A MITEL
PRODUCT
GUIDE

Unify OpenScape UC Application V10

System Description

System Description
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Mitel

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History of Changes

Date	Changes	Reason
2020-28-02	Initialization of V10	
2023-28-06	Remove outdated references to OpenScape UC Application documents from chapter 1.7 Continuative Documentation	UCBE-31967

1 About this Manual

This chapter provides information about the following topics:

1.1 Target Group of this Manual

This manual addresses all persons that care for an overview of the OpenScape UC Application components and functions.

1.2 This Manual's Content

This manual describes the OpenScape UC Application components and functions.

1.3 Manual Structure

This manual is divided into the following chapters:

Chapter 1, “About this Manual”

This chapter contains general information about the manual itself. It helps you finding your way on the following pages and to quickly access important and useful information.

Chapter 2, “Overview of OpenScape UC Application”

This chapter introduces the most important OpenScape UC Application features.

Chapter 3, “Deployment Scenarios”

This chapter familiarizes you with the extension stages in which you can use OpenScape UC Application.

Chapter 4, “User Interfaces”

This chapter introduces the OpenScape UC Application user interfaces.

Chapter 5, “Central Communications Technologies and Communication Aids”

This chapter covers the communications technologies and tools the OpenScape UC Application is based on.

Chapter 6, “Connecting external Systems”

This chapter is about the external systems to which you can connect OpenScape UC Application.

Chapter 7, “Application Environments”

This chapter provides examples that illustrate how OpenScape UC Application integrates in the deployment scenarios of connected external systems.

Chapter 8, “Information on the further System Environment”

This chapter shows you how OpenScape UC Application behaves as regards selected technologies.

Chapter 9, “Security Functions”

This chapter focuses on the OpenScape UC Application security features.

Chapter 10, “Licensing”

This chapter deals with the OpenScape UC Application license model.

1.4 General Conventions

With version 7 the product name HiPath 4000 changes to OpenScape 4000.

In this manual we use the product name OpenScape 4000 as synonym for both name variants. If information depends on the product version, we name the relevant product version explicitly.

1.5 Representation Conventions

Critical notes and additional information are indicated in this manual in the following manner:

IMPORTANT:
This indicates notes that carry information of **high priority**. Please definitely read and heed such notes to avoid malfunctions, loss of data or damages to devices.

NOTE:
Notes indicated in this way point to information worth knowing or useful tips.

1.6 Acronyms used

In this manual we use the following acronyms.

Acronym	Meaning
AD	Active Directory
API	Application Programming Interface
CA	Certificate Authority
CAD	Calling Number
CALEA	Communications Assistance for Law Enforcement Act
CMP	Common Management Platform
CSR	Certificate Signing Request
CSTA	Computer Supported Telecommunications Applications
CTI	Computer Telephony Integration
CWA	Communicator Web Access
DNS	Domain Name Service
FQDN	Fully Qualified Domain Name
GRUU	Globally Routable User Agent URI
GUI	Graphical User Interface
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
ID	Identification description
IIS	Internet Information Service
IM	Instant Messaging
IP	Internet Protocol
IPsec	Internet Protocol Security
ISDN	Integrated Services Digital Network
LDAP	Lightweight Directory Access Protocol
MAC	Media Access Control
MGCP	Media Gateway Control Protocol
MS	Microsoft
OCS	Office Communication Server
OND	One-number Device
ONS	One-number Service
OS	OpenScape
OWA	Outlook Web Access
PE	Personal Edition of the OpenScape Desktop Client

Table 1 Acronyms used

Acronym	Meaning
PID	Permission ID
PIN	Personal Identification Number
PKCS	Public Key Cryptography Standards
PKI	Public Key Infrastructure
PSTN	Public Switched Telephony Network
QoS	Quality of Service
RTP	Real Time Transport Protocol
SAN	Subject Alternative Names
SIP	Session Initiation Protocol
SIP SM	SIP Service Manager
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
TCSPI	Telephony Conferencing Service Provider Interface
TK	Telecommunication
TLS	Transport Layer Security
TSE	Trusted Service Entry
TTM	Trusted Transfer Mode
TTS	Text-to-Speech
TUI	Telephony User Interface
UC	Unified Communications
UCMA	Unified Communications Managed API
UDP	User Datagram Protocol
URI	Uniform Resource Identifier
WE	Enterprise Web Embedded Edition of the OpenScape Desktop Client
XML	Extensible Markup Language
XMPP	Extensible Messaging and Presence Protocol
XPR	OpenScape Xpressions

Table 1 Acronyms used

1.7 Continuative Documentation

In addition to this system description, the following OpenScape UC Application documentation is available:

- *OpenScape UC Application V10, Planning Guide*
- *OpenScape UC Application V10, Security Checklist*
- *OpenScape UC Application V10, Installation and Upgrade, Installation Guide*
- *OpenScape UC Application V10, Configuration and Administration, Administrator Documentation*
- *OpenScape UC Application V10, Fusion for Office,Installation Guide*
- *OpenScape UC Application V10, Fusion for IBM Notes, Installation Guide*
- *OpenScape UC Application V10, OpenScape Fusion in VDI Systems, Installation Guide*
- *OpenScape UC Application V10, Executive/Assistant Cockpit, Installation Guide*

Moreover, the following User Guides, Extended Guides and Quick Reference Guides are available:

- *OpenScape UC Application V10, OpenScape Web Client, User Guide*
- *OpenScape UC Application V10, OpenScape Web Client, Quick Reference Guide*
- *OpenScape UC Application WebClient V10, Extended Guide, Feature Description*
- *OpenScape UC Application V10, UC Desktop Application, User Guide*
- *OpenScape UC Application V10, Fusion for Office, User Guide*
- *OpenScape UC Application V10, Fusion for Office, Extended Guide, Feature Description*
- *OpenScape UC Application V10, Fusion for Notes, User Guide*
- *OpenScape UC Application V10, OpenScape Desktop Integration, User Guide*
- *OpenScape UC Application V10, Executive/Assistant Cockpit, User Guide*
- *OpenScape UC Application V10, OpenScape Extensions for Microsoft Outlook, User Guide*
- *OpenScape UC Application V10, Application Builder, User Guide*

You find further information about OpenScape Media Server in the following documentation:

- *OpenScape Media Server*
  Administrator Documentation

You find further information about the Common Management Platform the following documentation:

- *OpenScape Common Management Platform*
  Administrator Documentation

You find further information about the OpenScape Xpressions server e.g. in the following documentation:

- *OpenScape Xpressions, Server Installation*
  Installation Guide
- *OpenScape Xpressions, Cluster Installation*
  Installation Guide
- *OpenScape Xpressions, Server Administration*
  Administration Manual

You find further information about OpenScape Web Collaboration e.g. in the following documentation:

- *OpenScape Web Collaboration*
  System Description
- *OpenScape Web Collaboration, Installation, Configuration and Update*
  Installation Manual

1.8 Data Protection and Data Security

This system also processes and uses personal data for purposes such as billing, displays, and customer data acquisition.

In Germany, the processing and use of such personal data is subject to various regulations, including the regulations of the Federal Data Protection Law (Bundesdatenschutzgesetz = BDSG). For other countries, please follow the appropriate national laws.

The aim of data protection is to protect the rights of individuals being affected by use of their personal data.

In addition, the aim of data protection is to prevent the misuse of data when it is processed and to ensure that one's own interests and the interests of other parties which need to be protected are not affected.

NOTE: The customer is responsible for ensuring that the system is installed, operated and maintained in accordance with all applicable labor laws and regulations and all laws and regulations relating to data protection, privacy and safe labor environment.

Members of the Unify Software and Solutions GmbH & Co. KG are required to observe business and data secrecy as a result of the company's work rules.

In order to ensure that the statutory requirements during service – whether during "on-site service" or during "remote service" – are consistently met, you should always observe the following rules. You will not only maintain the interests of your and our customers, you will also avoid personal consequences.

A conscientious and responsible approach helps protect data and ensure privacy:

- Ensure that only authorized persons have access to customer data.
- Take full advantage of password assignment options; do not allow unauthorized persons to gain access to passwords by writing them down on a piece of paper or via other means.
- Ensure that no unauthorized person is able to process (store, modify, transmit, disable, delete) or use customer data in any way.
- Prevent unauthorized persons from gaining access to storage media, such as backup diskettes or log printouts. This applies to service calls as well as to storage and transport.
- Ensure that storage media which are no longer required are completely destroyed. Ensure that no sensitive documents are left unprotected.

Work closely with your customer contact; this promotes trust and reduces your workload.

2 Overview of OpenScape UC Application

OpenScape UC Application brings the Unified Communications (UC) solution by Unify into an open services-oriented architectural (SOA) solution for managing communications. Optimized for business process integration, OpenScape UC Application is a unified, real-time, modular UC application suite providing opportunities for a seamless modular upgrade path.

OpenScape UC Application fits into an enterprise’s existing voice and data infrastructure and ties together phones, voicemail, e-mail, text-messaging, calendaring, instant messaging, and conferencing services. The software provides an interface you can use for managing the presence and communications features.

OpenScape UC Application makes it easier for users—in the office, at home, or on the road—to access the people and the information they need.

A couple of examples:

- A user can set his/her preferences for various communications media, specify which people he/she will take calls from and how they can reach him/her. For example, if he's/she’s out of the office for the afternoon, he/she can have all incoming calls between noon and 5:00 p.m. routed to his/her assistant.
- With a glance at the contact list, a user can see how a particular contact has set his/her status (for example, in the office, in a meeting) and determine the best way to reach him/her.
- The user can initiate a voice or video conference with his/her colleagues by mouse click. An additional web conference can be initiated for distributing documents in the scope of the voice or video conference.

2.1 Important User Features

OpenScape UC Application supports important user features in the following areas:

- Voice Telephony
- Video Telephony
- Mobile Working
- Presence
- Audio and Video Conferences
- Web collaboration
- Instant Messaging
- Teamwork

The following sections describe the most important user features in detail.

2.1.1 Voice Telephony

2.1.1.1 Inbound Connections

The following inbound-communications features are supported:

- **Call screening**
  - User can view Caller ID and calling party information
  - User can view Contact Pop-up/Toast
  - User can direct incoming calls to the voicemail system or to a colleague on the fly
- **One-number service (ONS)**
  - Incoming calls to a user's published number are redirected to one or more devices specified by the user
  - Support single voicemail box (even if the user uses a home phone, mobile phone, and the like, each having separate voicemail boxes)
  - Manage list of “preferred” devices, including SIP phone, PBX phone, home phone, mobile phone, OpenScape Desktop Client and similar destinations
  - Support “dynamic binding” for calls extended by a user to devices not owned by that user (that is, associated devices)
  - Provides the OpenScape user’s published number identity to other participants in the call no matter which device the OpenScape user deploys

- **Voice messages (messaging)**
  - Provides users with single inbox for voice messages independent of their selected preferred device
  - User can receive his/her messages in his/her preferred groupware inbox (UM)
  - User can retrieve and manage his/her messages via the voice portal or groupware
- **Rules**
  - Simple wizard/dialog-based rules creation and management
  - User can use rule names and icons/avatars to quickly determine which rules are active
  - User can activate/deactivate rule sets by using a variety of methods, for example via OpenScape Desktop Client, voice portal and OpenScape Mobile Client
  - Rule conditions can include elements such as originator, date/time, availability, and the like
- **Miscellaneous features for inbound connections**
  - Support of separate ring-no-answer (RNA) timeouts for different devices
  - Multiple call handling: Users can control and manage several simultaneous calls
  - Busy-on-Busy: Controls the busy-phone signaling in the entire system

2.1.1.2 Outbound Connections

The following outbound-communications features are supported:

- **Click-to-action**
  - Provision of call control actions (for example make call, hold, retrieve, answer, disconnect, transfer, callback) and other pertinent actions (for example change presence status, activate rules, change preferred device, tell-me-when) via various user interfaces.
  - Applying actions to single or multiple contacts or contact groups
  - Option to direct a call to a user's specific device that may not be his/her preferred device.
- **One-number service**

  The one-number service combines all the phone numbers via which an OpenScape user can be reached.

  This combination of phone numbers has the following advantages.
  - For each OpenScape user, only one single phone number must be published via which he/she is available – the ONS phone number.
  - At any time, each OpenScape user can choose in his/her OpenScape client the device he/she would like to assign the ONS phone number to – the preferred device (OND).

– When an OpenScape user receives a call under his/her ONS phone number, this call is always directly forwarded to the respectively selected preferred device (OND). If the call is not accepted on this device or if the line is defective, the call is redirected to the other available devices of the OpenScape user - one after another. The order in which the devices are used is defined by the OpenScape user via an individual routing list.
No matter on which device the OpenScape user accepts the call: the ONS phone number of the called OpenScape user is always displayed to the caller.

– When the OpenScape user initiates a phone call from his/her selected preferred device (OND), the ONS phone number of the OpenScape user is displayed to the callee as originator number.

The one-number service does not take effect in the following cases:

– If the OpenScape user is called via phone number other than his/her ONS phone number.

– If the OpenScape user initiates a call from a device he/she has not selected as preferred device (OND).

– If the OpenScape user initiates a call from a device he/she has selected as preferred device but that the OpenScape system does not monitor – e. g. a cell phone.

- **Contact list management**
  - Effective contact management via search, group, and sort capabilities
  - Display of contact information (presence, number, e-mail address, and so on.)
  - Quick access to "click-to-actions"
  - Access to personal, corporate, and external contact information via LDAP support.
- **Call journal**
  - Tracking of incoming, outgoing, missed, picked-up, conference, and transferred calls; as well as calls that were sent to the voicemail box
  - Effective journal management via search, group, and sort capabilities
  - Context tagging of calls (for example project codes)
  - Quick access to "click-to-actions"
- **Groupware integration**
  - OpenScape UC Application supports the ability to drag and drop text strings from groupware into selected points of the client.
- **Miscellaneous features for outbound connections**
  - Sending Dual Tone Multi Frequency (DTMF)
  - Call progress tones in click-to-dial scenarios
  - Multiple call handling: Users can control and manage several simultaneous calls
- **Tell-me-when**
  - Set condition for notification upon a specified user presence status change or modification to the voice availability.

2.1.2 Video Telephony

2.1.2.1 Client-based Video Telephony

OpenScape Desktop Client users can communicate with each other by video. This requires the OpenScape Desktop Client to communicate via SIP.

2.1.2.2 Server-based Video Telephony

Users can deploy the conference portal to communicate by video conference also. This conference portal function is based on the video compression standard H.264/AVC and is provided by the OpenScape Media Server.

In the scope of video conferencing the following general features are supported in particular:

- Devices that have video and audio functionality or merely audio functionality can connect to any video conference.
- Access to a video conference room after specifying a PIN only.
- Display of the name of a conference participant when he/she enters or leaves a conference room. This requires the system to be able to determine the name of the relevant participant from the originator number.
- Individual video layout configurations. Customized and pre-configured video layouts determine the quality and arrangement in which video images of conference participants appear on video devices.
- Automatic selection of the ideal video layout.
- Indication of the conference participant who is talking.
- Indication of the conference participant who moderates the conference.
- Display of a conference participant list that also shows status information of every conference participant – e.g. dialing in via video- or audio-based endpoint device, muted etc.
- Time display that depends on the conference type (e.g. current time, current conference duration, time until the scheduled conference start).

2.1.3 Mobile Working

The following mobility features are supported:

- **Routing calls to devices**
  - User can redirect incoming calls to his/her preferred device or any other device (for example, mobile, desk phone, and the like.)
  - User can route an existing phone connection to his/her preferred device or any other device (for example, mobile, desk phone, and the like.)
- **Voice portal**

  Provides telephone access to capabilities such as:
  - creating, listening, and responding to messages
  - listening and responding to appointments
  - starting and joining conferences
  - finding and calling contacts
  - setting user presence
  - setting the preferred audio device
- **OpenScape Mobile Client**
  - The OpenScape Mobile Client is an application installed on a mobile device, providing to a mobile user the most important features of OpenScape UC Application. This includes the users presence-enabled contact list, important user settings, as well as the ability to initiate both two party calls and conferences.
  - The OpenScape Mobile Client is supported for various platforms.

2.1.4 Presence

The following presence features are supported:

- Choice between the integration mode Standard and Microsoft Lync Server.

NOTE: If OpenScape UC Application was installed with the OpenScape presence model, you can migrate the presence model to the Microsoft Lync presence model at a later date.

In case of the integration mode Microsoft Lync Server, the user presence information is synchronized in both directions between the Microsoft Lync system and the OpenScape clients.

NOTE: A project-specific release is required for connecting Microsoft Lync Server to OpenScape UC Application.

NOTE: Connecting Microsoft Lync Server is not supported with Very Large Deployment.

NOTE: If OpenScape UC Application is operated at Microsoft Lync, you cannot use the connection to the instant-messaging server Openfire at the same time.

In case of the Standard integration mode, OpenScape clients can indicate the IM media presence status of OpenScape users. OpenScape UC Application determines this IM media presence status from an OpenScape user being logged in at the Openfire server or not.

NOTE: An incorrect presence status may be displayed if an OpenScape user connects to the Openfire server via different clients at the same time. The Openfire server does currently not support such overlapping logon scenarios.

- Provides full spectrum presence view that includes the following elements:
  - User presence
  - Voice availability
  - Text notes
  - Location
  - Time zone
- End user can configure the number of active calls required before the user is marked busy for voice availability.

2.1.5 Audio and Video Conferences

OpenScape UC Application supports different types of audio- and video-based conferences. You find details about these conference types in Section 5.6, “Conferencing”, on page 89.

2.1.6 Web collaboration

The following Web Collaboration features are supported:

- Comprehensive web conferencing features enabled by OpenScape Web Collaboration.

You find detailed information about the supported Web Collaboration features in the product description of the Web Collaboration suite used.

2.1.7 Instant Messaging

The following instant messaging features are supported:

- Integration of the instant-messaging functions of Microsoft Lync or Openfire.
- In the OpenScape Desktop Client and in the OpenScape Web Client users can deploy the IM service of a Microsoft Lync system connected to OpenScape UC Application.

  NOTE: A project-specific release is required for connecting Microsoft Lync Server to OpenScape UC Application.

