A MITEL
PRODUCT
GUIDE

OpenScape UC Application V11R1

Kubernetes Planning Guide

Planning Guide
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Mitel

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Contents

1 History of Changes

Date	Changes	Reason
12-05-2026	UC V11 document initiation	N/A

2 About this Manual

This chapter provides information about the following topics:

2.1 Target Group of this Manual

This manual is intended for persons who plan to establish an OpenScape UC Application system in the relevant software version.

Readers should have the following knowledge to use the information provided in this documentation.

- Knowledge of the OpenScape UC Application features
- Knowledge of the general working method of information technology and voice communication systems
- Knowledge of terms used in the information technology and voice communication environment.

2.2 This Manual's Content

This manual describes how to plan a communications solution based on OpenScape UC Application V11.

What you do not find in this manual

This manual does not consider the following topics:

- Deployment scenarios offered by the OpenScape UC Application setup but that do not contain OpenScape UC Application components.
- How to plan deploying the communications system used. You find information about this in the planning guide of the communications system used.
- How to install, upgrade, configure or administer OpenScape UC Application components. You find information about this in the manuals of the system components concerned.

2.3 Manual Structure

This manual is divided into the following chapters:

2.4 General Conventions

Version 7 changes the name of the product HiPath 4000 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 mention the relevant product version explicitely.

2.5 Representation Conventions

To highlight information, we use the following markups and representations in this manual.

- Text Markups
- Further Markups

2.5.1 Text Markups

In this manual we use the following markups to highlight selected text passages.

For the following elements	Example
• Book title	*OpenScape UC Application Planning Guide*
• System entries and outputs • File names and system directory specifications • File contents	`conn %CONNECTION_NAME%`
• Menu names and entries in a GUI • Names of GUI entry fields • GUI buttons • GUI tabs • Names of keyboard keys • Highlighted names	Click on **Save** to …
Specifications with individual contents.	• `C:\<`*user directory*`>\` • *<address list>*
Active cross reference for skipping to the specified passage in the manual.	• Text Markups • About this Manual on page 8
Sequence of menu entries to be selected	**Users & Resources > Resources**

2.5.2 Further Markups

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.

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

2.6 Acronyms used

In this manual we use the following acronyms.

Table 1: Acronyms used

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

Acronym	Meaning
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
OND	One-number device
ONS	One-number service
OS	OpenScape
OWA	Outlook Web Access
PE	Personal Edition of the OpenScape Desktop Client
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

Acronym	Meaning
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

2.7 Continuative Documentation

You find a list of all OpenScape UC Application manuals in the manual *OpenScape UC Application, System Description*.

2.8 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.

NOTICE: 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 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.

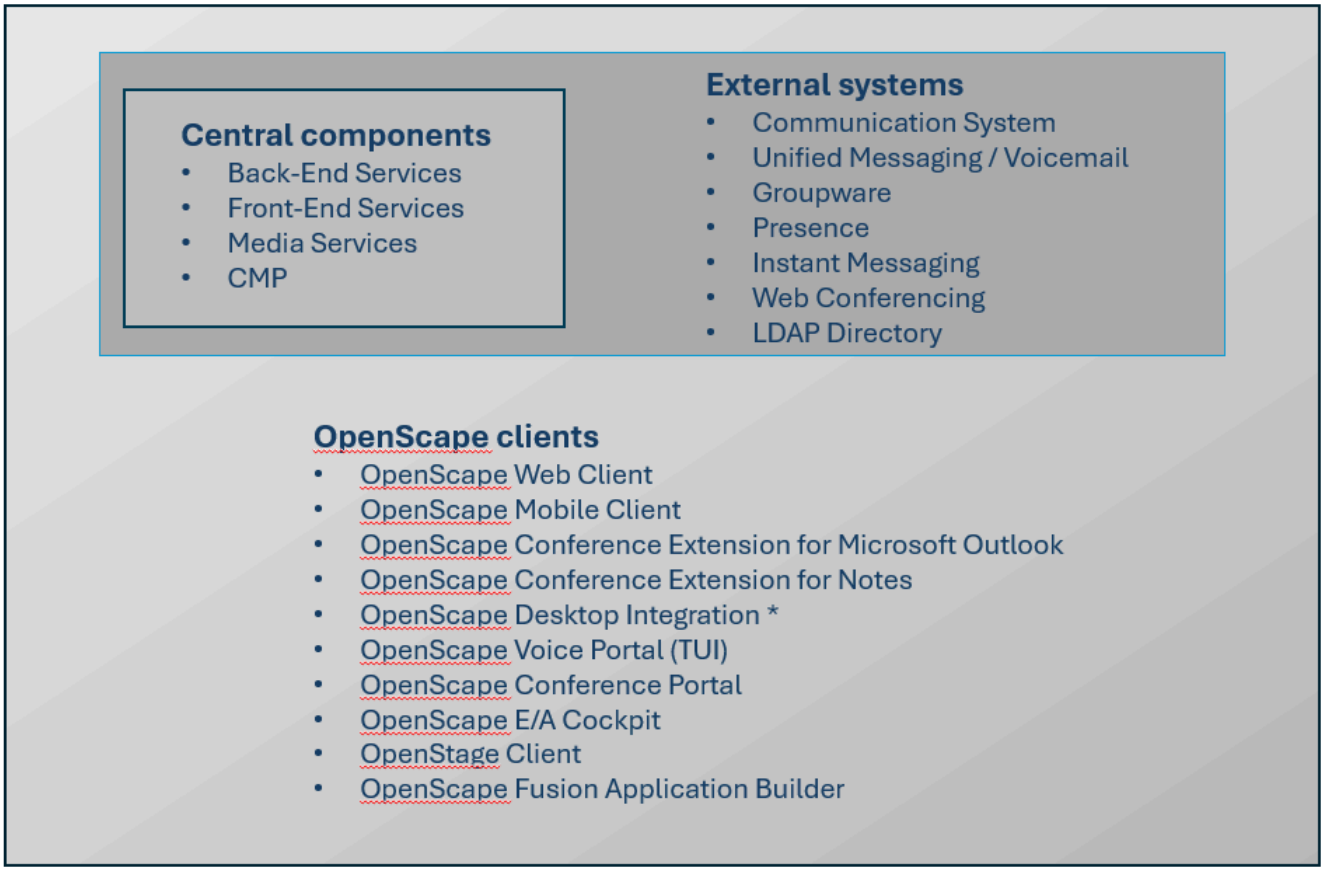
Work closely with your customer contact; this promotes trust and reduces your workload.

3 Overview of the UC Application Components

This chapter provides information about the following topics:

3.1 Dividing the Components

The following figure divides the OpenScape UC Application components in three groups. The planning steps in this manual are based on this division.



* With the OpenScape Desktop Integration client, users of the UC Application can establish a connection to a selected phone number within any Windows application.

The following sections of this chapter describe the basic functions of the different OpenScape UC Application components. You find a detailed feature description of OpenScape UC Application in the OpenScape UC Application – System Description manual.

3.2 Central Components Overview

From a simple point of view, OpenScape UC Application consists of the following central components:

- Back-End Services
- Front-End Services
- Media Services
- CMP

The following sections describe the basic features of these components.

3.2.1 Back-End Services

The back-end services enable the application logic (business logic) of OpenScape UC Application. The OpenScape UC Application data management is also considered a back-end service in this manual.

The back-end services are always installed on the application computer of the UC Application landscape.

3.2.2 Front-End Services

The front-end services represent in OpenScape UC Application the communication interface for the OpenScape Web Client. They are based on a web server of type Apache Tomcat.

The front-end services are installed either on the application computer or on an independent computer system of the UC Application landscape.

3.2.3 Media Services

The OpenScape UC Application media services are provided by the OpenScape Media Server. Their major tasks are:

- Providing the OpenScape UC Application voice portal
- Providing the OpenScape UC Application conference portal
- Processing media streams within OpenScape UC Application
- Generating tones and announcements for operating OpenScape Voice and playing these on terminal devices

The media services are installed either on the application computer or on an independent computer system of the UC Application landscape.

3.2.4 CMP

The CMP is a browser-based configuration interface for the OpenScape communications solution. It contains general management features that you can use to administer default components of the OpenScape communications solution.

In addition to these general management features the CMP can integrate further administration interfaces, which belong to other, independent OpenScape components. For example, the OpenScape Voice Assistant, with which you administer and configure the OpenScape Voice communications system.

The CMP is always installed on the application computer of the UC Application landscape.

3.3 Client Components Overview

OpenScape UC Application supports the following client components:

- OpenScape Web Client
- OpenScape Mobile Client
- OpenStage Client
- OpenScape Conference Extension for Notes
- OpenScape Conference Extension for Microsoft Outlook
- With the OpenScape Desktop Integration client, UC Application users can set up a connection to a phone number the user has selected in any Windows application.
- OpenScape Voice Portal (TUI)
- OpenScape Conference Portal
- OpenScape Auto Attendant
- OpenScape E / A Cockpit

The following sections describe the basic features of these components.

3.3.1 OpenScape Web Client

UC Application users can deploy OpenScape Web Client to access the OpenScape UC Application services browser-based. The only requirement is here that the user's computer is equipped with a web browser.

3.3.2 OpenScape Mobile Client

UC Application users can deploy OpenScape Mobile Client to access the OpenScape UC Application services via cell phone.

3.3.3 OpenScape Conference Extension for Microsoft Outlook

UC Application users can deploy OpenScape Conference Extension for Microsoft Outlook to schedule and monitor telephone and web conferences in their Microsoft Outlook client. Furthermore, UC Application users can synchronize their OpenScape presence status with their Microsoft Outlook calendar data.

3.3.4 OpenScape Conference Extension for Notes

UC Application users can deploy OpenScape Conference Extension for Notes to schedule and monitor telephone and web conferences in their Notes client. Furthermore, UC Application users can synchronize their OpenScape presence status with their Notes calendar data.

3.3.5 OpenScape Desktop Integration

With the OpenScape Desktop Integration client, UC Application users can set up a connection to a phone number the user has selected in any Windows application.

3.3.6 OpenScape UC Desktop Application

The OpenScape UC Desktop App is an OpenScape UC client that can be installed in the user's computer desktop. It's designed to tightly integrate with the OpenScape UC WebClient, adding extra features with the purpose to allow a better user experience and interaction with the suit of OpenScape products.

The OpenScape UC Desktop App provides all the existing UC WebClient features.

3.3.7 OpenScape Voice Portal (TUI)

The voice portal provides a telephone user interface (TUI) that users can deploy for accessing the extensive Unified Communications services of OpenScape UC Application. The user operates this telephone user interface via telephone keypad or by voice commands.

Please refer to OpenScape Clients at OpenScape UC Application on page 85 to see which OpenScape UC Application services you can use via the voice portal.

3.3.8 OpenScape Conference Portal

The conference portal provides virtual conference rooms in which users gather for staging audio and video conferences. Users can deploy any phone or

softphone as audio terminal device. In Section 8.11, “Planning for OpenScape Conference Portal”, on page 265 you find details about the supported video terminal devices.

Conferences can be scheduled and controlled via a phone interface (TUI) or via OpenScape-UC- Application clients.

3.3.9 OpenScape Fusion Application Builder

The OpenScape Fusion Application Builder is an administrator client. You can use it to create custom, IVR-based applications for the OpenScape Media Server. For this purpose, the flow chart of a passive or interactive voice dialog application is designed on the GUI of the OpenScape Fusion Application Builder.

3.3.10 OpenScape Auto Attendant

OpenScape Auto Attendant provides the automated attendant – an automated central postmaster for OpenScape UC Application.

3.3.11 OpenScape E / A Cockpit

OpenScape E/A Cockpit enables an extended, dynamic forwarding logic for calls and is based on the status of the E/A group subscribers of OpenScape Voice.

3.4 Overview of the Connections to external Systems

OpenScape UC Application supports connections for the following system families:

- Communications System
- Unified Messaging / Voicemail
- Groupware
- Presence
- Instant Messaging
- Web Conferencing
- LDAP Directory

The following sections describe the basic features of each of these connections.

3.4.1 Communications System

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

The following communications systems can be connected to OpenScape UC Application:

- OpenScape Voice
- OpenScape 4000

NOTICE: You find details of the versions of supported communications systems and the number of connectable systems in Supported Deployment Scenarios on page 23.

3.4.2 Unified Messaging / Voicemail

To expand the Unified Messaging services of OpenScape UC Application or to enable an improved migration of other systems of this family, other Unified Messaging systems can be connected to OpenScape UC Application.

Of the OpenScape system family, especially OpenScape Xpressions can be connected to OpenScape UC Application.

3.4.3 Groupware

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 in particular as voice message store then.

OpenScape users may e. g. access the following personal information in the connected groupware system via a groupware connection:[1]

- Private contacts
- Inbox
- Calendar

Of the groupware system family one of the following systems can be connected to OpenScape UC Application:

- Microsoft Exchange
- CHL Domino

NOTICE: In order for OpenScape users to administrate their Notes contacts in the OpenScape clients, they must be configured as roaming users in the CHL Domino server or have their private address book actively stored on the CHL Domino server.

NOTICE: While the groupware connector of OpenScape UC Application enables access to private Domino contacts, DirX

[1] If you wish to connect an external LDAP directory to OpenScape UC Application (e. g. Microsoft Active Directory), you need to use the LDAP connection of OpenScape UC Application for this purpose. See LDAP Directory on page 21 on this. In this way you can provide an LDAP-based global contact list to OpenScape users, for example.

or Tivoli realize additional access to global Domino contacts. DirX is not required here 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.

3.4.4 Presence

OpenScape UC Application can be connected to one the following external presence systems for exchanging presence information with them.

- Openfire

3.4.5 Instant Messaging

OpenScape UC Application can be connected to one the following external instant-messaging systems. This enables OpenScape users to exchange instant messages via the connected system.

- Openfire

3.4.6 Web Conferencing

OpenScape UC Application can in particular be connected to the external web conferencing system OpenScape Web Collaboration. OpenScape users are thus enabled to communicate via web conferences.

3.4.7 LDAP Directory

You connect the OpenScape system to external LDAP directories via an LDAP connection. In this way you can provide an LDAP-based global contact list to OpenScape users, for example.

4 Planning-Process Overview

As already described, you can divide the components of a UC Application system as follows:

- Central components
- OpenScape clients
- External systems

On grounds of this division we spread the planning for a UC Application system over the following sections:

1) Selecting the Deployment Scenario

You can install OpenScape UC Application in various, so-called deployment scenarios. Each of these deployment scenarios is tuned to a specific scope of system performance and features.

In this first planning step you select the deployment scenario that comes closest to your individual requirements.

2) Overview of the UC Application Components

After selecting the deployment scenario you plan the requirements of the central OpenScape components.

3) Planning for connecting the external Communications System

In this step you plan the requirements for connecting communications systems. For example, the requirements for connecting an OpenScape Voice system to OpenScape UC Application.

4) Planning for Connecting further external Systems

In this step you plan the requirements for connecting external foreign systems. For example, the requirements for connecting a Microsoft Exchange system to OpenScape UC Application.

5) Planning for the Connection of OpenScape Clients

In this step you plan all requirements on the infrastructure of the UC Application system so that you can use OpenScape clients.

6) Planning for Licenses

In this step you plan which licenses you will need for a UC Application system.

7) Environment-dependent Plannings

If you want to integrate OpenScape UC Application in an already existing communication environment, more individual requirements may have to be met. This last planning step goes into about such requirements.

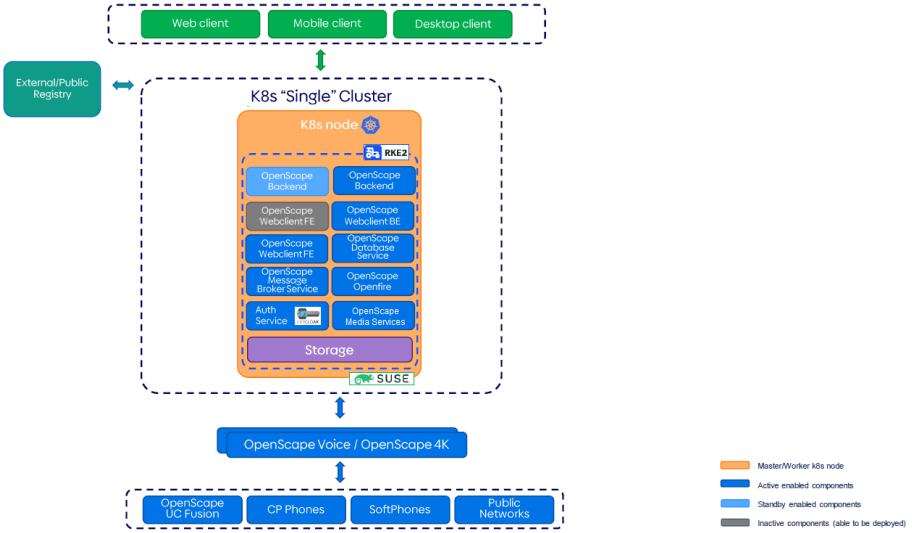
5 Selecting the Deployment Scenario

This chapter provides information about the following topics:

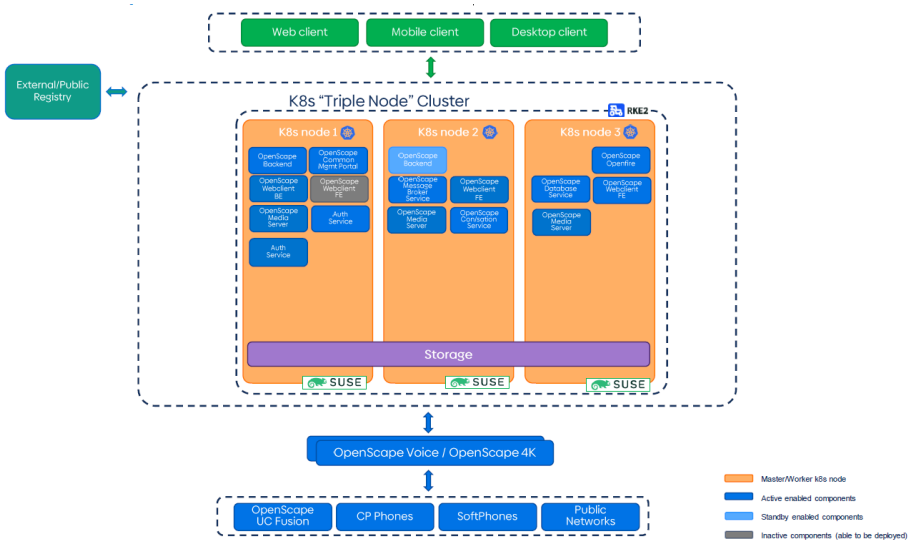
5.1 Supported Deployment Scenarios

OpenScape UC V11 supports the following deployment scenarios:

- **Single Node Kubernetes Cluster**



- **Triple Node Kubernetes Cluster**



Both deployment types can support the same number of UC application users and handle the same workload. However, a key difference lies in high

availability, which is provided by the triple node deployment. Multi-node clusters enhance resilience; if one node fails, the others can take over, ensuring that your applications remain available.

The following table describes the general system load and the possible features for each of these deployment scenarios. The given numbers always apply for the maximum system extension of the relevant deployment scenario.

	Single Node Deployment	Triple Node Deployment
Maximum number of UC Application users	35 000 (per cluster)	35 000 (per cluster)
High availability	–	✓
Existing availability model for the computer systems of the front-end services	N + 1	N + 1
Existing availability model for the computer systems of the media services	N + 1	N + 1
System databaseof UC Application	MySQL	MySQL
Integrated presence feature	✓	✓
Connecting OpenScape Xpressions	✓	✓
Connecting UC applications by third-party suppliers	✓	✓
Maximum number of groupware connections (CHL Domino or Microsoft Exchange)	1 (per cluster)	1 (per cluster)
Maximum number of LDAP directory connections	any	any
Supports video conferences (video MCU)	✓	✓

	Single Node Deployment	Triple Node Deployment
Number of OpenScape Mobile Clients supported by Facade server	max. number of UC Application	max. number of UC Application
Maximum number of Openfire users	max. number of UC Application users	max. number of UC Application users
Maximum number of E / A Cockpit users	1000 (per cluster)	1000 (per cluster)
Maximum number of OpenStage clients	1000 (per cluster)	1000 (per cluster)
Installation in virtual environment	✓	✓
Supported Communication Systems	• OpenScape Voice • OpenScape 4000	• OpenScape Voice • OpenScape 4000
Number of connectable OpenScape Voice Systems	1 (per cluster)	1 (per cluster)
Number of connectable OpenScape 4000 Systems	63 (per cluster)	63 (per cluster)
Combination of different communications systems	max. 1 OS Voice + max. 63 OpenScape 4000 (per cluster)	max. 1 OS Voice + max. 63 OpenScape 4000 (per cluster)

5.2 Upgrading and Changing the Deployment Scenario

NOTICE: You find further and more detailed information about upgrading and changing the deployment scenario of OpenScape UC Application in the *OpenScape UC Application, Installation and Upgrade* manual.

The following table shows the deployment scenarios you can toggle with a UC Application V10 system.

Table 2: Changing the deployment scenario within OpenScape UC Application V10

From:	To:	Single Node Cluster	Triple Node Cluster
Single Node Cluster		–	✓
Triple Node Cluster		–	–

5.3 Networking Deployment Scenarios

Using Single/Triple node cluster, you can install OpenScape UC Application with several networked clusters to provide the UC Application services for a maximum number of users.

If required, you can also network all other OpenScape UC Application deployment scenarios using the Federation function of the Openfire system. This is useful, for example, when connecting UC Application environments that were operated separately until a business combination to provide the users of such UC Application environments with environment-spanning presence information.

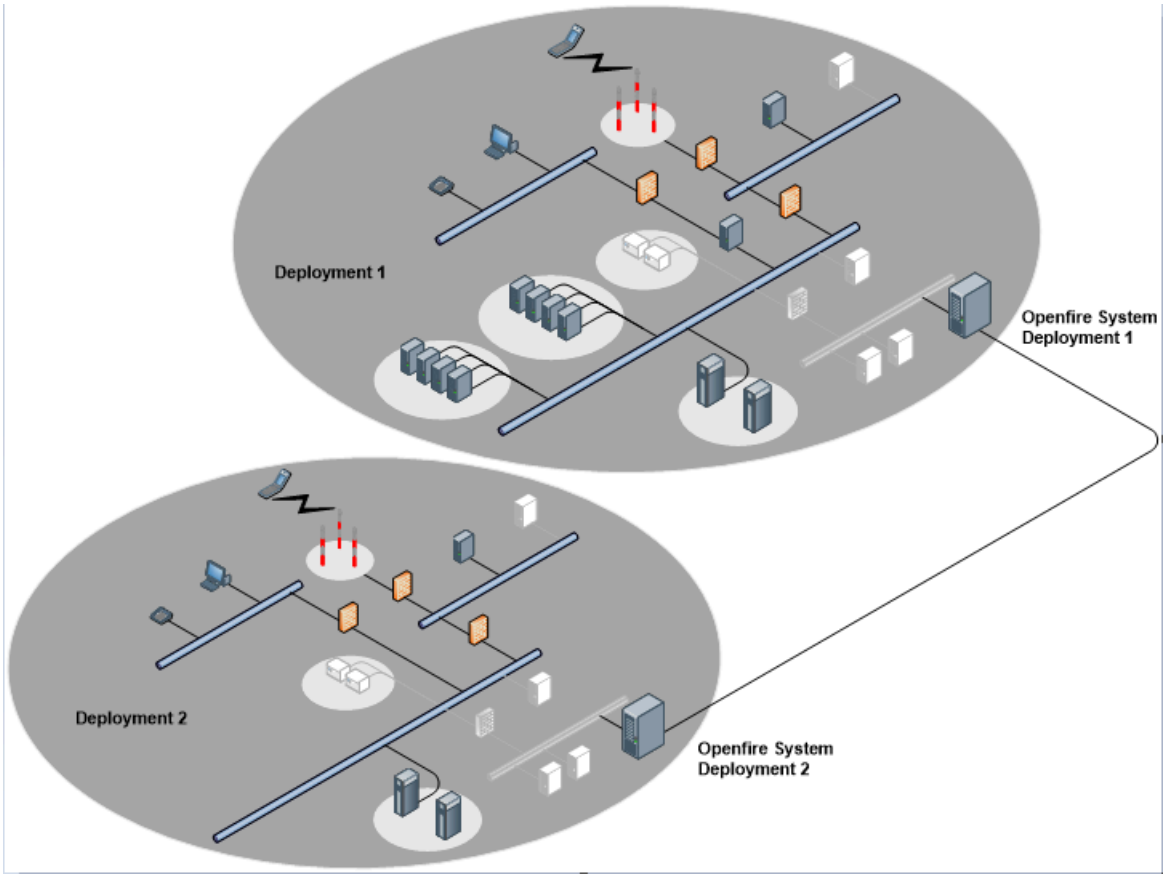
Depending on the number of Openfire servers / XMPP domains the eventually networked UC Application environment uses, there are basically two alternatives for this type of networking:

- **Using one Openfire server / one XMPP domain per deployment scenario**

  In this case, an individual Openfire server is used for each of the deployment scenarios to be networked. You can prefer this alternative if the deployment

scenarios were already in operation before the networking and shall be networked retrospectively.

