The EIM card must be fitted before the system is put into operation. The communication server will not start without the EIM card.
- If the defective EIM card was replaced by a new one, all DECT cordless phones must be logged on again. This is necessary because the DECT identification numbers are stored on the EIM card.

Mainboard

If the components on the mainboard are defective or permanently faulty, the entire communication server with the metal chassis must be replaced.

To replace the communication server, proceed as follows:

CAUTION: Be sure to observe the *Safety regulations*.

1. Back up the configuration data and audio data, if still possible.
2. Carry out preparations (see *Preparations*).
3. Remove the housing cover.
4. Remove the interface cards (see *Interface cards*), the system modules (see *System modules*) and the wiring adapter.
5. Change the EIM card of the defective mainboard to the new mainboard (see *Replacing the EIM card*).
6. Dismantle all the connected cables in such a way that the new communication server can be identically reconnected.

   NOTE: The mainboard is not dismantled but replaced complete with metal housing.
7. The new communication server can now be reassembled, fitted and installed in the reverse sequence.
8. Carry out a first start of the system (see *First start via WebAdmin*) and upload the configuration data from a backup file back on to the communication server.

Replacing system terminals

DSI system phones

Phones with the same level of added features

Replacing a defective phone

Once the defective DSI system phone has been replaced by an identical phone the terminal configuration data is automatically transferred.

Relocating a phone

The assigned port can be modified in the terminal configuration via WebAdmin, and the phone connected on the new slot. The terminal configuration data is preserved.

Phones with a different level of added features

If a phone is replaced with another type of phone, most of the terminal configuration data can be taken over using *Multi edit*. A separate *Multi edit (keys)* function is available for the key configuration. Details can be found in the WebAdmin help for the view *Standard terminals* (*=qd*).

DECT terminals

Replacing a radio unit

1. Dismantle the defective radio unit.
2. Fit the new radio unit.

NOTE: If the ports of a radio unit are to be changed or if a radio unit is no longer used, it is important to remove the radio unit in the system configuration. If not, start-up problems may occur when another radio unit is connected to the same ports.

Replacing a cordless phone (a phone without microSD card)

1. Cancel the registration of the old cordless phone.
2. Register the new cordless phone. The cordless phone data is preserved until the user number is also deleted.

Cancelling the registration of a cordless phone on the system

In WebAdmin in the edit view of the cordless phone, click *Cancel registration*.

TIP: The identification of the cordless phone is deleted only if the cordless phone is located within the coverage range of a radio unit; otherwise, it must be deleted manually on the cordless phone (see the cordless phone's User's Guide). The user number and data in the system are retained.

Registering a cordless phone on the system

1. Prepare the cordless phone for registration (see the cordless phone's User's Guide).
2. Prepare system for registration. In WebAdmin in the edit view of the cordless phone, click Register.

NOTE: With some phone types, the user of the cordless phone may have to identify himself to the system using an authentication code (AC). This authentication code is issued after the *Register* button is clicked.

Replacing a cordless phone (a phone with microSD card)

The special microSD card is suitable for replacement with wireless DECT phones Mitel 620/622 DECT, Mitel 630/632 DECT and Mitel 650 DECT. The card stores the cordless phone's registration data on the communication server and the most important local settings. This guarantees that in case of device defect - by taking the card along - the operation on a replacement device can be continued within a short period and without re-registering.

Each card (like each cordless phone) has its own, globally known unique serial number for DECT devices (IPEI: International Portable Equipment Identity), used for the registration process on DECT communication systems. In an operation with the card, the data stored on the card is always used.

NOTE:

- The microSD card can only be used as from Device hardware 2 (concerns Mitel 620 DECT, Mitel 630 DECT).
- Use the card only after reading this detailed description of the card functions. Failing to observe these recommendations may cancel the registration of operational devices.
- All registration and device data on the card is encrypted and protected against copying.
- Do not use the card with other devices (e.g. camera) to avoid reformatting the card mistakenly and to have enough storage space.
- The card can no longer be used with the cordless phones after being erased or formatted.
- Commercially available microSD cards cannot be used (except to copy local settings, see *Copying local settings using a commercially available microSD card*).

Using a microSD card

NOTE: The microSD card must be handled very carefully. The contacts must be free from dust, humidity, oil, etc. Do not store the card in warm areas (exposed to direct sunlight, for example). Do not bend the card as this may damage the contacts.

1. Switch off the cordless phone.
2. Open the battery compartment and remove the battery.
3. Push the card holder downwards and carefully tilt the cover sligghtly upwards (see *microSD card* on the left).

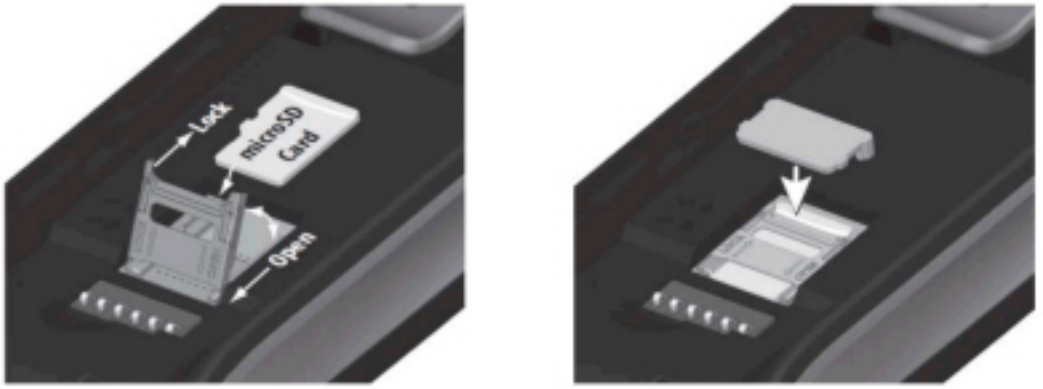
   CAUTION: Never touch the now visible and shining golden contacts! Static discharges may lead to device malfunction.
4. Place the card in the holder (with the contact surfaces downwards and the side card interfaces leftwards).
5. Close the card holder then carefully push it upwards until it snaps into place.
6. Only for Mitel 620 DECT, Mitel 630 DECT with black card holder:

   Take the protective cover provided with the card and put it on top of the card holder (see *microSD card* rightwards).

NOTE: The protective cover should not be used for Mitel 620 DECT, Mitel 630 DECT with a white card holder or in Mitel 622 DECT, Mitel 632 DECT and Mitel 650 DECT.

7. Insert the battery and cover the battery compartment.

Figure 6.4: microSD card



Behaviour after inserting a new microSD card

After starting the cordless phone you will receive, in the start phase, a message informing you that a new card has been detected. The two typical cases are described below:

Cordless phone has not yet been registered:

Accept the new card.

- The local settings are copied to the card.

Register the phone on the communication server.

- The registration data is stored on the card.
- Modifications on the local settings are henceforth also stored on the card.

Cordless phone is already registered:

Accept the new card.

- The local settings are copied to the card.
- The registration data is copied to the card and erased from the cordless phone memory.
- Modifications on the local settings are henceforth also stored on the card.

Behaviour after inserting a valid microSD card

After starting the cordless phone you will receive, in the start phase, a message inform-ing you that a new card with a new ID has been detected.

Accept the card.

- The cordless phone restarts.
- The card's registration data and local settings are used.
- The original data remains stored in the cordless phone and is reactivated once the card is removed.

Copying local settings using a commercially available microSD card

This procedure is helpful if several cordless phones with the same local settings must be preconfigured.

1. Carry out on a master cordless phone without microSD card the local settings you want.
2. Switch off the master cordless phone, insert a commercially available microSD card then restart the master cordless phone.
3. Confirm the information that the microSD card is invalid.
4. Select *Menu - Settings - General - Administration - Diagnostics - File Mgmt*. *Device* then copy all user data to the microSD card.

   → The card is now specially marked as a copy card.
5. Switch off the master cordless phone, remove the card and insert the card in the tar-get cordless phone to which the data must be copied.
6. Start the target cordless phone and confirm the information that the user data on the card will be used.
7. Copy all user data from the card to the memory of the target cordless phone.

   → The target cordless phone restarts.
8. Switch off the target cordless phone and remove the card.

   → After the target cordless phone is switched on again the copied user data is used.

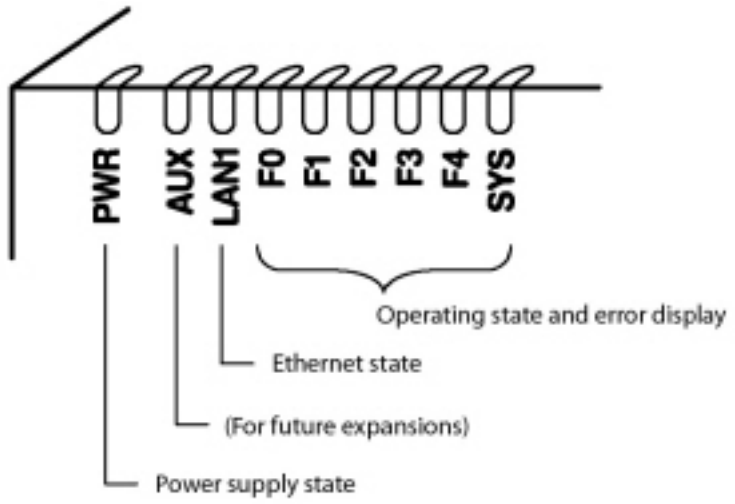
Display and control panel

The display and control panel of the Mitel 415 and Mitel 430 communication servers on the front panel consists of an LED display panel and a pilot key. It is used to indicate operating states and carry out functions.