  NOTE: Connecting Microsoft Lync Server is not supported with Very Large Deployment.

- The integration of IM services by OpenScape UC Application via an external, XMPP-based IM server is particularly efficient. For the time being the OpenScape system can only be used via XMPP in combination with the Openfire server.
- If you connect OpenScape UC Application to an Openfire server, user information is automatically transferred from OpenScape UC Application to the Openfire server.

  NOTE: Automatic transmission of user information is unavailable if the Openfire server is operated under the Windows operating system.

- If OpenScape UC Application is connected to an Openfire server, the OpenScape clients display the IM media presence status of OpenScape users. OpenScape UC Application determines this IM media presence status from an OpenScape user being logged in at the Openfire server or not.

2.1.8 Teamwork

The following team features are supported:

- Several OpenScape users can be combined into single teams.
- The OpenScape system administrator can configure any teams and manage all of them. Additional team administrators individual to the respective teams can also create teams but manage only self-created ones.
- Each team member can see the telephone status of other members of the same team.
- Each team member can be notified about calls that arrive for other members of the same team.
- Each team member can accept calls that arrive for other members of the same team.
- Each team member can also see the call journals of the other members of the same team.
- Each user can individually specify for other team members whether calls and the call journal of a team member are also displayed to other team members.

2.2 Scalability

You can use OpenScape UC Application in different system configurations – the so-called deployment scenarios. OpenScape UC Application can thus be scaled according to individual customer requirements.

You find detailed information about possible deployment scenarios in Chapter 3, “Deployment Scenarios”.

2.3 Availability

NOTE: The described availability models may exclusively be configured by Professional Services & Solutions (PS&S) of Unify Software and Solutions GmbH & Co. KG.

The availability models of OpenScape UC Application increase the operational readiness of the UC Application services and minimize downtimes after an error.

OpenScape UC Application can use one of the following availability models:

- "Cold Stand-by" Availability Model
- "Warm Stand-by" Availability Model

2.3.1 "Cold Stand-by" Availability Model

The following additional components are required for using the "Cold Stand-by" availability model:

- An additional application computer that is installed and configured exactly like the active application computer. This additional application computer is not integrated in the network in normal operation.

  NOTE: If the "Cold Stand-by" availability model is to include more than the application computer, further computer systems may be required.

- A Storage-Area-Network solution (SAN)

  NOTE: An external SAN solution requires at least: Two 160 GB 10k RPM SATA harddisk drives in RAID-1 configuration.

Furthermore, the redundancy license for OpenScape UC Application is required.

If the active application computer fails, the administrator must execute the following tasks manually in the "Cold Stand-by" availability model:

- He/she must precisely detect the failure of the active application computer using available management tools.
- He/she must shut down the failed application computer in a controlled way and switch it off.
- He/she must switch on the additional application computer, partly pre-configure it and integrate it in the network.
- He/she must update the configuration of the additional application computer with the information of the Storage-Area-Network database.

You can obtain continuative information about the "Cold Stand-by" availability model via Professional Services & Solutions (PS&S) of Unify Software and Solutions GmbH & Co. KG.

2.3.2 "Warm Stand-by" Availability Model

The administrator tasks described for the "Cold Stand-by" availability model can also be taken on by additional cluster software – e. g. the software IBM Tivoli Automation (TSA). This transfers the "Cold Stand-by" availability model to the "Warm Stand-by" availability model.

Besides additional cluster software, the components additionally required for the "Cold Stand-by" availability model are also required for the "Warm Stand-by" availability model – inclusive the redundancy license. The additional application computer is, however, already integrated in the network and system monitoring in normal operation.

You can obtain continuative information about the "Warm Stand-by" availability model via Professional Services & Solutions (PS&S) of Unify Software and Solutions GmbH & Co. KG.

2.4 Multi-Tenant Ability

OpenScape UC Application can enable a multi-tenant-compatible system in collaboration with OpenScape Voice.

2.5 System Management

OpenScape UC Application is managed via the CMP. To enable this, the CMP provides two types of functions.

- Functions that concern OpenScape UC Application exclusively. This comprises e. g. configuring the conference portal or connecting OpenScape UC Application to external systems.

  You find information about these CMP functions in the OpenScape UC Application*, Configuration and Administration* manual.

- Functions that do not only concern OpenScape UC Application but all OpenScape products of a communications solution. This comprises e. g. system monitoring or the license management.

  You find information about these CMP functions in the OpenScape *Common Management Platform, Administrator Documentation* manual.

If updating the system software fails, a partition-based fallback concept sees to OpenScape UC Application starting with the last executable software level and staying operable.

2.6 Accessibility

Although it is not a PBX or IVR Messaging system as covered by Federal Communications Commission (FCC) Rules and Regulations 47 CFR Parts 6&7, OpenScape UC Application adheres to the guidelines specifying that communications systems must be usable by persons with disabilities. This impacts all aspects of the UC Application system and includes provision for the deaf, limited mobility, color blind, susceptibility to flashing lights, and so on. OpenScape UC Application is also handles TTYs. Through the OpenScape Media Server, OpenScape UC Application also provides TTY recording and control.

Not every system component needs to satisfy every individual. However, the system must be accessible.

Some customers use systems of their own. This means that configuration screens and those features allowing users to perform self-management must be accessible.

2.7 Compatibility with prior Releases

The present OpenScape UC Application version cannot interact with previous main versions of OpenScape UC Application on feature level.

2.8 Planning Principles

A communication solution based on OpenScape UC Application has a modular structure and can thus be adapted to the individual users' constraints. The basic installation of OpenScape UC Application may e. g. consist of one single server. From this starting point, the solution can be enhanced with groupware applications, collaboration solutions, mobility solutions, softswitch capabilities, etc.

There is a number of planning principles that guide how the various system modules of OpenScape UC Application can be combined:

You find additional information about planning and performance of OpenScape UC Application in the OpenScape UC Application*, Planning Guide* manual.

2.8.1 Planning Principles for the Network

To keep OpenScape UC Application components from failing because of defective LAN switches, each OpenScape UC Application computer system should be connected to two independently operating LAN switches.

2.8.2 Planning Principles for Telephony Services

As regards telephony services, the following planning principles apply:

- OpenScape UC Application must always be connected to a communications system.
- You can connect the following communications systems to OpenScape UC Application:
  - OpenScape Voice
  - OpenScape 4000

Chapter 3, “Deployment Scenarios” provides details about the versions of the supported communications systems and the number of systems that can be connected.

2.8.3 Planning Principles for Groupware Services

As regards groupware services, the following planning principles apply:

- OpenScape UC Application must be connected to a groupware system if no external Unified Messaging system is used – e.g. OpenScape Xpressions. This groupware system serves then in particular as voice message store.
- Only one groupware infrastructure is supported at the same time. Currently, OpenScape UC Application supports the following external groupware solutions:
  - Microsoft Exchange Server 2016, 2013, 2010, 2007 and 2003 with associated Microsoft Outlook clients
  - IBM Lotus Domino 8.5.x or 9.0.x Server with associated IBM Lotus Notes clients
- Mixing groupware clients and servers of different systems is not supported. Thus, the combinations IBM Lotus Domino server / Microsoft Outlook clients and Microsoft Exchange server / IBM Lotus Notes clients are not possible.

2.8.4 Planning Principles for Presence Services

As regards presence services, the following planning principles apply:

- OpenScape UC Application can operate without external infrastructure for presence services.
- For the time being, you can use Microsoft Lync Server 2010 or Microsoft Lync Server 2013 as external infrastructure for presence services.

NOTE: A project-specific release is required for connecting Microsoft Lync Server to OpenScape UC Application.

NOTE: Connecting Microsoft Lync Server is not supported with Very Large Deployment.

- If the customer does not have an external infrastructure for presence services, the OpenScape UC Application presence model will be used. If the customer integrates Microsoft Lync Server, the presence model of this collaboration solution can be used.

NOTE: If OpenScape UC Application was installed with the OpenScape presence model, you can migrate the presence model to the Lync presence model at a later date.

2.8.5 Planning Principles for Instant-Messaging Services

As regards instant-messaging services, the following planning principles apply:

- OpenScape UC Application can operate without an external instant-messaging infrastructure.
- If instant messaging integration is desired, a single instant messaging infrastructure can be supported. Currently, OpenScape UC Application supports the following external instant messaging solutions:
  - Microsoft Lync Server 2010
  - Microsoft Lync Server 2013
  - Openfire in the respectively most recent version

NOTE: A project-specific release is required for connecting Microsoft Lync Server to OpenScape UC Application.

3 Deployment Scenarios

The central components of OpenScape UC Application and at least one communications system represent the core of each UC Application environment. They can be used in different configurations – the so-called deployment scenarios. This allows us to meet a customer's topology, scalability, and reliability constraints.

OpenScape UC Application supports the following deployment scenarios which can already be selected in the OpenScape UC Application installation as default configuration:

- Integrated Deployment, in which case all central OpenScape UC Application components run on a common server system with the communications system.

  IMPORTANT: This deployment scenario is not recommended for solutions that require an increased system availability.

- Integrated Deployment with External Media Server, which case all central OpenScape UC Application components run on a common server system with the communications system, while video is streamed via an External Media Server.
- Small Deployment, in which case all central OpenScape UC Application components run on a common server system. Independently of the communications system used which is installed on an independent computer system.
- Large Deployment, in which case various central OpenScape UC Application components and the communications system run on independent servers.
- Very Large Deployment, based on single so-called clusters used for gradually increasing the performance of a UC Application system beyond the performance of Large Deployment.

The following table describes expansion limits for each of these deployment scenarios.

	Integrated Deployment	Integrated Deployment with External Media Server	Small Deployment	Large Deployment	Very Large Deployment
Maximum number of UC Application users	1250[1,2]	1250[1,2]	2500[3]	15000[3]	200000[4]
Maximum number of UC Application users in case of an integrated Voicemail solution (voice portal)	1250[1,2]	1250[1,2]	2500	5000	– (OpenScape Xpressions required as ext. UM solution)
Maximum number of UC Application clusters	–	–	–	–	5[5]
Maximum number of UC Application users per cluster	–	–	–	–	40000
Maximum number of UC Application users in a virtual environment	–	–	1000	15000	35000 (per cluster)
Geographic distribution of the UC Application components	–	–	–	–	✓
Possible availability models for the application computer[6]	Cold stand-by	Cold stand-by	Cold stand-by Warm stand-by	Cold stand-by Warm stand-by	Cold stand-by Warm stand-by
Existing availability model for the computer systems of the front-end services	–	–	–	N+1	N+1

	Integrated Deployment	Integrated Deployment with External Media Server	Small Deployment	Large Deployment	Very Large Deployment
Existing availability model for the computer systems of the media services	–	–	–	N+1[7]	N+1[7]
System database of UC Application components	solidDB	solidDB	solidDB	solidDB	MySQL
Integrated presence feature	✓	✓	✓	✓	✓
Connecting OpenScape Xpressions	✓	✓	✓	✓	✓ (OpenScape Xpressions is always required as external Unified Messaging solution)
Connecting UC applications by third-party suppliers	✓	✓	✓	✓	✓
Maximum number of groupware connections (IBM Lotus Domino or Microsoft Exchange)	1 (required if no external voicemail solution is available)	1 (required if no external voicemail solution is available)	1 (required if no external voicemail solution is available)	1 (required if no external voicemail solution is available)	1 (per cluster)
Maximum number of Microsoft Lync connections[8]	1	1	1	1	–
Maximum number of LDAP directory connections	any	any	any	any	any
Supports video conferences (video MCU)	–	✓	✓	✓	✓
Number of OpenScape Mobile Clients supported by Facade server	max. number of UC Application users	max. number of UC Application users	max. number of UC Application users (virtual environment: 1000)	max. number of UC Application users[9]	max. number of UC Application users[9]

	Integrated Deployment	Integrated Deployment with External Media Server	Small Deployment	Large Deployment	Very Large Deployment
Maximum number of Microsoft Lync users in case of an Microsoft Lync connection	max. number of UC Application users	max. number of UC Application users	max. number of UC Application users	max. number of UC Application users	–
Maximum number of Openfire users	max. number of UC Application users	max. number of UC Application users	max. number of UC Application users	max. number of UC Application users	max. number of UC Application users
Maximum number of OpenScape Web Collaboration users	250	250	250	250	250 (per OpenScape Web Collaboration server)
Maximum number of E/A Cockpit users	100	100	250	1000	1000 (per cluster)
Maximum number of OpenStage clients	1000	1000	1000	1000	1000 (per cluster)
Maximum number of OpenScape Fusion Clients V1	5000	5000	5000	5000	5000 (per cluster)
Installation in virtual environment/ with help of Virtual Appliances	✓/–	✓/–	✓/✓	✓/✓	✓/–

	Integrated Deployment	Integrated Deployment with External Media Server	Small Deployment	Large Deployment	Very Large Deployment
Supported communications systems	• OpenScape Voice – V9 – V8 – V7	• OpenScape Voice – V9 – V8 – V7	• OpenScape Voice – V9 – V8 – V7 • OpenScape 4000 – V8 – V7	• OpenScape Voice – V9 – V8 – V7 • OpenScape 4000 – V8 – V7	• OpenScape Voice – V9 – V8 – V7 • OpenScape 4000 – V8 – V7
Number of connectable OpenScape Voice systems	1	1	1	1	1 (per cluster)
Number of connectable OpenScape 4000 systems	–	–	63	63	63 (per cluster)
Combination of different communications systems	–	–	max. 1 OS Voice + max. 63 OpenScape 4000	max. 1 OS Voice + max. 63 OpenScape 4000	max. 1 OS Voice + max. 63 OpenScape 4000 (per cluster)

1 OpenScape Voice-only users + UC Application users ≤ 5000
2 For the platforms IBM x3550M3 and FSC RX200 S6
3 All UC Application users, either exclusively on the connected OpenScape Voice system or exclusively on the connected OpenScape 4000 systems.
4 Larger number of users possible on the basis of a project-specific release.
5 Larger number of clusters possible on the basis of a project-specific release.
6 Only Professional Services & Solutions (PS&S) of Unify Software and Solutions GmbH & Co. KG may configure the described availability models.
7 In a OpenScape 4000 environment without OpenScape Voice, several OpenScape Media Servers can only be used if a OpenScape 4000 SIP load balancer is deployed.
8 Connecting Microsoft Lync Server to OpenScape UC Application requires a project-specific release.
9 Maximum 5000 per Facade server.

Each of the listed deployment scenarios contains the following central system components:

- Communications system
- CMP
- OpenScape Media Server
- OpenScape UC Application frontend services
- OpenScape UC Application backend services

The following sections describe in general how these system components are distributed in an OpenScape landscape depending on the respective deployment scenario.

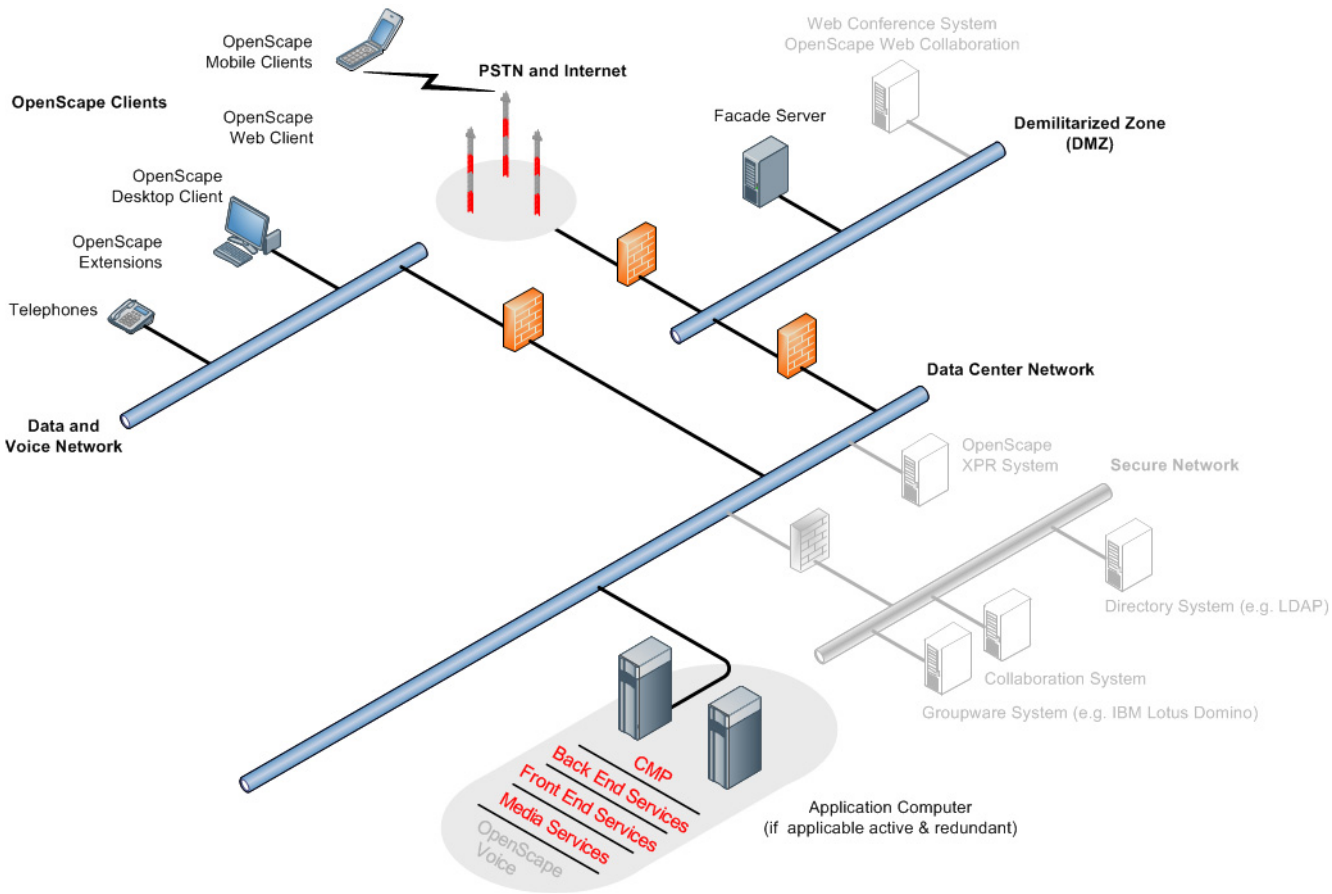
You find continuative details of the various deployment scenarios in the OpenScape UC Application*, Planning Guide* manual.

