A MITEL
PRODUCT
GUIDE

Unify OpenScape Xpressions V7

System Description

Service Documentation
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Mitel

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History of Changes

Date	Changes	Reason
2012-05-07	SAP Business byDesign-Integration and ACD deleted.	FRN 5712
2014-01-24	The section about anitvirus programs now refers to the Release Notice.	Review
2014-09-09	The section about supported Microsoft Exchange versions now referes to the Release Notice.	FRN 7973
2014-10-10	MAPI fax printer drivers are supported in a terminal server environment with Citrix (see Section 9.4, “Clients on Terminal Servers”, on page 194).	

1 The OpenScape Xpressions System

1.1 Introduction

OpenScape Xpressions combines voicemail, fax, e-mail and text (Short Message - SMS) services on a Windows Server 2003 or 2008[1] platform and transforms them into a Unified Messaging system with the Hicom/HiPath/OpenScape communication platforms, and third-party systems. Information flow, flexibility and speed have become decisive factors for the success of modern companies. Thanks to its modular, scalable client/server architecture, OpenScape Xpressions can be optimally configured to meet users' individual communication needs. Open standards, integration in existing IT and telecommunications environments, and secure PBX access via ISDN, LAN, and the Internet guarantee the protection of your investment in the future. The customer can select services, users, IT integration as well as software-only solutions or certified all-in systems when required. In this way, a tailored solution for every requirement from the small entry-level variant right up to networked communication solutions can be created.

1.2 Purpose of this Documentation

This system specification describes the OpenScape Xpressions with its extensive functions and features. It is particularly useful as sales tool for advising customers. Each of the OpenScape Xpressions documents is designed to answer a different customer question, such as:

- What can I do with OpenScape Xpressions? -> System Specification
- How can I do this? -> User Manuals
- How is the system configured? -> Administrator Manual or Installation Manual

The system specification does not completely ignore the technical background: it includes enough information to give users a better understanding of the system.

With regard to the individual topics, we created a table of features (for example telephone user interface or Outlook Extensions) to improve clarity when comparing clients and selecting one of the OpenScape Xpressions software components available.

1. Please refer to the OpenScape Xpressions Release Notice to see which operating systems have been released.

1.3 Messaging Overview

1.3.1 Unified Messaging (UM) and Messaging

Unified Messaging allows you to access all messages via a standard journal irrespective of the message type. This means you can view or play back fax, voicemails, or e-mail messages with a client. Unified Messaging can therefore be considered a basic function of OpenScape Xpressions.

In contrast to Unified Messaging a Voice-Only system is a pure messaging system for voicemails.

When a OpenScape Xpressions Unified Messaging server is connected to a third-party mail system (for example MS Exchange or Lotus Notes), all messages (voicemails, fax, e-mail) are only held in the third-party mail system. In OpenScape Xpressions the e-mails of the third-party mail system do not exist, so that it is not possible to access these messages via the telephone user interface (TUI). Faxes and voicemails are only forwarded from OpenScape Xpressions to the third-party e-mail system. Consequently, Unified Messaging is only available in the third-party mail client.

1.3.2 Integrated Messaging (IM)

Integrated Messaging is the connection of the OpenScape Xpressions Unified Messaging server to other remote servers (such as Exchange and Lotus Notes) and the interchange of all messages between the two systems. In this case, the e-mails associated with the third-party e-mail server are also replicated to OpenScape Xpressions. This can be configured for individual users or all users. The advantage of this procedure is that users can read or play back all messages not only at their third-party mail system client but also at all available clients. In this way, users can even retrieve e-mail messages from the OpenScape Xpressions server by telephone, for example, and use the telephone's mailbox function for new e-mail messages. Status synchronization between read and unread messages is also performed correctly.

The disadvantage of this operation mode is that data need to be kept twice, thus on both systems.

Integrated Messaging is possible with Microsoft Exchange Server 2003 and Lotus Domino R6, R7 and R8.

NOTE: Integrated Messaging is not possible in case of a connection to Exchange Server 2007. Messages are exclusively accessed via True Unified Messaging.

1.3.3 True Unified Messaging (TUM)

In contrast to Integrated Messaging, message replication is **not** performed between OpenScape Xpressions and the third-party mail system (for example Exchange and Lotus Notes) in True Unified Messaging, but the messages remain in the message database of the third-party mail system. When a message is retrieved via telephone, OpenScape Xpressions accesses directly the mail database of the third-party system to forward this message to the telephone network. The user can then have the e-mail read out over the telephone with the text-to-speech function.