LED display

The front panel contains an LED display field with a total of 9 labelled LEDs. It is used as an operating state and error indicator during the start-up phase and during operation.

Figure 6.5: LED display



"PWR" lit Power supply in order

"LAN1" lit: Port has a connection with the network

LAN1" blinking Port is receiving or sending data

"F0, F1, F2, F3, F4, SYS": see *Operating modes and display priorities*

Each LED can take on one of four states: green (G), orange (O), red (R) and inactive. In general the colours have the following meaning:

Table 6.3:Significance of the LEDs colours

Colour		**Meaning**
Inactive	–	Switched off
Green	G	Normal operation / everything in order
Orange	O	Function is being carried out / is active
Red	R	Warning / error

An LED activation period lasts 1 second and is subdivided into 8 units of 125 ms. In this way all the various flashing patterns can be displayed.

Example:

In the following display pattern the LED lights up green for 500 ms and is then inactive for 500 ms. Then it lights up green again for 500 ms ... etc.

Table 6.4:Example of a display pattern (Sheet 1 of 2)

LED activation period	**Description**
1s	

Table 6.4:Example of a display pattern (Continued) (Sheet 2 of 2)

G	G	G	G	–	–	–	–	Slowly flashing green

The following display patterns and symbols have been defined for displaying the status of the communication server:

Table 6.5:Defined display patterns (Sheet 1 of 2)

LED activation period 1s								**Description**	**Symbol**
–	–	–	–	–	–	–	–	Inactive	–
G	G	G	G	G	G	G	G	Steady green	G
O	O	O	O	O	O	O	O	Steady orange	O
R	R	R	R	R	R	R	R	Steady red	R
G	G	G	G	–	–	–	–	Slowly flashing green	G –
O	O	O	O	–	–	–	–	Slowly flashing orange	O –
R	R	R	R	–	–	–	–	Slowly flashing red	R –
G	G	G	G	O	O	O	O	Slowly flashing green/ orange	G O
O	O	O	O	R	R	R	R	Slowly flashing orange /red	O R

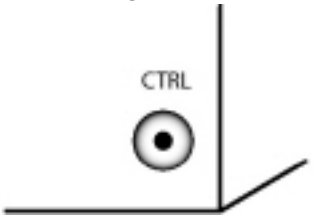
Table 6.5:Defined display patterns (Continued) (Sheet 2 of 2)

R	R	R	R	G	G	G	G	Slowly flashing red/green	
G	G	–	–	G	G	–	–	Rapidly flashing green	
G	–	G	–	G	–	G	–	Very rapidly flashing green	
R	–	R	–	R	–	R	–	Very rapidly flashing red	

Pilot key (CTRL key)

Pressing the pilot key carries out certain functions or switches the system to a particu-lar mode.

Figure 6.6: Pilot key



Different actions are carried out depending on how long the key is pressed and the system's current operating state. The duration of the keypress is divided into three time intervals:

Table 6.6:Keypress duration, pilot key

Designation	ID	Keypress duration
Short keypress (Shortclick)	SC	0...2 seconds
Long keypress (Long Click)	LC	2...10 seconds
Very long keypress (Very Long Click)	VLC	More than 10 seconds

Operating modes and display priorities

The system software of the Mitel 415/430 recognizes various operating modes, which are displayed with the LEDs F0, F1, F2, F3, F4 and SYS. In the following these displays are referred to as combination patterns or patterns and are numbered for easy reference.

The various operating modes have different display priorities, i.e.a mode with a higher display priority will cover up the combination pattern of a mode with a lower display priority. The combination patterns covered up are stored and continually updated in the background, which means that no patterns are lost.

The table below lists all the operating modes and their display priorities. The highest display priority is 1; the lowest, 7.

Table 6.7:Operating modes and display priorities

Operating mode	Display priority	Remarks
Shut-down Mode	1	• After the system is shut down • Shut-down mode lasts for 3 minutes. Thereafter the system automatically changes to *Startup Mode*.
Error Mode	1	• System is no longer able to run
Startup Mode	2	• When power is supplied • After a restart/first start • Used as a progress indicator during startup
Application Command Mode *Boot Command Mode*	3	• Used for carrying out certain functions • This mode is exited automatically if no input is made within 20 seconds.
Warning Mode	4	• System is still capable of running but the system function may be impaired. • Problem needs to be remedied as soon as possible.
Wiring Adapter Malfunction Mode	5	• System is running but a problem has been detected on one or more wiring adapter slots.
Feature Mode	6	• System is running normally but one function is active.
Normal Mode	7	• System is running normally.

Startup Mode

Startup begins as soon as power is supplied or after a restart/first start, and ends when the system enters Normal Mode. The LED combination patterns *[1]*...*[9]* indicate the individual start-up phases in chronological order and also serve as a progress indicator.

Table 6.8:Combination patterns during startup (Sheet 1 of 2)

Pattern No.	F0	F1	F2	F3	F4	SYS	Duration [s]	Meaning
[1]	R	R	R	R	R	R	~3	Red LED test
[2]	O	O	O	O	O	O	~1,5	Orange LED test
[3]	G	G	G	G	G	G	~1,5	Green LED test
[4]	G G G	–	–	–	–	–	~7	RAM self-test
	G	–	–	–	–	–	~3	
	–	–	–	–	–	–	~15	
[5]	G	G –	–	–	–	–	~3	Startup State
[6]	G	G	G –	–	–	–	~1	Preparing system software loading
[7]	G	G	G	G –	–	–	~3	Loading the system software
[8]	G	G	G	G	–	–	~1	System software successfully loaded
	–	–	–	–	–	–	~10	

Table 6.8:Combination patterns during startup (Continued) (Sheet 2 of 2)

[9]	–	–	–	–	–	G – G	~60	System software starting up

The startup phase is now completed and the system switches to Normal Mode. The pilot key now accepts inputs; the terminal displays are visible shortly thereafter.

Normal Mode

Normal Mode means that the system software is running fault-free. Depending on the situation the LEDs display the following combination patterns:

Table 6.9:Combination patterns in Normal Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[11]	–	–	–	–	–	G –	System in normal operation
[12]	G	–	–	–	–	G –	At least one internal port seized
[13]	–	G	–	–	–	G –	At least one external port seized

Mutual combinations of patterns *[12]* and *[13]* are possible as are combinations with patterns *[14]*, *[15]* and *[16]*.

Feature Mode

Feature Mode means that the system software is running fault-free, but that a special function (feature) is active. Depending on the function the LEDs display the following combination patterns:

Table 6.10:Combination patterns in Feature Mode (Sheet 1 of 2)

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[14]	–	–	–	–	–	O –	System is prebarred

Table 6.10:Combination patterns in Feature Mode (Continued) (Sheet 2 of 2)

[15]	–	–	–	O	–	G –	Enable the password-free access for configuration via Ethernet.
[16]	–	–	–	–	O	G –	Remote access to AIN enabled via an external dial-up connection.

Mutual combinations of patterns *[14]*, *[15]* and *[16]* are possible as are combinations with patterns *[12]* and *[13]*.

Mitel Advanced Intelligent Network:

In an AIN the offline mode of a satellite is indicated by the green-orange flashing SYS-LED. Combinations with the patterns of the Normal Mode and Feature Mode are possible.

Exception: Pattern *[14]* (prebarred system) takes priority over the offline mode display.

Application Command Mode

The Application Command Mode can be used to shut down or restart the communication server with prior database backup. It is also used to enable or disable password-free access (pattern *[15]*) and remote access to the AIN via an external dial-up connection (pattern *[16]*).

The Application Command Mode is indicated by the SYS-LED flashing green-orange.

The Application Command Mode is entered pressing and holding down the control key (LC) in Normal Modus. Combination pattern *[17]* is displayed once the Application Command Mode has been entered.

Table 6.11:Patterns after entering the Application Command Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[17]	R	–	–	–	–	G O	Application Command Mode active

The Application Command Mode is exited automatically if no input is made within 20 seconds; the system returns to Normal Mode.

Boot Command Mode

The Boot Command Mode is used to carry out a first start or set a fixed IP address.

The Boot Command Mode is indicated by the SYS-LED flashing orange-red.

The Boot Command Mode is entered by pressing and holding down the control key (LC) during the start-up state (pattern *[5]*, *Combination patterns during startup*). Pattern *[18]* is displayed once the Boot Command Mode has been entered.

Table 6.12:Patterns after entering the Boot Command Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[18]	R	-	-	-	-	O R	Boot Command Mode active

The Boot Command Mode is exited automatically if no input is made within 20 seconds; the system returns to Startup Mode and restarts.

Wiring Adapter Malfunction Mode

The system switches to this mode if an unsuitable wiring adapter is fitted into one of the wiring adapter slots. Missing wiring adapters are also indicated.