3.1 Integrated Deployment

IMPORTANT: This deployment scenario is not recommended for solutions that require an increased system availability.

Integrated Deployment is suitable for small companies and as test scenario in larger environments.

The following illustration shows the main elements of which this deployment scenario consists:



All centralized OpenScape UC Application and OpenScape Voice system components are installed on a common computer system – the application computer. The application computer is non-redundantly designed.

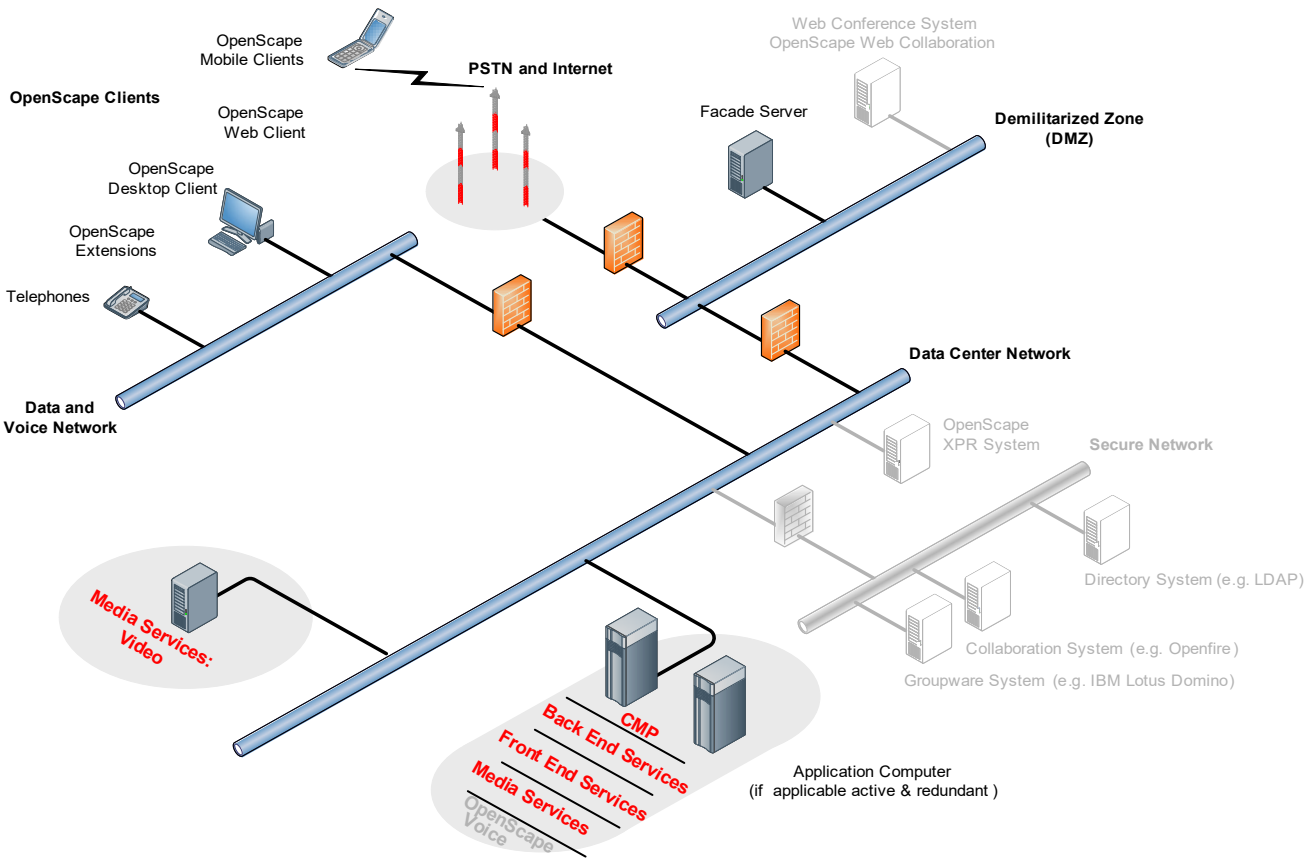
OpenScape Voice is set up as Simplex scenario.

3.2 Integrated Deployment with External Media Server

IMPORTANT: This deployment scenario is not recommended for solutions that require an increased system availability.

Integrated Deployment with External Media Server is suitable for small companies who require video conference capabilities and as test scenario in larger environments.

The following illustration shows the main elements of which this deployment scenario consists:



All centralized OpenScape UC Application and OpenScape Voice system components are installed on a common computer system – the application computer. The application computer is non-redundantly designed. An external Media Server is used to stream video in order to support video conference capabilities.

OpenScape Voice is set up as Simplex scenario.

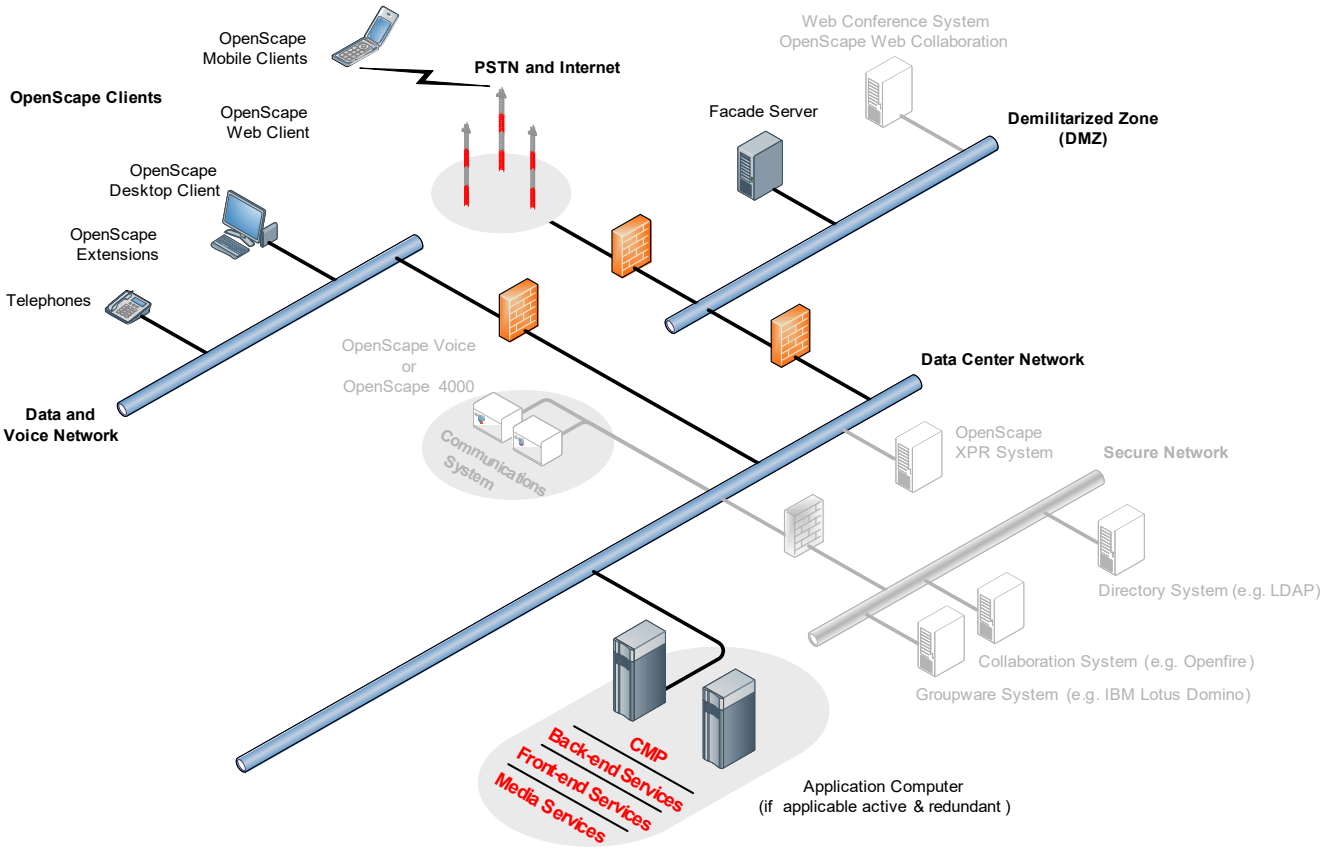
3.3 Small Deployment

Small Deployment is suitable for small and middle-sized companies that are focused on a redundant PBX solution.

The following illustration shows the main elements of which this deployment scenario consists:

All centralized OpenScape UC Application components are installed on a common computer system – the application computer. The application computer is non-redundantly designed.

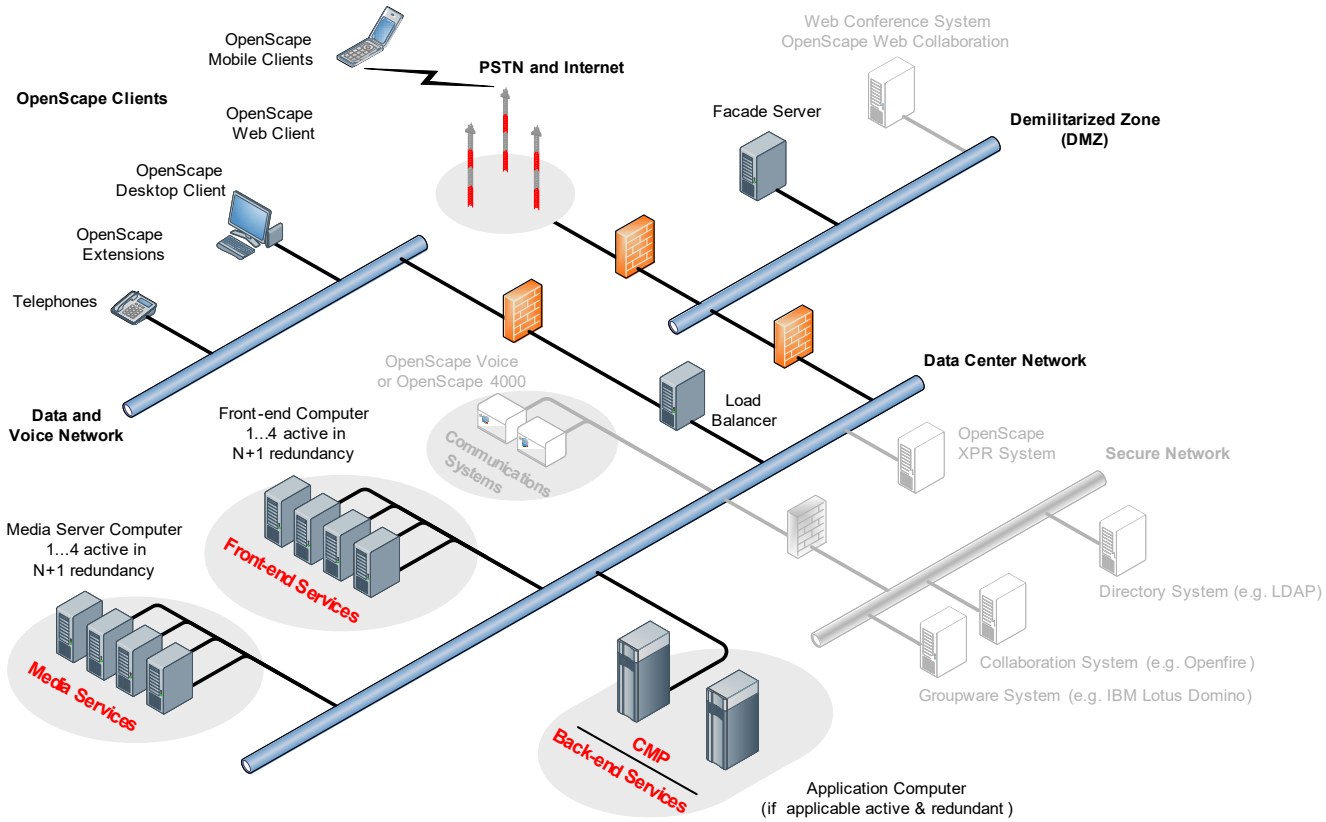
The communications system is installed independently from the application computer. If OpenScape Voice is used, this system is installed as duplex system.



3.4 Large Deployment

Large Deployment is particularly suitable for large concerns because of its redundancy options and scalability.

The following illustration shows the main elements of which this deployment scenario consists:



Of the centralized UC Application components only the OpenScape backend services and the CMP are installed on one computer system – the application computer. The application computer is designed to redundancy, with the two computer systems being interconnected via a Storage Area Network and operating in “cold” stand-by. With the appropriate additional software the systems can also work in “warm” stand-by.

All other central OpenScape UC Application components are on independent computer systems. That concerns:

- OpenScape frontend services

  The OpenScape frontend services may consist of a group of up to four computer systems for scaling the system performance and redundancy reasons. The same OpenScape components are installed on the computer systems of this group.

- OpenScape media services

  The OpenScape media services may consist of a group of up to four computer systems for scaling the system performance and redundancy reasons. The same OpenScape components are installed on the computer systems of the OpenScape media services.

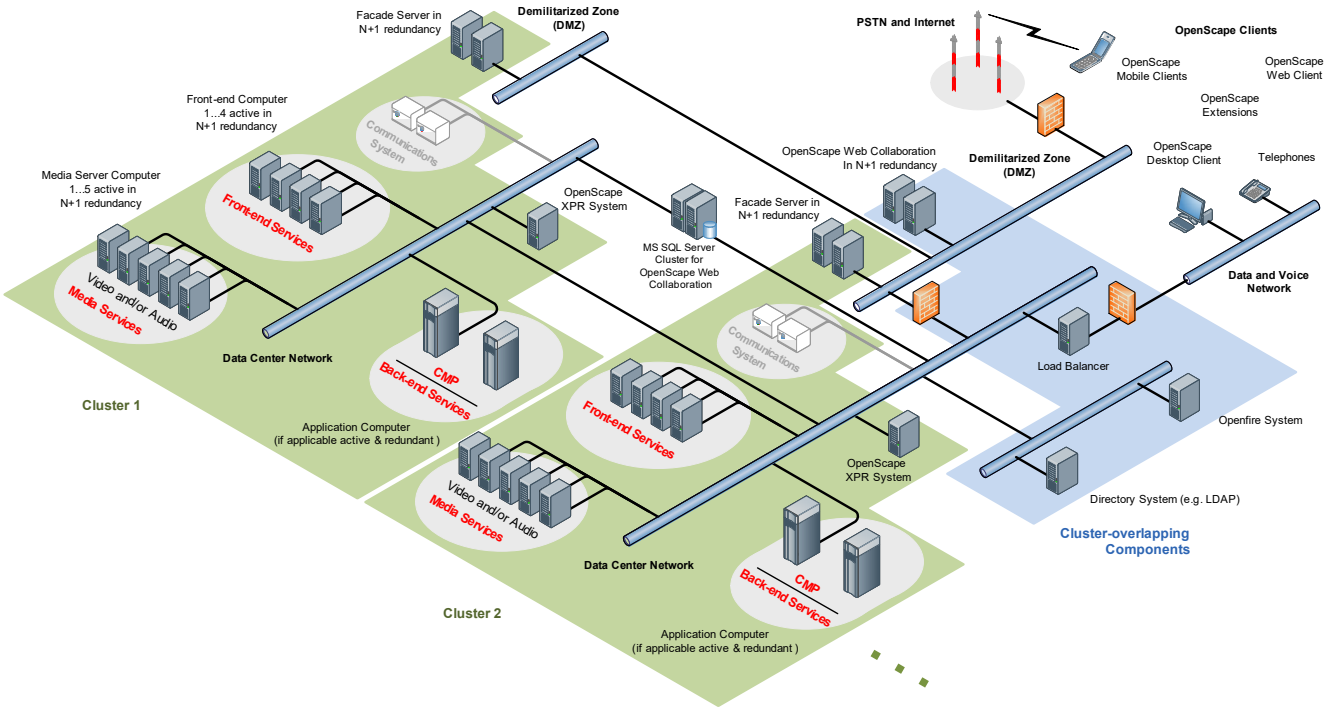
The communications system is installed independently from the application computer. If OpenScape Voice is used, this system is installed as duplex system.

3.5 Very Large Deployment

Very Large Deployment is based on single, so-called clusters used for gradually increasing the performance of a UC Application system beyond the performance of Large Deployment.

All clusters used can generally be operated in the same location – a so-called data center. However, such clusters can also be divided between any number of data centers to distribute Very Large Deployment components among geographically different locations.

You can compare the structure of each cluster within a data center mainly with the structure of Large Deployment. Cluster-spanning components of the data center provide further system functions.



4 User Interfaces

This chapter describes the user interfaces of OpenScape UC Application, which you can divide into the following areas according to their respective implementation:

> ***NOTICE:*** Possible restrictions on the described user interfaces or single features are found in the *OpenScape UC Application, Planning Guide* manual.