Example of networking two deployment scenarios:



NOTICE: If existing deployment scenarios that already use Openfire servers shall be networked, you must uninstall such Openfire servers and set up new versions of the Openfire server.

You find detailed information about configuring these types of networking in the *OpenScape UC Application, Installation and Upgrade* manual.

5.4 Overview of the Deployment Scenarios' Structure

This chapter informs you about the general, simplified structure of the following deployment scenarios and their associated specials.

The respectively represented network infrastructure is merely a planning recommendation. The actual realization of the network infrastructure for a UC Application landscape depends on various, mostly project-individual circumstances.

Such circumstances may be:

- Whether a network infrastructure concept is already available
- The network security demanded by the customer

- The size of the expected network load
- The distribution of the expected network load
- The size of the network infrastructure budget

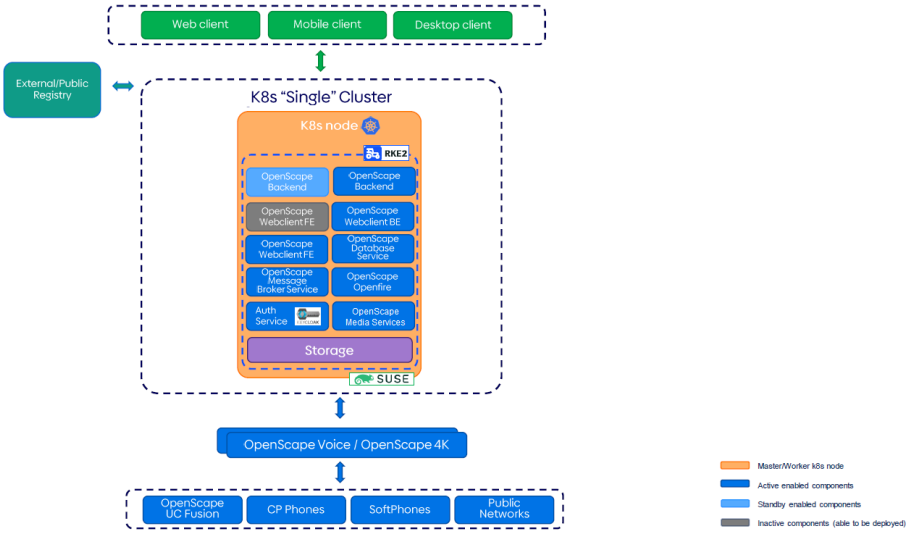
Taking these circumstances into consideration we recommend to establish an appropriate network infrastructure concept in addition to the plannings in this manual.

NOTICE: As a rule, we shall not go into product-unrelated system components in the following sections. Consequently, they are grayed out in the associated figures. The exception is Single/Triple node cluster, for which we also consider selected, product-unrelated components.

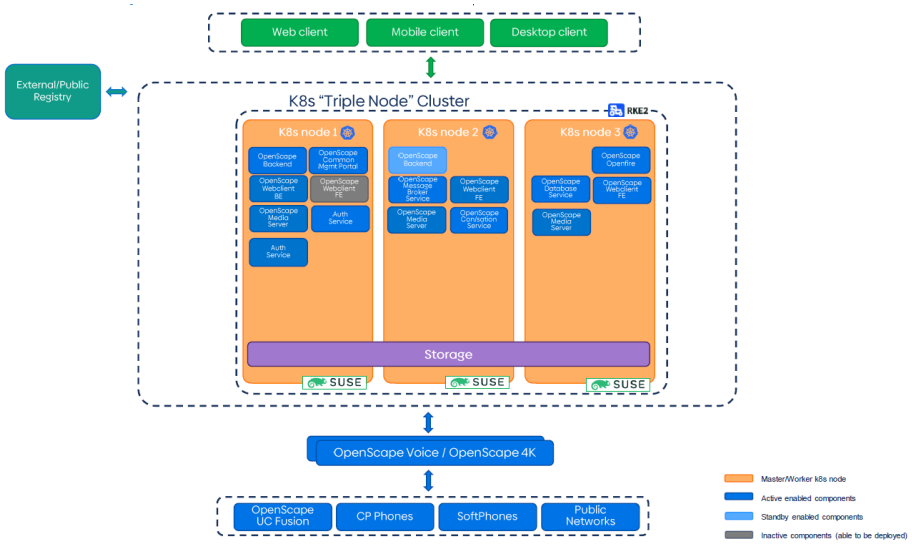
5.4.1 Single/Triple Node Cluster

OpenScape UC V11 supports the following deployment scenarios:

- **Single Node Kubernetes Cluster**



- **Triple Node Kubernetes Cluster**



Both deployment types can support the same number of UC application users and handle the same workload. However, a key difference lies in high availability, which is provided by the triple node deployment. Multi-node clusters enhance resilience; if one node fails, the others can take over, ensuring that your applications remain available.

The following table describes the general system load and the possible features for each of these deployment scenarios. The given numbers always apply for the maximum system extension of the relevant deployment scenario.

	Single Node Deployment	Triple Node Deployment
Maximum number of UC Application users	35 000 (per cluster)	35 000 (per cluster)
High availability	–	✓
Existing availability model for the computer systems of the front-end services	N + 1	N + 1
Existing availability model for the computer systems of the media services	N + 1	N + 1
System databaseof UC Application	MySQL	MySQL
Integrated presence feature	✓	✓

	Single Node Deployment	Triple Node Deployment
Connecting OpenScape Xpressions	✓	✓
Connecting UC applications by third-party suppliers	✓	✓
Maximum number of groupware connections (CHL Domino or Microsoft Exchange)	1 (per cluster)	1 (per cluster)
Maximum number of LDAP directory connections	any	any
Supports video conferences (video MCU)	✓	✓
Number of OpenScape Mobile Clients supported by Facade server	max. number of UC Application	max. number of UC Application
Maximum number of Openfire users	max. number of UC Application users	max. number of UC Application users
Maximum number of E / A Cockpit users	1000 (per cluster)	1000 (per cluster)
Maximum number of OpenStage clients	1000 (per cluster)	1000 (per cluster)
Installation in virtual environment	✓	✓
Supported Communication Systems	• OpenScape Voice • OpenScape 4000	• OpenScape Voice • OpenScape 4000
Number of connectable OpenScape Voice Systems	1 (per cluster)	1 (per cluster)
Number of connectable OpenScape 4000 Systems	63 (per cluster)	63 (per cluster)

	Single Node Deployment	Triple Node Deployment
Combination of different communications systems	max. 1 OS Voice + max. 63 OpenScape 4000 (per cluster)	max. 1 OS Voice + max. 63 OpenScape 4000 (per cluster)

6 Planning for central UC Application Components

This chapter provides information about the following topics:

6.1 Planning for Single/Triple Node Cluster Deployment

This chapter provides information about the following topics:

6.1.1 Verifying Restrictions

Restrictions apply for Large Deployment in the following areas.

6.1.1.1 General Restrictions

The following restrictions apply for the entire system:

- Connections with network address translation (NAT) between system components are not supported.
- Security scans with Qualys appliances can lead to ActiveMQ crash (due to specific code implementation of the 3rd party ActiveMQ library).

6.1.1.2 Restrictions on the OpenScape Media Server

The following restrictions apply for the OpenScape Media Server:

- Devices display conference connections always as insecure; no encryption icon is thus represented on the device display. This also applies for the event that SRTP has been configured for connections in the OpenScape Media Server.

  The reason for this is that the OpenScape Media Server can merely ensure that the data for the respectively first connection segment is encrypted.

6.1.1.3 Restrictions on a virtualized Environment

The following restrictions apply for virtualized environment:

- VMware ESXi V7 (alternative description: VMware vSphereHypervisor V7).
- VMware Fault Tolerance is not supported.
- VMware vMotion is supported with the following restrictions.
  - An active UC Application node may be transmitted from one ESX(i) host to another ESX(i) host of the cluster (Migrate Virtual Machine) only at times of minimal system load. Choosing other times may considerably affect the performance of UC Application services.
  - When an active UC Application node is transmitted from one ESX(i) host to another ESX(i) host of the cluster (Migrate Virtual Machine), the relevant UC Application node may become unavailable for several seconds. However, after this short period it automatically adopts its original operational state again.
  - A dedicated network with a minimum transmission rate of 1 Gbit / s must exist between the ESX(i) hosts. This network must be operated separately from the networks of other applications.

  IMPORTANT: In rare cases, a hardware bug may lead to the system not being restorable because of a damaged file system. This risk is unspecific for OpenScape UC Application. It applies for all virtual systems for which the VMware High Availability is used.

- VMware Data Backup / VMware Data Recovery is supported with the following restrictions.
  - VMware Data Recovery is only supported in version 2.0.1.2374-740238-x86_64 or higher.
  - Data backups with the help of VMware Data Backup / VMware Data Recovery must be executed at times of minimal system load. This is important, because VMware Data Backup / VMware Data Recovery is based on creating and deleting snapshots and VMware ESXi may stop a virtual machine for several seconds while a snapshot is being deleted. If this happens while UC Application services are being executed, time-outs in OpenScape UC Application may be the result. Consequently, the connection to the communications system may be rebooted and telephony features – such as call routing for the One-Number Service (ONS) – may become temporarily unavailable.
  - If the **Thick Provision Lazy Zeroed** option is available for the hard-disc space of a virtual computer system, it must be activated in productive systems for application computers and Media Server computers.

  - If the **Thick provision Lazy Zeroed** option is active for the hard-disc space of a virtual computer system, free hard-disc space of the same size must be additionally available.

    Example: The **Thick provision Lazy Zeroed** option is active for the 130 GB hard-disc of a virtual computer system. In this case, another 130 GB of hard-disc space must be available for the virtual computer system.

    This additional space is allocated by VMware Data Recovery when restoring data and made available again after the restoration.

    NOTICE: When operating in test and demonstration systems you can save considerable amounts of hard-disc space by activating **Allocate and commit space on demand (Thin provisioning)**. This means that the virtual hard disk grows with the actually required hard disk capacity. This option is supported for all virtual computers of OpenScape UC Application, but we do **not recommend** it for the application and Media Server computer in productive systems as it has negative influences on the performance.

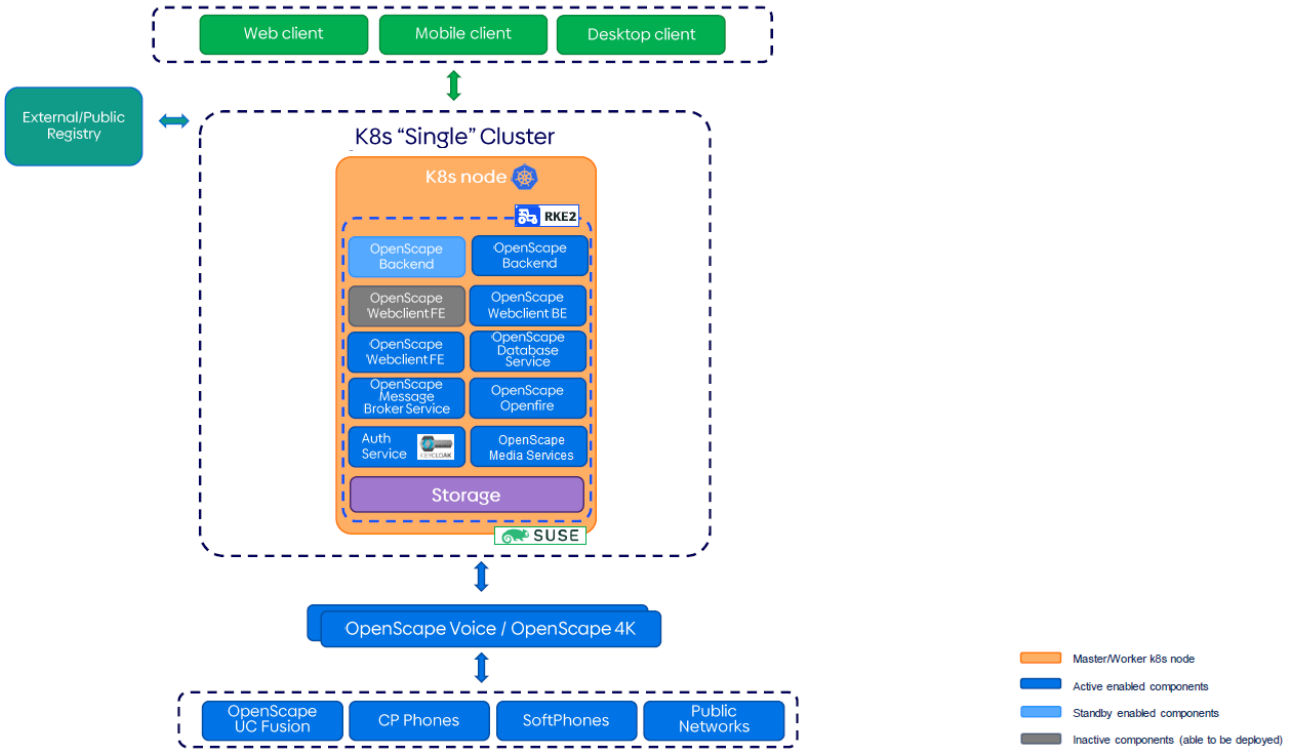
- VMware Snapshots are supported with the following restrictions.
  - Snapshots must be executed at times of minimal system load. The performance of UC Application services may otherwise decrease from the user's perspective.
  - VMware ESXi may stop a virtual machine for several seconds while a snapshot is being deleted. If this happens while UC Application services are being executed, time-outs may be the result. Consequently, the connection to the communications system may be rebooted and telephony features – such as call routing for the One-Number Service (ONS) – may become temporarily unavailable.
  - Only one snapshot per virtual computer may be available at any time.
- VMware Tools are supported.
- No video conferences in the Full-HD format are supported.
- The CPU load of each virtualization platform mapping an OpenScape Media Server must not exceed 75 %.

If a virtualized environment restricts the OpenScape UC Application performance, the table in Supported Deployment Scenarios on page 23 documents this accordingly.

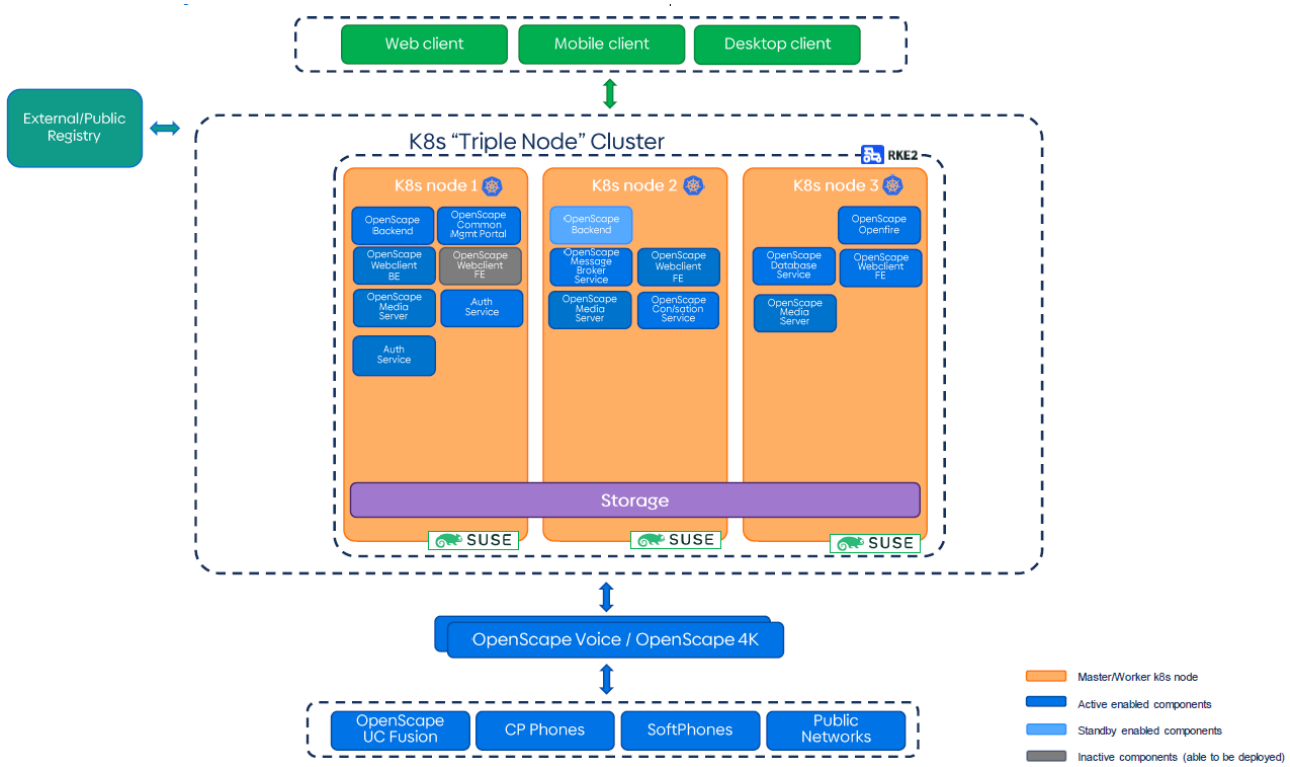
6.1.2 Overview of the Components Distribution

The figures below shows how the central OpenScape UC Application components are distributed according to the deployment scenario.

- **Single Node Kubernetes Cluster**



- **Triple Node Kubernetes Cluster**



6.1.3 Planning Operating System Requirements

The operating system must comply with the following requirements for the various server components:

The Kubernetes Cluster is deployed on a server running on SUSE Linux Enterprise Server 15 SP7.

- The external licensing server is deployed on SUSE Linux Enterprise Server 15 SP7.

OpenScape Voice computer

See planning guide for OpenScape Voice.

Load balancer (foreign system)

See producer documentation for the load balancer used.

6.1.4 Planning general Requirements on the Load Balancer of the Front-end Services

NOTICE: The load balancer is neither an OpenScape UC Application component nor is it installed or configured by the OpenScape UC Application setup.

If several computer systems are configured for front-end services with the deployment scenario, a load balancer is required in the network. This load balancer serves the following purposes:

- Distributing the communication of the OpenScape Web Clients among the different front-end computers.
- Performing the TLS encryption and decryption to relieve the UC Application servers from this task.

The load balancer used must have at least the following general features.

- Availability of at least 99.9995%.
- Distribute requests for new TLS, HTTP and HTTPS connections to different computer systems.
- Classify communication to treat it as follows.
  - Distribute to different groups of computer systems. (e.g. web communication to web servers, SOAP communication to application computers)
  - Distribute to individual computer systems.

  Communication classification needs to be possible at least according to the following criteria.
  - Destination IP address
  - Protocol port
  - URL pattern

- Session persistence feature to hold a client during a classified connection on the original computer system.

  The session persistence feature must at least be based on the following criteria.

  – Source IP address
  – SSL ID
  – Cookie
- Detection of server availability to distribute communication to similar functioning systems in case of computer or software failure.

  The availability of computer systems or software must at least be recognized based on the following criteria.

  – Response time of the computer systems
  – Error/cause code of the TCP / TLS and HTTP protocols
- TLS / SSL offloading to realize encryption, decryption and re-encryption for TLS and SSL on the load balancer.
- Session persistence feature for HTTP 1.1

  OpenScape uses persistent HTTP connections for sending events to the clients. Therefore, existing HTTP connections must not be cleared by the network components for at least 15 minutes.
- Existing security features must be configurable so that the usual OpenScape communication does not initiate security violations.

  That applies especially to the application based denial of service protection against attacks with HTTP GET requests since OpenScape UC Application uses these requests for the communication with the OpenScape clients.
- At “busy hours”, the load balancer must provide for OpenScape UC Application at least the following performance capacities:

  – 280 MBit for SSL data traffic
  – 75 000 simultaneous HTTPS connections

  These estimations are based on 10 000 OpenScape users, which is a typical number. The actually required load balancer performance depends on the OpenScape clients used and on the number of clients being simultaneously active at “busy hours“.

6.1.5 Planning Special System Requirements for the Network

Application computers and front-end computer systems of OpenScape UC Application intercommunicate via variable, dynamically allocated protocol ports. Therefore no network component must have been configured between these two components since it hinders this type of communication.

A network component that automatically closes non-active TCP connections between the application computer and the front-end computer systems must not exist between these components.

The computer system of the OpenScape Media Server must always be accessible via at least one IPv4 address. The TTS / ASR engine of OpenScape UC Application can otherwise not be used.

Whenever possible, the OpenScape UC Application components should not fail because of defective LAN switches. Every OpenScape UC Application computer system should therefore be connected to two independently operated

LAN switches. In this context, the documented hardware requirements contain two identical network boards per computer system.

The OpenScape UC Application components must be connected via a 100 / 1000 Mbit/s Ethernet-LAN. This assumes a homogeneous network that does not have any critical bottlenecks between sub-networks.

Time-outs may disturb the system communication or make it completely impossible if the computer systems communicate with each other via a WAN connection. This concerns in particular connections to external systems such as a groupware environment.

The following system requirements apply for the network between audio client and OpenScape Media Server.

- Package loss rate when using G.711 less than 10 % [2].

1) 0 – 5 % package loss:	good sound quality
1) 5 - 10 % package loss:	restricted sound quality

- Package loss rate when using G.722 smaller than 2 % [2].

1) 0 % package loss:	good sound quality
1) 1 - 2 % package loss:	restricted sound quality

If video shall be used, additional system requirements apply for the network. See Planning System Requirements for Video (Video MCU) on page 102 on this.

6.1.6 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

6.1.7 Performance Data of the OpenScape Media Server

The OpenScape Media Server has the following performance data.

SIP-BHCA applied:	**10 000** (a default SIP scenario uses approximately seven SIP messages)
Maximum permissible number of channels:	
• Voice portal (DTMF-based):	Max. **620** G.711 channels (RTP or RTCP) or
• Voice portal (ASR-based):	Max. **80** G.711 channels (RTP or RTCP) or

[2] The specified package loss rates are benchmarks. The actual perception of the described quality levels depends on the subjective feeling of the single user and on acoustic influences that affect the environment of the device used.

• OpenScape Auto Attendant:	Max. **1 540** G.711 channels (RTP or RTCP) or
• Customer-specific application:	Depending on the application up to max. **1 540** G.711 channels (RTP or RTCP) or
• Conference portal	Max. **1 540** G.711 channels (RTP or RTCP) (per conference room max. **250**[3] G.711 channels) or
• a combination of shares	
• Text-to-Speech (TTS)	Max. **300** channels
• WebRTC	Max. 1000 channels

NOTICE: We assume for the specified number of channels: The OpenScape Media Server can use up to 30 % of the processor power on the computer system.

If codecs different from G.711 are used, the following applies:	
• One G.722 channel corresponds to	the performance of **2** G.711 channels
• One G.729 channel corresponds to	the performance of **2.4** G.711 channels
• One 720p video channel corresponds to	the performance of **180** G.711 channels
• One 1080p video channel (H.264) corresponds to	the performance of **350** G.711 channels
• One 1080p video channel (H.265) corresponds to	the performance of **700** G.711 channels

WebRTC Performance

WebRTC endpoints have been added as a new capability for OpenScape UC users to facilitate web audio and video calls using the WebRTC endpoint either as an OND or ONS line for the users on the OpenScape UC Web client.

NOTICE: Provisioning of other services on Media Server should be disabled to achieve the maximum capacity for WebRTC calls.

WebRTC channels exclusive usage in one Media Server: 350 to 1000 channels depending on codecs used and Hardware specs and number of vCPUs.

[3] In the case of moderated conferences without conference portal dial-out, up to **500** G.711 channels are supported per conference room – if the participants dial in during approx. one minute (approx. 30 000 BHCA).

Depending on your Hardware installation you can use the following formulas to calculate the BHCA rates:	
For AMD Epyc or equivalent processor:	
1) 16 vCPUs	CPU usage % approximately
CPU16=(BHCAG711*23%+BHCAG722*38%+BHCAG729*40%+BHCAOpus*46%)/72K	
1) 8 vCPUs	CPU usage % approximately
CPU8=CPU16 /2.33	
For Intel Xeon E5 2698v4:	
CPU=CPU(AMD Epyc)/1.37 (for same vCPUs)	CPU usage % approximately

6.2 Planning for CMP

Planning information concerning the CMP are depicted in the manual *OpenScape Common Management Platform, Administrator Documentation*.