The Wiring Adapter Malfunction Mode is indicated by one or more red flashing LEDs F1...F4. The LED number corresponds to the number of the Wiring Adapter slot concerned. The SYS-LED flashes green as in the Normal Mode.

Table 6.13:Sample pattern for Wiring Adapter Malfunction Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[20]	-	-	R -	-	-	G -	Wrong or missing wiring adapter in slot WA2

Warning Mode

The system switches to the Warning Mode if a problem occurs that impairs the system's normal operation. The Warning Mode is indicated by the red-green flashing SYS-LED and is exited only once the problem is remedied.

The different warnings are binary coded and are indicated by the LEDs (F0...F4).

Table 6.14:Warning Mode combination patterns

F0	F1	F2	F3	F4	SYS	Category / Description	Remedy
-	-	-	-	R	R G	Fan out of operation	Check connections or replace fan
-	-	-	R	-	R G	Oscillator Tuning Block missing (can cause DECT problems)	Contact Support. The Oscillator Tuning Block has to be loaded.

Boot Mode

The boot mode enables an Emergency Upload via the Ethernet interface. This is required whenever there is no longer any executable system software stored on the communication server for whatever reason or if a downgrade to an older software version is to be carried out.

The Boot Mode is indicated by the SYS-LED flashing red.

To access the boot mode press the control key during the LED test red, which is executed during the start-up phase (pattern *[1]*, *Combination patterns during startup*). The length of time the pilot key is pressed is irrelevant. The red LEDs go off once the control key is pressed. After a wait time of approx. 30 seconds, Pattern *[21]* of the boot mode is displayed.

Table 6.15:Combination patterns in Boot Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[21]	-	-	-	-	-	R -	Boot Mode active

The boot mode remains active until the Emergency Upload is completed or the system is restarted manually.

Shut-down Mode

If, for maintenance purposes, the communication server is disconnected from the power supply, it must be shut down under control (see *Shutting down the communication server*). It then remains in Shut-down

Mode for three minutes before it starts again automatically. During this period the communication server can be disconnected from power supply.

NOTE: Never disconnect the communication server from the power supply to trigger a restart. This can result in data losses and prevent a restart.

Combination pattern *[22]* is displayed in shut-down mode.

Table 6.16:Combination patterns in Boot Mode

Pattern No.	F0	F1	F2	F3	F4	SYS	Meaning
[22]							Shut-down Mode active

Error Mode

The system switches to Error Mode if a problem or error occurs that prevents the system's normal operation. This can be a hardware error or a software installation error.

The Error Mode is indicated by the red SYS-LED flashing very rapidly and is exited only once the error is remedied. In many cases this involves a system restart.

The different errors are binary coded and are indicated by the LEDs (F0...F4).

Table 6.17:Error Mode combination patterns (Sheet 1 of 5)

F0	F1	F2	F3	F4	SYS	Category / Description	Remedy
						Hardware: No licence: EIM card missing or defective	Insert or replace EIM card
						Hardware: No IP address data on the EIM card	Run a first start or replace EIM card
						Hardware: EIM card not compatible	Replace EIM card

Table 6.17:Error Mode combination patterns (Continued) (Sheet 2 of 5)

–	–	R	–	–	R R R	Hardware: DRAM defective	Replace communications server
–	–	R	–	R	R R R	Hardware: BBT Integrity Check: No free replacement blocks available	Replace communications server
–	–	R	R	–	R R R	Hardware: BBT Integrity Check: Inconsistent Bad Block Table	Replace communications server
–	–	R	R	R	R R R	Hardware: BBT Integrity Check: ECC has detected an uncorrectable read error	Replace communications server
–	R	–	–	–	R R R	Hardware: BBT Integrity Check: Block 0 is faulty; the Bad Block Table cannot be used	Replace communications server

Table 6.17:Error Mode combination patterns (Continued) (Sheet 3 of 5)

–	R	–	–	R	R R R	Software: Version transfer not possible: The country and/or sales channel in the EIM card does not match the configuration data in the Flash	Using WebAdmin set a different EIM card and / or sales channel.
–	R	–	R	–	R R R	Software: Version transfer not possible: Software release unknown.	Load new system software onto mainboard
–	R	–	R	R	R R R	Software: Incompatible Boot software	Contact Support. A different Boot software may have to be loaded.

Table 6.17:Error Mode combination patterns (Continued) (Sheet 4 of 5)

–	R	R	–	–	R R R	Software/ Hardware: General copy error	Load correct system software onto mainboard or replace communication server.
–	R	R	–	R	R R R	Software: Copy error between file system and DRAM	Load correct system software onto mainboard or replace communication server.
–	R	R	R	–	R R R	Factory Server Error: No DHCP	For the manufacturer only
–	R	R	R	R	R R R	Factory Server Error: No TCP connection	For the manufacturer only
R	–	–	–	–	R R R	Software: corrupt file system	Contact Support. The file system must be reformatted.

Table 6.17:Error Mode combination patterns (Continued) (Sheet 5 of 5)

R	R	R	R	R	R R R	Software: Emergency UploadFunctional system software no longer available	New system software must be loaded with EUL via LAN (see **Loading new or older system software with System Search**).
-	-	-	-	-	-	Software: General boot error	Contact Support. A different Boot software may have to be loaded.
R R R	R R R	R R R	R R R	R R R	R R R	Software: General error	Load new software onto mainboard. If unsuccessful, contact Support.

Carrying out functions

The pilot key is used to carry out various functions. For certain functions the system has to be in a particular operating state beforehand.

Shutting down the communication server

The communication server can be shut down in a controlled manner. It then remains in Shut-down Mode (see *Shut-down Mode*) for three minutes before it starts again automatically. Within these three minutes, the communication server can be disconnected from the power supply.

Requirement:

The system is in *Application Command Mode*.

1. Press the pilot key with a short keypress (SC) until "F1" lights up.
2. Press the pilot key with a long keypress (LC)
   - After 2 second keypress "F1" lights up green by way of confirmation.
   - After the key is released the communication server is shut down and displays Pattern *[22]*for three minutes.

     TIP: You can also shut down the communication server in a controlled manner via WebAdmin in the *Maintenance* / *System reset* (*=4e*) view.

Normal restart with database backup

The following sequence carries out a database backup and saves the data on the communication server's internal file system. The communication server is then restarted automatically:

Requirement:

The system is in *Application Command Mode*.

1. Press the pilot key several times with a short keypress (SC) until "F2" lights up.
2. Press the pilot key with a long keypress (LC)
   - After 2 second keypress "F2" lights up green by way of confirmation.
   - Once the key is released, a database backup is carried out followed by a communication server restart.

     TIP: You can also restart the communication server via WebAdmin in the *Maintenance* / *System reset* (*=4e*) view.

Forced restart without database backup

In all operating states a very long keypress (VLC) on the pilot key forces the communication server to restart. The restart is initiated **after the key is released**.

NOTE: Forced restart is the same as power failure and can result in loss of data. This may prevent a communication server start-up. Forced restart should only be initiated if normal restart (via the control key or with WebAdmin) is no longer possible for any reason.

Enabling / disabling password-free access

The following sequence changes the status of the password-free access:

Requirement:

The system is in *Application Command Mode*.

1. Press the pilot key with a short keypress (SC) until "F3" lights up.
   – "F3" indicates the current status: steady red= disabled, steady orange = enabled.
2. Press the pilot key with a long keypress (LC)
   – After 2 second keypress "F3" lights up green by way of confirmation.
   – When the key is released, the status changes and the system jumps back to original Mode.
   – "F3" indicates the current status: inactive = disabled, steady orange = enabled.

   NOTE: You are strongly advised to keep the password-free access open only for as long as necessary. For security reasons it is automatically deactivated again after a restart or at the latest after 60 minutes.

Enabling / disabling the dial-up connection to the AIN

The following sequence changes the status of the remote access to the AIN via an external dial-up connection:

Requirement:

The system is in *Application Command Mode*.

1. Press the pilot key several times with a short keypress (SC) until "F4" lights up.
   – "F4" indicates the current status: steady red= disabled, steady orange = enabled.
2. Press the pilot key with a long keypress (LC).
   – After 2 second keypress "F4" lights up green by way of confirmation.
   – When the key is released, the status changes and the system jumps back to original Mode.
   – "F4" indicates the new status: inactive = disabled, steady orange = enabled.

   NOTE: You are strongly advised to keep the remote access to the AIN via an external dial-up connection open only for as long as necessary. There is no time limit to the access and it remains in place even after a system restart.

Carrying out a first start

The following sequence carries out a system first start.

NOTE: A first start deletes all the configuration data already stored and replaces it with the default values of the sales channel. Therefore, always back up the configuration data before a first start. The system-specific data such as the system ID, system type, sales channel, software generation and IP address of the system are preserved.

Requirement:

The system is in *Boot Command Mode*.

1. Press the pilot key briefly.
   – "F1" lights up red.
2. Press the pilot key with a long keypress (LC).
   – After 2 second keypress "F1" lights up green by way of confirmation.
   – The first start is initiated once the key is released.

– The system now deletes the database. This is indicated with Pattern *[19]*. Thereafter, the system changes to Normal Mode after a brief interruption. It now still remains up to five minutes until the communication server is accessible with WebAdmin.