System-integrated User Interfaces

- OpenScape Voice Portal
- OpenScape Conference Portal

Independent Client Applications

- OpenScape Desktop Client Enterprise Web Embedded Edition
- Mobile Client
- OpenStage Client
- E/A Cockpit
- OpenScape Auto Attendant
- OpenScape Fusion Application Builder

Web-based User Interfaces

- OpenScape Web Client
- OpenScape Web Client 1.0

Plug-in-based User Interfaces

- OpenScape Extensions for Microsoft Outlook
- OpenScape Extensions for Lotus Notes
- OpenScape Desktop Integration
- OpenScape Client Integrations
- OpenScape Fusion for Office
- OpenScape Fusion for Microsoft Lync
- OpenScape Fusion for IBM Notes

In the following tables we compare the most important clients and their most important features. To provide a better overview, we use the following abbreviations for the client names:

VP	– OpenScape Voice Portal
WE	– OpenScape Desktop Client Enterprise Web Embedded Edition
MC	– Mobile Client
OSt	– OpenStage Client

WC	– OpenScape Web Client
WC1	– OpenScape Web Client 1.0
EOI	– OpenScape Extensions for Microsoft Outlook
ENo	– OpenScape Extensions for Lotus Notes
FOI	– OpenScape Fusion for Office
FLy	– OpenScape Fusion for Microsoft Lync
FNo	– OpenScape Fusion for IBM Notes

Telephony features	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Phone control by CTI		✓		✓	✓	✓			✓	✓	✓
• Client can be used as a softphone (SIP)		✓							✓	✓	✓
• Calling a subscriber											
using a phone number	✓	✓	✓		✓	✓			✓	✓	✓
as a contact	✓	✓	✓	✓	✓	✓			✓	✓[1]	✓
• Preferred devices											
adding/changing/deleting		✓	✓		✓	✓			✓	✓	✓
selecting	✓	✓	✓	✓	✓	✓			✓	✓	✓
• Routing rules											
adding/changing/deleting		✓				✓			✓		✓
selecting	✓	✓	✓			✓			✓		✓
• Named device lists											
adding/changing/deleting		✓				✓			✓	✓	✓
selecting		✓			✓	✓			✓	✓	✓
• Video telephony (SIP) incl. autom. bandwidth adjustment		✓							✓	✓	✓

1 Microsoft Lync or Microsoft Outlook contacts only

Journal features	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Logging incoming and outgoing calls anytime		✓	✓	✓	✓	✓			✓	✓	✓

Journal features	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Filtering journal entries by call type		✓		✓	✓	✓			✓	✓	✓
• Calling communication partners from the call journal		✓	✓	✓	✓	✓			✓	✓	✓
• Displaying only the last 20 journal entries in each case			✓								

Contact features	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Displaying private contacts		✓	✓	✓	✓	✓			✓		✓
• Managing private contacts in groups		✓	✓		✓	✓			✓		✓
• Finding contacts in the connected directory		✓	✓	✓	✓	✓			✓		✓
• Copying contacts from the connected directory to the private contacts		✓			✓	✓			✓		✓
• Exporting, importing and printing data of private contacts						✓			✓		✓
• Synchronizing private contact data with Google											

Conferencing features	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Starting Ad-hoc conferences[1]	A[2]	A/W	A		A/W	A/W			A/W	A/W	A/W
• Meet Me conferences											
scheduling[1]		A/V/W				A/V/W	A/V/W	A/V/W	A/V/W	A/V/W	A/V/W
starting from the GUI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
joining via the GUI/TUI	✓	✓			✓	✓					
• Scheduling /starting persistent conferences[1]		A/V/W			A/V/W						
• Controlling conferences (Floor Control)		✓		✓	✓	✓	✓	✓	✓		✓

1 A – audio conference, V – video conference, W – web conference
2 With voice-controlled access only

Presence features	VP	WE	MC	OSt	WC	WC1	EOl	ENo	FOl	FLy	FNo
• Displaying/changing one's own presence status	✓	✓	✓	✓	✓	✓			✓	✓	✓
• Displaying presence statuses of contacts	✓	✓	✓		✓	✓			✓	✓	✓
• Tell-Me-When		✓				✓			✓		✓
• Recording voicebox greetings depending on presence status	✓										
• Displaying the media presence for users		✓	✓		✓	✓			✓		✓

Team features	VP	WE	MC	OSt	WC	WC1	EOl	ENo	FOl	FLy	FNo
• Viewing a team member's telephone status		✓				✓			✓	✓	✓
• Picking up calls for team members		✓			✓	✓			✓	✓	✓
• Viewing a team member's journal		✓				✓			✓	✓	✓
• Managing team settings by the team administrator		✓				✓			✓	✓	✓

Instant-messaging features	VP	WE	MC	OSt	WC	WC1	EOl	ENo	FOl	FLy	FNo
• Chatting with OpenScape users		✓			✓	✓			✓		✓
• Performing a group chat		✓			✓	✓			✓		✓

Mailbox features	VP	WE	MC	OSt	WC	WC1	EOl	ENo	FOl	FLy	FNo
• Playing, recording and sending voice messages	✓										
• Listen to E-mail messages	✓										
• Playing appointment notifications	✓										
• Configuring an answering machine	✓										

Calendar features	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Accessing the Microsoft Outlook or IBM Notes calendar of a connected groupware system	✓										
• Retrieving appointments of the day	✓										
• Playing the appointments of a specific period	✓										
• Accepting/rejecting appointments	✓										
• Creating calendar entries	✓1										

1 With voice-controlled access only

Security Functions	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• Access to the UC system PIN-/password-protected	✓	✓1	✓		✓	✓			✓1		✓1
• Access user-name-protected		✓1	✓		✓	✓			✓1		✓1
• Password policy					✓	✓					
• Simplified access by trusted phone numbers	✓										
• Encrypted communication with the server					✓	✓					

1 At the client's first start only

Miscellaneous	VP	WE	MC	OSt	WC	WC1	EOI	ENo	FOI	FLy	FNo
• OpenScape Desktop Integration can be installed		✓			✓	✓					
• Single Sign-On (SSO) supported		✓			✓	✓	✓	✓	✓	✓	✓
• Logging on using Windows login data			✓				✓		✓	✓	✓

4.1 System-integrated User Interfaces

The system-integrated user interfaces are provided directly by the OpenScape UC Application server services. In order to deploy those interfaces, users merely need a phone device for connecting OpenScape UC Application.

OpenScape UC Application provides the following system-integrated user interfaces.

4.1.1 OpenScape Voice Portal

The OpenScape voice portal is a telephone user interface; thus available from any phone. Users can operate the voice portal via telephone keypad or by making voice entries depending on the portal access used.

The OpenScape voice portal provides the following features for keyboard-based portal access:

Telephony features

- Calling subscribers by specifying a phone number or contact name
- Setting a preferred device for outgoing and incoming calls
- Selecting a routing rule for incoming calls

Mailbox features

- Recording and sending voice messages
- Listen to voice messages
- Listen to E-mail messages
- Playing appointment notifications
- Managing several mailbox folders
- Configuring an answering machine

Calendar features

- Accessing the calendars of a connected groupware system
- Retrieve pending appointments.
- Playing appointments from a specific date/time range
- Accepting or rejecting appointments

Conferencing features

- Retrieving conferences list
- Starting conferences
- Joining started conferences

Presence features

- Displaying and changing one's own presence status
- Retrieving the presence status of a contact
- Recording individual greetings for the available presence statuses. The played greeting changes then automatically with the set presence status.

Additional features for the voice-controlled portal access

- Creating calendar entries
- Starting Ad-hoc conferences (audio and web)

Security Functions

- Access PIN-protected
- Simplified access by calling from a trusted phone (Trusted Numbers)

You find a detailed description of OpenScape Voice Portal in the following documentation:
• OpenScape UC Application, Client Applications, User Guide • OpenScape UC Application, Configuration and Administration, Administrator Documentation • OpenScape UC Application, Installation and Upgrade, Installation Guide

4.1.2 OpenScape Conference Portal

The OpenScape conference portal provides virtual conference rooms in which users can gather and hold audio and video conferences. Users may deploy any telephone or softphone as terminal audio device. Details about the supported video devices are included in the OpenScape UC Application, Planning Guide manual.

The conferences can be scheduled and controlled via a telephone user interface (TUI) or via various clients of OpenScape UC Application.

If a user configures a conference for the conference portal, all involved participants receive automatically an e-mail notification that contains all required conference data. The structure of such an e-mail notification can be adjusted for conferences that users configure in one of the following user interfaces:

- OpenScape Web Client 1.0
- OpenScape Extensions for Microsoft Outlook
- OpenScape Extensions for Lotus Notes

The OpenScape conference portal supports the following types of audio- and video-based conferences:

- Ad-hoc conferences
- Meet Me conferences
- MeetNow! conferences

You find a detailed description of OpenScape conference portal in the following documentation:
• OpenScape UC Application, Configuration and Administration, Administrator Documentation

4.2 Independent Client Applications

OpenScape UC Application provides some user interfaces using independent client applications. If a user is to use such a client application, it must be installed

on one of the user's devices – depending on the client application for example on the user's PC or mobile phone.

OpenScape UC Application provides the following independent client applications.

4.2.1 OpenScape Desktop Client Enterprise Web Embedded Edition

Using OpenScape Desktop Client Enterprise Web Embedded Edition you can reach people fast and easily or access important information – in the office, at home or on the road.

OpenScape Desktop Client Enterprise Web Embedded Edition provides among other things the following features:

Telephony features

- Controlling telephony features CTI
- Calling subscribers and contacts
- Managing the preferred device for outgoing and incoming calls
- Selecting a routing rule for incoming calls
- Client can be used as a softphone (SIP)
- Video telephony (SIP)

Additionally in mode **OpenScape Web Client 1.0**:

- Managing a routing rule for incoming calls

Journal

- Logging incoming and outgoing calls anytime
- Filtering journal entries by call type (for example incoming or missed)
- Calling a communication partner by click

Contact features

- Managing private contacts in groups
- Displaying availability for various media
- Contacting contacts

Conferencing features

In standard Web Client mode:

- Starting Ad-hoc conferences (audio, web)
- Scheduling and starting persistent conferences (audio, video and web)
- Starting a scheduled conference (audio, video and web)
- Controlling audio, video and web conferences (Floor Control)

In mode **OpenScape Web Client 1.0**:

- Starting Ad-hoc conferences (audio, web)

- Scheduling and starting Meet Me conferences (audio, video and web)
- Controlling audio, video and web conferences (Floor Control)

Presence features

- Displaying and changing one's own presence status
- Displaying presence statuses of contacts
- Tell-Me-When
- In case of an integration with Micosoft Office Communications Server, OpenScape UC Application adopts automatically the presence status specified there

Team features

- Picking up calls for team members

Additionally in mode **OpenScape Web Client 1.0**:

- Displaying a team member's telephone status
- Accessing the team members' journal
  (to be released individually by the team member)
- Managing team settings by the team administrator

Instant Messaging

- Chatting with OpenScape users
- Starting group chats

You find a detailed description of OpenScape Desktop Client Enterprise Web Embedded Edition in the following documentation:
• OpenScape UC Application, OpenScape Desktop Client Enterprise Web Embedded Edition, User Guide • OpenScape UC Application, OpenScape Desktop Client Enterprise Web Embedded Edition, Installation Guide

4.2.2 Mobile Client

Using Mobile Client you can deploy a large number of OpenScape UC Application features from mobile phones.

Mobile Client provides among other things the following features:

Telephony features

- Calling subscribers and contacts
- Managing the preferred device for outgoing and incoming calls
- Selecting a routing rule for incoming calls

Journal

- Displaying the last 20 calls anytime

- Calling a communication partner

Contact features

- Managing private contacts in groups
- Calling contacts

Conferencing features

- Starting Ad-hoc conferences (audio)
- Displaying Meet Me conferences
- Starting Meet Me conferences (audio) scheduled by yourself
- Joining started Meet Me conferences

Presence features

- Displaying and changing one's own presence status
- Displaying the presence status of contacts
- In case of an integration with Micosoft Office Communications Server, OpenScape UC Application adopts automatically the presence status specified there

Security Functions

- Access user-name- and password-protected

You find a detailed description of Mobile Client in the following documentation:
• OpenScape UC Application, Mobile Client, User Guide

4.2.3 OpenStage Client

Using OpenStage Client you can deploy a large number of OpenScape UC Application features on the phones of type OpenStage 60 or OpenStage 80.

OpenStage Client provides the following features:

Telephony features

- Managing the preferred device for outgoing and incoming calls

Journal

- Logging incoming and outgoing calls anytime
- Filtering journal entries by call type (for example incoming or missed)
- Calling a communication partner by click

Contact features

- Finding contacts in address books
- Displaying private contacts
- Calling contacts

Conferencing features

- Displaying Meet Me conferences
- Starting Meet Me conferences scheduled by yourself
- Joining started Meet Me conferences

Presence features

- Displaying and changing one's own presence status

You find a detailed description of OpenStage Client in the following documentation:
• OpenScape UC Application, Client Applications, User Guide • OpenScape UC Application, Installation and Upgrade, Installation Guide

4.2.4 E/A Cockpit

E/A Cockpit is a user interface for OpenStage phones. It realizes an advanced, dynamic forwarding logic for calls and is based on the status of the E/A group subscribers to OpenScape Voice.

E/A Cockpit synchronizes the subscriber status with OpenScape Voice and transfers status changes and phone events to the user interfaces.

For OpenScape UC Application users, the E/A Cockpit status is synchronized with the OpenScape UC Application presence status and the status of the preferred device.

You find a detailed description of E/A Cockpit in the following documentation:
• OpenScape UC Application, Executive/Assistant Cockpit, User Guide • OpenScape UC Application, Installation and Upgrade, Installation Guide

4.2.5 OpenScape Auto Attendant

OpenScape Auto Attendant enables for OpenScape UC Application an automated central postmaster account.

OpenScape Auto Attendant provides among other things the following features:

- DTMF-based control of the following, pre-defined OpenScape Auto Attendant features:
  - Connecting extensions
  - Searching employee directory for contact to connect
  - Finishing calls (probably after playing a greeting)
  - Recording and sending voice messages
  - Playing greetings
- Receiving fax messages

- Providing assistance for callers
- Configuration mode hidden through authentication
- GUI-based configuration

OpenScape Auto Attendant supports the following configurable time modes for call handling.

- Within business hours
- Outside business hours
- Within company vacation
- On public holidays
- At the weekend
- In an emergency

You find a detailed description of OpenScape Auto Attendant in the following documentation:
• OpenScape UC Application, Configuration and Administration, Administrator Documentation • OpenScape UC Application, Installation and Upgrade, Installation Guide

4.2.6 OpenScape Fusion Application Builder

OpenScape Fusion Application Builder is an administrator client. You can use it to create customized, IVR-based applications for the OpenScape Media Server. For this purpose, the flow diagram of a passive or interactive voice dialog application is designed in the graphic user interface of OpenScape Fusion Application Builder.

You find a detailed description of OpenScape Fusion Application Builder in the following documentation:
• OpenScape UC Application, Application Builder, User Guide

4.3 Web-based User Interfaces

Users can deploy web-based user interfaces with the help of a common web browser.

OpenScape UC Application provides the following web-based user interfaces.

4.3.1 OpenScape Web Client

Using OpenScape Web Client you can deploy a large number of OpenScape UC Application features in a common web browser.

The OpenScape Web Client provides in particular the following features:

Telephony features

- Calling subscribers and contacts
- Managing the preferred device for outgoing and incoming calls
- Selecting named device lists for selecting your preferred device

> ***NOTICE:*** You cannot create or edit named device lists with the OpenScape Web Client.

Journal

- Logging incoming and outgoing calls anytime
- Filtering by call type (for example incoming or missed)
- Calling a communication partner by click

Contact features

- Managing private contacts in groups
- Contacting contacts
- Finding contacts in the connected directory
- Copying contacts to the private contacts from the connected directory

Conferencing features

- Starting Ad-hoc conferences (audio, web)
- Scheduling and starting persistent conferences (audio, video and web)
- Starting a scheduled conference (audio, video and web)
- Controlling audio, video and web conferences (Floor Control)

Presence features

- Displaying and changing one's own presence status
- Displaying presence statuses of contacts

Voicemail features

- Managing voicemails from the voicemail system
- Managing the voicemail system via logging on to the OpenScape Xpressions Web Assistant separately

Team features

- Picking up calls for team members

Instant Messaging

- Chatting with OpenScape users
- Starting group chats

Security Functions

- Access user-name- and password-protected
- Applying the password policy
- Option for encrypted communication with the server

You find a detailed description of OpenScape Web Client in the following documentation:
• OpenScape UC Application, OpenScape Web Client, User Guide • OpenScape UC Application, Installation and Upgrade, Installation Guide

4.3.2 OpenScape Web Client 1.0

Using OpenScape Web Client 1.0 you can deploy a large number of OpenScape UC Application features in a common web browser.

OpenScape Web Client 1.0 provides among other things the following features:

Telephony features

- Calling subscribers and contacts
- Managing routing rules and rule profiles for incoming calls
- Managing the preferred device for outgoing and incoming calls
- Managing named device lists for selecting your preferred device

Journal

- Logging incoming and outgoing calls anytime
- Filtering journal entries by call type (for example incoming or missed)
- Calling a communication partner by click
- Exporting journal contents

Contact features

- Managing private contacts in groups
- Displaying availability for various media
- Contacting contacts
- Finding contacts in connected directories
- Copying contacts to the private contacts from connected directories
- Exporting, importing and printing contact lists

Conferencing features

- Starting Ad-hoc conferences (audio, web)
- Scheduling and starting Meet Me conferences (audio, video and web)
- Controlling audio, video and web conferences (Floor Control)

Presence features

- Displaying and changing one's own presence status
- Displaying presence statuses of contacts
- In case of an integration with Micosoft Office Communications Server, OpenScape UC Application adopts automatically the presence status specified there
- Tell-Me-When

Team features

- Displaying a team member's telephone status
- Picking up calls for team members
- Accessing the team members' journal
  (to be released individually by the team member)
- Managing team settings by the team administrator

Instant Messaging

- Chatting with OpenScape users
- Starting group chats

Security Functions

- Access user-name- and password-protected
- Applying the password policy
- Option for encrypted communication with the server

You find a detailed description of OpenScape Web Client 1.0 in the following documentation:
• OpenScape UC Application, OpenScape Web Client 1.0, User Guide • OpenScape UC Application, Installation and Upgrade, Installation Guide

4.4 Plug-in-based User Interfaces

Using a software module, plug-in-based user interfaces integrate in a foreign system the user deploys besides OpenScape UC Application. This enables the user to operate OpenScape UC Application services from the foreign system's user interface.

OpenScape UC Application provides the following plug-in-based user interfaces.

4.4.1 OpenScape Extensions for Microsoft Outlook

Using OpenScape Extensions for Microsoft Outlook and the Microsoft Outlook calendar data you can schedule and manage Meet Me conferences.