7 Planning for connecting the external Communications System

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

IMPORTANT: Each communications system connected to OpenScape UC Application must be adequately dimensioned for processing the load of the planned UC Application users. This is particularly true for Very Large Deployment. Please obtain details of the performance data and dimensioning recommendations for the relevant communications systems from the associated product documentation.

The following released communications systems can be connected to OpenScape UC Application:

- OpenScape Voice
- OpenScape 4000

NOTICE: You find details of the versions of supported communications systems and the number of connectable systems in the table in Supported Deployment Scenarios on page 23.

It is also possible to have a mixed mode in the meaning that OpenScape UC Application can be connected to both OpenScape 4000 and OpenScape Voice simultaneously.

IMPORTANT: The mixed mode requires a project-specific release.

Furthermore, you can connect other communications systems in addition, but the OpenScape UC Application features are then, as far as these communications systems are concerned, available significantly restrictedly.

To connect a communications system to OpenScape UC Application you need to execute the following planning steps:

- Planning a Connection Type for a Communications System
- If different types of communications systems are available for direct connections: Comparing system-depending Features for a direct Connection
- In case of connecting OpenScape Voice: Checking technical Restrictions on OpenScape Voice
- In case of connecting OpenScape 4000: Checking technical Restrictions on OpenScape 4000

7.1 Planning a Connection Type for a Communications System

Two connection types, which differ conceptionally and in their scope of services, are available for connecting a communications system to OpenScape UC Application.

- **Direct connection**

  In this manner you can connect communications systems to OpenScape UC Application that are approved for OpenScape UC Application by name. Compare Supported Deployment Scenarios on page 23.

  In case of a direct connection, all line features of OpenScape UC Application are available that have been released for the relevant communications system.

  To use OpenScape UC Application it must be directly connected to at least one released communications system.
- **Indirect connection**

  In this manner you can connect any available communications systems to OpenScape UC Application; also those not approved for OpenScape UC Application by name.

  Not all line features of OpenScape UC Application can be used via an indirect connection. The respectively connected communications system determines which line features are supported and to what extent.

  Connecting communications systems indirectly is optional. If you use indirect connections, there must also always be one OpenScape Voice system connected to OpenScape UC Application directly.

NOTICE: Connecting a communications system to OpenScape UC Application directly requires a project-specific release.

7.1.1 Direct Connection to a released Communications System

To use OpenScape UC Application it must be directly connected to at least one released communications system.

How to connect a communications system to OpenScape UC Application directly depends on the number and type of the communications systems to be connected.

For connecting communications systems directly we differentiate three scenarios:

- Connecting a single communications system directly
- Connecting several communications systems of the same type directly
- Connecting several communications systems of different type directly

Connecting a single communications system directly

A singly connected communications system must be connected to the central components of OpenScape UC Application in two ways:

- Via a SIP trunk between the directly connected communications system and the OpenScape UC Kubernetes cluster is installed. In and outbound phone connections for Media Server applications – e. g. for the voice and conference portal – are routed via this SIP trunk.

  If several OpenScape Media Servers are deployed with OpenScape UC Kubernetes cluster, every OpenScape Media Server must be connected to the directly connected communications system via an SIP trunk.

  NOTICE: In a OpenScape 4000 environment without OpenScape Voice, several OpenScape Media Servers can only be used if a OpenScape 4000 SoftGate SIP Load Balancer is deployed.

- Via a CSTA connection between the directly connected communications system and the OpenScape deployment (ucbe pod). Via this connection, the statuses of the relevant phones are monitored and the associated phone connections controlled.

Connecting several communications systems of the same type directly

NOTICE: For the time being, this connection type can only be used with OpenScape 4000.

In this scenario, all OpenScape 4000 systems are connected to the central components of OpenScape UC Application via two ways.

- Via an SIP trunk between the SIP load balancer of the OpenScape 4000 systems and the computer system on which the OpenScape Media Server is installed. In and outbound phone connections for Media Server applications – e. g. for the voice and conference portal – are routed via this SIP trunk.
- Via a CSTA connection between the OpenScape 4000 system and the application computer of OpenScape UC Application. Via this connection, the statuses of the relevant phones are monitored and the associated phone connections controlled.

Connecting several communications systems of different type directly

The following figure shows how to connect several communications systems of different type to OpenScape UC Application directly.

In this scenario OpenScape Voice is connected to OpenScape UC Application as if it was the only connected communications system.

- Via an SIP trunk between OpenScape Voice and the computer system on which the OpenScape Media Server is installed. In and outbound phone connections for Media Server applications – e. g. for the voice and conference portal – are routed via this SIP trunk.

  If several OpenScape Media Servers are installed with ICN EN HS D 533, every OpenScape Media Server must be connected to OpenScape Voice with an SIP trunk.
- Via a CSTA connection between OpenScape Voice and the application computer of OpenScape UC Application. Via this connection, the statuses

of the relevant phones are monitored and the associated phone connections controlled.

The OpenScape 4000 system is also connected to the application computer of OpenScape UC Application using a CSTA connection. However, there is no SIP trunk between OpenScape 4000 and the available OpenScape Media Servers. Instead, an SIP trunk connects OpenScape 4000 and OpenScape Voice.

If several OpenScape 4000 systems shall be used besides OpenScape Voice, all of them are connected to OpenScape Voice and OpenScape UC Application in the same way.

7.1.2 Indirect Connection to an available Communications System

NOTICE: Connecting a communications system to OpenScape UC Application directly requires a project-specific release.

You can integrate an already available communications system in a UC Application solution via an indirect connection. It can be assumed that a published phone number already exists in the available communications system for every user to deploy OpenScape at a later date. This phone number is to be kept in the scope of OpenScape UC Application.

Under these circumstances, it is best for an indirect connection to shift the already published phone numbers of the available communications system to the communications system directly connected to OpenScape UC Application.

Summarized, the following must happen:

- Every already published phone number must be deleted on the available communications system and configured on the communications system directly connected to OpenScape UC Application.
- In OpenScape UC Application, every phone number shifted in this way must be assigned to the relevant OpenScape user as ONS number.
- In the available communications system, a new phone number must be configured for the office phone of each OpenScape user to replace the shifted phone number.
- The available communications system must be configured so that all calls directed to the published phone numbers are transferred to the directly connected communications system.

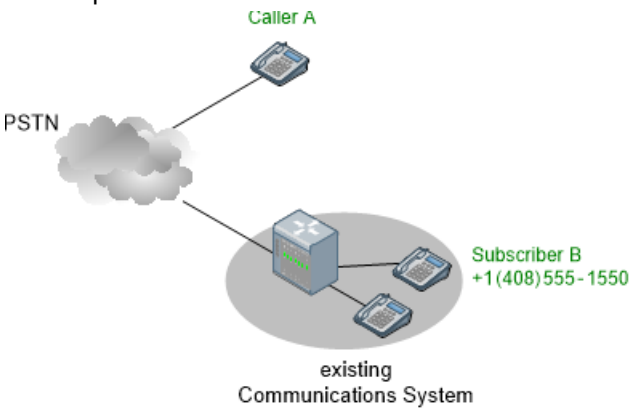
NOTICE: If OpenScape UC Application and the directly connected communications system are added to the available system environment, the topology of the phone network changes. In this changed topology it must be made sure that all subscribers can be reached from any point in the phone network.

Connecting several available communications systems indirectly

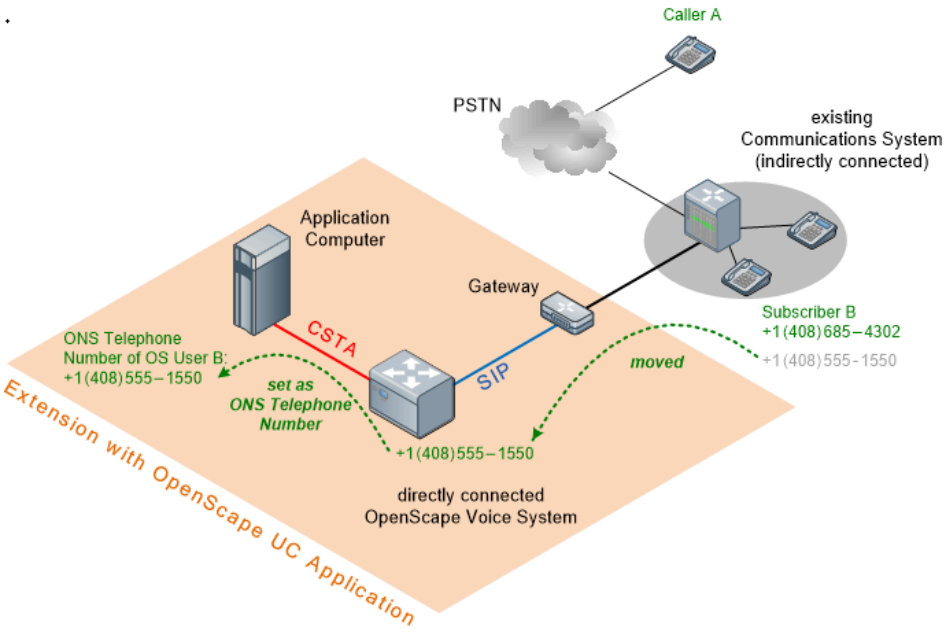
You can also connect several available communications systems to OpenScape UC Application indirectly in the described manner.

Function example of an indirect connection

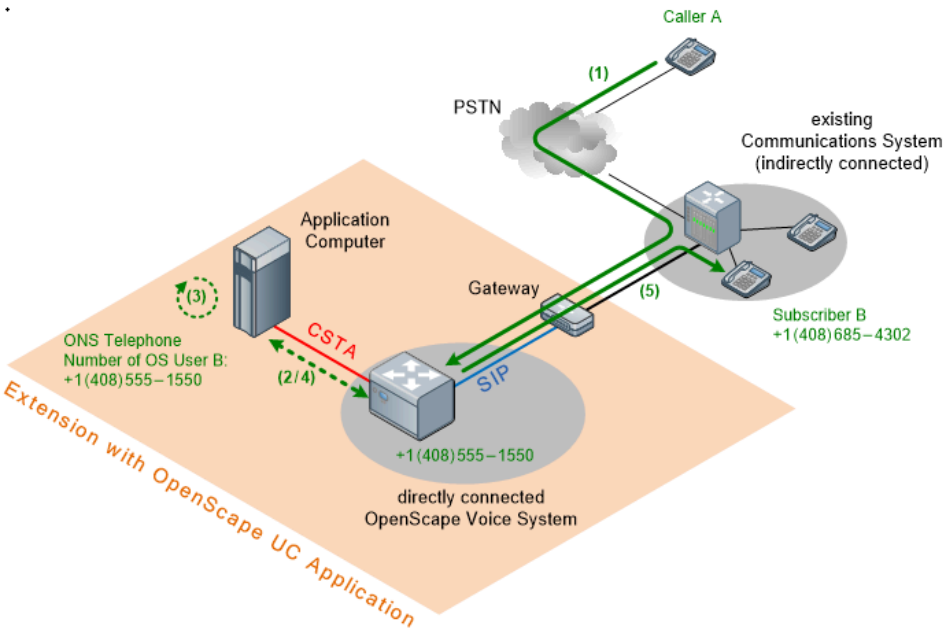
In the available communications system, subscriber B has the published phone number +1(408) 555-1550. When caller A calls subscriber B, the call is routed through the PSTN and the available communications system over to subscriber B's telephone.



If OpenScape UC Application is to be added to the available system environment, calls addressed to OpenScape users must be forwarded to the communications system directly connected to OpenScape UC Application. OpenScape UC Application then provides the one-number service the directly connected communications system can use for monitoring and controlling calls.



This forwarding requires shifting the originally published phone number +1(408) 555-1550 from the available communications system to the directly connected communications system. Subsequently, a new phone number must be assigned to the user's original office phone in the available communications system, so that OpenScape UC Application can route calls to this number if required. In the depicted example this is phone number +1(408) 685-4302. The published number thus remains the same, but is now under the control of OpenScape UC Application.



After this reconfiguration the system behaves as follows:

1) Calls to subscriber B reach through the PSTN the available communications system and are routed to the gateway of the directly connected communications system from there.

2) Using CSTA, the directly connected communications system notifies OpenScape UC Application about a call arriving for phone number +1(408) 555-1550.

3) Since this phone number has been configured as ONS number for OpenScape user B, OpenScape UC Application applies all routing rules this user has configured in OpenScape UC Application to this call.

4) If the user has defined his/her phone of the available communications system as preferred device, OpenScape UC Application has the directly connected communications system forward the call to phone number +1(408) 685-4302 using CSTA.

5) The call is then signalled at the relevant device of the available communications system. When subscriber B accepts the call, then caller A is connected to subscriber B.

If subscriber B has defined another preferred device, OpenScape UC Application has the directly connected communications system reroute the call to the relevant device.

Please note that two channels are allocated in the gateway for every call – one for directly connecting caller A to the connected communications system and one for forwarding to subscriber B. If both connection partners are subscribers to the available communications system, not only two but four channels are allocated in the gateway. Please keep this in mind when dimensioning the gateway.

7.2 Comparing system-depending Features for a direct Connection

The following table gives an overview which of the most important UC Application features are supported via the directly connectable communications systems.

The *OpenScape UC Application, System Description* manual describes via which UC Application clients the supported features can be used.

Table 3: Communications System Function Dependencies

UC Application Service	OpenScape Voice		OpenScape 4000			
	as regards ONS device	as regards preferred device	as regards ONS device		as regards preferred device	
			V8	V10	V8	V10
Call Control						
• Initiate call	✓	✓	✓		✓	
• Hold call	✓	✓	✗		✗	
• Reconnect call	✓	✓	✓		✓	✓
• Transfer call via consultation call	✓	✓	✓		✓	✓
• Transfer call without consultation call	✓	✓	✓	✓	✓	✓
• Initiate consultation call	✓	✓	✓		✓	✓
• Reject connection	✓	✓	✓		✓	✓
• Clear connection	✓	✓	✓		✓	✓
• Alternate connection	✓	✓	✓		✓	✓
• Request callback	✓	✓	✓		✗	
Note: Request callback to / from external preferred device is not supported. However, request callback from internal preferred device (residing on the same OS4k system) is supported.						
• Call waiting	✓	✓	✓		✗	
Note: Call waiting is not supported for WebRTC. However, it is supported for devices.						
• Dial with the help of function keys via plug-in	✓	✓	✓		✓	

UC Application Service	OpenScape Voice		OpenScape 4000			
	as regards ONS device	as regards preferred device	as regards ONS device		as regards preferred device	
			V8	V10	V8	V10
• SIP-URI dialing	✓	✓	✗		✗	
• Backup Preferred Device Routing	✓	✓	✗		✗	
Call Control User Interface						
• Inbound / outbound calls are displayed	✓	✓	✓		✓	✓
• Phone number and/or name of a caller is displayed	✓	✓	✓		✓	✓
• Record conversation (with SIP Softphone only)	✓	✓	✗		✗	
Change of Device						
• User can redirect incoming call to one of his/her preferred devices or any other device	✓	✓	✓		✓	✓
• User can hand active call over to one of his/her preferred devices or reroute it to any other device	✓	✓	✓	✓	✓	✓
Audio Conference – Ad-hoc						
• Server-based Ad-hoc conference supported	✓	✓	✓		✓	
• User can select any contacts, start an Ad-hoc conference and subsequently remove contacts from the conference and add them to the conference	✓	✓	✓		✓	
Audio Conference – Meet Me						
• Open and administrate open conferences without moderator	✓	✓	✓		✓	
• Create and administrate conferences that are controlled by a moderator	✓	✓	✓		✓	
• Define other moderators	✓	✓	✓		✓	

UC Application Service	OpenScape Voice		OpenScape 4000			
	as regards ONS device	as regards preferred device	as regards ONS device		as regards preferred device	
			V8	V10	V8	V10
• Provide acces PIN	✓	✓	✓		✓	
• Show all conference participants that have logged on to the conference or not yet (participant name or phone number)	✓	✓	✓		✓	
• Selectively mute audio transmissions of other conference participants	✓	✓	✓		✓	
• Mute conference	✓	✓	✓		✓	
• Delete single participants from conference	✓	✓	✓		✓	
• Block active conference for callers who wish to participate	✓	✓	✓		✓	
• Identify conference participant who is currently talking	✓	✓	✓		✓	
• Record and play name of conference participants at the beginning of the conference	✓	✓	✓		✓	
• Add document links and URLs to the conference in order to make them accessible for other conference participants. Start web conference session	✓	✓	✓		✓	
• Participants may select whether to be called by the system for a conference or to dial in by themselves	✓	✓	✓		✓	
• Participate at an active conference without entering access number and PIN	✓	✓	✓		✓	
• Initiate scheduled conference	✓	✓	✓		✓	
Contact list management						
• Administrate server-based contact list stored on the OpenScape server	✓	✓	✓		✓	
• Administrate server-based contact list that is stored on the Groupware server (Microsoft Exchange)	✓	✓	✓		✓	

UC Application Service	OpenScape Voice		OpenScape 4000			
	as regards ONS device	as regards preferred device	as regards ONS device		as regards preferred device	
			V8	V10	V8	V10
• Administrate contacts via searching, grouping and sorting function	✓	✓	✓		✓	
• Search in global address books – e. g. in corporate directories (LDAP, Microsoft Exchange)	✓	✓	✓		✓	
• Search for personal contacts in connected groupware (LDAP, Microsoft Exchange)	✓	✓	✓		✓	
• Import and export personal contact list	✓	✓	✓		✓	
Call journal						
• Log the following calls: incoming calls, outgoing calls, lost calls, forwarded calls, calls forwarded to voicemail	✓	✓	✓		✓	✓
• Administrate server-based call journal that is stored on the OpenScape server	✓	✓	✓		✓	
• Administrate call journal via searching and sorting function	✓	✓	✓		✓	
One-Number Service (ONS)						
• The user ONS phone number is displayed to the caller (independent of user device)	✓	✓	✓		✓	✓
• Named device list is displayed	✓	✓	✓	✓	✓	✓
• User can administrate list of preferred devices	✓	✓	✓		✓	
• ONS device can be member of a multi-line hunt group of OpenScape Voice	✓					
• ONS device can be member of a group function of OpenScape 4000			see Restrictions		see Restrictions	
OpenScape Messaging						
• Accept voice messages and forward as e-mail attachment to preferred e-mail inbox (Microsoft Outlook)	✓	✓	✓		✓	

UC Application Service	OpenScape Voice		OpenScape 4000			
	as regards ONS device	as regards preferred device	as regards ONS device		as regards preferred device	
			V8	V10	V8	V10
OpenScape Xpressions Integration						
• Quick access to voice messages via operating elements for e.g. start, stop, break, delete and save	✓	✓	✓		✓	
• Transfer between the OpenScape Xpressions TUIs and voice portal (Trusted Transfer Mode)	✓		✗			
• Message Waiting Indication	✓		✓			
Instant Messaging						
• Initiate audio call from IM session	✓	✓	✓		✓	
• Initiate audio conference from IM session	✓	✓	✓		✓	
Presence						
• Show presence, telephony presence, notes and time zone information	✓	✓	✓		✓	
• Show OpenScape 4000 telephony presence	✓	✓	✓		✓	
• Show presence status and telephony presence status of contacts in call journal	✓	✓	✓		✓	
Video						
• Initiate video connection to a participant who uses the SIP softphone OpenScape Personal	✓	✓	✗	✓	✗	✓
• Initiate video connection to another SIP participant	✓	✓	✗	✓	✗	✓

7.3 Checking technical Restrictions on OpenScape Voice

If OpenScape Voice is connected to OpenScape UC Application directly, the following restrictions apply:

- If a phone number is already monitored by a CSTA application, it must not be simultaneously configured as ONS phone number. This refers e.g. to

phone numbers already monitored by ComAssistant or OpenScape Contact Center.

- An ONS phone number must not be simultaneously assigned to several endpoint devices because, in this case, the **Auto Answer** feature does not work.
- An ONS phone number must not be simultaneously configured as Circuit phone number.
- If a caller initiates a callback from his/her preferred device (OND), the callback will in due course not be indicated on the preferred device but on the device with the associated ONS number.
- You cannot use named device lists to forward calls from a keyset line to a rollover line.
- The following restrictions apply for the use of multi-line hunt groups (MLHG):
  - The relevant UC Application users may not use the named device list for their preferred devices.
  - The relevant UC Application users may not configure call routing rules..
  - For the relevant OpenScape Voice subscribers, displaying the pilot phone number for outgoing calls should not be configured.
  - If the One Number Service is to be used for UC Application users that are subscribers of a multi-line hunt group (MLHG), the following applies: The OpenScape Voice services **CSTA** and **One Number Service** must be configured not only for the subscribers of the multi-line hunt group but also for the pilot number of the multi-line hunt group.
- Provisioning of OpenScape UC users as hunt group members is supported with the following configuration regarding MLHG pilot DN:
  - MLHG pilot DN must be provisioned as "profile only" with CSTA and ONS services.
  - MLHG pilot DN can not be an OpenScape UC user.
- If a named device list is set as preferred device (OND) and one device of the named device list is busy, a waiting caller always receives a busy tone.
- Expanding a two-person conversation to a UC Application-based conference (transfer conference, Merge Calls) is not supported.
- Expanding a two-person conversation with a Web Collaboration session is not supported.
- OpenScape UC Application monitors by default only those subscribers, that use a well-known country code. If in a customer invironment an unknown system-dependent country code needs to be used, this country code must be added on every application computer and every OpenScape Media - Server to the file `dialingRules.xml`. This file is saved in the following directory: <*Osc-Install*>`/common/conf/`

7.4 Checking technical Restrictions on OpenScape 4000

Restrictions on connecting OpenScape 4000 depend on whether OpenScape 4000 is connected to OpenScape UC Application directly or indirectly.

- Checking technical Restrictions on Connecting OpenScape 4000 directly
- Checking technical Restrictions on Connecting OpenScape 4000 indirectly

7.4.1 Checking technical Restrictions on Connecting OpenScape 4000 directly

If OpenScape 4000 is connected to OpenScape UC Application directly, the following restrictions apply depending on the software version of OpenScape 4000 used:

- Restrictions on OpenScape 4000 V7 and higher

Restrictions on OpenScape 4000 V7 and higher

- Is not supported for Integrated Deployment.
- 5000 UC Application users may be assigned to each OpenScape 4000 system at the most.
- At OpenScape 4000, the number of possible OpenScape Media Server channels is generally restricted by the OpenScape 4000 gateways. However, if a OpenScape 4000 SoftGate SIP Load Balancer is used, the number of possible channels can be notched up. Such an SIP load balancer can manage several OpenScape 4000 gateways in connection with up to four OpenScape Media Servers.

  Information about the OpenScape 4000 gateway's channel restriction is contained in the *OpenScape 4000 IP Solutions, Service Documentation*.
- In a OpenScape 4000 environment without OpenScape Voice and without OpenScape 4000 SoftGate SIP Load Balancer you can use the OpenScape 4000 systems only in connection with a single shared OpenScape Media Server.

  The single OpenScape Media Server is only connected to one of the OpenScape 4000 systems used. All further OpenScape 4000 systems must route connections for the OpenScape Media Server via this selected OpenScape 4000 system.

  In such an environment there is no redundancy for the media services.
- Private numbering plans are not supported.
- Auto Attendant feature is not supported for OpenScape 4000 systems.
- Expanding a two-person conversation to a UC Application-based conference (transfer conference, Merge Calls) is not supported.
- Users cannot be forwarded from OpenScape Xpressions PhoneMail to the voice portal with help of the Trusted-Transfer-Mode (TTM). If OpenScape Xpressions PhoneMail as well as the voice portal shall be used, at least two independent access numbers must be configured.
  - One access number in OpenScape Xpressions that allows the user to access his/her PhoneMail inbox.
  - One access number in OpenScape UC Application that lets users set for example their presence status or preferred device in the voice portal.
- The call waiting feature works only at the OpenScape 4000 device with the ONS number. That means:
  - If a terminal device and not a named device list has been set as preferred device (OND): The call waiting feature works only if the OpenScape 4000 device with the ONS number has been selected as preferred device (OND). If another device has been set as preferred device (OND), a second caller will always receive a busy tone; no matter which setting has been performed for the call waiting feature on the terminal device.