Table 6.18:Patterns while the database is deleted as a result of a first start

Pattern No.	F0	F1	F2	F3	F4	SYS	Duration [s]	Meaning
[19]							~5	Deleting the database

TIP: You can also initiate a first start of the communication server via WebAdmin in the *Maintenance* / *System reset* (*=4e*) view. There you can also reset the sales channel in addition to a first start.

Resetting the IP address

The IP address data is stored on the EIM card and is retained even after a first start. The following sequence only resets the IP address data of the communication server to the default values. All the other data is retained.

Requirement:

The system is in *Boot Command Mode*.

1. Press the pilot key several times with a short keypress (SC) until "F2" lights up red.
2. Press the pilot key with a long keypress (LC)
   – After 2 second keypress "F2" lights up green by way of confirmation.
   – The IP address data is reset to the default values once the key is released. The startup then continues normally.

Default values of the IP address data:

- IP address: 192.168.104.13
- Subnet mask: 255.255.255.0
- Gateway: 0.0.0.0

Thorough RAM test

To carry out a thorough RAM test during startup, press the pilot key briefly (SC) during the orange LED test (pattern*[2]*). The thorough RAM test lasts for approx. 2 minutes and is displayed with Pattern *[4]*. The startup then continues normally.

Emergency Upload via LAN

An Emergency Upload is required whenever there is no longer any executable system software stored on the communication server for whatever reason or if a downgrade to an older software version is to be carried out.

For this, proceed as described in *Loading new or older system software with System Search*.

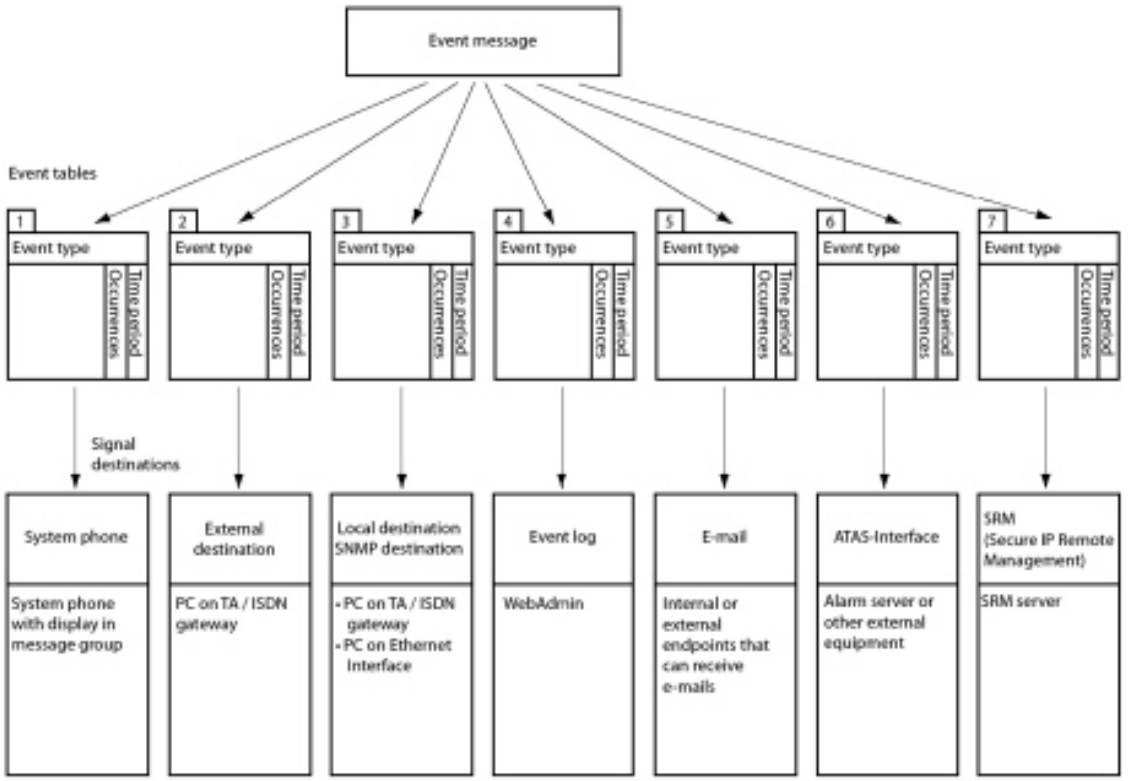
Operations supervision

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:

Figure 6.7: Distribution principle for an event message



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).

Table 6.19:Event types, in alphabetical order (Sheet 1 of 24)

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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 2 of 24)

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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 3 of 24)

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 date. **NOTE:** This event message is generated by the backup communication server.	Instance type (0: User, 1: terminal), user number or ter-minal 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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 4 of 24)

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

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 5 of 24)

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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 6 of 24)

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 overheaing: 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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 7 of 24)

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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 8 of 24)

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)
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 mes-sage), 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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 9 of 24)

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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 10 of 24)

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 mes-sage 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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 11 of 24)

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)
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, rea-son, 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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 12 of 24)

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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 13 of 24)

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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 14 of 24)

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. **NOTE:** • To revent 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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 15 of 24)

Port out of service	A port previously in operation has stopped func-tioning.	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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 16 of 24)

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 miss-ing, 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. 191	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)
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 trig-gered 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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 17 of 24)

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, roll-back performed • 3: New communication server software started and running well Date, time	Normal (without match)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 18 of 24)

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 man-agement 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)
SX-200 hotel management system: Connection established	The connection to the SX-200 hotel manage-ment 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 manage-ment 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 gener-ated by the primary communication server.	Backup communica-tio n server ID, date, time	critical (negative, with match)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 19 of 24)

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 communica-tion 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 resynchronized with the system clock.	Port number, date, time	Serious (positive, with match)
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 spe-cific 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)

Table 6.19: Event types, in alphabetical order (Continued) (Sheet 20 of 24)

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: Shut-down (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)
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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 21 of 24)

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 SIM-PLE/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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 22 of 24)

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 param-eter 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)

Table 6.19:Event types, in alphabetical order (Continued) (Sheet 23 of 24)

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)
Too few licences for IP system phones	A MiVoice\ 5361\ IP / 5370 IP / 5380 IP was una-ble 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)

Table 6.19: Event types, in alphabetical order (Continued) (Sheet 24 of 24)

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)
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.

Table 6.20:Meaning of the parameter values for the event message *Send e-mail failed (Sheet 1 of 2)*

	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 IDYY: 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)		

Table 6.20: Meaning of the parameter values for the event message *Send e-mail failed (Continued) (Sheet 2 of 2)*

10	E-mail text too long (body)	User name authentica-tion (LOGIN)		
11	E-mail attachment too large	Password authentica-tion (LOGIN)		
12	Format of e-mail attachment not supported	Authentication (PLAIN)		
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.

Event tables

Event tables (*=f4*) list all the event messages the system is capable of generating (see *Event types, in alphabetical order*).

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.

Table 6.21: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.

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 8.
- 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 7.

External signal destinations

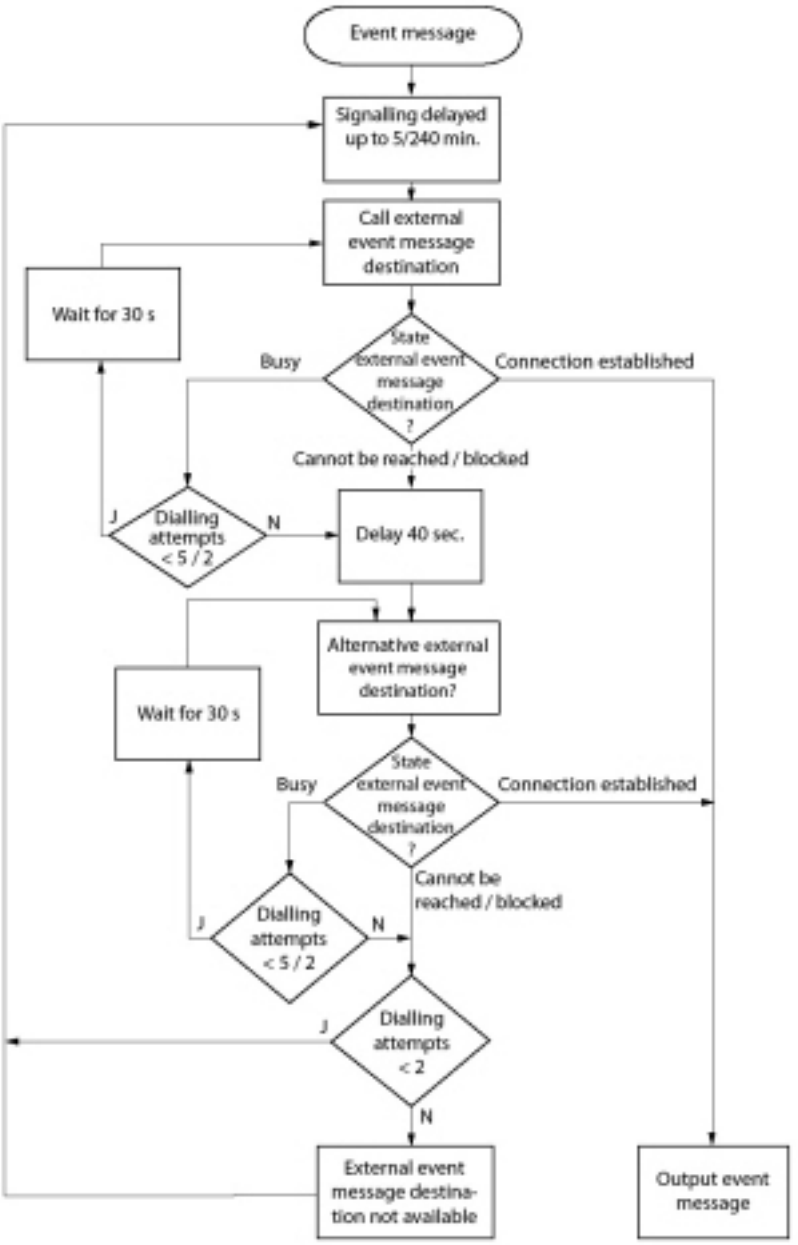
Depending on the event table allocated, event messages (normally Table 2) are sent to a specified external signal destination. Two external signal destinations can be specified:

- 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

Figure 6.8: 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.