The advantage of True Unified Messaging is that it does not duplicate data like Integrated Messaging. True Unified Messaging and Integrated Messaging can be operated in parallel with OpenScape Xpressions. You can therefore set whether Integrated Messaging or True Unified Messaging should be used for each individual user.

NOTE: Integrated Messaging is not possible in case of a connection to Exchange Server 2007. Messages are exclusively accessed via True Unified Messaging.

When an incoming fax message is received by OpenScape Xpressions, it is sent over the gateway to the third-party system's mail database (as in Unified Messaging). The user can then retrieve the fax message with True Unified Messaging.

1.3.4 Unified Communications (CTI)

In case of Unified Communication, a unified or integrated messaging system is expanded by convenient telephony features. This means that users can create call lists or initiate and process incoming and outgoing telephone calls directly from their customary application (Outlook, Lotus Notes). This PC-client telephony function is called Computer Telephony Integration (CTI).

1.4 Marketing Structure

The various demands to a messaging system require different marketing structures for the OpenScape Xpressions system, so that customers can customize and upgrade the system to their requirements. The OpenScape Xpressions system marketing structure appears as follows:

OpenScape Xpressions Basic system

The OpenScape Xpressions basic system contains the following features:

- Office Packet
- Automated Attendant
- Internet E-Mail
- E-Mail connectors to MS Exchange, Lotus Notes and SAP
- Fault/User Management
- AMIS networking (AMIS = Audio Message Interface Standard)
- LDAP (Lightweight Direct Access Protocol)
- OpenScape Xpressions systems networking
- Communications Client

Voice User

Expands the basic system by the following features:

- Web Assistant

Unified User

Expands the basic system by the following features:

- Web Assistant

Enables the integration of the following features that can be purchased separately:

- SMS
- Fax-on-Demand
- Text-to-Speech
- Extensions Advanced
- Voice recognition (project-specific)
- Remote maintenance via modem
- Hardware respectively connection lines via Dialogic/Eicon to the PBX

2 Telephone User Interface

2.1 Overview

OpenScape Xpressions supports two voice mail scripts. PhoneMail and VMS let you use the telephone to retrieve and administer different types of message (voice messages, faxes, e-mails). This TUI can also be used to record and send voice messages for other subscribers. You can contact other subscribers' mailboxes directly to leave them a message. Callers can be diverted to a mailbox where they can leave messages or listen to a personal greeting. Various special functions such as direct connection to the originator of an incoming message are also included in the scope of functions. VMS also allows you to record and edit dictations and to broadcast messages.

Every voice mail subscriber in OpenScape Xpressions is assigned a personal mailbox on the OpenScape Xpressions server. The mailbox can be accessed with PhoneMail or VMS using any telephone (a telephone that is connected to the telephone system in your organization) or an external telephone (a telephone that sets up the connection to the telephone system in your organization via a CO code).

2.2 Features of the Telephone User Interface

2.2.1 Comparison of PhoneMail and VMS

	PhoneMail	VMS	Web Assistant
Inbox			
Greeting on calling in	x	x	
Listen to voice message	x	x	
Output fax message or e-mail to default printer	x	x	
Output fax message or e-mail to default fax device	x	x	
Output fax message or e-mail to any fax device	x	x	
Listen to e-mail message (with text-to-speech)	x	x	

	PhoneMail	VMS	Web Assistant
Listen to e-mail message attachment (with text-to-speech)	x	x	
Output information on attachments	x	x	
Play message header	x	x	
Jump to next message header	x	x	
Jump to previous message header	x	Reverse playback order	
Repeat message header	x	x	
Output the subject line of an e-mail	x	x	
Enable/disable subject line output		x	
Save message	x	Saved until deleted	
Mark message as unread		x	
Delete message	x	x	
Reply to message with/without comment	x	x	
Forward message with/without comment	x	x	
Phone Contact	x	x	
Set up connection to random subscriber from Inbox		x	
Urgent/private messages are marked	x	x	
Defining message types			
Output all/old/new voice messages	x		x
Output all/old/new fax messages	x		x
Output all/old/new e-mails	x		x
Record/send message	x	x	
Message recording	x	x	
Delete recording	x		
Play recording to check quality	x	x	
Enter recipient number	x (after recording)	x (before recording)	