  - If a named device list has been set as preferred device (OND): An incoming second call is always routed to the next free device of the named device list and signaled there. This, however, is not true if the OpenScape 4000 device with the ONS number is contained in the named device list and the call waiting feature is active for this device. In this case an incoming second call is also signaled on a busy device with the ONS number. If the second call remains unaccepted, it is routed to the next free device of the named device list.
- You can use OpenScape UC Application with the signaling and payload encryption (SPE) of OpenScape 4000. However, encryption signaling is not displayed in the UC Application clients.
- No OpenScape Desktop Client Web Embedded features controlled via the classic phone menu, feature codes or phone keys are supported.
- The following local OpenScape 4000 group features are supported at OpenScape UC Application only passively for UC Clients:
  - Call pickup
  - Hunt group
  - CHESE-integrated secretarial unit

  Passively means that an ONS device can be a member of those groups. However, if the user is a UC client, the operation is only possible at the ONS device and not in the UC Application client.

  If the user is a webRTC client, it is only possible to receive call pickup notifications in the UC Application Client.

  Also, a UC user with additional WebRTC resource, will receive call pickup notifications in the web client only if the webRTC resource is a member of those pickup groups.

  NOTICE: If OpenScape Desktop Client WE is used as ONS device, such group features cannot be operated on the ONS device either.

  The displays in the UC Application client are correct as regards the call control and the journal.

  The state of Hunt Group members is based on the HGMEMB buffer. The buffer is initialized with the first call.

  The correct information about member’s status is guaranteed only when the HGMEMB buffer is created. Therefore, there could be inconsistencies before the first call via Hunt Group or after a soft restart, when HGMEMB buffers are deleted.
- You cannot use a postmaster account as preferred device (OND).
- You cannot use GroupNumbers like HuntGroup, AttendantGroup, DNIT, OS4K ONS, voice mail as preferred device (OND)
- OpenScape UC Application cannot control phones that are connected to OpenScape 4000 via classic SIP interface (S0PP).
- Unify SIP Deskphones (like CP, OpenStage etc.) are not supported as UC ONS for classic SIP (S0PP) or UFIP SIP interface.
- OpenScape UC Soft Clients are supported as UC ONS using UFIP SIP interface.

NOTICE: For details, please refer to appropriate OpenScape 4000 Documentation (V8 and higher)

- The following features must not be configured in OpenScape 4000 for all types of devices/clients used by the OpenScape UC Application:
  - Attendant Console
  - Nightservice
  - Follow me
  - PIN identification

    NOTICE: The feature **PIN4** can be used by entering the PIN with the keys of the OpenScape 4000 telephone. The PIN can not be entered in the UC Application clients.

  - H4k ONS functionality
  - Silent / Tone Monitoring
  - Network-wide hunt group
  - Hunt group parallel ringing
  - Network-wide executive / secretary function
  - Integrated Key Functionality / Multi Line Access (Keyset)
  - COM group features
  - Speaker Call – One-Way Broadcast
  - Network-wide pickup group
  - Personal device group (twinning) not supported with UC soft phones (SIP-UFIP)
- When using a CMI DECT handset configured as a UC ONS number, the UC client interface does not display an answer button for incoming calls. Calls can only be answered from the CMI handset.
- If the CMI handset is out of range, the UC Application is not informed. The UC client will not reflect that the CMI device is unreachable.
- Callback free to SIP or Analog station can't be set via UC. Callback to external preferred device (residing in central office or in other OpenScape 4000 system) is not possible. Also, it is not possible to request callback from UC when using external preferred device (residing in central office or in other OpenScape 4000 system).
- Virtual device numbers like tie trunks (for example xpressions) are not correctly handled by UC.
- In case of digit prefixing (English: TDCSU:DGTPR, German TDCSU:ZIVO) on trunk connections:
  - UC contact search after phone number fails in case OpenScape 4000 extension number is used as search criteria. Same restriction in case Easy UC application is used.
  - Incoming calls from media server needs additional OpenScape 4000 configuration in order to add the prefix digit
- Multiple alert and speed extend from attendant when a UC client is involved not supported by UC.
- It is recommended to configure Xpressions with Single Step Call Transfer (SSCT) instead of 2 step transfer in case UC is configured using Call Transfer Settings tab and setting the "Allow blind transfers" option.
- Keysystem - UC is supported only for the primary line

- Signaling and Payload Separation (SPS) interconnectivity with UC is not supported
- The CHESE calls are routed to the preferred device (OND) of the right member (executive, secretary or substitute), depending on the current secretary xfer and substitute settings. But if CHESE member is acting on any OND different than ONS the other CHESE members are not alerted and on the OND all CHESE specific group indications (i.e. indications on PUS keys and DSS keys, calling party display on executive phone, splash ring and substitute executive ring and the possibility to pick up a specific) are missing.
- In case pickup member has OND set, OND different than ONS - the pickup group indication at pickup members is missing.
- VNR systems only VNR code + extension or E164 dialing is supported
- By default, DAKS calls do not follow the preferred device settings. This is intentional to ensure Alarm calls truly call the intended physical device. However, starting from V8 R2, this behavior can be changed by activating the optional feature flag 722 via AMO ZANDE.
- Actions initiated by the OND (preferred device) and not by the ONS (UC user), will not be reflected in the UC user Call Control.
- Networking forward scenario: in order to have correct information in call control in case of network call forward, parameters FWDN and FNAN must be added on the trunk COT.

OpenScape UC Application and dialing feature codes on OS4K:

Users can dial feature codes (DARs) from their UC client (for all types of endpoints) and WebRTC client to activate or deactivate OS4k features. The following DARs are available:

1) Hunt group in/out

Example for hunt group in:

- The AHTVCE WABE code for hunt in is *13
- An UC user (12100) who wants to change its hunt group status needs to dial *13
- OS4K receives CSTA MAKE CALL REQUEST from 12100 to *13
- The following information is displayed in ACL:

Call from 12100 to empty number is initiated, to put the station in DIAL state;

Dial digits *13 from 12100 are invoked;

A MAKE CALL RESPONSE will be generated:

- POSITIVE response: the feature was activated
- NEGATIVE response: the feature code is invalid

NOTICE: There is no UI element in UC to mark the hunt group status (IN or OUT).

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2) Number/name suppression on

Example of number suppression:

- The activation code for number suppression ON is *50.
- An UC user (12100) who wants to call another UC user (13100) with number suppression needs to dials *5013100.
- OS4K receives a MAKE CALL REQUEST from 12100 to *5013100.
- Call from 12100 to 13100 is initiated with calling number suppression on.
- No acknowledgement (no special CSTA event) is generated to mark the feature activation/deactivation.
- A CSTA MAKE CALL RESPONSE will be generated:
  - POSITIVE response: the feature was activated and a call was initiated.
  - NEGATIVE response: either the feature code is invalid, or the destination is invalid.

The minimum software requirements for complete feature activation are listed below:

- UC 10.4.6.0
- OS4K CSTA V10 R1.34.2
- OS4K RMX V10 R1.34.6

OpenScape UC Application interaction with IVRs on OS4K and UC Media Server IVR (in particular used with Application Builder):

- A common IVR behaviour is to reuse the CLI of an incoming call on the outgoing call leg so that the original party A number is presented directly to the called destination, upon ringing. If party A is a device monitored via UC (meaning that party A will be an internal station), the UC call engine cannot identify that the call was established via IVR, without special identification.
- The special identification is communicated via the parameter “voiceUnitCall” in the CSTA ‘privateData’ field. The “voiceUnitCall” parameter will be set automatically whenever the trunk Cornet-N field ‘Call Transaction Type’ “Generic Server” is received.
- Xpressions can set this field directly. However, for 3rd party IVRs and UC Media Server (in particular used with Application Builder), the parameter SPSR must be set in the COT of the trunk used for the IVR or MS to trigger this identification.

Starting with OpenScape 4000 V10R0 Feature Pack 2021 the following restrictions are not longer valid:

- In case of consultation to non UC device after callback (free or busy) is initiated call control window still shows outgoing call, callback is executed.
- Virtual device numbers like Pilot Hunt Group, DNIT, attendant Groups,are not correctly handled by UC.

NOTICE: OpenScape 4000 provides Diallable Numbers to UC for Pilot Hunt, Attendant Group and ACD. In order to activate this feature the following flag should be activated in CSTA advance configuration: PRESENT_DIALABLE_NO_FOR_GROUPS = 1 Diallable numbers should be added in UC address translation table in order to be correctly normalized.

- Transfer to busy device - not supported - not valid starting with OpenScape4000 RMX HF32, CSTA HF7, UC V10R3 FR11.
- Support of numbering plans
  - The following numbering plans are supported:

Unknown Closed Numbering / Extension Dialing	
Unknown Networking with:	
– Numbering Plan Identifier (NPI) – Type of Number (TON)	= UNKNOWN, ISDN = UNKNOWN
Dialing the extension received via the line as Called Party Number – *example*: 20725	

E.164 Numbering / Public Number or Extension Dialing	
E.164 Networking with:	
– Numbering Plan Identifier (NPI) – Type of Number (TON)	= ISDN = International, National
Dialing the fully qualified phone number or extension received via the line as fully qualified Called Party Number – *example*: 20725	

North American 10 digit

VNR Standalone
If the KNDEF parameter VNRGRP is not used. It allows grouping various VNR nodes in a VNR group to enable Extension Dialing between the different VNR nodes of a VNR group.

Open Numbering / Access Code + Extension Dialing	
Unknown Networking with:	
– Numbering Plan Identifier (NPI) – Type of Number (TON)	= UNKNOWN = UNKNOWN
Dialing the access code + extension; both are received via the line as Called Party Number – *example*: 96-20725	
Usage of Digit Prefixing (TDCSU: DGTPR) on trunk connections German: Ziffernvoreinstellung (TDCSU: ZIVO)	

This feature is used to reach an extension by means of digit prefixing from outside (DDI). *Example:* To route the Called Party Number *234* to the internal extension *30234*, the digit prefixing *30* is configured on the trunk (TDCSU).

Networked VNR Systems

– The following numbering plans are **not** supported:

VNR Standalone
If the KNDEF parameter VNRGRP is used. It allows grouping various VNR nodes in a VNR group to enable Extension Dialing between the different VNR nodes of a VNR group. This VNRGRP feature is rarely used.

PNP Private Numbering Plan	
E.189 Networking with:	
– Numbering Plan Identifier (NPI) – Type of Number (TON)	= PRIVATE = Level 2, Level1, Local
This numbering plan is rarely used.	

- OpenScape 4000 Manager is mandatory for OpenScape 4000 Networks. OpenScape4000 stand alone node can be added in CMP using Assistant.

7.4.2 Checking technical Restrictions on Connecting OpenScape 4000 indirectly

If OpenScape 4000 is connected to OpenScape UC Application indirectly, the following restrictions apply:

- Only the status of the OpenScape 4000 devices can be monitored by CTI. Consequently, you cannot use the OpenScape 4000 devices as ONS devices.
- OpenScape users cannot be notified about new voicemails in UC Application clients.

The following table documents the features supported via the SIP-Q connection between OpenScape Voice and OpenScape 4000. A possible support may depend on whether the relevant feature is initiated by OpenScape Voice or OpenScape 4000.

Table 4: Supported Features between OpenScape Voice and OpenScape 4000 via SIP-Q

Feature	… if initiated by OpenScape Voice:	… if initiated by OpenScape 4000:
One-Number Service (ONS)	✓	✓ (only simulated)
Three Party Conference	✓ (only if initiating device is the OND)	✓
Call Deflection	✓	✓
Call Hold	✓	–
Call Retrieve	✓	–
Consult	✓	✓
Alternate call	✓	✓
Recall	✓	✓
Call Pickup-Group	✓	(–)
Call Transfer	✓	✓
Recall after Call Transfer	✓	✓
Call Waiting (Terminating)	✓	✓
Completion of Calls to busy Subscriber (CCBS)	✓	✓ (only call-related)
Call Completion on no Reply (CCNR)	✓	✓ (only call-related)

Feature	… if initiated by OpenScape Voice:	… if initiated by OpenScape 4000:
Calling Line Identification Presentation (CLIP)	✓	✓
Calling Line Identification Restriction (CLIR)	✓	✓
Connected Line Identification Presentation (COLP)	✓	✓
Connected Line Identification Restriction (COLR)	✓	✓
Calling Name Identification Presentation (CNIP)	✓	✓
Calling/Connected Name Identification Restriction (CNIR)	✓	✓
Do Not Disturb/Override	✓ (only passive)	✓ (only passive)
Emergency Intrusion	✓ (only compatible)	(–)
Emergency LIN	✓ (only compatible)	(–)
Emergency Ringing	✓ (only compatible)	(–)
Executive Intrusion/Override	✓ (only compatible)	(–)
Forced Release	✓ (only compatible)	(–)
Intercom / Speaker Call	✓ (only compatible)	(–)
Message Waiting Indication	with internal message store supported via SIP (not via CSTA)	with internal message store supported via SIP (not via CSTA)

Feature	… if initiated by OpenScape Voice:	… if initiated by OpenScape 4000:
Private Numbering Plan (PNP)	✓	✓
Remote Members:		
• Business Groups	✓ (only passive)	✓ (only passive)
• Simultaneous Ringing	–	–
• Serial Ringing	✓ (only passive)	(–)
• Selective Call Appearance	✓ (only passive)	✓ (only passive)
• Selective Call Rejection	✓ (only passive)	✓ (only passive)
• Anonymous Call Rejection	✓ (only passive)	✓ (only passive)
• Multi-line Hunt-Group	✓	(–)
Signalling and Payload Encryption	✓	✓
Single Step Call Transfer	✓	✓
Video Calling	–	–

Meaning of the specified support levels and selected restrictions:

✓	–	The feature is supported. Restrictions are specified in brackets where applicable.
• –	–	The feature is not supported.
• (–)	–	The function of this feature has not been tested yet.
• only compatible	–	The CSTA interface of OpenScape Voice behaves for this feature like in a scenario without OpenScape UC Application.

• only passive	–	The feature is not initiated by OpenScape UC Application.

7.5 Several UC Application Systems at a shared OpenScape Voice System

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 transmitted to each UC Application system.

You can configure this setting individually for each UC Application system in the associated CMP.

NOTICE: An individual CMP must be installed for each UC Application system. The central OpenScape Voice system can then be administered from any of these CMPs but a UC Application system can only be administered from the respectively associated CMP.

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8 Planning for Connecting further external Systems

This chapter provides information about the following topics:

8.1 External Systems at OpenScape UC Application

IMPORTANT: Each external system connected to OpenScape UC Application must be adequately dimensioned for processing the load of the planned UC Application users. This is particularly true for Very Large Deployment. Please obtain details of the performance data and dimensioning recommendations for the relevant external systems from the associated product documentation.

OpenScape UC Application can be connected to further different external systems. Such connections enable OpenScape users to access features that are then not provided by OpenScape UC Application but by the connected systems.

Systems of the following groups must or can be connected to OpenScape UC Application.

- Unified Messaging systems

  For example OpenScape Xpressions

  Very Large Deployment requires a connection to OpenScape Xpressions for each cluster. For all other deployment scenarios, connecting a Unified Messaging system is optional.
- groupware systems
  - Microsoft Exchange
  - CHL Domino

  You find details of the versions of supported groupware systems in Planning for Groupware Systems on page 72.

  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 in particular as voice message store then.

- Presence systems
  - Openfire

  If presence features are to be used with OpenScape UC Application, OpenScape UC Application must be connected to an external presence system.
- instant-messaging systems
  - Openfire

  If instant-messaging features are to be used with OpenScape UC Application, OpenScape UC Application must be connected to an external instant-messaging system.
- Web conferencing system OpenScape Web Collaboration

  If web conferences are to be used with OpenScape UC Application, OpenScape UC Application must be connected to an external web conferencing system OpenScape Web Collaboration.
- LDAP directories and Active Directory

  Connecting LDAP directories or Active Directories is optional.
- OpenScape E/A Cockpit

  Connecting OpenScape E/A Cockpit is optional.

8.2 Planning for External Unified Messaging Systems

OpenScape UC Application uses a workflow for incoming calls. This workflow always ends in the voicemail box of the called user. In this way no call is lost even if the called user cannot answer the phone.

In most cases it is advisable to provide a common Unified Messaging solution for all UC Application users. But in the following cases the deployment of different systems may be required:

- There are user groups of which each expects a preferred system solution.
- An existing solution shall be slowly migrated to a new system.
- To save costs, most users may only deploy basic features and only some are given access to a solution of higher quality.

OpenScape UC Application offers with the voice portal an integrated Unified Messaging solution. This solution requires OpenScape UC Application be connected to an external groupware system which is used in particular as voice message store.

As alternative to this integrated Unified Messaging solution, you can use one of the following external solutions.

- OpenScape Xpressions
- Third-Party Unified Messaging or voicemail system

The Unified Messaging system used determines which features are available to a UC Application user.

To connect an external Unified Messaging system to OpenScape UC Application you need to execute the following planning steps.

- Verifying Restrictions

- Planning the Connection
- Planning the m × n Connection of OpenScape Xpressions
- Planning required Licenses

8.2.1 Verifying Restrictions

If you want to connect an external Unified Messaging system to OpenScape UC Application, you need to check if the relevant system can be smoothly operated at OpenScape UC Application.

The scope of this check depends on the system you want to connect to OpenScape UC Application.

- OpenScape Xpressions
- Unified Messaging system by a third-party supplier

OpenScape Xpressions

If you connect OpenScape Xpressions as external Unified Messaging system to OpenScape UC Application, the following restrictions apply:

- The XPR server and OpenScape UC Application must be connected to the same communications system.
- The XPR server and the communications system must be connected to each other via an SIP trunk.
- The Trusted Transfer Mode supports only 1:1 relationships between a PhoneMail entity and an address binding of the voice portal.
- The start character in the TTM originator number must not be removed by the communications system or a gateway between XPR Server and OpenScape UC Application.
- The relevant OpenScape users deploy the PhoneMail TUI of OpenScape Xpressions as Unified Messaging access.
- Via the OpenScape Xpressions PhoneMail TUI the users can access the following features:
  - The OpenScape Xpressions Unified Messaging features
  - The OpenScape UC Application voice portal features

  The following versions of OpenScape Xpressions can be connected to OpenScape UC Application:
- V5 R4
- V6
- V7

Unified Messaging system by a third-party supplier

Unified Messaging solutions by third-party suppliers must be checked in each single case.

Please note: Every configured voice portal access of OpenScape UC Application routes all Unified Messaging users of a 3rd-party supplier system to a common, preconfigured direct-access number when they want to retrieve their messages. This restriction affects the support of third-party supplier systems at OpenScape UC Application.

8.2.2 Planning the Connection

You need to execute the following general planning steps for an external Unified Messaging system.

1) Check whether the desired Unified Messaging system cooperates with OpenScape UC Application (cf. Section 7.2.1, “Verifying Restrictions”, on page 166).
2) Install the Unified Messaging system and configure it when it complies with all requirements.Identify the access numbers for the Unified Messaging system.Determine which UC Application users are to be assigned to the single available access numbers.

The language-specific planning occurs in the steps 3 and 4. First, the system planner needs to know which language is used by which system access. Then, he/she must assign each UC Application user the number of the system access that deploys the associated language.

Example: There are the users Joe (American), Karl and Franz (German). Figure 3 shows to which language-specific access these users route calls or via which access number they access their voice mailbox.

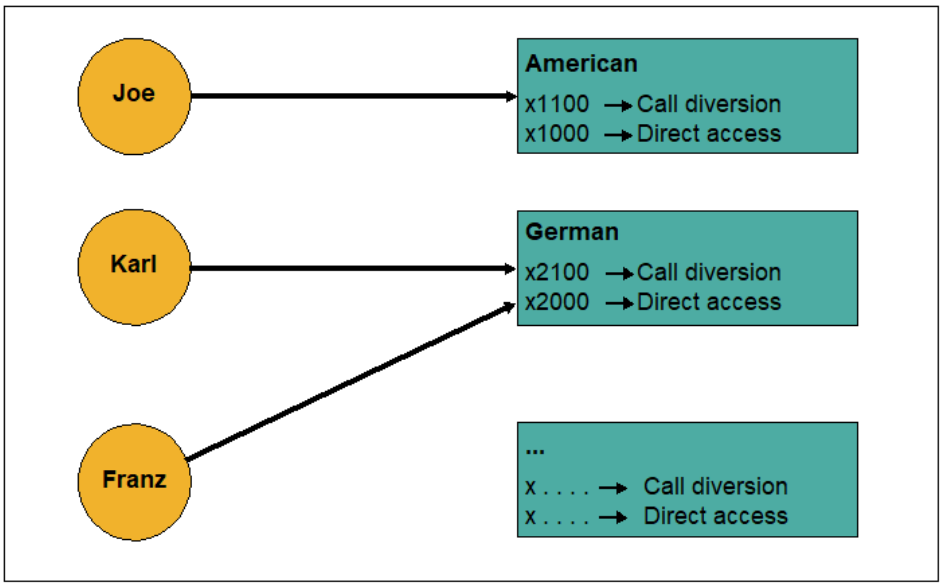
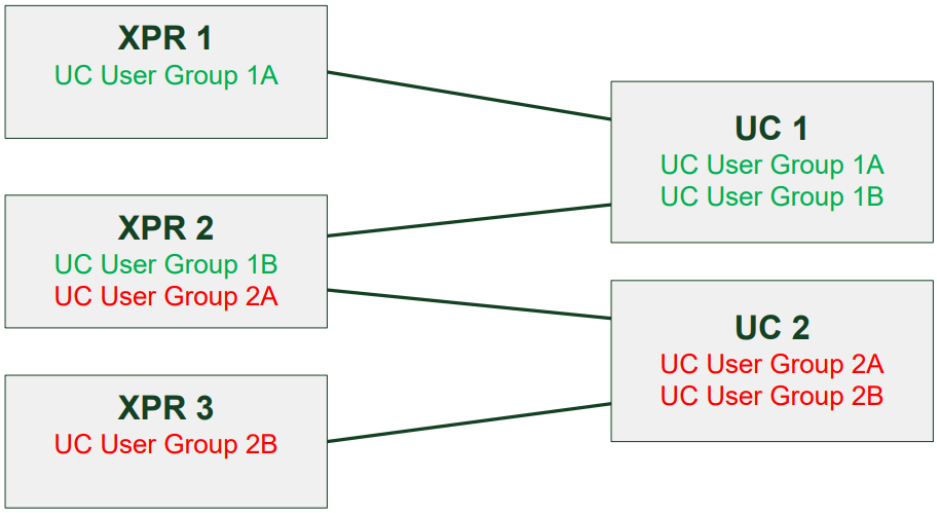


Figure 1: Language-specific System Accesses

8.2.3 Planning the m × n Connection of OpenScape Xpressions

You can connect several OpenScape Xpressions systems to several UC Application systems with any assignment (m × n connection). The following schematic representation exemplifies such an environment:

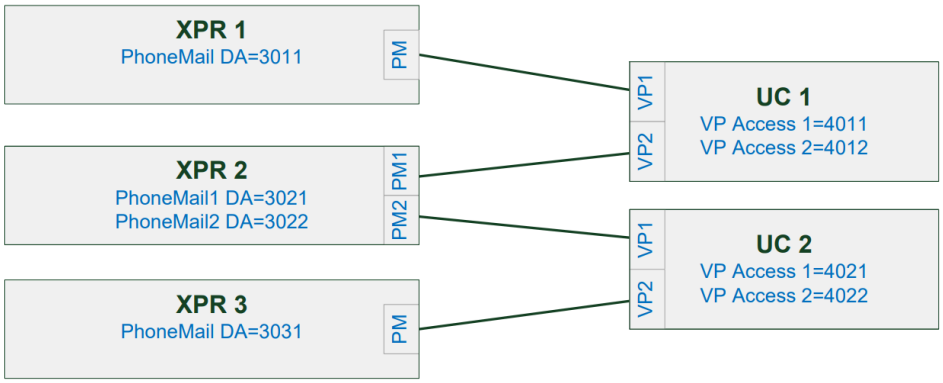


In this example there are two UC Application systems the users of which are distributed among three OpenScape Xpressions systems in altogether four groups.