NOTE:

- 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.

NOTE: 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 *Event types, in alphabetical order*.

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.

Operating state and error displays

System operating state

During the start-up phase, various self-tests are performed and the individual phases are shown in the LED display on the front panel (see *Startup Mode*).

When operation is OK, the SYS LED flashes green, regularly, and once per second in the display on the front panel. The system is in normal mode. The assignment of internal or external ports, password-free access as well as remote access via an external dial-up connection to AIN are shown as status in the LED display (see *Normal Mode* and *Feature Mode*).

System error displays

Whenever the system detects an error, it displays the corresponding error code in the LED display field of the front panel (providing the communication server is still powered and the display is working).

There are 3 types of error:

- System is running but a problem has been detected on one or more wiring adapter slots. (See *Wiring Adapter Malfunction Mode*.)
- Warning. System is still capable of running but the system function may be impaired (see *Warning Mode*).
- Serious error. System is no longer able to run (see *Error Mode*).

In the event of sporadic errors check the installation for earth loops.

Terminals

Table 6.22:Malfunctions on the terminal side

Error description	**Error cause / error handling**
Digital system phones on the DSI bus display *Not Configured* along with the node number, the slot number and the port number.	No terminal has yet been created on the connected port or an incorrect terminal selection digit (TSD) has been allocated to the terminal: • Check system and terminal configuration • Check installation and connecting cable
System phones do not obtain any dial tone when seizing a line; display reads *Not available*.	Replace phone or interface card.
Terminals with configurable dialling method experience sporadic malfunctions whenever control key is pressed.	System earth must not be connected on terminals configured for MFV/DTMF (double signalling on Flash/earth key).
Analogue terminals do not obtain a dial tone when off-hook.	No terminal has been created on the connected port or the terminal created has not been allocated to a user. • Create a terminal and allocate a user • Check installation or connecting cable

Operating state of the Mitel DECT radio units

Each radio unit is equipped with 3 LEDs. The operating state the radio units is indi-cated by different colours and flashing sequences in cycles of 1 s, specifically by one of the two outer LEDs on the SB-4+ and by both outer LEDs on the SB-8 / SB-8ANT (separately for each DSI bus). Each character (G, R or -) corresponds to 1/8 of a second.

Example:

During the synchronization phase GGGGRRRR the LED flashes periodically. 1/2 second green, 1/2 second red.

Table 6.23:Flashing sequences of the status LED on the DECT radio unit (Sheet 1 of 3)

State	Cycle								Meaning
No flashing	-	-	-	-	-	-	-	-	LED switched off / software not running / RU not connected
Red									Error:
	R	R	R	R	R	R	R	-	DSI bus not in order
	R	-	-	-	-	-	-	-	Power supply error or DSI line too long

Table 6.23:Flashing sequences of the status LED on the DECT radio unit (Continued) (Sheet 2 of 3)

Green / red									Startup process :
	G	R	R	R	R	R	R	R	DSI ok
	G	R	G	R	G	R	G	R	Software is uploaded
	G	G	G	G	G	R	R	R	Synchronizing
	G	G	G	G	G	G	G	R	DECT is being started
	G	G	G	G	G	R	G	R	HF Power Down / DECT System Status Passive [1]

Table 6.23:Flashing sequences of the status LED on the DECT radio unit (Continued) (Sheet 3 of 3)

Green									Normal operation (requirement: LED not switched off):
	G	–	–	–	–	–	–	–	All B channels available
	G	G	G	G	–	–	–	–	1 to 3 B channels busy
	G	G	G	G	G	G	G	–	3 B channels busy

1. This operating state appears in the following situations:

During a configuration data upload

After a system first-start

If in WebAdmin in the *DECT* view (*=sa*) the parameter *DECT system status* is set to *Passive*.

If no location area is assigned to a radio unit - (This may happen after adding a radio unit to a system with several Location Areas, which is the case when a radio unit has already been set in a Location Area unequal 0). In this case the added radio unit has to be manually allocated to the selected Location Area.)

An orange status LED indicates that DECT signalling is active, i.e. DECT sequences are currently being transmitted between the cordless phone and the radio unit. Examples:

- With each keystroke on the cordless phone the LED briefly lights up orange.
- During a cordless phone firmware download the orange LED remains lit until the download is completed.

On an SB-8ANT radio unit the middle LED indicates whether the internal or external antennas are active. If the LED is lit green, the external antennas are active.

NOTE: After the system initialization the radio unit starts in status "DSI ok". It is only ready to operate once at least one DECT user has been entered in the numbering plan or once in WebAdmin the parameter *DECT system status* has been set to *Active*.

Malfunction of the Mitel DECT radio unit

Table 6.24:Malfunction of the Mitel DECT radio unit

Error description	Error cause / error handling
No radio connection in a coverage area.	Check LED on radio unit: LED is flashing red (short red phase): • Check power supply / line length of DSI bus cable LED is flashing red (long red phase): • Check DSI bus cable • Unplug DSI bus cable for one minute, then reconnect LED is flashing green (long green phase): • All B channels busy
Radio unit not activated.	LED on radio unit is flashing red/green (various patterns): • Radio unit in startup phase LED on radio unit is flashing red (long red phase): • Radio unit defective If LED on radio unit not flashing: • Check trunk connections • Radio unit defective • LED of the radio units deactivated throughout the system

Malfunctions of Mitel DECT cordless phones

Table 6.25:Malfunctions of Mitel DECT cordless phones (Sheet 1 of 2)

Error description	Error cause / error handling
No display.	• Switch cordless phone on and test • Replace or charge battery
No radio link to radio unit; no aerial symbol.	Check coverage area (within range of a radio unit). • Check radio units in this section Cordless phone not registered with the system • Cordless phone registered
Impossible to dial.	Keypad blocked (keylock) • Unlock keypad

Table 6.25:Malfunctions of Mitel DECT cordless phones (Continued) (Sheet 2 of 2)

No dial tone.	• Check radio units in this section
Poor connection quality (echo effect).	• Turn back loudspeaker opposite (for call parties)
Cordless phone beeps approx. every 10 s during a call (or in standby) while battery indicator is flashing.	• Replace battery immediately, either after or during the call (see cordless phone user's guide)
Call breaking up.	You are moving out of range. • Find a location with a better radio contact
A cordless phone is called from a different system phone, but cannot be reached.	Busy tone obtained and display reads *Busy* • Cordless phone is busy Congestion tone obtained and display reads *Circuit overload*. • All radio channels busy If congestion tone is obtained after 8 seconds and display reads *No answer*. Reasons why the cordless phone could not be reached: • It is switched off • It is not within reachable radio area • No radio channels currently available • It is not registered with the system • Call diverted due to unobtainable
Cordless phone is not ringing.	• Activate tone ringing
The cordless phone cannot be configured; PIN missing (or forgotten).	• Reset PIN for user (overwrite)

Malfunctions of the DECT charging bays

Table 6.26:Malfunctions of the DECT charging bay (Sheet 1 of 2)

Error description	**Error cause / error handling**

Table 6.26:Malfunctions of the DECT charging bay (Continued) (Sheet 2 of 2)

The cordless phone will not charge.	• Connect power supply • Check the charging contacts • Check battery and replace if necessary. About the charging process: • Battery symbol on the cordless phone is flashing (Office 135) or filling up (Office 160, Mitel 600 DECT) when the battery is being charged. • Check tone indicates correct contact.

Longclicks on Mitel DECT cordless phones

In normal DECT cordless phone operation, long-clicking the following keys accesses additional functions directly.