OpenScape Extensions for Microsoft Outlook provides among other things the following features:

Conferencing features

- Scheduling and managing Meet Me conferences (audio, video and web)
- Starting scheduled Meet Me conferences automatically at a pre-set time (Scheduled Conferencing)
- Scheduling and managing web conferences

Presence features

- Synchronizing one's own presences status based on the Microsoft Outlook calendar data

You find a detailed description of OpenScape Extensions for Microsoft Outlook in the following documentation:
• OpenScape UC Application, Client Applications, User Guide

4.4.2 OpenScape Extensions for Lotus Notes

Using OpenScape Extensions for Lotus Notes and the IBM Notes calendar data you can schedule and manage Meet Me conferences.

OpenScape Extensions for Lotus Notes provides among other things the following features:

Conferencing features

- Scheduling and managing Meet Me conferences (audio, video and web)
- Starting scheduled Meet Me conferences automatically at a pre-set time (Scheduled Conferencing)
- Scheduling and managing web conferences

Presence features

- Synchronizing one's own presences status based on the IBM Notes calendar data

You find a detailed description of OpenScape Extensions for Lotus Notes in the following documentation:
• OpenScape UC Application, Client Applications, User Guide

4.4.3 OpenScape Desktop Integration

Using OpenScape Desktop Integration you can call subscribers by selecting the text of a phone number and pushing a hotkey in any PC application. Furthermore, this client extension allows signalling incoming calls and instant messages even if the OpenScape Web Client window is closed.

4.4.4 OpenScape Client Integrations

Using OpenScape Client Integrations you can initiate calls from the journal and contact entries of a groupware client used.

4.4.5 OpenScape Fusion for Office

Using OpenScape Fusion for Office you can operate the OpenScape UC Application features from the graphic user interface of Microsoft Outlook.

OpenScape Fusion for Office provides among other things the following features:

Telephony features

- Controlling telephony features CTI
- Calling subscribers and contacts
- Managing the preferred device for outgoing and incoming calls
- Managing routing rules for incoming calls
- Client can be used as a softphone (SIP)
- Video telephony (SIP)

Journal

- Logging incoming and outgoing calls anytime
- Filtering journal entries by call type (for example incoming or missed)
- Calling a communication partner by click

Contact features

- Managing private contacts in groups
- Finding contacts in the connected directory
- Copying contacts to the private contacts from the connected directory
- Displaying availability for various media
- Contacting contacts
- Exporting, importing and printing contact lists

Conferencing features

- Starting Ad-hoc conferences (audio, web)
- Scheduling and starting Meet Me conferences (audio, video and web)
- Joining started Meet Me conferences

Presence features

- Displaying and changing one's own presence status
- Displaying presence statuses of contacts
- Tell-Me-When

- In case of an integration with Micosoft Office Communications Server, OpenScape UC Application adopts automatically the presence status specified there

Team features

- Displaying a team member's telephone status
- Picking up calls for team members
- Accessing the team members' journal
  (to be released individually by the team member)
- Managing team settings by the team administrator

Instant Messaging

- Chatting with OpenScape users
- Starting group chats

Security Functions

- Access user-name- and password-protected

You find a detailed description of OpenScape Fusion for Office in the following documentation:
• OpenScape UC Application, OpenScape Fusion for Office 2007, User Guide
• OpenScape UC Application, OpenScape Fusion for Office/Lync, Installation Guide

4.4.6 OpenScape Fusion for Microsoft Lync / Skype for Business

Using OpenScape Fusion for Microsoft Lync you can operate the OpenScape UC Application features from the graphic user interface of Microsoft Lync.

NOTICE: If at the time of the setup on the computer a Microsoft Outlook 2010 and higher client is already present there too, the Microsoft Outlook add-in of OpenScape Fusion for Office is automatically installed also.

OpenScape Fusion for Microsoft Lync provides among other things the following features:

Telephony features

- Controlling telephony features CTI
- Calling subscribers and contacts
- Managing the preferred device for outgoing and incoming calls
- Client can be used as a softphone (SIP)
- Video telephony (SIP)

Journal

- Logging incoming and outgoing calls anytime
- Filtering journal entries by call type (for example incoming or missed)
- Calling a communication partner by click

Contact features

- Managing contacts in Microsoft Lync
- Displaying availability for various media
- Contacting contacts

Conferencing features

- Starting Ad-hoc conferences (audio, web)
- Scheduling and starting Meet Me conferences (audio, video and web)
- Joining started Meet Me conferences

Presence features

- Displaying and changing one's own presence status
- Displaying presence statuses of contacts
- In case of an integration with Micosoft Office Communications Server, OpenScape UC Application adopts automatically the presence status specified there

Team features

- Displaying a team member's telephone status
- Picking up calls for team members
- Accessing the team members' journal
  (to be released individually by the team member)
- Managing team settings by the team administrator

Instant Messaging

- Chatting with OpenScape users
- Starting group chats

Security Functions

- Access user-name- and password-protected

You find a detailed description of OpenScape Fusion for Microsoft Lync in the following documentation:
• OpenScape UC Application, OpenScape Fusion for Microsoft Lync, User Guide • OpenScape UC Application, OpenScape Fusion for Office/Lync, Installation Guide

4.4.7 OpenScape Fusion for IBM Notes

Using OpenScape Fusion for IBM Notes you can operate the OpenScape UC Application features from the graphic user interface of IBM Notes.

OpenScape Fusion for IBM Notes provides among other things the following features:

Telephony features

- Controlling telephony features CTI
- Calling subscribers and contacts
- Managing the preferred device for outgoing and incoming calls
- Routing rules for incoming calls
- Client can be used as a softphone (SIP)
- Video telephony (SIP)

Journal

- Logging incoming and outgoing calls anytime
- Filtering journal entries by call type (for example incoming or missed)
- Calling a communication partner by click

Contact features

- Managing private contacts in groups
- Finding contacts in the connected directory
- Copying contacts to the private contacts from the connected directory
- Displaying availability for various media
- Contacting contacts
- Exporting, importing and printing contact lists

Conferencing features

- Starting Ad-hoc conferences (audio and web)
- Scheduling and starting Meet Me conferences (audio, video and web)
- Joining started Meet Me conferences

Presence features

- Displaying and changing one's own presence status
- Displaying presence statuses of contacts
- Tell-Me-When
- In case of an integration with Micosoft Office Communications Server, OpenScape UC Application adopts automatically the presence status specified there

Team features

- Displaying a team member's telephone status

- Picking up calls for team members
- Accessing the team members' journal
  (to be released individually by the team member)
- Managing team settings by the team administrator

Instant Messaging

- Chatting with OpenScape users
- Starting group chats

Security Functions

- Access user-name- and password-protected

You find a detailed description of OpenScape Fusion for IBM Notes in the following documentation:
• OpenScape UC Application, OpenScape Fusion for IBM Notes, User Guide • OpenScape UC Application, OpenScape Fusion for IBM Notes, Installation Guide

5 Central Communications Technologies and Communication Aids

OpenScape UC Application provides various communications technologies and communication aids to make communication easier for OpenScape users.

The most important are:

- User Presence Status and Availability Model
- Preferred Target
- Routing Lists
- Rules
- Contacts
- Conferencing
- Self-Service Portal for Guests

5.1 User Presence Status and Availability Model

The presence model consists of several elements. These are

- User presence
- Voice media presence
- IM media presence
- Text note
- Time zone
- Location

OpenScape UC Application currently supports the following presence models:

1. OpenScape presence model
2. Harmonized Microsoft Lync presence model

The customer chooses during the installation one of these presence models.

If OpenScape UC Application was installed with the OpenScape presence model, you can migrate the presence model to the Microsoft Lync presence model at a later date.

5.1.1 Presence Models

A presence model comprises various information. These are described in this section.

User presence

Here you can enter your personal presence status. Thus OpenScape UC Application can determine by means of your personal presence information which is the best way to contact you. User presence can be shared among colleagues so that they also can make decision about communication based upon your personal user presence.

Media presence

This describes an overall availability for each media type supported by one of the devices of a user – currently, these are the media types voice, e-mail and instant messaging. The overall availability for each media type takes into account the state (busy, online, unknown, offline) of each device that supports that media type. Subsequently, the statuses of the corresponding devices are combined in order to determine the overall availability of each media type. See also Section 5.1.3, “Media Availability”, on page 80.

The user’s preferred device can be overridden on a call by call basis.

Instant Messaging (IM) media presence

Text note

Users can add an explanatory note to describe his/her presence.

Time zone

Indicates the time zone of the contact.

Location

Indicates the geographic location of the contact.

5.1.2 Status

As already mentioned, OpenScape UC Application currently supports the following presence models:

1. OpenScape presence model
2. Harmonized Microsoft Lync presence model

The customer chooses during the installation of OpenScape UC Application the model that he would like to use. When the choice has been made, the OpenScape UC Application system shows in the OpenScape UC Application user interface the statuses of the chosen model.

Every OpenScape user has a status at all times. Status can be set from the OpenScape UC Application or the Voice Portal and can be one of the following:

OpenScape UC Application user interface

The list below shows the default presence states of the OpenScape UC Application.

- Available
- Be right back
- In a meeting
- Busy
- Do not disturb
- Unavailable

Microsoft Lync user interface

OpenScape UC Application uses the following Microsoft Lync statuses when the system is installed in a Microsoft environment and the Microsoft Lync server is used as collaboration solution.

- Online
- Away
- Be right back
- Busy
- Do not disturb
- Offline

> ***NOTE:*** The user cannot set status *Offline* via OpenScape UC Application or the Microsoft Lync user interface. This is the status shown when the user has logged off from the OSC server.

Status is one of the key means by which an OpenScape user personalizes the behavior of the OpenScape UC Application system. In particular:

- With the Routing Lists, users can associate each status with a device list to which communications will be routed. The device is changed automatically when the user changes his status.
- With the Voice Portal, users can record a status-based greeting that their callers hear. The greeting changes automatically as the user changes his status.
- Status is displayed as part of the contact list for each of the contacts who are OpenScape users.

5.1.3 Media Availability

Media availability is individually available for each of the media types voice, e-mail and instant messaging.

As Figure 1 shows, it is determined by taking into account whether each device that is capable of the media type in question is busy, online, off-line, or whether its availability is unknown. These individual statuses are combined in order to determine the overall availability of each media type.

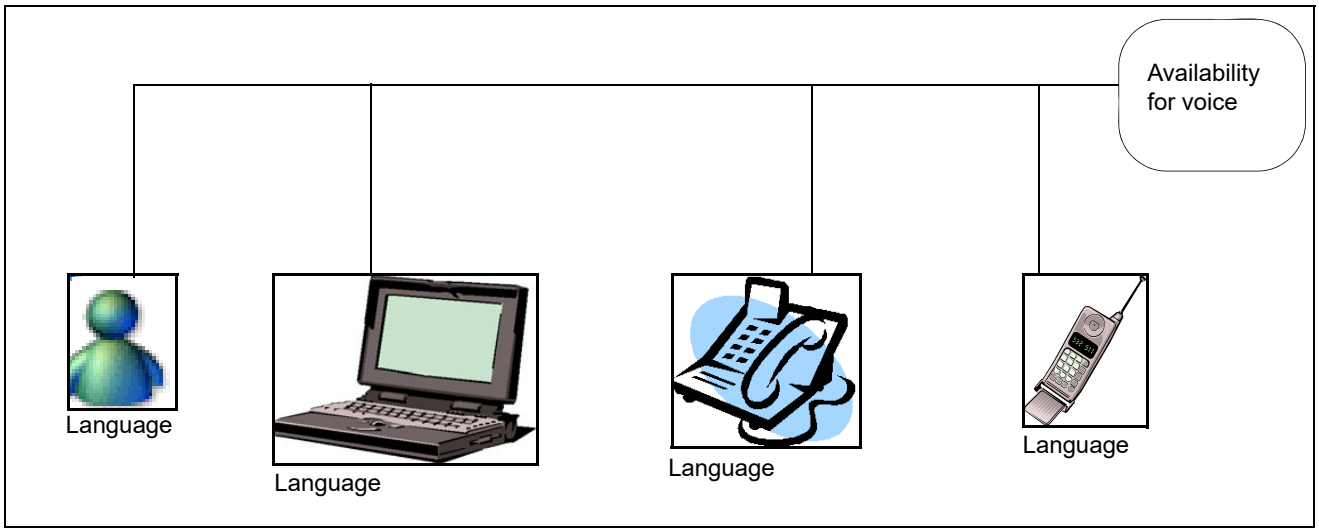


Figure 1 Overall availability for the voice media type

Based on the availability information about each media type (for example, available via phone, not available via instant messaging, available via e-mail), the OpenScape UC Application can make the appropriate routing decision.

NOTE: If a user is accessible by any phone such as an office phone, a home phone, or a mobile phone, the OpenScape UC Application by default makes the assumption that the user is available via phone.

NOTE: The user can specify the number of voice calls that he/she must be active in at the same time before the system reports this user as busy. Most of the users will set this value to **1**, however, it can also be a higher value.

The overall availability for each media type enables OpenScape UC Application to take routing decisions. Additionally, it is displayed for the corresponding media type for each of the contacts in the contact list.

5.1.4 Interaction with the Presence Model

NOTE: The user can set his/her user presence status. The user's media availability, however, is determined by the configuration of the active routing list and the current status of the devices.

It is recommended that an OpenScape user always sets his/her own user presence status in order to specify his/her own personal status and to ensure that his/her own routing rules are applied according to his/her current user presence.

5.2 Preferred Target

OpenScape users can control the default inbound and outbound handling of calls using the *preferred target*. The preferred target may be a single device or a list of devices. In this context, a device is an arbitrary functional unit that may serve as communication endpoint – e.g. a telephone.

When a call is made to the user, the default routing is determined by the preferred target. If the target is a single device, the call is routed to that device. If the target is a list, the call is routed to each of the list's devices one after the other until the call is answered. In both cases, the call is routed to the voicemail system if it is not accepted on any of the devices. This requires that the user in question has been assigned a voicemail box.

The preferred target is also used to determine the device the OpenScape UC Application will initiate user calls from. If the preferred target is a single phone, it will be used. If the target is a device list, the first phone on the list will be used. The OpenScape UC Application clients allow the user to select an alternate device to override the default for a single call.

In the scenarios below, the user has the following set:

Devices: Home, Cell, Work

Device lists: device list *OutOfOffice* containing (Home, mobile phone); device list *LeaveMeAlone* containing (voicemail).

- **Scenario A:** User sets preferred target to work.
  - Inbound calls would go to work and RNA timeout to the voicemail system, if the user has been assigned a voicemail box.
  - Outbound calls would be initiated from work.
- **Scenario B:** User sets preferred target to *OutOfOffice*.
  - Inbound calls would ring at home, then cell, then voicemail system, if the user has been assigned a voicemail box.
  - Outbound calls would be initiated from home.
- **Scenario C:** User sets preferred target to *LeaveMeAlone*.
  - Inbound calls would go directly to the voicemail system, if the user has been assigned a voicemail box.

5.3 Routing Lists

Users can configure up to three status-associated devices for routing incoming and outgoing calls and incoming instant messages. When a user changes his status, the device that his communications routes to is automatically changed.

5.4 Rules

Rules are used to manage non-routine calls. For example, incoming calls when the user is in a meeting or on a business trip. In these situations, the user may wish to have those calls forwarded to an assistant. However, if an important customer or consultant calls, the user may wish to personally answer these calls on his/her mobile device. The user may wish to set up rules to receive calls from family members on his/her mobile phone if in a meeting or away on business.

Definitions:

- **Rule** – A rule is used to define what should happen to an incoming call or an e-mail.

  As soon as a rule has been set up it can be assigned to a profile. Rules are applied only if they are combined with a profile.

- **Profile** – A profile contains rules a user has assigned to this profile. Each profile may contain one or more rules with different priorities.

- **Rules Interpreter** – This tool will apply the Rules to incoming calls and determine which contact or device in which to route them.

NOTE: An active call forwarding has priority over the rules. So to avoid conflicts when rules are in effect, forwarding must be deactivated.

5.4.1 Rule and Profile Relationship

A rule can belong to one of three priority groups (high, normal, and low) and is listed under the profile it is assigned to. The higher a rule is on the list within a profile, the higher the priority.

When a profile is activated, the system starts at the top of the list and checks all the rules in the profile until an appropriate rule is found. This rule is applied and the rest of the rules on the list are ignored.

A rule profile can be set for every status, such as Not Available, Busy, In Meeting, etc.

5.4.1.1 Lists of Persons

Rather than assigning persons to a rule or rules, it is easier to assign contacts into groups, such as Project X, family, key customers, and the like. In the OpenScape UC Application, this kind of groups are called lists of persons. By using these lists of persons, you can group members of project X, family or key customers individually.

A great advantage of the person lists is that they support the addition of new contacts that can then be automatically linked to a rule. This means you do not have to change the rule when a new person is added to the list, the new person can utilize the existing rule.

Just as rules are important when persons are involved, sometimes dates are equally or more important. See Section 5.4.1.2, “Date Lists”.

5.4.1.2 Date Lists

If you wish to specify that a rule applies on a particular date, you can define individual days and times periods in this rule. The rule may apply to your vacation period or a short absence. To avoid changing the rule when the dates change, you can use a date list and link it to the rule. You modify the list, but the rule remains unchanged.

5.5 Contacts

Users can manage their UC Application contacts and take the following actions:

- Add a new contact or remove a contact, even persons who are on other directories in their company's network
- Import contacts from Microsoft Exchange / Outlook or IBM Lotus Domino / IBM Lotus Notes
- Import contacts from Microsoft Lync
- Start voice conference or multimedia conference with contacts
- Place a phone call, send an IM or an E-mail to a contact
- View a contact's status
- View the contact's availability for a phone call, IM, and E-mail.

NOTE: A contact can block access to specific individuals from viewing his status and media availability.

In the Contact display, an icon next to the contact's name indicates whether that person is reachable by phone, instant messaging, or e-mail.

Restricting the Visibility of Contacts based on Groups

OpenScape UC Application provides various connectors for finding contacts in different directories. Such connectors comprise for example the connector for connecting an external LDAP directory or the connector for connecting system-wide user directories.

Finding contacts using those connectors can be deployed for the following applications:

- UC Application users can determine the contact data of other users via contact search.
- Intrasystem services use the contact search to resolve user names and phone numbers against each other – for example to display names in the call journal.