You configure such an environment in the following essential configuration steps:

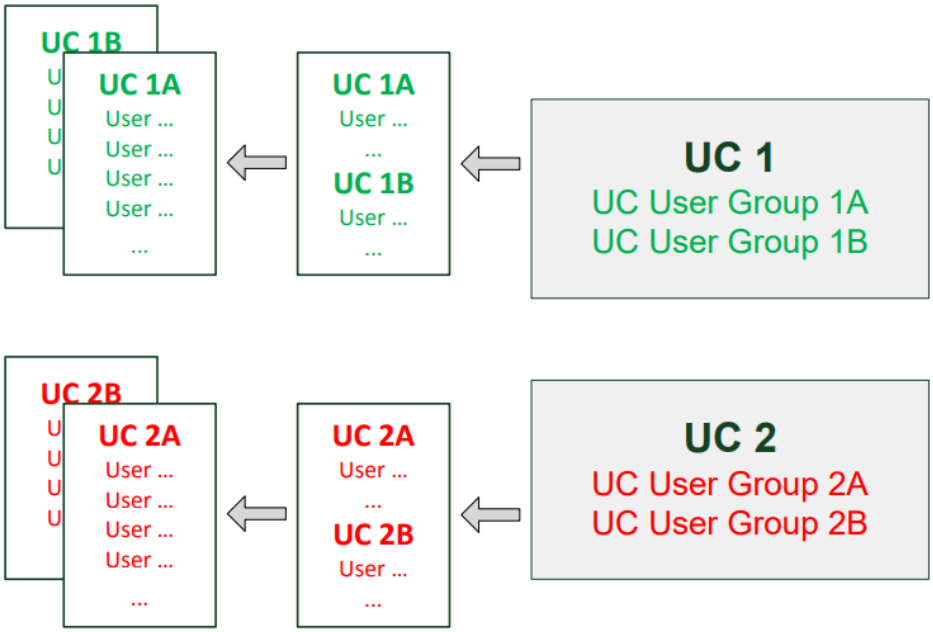
Configuring the PhoneMail entities with their Direct Access for the Trusted Transfer Mode on the OpenScape Xpressions systems. If an OpenScape Xpressions system is connected to several UC Application systems, an individual PhoneMail entity must be configured in the OpenScape Xpressions system for each of these connections.

1) Configuring the voice portal access for the Trusted Transfer Mode on the UC Application systems. If a UC Application system is connected to several OpenScape Xpressions systems, an individual voice portal access must be configured in the UC Application system for each of these connections.



1) Exporting the UC user accounts from each UC Application system by means of the CMP's export function.

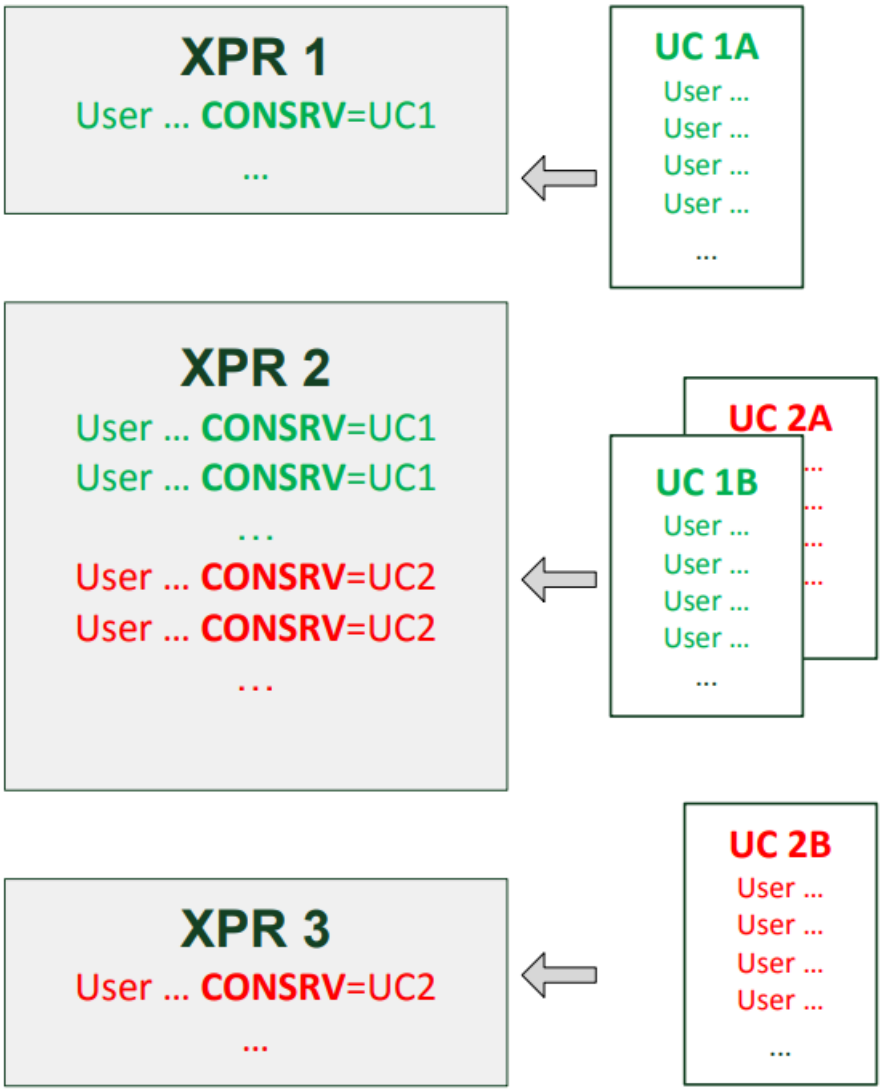
2) Creating one file for each UC user group from the export files of the UC user accounts manually.



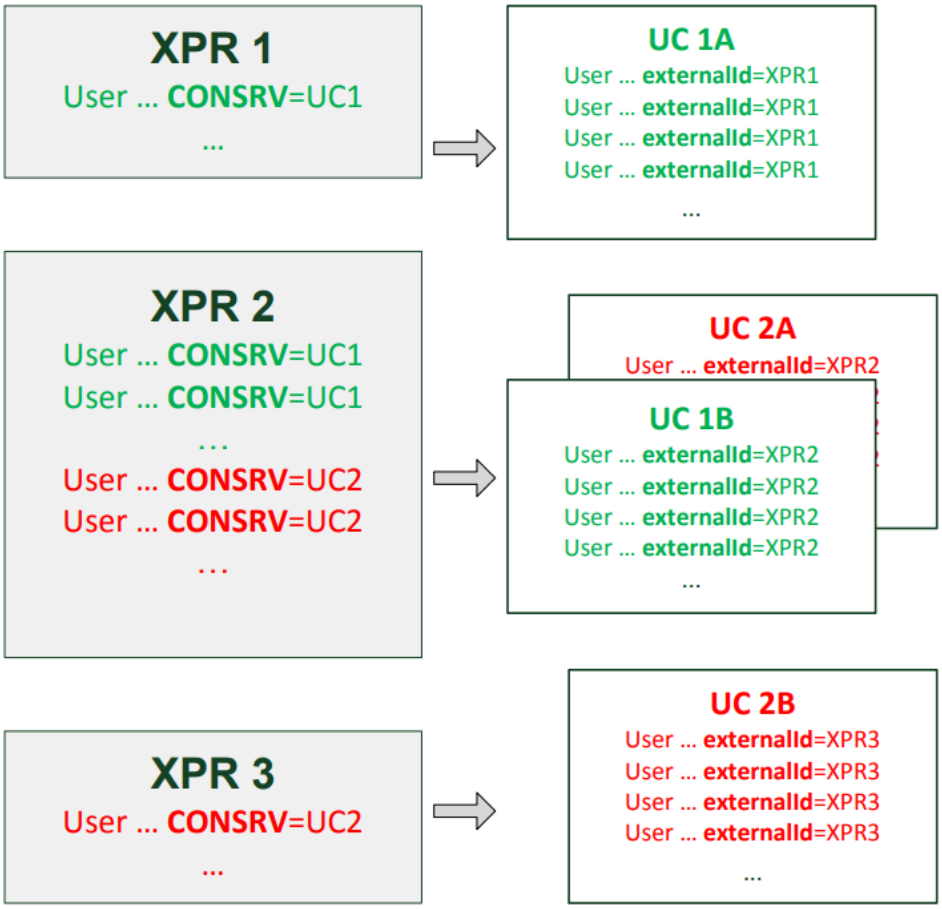
1) Importing the export file of each UC user group in the associated OpenScape Xpressions system by means of the import script, thus creating an associated XPR user account for each UC user account. An individual value for the **CONSRV** database field is set in the XPR user database for the

users of each user group during the import. This value serves as reference to the UC Application system a user is assigned to.

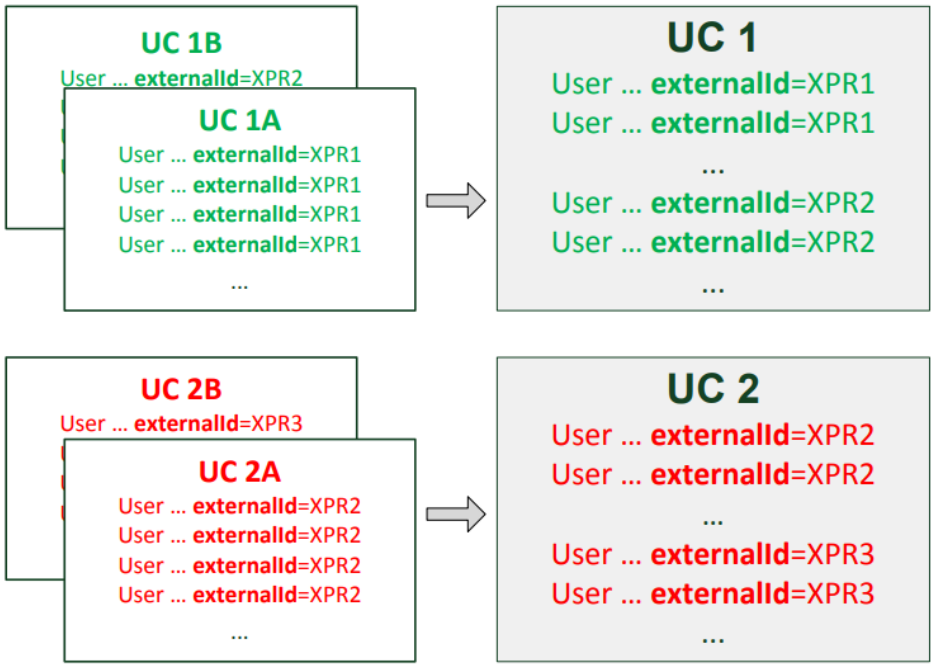
NOTICE: In the configuration description of the *OpenScape UC Application, Configuration and Administration* manual this value is referred to as *System ID*.



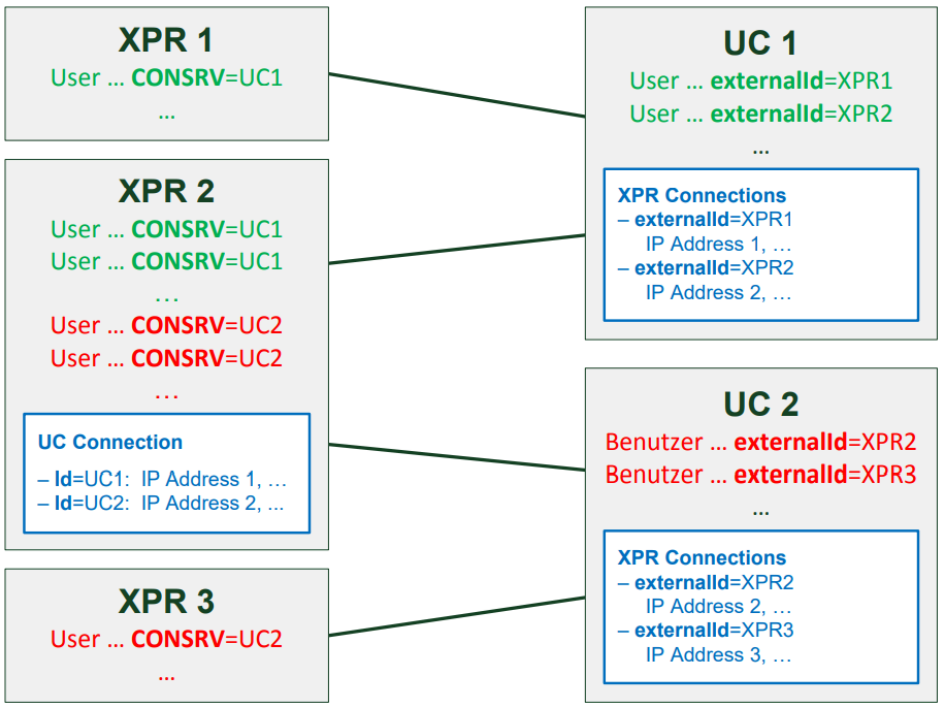
2) Exporting the XPR user accounts specific to groups from each OpenScape Xpressions system by means of the Infotool's export function. In this process, all required **##ExternalId** entries are exported for each user account for the relevant OpenScape Xpressions system.



1) Importing the export file of each UC user group in the associated UC Application system by means of the CMP's import function, thus creating the required **##ExternalId** entries for each UC user account for the relevant OpenScape Xpressions system.



1) Configuring the connection data of the relevant UC Application systems by means of anXPR configuration file in the OpenScape Xpressions systems that manage users of several UC Application systems. In this process, the **CONSRV** database field of each XPR user account serves for determining the relevant connection in the configuration file.
2) Configuring the connection data of the connected OpenScape Xpressions systems in all UC Application systems by means of a UC Application configuration file. In this process, the relevant **##ExternalId** entry of each UC Application user account serves for determining the relevant connection in the configuration file.



The configuration steps are described in detail in the *OpenScape UC Application, Configuration and Administration, Administrator Documentation* manual.

8.2.4 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

8.3 Planning for 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 in particular as voice message store then.

For the time being you can connect one of the following groupware systems to OpenScape UC Application via the OpenScape UC Application groupware connection.

- Microsoft Exchange 2003
- Microsoft Exchange 2007
- Microsoft Exchange 2010
- Microsoft Exchange 2013
- Microsoft Exchange 2016
- Microsoft Exchange Online
- CHL Domino 8.5.x
- CHL Domino 9.0.x

To connect a groupware system to OpenScape UC Application you need to execute the following planning steps.

- Verifying Restrictions
- Planning the Use of Microsoft Exchange Autodiscover
- Planning required Licenses

8.3.1 Verifying Restrictions

- OpenScape UC Application can always only be connected to a single groupware system. Operating several groupware systems at OpenScape UC Application in parallel is thus ruled out.
- Mixed operation of Microsoft Exchange / Notes or Microsoft Outlook is not possible.

Additional restrictions on an CHL-Domino connection

- So that an OpenScape user can administer his/her Notes contacts in the OpenScape clients, he/she must be configured as roaming user in the CHL Domino server or have his/her private address book actively stored on the CHL Domino server.

Additional restrictions on a Microsoft Exchange connection

- The Microsoft Exchange 2003 connection is based on WebDAV.
- The Microsoft Exchange 2007 connection may be based on WebDAV or on Web Services.

  NOTICE: We recommend using the connection via Web Services for a new installation of OpenScape UC Application, because more recent Microsoft Exchange versions do not support the WebDAV interface anymore.

- Connecting Microsoft Exchange 2010 / 2013 / 2016 / Online is based on Web Services.
- If a Microsoft Exchange connection based on web services shall be used, the following applies:
  - In the user accounts of all UC Application users, the **primary** Microsoft Exchange e-mail address must be configured as e-mail address.The Groupware-Exchange connector uses a technical user account for accessing the Web Services interface of a CAS. This user account must successfully authenticate against the EWS website of the relevant CAS.

- If the Microsoft Exchange Autodiscover service should be used for a web-services-based Microsoft Exchange connection, the following applies:

  The Groupware-Exchange connector uses a technical user account for accessing the Web Services interface of a CAS. This user account must successfully authenticate against the Autodiscover website of the relevant CAS.
- The Persona Concept of Microsoft Exchange 2013 is not supported.

8.3.2 Planning the Use of Microsoft Exchange Autodiscover

The Groupware-Exchange connector of OpenScape UC Application supports the web-services-based Autodiscover service for the Microsoft Exchange connection of Microsoft Exchange 2007 / 2010 / 2013/ 2016 / Online.

Utilising the Autodiscover service may be useful in the following scenarios:

- In case of Microsoft Exchange organizations in which different web services URLs are required for accessing the mailboxes of Microsoft Exchange users.
- In case of Microsoft Exchange organizations in which Microsoft Exchange users frequently move from one Microsoft Exchange forest to another.
- In case of Microsoft Exchange organizations in which Microsoft Exchange users frequently move from one AD site to another within an Microsoft Exchange forest.
- In case of Microsoft Exchange organizations that use so-called Database Availability Groups (DAG).
- In case of Microsoft Exchange organizations in which more than one web services URL is needed for accessing all required mailboxes.

  The producer documentation describes under the following link in section *Proxying for Exchange Web Services* situations in which several web services URLs are required for a Microsoft Exchange organization:

  `http://technet.microsoft.com/en-us/library/bb310763.aspx`

Planning technical conditions for Microsoft Exchange Autodiscover

If Autodiscover is activated for the Groupware-Exchange connector, the Groupware-Exchange connector accesses the Microsoft Exchange mailboxes in a two-stage process.

1) Using the Autodiscover service: Determining the appropriate Web Services URL for the mailbox of the relevant OpenScape user.

  To do this, the Groupware-Exchange connector addresses the Autodiscover service in one of the following manners:

  - Via a statically configured Autodiscover URL (static Autodiscover).
  - Via an Autodiscover URL created dynamically as soon as the Groupware-Exchange connector wants to access an individual mailbox (dynamic Autodiscover).

NOTICE: The *OpenScape UC Application, Configuration and Administration* manual contains details of the dynamic and static mode of the Autodiscover service.

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2) Accessing the mailbox of the relevant OpenScape user via the determined Web Services URL and executing the desired mailbox operation.

The Web Services URL for accessing the mailbox is thus not configured statically as is the case when no Autodiscover is active for the Groupware-Exchange connector.

This work mode of the Autodiscover service results in the following important aspects to be planned for a Microsoft Exchange organization if Autodiscover shall be used.

- If the Groupware-Exchange connector shall communicate with the systems of the Microsoft Exchange organization securely, SSL certificates must exist for the host part of every Autodiscover URL and every web services URL via which the Groupware-Exchange connector communicates with the Microsoft Exchange organization.

  This may require several different host-individual SSL certificates or a common SAN-SSL certificate[4] for all relevant hosts.

  NOTICE: Dynamic Autodiscover uses exclusively encrypted communication (HTTPS).

- **If static Autodiscover is used:** The statically configured URL of the Autodiscover service must refer to a CAS server that can publish Web Services URLs for all required user mailboxes.

  The host part of the Autodiscover URL must be resolvable via DNS.
- **If dynamic Autodiscover is used:** All dynamically derived URLs of the Autodiscover service must refer to CAS servers that can publish Web Services URLs for the relevant user mailboxes (if required, use prefix for adjustment). This concerns all organizationally possible URLs of the following format:
  - `https://comp.com/autodiscover/autodiscover.xml`
  - `https://<prefix>.comp.com/autodiscover/autodiscover.xml`

  The host part of all derived Autodiscover URLs must be resolvable via DNS.

8.3.3 Planning required Licenses

In Licenses for Connecting 3rd-Party Systems on page 120 you plan which licenses you need for an individual communications solution.

8.4 Planning for Presence Systems

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

For selection are:

[4] SAN certificates are not only issued for a single fully qualified host name but for several host names.

- Integration mode Standard This integration mode must be used if the UC Application system is to be connected to the instant-messaging system Openfire.
- Verifying Restrictions
- Planning System Requirements for the Presence System
- Planning required Licenses

8.4.1 Verifying Restrictions

OpenScape UC Application can always only be connected to one of the following external presence systems:

1) Openfire

> **NOTICE:** The connection to an existing Openfire server assumes a project-specific release. Furthermore, the system must be individually configured by service personnel.

General Restrictions

Every UC Application user can monitor the presence status of at most 400 other users.

Restrictions on connecting Microsoft Lync Server / Skype for Business

- OpenScape UC Application communicates with Microsoft Lync / Skype for Business via the API UCMA of Microsoft.
- Under OpenScape UC Application only the following presence statuses are available:
  - **Available (3500)**
  - **Busy (6500)**
  - **Do not disturb (9500)**
  - **Be right back (12500)**
  - **Away (15500)**
  - **Offline (18000)**

  You cannot set any other states for the Microsoft Lync / Skype for Business system in any UC Application client.

  The presence statuses of OpenScape UC Application and the Microsoft Lync / Skype for Business system are assigned as follows:

Status in UC Application		Status to be processed in Microsoft Lync / Skype for Business
Available (3500)	<>	**Available (3000 – 4999)**
	<	**Available-Idle (4500 – 5999)**
Busy (6500)	<>	**Busy (6000 – 7499)**

Status in UC Application		Status to be processed in Microsoft Lync / Skype for Business
	<	**Busy-Idle (7500 – 8999)**
Do not disturb (9500)	< >	**Do not disturb (9000 – 11999)**
Be right back (12500)	< >	**Be right back (12000 – 14999**
Away (15500)	< >	**Away (15000 – 17999)**
Offline (18500)	< >	**Offline (> 18000)**

- As long as a user is not logged in at the Microsoft Lync / Skype for Business system by means of a Microsoft Lync / Skype for Business client, the UC Application clients display the presence status **Offline**.
- Displaying the presence status **Offline** is exclusively managed automatically. Users cannot set this status in their UC Application client manually.
- If a Microsoft Lync / Skype for Business client changes to the **Auto-Away** status, the status of the respective UC Application user changes to **Away** and cannot be changed in the UC Application client as long as the Microsoft Lync / Skype for Business client is in the described state.

8.4.2 Planning System Requirements for the Presence System

The hardware and software requirements for the Openfire or UCMA proxy system correspond to those in Planning System Requirements for the Instant-Messaging System on page 78.

8.4.3 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

8.5 Planning for Instant-Messaging Systems

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

For selection are:

1) Integration mode Standard This integration mode must be used if the UC Application system is to be connected to the instant-messaging system Openfire.

To connect an Instant-Messaging system to OpenScape UC Application you need to execute the following planning steps:

8.5.1 Verifying Restrictions

OpenScape UC Application can always only be connected to one of the following external instant-messaging systems:

1) Openfire

> **NOTICE:** The connection to an existing Openfire server assumes a project-specific release. Furthermore, the system must be individually configured by service personnel.

The following features are supported with the listed external instant-messaging systems.

Connection to OpenFire

- The Openfire instant-messaging features can be used in OpenScape - Desktop Client and in OpenScape Web Client.
- User information can be automatically administered in the OpenFire server by OpenScape UC Application via the authentication plug-in of the OpenFire server.
- Only UC Application users may exchange messages via the Openfire server.
- In case of an initial installation of Small Deployment or Large Deployment we recommend to set up the Openfire server on the application computer of OpenScape UC Application under the following conditions:
  - If not more than 15.000 users shall be deployed with future program versions of OpenScape UC Application.
  - If not several UC Application systems shall be networked with future program versions of OpenScape UC Application.

  The hardware recommendations given for the application computer of OpenScape UC Application are sufficient for operating the Openfire server.

8.5.2 Planning System Requirements for the Instant-Messaging System

Connection to OpenFire

Setting up the Openfire server on the application computer of OpenScape UC Application does not result in any special system requirements to be complied with by the computer system of the application computer.

If you install the Openfire server on an independent computer system, this system must comply with the following minimum requirements:

Hardware:	• 4-core CPU (e. g. Intel Xeon 56xx / 2.66 GHz 8 MB or better configuration) • 8 GB RAM 2 × 4 DDR3 1 333 MHz Note: If the Chat History feature is enabled, then the RAM must be upgraded to 16GB. • Min. 100 GB 10 k RPM HD-SAS hard disk drive In case syncUC functionality is required for the Openfire server, it is necessary to create two LVM partitions, 100 GB each. • One DVD-ROM drive • Two identical Gigabit-Ethernet network boards • Certified for SUSE Linux Enterprise Server 12 (64-bit version) • Activated hyper threading • Option of BIOS or UEFI-based booting of the computer system.
Operating system:	SUSE Linux Enterprise Server 15

8.5.3 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

8.6 Planning for Web Conference Systems

OpenScape UC Application expands the user cooperation by integrating web conference systems. Owing to this integration users can start a web conference in combination with a UC Application voice conference or add a web conference to a running UC Application voice conference.

To connect an external web conference system to OpenScape UC Application, you need to execute the following planning steps.

- Planning for external OpenScape Web Collaboration
- Verifying Restrictions
- Planning System Requirements for OpenScape Web Collaboration
- Planning Bandwidth Requirements for OpenScape Web Collaboration
- Planning a Redundancy Concept (optional)
- Planning required Licenses

To connect an integrated web conference system to OpenScape UC Application, you need to execute the following planning steps.

- Planning for integrated OpenScape Web Collaboration
- Verifying Restrictions
- Planning System Requirements for OpenScape Web Collaboration
- Planning Bandwidth Requirements for OpenScape Web Collaboration
- Planning a Redundancy Concept (optional)
- Planning required Licenses

8.7 Planning for 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.

To connect an LDAP directory to OpenScape UC Application you need to execute the following planning steps.