Table 6.27:Longclicks on Mitel DECT cordless phones (Sheet 1 of 3)

Function	Office 135	Office 160	Mitel 600 DECT
In a list box: change scroll direction. Long-click ">" switches to "lt;" and vice versa	Foxkey right	Foxkey right	—
Direct access to the configuration menu	M	M	—
Switch cordless phone on/off	C, 0	0	End key
Switches over to the next radio system temporarily.	1	1	2
Indicates the radio system parameters (cordless phone IPEI and radio system PARK). With each additional call the next radio system is indicated in each case if there are other logons.	2	2	—

Table 6.27:Longclicks on Mitel DECT cordless phones (Continued) (Sheet 2 of 3)

Indicates the cordless phone's internal diagnostics.	3	3	—
Switches to a special alarm menu of the cordless phone.	—	—	3[1]
Indicates the data of the valid radio unit ("Show Measurement Mode", see "Planning DECT Systems" in the User's Guide).	4	4	—
Indicates the cordless phone's firmware version.	5	5	—
Jumps to the cordless phone's service menu.	—	—	5
Indicates battery charge status and the type.	6	—	—
Indicates the communication server's software version.	7	7	—
Activates "semi" key lock. See Operating Instructions for details.	8	8	—
Activates key lock. See Operating Instructions for details.	9	9	#
Switch dialling type DTMF on/off. See Operating Instructions for details.	*	*	—
Switch tone ringing on/off.	—	—	*

Table 6.27:Longclicks on Mitel DECT cordless phones (Continued) (Sheet 3 of 3)

Jumps to the cordless phone's tone ring menu.	Loud-speaker key	Loud-speaker key	—
Menu for display contrast, display backlighting, area tone and overload tone. See Operating Instructions for details.	#	#	—
Configuration mode for hotkey. See Operating Instructions for details.	Hotkey	Hotkey	Hotkey
Switch error messages on/off (default value: Off). Messages relating to the following errors cannot be switched on/off: HS logon error, incorrect location reg-istration, no locatable radio unit, network, system or radio unit overload.	5 + 3	5 + 3	—

1. Mitel 630 DECT only

Overload code displays Office 135 / Office 160

The overload code displays on the cordless phones Office 135 and Office 160 can be activated and deactivated using the following key combination (toggle function): Long-click key 5 and then long-click key 3 (long = long-click = 2 seconds).

The overload code display is always deactivated after system initialization.

Table 6.28:DECT overload code displays Office 135 (Sheet 1 of 2)

Code	Name	Error description	Error handling
05 / 06	IPEI Not Accepted	Cordless phone already registered with the system under a different number.	• Delete cordless phone registration. • Try again
10	Authentication failed	Registration error	Try again

Table 6.28:DECT overload code displays Office 135 (Continued) (Sheet 2 of 2)

51	DL 04 Expiry	Timer (on cordless phone) has expired	Try again
70	Timer Expired	MM timer in system has expired (during registration)	Try again
44	Failure to set up traffic bearer	Connection cannot be set up as too many cordless phones are phoning within the same range	• Try again • If still unsuccessful after several attempts, restart cordless phone and try again.
45	No Quiet Channel	No channel available, same as code 44	Same measures as for code 44
80	Reject Location Area. Not allowed. Misused to indicate wrong "design" version.	Wrong mode during logon.	Logon to the system lt; I5 • Office 135: Longclick "Home" Logon to the system > I5: • Office 135: Shortclick "Home"

Other aids

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.

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.

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.

There are the two main areas */home/mivo400/* and */ram/*. Statistical data are stored in the RAM area while all communication server folders and files are placed in the home directory.

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.

Measuring equipment for cordless systems

The aids required for measuring out DECT systems are described under “Planning DECT Systems” in the User’s Guide.

Annex

This chapter informs you about the systematic designation system and provides you with an equipment overview of the communication server with cards, modules and optional components. It also provides the technical data for interfaces, communication server and system terminals as well as a table overview of the digit key assignments and function keys for the system phones. Finally here is a list of functions and products no longer supported, licence information on third-party software products, and a table summary of related documents and online help.

Systematic designation system

Table 7.1:PCB Designation

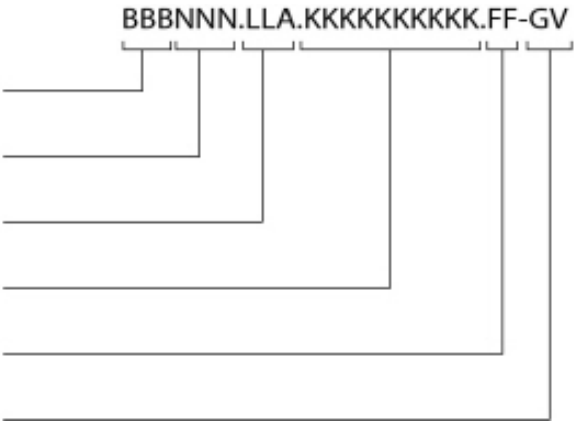
PCB type (three-digit)	
Project number (three-digit)	
Country code and sales channel	
ID	
Colour code on terminals	
Generation and version	

Table 7.2:Explanation of the PCB Designation (Sheet 1 of 2)

Part of the PCB designation	**Remarks and examples**
PCB type (three-digit)	LPB = Printed circuit board fitted KAB = Cable fitted PBX = Complete system SEV = Set packed EGV = Terminal packed MOV = Module/card packed
Project number (three-digit)	957 (System Mitel 415/430)

Table 7.2:Explanation of the PCB Designation (Continued) (Sheet 2 of 2)

Country code and sales channel (one to three-digit, with full stops)	Two-digit country code as per ISO 3166,Sales channel (1...9) for various sales channels. Example: EXP = Export channels (not country-specific) Space = No country code
ID	ETAB4 = analogue terminal card with 4 FXS interfaces
Colour code on terminals	Colour designation in accordance with EU directive
Generation and version	Example: –3C = 3. Generation, Version C (Generation new modules: -1) **NOTE:** • A generational change is effected following substantial changes to the functionality of a PCB. • A change of version is effected following small changes to functions or once faults have been remedied. Backward compatibility is guaranteed.

Rating Plate and Designation Stickers

Figure 7.1: Rating plate (example Mitel 430 communication server)

Figure 7.2: Designation stickers (example interface card)

Equipment Overview

Table 7.3:Equipment Overview

Description
Mitel 415 basic system with power supply unit and power cable
Mitel 430 basic system with power supply unit and power cable
DSP module SM-DSPX1
DSP module SM-DSPX2
TIC-2AB trunk card (2 x FXO)
TIC-4AB trunk card (4 x FXO)
TIC-1PRI ISDN primary trunk card
TIC-2TS ISDN basic trunk card/terminal interface card
TIC-4TS ISDN basic trunk card/terminal interface card
Terminal card EADP4 (4 x DSI-AD2)
Terminal card ETAB4 (4 x FXS)
Options card ODAB
Wiring adapter 2W
Wiring adapter TS0
Wiring adapter TS1
Wiring adapter 1PRI
Prefabricated system cable 12 x RJ45, 6 m
RJ45 patch cable, blue, screened, 1 m
RJ45 patch cable, blue, screened, 2 m
Mitel 415 rack-mounting set
Mitel 430 rack-mounting kit incl. fan
Cable cover set for Mitel 415/430

Table 7.4:Overview of spare parts

Description
Mitel 430 fan
Power supply unit for basic system
Two-pin standard power cable for basic system

Technical data

Network interfaces

The following technical data applies to the network interfaces:

Primary rate interface PRI

- E1 ISDN PRI
  - 30 B channels, 1 D channel, Bitrate 2.048 Mbit/s
  - Protocol DSS1 (public), QSIG/PSS1 (private) – used mainly in Europe
  - Protocol CAS MFC R2 – used in Brazil
  - Only on TIC-1PRI card

Basic rate interface BRI-T

- Standard Euro ISDN interface as per CTR-3
- Configurable for point-to-point or point-to-multipoint operation
- Not usable in USA/Canada for the public network

Analogue network interfaces

- Voice path with A/D and D/A conversion (standard PCM, A-law)
- Transmission as per ES 201 168 (level country-specific)
- Signalling as per TBR 21
- Pulse or DTMF dialling, Flash signal
- Loop current detection
- Call charge receive 12 or 16 kHz (frequency and level setting country-specific)
- CLIP detection in accordance with ETS 300 778-1

Terminal interfaces

The following technical data applies to the terminal interfaces:

Digital terminal interface DSI

- Proprietary interface, two-wire
- Two system phones of the MiVoice 5300 series can be connected per interface (AD2 protocol)

- One SB-4+/SB-8 radio unit can be connected (with 8 channels the SB-8 radio units requires two DSI interfaces)
- Power supply min. 75 mA, limiting at approx. 80 mA, terminal voltage 36…48 V
- Line termination in the phone
- Transparent transmission of 2 PCM channels

Digital terminal interface BRI-S

- Standard Euro ISDN interface
- Phantom power supply min. 140 mA, limiting at approx. 170 mA, terminal voltage 36…41 V
- Up to 8 terminals can be connected
- Maximum of 2 simultaneous call connections

Analogue terminal interface FXS

- Configurable multifunctional interface for connecting analogue terminals and equipment.
- The following applies for the FXS mode *Phone / Fax*, *two-wire door* and *general bell*:
  - Voice path with A/D and D/A conversion (standard PCM, A-law)
  - Transmission as per ES 201 168 (level country-specific)
  - Constant-current loop supply approx. 25 mA (with loop resistance £ 1000 W)
  - Receive pulse or DTMF dialling
  - CLIP display on 2 analogue terminals interfaces simultaneously.
  - Ringing supply 40…43 V 50 Hz at load 4kW; no DC voltage overlay (country-specific versions also with 25 Hz)
  - No control key detection
  - No charge signalling pulses
- For more technical details and cable requirements see Multifunctional FXS interfaces.