In the contact search scope you can restrict the visibility of contacts as follows:

- Each contact search connector can be made available exclusively to UC Application users who belong to an individual user group – a so-called visibility group.
- UC Application users may belong to none or any number of visibility groups.
- If UC Application users have access to selected contact search connectors only, the following applies:
  - Users may deploy only those selected connectors for finding contact data.
  - UC Application services may use only those selected connectors to resolve user names and phone numbers against each other for the relevant users.

NOTE: Restricting the visibility of contacts requires a project-specific release. You can obtain details of such a solution from Professional Services & Solutions (PS&S) of Unify Software and Solutions GmbH & Co. KG.

5.6 Conferencing

OpenScape UC Application supports various types of audio and video conferences.

Furthermore, UC Application users may deploy web conferences by connecting the OpenScape Web Collaboration product. You find further information on this in Section 6.5, “Web Conferencing Systems”, on page 96.

5.6.1 Optimized Conference Routing

The conferencing infrastructure of OpenScape UC Application is provided by the configured OpenScape Media Server. If OpenScape UC Application is operated with several OpenScape Media Servers, you can optimize audio and video conferences on the basis of the following criteria and divide them between the available OpenScape Media Servers.

- Geographic assignment based on office codes
- Type of the conference medium (audio or video)
- Load of the single OpenScape Media Servers

5.6.2 Supported Conference Types

OpenScape UC Application supports the following conference types of audio and video conferences:

- Ad-hoc Conference
- Meet Me conference
- MeetNow! Conference

5.6.2.1 Ad-hoc Conference

An Ad-hoc conference is a dynamically and spontaneously configured and immediately performed conference. If you wish to stage a meeting with several persons and you see in the contact list that all of them are available, you can select them and subsequently start a one-off voice conference in one working step.

No Video is supported for Ad-hoc conferences.

5.6.2.2 Meet Me conference

Meet Me conferences are planned and configured in advance.

You can configure them as scheduled conferences that start automatically at a specific time or as conferences that can be started freely and manually by the moderator or automatically by the first conference participant who dials in.

Two types of Meet Me conferences are possible:

Open conference

An open conference is a Meet Me conference in which all participants have the same control privileges. The conference is started either automatically at a scheduled time or manually by one of the participants respectively automatically by the first participant who dials in. Depending on the conference configuration, the participants are either called automatically by the system at the conference start (dial-out) or need to dial in by themselves (dial-in).

Moderated conference

A moderated conference is a Meet Me conference in which only the conference creator is in control as moderator. The conference starts automatically if a point in time has been configured. If no start time has been configured, the moderator can start the conference manually or by dialing in. Depending on the configuration, participants can dial in or are called by the system (dial-out). When the moderator leaves the conference, it ends automatically for the other participants also.

5.6.2.3 MeetNow! Conference

Using a special access number you can configure MeetNow! conferences quickly with all external and internal participants. The conference room is exclusively defined by specifying an arbitrary PIN. I. e. all conference participants who dial the access number and enter the specified PIN are in the same conference room and can talk to each other directly.

MeetNow! conferences can be started only by callers the conference portal can uniquely identify as OpenScape users. If an OpenScape user not uniquely identified is the first one to dial into a MeetNow! conference, he/she will hear music-on-hold until the first uniquely identified OpenScape user dials into the MeetNow! conference.

NOTE: The special character of MeetNow! conferences does not allow the conference portal to handle the assignment of access PINs. This may lead to participants using the same access PIN for different conferences. In this case the participants may be connected to each other in the same conference room unintentionally.
To handle the allocation of access PINs for MeetNow! conferences, each user can be assigned a personal access PIN. The participant will use this access PIN when inviting other participants to a MeetNow! conference. A personal access PIN may be derived from a company's extensions, for example.

5.7 Self-Service Portal for Guests

The Self Service Portal allows guests calling into the OpenScape UC Application system to be able to listen to the greetings of OpenScape users and to leave a message for these users.

A guest accesses the user's Self-Service Portal by first dialing the user's extension number and then making the appropriate selection from a list of choices.

NOTE: The OpenScape user specifies these selection options in his/her individual greeting configuration. If the user has not set up his/her greeting configuration, the caller can only leave a message.

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6 Connecting external Systems

You can connect OpenScape UC Application to various external systems. Such connections provide OpenScape users with functions not made available by OpenScape UC Application itself but by the connected systems.

6.1 Communications Systems (PBXs)

OpenScape UC Application must always be connected to a communications system. This communications system provides the OpenScape UC Application components with the basic infrastructure for telecommunications services.

You can connect the following released communications systems to OpenScape UC Application (direct connection):

- OpenScape Voice
- OpenScape 4000

NOTE: Chapter 3, “Deployment Scenarios” provides details about the versions of the supported communications systems and the number of systems that can be connected.

Furthermore, other communications systems can be connected in addition (indirect connection). The OpenScape UC Application features related to such communications systems are available quite restrictedly, though.

6.2 Groupware Systems

OpenScape UC Application must be connected to a groupware system if no external Unified Messaging system is used – e.g. OpenScape Xpressions. This groupware system serves then in particular as voice message store.

NOTE: Very Large Deployment assumes a connection to OpenScape Xpressions.

A groupware connection enables OpenScape users to access e. g. the following private information in the connected groupware system:

- Private contacts
- Inbox
- Calendar

For the time being, the groupware connection of OpenScape UC Application allows connecting one of the following groupware systems to OpenScape UC Application:

- Microsoft Exchange 2003
- Microsoft Exchange 2007
- Microsoft Exchange 2010
- Microsoft Exchange 2013
- Microsoft Exchange 2016
- IBM Lotus Domino 8.5.x
- IBM Lotus Domino 9.0.x

6.3 Unified Messaging Systems

OpenScape UC Application uses a workflow for incoming calls. At the end of this workflow you always find the voicebox of the called user. This ensures that no calls will be missed because of the caller being unable to answer the phone.

In most cases it is advisable to provide a common Unified Messaging solution for all UC Application users. However, in the following cases different systems may have to be used:

- There are user groups with each of them expecting a preferred system solution.
- An existing solution shall be gradually migrated to a new system.
- Budget limits allow only basic functions for most users and only a small number of users has access to more sophisticated solutions.

OpenScape UC Application offers an integrated Unified Messaging solution with the voice portal.

You can use one of the following external solutions as alternative to this integrated Unified Messaging solution:

- OpenScape Xpressions
- Unified Messaging or voicemail system by a 3rd-party vendor

Which functions are available to a UC Application user depends on the Unified Messaging system used.

NOTE: Very Large Deployment assumes a connection to OpenScape Xpressions.

6.4 Presence Systems

Each UC Application system uses a defined integration mode for its presence functions. This integration mode is selected during the system setup and tunes the UC Application system to a specified presence system.

You can select from:

- Integration mode Standard
  You need to use this integration mode if the UC Application system shall be connected to the instant-messaging system Openfire.
- Integration mode tuned to Microsoft Lync Server

NOTE: A project-specific release is required for connecting Microsoft Lync Server to OpenScape UC Application.

If the Microsoft Lync-based integration mode is used for a UC Application system, OpenScape UC Application must be connected to a corresponding foreign system. This foreign system then serves as source for the presence values.

6.5 Web Conferencing Systems

OpenScape UC Application extends the user collaboration as it can integrate web conferencing systems. Owing to this integration, users can start a web conference along with a UC Application voice conference or add a web conference to an active UC Application voice conference.

OpenScape UC Application can in particular use OpenScape Web Collaboration Instant Meeting as web conferencing system.

6.6 Instant-Messaging Systems

Each UC Application system uses a specified integration mode for its instant-messaging functions. This integration mode is selected during the system setup and tunes the UC Application system to a specified instant-messaging system.

You can select from:

- Integration mode Standard
  You need to use this integration mode if the UC Application system shall be connected to the instant-messaging system Openfire.
- Integration mode tuned to Microsoft Lync Server

NOTE: A project-specific release is required for connecting Microsoft Lync Server to OpenScape UC Application.

If the Microsoft Lync-based integration mode is used for a UC Application system, OpenScape UC Application must be connected to a corresponding foreign system. This foreign system then serves as instant-messaging system.

6.7 LDAP Directories

The LDAP connection allows you to connect OpenScape UC Application to any external LDAP directory – e.g. to an Active Directory if you connect Microsoft Exchange to OpenScape UC Application as groupware.

7 Application Environments

Because of the modular character of a UC Application environment, the scope of this manual does not allow representing all application environments of OpenScape UC Application that can be realized by external systems.

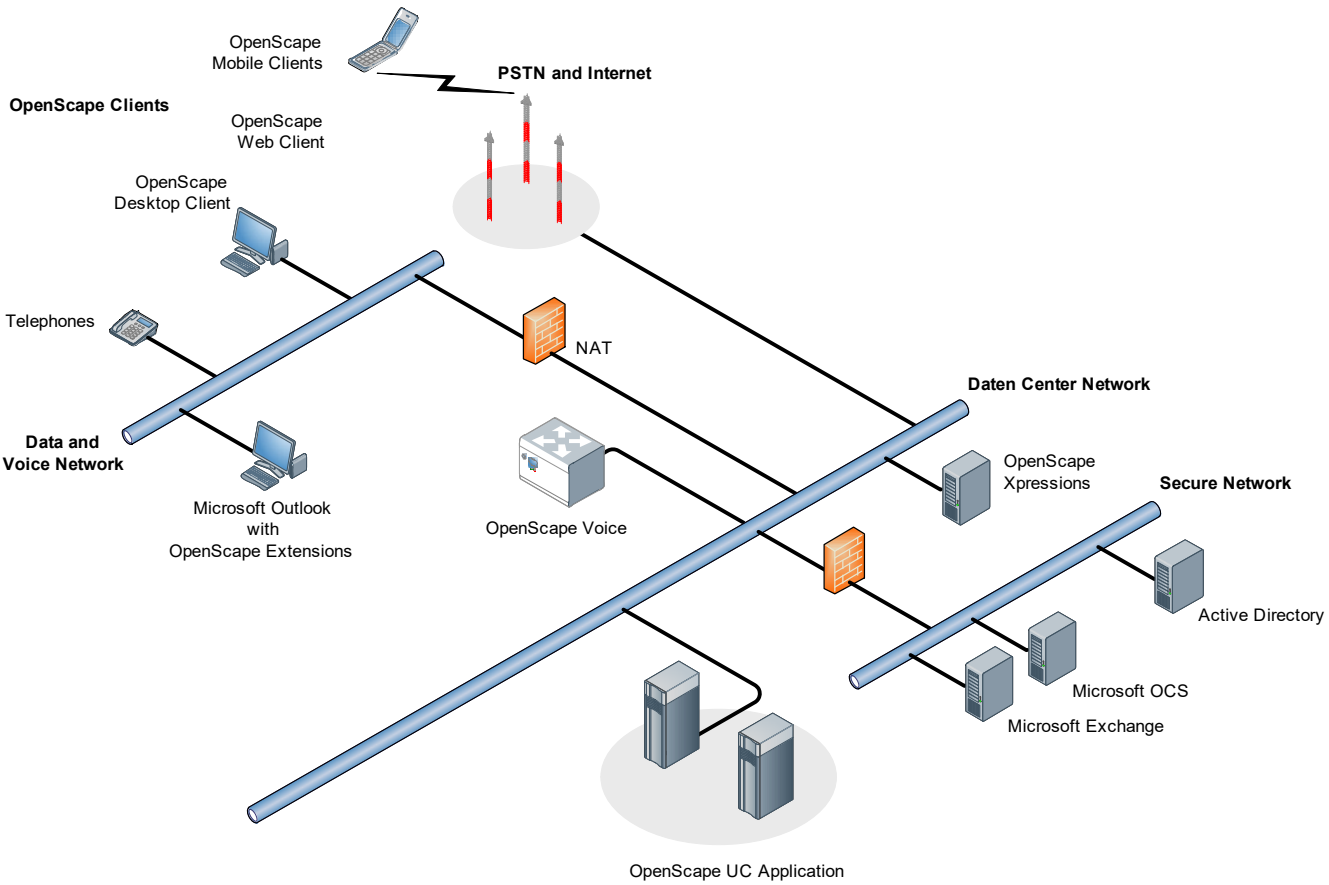
The following sections will therefore only deal with some examples of application environments.

- Example of a Microsoft-based Application Environment
- Example of an IBM-based Application Environment
- Example of an Application Environment with indirectly connected Communications System
- Multi-Tenant Environment

7.1 Example of a Microsoft-based Application Environment

This example describes an application environment with:

- OpenScape Voice as directly connected communications system
- Microsoft Exchange as groupware system
- Microsoft OCS as presence and instant-messaging system
- OpenScape Xpressions as external Unified Messaging system
- Active Directory as LDAP directory



In such a Microsoft-based application environment, OpenScape UC Application integrates in an existing Microsoft infrastructure and provides the following features as regards Microsoft Exchange or Microsoft OCS:

Microsoft Exchange server

A Microsoft Exchange connection offers OpenScape users the following advantages:

- OpenScape users can access their Microsoft Exchange inbox via voice portal and execute the following tasks:
  - Playing / deleting / restoring messages
  - Marking messages as read / unread
  - Responding to / forwarding messages with a voicemail
  - Creating a new voicemail
- OpenScape users can access their Microsoft Exchange calendar via voice portal and execute the following tasks:
  - Playing / accepting / declining appointments
  - Sending a voicemail to the initiator of an appointment
- OpenScape users can access their private Microsoft Exchange contacts with their UC Application client and execute the following tasks:
  - Creating / deleting / modifying / finding contacts

  The private contacts of the UC Application clients are in this case no longer stored in the OpenScape system but in the contact folder of the Microsoft Exchange inbox.

  Contacts are regularly synchronized between the UC Application clients and the Microsoft Exchange system.

IMPORTANT: If the contact management is migrated from the internal OpenScape-based solution to the Microsoft Exchange inbox, no contacts are synchronized that are already present in the OpenScape system.

NOTE: You can configure the Microsoft Exchange connection also in such a way that the OpenScape users' access to their private Microsoft Exchange contacts is restricted to reading.

Working with the Microsoft Lync server, the Exchange server will also provide instant messaging (IM).

In a Microsoft environment, a Microsoft Exchange server must always be present.

The mailboxes of all Microsoft Exchange users must be accessed via a single, common OWA access point.

OpenScape UC Application supports the following Microsoft Exchange server versions:

- Microsoft Exchange Server 2003
- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2016

Microsoft Lync server

A Microsoft Lync connection offers OpenScape users the following advantages.

- OpenScape users can access their contacts in the Microsoft Lync system and execute the following tasks with their OpenScape Web Client or their OpenScape Desktop Client:
  - Finding contacts
  - Copying found contacts to the private contact list of the OpenScape system
- The OpenScape and the Microsoft Lync system synchronize the users' presence information. This enables the user to control his/her presence status in the Microsoft Lync client as well as in the OpenScape clients.

OpenScape UC Application supports the following versions of the Microsoft Lync servers:

- Microsoft Office Communication Server 2007
- Microsoft Lync Server 2010
- Microsoft Lync Server 2013

OpenScape Xpressions

OpenScape Xpressions is used as store for incoming voice messages. To edit voice messages, OpenScape users can deploy the PhoneMail script of OpenScape Xpressions.

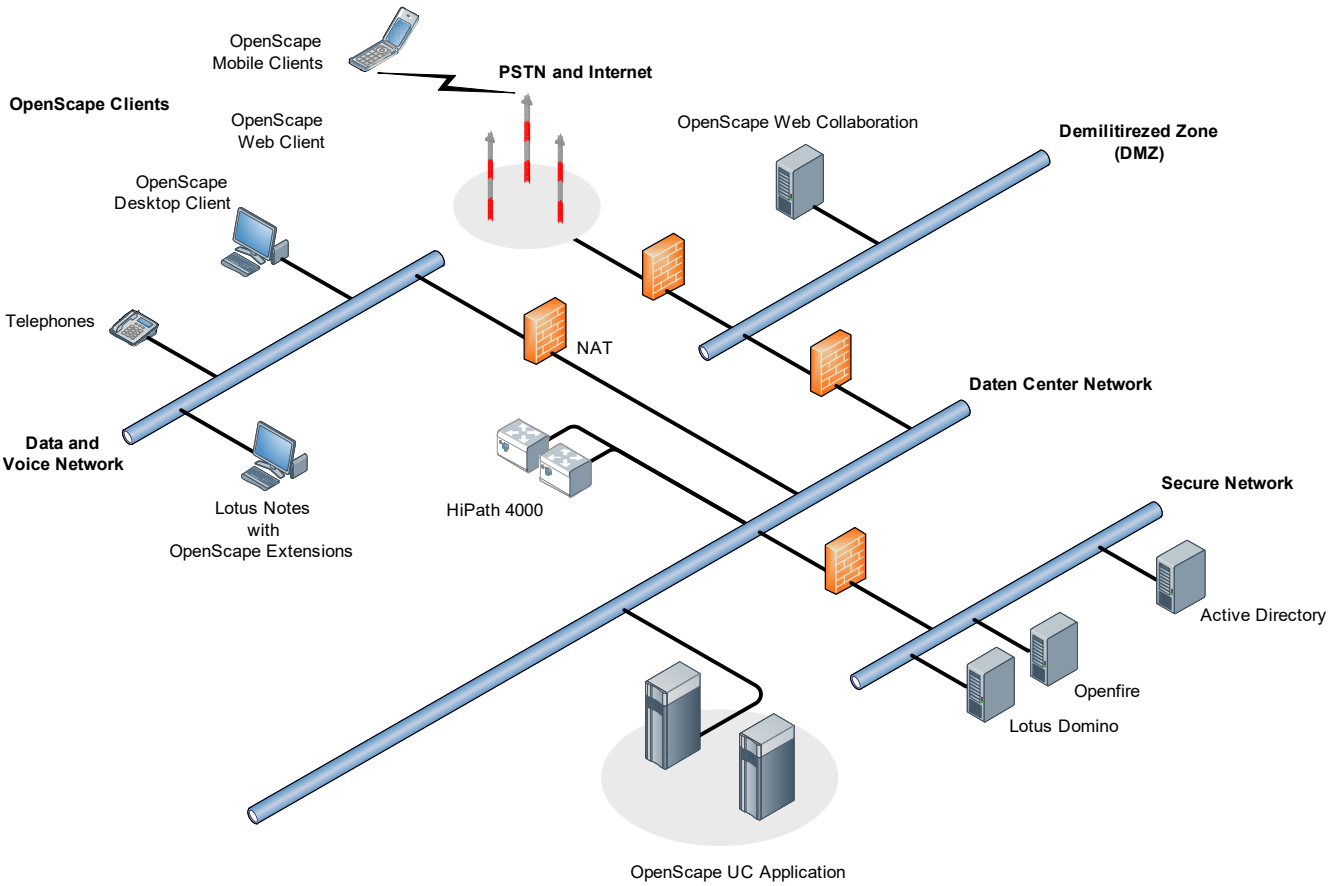
LDAP directory

The Active Directory provides OpenScape users with global contact lists – e.g. a contact list of all employees in the company.