- Verifying Restrictions
- Planning required Licenses

8.7.1 Verifying Restrictions

You can connect only LDAP directories with unique IDs to OpenScape UC Application.

8.7.2 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

8.8 Reverse Proxy

A proxy server (HAProxy) to handle Web Collaboration traffic, mobile traffic and Internet Access is introduced.

HAProxy is a free, very fast and reliable soloution offering high availability, load balancing and proxying TCP and HTTP-based applications.

HAProxy is used as Reverse Proxy.

For further visit:

http://www.haproxy.org

https://cbonte.github.io/haproxy-dconv/configuration-1.5.html

Reverse proxy has two different installation modes:

- Standalone Mode
- Facade

Result of Performance tests are under Capacities.

8.8.1 Capacities

For 15k users per FE require a under mixed feature configuration requires a maximum of 150000 connections per listener.

NOTICE: This value is specified in the configuration file generated with haproxymanager (refer to Administration Guide Configuration and Administration). This value is not configurable.

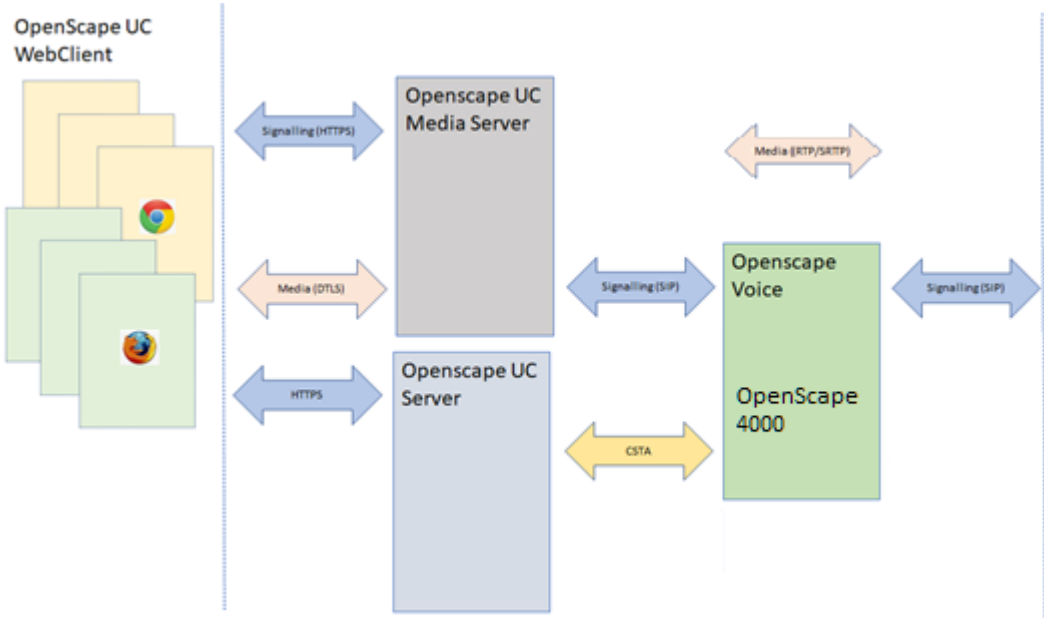
8.9 Planning for WebRTC functionality

In OpenScape UC V10, you can create WebRTC with OpenScape 4000 (OS4K) or devices registered to OSV and controlled in the same way as other devices (CP phones or softphones). The WebRTC devices in UC V10 provide audio/video(H264) capabilities for users operating UC features through Chrome or Firefox (in Microsoft Windows, MAC or Linux OS).

Every WebRTC endpoint is connected to the OpenScape Media Server that registers an exclusive SIP subscriber in OSV to be used as ONS or OND by the user. OpenScape UC can control this device via CSTA protocol.

Furthermore, this WebRTC device can also communicate with any other OSV device and/or the external telephony networks.

WebRTC offers a WebCollaboration approach with the activation of the Screen Sharing functionality allowing seemless integration with OpenScape UC Clients User Interface.



8.9.1 Restrictions

NOTICE: Consult also the Release Notes to see the restrictions that apply to a specific OpenScape UC release version.

The following restrictions apply:

- Control of Audio device buttons is not available in WebClient.
- Only Chrome and Microsoft Edge Chromium are fully supported;
- Limited Mode is not supported (OSB).
- TURN with IPV6 is not supported.

Additional Restrictions for WebRTC connected to OpenScape 4000:

- Hold/retrieve not supported
- Digest authentication for WebRTC SIP subscriber not supported

> **IMPORTANT:** Due to security reasons WebRTC resources should not be configured on a gateway which is directly connected to the Internet or a gateway configured on a SBC (with Internet access), because of missing authentication.

- SIP subscriber not supported
- Second call for WebRTC

8.9.2 Prerequisites

The following are basic prerequisites for using the WebRTC functionality:

- Functional UC V11 (single or triple node deployment).
- Valid server certificate and its private key issued by the MS node by a trusted Root CA.
- The Root CA certificate.
- WebRTC licenses.
- Xpressions must have the fix “Telematic-811FR5-20337”.
- Only Chrome and Microsoft Edge (Chromium based) browsers are supported.
- HAProxy (for internet usage)

Additional Prerequisites for WebRTC connected to OpenScape 4000:

- RMX V10 R0.28.9
- Assistant / Manager V10 R0.28.3
- Specific LW-Hotfix V10 R0.28.2

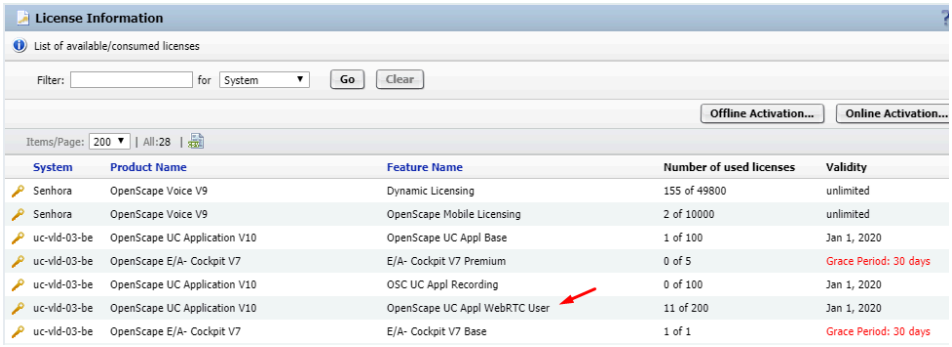
  WebRTC with OpenScape 4000 is supported starting with UC 10R2 FR2.
- In case of ONS/OND WebRTC setup the OND (SIP) has to be configured on the same system with the ONS device.
- The UC WebRTC users functionality is supported only on OpenScape 4000 STMIX boards and SoftGate (virtual HG). STMI2 and STMI4 boards are not supported for WebRTC functionality.

> **IMPORTANT:** After upgrading from a version lower than V10 R0.28.3 to a version greater or equal to V10 R0.28.3, an upload all in assistant/manager is necessary in order to populate database with needed parameters of WebRTC feature for already created SIP/UFIP stations. After that, a full synchronization of upgraded nodes is required in UC CMP under Maintenance > Inventory > Nodes

8.9.3 Planning required WebRTC licenses

WebRTC licenses are required prior to the installation.

You can find additional information about WebRTC channels, according to your specific deployment, can be found in Planning for central UC Application Components.



8.9.4 WebRTC Bandwidth Requirements

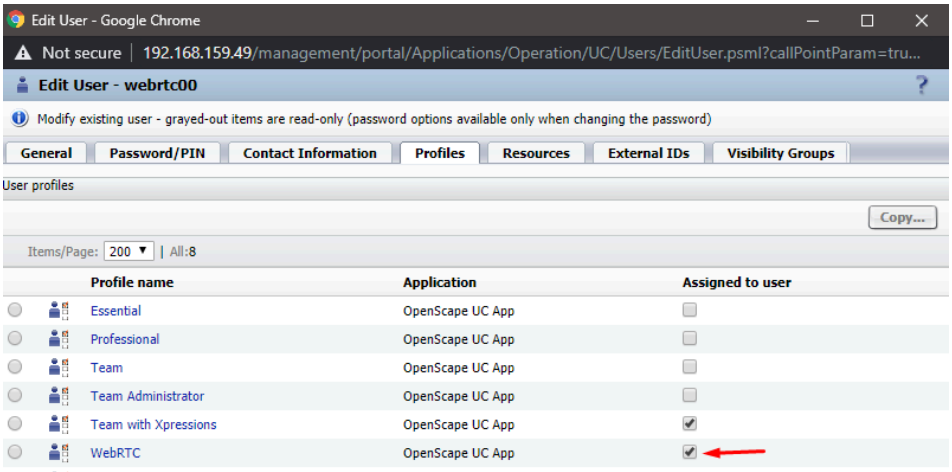
The bandwidth requirements f for UC WebRTC client are:

Table 5: UC WebRTC client usage requirements

Media type	Codec	Bandwidth
Audio	G.711, G.722	80 kbps
Video	H.264	512 kbps
Screensharing	VP8	256 kbps

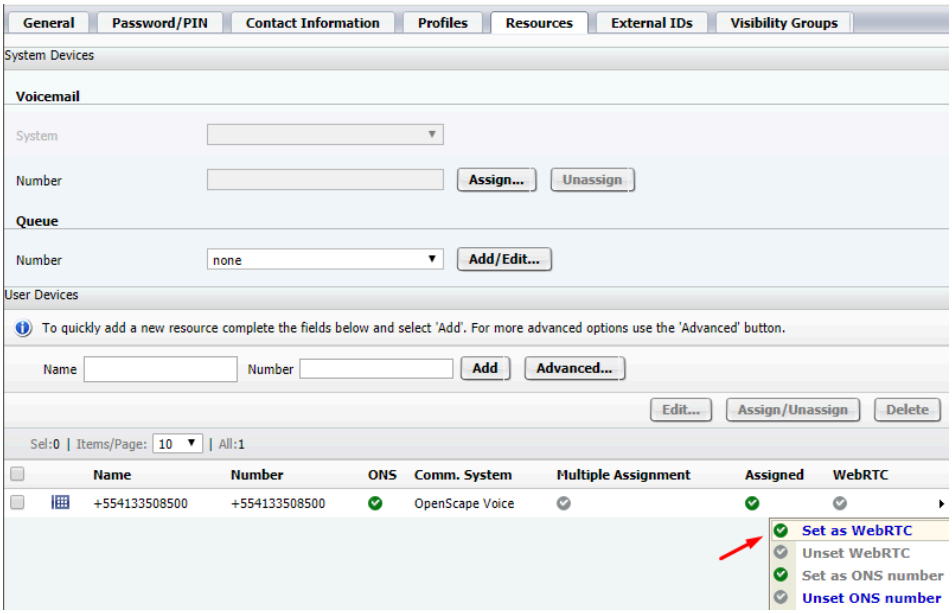
8.9.5 Planning for UC user profiles

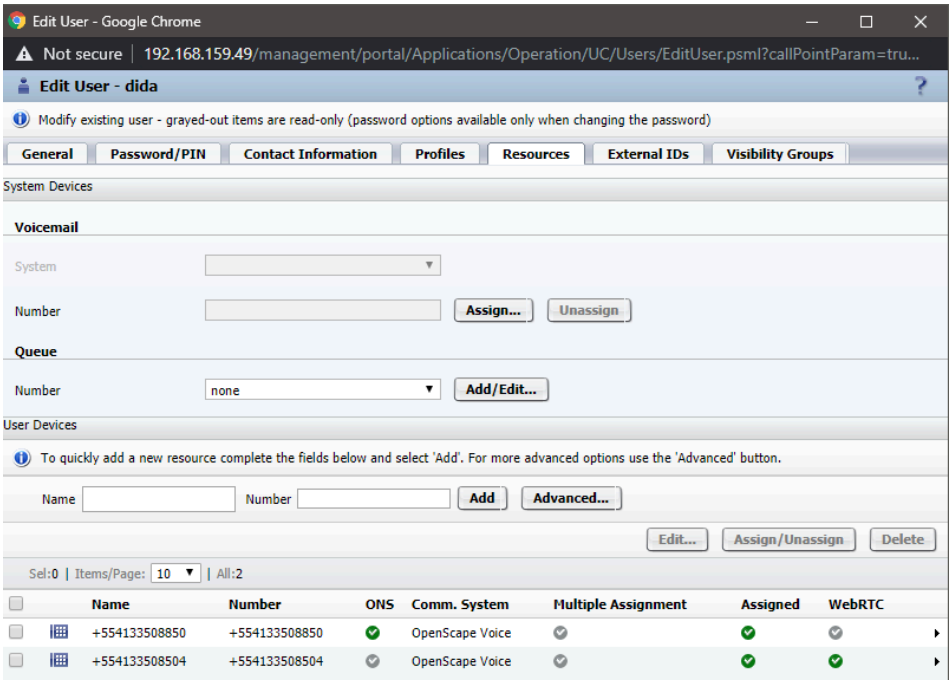
It is required to define the users that are allowed to use WebRTC licenses, i.e WebRTC capability needs to be assigned to the specific profiles of the users that will use the WebRTC features.



8.9.6 Planning for configuration of devices (OND or ONS)

It is required to define what device will be assigned to control WebRTC activities for the user. It can be any OND or the ONS.





8.9.7 WebRTC Screen Sharing

WebRTC offers a WebCollaboration approach with the activation of the Screen Sharing functionality allowing seamless integration with OpenScape UC Clients User Interface.

9 Planning for the Connection of OpenScape Clients

This chapter provides information about the following topics:

- OpenScape Clients at OpenScape UC Application
- Planning for OpenScape Web Client
- Planning for OpenScape Web Client
- Planning for OpenScape Mobile Client
- Planning for OpenStage Client
- Planning for OpenScape Conference Extension for Microsoft Outlook
- Planning for OpenScape Conference Extension for Notes
- Planning for OpenScape Desktop Integration (DI Tool)
- Planning for OpenScape UC Desktop Application
- Planning for OpenScape Conference Portal
- Planning for OpenScape Conference Portal
- Planning for OpenScape Voice Portal (TUI)
- Planning for OpenScape Fusion Application Builder
- Planning for OpenScape E / A Cockpit

9.1 OpenScape Clients at OpenScape UC Application

OpenScape UC Application supports the following clients:

- The following sections describe the basic features of these components.
- OpenScape Web Client
- OpenScape Mobile Client
- OpenScape Conference Extension for Microsoft Outlook
- OpenScape Voice Portal (TUI)
- OpenScape Conference Portal
- OpenScape Fusion Application Builder
- OpenScape Auto Attendant
- OpenScape E / A Cockpit

Beyond that, the following client extensions exist:

- OpenScape Conference Extension for Microsoft Outlook
- OpenScape Desktop Integration
- With the OpenScape Desktop Integration client, UC Application users can set up a connection to a phone number the user has selected in any Windows application.

The following sections provide an overview of the general system environments in which the clients and client extensions can be used.

- Software Environments for Clients and Client Extensions
- Language Support for Clients and Client Extensions
- Terminal Server Support

The ensuing chapters document further details about the supported system environments and system requirements of the clients and client extensions.

Furthermore, the *OpenScape UC Application, Client Applications* manual contains a table that lists the most important features of the clients and client extensions.

Software Environments for Clients and Client Extensions

Table 6: Software Environments for Clients and Client Extensions

		OS Conference Extension (Microsoft Outlook)	OS Conference Extension (Notes)	OS Desktop Integration	OS Mobile Client	O
Operating systems	Windows 8 [5]	✓ [6]	✓	✓ [6]		(r
	Windows 8.1 [5]	✓ [6]	✓	✓ [6]		(r
	Windows 10 [5]	✓ [6]	✓	✓ [6]		(r
	Windows Mobile				✓ [7]	(r
	Blackberry OS				✓ [7]	(r
Web browser	Internet Explorer (for Windows operating systems only)			v9 to V11		V
	Mozilla Firefox (for Windows operating systems only)					la a
	Google Chrome (for Windows operating systems only)					la

[5] Available only on the classic user interface, not on the modern UI

[6] For Microsoft Office 2010 and higher, Internet Explorer 11 only

[7] Version depends on the mobile phone used (cf. Section 8.3.1, “Planning System Requirements for the Mobile Phone”, on page 230)

		OS Conference Extension (Microsoft Outlook)	OS Conference Extension (Notes)	OS Desktop Integration	OS Mobile Clie
	Safari (for MAC OS X only)				
	MS Edge				
Groupware	Microsoft Office /Outlook 2007	✓			
	Microsoft Office /Outlook 2010	✓			
	Microsoft Office /Outlook 2013	✓			
	Microsoft Office /Outlook 2016	✓			
	Microsoft Office /Outlook 2019	✓			
	IBM Notes		V6.5.6 to V9		
	IBM Sametime				

Language Support for Clients and Client Extensions

Table 7: Language Support for Clients and Client Extensions

	OS Con Exte (Mic Outl	OS Con Exte (No	OS Des Inte	**OS - Mol Clie**	**OS - Wel Clie**	OS Aut Atte	OS Fus App Buil (GU	OS Fus App Buil (AS	OS E / A Coc	OS Voic Port (DT con TUI	OS Voic Port (voi con TUI	OS Con Port (TU	Nuance TTS ASR
Chinese (Mandarin)	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
German (Germany)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
English (US)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
English (UK)						✓		✓		✓		✓	✓
Finnish (Finland)												✓	✓
French (France)	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
Italian (Italy)	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
Catalan													

	OS Con Exte (Mic Outl	OS Con Exte (No	OS Des Inte	**OS - Mol Clie**	**OS - Wel Clie**	OS Aut Atte	OS Fus App Buil (GU	OS Fus App Buil (AS	OS E / A Coc	OS Voic Port (DT con TUI	OS Voic Port (voi con TUI	OS Con Port (TU	Nuance TTS ASR
Dutch (Belgium)	✓				✓								✓
Polish (Poland)					✓							✓	✓
Portuguese (Brazil)	✓	✓	✓	✓	✓	✓				✓		✓	✓
Portuguese (Portugal)	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
Russian (Russia)	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
Spanish (Spain)	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
Czech (Czech Republic)	✓		✓		✓								
Japanese (Japan)													✓

Terminal Server Support

Selected UC Application clients and client extensions can be used in a Citrix environment after a project-specific release.

Table 8: Terminal Server Support for Clients and Client Extensions

	OS Con Exte (Mic Out	OS Con Exte (No	OS Des Inte	**OS - Mol Clie**	**OS - Wel Clie**	OS Aut Atte	OS Fus App Buil (GU	OS Fus App Buil (AS	OS E / A Coc	OS Voic Port (DT con TUI	OS Voic Port (voi con TUI	OS Conference Portal (TUI) d
Citrix					✓	–	–	–	–	–	–	–
Windows Server, accessed via remote desktop						–	–	–	–	–	–	–

9.2 Planning for OpenScape Web Client

To connect the OpenScape Web Client to OpenScape UC Application you need to execute the following planning steps.

- Planning System Requirements

9.2.1 Planning System Requirements

The OpenScape Web Client is a web-based client. Using it assumes one of the following web browser versions:

Web browser:	• Microsoft Edge • Mozilla Firefox ESR 38 or latest available • Google Chrome latest available • Safari 9.x or latest available (JavaScript active No pop-up blocker No ad-blocker)

9.2.2 Verifying Restrictions

- In order to display all OpenScape Web Client elements in the web browser, OpenScape Web Client requires a display surface of approximately 1024 × 768 pixels. This display surface is just about reached when you maximize for example the Internet Explorer 10 window and display only the menu bar at a screen resolution of 1024 × 768 pixels.You cannot use OpenScape Web Client in the web browser's private operating mode (for example **Private Browsing** in Mozilla Firefox or **InPrivate** in Microsoft Internet Explorer).
- The OpenScape Web Client does not support multiple sessions. In other words, you should not open several browser sessions for the same user, as several services, such as the presence service, may be affected. The same applies for parallel access with the OpenScape Desktop Client.
- The compatibility view must not be enforced in the Internet Explorer.The expanded **Disable script debugging** setting must be active in the Internet Explorer.
- A contact image can be stored for each contact created locally. The following requirements apply for such images:
  - Max. 16 kB per contact image
  - JPEG or PNG format
- If you wish to copy contact images from a connected LDAP directory, they must comply with the following requirements:
  - Max. 16 kB per contact image
  - JPEG format
- If several images are stored in a connected LDAP directory for a contact, only the first image will be considered in each case. If this image complies with the mentioned requirements, it is copied with the contact.

- All contact images are stored on the application computer of OpenScape UC Application.

  You can determine the memory required for this purpose by the following formula:

  `Number of users × number of contacts per user × 16 kB`

  The system does not automatically restrict the total amount of memory required for all contact images.
- We recommend the following sizes for contact images:

1) 24 × 24	**1)** 42 × 42	**1)** 72 × 72
1) 32 × 32	**1)** 56 × 56	

1) If you use images in another size, OpenScape Web Client will convert them into the recommended sizes.

- Changes concerning the user privileges become only effective in the OpenScape Web Client, after the respective user logs on again at the UC Application system via the OpenScape Web Client.
- In the scope of the team function the following applies: Though the team members see calls to be picked up in the UC Application client, a user cannot pick up a call if his/her preferred device (OND) is busy (not in idle state). And this is still not possible even if the preferred device (OND) signals the relevant call.

  Example: **User A** with the ONS number **100** and **user B** with the ONS number **200** are members of the same team. **User A** configures the device with phone number **200** as **preferred device** (OND). **User B** uses the device with his/her ONS phone number **200** as **preferred device** (OND). A third user calls the phone number **100** and is forwarded to the device with phone number **200**. The device with phone number **200** rings and the call is offered to be picked up in the UC Application client of **user B**. **User B** cannot pick up the call, because his/her **preferred device** (OND) with phone number **200** is currently busy (not in idle state); for: an incoming call is being signaled on it.

9.2.3 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.3 Planning for OpenScape Mobile Client

To connect the OpenScape Mobile Client to OpenScape UC Application you need to execute the following planning steps.

NOTICE: When OpenScape Mobile Pro (OSMO Pro) is used, then a Reverse Proxy is mandatory

- Planning System Requirements for the Mobile Phone
- Planning Special System Requirements for the Network
- Planning general Requirements on the Load Balancer of the Facade Servers

- Planning required Licenses

9.3.1 Planning System Requirements for the Mobile Phone

The mobile phone must comply with the following requirements so that the OpenScape Mobile Client can be used with it:

Device:	You find a list of supported devices under the following link: https://osiris.unify.com/portfolio/UnifiedCommunicationsOpenScape/0500OpenScapeMobilityProdu
Software:	Blackberry • Java Runtime Environment on the device (J2ME)
	Windows Mobile • .NET Compact Framework 2.0
	Apple iOS and Android devices are supported by the product OpenScape Mobile. You find details i
Furthermore:	Mobile phone contract with data option (GPRS, UMTS)

9.3.2 Planning Special System Requirements for the Network

OpenScape UC Application must be connected to the internet via a so-called Facade server so that the OpenScape Mobile Client can communicate with OpenScape UC Application. This Facade server is an application server that serves as endpoint for the inbound internet connections of the OpenScape Mobile Clients.

NOTICE: You need to ensure that the OpenScape Mobile Client can reach the Facade server anytime and from all networks used. This may require the network routing of the infrastructure used to be adjusted. Contact the network administrator in charge on this.

We recommend to install the Facade server on an individual computer system in a DMZ of the network infrastructure.

NOTICE: The described Facade server is neither installed nor configured by the OpenScape UC Application setup.

The computer system for the Facade server must comply with at least the following requirements:

Minimum hardware requirements:	• 4-core CPU, 2.66 GHz • 4 GB RAM • 150 GB 10 k RPM HD-SAS hard disk drive • DVD-ROM drive • Two Gigabit-Ethernet interfaces

Operating system:	• SUSE Linux Enterprise Server 15 – 64 Bit In the relevant release notes on the product data carrier you find more detailed information – for example about the service pack and patch level.

To increase the number of simultaneously supported OpenScape Mobile - Clients or to operate several Facade servers in an N+1 redundancy, you can configure several Facade servers. The system requests of the OpenScape Mobile Clients must then be distributed among the different Facade servers via a load balancer.

You find information about the requirements on the load balancer in the following passage and documentation:

- Planning general Requirements on the Load Balancer of the Facade Servers on page 92
- Planning guide of the 3rd-party manufacturer

9.3.3 Planning general Requirements on the Load Balancer of the Facade Servers

NOTICE: The load balancer is neither an OpenScape UC Application component nor is it installed or configured by the OpenScape UC Application setup.