Communication server

Table 7.5:Dimensions and weights

	Mitel 415/430 for wall mounting	**Mitel 415/430 in rack mounting**
Height	65 mm	65 mm
Width	360 mm	483 mm
Depth	294mm	294mm
Weight (excl. mains cord, interfaces cards, modules and packaging)	2.4 kg	2.5 kg

Table 7.6:Electrical isolation of interfaces

Interface	**Mitel 415/430**	
Analogue network interfaces	0.2 kV	Operating isolation
Digital network interfaces BRI		Operating isolation
Control input on ODAB		no isolation, but input impedance > 8 kW
Freely connectable relay contacts on ODAB	0.2 kV	
Door intercom interface on ODAB	0.2 kV	
Control input on FXS interface		no isolation
Control output on FXS interface		no isolation
Audio input		no isolation

Table 7.7:Ambient conditions

Condition	**Mitel 415/430**
Ambient temperature	5 °C to 45 °C
Relative air humidity	30 % to 80 %, non-condensating

Table 7.8:Electrical data (Sheet 1 of 2)

	Mitel 415	**Mitel 430**
Class of protection	1	
Input voltage	95 V…253 V, 48…62 Hz	
Input current	approx. 0.11 A...0.7 A	approx. 0.11 A...1.0 A
Resistant to voltage breaks	lt; 6ms	
Power input with min. configuration	approx. 15 W	approx. 15 W
Power input with max. configuration	approx. 50 W	approx. 75 W

Table 7.8:Electrical data (Continued) (Sheet 2 of 2)

Undervoltage limit (system reset, data backup)	lt; 90 V

Table 7.9:Heat dissipation

	Mitel 415	**Mitel 430**
Maximally configured system	approx. 37 W = 135 kJ/h	approx. 50 W = 180 kJ/h

Design of interface cards, modules and wiring adapters

Table 7.10:Design (Sheet 1 of 2)

Card/module	**Design**
TIC-4TS	B
TIC-2TS	B
ESST	C
TIC-4AB [1]	B
TIC-2AB [a]	B
TIC-1PRI [a]	C
EAAB2	B
EADP4	E
EAD4V	A
EAD4C	A
ETAB4	B
ODAB	C
SM-DSP1	D
SM-DSP2	D
SM-DSPX1	D
SM-DSPX2	D
WA-TS0	F2

Table 7.10:Design (Continued) (Sheet 2 of 2)

WA-TS1	F2
WA-2W [a]	F1
WA-1PRI	F1

1. Must not be used in USA/Canada.

Figure 7.3: Dimensions of interface cards (design A, B, C)

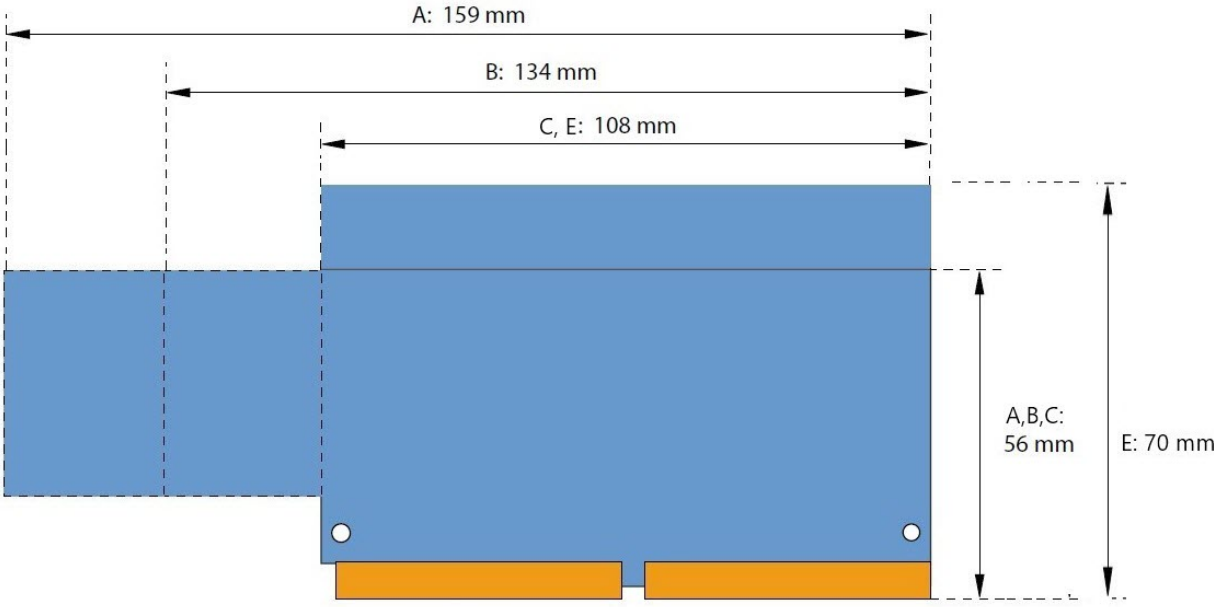


Figure 7.4: Dimensions of system module (design D)

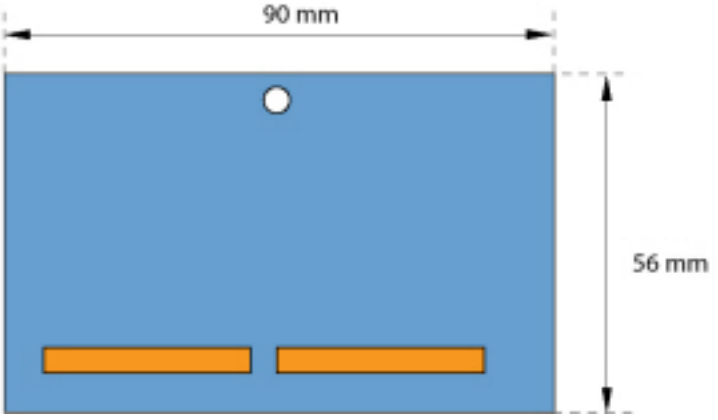
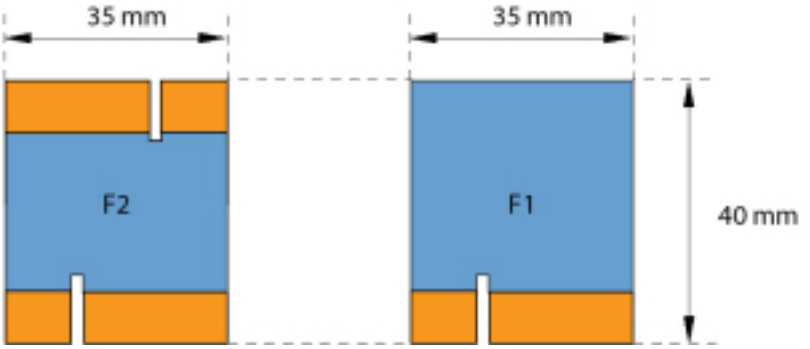


Figure 7.5: Wiring adapter dimensions (design F)



LAN switch

Figure 7.6: LAN switch on the mainboard

10Base-T / 100Base-TX switch Fully compliant with IEEE 802.3/802.3u Auto MDI-X, Autopolarity, Autonegotiation Flow control fully supported (half duplex: backpressure flow control, full duplex: IEEE 802.3x flow control) Embedded SRAM for packet storage 1024-entry look-up table, direct mapping mode QoS: 802.1p VLAN tag, DiffServ/TOS field in TCP/IP header, IP-based priority

Digital and IP system phones

Table 7.11:Digital and IP system phones (Sheet 1 of 2)

	MiVoice 5360 / 5360 IP, MiVoice 5361 / 5361 IP, MiVoice 5370 / 5370 IP, MiVoice 5380 / 5380 IP
Ambient temperature in operation	0 °C to 40 °C
Relative humidity in operation	30 % to 80 %
Admissible storage temperature	-25 °C to 45 °C
Power consumption, digital system phones	see table *Average power requirements of terminals* and table *Maximum power requirements of the system phones on the DSI bus*

Table 7.11:Digital and IP system phones (Continued) (Sheet 2 of 2)

Power consumption, IP system phones	see System Manual for "Mitel Advanced Intelligent Network (AIN) and IP system phones"

Table 7.12:Dimensions and weights, digital and IP system phones

Terminals	Height (Type of mounting)	Width	Depth (Type of mounting)	Weight
MiVoice 5360, MiVoice 5360 IP, MiVoice 5361, MiVoice 5361IP	115 mm (desktop 25 °) 151 mm (desktop 45 °) 199 mm (wall)	262 mm	198 mm (desktop 25 °) 166 mm (desktop 45 °) 90 mm (wall)	approx. 850g
MiVoice 5370, MiVoice 5370 IP	115 mm (desktop 25 °) 151 mm (desktop 45 °) 199 mm (wall)	262 mm	198 mm (desktop 25 °) 166 mm (desktop 45 °) 90 mm (wall)	approx. 875 g
MiVoice 5380, MiVoice 5380\ IP	115 mm (desktop 25 °) 151 mm (desktop 45 °) 199 mm (wall)	262 mm	198 mm (desktop 25 °) 166 mm (desktop 45 °) 90 mm (wall)	approx. 935 g
Expansion key module MiVoice M530	115 mm (desktop 25 °) 151 mm (desktop 45 °) 199 mm (wall)	95 mm	198 mm (desktop 25 °) 166 mm (desktop 45 °) 90 mm (wall)	approx. 180 g
Expansion key module MiVoice M535	115 mm (desktop 25 °) 151 mm (desktop 45 °) 199 mm (wall)	128 mm	198 mm (desktop 25 °) 166 mm (desktop 45 °) 90 mm (wall)	approx. 325g

Mitel DECT radio units

GAP functionality

The following table contains the network features as defined in the GAP standard. For each feature a separate column indicates whether it is supported by communication servers of the MiVoice Office 400 family or Mitel DECT cordless phones.