7.2 Example of an IBM-based Application Environment

This example describes an application environment with:

- Two OpenScape 4000 systems as directly connected communications systems
- IBM Lotus Domino as groupware system
- Openfire server as presence and instant-messaging system
- OpenScape Web Collaboration as web conferencing system
- Active Directory as LDAP directory



In such an IBM-based application environment, OpenScape UC Application integrates in an existing IBM infrastructure.

IBM Lotus Domino server

An IBM Lotus Domino connection offers OpenScape users the following advantages.

- Voice messages are deposited in the IBM Lotus Domino inbox of the addressed OpenScape user.
- OpenScape users can access their IBM Lotus Domino inbox via voice portal and execute the following tasks:
  - Playing / deleting / restoring messages
  - Marking messages as read / unread
  - Responding to / forwarding messages with a voicemail
  - Creating a new voicemail
- OpenScape users can access their IBM Lotus Domino calendar via voice portal and execute the following tasks:
  - Playing / accepting / declining appointments
  - Sending a voicemail to the initiator of an appointment

- OpenScape users can access their private IBM Lotus Domino contacts and execute the following tasks with their OpenScape Web Client or their OpenScape Desktop Client:
  - Creating / deleting / modifying / finding contacts

NOTE: So that an OpenScape user can manage his/her IBM Lotus Notes contacts in the OpenScape clients, he/she must have been configured in the IBM Lotus Domino server as roaming user or have his/her private address book actively stored on the IBM Lotus Domino server.

NOTE: While the groupware connector of OpenScape UC Application enables access to private Domino contacts, DirX or Tivoli realize additional access to global Domino contacts. DirX is not required if Tivoli Identity Management is available for your system. Professional Services & Solutions (PS&S) of Unify Software and Solutions GmbH & Co. KG provides DirX and integrates and configures DirX individually.

OpenScape UC Application supports the following Domino server versions:

- IBM Lotus Domino 8.5.x
- IBM Lotus Domino 9.0.x

LDAP directory

The Active Directory provides OpenScape users with global contact lists – e.g. a contact list of all employees in the company.

OpenScape Web Collaboration

Using OpenScape Web Collaboration, users can start a web conference along with a UC Application voice conference or add a web conference to an active UC Application voice conference.

Openfire Server

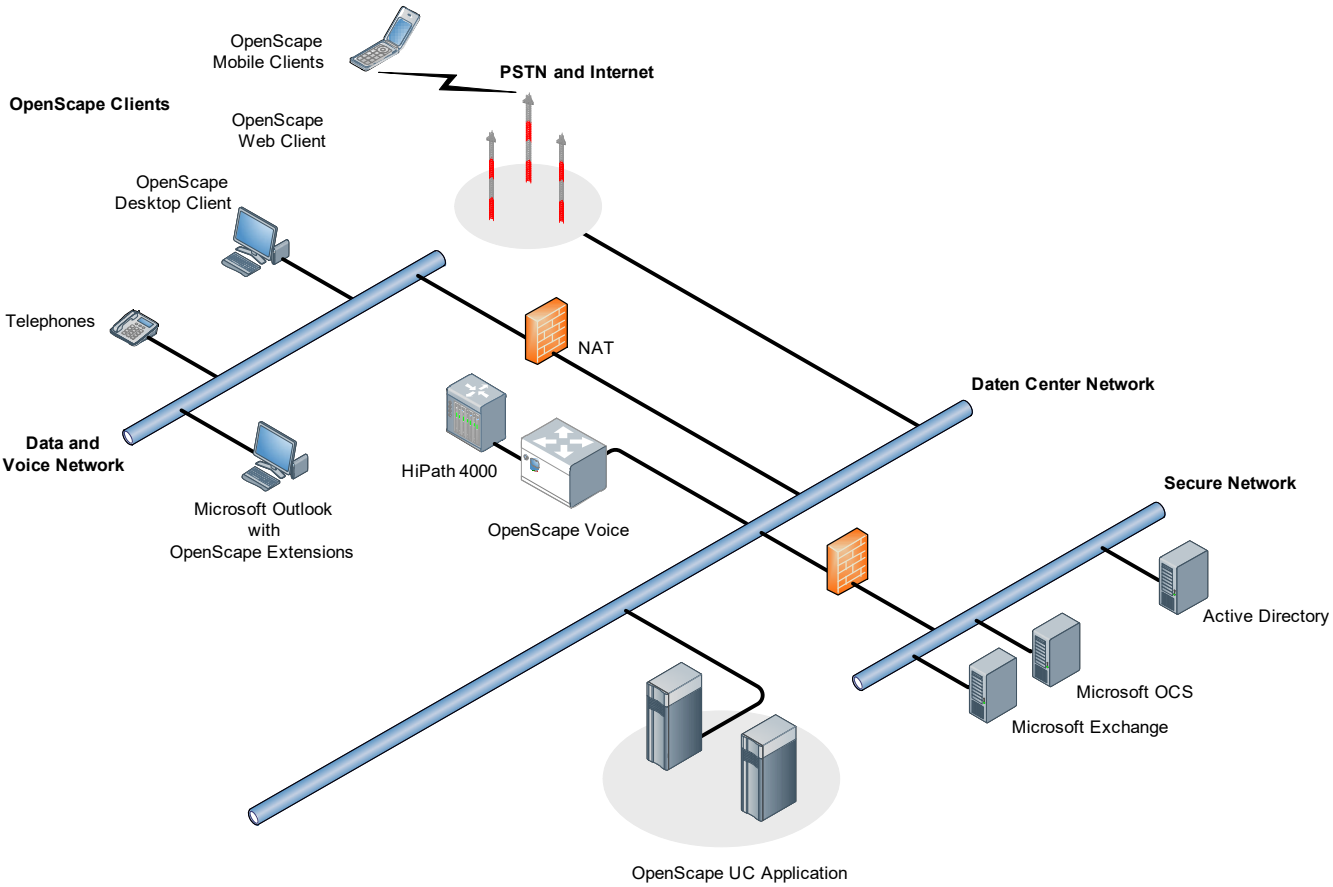
Openfire provides an instant-messaging service. OpenScape users can thus communicate with other users via instant-messaging connections.

Furthermore, IM media presence statuses of OpenScape users can be displayed in the OpenScape clients. OpenScape UC Application determines these IM media presence statuses from an OpenScape user being logged in at the Openfire server or not.

7.3 Example of an Application Environment with indirectly connected Communications System

NOTE: This method of connecting the communications system is often referred to as Back-to-Back User Agent Connection.

- OpenScape Voice as directly connected communications system
- Microsoft Exchange as groupware system
- Microsoft OCS as presence and instant-messaging system
- Active Directory as LDAP directory
- OpenScape 4000 as indirectly connected communications system



The functions as regards Microsoft Exchange, Microsoft Lync and the Active Directory correspond to those in Section 7.1, “Example of a Microsoft-based Application Environment”, on page 100.

In this example, connecting the communications system indirectly offers futhermore the option to integrate any available communications system in a UC Application environment. In this case a OpenScape 4000 system.

You find details of this integration in the OpenScape UC Application*, Planning Guide* manual.

7.4 Multi-Tenant Environment

Several UC Application systems can be simultaneously connected to an OpenScape Voice system (multi-tenant environment). In this case, all connected UC Application systems operate completely independently from each other and each of the UC Application systems has only the UC Application data and UC Application settings of a selected tenant.

To ensure in a multi-tenant scenario that each UC Application system can only access the OpenScape Voice data of the associated tenant, only the data of the associated OpenScape Voice business group may be transferred to each UC Application system.

8 Information on the further System Environment

This chapter describes the OpenScape UC Application behavior as regards:

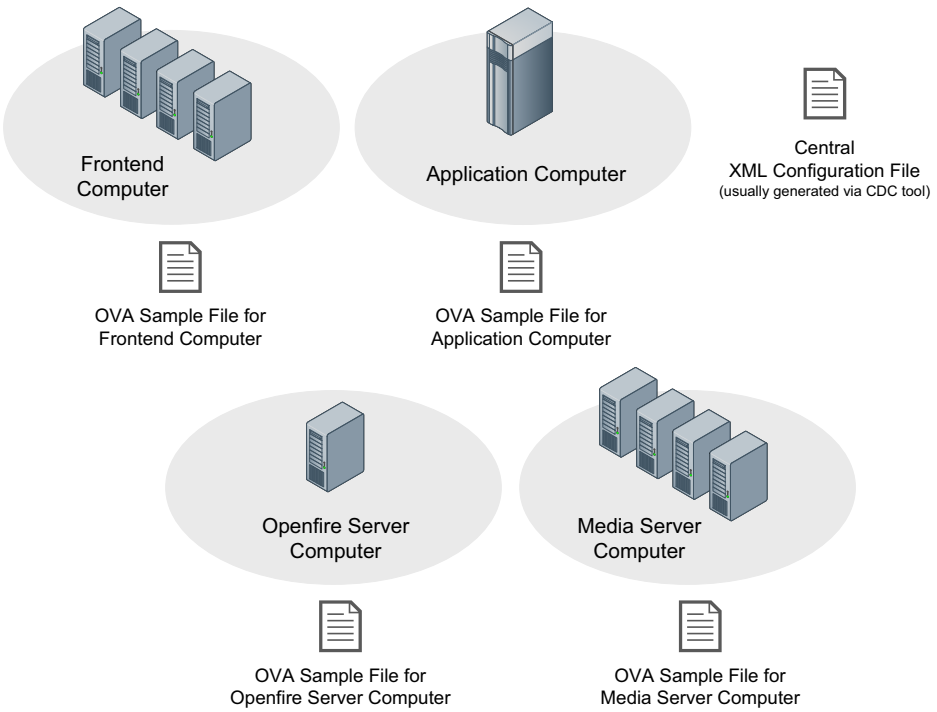
- Server Virtualization
- Remote Access for UC Application Users (RAS)
- Virtual local Networks (VLAN)
- Network Addressing
- Network Address Translation (NAT)
- Firewall Systems
- System Security

8.1 Server Virtualization

You can install OpenScape UC Application on the basis of virtual computer systems. Depending on the deployment scenario, you can use an automated basic installation/ configuration (Virtual Appliance) for this purpose.

Virtual appliances are pre-set and pre-configured software applications. In case of a virtual system environment this means that the software components required for a UC Application solution no longer have to be installed manually. Instead, they are supplied in a pre-configured form.

To enable this, an individual OVA sample file is delivered for each node type of the UC Application solution. This sample file determines already many default settings of the associated virtual machine that are independent from the environment. All further settings that depend on the customer environment (for example IP addresses) are defined with the help of an additional central XML configuration file. As a rule, this XML configuration file is created by means of the CDC tool and processed on the application computer only.



OpenScape UC Application is set up on the basis of virtual appliances in the following general steps:

- Creating the central XML configuration file (as a rule with help of the CDC tool).
- Creating all required virtual machines on the basis of type-individual OVA sample files.
- Initial start of the virtual computer systems. In this process, the computer systems are automatically configured based on the information in the central XML configuration file.
- Rebooting the virtual computer systems.

In Chapter 3, “Deployment Scenarios” you can look up the deployment scenarios for which the automated basic installation/configuration (Virtual Appliance) is possible.

8.2 Remote Access for UC Application Users (RAS)

If a Remote Access Server (RAS) is provided on a customer system, then OpenScape clients outside the local network may access the OpenScape UC Application through an RAS connection.

8.3 Virtual local Networks (VLAN)

OpenScape UC Application supports VLAN-based network environments.

8.4 Network Addressing

OpenScape UC Application supports networks with IPv4, IPv6 and mixed network addresses.

8.5 Network Address Translation (NAT)

Connections with Network Address Translation (NAT) between system components are *not* supported.

8.6 Firewall Systems

OpenScape UC Application can also be used in a network environment that deploys firewall systems. In this case, specified ports must be shared in the firewall systems for the components of the UC Application environment to communicate trouble-free.

8.7 System Security

The OpenScape UC Application is a Unified Communications application that resides within and interacts with the customer’s IT infrastructure. There are many non-OpenScape UC Application elements within this IT infrastructure, and the security architecture and considerations for those standard elements is largely outside the scope of OpenScape UC Application concerns.

The OpenScape UC Application grants the security of the following components:

1. All OpenScape UC Application components.
2. The points where the OpenScape UC Application interacts with the customer’s IT infrastructure.

In addition to implementing security considerations directly into the OpenScape UC Application, the product team also continuously assesses and improves security by performing both conceptual and practical security assessments on the product throughout the development process. (The Unify HiPath security policy demands such assessments be carried out.) The types of threats considered in these assessments are listed below:

Types of Threats Considered

- Denial of Service
- Destruction
- Disclosure
- Insertion
- Interception, Eavesdropping
- Manipulation
- Masquerade, misuse of service
- Replay
- Repudiation
- Traffic analysis
- Unauthorized transmission
- Unauthorized use of resources

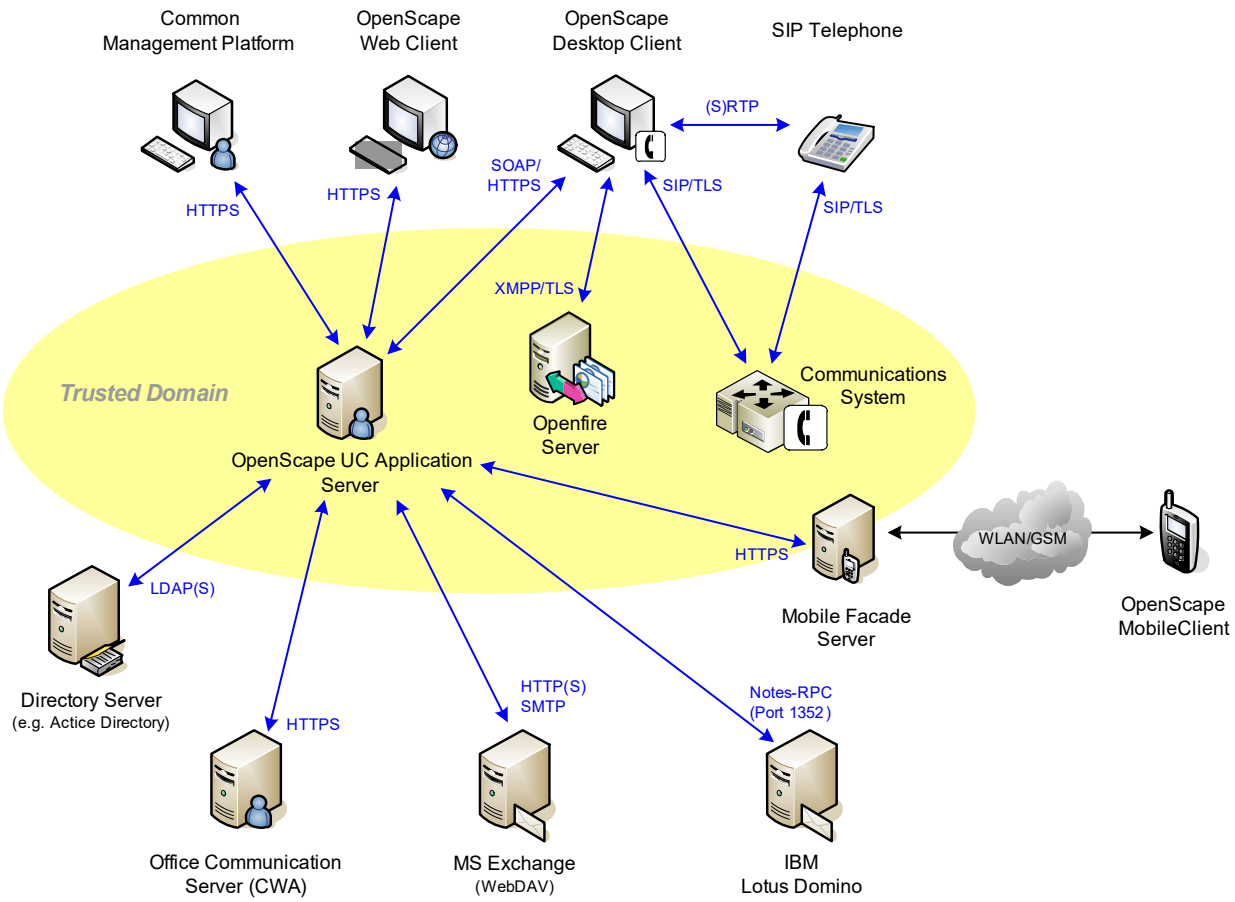
Information about the security concept of OpenScape UC Application is detailed in Chapter 9, “Security Functions”.

9 Security Functions

OpenScape UC Application supports the following security functionality:

- Authentication
- Authorization
- Encryption
- Audit Log
- Certificate Strategy
- Password and PIN Policies
- Voice Portal Security Concept
- Protocols for secured Data Transmission

The following figure shows the security protocols used by OpenScape UC Application.



9.1 Authentication

To protect access to the system, logon is restricted with user IDs and passwords. The following types of password access exist:

- The user’s domain user-name and password are used for portals that support alphanumeric input.
- A fully numeric OpenScape user ID and password are supported for easy access from devices that do not easily support alphabetic input such as a telephone keypad. A user accesses the Voice Portal by dialing his name or dialing his user ID and password.