To increase the number of simultaneously supported OpenScape Mobile - Clients for Large Deployment or to operate several Facade servers in an N+1 redundancy, you can configure several Facade servers.

In this case a load balancer is required in the network. This load balancer serves the following purposes:

- Distributing the HTTPS communication of the OpenScape Mobile Clients among the available Facade servers. In this process, a client must communicate with the same Facade server during the entire connection time after the connection setup.
- If desired: Performing the TLS encryption and decryption to relieve the Facade server from this task (TLS-Off-Loading)..

The load balancer used must have at least the following general features.

- Availability of at least 99.9995%.
- Distributing requests for new HTTPS connections among different computer systems.
- Session persistence feature to hold a client during a classified connection on the original computer system.

  The session persistence feature must be based at least on the source IP address.

- Detection of server availability to distribute communication to similar functioning systems in case of computer or software failure.

  The availability of computer systems or software must at least be recognized based on the following criteria.

  – Response time of the computer systems
  – Error/cause code of the TCP / TLS and HTTP protocols
- TLS / SSL offloading to realize encryption, decryption and re-encryption for TLS and SSL on the load balancer.
- Session persistence feature for HTTP 1.1

  OpenScape uses persistent HTTP connections for sending events to the clients. Therefore, existing HTTP connections must not be cleared by the network components for at least 15 minutes.
- Existing security features must be configurable so that the usual OpenScape communication does not initiate security violations.

  That applies especially to the application based denial of service protection against attacks with HTTP GET requests since OpenScape UC Application uses these requests for the communication with the OpenScape clients.
- At “busy hours”, the load balancer must provide for OpenScape UC Application at least the following performance capacities:

  – 280 MBit for SSL data traffic
  – 75 000 simultaneous HTTPS connections

  These estimations are based on 10 000 OpenScape users, which is a typical number. The load balancer solution actually required depends on the number of clients being simultaneously busy at the “busy hour“.

9.3.4 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.4 Planning for OpenScape Conference Extension for Microsoft Outlook

You need to execute the following planning steps for using OpenScape Conference Extension for Microsoft Outlook:

- Planning System Requirements
- Planning required Licenses

9.4.1 Planning System Requirements

OpenScape Conference Extension for Microsoft Outlook is a Microsoft Outlook-based client. For using it, the client computer system must comply with the following requirements:

Operating system:	• Windows 8 (available only on the classic user interface, not on the modern UI; Microsoft Outlook 2010 only) • Windows 10 • You find detailed information, e. g. about the service pack and patch level, in the release notes on the product data carrier.
Exchange server:	• Microsoft Exchange Server 2010 (On-Premise) • Microsoft Exchange Server 2013 (On-Premise) • Microsoft Exchange Server 2016 (On-Premise) • Microsoft Exchange Online
Microsoft Outlook version according to:	• Microsoft Office 2007 • Microsoft Office 2010 • Microsoft Office 2013 • Microsoft Office 2016 • Microsoft Office 2019
Furthermore:	• Microsoft.NET Framework 4.0

NOTICE: As of software level 71.0.153, OpenScape Conference Extension for Microsoft Outlook requires SP3 of Microsoft Outlook 2007.

9.4.2 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.4.3 Verifying Restrictions

- OpenScape Conference Extension for Microsoft Outlook requires that the user uses a Microsoft Exchange account (Microsoft Exchange or compatible service option when adding the account in Outlook). POP3 or IMAP accounts are not supported.

9.5 Planning for OpenScape Conference Extension for Notes

You need to execute the following planning steps for using OpenScape Conference Extension for Notes:

- Planning System Requirements
- Verifying Restrictions
- Planning required Licenses

9.5.1 Planning System Requirements

OpenScape Conference Extension for Notes is an IBM-Notes-based client. For using it, the client computer system must comply with the following requirements:

Operating system:	• Windows 8 (available only on the classic desktop user interface, not on the modern UI) You find detailed information, e. g. about the service pack and patch level, in the release notes on the product data carrier.
IBM Notes version:	• CHL Domino Notes 6.5.6 to 8.5.3 • IBM Notes 9

9.5.2 Verifying Restrictions

No multilanguage templates are supported.

9.5.3 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.6 Planning for OpenScape Desktop Integration (DI Tool)

You need to execute the following planning steps for using OpenScape Desktop Integration at OpenScape UC Application.

- Planning System Requirements
- Planning required Licenses

9.6.1 Planning System Requirements

The same system requirements apply for OpenScape Desktop Integration and OpenScape Web Client alike.

See Planning for OpenScape Web Client on page 88 on this.

The following system requirements must be met for using OpenScape Desktop Integration.

Web browser:	• Microsoft Edge

9.6.2 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.7 Planning for OpenScape UC Desktop Application

You need to execute the following planning steps for using OpenScape UC Desktop Application:

- Planning System Requirements
- Verifying Restrictions:
- Planning required Licenses

9.7.1 Planning System Requirements

Minimum hardware requirements:	• CPU with 1 GHz (CPU with 2 GHz recommended) • 2 GB RAM	
Operating system:	If Audio shall be used: • Processor must support SSE 2.x or higher if G.729 shall be used. If Video shall be used: • 2-core CPU with 1.83 GHz; for HD resolution Core-i5-CPU • 2 GB RAM; in case of computer systems with many applications 4 GB • Graphics board with 128 MB RAM and the most recent driver software • Recommended cameras inclusive the most recent driver software Logitech C910 / C920 / C930 Logitech Pro 9000 Microsoft LifeCam • Windows 10	
Compatible sound devices:	Jabra devices:	
	Product	
	Jabra Evolve 80	
	Jabra Evolve 75e	
	Jabra Evolve 75	
	Jabra Evolve 65	
	Jabra Evolve 40	

	Jabra Evolve 30	
	Jabra Evolve 20 Mono and Stereo	
	Jabra Evolve2 40	
	Jabra Evolve2 30	
	Jabra Evolve2 65 Mono and Stereo	
	Jabra Evolve2 85 Mono and Stereo	
	Jabra Biz 2400 II CC	
	Jabra Biz 2400 II	
	Jabra Biz 2400	
	Jabra Biz 2300	
	Jabra Motion UC+	
	Jabra Motion UC	
	Jabra Speak 410	
	Jabra Speak 510	
	Jabra Speak 710	
	Jabra Speak 810	
	Jabra PRO 9470	
	Jabra PRO 9465	
	Jabra PRO 9460	
	Jabra PRO 9450	
	Jabra PRO 930	
	Jabra Engage 65	
	Jabra Engage 75	
	Epos / Sennheiser devices:	
	Product	
	SC 30 USB CTRL	
	SC 60 USB CTRL	
	SC 40 USB CTRL	
	SC 45 USB CTRL	
	SC 70 USB CTRL	
	SC 75 USB CTRL	

	SC 135 USB	
	SC 165 USB	
	SC 130 USB	
	SC 160 USB	
	SC 230 / 260 USB	
	SC 230 / 260 II USB CTRL	
	SDW 5016	
	SDW 5036	
	SDW 5066	
	SP 30 +	
	SC 630 / 660 USB CTRL SC 660 ANC USB	
	SC 230 / 260 incl. USB-ED CC 01	
	SC 630 / 660 incl. USB-ED CC 01	
	DW Office	
	SD Pro 1 / 2	
	D 10 USB	
	Presence UC	
	MB Pro 1 / 2 UC	
	MB 660 UC	
	SP 10	
	SP 20	
	SP 220	
	Team Connect Wireless	
	Logitech devices:	
	Product	
	Logitech Zone Wireless	
	Logitech Zone Wired	
	Logitech H650E Mono/Stereo	
	Logitech H570E Mono/Stereo	
	Logitech H820E Mono/Stereo	

Gigaset devices:	
Product	
Gigaset Ion	
Yealink devices:	
Product	
CP700 (Speakerphone)	
UH34 & UH34 Lite Dual/Mono	
UH36 Dual/Mono	
WH62	
WH63	
WH66	

Poly / Plantronics Devices:

The OpenScape UC Desktop App client requires the Plantronics Hub software

installed in the machine in order to have integration with the Plantronics devices. The Plantronics headsets recognized by Plantronics Hub will be also recognized by UC Desktop App.

If there are more than one Plantronics headset plugged-in, the primary Plantronics headset specified in Plantronics Hub must be selected in the Audio/Video tab of the OpenScape UC Settings Tab dialog (system tray menu Open -> Settings).

Product	
Blackwire 310 / 320 UC	
Blackwire 315 / 325 UC	
Blackwire 3200 Series	
Blackwire 510/520 mono/stereo	
Blackwire 5200 Series	
Blackwire 710/720 UC	
Blackwire 7225	
Blackwire 725 stereo	
Blackwire C325	
Blackwire C720	
Calisto 3200 (Speakerphone)	

Calisto 5200 (Speakerphone)	
Calisto 5300 (Speakerphone)	
Calisto 610/620	
Calisto 7200	
Century SC 360 USB	
Circle SC 230 USB	
Circle SC 260 USB	
D261N / DA45 USB	
DA45	
DA80	
EncorePro 500 USB Series	
EncorePro 700 USB Series	
MB PRO 1 UC (dongle)	
MB PRO 2 UC (dongle)	
Presence UC (dongle)	
Savi 400 Series	
Savi 700 Series	
Savi 8220 UC	
Savi 8240 UC	
Savi 8245 UC	
Savi W740	
Sync 20/20+ Series	
Sync 40/40+ Series	
Sync 60/60+ Series	
Voyager 3200 UC	
Voyager 4300	
Voyager 5200 UC	
Voyager 6200 UC	
Voyager 8200 UC	
Voyager Edge UC	
Voyager Focus 2	

Voyager Focus UC	
Voyager Legend UC	

NOTICE: Please note that in case of a headset is being used by two different applications (e.g. running UC Desktop App and Microsoft Teams) in the machine, it may happen that actions in the headset controller for one application may affect the other. This may lead to unexpected behaviors in certain scenarios. The recommendation is to disable the headset controller in one of the applications. The way how to do this in OpenScape UC Desktop App is described in the User Guide.

9.7.2 Verifying Restrictions:

- The use UC Desktop App in parallel with OSC UC WebClient, or the old Desktop Integration tool is not supported.
- For displaying all of its elements in the main window, UC Desktop App requires a display surface of 1024 x 768 pixels
- The following applies in the scope of the team function:

  Even if team calls are displayed to you in the client, you cannot pick up such a call if your preferred device (OND) is not idle. This is still not possible even if you preferred device (OND) signals the call.

9.7.3 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.8 Planning for OpenScape Conference Portal

You need to execute the following planning steps for using conferences with OpenScape UC Application:

- Video Behavior of Conferences
- Planning System Requirements for Video (Video MCU)
- Verifying Restrictions
- Planning required Licenses

9.8.1 Video Behavior of Conferences

The video behavior of conferences is based on the following basic concepts:

- Video-Compatibility/Video Use of a Conference
- Allocation of video licenses and participant images within a video stream
- Routing Conferences to Individual OpenScape Media Servers

Video-Compatibility/Video Use of a Conference

In order to support not only the medium audio, but additionally also video, a conference needs to be video-enabled.

This video-compatibility as such is not an indication of a conference actually using Video. Devices that exclusively use audio but no video may thus dial into a video-compatible conference. In this case, the relevant conference is still video-compatible, but no video composer that processes video information and transmits it to the devices is started in the conference portal.

This video-composer is not started until the first conference participant dials into the conference with a video device. The aim of this behavior is to optimize the use of system resources of the network and the OpenScape Media Servers involved.

The conference management of the conference portal plugin in the CMP indicates if a conference is video-enabled or not.

Allocation of video licenses and participant images within a video stream

Switching on the camera of the video device used or not does not determine if a video conference participant is allocated one of the available video licenses and - if possible - his/her participant image is shown in the video datastream. The point is, however, that the video device used must have negotiated with the conference portal the video feature for the RTP connection.

Routing Conferences to Individual OpenScape Media Servers

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 conference medium (audio or video)
- Load of the single OpenScape Media Servers

The priority of these criteria is decreasing from top to bottom.

The settings for the geographic assignment and the conference medium type are configured for each OpenScape Media Server individually in the configuration interface of the corresponding conference portal.

9.8.2 Planning System Requirements for Video (Video MCU)

- The conference portal supports video conferencing only for selected deployment scenarios.

  The table in Supported Deployment Scenarios on page 23 describes which ones these are.
- No video conferences are supported via VPN.
- The following additional system requirements apply for the network between video client and OpenScape Media Server.
  - Each video channel requires a maximum transfer rate of approx. 2 Mbit / s (HD) respectively 4 Mbit / s (Full-HD). The transmission rate used

individually may vary strongly and depends on the transmitted video content.

– Package loss rate less than 5 % [8].

– 0 - 3 % package loss:	good video quality
– 3 - 5 % package loss:	restricted video quality

The conference portal supports the following outbound video resolutions with a fixed framerate of up to 30 images per second by default:

1. CIF	(352 × 288 pixels)
2. HD720p	(1280 × 720 pixels)
3. HD1080p	(1920 × 1080 pixels)
4. QVGA	(320 × 240 pixels)
5. VGA	(640 × 480 pixels)

- The conference portal supports the following inbound video resolutions by default:

1. 4CIF	(704 × 576 pixels)
2. CIF	(352 × 288 pixels)
3. HD720p	(1280 × 720 pixels)
4. HD1080p	(1920 × 1080 pixels)
5. QCIF	(176 × 144 pixels)
6. QVGA	(320 × 240 pixels)
7. VGA	(640 × 480 pixels)

The frame rate of inbound video streams is operation-irrelevant. Other resolutions are cut to the next smaller format.

- Performance values for estimating the supported number of video channels per OpenScape Media Server with a maximum CPU load of 40 % and 10 kBHCA (SIP):

			Max. number of simultaneous video channels			
CPU series	CINT2006 rate	Example system	VGA	HD 720	HD 720 with “Self-View”	HD 1080
Dual X5650	344	RX200 S6 2 × X5650, 2.66 Ghz	21	12	27	–

[8] The specified package loss rates are benchmarks. The actual perception of the described quality levels depends on the subjective feeling of the single user and on visual influences that affect the environment of the device used.

			Max. number of simultaneous video channels			
CPU series	CINT2006 rate	Example system	VGA	HD 720	HD 720 with “Self-View”	HD 1080
Dual E5-26xx	536	RX200 S7 2 × E5-2650, 2 Ghz	45	19	42	11
	644	RX200 S7 2 × E5-2670, 2.6 Ghz	54	23	51	13
	663	RX200 S7 2 × E5-2680, 2.7 Ghz	56	23	53	13
	695	RX200 S7 2 × E5-2690, 2.9 Ghz	59	25	55	14
Virtual system with the same CPU performance and number of virtual CPUs as stated above			75 %	75 %	75 %	–
			of the respectively specified number of video channels			

- Which video devices are released with OpenScape UC Application documents the sales information about the product OpenScape Video.
- For OpenScape Desktop Client WE / PE at least one of the following cameras should be used to stage video conferences:
  - Logitech C910 / C920 / C930
  - Logitech Pro 9000
  - Microsoft LifeCam

9.8.3 Verifying Restrictions

- When individual conferences are configured and planned, the system resources are not checked for being adequate for the respective conference. Furthermore, no system resources are reserved for conferences that are configured for a later time. This applies for the hardware resources of the OpenScape Media Server used as well as for the existing licenses for conference channels.

  To ensure that sufficient system resources are available at the start of a conference, the conference portal system resources should be configured generously.
- In Very Large Deployment it is possible that a conference is not hosted by the same system cluster as the participants who dial in. In this case the conference control provides the participants concerned only with the following features:
  - Recognizing the active speaker
  - Initiating a web conference
  - List of conference participants who have or have not dialed in

- The following must be ensured for displaying the e-mail notifications of the conference portal in the OpenScape clients correctly:
  - The **Use UTF-8 for mailto links** option must be active for Microsoft Internet Explorer under **Tools > Internet options > Advanced > International**.The **Enable UTF-8 support for mailto: protocol** option must be active for Microsoft Outlook 2007 and later. How to activate this option depends on the Microsoft Outlook version used and is described in the associated product documentation.

    NOTICE: These settings are the default settings for the respective software and should therefore be configured as demanded.

- Before the conference portal connects a call to a conference it will check whether the associated connection partner is a voicemail system. If this is the case, the conference portal terminates the call and does not connect it to the conference.

  The following requirements must be complied with for the conference portal to suppress the connection to voicemail systems in this way:

  - OpenScape Voice is used as directly connected communications system.
  - In OpenScape Voice, the **SIP Privacy Support** flag must have been set to **Full** for the endpoint profile of the relevant ONS phone numbers. This will signal the addresses for reroutings by means of SIP.
  - The user must in the CMP have been assigned the bridge number of the voicemail system used by means of the user-related voicemail number. The conference portal uses the thus configured voicemail numbers as reference value for the above check.

  If, however, a user reroutes calls e. g. by means of call forwarding or via a preferred device to a voicemail system, the conference portal cannot suppress the connection to the relevant voicemail system.

9.8.4 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

9.9 Planning for video conferencing

To calculate the amount of possible video conference channels on a given hardware, the following statements must be taken into account:

- The behavior in regards of CPU usage when loading the system with UC conference video channel does not match an official benchmark (e.g. PassMark or SpecOrg).
- The performance of a VM depend on the number of assigned virtual CPUs (vCPUs). The difference between the tested CPUs (Intel E5 and AMD Epyc) is not significant.
- The number of vCPUs assigned to a VM should not be higher than the number of physical cores available on the underlaying hardware.
- It is recommended to use only up to 16 vCPUs, otherwise the CPU usage may not be linear anymore.

- When putting multiple VMs on the same hardware under high load (>75%), they might have an impact on each other.
- The system load when using the “no individual views” mode depends on the number of participants in a single room. This is not the case in the mode with individual views.
- The “no individual views” mode save a lot of CPU power, enabling the system to handle more conference video channels.

The following recommendations must be taken into account when sizing a VM for using it with the UC Media Server, for running UC video conferences:

- Do not exceed 75% CPU load and keep the rest as safety buffer (Load formula CPU% 75 as maximum).
- Do not assign more than 16 vCPUs. This might result in a nonlinear behavior. Proceed with this only is you are aware of the consequences.
- Do not run more than one UC MediaServer VM for UC video conferences on the same server hardware.
- Make sure that the server hardware is equipped with all memory modules recommended for the CPU type. During testing, a serious performance issue has been noticed. The issue was caused by too less RAM modules plugged in. For example, the AMD Epyc CPU has eight memory controllers and it needs eight RAM modules per CPU, and 16 in servers with two CPUs.

9.9.1 Load formula

Use the formulas below to determine the VM size for the “individual views” and “no individual views” modes.

Formula for "individual views" mode:

$$CPU\% = \frac{p * ResolutionFactor * AmountOfChannel}{AmountOfvCPU}$$

$$AmountOfChannel = \frac{AmountOfvCPUs * CPU\%}{11{,}536 * ResolutionFactor}$$

The ResolutionFactor depends on the following values:

1) VGA = 1

- HD720 = 2,4
- FullHD = 5

The p variable can be adapted in case the underlaying hardware is faster.

Commonly, p = 14 is suitable for most hardware.

On the faster AMD Epyc platform, the value can be decreased to p = 11,5.

Examples:

2) How much CPU load to expect when running 36 HD720 channels on a 16 vCPU VM?

$$CPU\% = \frac{14 * 2{,}4 * 36}{16} = 75{,}5$$

1) How much VGA channel is it possible to run on an 8 core VM, when the system's CPU usage is 75%?

$$AmountOfChannel = \frac{8 * 75}{14 * 1} \sim \mathbf{43}$$

Formula for "no individual views" mode:

When using the "no individual views" mode, the number of participants in a single conference room must be taken into account.

Since not every conference has the same number of participants, you need to determine an average value for the number of participants.

$$CPU\% = \frac{\left(\frac{p * ResolutionFactor * AmountOfChannel}{AmountOfvCPU}\right)}{r + (participantsPerRoom - 2) * 0{,}06}$$

$$AmountOfChannel = \frac{AmountOfvCPU * CPU\% * [r + (participantsPerRoom - 2) * 0{,}06]}{p * ResolutionFactor}$$

The r variable depends on the resolution:

1) For VGA, r=1,43

- For HD720, r=1,62
- For FullHD, r=1,53

Examples:

2) How many CPU load can we expect on a 16 vCPU AMD Epyc VM, when 4 participants are in a conference room, using VGA as the resolution and 80 participants are connected in total?

$$CPU\% = \frac{\frac{11{,}5 * 1 * 80}{16}}{1{,}43 + (4 - 2) * 0{,}06} \sim \mathbf{37}$$

1) How many channels can a system handle with 75% CPU usage, when using HD720 as the video resolution and, on average, 8 participants are in a conference room on a 16-vCPU machine?

$$AmountOfChannel = \frac{16 * 75 * [1{,}62 + (8-2) * 0{,}06]}{11{,}5 * 2{,}4} \sim \mathbf{86}$$

9.10 Planning for OpenScape Voice Portal (TUI)

You need to execute the following planning steps for using the voice portal with OpenScape UC Application:

- Estimating required TTS Ports
- Verifying Restrictions

9.10.1 Estimating required TTS Ports

The voice portal TUI is enabled by the OpenScape Media Server of the OpenScape system. It is thus part of the media services.

Users can operate the voice portal via telephone keypad or voice prompts.

One of the central voice portal components in the TTS engine, which converts text information in spoken text. This feature is required when OpenScape users retrieve e. g. calendar or other text-based information via telephone.

The TTS engine is licensed port-based and language-independent. When planning the TUI you must therefore estimate how many TTS ports are required for the planned number of OpenScape users.

The following table provides a general reference value for the number of required TTS ports depending on the number of users per OpenScape Media Server. A differentiation is made as to whether the integrated voicemail and messaging features are used by OpenScape UC Application or by an external Voicemail / Unified Messaging system.

Table 9: Estimating the required TTS Ports per OpenScape Media Server

Number of OpenScape user per OpenScape Media Server	100	200	500	1000	1500	2000	2500	3000	350
Recommended number of TTS ports per OpenScape Media Server, if VM / UM features are used by UC Application	5	6	8	11	13	15	17	–	–
Recommended number of TTS ports per OpenScape Media Server if VM / UM features of an external system are used – e. g. OpenScape Xpressions	3	4	5	7	8	9	10	11	12
Used number of TTS ports by Conference				2		4		6	

The table also shows the following: Depending on the demand on the TTS feature the TTS engine of the OpenScape Media Server may not support the maximum possible number of users. This limitation can be avoided by connecting OpenScape UC Application in this case to an external voicemail / Unified Messaging system.

9.10.2 Verifying Restrictions

If you use the voice-controlled voice portal (application voice portal ”Speech”), the number of contacts entered in the global contact list of OpenScape UC Application must not exceed 1000.

If the global contact list contains more than 1000 contacts, the response times of the voice portal will increase significantly and the quality of recognizing spoken contact names deteriorates.

9.11 Planning for OpenScape Fusion Application Builder

Using OpenScape Fusion Application Builder requires the deployed computer system to comply with at least the following hardware requirements:

Minimum hardware requirements:	• 2-core CPU, 2.66 GHz or better configuration • 4 GB RAM • 150 GB 10 k RPM HD-SAS hard disk drive • DVD-ROM drive • Two Gigabit-Ethernet interfaces
Operating system:	Each Windows operating system on which the following software can be operated: • Java Runtime Environment (JRE) 6 or later • Eclipse Rich Client Platform (RCP) *NOTE:* Windows Server 2012 is not supported.

9.12 Planning for OpenScape E / A Cockpit

OpenScape E/A Cockpit enables an extended, dynamic forwarding logic for calls and is based on the status of the E/A group subscribers of OpenScape Voice.

You need to execute the following planning steps for using OpenScape E/A Cockpit at OpenScape UC Application:

- Verifying Restrictions
- Planning System Requirements for OpenScape E /A Cockpit
- Planning required Licenses

9.12.1 Verifying Restrictions

The following restrictions apply for OpenScape E/A Cockpit:

- OpenScape E/A Cockpit has been released for the following OpenStage phones:
  - OpenStage 60
  - OpenStage 80
  - Desk Phone IP 55G
- OpenScape E/A Cockpit has been released for the following Desk phone:
  - Desk phone CP600
- In a UC Application environment, OpenScape E/A Cockpit may only be installed on a single computer system. Consequently, there is no redundancy for its function.
- OpenScape E/A Cockpit does not support any NAT.
- Usable for all OpenScape Voice versions released with the OpenScape UC Application version on hand.
- Communication of the OpenScape E / A Cockpit system must not be routed via a load balancer possibly configured.
- For the possible number of E/A Cockpit and UC Application users applies: Each E/A Cockpit user corresponds to five UC Application users when set off against the total number of users.