Table 7.13:Features supported as per GAP standard (Sheet 1 of 3)

No.	Feature	PP	In Mitel DECT cordless phones	FP	In MiVoice Office 400
1	Outgoing call	M	yes	M	yes
2	Off hook	M	yes	M	yes
3	On hook (full release)	M	yes	M	yes
4	Dialled digits (basic)	M	yes	M	yes
5	Register recall	M	yes	O	yes
6	Go to DTMF signalling (defined tone length)	M	yes	O	yes
7	Pause (dialling pause)	M	yes	O	—
8	Incoming call	M	yes	M	3
9	Authenticatio n of PP	M	yes	O	yes
10	Authenticatio n of user	M	yes	O	—
11	Location registration	M	yes	O	yes
12	On air key allocation	M	yes	O	yes
13	Identification of PP	M	yes	O	—
14	Service class indication / assignment	M	yes	O	—
15	Alerting	M	yes	M	yes
16	ZAP	M	yes	O	—

Table 7.13:Features supported as per GAP standard (Continued) (Sheet 2 of 3)

17	Encryption activation FP initiated	M	yes	O	—
18	Subscription registration procedure on-air	M	yes	M	yes
19	Link control	M	yes	M	yes
20	Terminate access rights FP initiated	M	yes	O	yes
21	Partial release	O	yes	O	yes
22	Go to DTMF (infinite tone length)	O	—	O	—
23	Go to Pulse	O	—	O	—
24	Signalling of display characters	O	yes	O	—
25	Display control characters	O	—	O	—
26	Authenticatio n of FP	O	yes	O	3
27	Encryption activation PP initiated	O	—	O	—
28	Encryption deactivation FP initiated	O	—	O	—
29	Encryption deactivation PP initiated	O	—	O	—
30	Calling Line Identification Presentation (CLIP)	O	yes	O	yes

Table 7.13:Features supported as per GAP standard (Continued) (Sheet 3 of 3)

31	Internal Call	O	yes	O	—
32	Service Call	O	—	O	—

PP: Portable Part

FP: Fixed Part

M: Mandatory (this feature must be supported by GAP compliant equipment)

O: optional

—: The Mitel DECT cordless phones and MiVoice Office 400 communication servers do not support the feature.

Technical data

Table 7.14:Mitel DECT radio units (Sheet 1 of 2)

Duplex method	Time-division multiplex, 10 ms frame length
Frequency range	1880 MHz to 1900 MHz
Frequency bands (carrier)	10
Channel spacing (carrier distance)	1,728 MHz
Transmission rate	1152 kbit/s
Duplex channels per carrier SB-4+ / SB-8	6 / 12
Number of channels (duplex channels) SB-4+ / SB-8	60 / 120
Modulation	GFSK
Data transfer rate	32 kbit/s
Voice encoding	ADPCM
Transmit power	250 mW peak value10 mW, average power per channel
Range	30 to 250 m
Max. line length to radio unit - power supply via DSI bus (0.5mm) - with power supply unit (9–15 VDC, 400 mA)	1200 m 1200 m

Table 7.14:Mitel DECT radio units (Continued) (Sheet 2 of 2)

Ambient temperature, radio unit in operation	-10 °C to 55 °C
Admissible storage temperature	-25 °C to 55 °C
Relative humidity in operation	30 % to 80 %
IP class of protection	IP 30
Dimensions: Radio unit W x H x D:	165 x 170 x 70 mm
Weight: Radio unit	320 g
Local power supply to radio unit (optional)	Plug-in power supply unit

Operation of digital system phones

Digit key assignment of system phones

Digit key assignment depends on the system phones series and the language set for the communication server.

The following Latin script assignment for the digit keys applies to the system phones MiVoice 5360 / 5360 IP, MiVoice 5361 / 5361 IP, MiVoice 5370 / 5370 IP, Office 135/135pro and all models of Office 160 for all communication server languages with the exception of Greek:

Table 7.15:Latin-script digit key assignment (Sheet 1 of 2)

	- . ? 1 ! , : ; ’ " ¿ ¡ - . ? 1 ! , : ; ’ " ¿ ¡		A B C 2 Ä Æ Å Ç a b c 2 ä æ å à ç
	D E F 3 É d e f 3 é è ê		G H I 4 g h i 4 ì
	J K L 5 j k l 5		M N O 6 Ñ Ö Ø m n o 6 ñ ö ø ò

Table 7.15:Latin-script digit key assignment (Continued) (Sheet 2 of 2)

	P Q R S 7 p q r s 7 ß		T U V 8 Ü t u v 8 ü ù
	W X Y Z 9 w x y z 9		+ 0 + 0
	* / ( ) lt; = > % £ $ ¤ ¥ ¤ @ amp; § * / ( ) lt; = > % £ $ ¤ ¥ ¤ @ amp; §		Space # Space #

NOTE:

- The MiVoice 5360 phones do not have a graphics-compatible display and therefore cannot display all the characters featured (see also the corresponding user guide).
- On the Office 160 cordless system phone the space character is stored under digit 0 and the special characters are stored under the #-key instead of the *-key.

Alpha keyboard MiVoice 5380 / 5380 IP

The integrated alphanumerical keyboard on the MiVoice 5380 / 5380 IP is available in a QWERTY and AZERTY version. The special characters can be called up using the "Ctrl" key and the "Shift" key.

Table 7.16:Integrated alphanumerical keyboard MiVoice 5380 / 5380 IP (Sheet 1 of 2)

Key	lt;Key>	Shift + lt;key>	Ctrl + lt;key>	Ctrl + Shift + lt;key>
A	a	A	ä á à â ã å æ	Ä á à â Ã Å Æ
B	b	B		
C	c	C	ç	Ç
D	d	D		
E	e	E	é è ê ë	É è ê Ë
F	f	F		
G	g	G		
H	h	H		
I	i	I	ï í ì î	ï í ì î
j	j	j		

Table 7.16:Integrated alphanumerical keyboard MiVoice 5380 / 5380 IP (Continued) (Sheet 2 of 2)

K	k	K		
L	l	L		
M	m	M		
N	n	N	ñ	Ñ
O	o	O	ö ó ò ô õ ø	Ö ó ò ô Õ Ø
P	p	P		
Q	q	Q		
R	r	R		
S	s	S	ß	
T	t	T		
U	u	U	ü ú ù û	Ü ú ù û
V	v	V		
W	w	W		
X	x	X		
Y	y	Y	ÿ	
Z	z	Z		
@	@	@		
+	+	+	- . ? ! , : ; . " / \ ( ) = lt; > % £ $ õ ¥ ª amp; § ¿ ¡	

Function commands (macros)

Function commands are used mainly for automatically activating/ deactivating features using the function keys of the system phones. The following function commands are available:

Table 7.17:Function commands for system phones (Sheet 1 of 2)

Function command	**Meaning**
"A"	Seize line with maximum priority[1]
"I"	Seize line
"H"	Seize line in hands-free mode[2]

Table 7.17:Function commands for system phones (Continued) (Sheet 2 of 2)

"X"	Disconnect
"P"	Pause 1 second before next action
"Lxx"	Seize line xx (line keys)[a]
"N"	Enter call number keyed in during call preparation
"."	Control keys function
"Z"	Activate / deactivate DTMF mode (tone dialling)
"R"	Use call number last dialled
"Y"	End call and reseize line

1. Available only with the key telephones.
2. Available for Mitel 600 DECT only.

The function commands can be stored directly on the system phones via Self Service Portal or on the function keys via WebAdmin.

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
- LAN switch SM-LAN8
- 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 he 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.
- 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.

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Documents and online help systems with further information

Table 7.18:Documents and online help systems with further information (Sheet 1 of 3)

Product	Document
	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

Table 7.18:Documents and online help systems with further information (Continued) (Sheet 2 of 3)

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 sys-tem phones
	Private networking system manual
Mitel SIP phones on MiVoice Office 400	Mitel6730/31/53SIP,Mitel6735/37/55/57SIP, 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
Mitel SIP phones (platform-inde-pendent)	User's guide, short user's guide, installation instructions, administration instructions
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

Table 7.18:Documents and online help systems with further information (Continued) (Sheet 3 of 3)

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 Analogueuser'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