OpenScape UC Application uses the IETF TLS 1.0 protocol in order to perform the machine authentication by using certificates and encryption. The certificate to be used for a particular server is configurable.

Depending on the environment in which the OpenScape UC Application is used, the following specialties apply for authentication:

- In an OpenScape environment, OpenScape users log on to the OpenScape clients with their OpenScape logon data by default.
- In an IBM environment, OpenScape users log on to the OpenScape clients by default with their OpenScape logon data.
- In a Microsoft environment, OpenScape users log on to the OpenScape clients with their Lync logon data by default.

Authentication is deployed for OpenScape end users as well as for OpenScape administrators.

The OpenSOA framework provides an expandable module for the authentication that can be customized for single-sign-on solutions.

9.2 Authorization

OpenScape UC Application uses the eXtensible access control markup language (XACML) as central authentication technology. This is an open industry standard, which is developed and maintained by the OASIS organization.

Based on this mighty technology OpenScape UC Application realizes application-specific authentication profiles, which include the role-based access control or the access control lists (ACL). Users deploy access control lists e.g. to determine which of their presence statuses other users may see. The role-based access control forms the base for the flexible framework that controls the user privileges.

OpenScape UC Application is already installed with a fixed set of default user roles – so-called user profiles. These user profiles already correspond in most cases to the user requirements. Furthermore, it is possible to create individual user profiles tailor-made for individual requirements.

9.3 Encryption

OpenScape UC Application provides various mechanisms to ensure data privacy. SSL and TLS communication is used for endpoint authentication and communications privacy, inter-service communications, as well as secure access to web-based management interfaces.

For the encryption of media for SIP calls, OpenScape UC Application and the communications system use SRTP.

In order to protect the communication between OpenScape UC Application nodes, IPSec can be used. IPSec modules, such as Openswan, an IPSec implementation for Linux, are employed in this.

To secure security-related, internal data, OpenScape UC Application uses the following:

- Authentication /integrity backup for payload:
  Hmac-SHA1 with 128-bit key
- Payload encryption:
  AES with 128-bit key in CBC mode with PKCS#5 padding

For the passphrase hashing of the openSOA framework OpenScape UC Application uses an implementation of the PBKDF2 key derivation scheme, which is defined in PKCS#5 v2 (RFC 2898). Hmac-SHA1 forms the basis as hash function. The iteration count of the hash feature amounts to 100. A 160-bit hash value is crated in combination with a user-based 80-bit Random Salt.

OpenScape UC Application stores passwords only in the respective hash format.

9.4 Audit Log

OpenScape UC Application logs all administrative and security-related actions in a protected audit log. Encryption mechanisms ensure that this audit log cannot be read or manipulated by unauthorized persons.

9.5 Certificate Strategy

During the initial setup of OpenScape UC Application, server certificates and keys are created based on a private root certificate authority.

These server certificates and keys can be replaced in one of the following manners:

- With 3rd party supplier certificates, which were issued by a commonly known, trustworthy certificate authority (such as VeriSign) selected by the customer.
- With a customer-proprietary public key infrastructure (PKI) using customer-specific certificates.

The OpenScape Desktop Client uses the certificate store of the Windows operating system. This requires the import of the trusted root certificate in the respective certificate store of the Windows operating system using the default methods. In case of the OpenScape Web Client, the root certificate must be added to the certificate store of the browser used (e.g. the Windows certificate store for the Internet Explorer).

The OpenScape Desktop Client and the SIP telephones can be used in one of the following manners:

- With server certificate and key, which were issued by a commonly known, trustworthy certificate authority (such as VeriSign) selected by the customer.
- With a customer-proprietary public key infrastructure (PKI) using customer-specific certificates.
- With the already integrated certificate, which is shipped with each SIP telephone or the OpenScape Desktop Client.

The DLS can be used to distribute the certificate and key for the SIP telephones.

9.6 Password and PIN Policies

Independent policies can be defaulted for users who create passwords and PINs. These policies control in particular:

- Enforced password modification upon the initial logon
- Password or PIN length
- Use of digits, capital letters and special characters in passwords
- Password or PIN validity duration
- Prevention of trivial passwords or PINs
- Prevention of recurring passwords or PINs
- Incorrect-entry monitoring
- Automatic access lock and release

9.7 Voice Portal Security Concept

The OpenScape UC Application Voice Portal provides a number of configurable security measures to restrict data access via telephone.

- **Initial Passwords**
  Voice Portal passwords can be unknowable until user initiates Voice Portal access via network-authenticated configuration user interface.
- **Failed Logon Attempts**
  Three failed Voice Portal logon attempts results in a call disconnect. The number of attempts can be configured.
- **Lockout**
  Voice Portal will lockout user accounts based on number of failed logon attempts for a configured time, or user changes the password via network-authenticated configuration user interface. The lockout time is configurable from one minute to 45 days and indefinitely by the administrator.
- **Error Log**
  Voice Portal lockout event results in a logging entry.

9.8 Protocols for secured Data Transmission

The following sections describe security standards and protocols supported by OpenScape UC Application.

9.8.1 Secure Real-time Transport Protocol (SRTP)

SRTP is a security profile for RTP that adds confidentiality, message authentication, and replay protection to that protocol. For the encryption of media for SIP calls, OpenScape UC Application and the communications system use SRTP and MIKEY.

9.8.2 IPSec (IP Security)

IPsec is a suite of protocols for securing IP communications by authenticating and/or encrypting each IP packet of a data stream. IPsec also includes protocols for cryptographic key establishment. OpenScape UC Application uses IPSec to secure communication between OpenScape UC Application nodes using IPsec modules such as Openswan.

9.8.3 TLS/ SSL

When applications in a network communicate, the TLS protocol ensures that no third party may eavesdrop, fake or tamper with any information TLS provides endpoint authentication and communications privacy over the Internet using cryptography. OpenScape UC Application uses SSL / TLS for endpoint authentication and communications privacy, as well as used internally within the OpenSOA framework for different types of connections; these connection types are especially SOAP over HTTPS, as well as CMP access over HTTPS and JS-SOC-SSL.

9.8.4 XACML

XACML stands for e**X**tensiblen **A**ccess **C**ontrol **M**arkup **L**anguage. It is a declarative access control policy language implemented in Extensible Markup Language (XML) and a processing model, describing how to interpret the policies

OpenScape UC Application uses XACML for authorization and policy enforcement.

10 Licensing

The license model of OpenScape UC Application is mainly based on user licenses.

Selected OpenScape UC Application features additionally assume that you have specific resource licenses besides the required user licenses. Such resource licenses comprise amongst other things the channel-based licenses for conferences or for the voice portal's TTS functionality.

You find detailed information about the licensing model of OpenScape UC Application in the OpenScape UC Application*, Planning Guide* manual.

Glossary

A

Active Directory
See Microsoft Active Directory.

American Standard Code for Information Interchange (ASCII)
The most common format for text files in computers and on the Internet. In an ASCII file, each alphabetic, numeric, or special character is represented with a 7-bit binary number (a string of seven 0s or 1s). 128 possible characters are defined.

API
See Application Programming Interface (API)
The specific method prescribed by a computer operating system or by an application program by which a programmer writing an application program can make requests of the operating system or another application.

ASCII
See American Standard Code for Information Interchange.

Availability
The willingness and ability of a user to engage in a communications session.

B

B2BUA
See Back-to-Back User Agent

Back-to-Back User Agent (B2BUA)
A SIP-based logical entity that can receive and process INVITE messages as a SIP User Agent Server (UAS). It also acts as a SIP User Agent Client (UAC) that determines how the request should be answered and how to initiate outbound calls. Unlike a SIP proxy server, the B2BUA maintains complete call state and participates in all call requests.

C

Certificate Authority (CA)
A certificate authority or certification authority (CA) is an organization or an entity which issues digital certificates for use by other parties. A CA issues digital certificates containing a public key along with the identity of the owner. The CA also certifies that the public key in the certificate belongs to the person, organization, server or other entity noted in the certificate. A CA's obligation in such schemes is to certify an applicant's credentials, so that users and relying parties can trust the information in the CA's certificates.

Collaboration Group
The people who belong to or have access to the collaboration session and its data form a collaboration group.

Communications Broker
An umbrella term for a collection of interfaces and adapting layers enabling communications in an open environment.

Computer Supported Telephony Applications (CSTA)
A protocol standard for advanced call control, used by a wide range of applications.

Contact List
A group of people who work closely together who have mutually agreed to share personal presence-state information with each other, for the purpose of expediting communication amongst themselves. Contact lists are joined, defined and maintained by the individuals. Individuals can be members of multiple contact lists. The Presence status of the members of each contact list is displayed on the preferred communication clients of each member.

CRM
See Customer Relationship Management.

CSTA
See Computer Supported Telephony Applications (ECMA CSTA III).

Customer Relationship Management
An information industry term for methodologies, software, and usually Internet capabilities that help an enterprise manage customer relationships in an organized way.

D

DHCP
See Dynamic Host Configuration Protocol.

DNS
See Domain Name System.

Domain Name System (DNS)
The way that Internet domain names are located and translated into Internet Protocol addresses. A domain name is a meaningful and easy-to-remember “handle” for an Internet address.

DTMF
See Dual-tone Multifrequency.

Dual-Tone Multifrequency (DTMF)
The signal to the phone company that you generate when you press an ordinary telephone's touch keys.

Dynamic Host Configuration Protocol (DHCP)
A communications protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet Protocol, each machine that can connect to the Internet needs a unique IP address.

E

Enterprise Resource Planning (ERP)
An industry term for the broad set of activities supported by multi-module application software that helps a manufacturer or other business manage the important parts of its business, including product planning, parts purchasing, maintaining inventories, interacting with suppliers, providing customer service, and tracking orders.

ERP
See Enterprise Resource Planning.

H

H.323
One of the first and most popular protocols for handling multimedia communications over IP networks. In recent times, H.323 has fallen out of favor with many vendors and customers due to its complexity in implementation.

I

IIS
See Internet Information Server.

Instant Messaging (IM)
The ability to send messages in near real-time to other IM users, especially members within a personal contact list. IM is generally used to ask quick questions or send quick updates and confirmations.

Integrated Services Digital Network (ISDN)
A system of digital phone connections that allows data to be transmitted simultaneously across the world using end-to-end digital connectivity.

Intelligent Reach
A OpenScape UC Application feature that provides presence status of members of a user’s contact list.

Internet Information Server (IIS)
A group of internet servers (including a Web or Hypertext Transfer Protocol server and a File Transfer Protocol server) with additional capabilities for Microsoft's Windows NT and Windows Server operating systems.

Internet Protocol (IP)
The method or protocol by which data is sent from one computer to another on the Internet.

Internet Security and Acceleration (ISA)
The successor to Microsoft's Proxy Server 2.0 and part of Microsoft's .NET support. ISA Server provides the two basic services of an enterprise firewall and a Web proxy/cache server.

IP
See Internet Protocol.

IPsec
A protocol for negotiating encryption and authentication at the IP (host-to-host) level.

ISA
See Internet Security and Acceleration

ISDN
See Integrated Services Digital Network.

J

J2EE
See JAVA 2 Enterprise Edition.

JAVA 2 Enterprise Edition (J2EE)
A web services programming language. J2EE is the standard used by IBM to support their WebSphere e-business applications.

K

KDC
See Key Distribution Center.

Kerberos
A secure method for authenticating a request for service in a computer network; the user’s password does not have to pass through the network.

Key Distribution Center
A domain service that runs on each Windows domain and provides Authentication Service and Ticket Granting Service.

M

MCU
See Multipoint Control Unit.

Megaco
Media Gateway Control Protocol (MGCP), also known as H.248 and Megaco, is a standard protocol for handling the signaling and session management needed during a multimedia conference. The protocol defines a communication method between a media gateway and a media gateway controller. The media gateway converts data from the format required for a circuit-switched network to that required for a packet-switched network and the media gateway controller.

MGCP/Megaco/H.248
Media-Gateway Control-Protocol is a protocol designed for the carrier side of VoIP, to handle the integration of circuit-switched carrier SS7 systems with new carrier-class VoIP systems. Media-Gateway Control-Protocol (defined in RFC 2705)

Microsoft Active Directory
A component of the Windows Server architecture, Active Directory presents organizations with a directory service designed for distributed computing environments. Active Directory allows organizations to centrally manage and share information on network resources and users while acting as the central authority for network security. In addition to providing comprehensive directory services to a Windows environment, Active Directory is designed to be a consolidation point for isolating, migrating, centrally managing, and reducing the number of directories that companies require.

Microsoft Management Console (MMC)
An application that provides a graphical-user interface (GUI) and a programming framework in which consoles (collections of administrative tools) can be created, saved, and opened.

MMC
See Microsoft Management Console

MRCP
Media-Resource Control Protocol (defined in RFC 4463)

MS-SDK
Media-Server proprietary software-development kit

Multipoint Conferencing Unit (MCU)
Provides users the ability to set up ad hoc voice, data, or multimedia conferencing sessions.

P

PBX
See Private Branch Exchange.

PCTN
See Public Cellular Telephone Network.

Private Branch Exchange (PBX)
A telephone system within an enterprise that switches calls between enterprise users on local lines while allowing all users to share a certain number of external phone lines.

PSTN
See Public Switched Telephone Network.

Public Cellular Telephone Network (PCTN)
The network of cellular equipment and terminals.

Public Switched Telephone Network (PSTN)
Public telephone network. The world's collection of interconnected voice-oriented public telephone networks, both commercial and government-owned. It's also referred to as the Plain Old Telephone Service (POTS). It's the aggregation of circuit-switching telephone networks that has evolved from the days of Alexander Graham Bell (“Doctor Watson, come here!”). Today, it is almost entirely digital in technology except for the final link from the central (local) telephone office to the user.

Q

QoS
See Quality of Service.

QSIG
A global signalling system for corporate networks.

Quality of Service (QoS)
The idea that transmission rates, error rates, and other characteristics can be measured, improved, and, to some extent, guaranteed in advance. QoS is of particular concern for the continuous transmission of high-bandwidth video and multimedia information.

R

RTP
Realtime transport protocol for media-streams (defined in RFC 3550)

S

SDK
See Software Development Kit.

Self-Service Portal
Provides access to OpenScape UC Application features for callers.

Session Initiation Protocol (SIP)
Signaling protocol defined by the IETF for handling multimedia communications over IP networks. Session Initiation Protocol used here for call control (defined in RFC 3161)

Short Messaging Service (SMS)
Globally accepted wireless service that enables the transmission of alphanumeric messages between mobile users and external systems such as electronic mail, paging, and voicemail systems.

SIMPLE
SIP for Instant Messaging and Presence Leveraging Extensions (IETF). Based on SIP, SIMPLE is an IETF standard and has emerged as the leading method of standardizing instant messaging and presence among various service providers.

Simple Object Access Protocol (SOAP)
The variation of XML that Microsoft uses to develop web services through their .NET platform.

SIP
See Session Initiation Protocol.

SIP gateway
Supports exchange of packet-switched communications between a SIP-based communications system and the PSTN or a corporate PBX.

SIP phone
IP telephone connected to any system that supports delivery of telephony functionality using the SIP protocol.

SMS
See Short Messaging Service.

SOAP
See Simple Object Access Protocol (XML protocol).

SQL
See Structured Query Language.

SRTP
Secure Realtime Transport Protocol (defined in RFC 3711)

Structured Query Language (SQL)
A standard interactive and programming language for getting information from and updating a database.

T

TCP
See Transmission Control Protocol.

TDM
See Time-Division Multiplexing

TGT
See Ticket Granting Ticket.

Ticket Granting Ticket (TGT)
Part of the Kerberos Version 5 IETF standard protocol that provides user authentication.

Time-division multiplexing (TDM)
A method of putting multiple data streams in a single signal by separating the signal into many segments, each having a very short duration. Each individual data stream is reassembled at the receiving end based on the timing.

TLS
See Transport Layer Security.

Transmission Control Protocol (TCP)
A set of rules (protocol) used along with the Internet Protocol (IP) to send data in the form of message units between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient routing

Transport Layer Security
A protocol that ensures privacy between communicating applications and their users on the Internet. When a server and client communicate, TLS ensures that no third party may eavesdrop or tamper with any message. TLS is the successor to the Secure Sockets Layer (SSL).

U

User Notification Service
The OpenScape UC Application architecture component that provides a mechanism for sending a notification message to users.

V

Voice Portal
Provides telephone-based voice access to OpenScape UC Application features.

VoiceXML
Voice Extensible Markup Language (based on Version 2.1)

W

Web Services Description Language (WSDL)
An XML-based language used to describe the services a business offers and to provide a way for individuals and other businesses to access those services electronically.

Web Telephony Engine (WTE)
A run-time engine in the Windows Server that uses HTML to enable the use of standard web authoring tools to create a variety of telephony solutions, such as Interactive Voice Response (IVR), voicemail, automatic call distribution, and call centers.

Windows Management Instrumentation (WMI)
Microsoft's implementation of Web-Based Enterprise Management (WBEM) technology. WBEM is a standard that the Distributed Management Task Force (DMTF—an industry consortium) defines. The WBEM standard encompasses the design of an extensible enterprise data-collection and management facility that has the flexibility and extensibility required to manage local and remote systems that comprise arbitrary components.

Windows Scripting Host (WSH)
A Windows administration tool that creates an environment for hosting scripts. That is, when a script arrives at your computer, WSH plays the part of the host — it makes objects and services available for the script and provides a set of guidelines within which the script is executed. Among other things, Windows Script Host manages security and invokes the appropriate script engine

Word Web
The OpenScape UC Application feature that allows users to create a document using Microsoft Word that can be saved as HTML and used as a voice application.

Workgroup Collaboration Portal
The part of the OpenScape UC Application user interface that allows users to manage collaboration sessions.

WMI
See Windows Management Instrumentation.

WSH
Windows Script Host

WTE
See Web Telephony Engine

X

XML
eXtensible Markup Language, a standard for the exchange of structured and networked data on the Web. XML documents can define their own tags, providing outstanding flexibility. XML makes it easy to define, author and manage SGML-defined documents and makes easy to share and transmit these documents.

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