  Example: A maximum of 15.000 UC Application users has been released for a UC Application environment. If 1000 E/A Cockpit users are configured in this case, only 10.000 UC Application users who exclusively use UC Application services can be simultaneously configured.
- Only those E / A Cockpit groups are released that use a maximum of four executives and two assistants.

  NOTICE: If E / A Cockpit groups with more than four executives and two assistants are used, a project-specific release is required.
- The OpenStage devices used for OpenScape E/A Cockpit can only communicate via HTTP and not via HTTPS. Consequently, OpenScape E/A Cockpit communicates insecurly only.
- OpenScape E/A Cockpit authenticates neither E/A Cockpit users nor the devices used. A correctly configured device and an assignment of the device to the relevant OpenScape user is sufficient for using the E/A Cockpit features.

9.12.2 Planning System Requirements for OpenScape E /A Cockpit

OpenScape E/A Cockpit is installed on the application computer of OpenScape UC Application for the following deployment scenarios:

- Integrated Deployment
- Small Deployment

For all other deployment scenarios, OpenScape E/A Cockpit must be installed on an additional computer system. This computer system must comply with the hardware requirements that also apply for the front-end computers.

Hardware requirements on an independent E/A Cockpit solution

If OpenScape UC Application shall be used with Small Deployment for an exclusive E/A Cockpit solution, the application computer must only comply with the following reduced hardware requirements:

Table 10: Hardware Requirements Small Deployment for exclusive E/A Cockpit Solution

Hardware configuration – Small Deployment			
System component	**Number of computers**	**Configuration**	**Number of users**
Application computer	1	1	Max. **100** UC Application users
Configuration 1 (minimum configuration) • Intel CORE 2 DUO E7200 (or better configuration) • 8GB RAM • One 250 GB 7.2k RPM 3.5’’ SATA hard disk drive • One DVD-ROM drive • One Gigabit-Ethernet network board • Certified for SUSE Linux Enterprise Server 12			

NOTICE: These hardware requirements may also be generally applied to smaller UC Application test systems.

9.12.3 Planning required Licenses

In Planning for Licenses on page 112 you plan which licenses you need for an individual communications solution.

10 Planning for Licenses

This chapter provides information about the following topics:

10.1 Overview of the License Model of OpenScape UC Application

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

Selected OpenScape UC Application features assume in addition that you have selected resource licenses besides such user licenses. Resource licenses comprise e. g. the channel-based licenses for conferences or for the TTS functionality of the voice portal.

NOTICE: You find information about resource-based enhancement licenses in OpenScape TTS Port License (Text-to-Speech) on page 116.

You can divide the licenses for an UC Application environment in the following groups:

- Operating System Licenses for central Components
- Operating System Licenses for Client Components
- Basic License for OpenScape UC Application
- User License for OpenScape UC Application
- Upgrade Licenses for OpenScape UC Application
- Redundancy License for OpenScape UC Application
- Licenses for OpenScape E / A Cockpit
- Licenses for Connecting 3rd-Party Systems
- Test Licenses
- Demo Licenses

Activation period

After you have installed a UC Application system you can use the software up to 30 days in the following scope without requiring a UC Application license.

Count	License type
1	OSC UC Appl V10 SuSE Upgrade Protection License
1	OpenScape UC Application Base License with:
	1 × OpenScape CMP User Management Feature Package LDAP License
	4 × OpenScape UC Application TTS Port License
	4 × Royalty for TTS Vocalizer 5.x for Network incl. Support
	1 × Unicom (former IBM) Solid Database per User Royalty (needed only for integrated deployment)
100	OpenScape UC Application User License with:
	1 × OpenScape CMP User Management User License
	1 × OpenScape Voice V10 Client Access User License
	1 × OpenScape Voice V8 Client Access User License
	1 × OpenScape Voice V7 Client Access User License
	1 × OpenScape Xpressions V7 Voice User License
1	OpenScape UC Application V10 Standby License
12	OpenScape UC Application Video Conference Channel License
1	OpenScape UC Application Audio Conference Channel License
1	OpenScape UC Application Speech Portal Channel License
4	OpenScape UC Application ASR Port License
4	OpenScape UC Application Auto Attendant Channel License
4	OpenScape UC Application Speech Application Channel License

If you do not install any licenses until expiration of the activation period, the OpenScape UC Application system features cannot be used anymore.

The activation period can only be used once per installed UC Application system. This is also the case if the product is installed again. After having installed the license key, the activation period can no longer be used.

NOTICE: The activation period is provided in order to configure the system. It is not intended for product test or demonstration purposes. For these purposes, individual test or demonstration licenses are available.

The following chapters provide an overview of all licenses. You can obtain a detailed description of all available OpenScape licenses from your sales partner in charge.

10.2 Operating System Licenses for central Components

Various UC Application components are operated on computer systems with Linux operating systems. For each of these computer systems you need a SuSE SLES license.

You can obtain the required licenses in two ways.

- Together with the other UC Application licenses.

  In this case you require for each SuSE SLES installation the following license package.

  SuSE SLES

  This license package contains the following licenses:

Count	License type
1	OSC UC Appl V10 SuSE 3 Year Upgrade Protection License
1	Royalty SuSE SLES 3 Year Upgrade Protection

- Independently from the other UC Application licenses by providing the required SuSE SLES licenses from another source.

  In this case you require for each SuSE SLES installation one of the following licenses to suppress the alarms about the missing UC Application-own SuSE SLES licenses.

Count	License type
1	Disabler for SuSE SLES Upgrade Protection License Alarm for 1 year in case of SuSE and upgrades provided by customer

Count	License type
1	Disabler for SuSE SLES Upgrade Protection License Alarm for 2 year in case of SuSE and upgrades provided by customer

Count	License type
1	Disabler for SuSE SLES Upgrade Protection License Alarm for 3 year in case of SuSE and upgrades provided by customer

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NOTICE:

When the SUSE SLES Upgrade Protection License is ordered through Mitel, full support responsibility resides with Mitel. This includes the obligation to provide Level 1 (L1) and Level 2 (L2) support for SUSE software to end users of the bundled products.

If customers or partners obtain SLES subscriptions independently (i.e., not through Mitel), they are entitled to request L1 and L2 support directly from SUSE for issues related to the SLES operating system. Support for the Mitel OpenScape

UC software remains unchanged regardless of how the SLES subscription is obtained.

10.3 Operating System Licenses for Client Components

In case of client components use we assume that you already have a sufficient number of licenses for the deployed operating systems.

10.4 Basic License for OpenScape UC Application

With OpenScape UC Application you always receive the following basic-license package. This basic-license package contains all licenses required for operating UC Application components.

OpenScape UC Application Enterprise Edition Base License

Count	License type
1	OpenScape UC Application Base License
1	OpenScape CMP User Management Feature Package LDAP License
4	OpenScape UC Application TTS Port License
4	Royalty for TTS Vocalizer 5.x for Network incl. Support
1	Unicom (former IBM) Solid Database per User Royalty (needed only for integrated deployment)

In addition to this basic license package you need a user license for each user to deploy the OpenScape UC Application features. You find information about the user license in User License for OpenScape UC Application on page 115.

Depending on the features UC Application users are to deploy, additional resource-based licenses may be required. You find information about resource-based licenses in Resource-based Licenses on page 116.

10.5 User License for OpenScape UC Application

You need the following license package for each user to deploy OpenScape UC Application features – independent from the features the relevant user shall deploy.

OpenScape Enterprise Edition User License

Count	License type
1	OpenScape UC Application User License
1	OpenScape CMP User Management User License
1	OpenScape Voice V10 Client Access User License

Count	License type
1	OpenScape Voice V9 Client Access User License
1	OpenScape Voice V8 Client Access User License
1	OpenScape Voice V7 Client Access User License
1	OpenScape Xpressions V7 Voice User License

Depending on the features UC Application users are to deploy, additional resource-based licenses may be required. You find information about resource-based licenses in Resource-based Licenses on page 116.

Resource-based licenses are managed as pool and can thus be deployed for each licensed user.

10.6 Resource-based Licenses

Users may require resource-based licenses in addition to the user license. This depends on the features a user is to deploy with OpenScape UC Application.

Resource-based licenses are managed as pool and can thus be deployed for each licensed user.

The following resource-based enhancement licenses are available:

- OpenScape TTS Port License (Text-to-Speech)
- OpenScape ASR Port License (Automatic Speech Recognition)
- OpenScape Speech Application Channel (Interactive Voice Response)
- OpenScape Video Conference Channel
- OpenScape Audio Conference Channel
- OpenScape Recording Channel
- OpenScape Speech Portal Channel
- OpenScape Auto Attendant Channel

OpenScape TTS Port License (Text-to-Speech)

The basic-licenses package contains licenses for four TTS channels. If you wish to use additional TTS channels, you need this license package for every additional TTS channel.

Count	License type
1	OpenScape UC Application TTS Port License
1	Royalty for TTS Vocalizer 5.x for Network incl. Support

OpenScape ASR Port License (Automatic Speech Recognition)

If users are to deploy ASR features with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Application ASR Port License
1	Royalty for Nuance Recognizer 9.x incl. Support

OpenScape Speech Application Channel (Interactive Voice Response)

If users are to deploy IVR-based applications with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Application Speech Application Channel License

Depending on the system solution, this license may assume the following additional license packages:

Count	License type
1	OpenScape ASR Port License (Automatic Speech Recognition)
1	OpenScape TTS Port License (Text-to-Speech)

OpenScape Video Conference Channel

If users are to deploy video conferencing with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Application Video Conference Channel License

NOTICE: Switching on the camera of the video device used or not does not determine if a video conference participant is allocated one of the video licenses available. The point is, however, that the video device used must negotiate with the conference portal the video feature for the RTP connection.

OpenScape Audio Conference Channel

If users are to deploy audio conferencing with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Application Audio Conference Channel License

OpenScape Recording Channel

If users are to deploy recordings of audio and video conferencing with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Recording License

The Recording license includes a concurrent use model where every active recording will consume one license.The license will be consumed by the conference creator. No additional video channel licenses are consumed by Collaboration client participant video.

OpenScape Speech Portal Channel

If users are to deploy the voice-controlled voice portal with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Application Speech Portal Channel License

Depending on the system solution, this license may assume the following additional license packages:

Count	License type
1	OpenScape ASR Port License (Automatic Speech Recognition)
1	OpenScape TTS Port License (Text-to-Speech)

OpenScape Auto Attendant Channel

If users are to deploy the Auto Attendant with OpenScape UC Application, they require the following license package in a reasonable quantity:

Count	License type
1	OpenScape UC Application Auto Attendant Channel License

Depending on the system solution, this license may require the following additional licenses:

Count	License type
1	OpenScape TTS Port License (Text-to-Speech)

10.7 Licenses for OpenScape E / A Cockpit

If you wish to use OpenScape UC Application with OpenScape E / A Cockpit, you need the following license packages depending on the system environment:

OpenScape E/A- Cockpit V7 Basis License Package

If you use OpenScape UC Application with OpenScape E / A Cockpit, you require the following basic license package. It contains the following licenses to operate a non-redundant OpenScape E / A Cockpit system that comprises up to four premium and eight standard users.

Count	License type
1	OpenScape E / A-Cockpit Basis License
8	OpenScape E / A-Cockpit Standard User License
4	OpenScape E / A-Cockpit Premium User License

If more than four premium and eight standard users are to deploy the OpenScape E / A Cockpit system, you need the following license packages depending on the system environment:

- For each additional standard user the following license:
  - OpenScape E / A-Cockpit Standard User License
- For each additional premium user one of the following licenses:
  - OpenScape E / A-Cockpit Standard User License
  - OpenScape E / A-Cockpit Premium User License

NOTICE: If an OpenScape E / A Cockpit system is to use groups with more than four bosses and two secretaries, a project-specific release is required.

The following table shows which OpenScape E / A Cockpit features are assigned to these user licenses.

Table 11: E / A Cockpit User Licenses and their deployable E / A Cockpit Features

OpenScape E / A Cockpit features	Standard	OpenScape E/A Cockpit Premium User License
Presence status for bosses (call forwarding)	✓	✓
Call forwarding to an assistant (one priority) – if available	✓	
Call forwarding to an assistant (five priorities) – if available – normal – always – normal (cell phone) – normal (to extension)		✓
Presence status for assistants	✓	✓
Stand-ins for assistants		✓

OpenScape E / A Cockpit features	Standard	OpenScape E/A Cockpit Premium User License
Displaying and managing presence stati	✓	✓
Controlling E / A Cockpit features without XML user interface for bosses	✓	✓
Message Waiting Indicator (MWI)		✓
Notification of assistants about calls for bosses		✓
Notification about calls in case of busy line		✓
Call cell phone option		✓
Removed activation of call forwarding to cell phone		✓

10.8 Licenses for Connecting 3rd-Party Systems

When connecting a 3rd-party system to OpenScape UC Application you always need to have all licenses required for operating the relevant foreign system.

Licenses exist for the following 3rd-party systems:

- Lotus Domino
- OpenScape Web Collaboration
- Openfire Instant Messaging

10.8.1 HCL Domino

When you use OpenScape UC Application at an CHL Domino system you need to install an additional Lotus Domino server on the UC Application application server. With this server a Notes API is installed, which is required for the Lotus Domino connection.

10.8.2 Openfire Instant Messaging

If you wish to use OpenScape UC Application with an Openfire server inclusive service support you need the following license:

Openfire Software Support

Count	License type
1	Support for Openfire Instant Messaging Software

10.9 Licenses for OpenScape Mobile

There are three types of Licenses for OpenScape Mobile (OSMO)

- OpenScape Voice only
- OpenScape UC only
- Combined OpenScape UC and OpenScape Voice

10.9.1 OpenScape Voice only

This does not belong to OpenScape UC, please refer to OpenScape Voice documentation

10.9.2 OpenScape UC only

Every softphone consumes a Dynamic User License (DUL).

Also every registered mobile device consumes a Dynamic User License.

10.9.3 Combined OpenScape UC and OpenScape Voice

Every softphone consumes a Dynamic User License (DUL).

Also every registered mobile device consumes a Dynamic User License.

Also every Desk Phone (from OpenScape Voice) requires a Dynamic User License.

So you have to consider the required licenses for both OpenScape Voice and OpenScape UC.

10.10 Test Licenses

The following test licenses are available for testing OpenScape UC Application:

OpenScape UC Application Evaluation License

This license allows testing OpenScape UC Application for 90 days in the following scope:

Count	License type
1	OpenScape UC Application Evaluation Base License with:

Count	License type
	100 × OpenScape Enterprise Edition User License
	10 × OpenScape Enterprise Edition HFA User License
	2 × OpenScape TTS Port License
	1 × OpenScape Speech Portal Channel License
	1 × OpenScape ASR Port License
	25 × OpenScape Audio Conference Channel License
	4 × OpenScape Video Conference Channel License
	1 × OpenScape Auto Attendant Channel License
	1 × OpenScape Speech Application Channel
2	Unicom (former IBM) Solid Database V100 per User Royalty (needed only for integrated deployment)
1	SuSE SLES 1 Year Upgrade Protection Key
1	Royalty SuSE SLES 1 Year Upgrade Protection

OpenScape E/A Cockpit Evaluation Package

This license allows testing OpenScape E / A Cockpit for 90 days in the following scope:

Count	License type
1	OpenScape E / A-Cockpit Evaluation Basis License with:
	16 × Standard User Evaluation License
	8 × Premium User Evaluation License

10.11 Demo Licenses

For presenting OpenScape UC Application to potential customers e. g. at fairs, the following demo licenses are available:

OpenScape UC Application Demo License

This license allows testing OpenScape UC Application indefinitely in the following scope:

Count	License type
1	OpenScape UC Application Demo Base License with:
	25 × OpenScape Enterprise Edition User License

Count	License type
	5 × OpenScape Enterprise Edition HFA User License
	2 × OpenScape TTS Port License
	1 × OpenScape Speech Portal Channel License
	1 × OpenScape ASR Port License
	10 × OpenScape Audio Conference Channel License
	4 × OpenScape Video Conference Channel License
	1 × OpenScape Auto Attendant Channel License
	1 × OpenScape Speech Application Channel License
1	SuSE SLES 1 Year Upgrade Protection Key
1	Royalty SuSE SLES 1 Year Upgrade Protection

OpenScape E / A Cockpit Demo Package

This license allows testing OpenScape E / A Cockpit infinitely in the following scope:

Count	License type
1	OpenScape E / A-Cockpit V7 Demo Basis License with:
	16 × Standard User Demo License
	8 × Premium User Demo License

11 Environment-dependent Plannings

This chapter provides information about the following topics:

11.1 Port Settings for existing Firewall Systems

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

You find a detailed description of these ports in the *OpenScape UC Application, Installation and Upgrade* manual.

12 Planning Worksheets

The purpose of these worksheets is to plan out a system and then provide these sheets to the administrators who will make the system changes as well as to installers. Defining this information in advance and providing it to installers will speed up the installation process considerably.

12.1 Planning the System Units

Use the following table to plan the system units of the communications solution.

Table 12: “Planning Basics” Worksheet

Entity	Components	Check those that apply
Deployment scenario		–
Communications system		–
Groupware used	Microsoft Exchange Server	
	CHL Domino	
Presence system		
Web conference system		
Voicemail / UM system		
LDAP directory		
OpenScape Media Server		
Number of users (inclusive voice and conference portal)		
Clients	Number of OpenScape Desktop Clients _____ Thereof: CTI _____ SIP _____ HFA _____	

Entity	Components	Check those that apply
	Number of OpenScape Web Clients _____	
	Number of OpenScape Mobile Clients _____	
	Number of Outlook plug-ins _____	

12.2 Documenting System Information

Use the following worksheets to note down the planning information required during the implementation of the OpenScape project.

- Important Customer Contacts
- Required Licenses
- Server or Device Names and IP Addresses
- Account Names and Passwords
- UC Application User

12.2.1 Important Customer Contacts

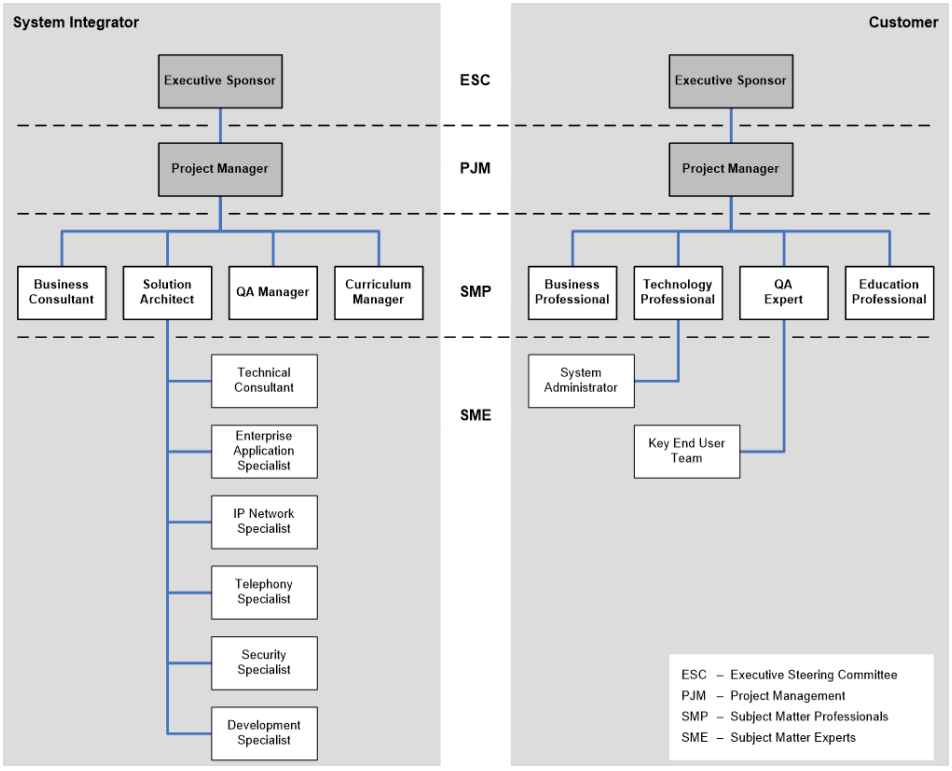
Note down the most important customer contacts here:

Table 13: “Important Customer Contacts” Worksheet

Contact	Name	E-mail	Phone	Remarks
Project manager				Most important contact
Technical person in charge of OpenScape UC Application				
Technical person in charge of the communications system				
Technical person in charge of the groupware system				

Contact	Name	E-mail	Phone	Remarks
Technical person in charge of the LDAP directory server				
Technical person in charge of the Active Directory				
Technical person in charge of LAN				
Technical person in charge of WAN				

The overall project is managed and monitored by a project manager from the outset. The people typically involved in a project are shown in this diagram.



12.2.2 Required Licenses

Various licenses are required for OpenScape UC Application to function fully. In the following table you can document the number of licenses required for your individual communication solution.

Table 14: “Licenses” Worksheet

Type of license	Count	Remark
Operating system licenses		
• For central components of OpenScape UC Application that are not installed on the computer system of OpenScape Voice		Acquisition from third-party supplier
• For OpenScape UC Application client components		Acquisition from third-party supplier
OpenScape UC Application basic license		
• OpenScape UC Application basic license		One of these licenses is required.
• Basic license OpenScape UC Application and OpenScape Voice		
Extension licenses		
• Redundancy Option license		For redundant application server required once.
• TTS Port license		From the fifth TTS port required port-wise.
• Essential User license		From the first Essential user required user-wise.
• Professional User license		From the first Professional user required user-wise.
• Team User license		As of the 101st team user required user-wise. The first 100 Team users are contained in the basic licenses.
• Personal SIP User license		Required from the first user who deploys the OpenScape Desktop Client (Personal Edition) as SIP client (user-wise).
• Personal HFA User license		Required from the first user who deploys the OpenScape Desktop Client (Personal Edition) as HFA client (user-wise).

Type of license	Count	Remark
• Personal CTI User license		Required from the first user who deploys the OpenScape Desktop Client (Personal Edition) as CTI client (user-wise).
• Mobile Client license		Required from the first user who deploys the OpenScape Mobile Client (user-wise).
Upgrade licenses Please consult you sales partner for information on this.		
Connection to foreign systems		
• CHL Domino Server (groupware server)		Acquisition from third-party supplier
• CHL Domino connector Server (application server)	–	Acquisition from third-partysupplier
• Microsoft Exchange Server		Acquisition from third-party supplier
• OpenScape Web Collaboration Base		If OpenScape Web Collaboration is to be used, required once.
• OpenScape Web Collaboration Room		As many licenses as many simultaneous conference rooms to be possible.
• OpenScape Web Collaboration Redundancy		For redundant system of OpenScape Web Collaboration required once.
• OpenScape E / A Cockpit Base		For a non-redundant OpenScape E / A Cockpit system with up to four premium and eight standard users
• OpenScape E/A Cockpit Standard User license		Required from the fifth premium and ninth standard user (user-wise).
• OpenScape E/A Cockpit Premium User license		Required from the fifth E / A Cockpit user (premium) (user-wise.
Test licenses		

Type of license	Count	Remark
• Evaluation license		100 users for OpenScape Voice 100 team users for OpenScape UC Application 100 mobile users for OpenScape UC Application 4 TTS ports (language-independent)
• Evaluation license package OpenScape Web Collaboration		10 simultaneous conference rooms
• Evaluations license package OpenScape E / A Cockpit		5 standard users 5 premium users
Further		

12.2.3 Server or Device Names and IP Addresses

Have the customer’s network administrator record the names and addresses to be used for the various servers.

Table 15: “Server Information” Worksheet

Server	System name	Domain name	IP Address	Port	Initial
Communications system					
GW connected to communications system					
External PBX (NStA)					
OpenScape UC Application					
OpenScape Media Server					
OpenScape front-end server					
Facade server					
Load balancer					
Groupware					
Exchange					

Server	System name	Domain name	IP Address	Port	Initial
Lotus Domino					
Active Directory					
LDAP					
Messaging server					
OpenScape E / A Cockpit					

12.2.4 Account Names and Passwords

Have the customer’s network administrator record the names and passwords to be used for the various accounts.

Table 16: “User Accounts” Worksheet

User account ID	Password	Description	Initial

12.2.5 UC Application User

A specific number of subscribers to the communications system uses the UC Application services. These subscribers must therefore be configured in the OpenScape UC Application. The OpenScape Media Server must also have its voice portal and conferencing extensions configured as well to allow users access to these functions.

Table 17: “UC Application User” Worksheet

#	Subscriber	E.164 numbers	Extension	Numbering plan	Initial
	Voice portal				
	Conferences				

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