	PhoneMail	VMS	Web Assistant
Correct recipient number	x	x	
Add recipient number	x	x	
Enter recipient name (vanity number)	x	x	
AMIS/VPIM addressing to third-party messaging systems	x	x	
Send message	x	x	
Send options			
Request a read receipt	x	x	
Mark message urgent	x	x	
Mark message private	x	x	
Enable the "urgent" option for callers to their own voice-mailbox	x	x	x (only for PhoneMail)
Send later	x	x	
Send later once	x	x	
Send later periodically (weekly/monthly)	x	x	
Ignore send options	x	x	
Outbox			
Scroll through the Outbox (similar to the Inbox function)		x	
Jump to the next message in the Outbox		x	
Listen to messages in the Outbox		x	
Output message header in the Outbox		x	
Extend request in Outbox (resend)		x	
Delete messages in the Outbox		x	
Connecting to subscribers			
Enter and call subscriber number	x	x	
Correct subscriber number	x	x	
Connect to operator	x	x	
Broadcast message or broadcast call			

	PhoneMail	VMS	Web Assistant
Send broadcast message or broadcast call to special broadcast call or broadcast message distribution list		x	
Repeat broadcast call or broadcast message distribution input		x	
Set send time		x	
Set expiration time		x	
Record broadcast message or broadcast call as if sending messages		x	
Create broadcast call or broadcast message distribution list		x	x
Recording dictation			
End recording and start delivery		x	
Overwrite recording from current position		x	
Rewind/fast forward dictation by x minutes/to any position in the dictation		x	
Output status report (length of dictation)		x	
Enable or disable user prompts		x	
Enter mailbox number of a dictation recipient		x	
Distribution lists			
Create, edit, or delete personal distribution list	x	x	x
Create, edit, or delete public distribution list (privilege required)		x	x
Set or modify code number for distribution list	x	x	x
Record distribution list name	x		x
Scroll through distribution list	x by selecting “Review”	x	x
Scroll through the subscriber list of a distribution list		x	x

	PhoneMail	VMS	Web Assistant
Check subscriber numbers	x by selecting “ Read out”		x
Add or delete subscriber number	x	x	x
Repeat subscriber number entry	x	x	x
Notification functions			
Enable, disable, or modify on work phone	x	x	x
Enable, disable, or modify on home phone	x		x
Set start or end time for user outcall	x	x	x
Enable, disable, or modify on spare phone	x	x	x
Enable, disable, or modify on spare phone2	x	x	x
Enable, disable, or modify on spare phone3	x	x	x
Enable, disable, or modify at SMS destination	x	x	x
Set start or end time for SMS destination	x	x	x
Call forwarding			
Activate/deactivate	x	x	
Change	x	x	x
Callers receive selection menu for forwarding mode	x		x
Forward a mobile phone to the voice box	x	x	
Mobile availability - mobile phone	x	x	
Disable mobile availability	x	x	x
Setting up a deputy			
Set up or change referral extension	x	x	x

	PhoneMail	VMS	Web Assistant
Enable or disable referral extension function	Possible by entering nothing	x	
Set up or change mailbox deputy	x	x	
Enable or disable mailbox deputy	x	x	
Greetings			
Record or change greetings	x	x	
Busy-line greeting	x	x	x
Internal greeting	x	x	x
External greeting	x	x	x
All caller greeting	x (alternate greeting)	x	x
After hours greeting	x	x	x
All greetings can be assigned codes	x	x	x
Message service (greeting only, no voice-mailbox)	x	x	x
Record name (can be set to record name when logging on for the first time)	x	x	x
Record personal greetings 1-9	x	x	x
Record general greetings 1-9 (as user *SYSTEM*)	x	x	x
General considerations			
Reverse playback order	x (only under playback options)	x (possible while browsing)	
Automatic message playback when polling	x	x	
Enable "Xpressions folder"	x		x
Cancel and return to the main menu	Partially	x	
Interrupt playback or recording	x	x	
Continue playback or recording	x	x	
Jump to end during playback	x	x	

	PhoneMail	VMS	Web Assistant
Fast forward playback by x seconds	8s (fixed value)	Adjustable value, or 10s	
Jump to start of message during playback	x	x	
Rewind playback by x seconds	x	Adjustable value, or 10s	
Repeat message played back	x	x	
Output message recipient	After playing back again		
Abbreviated or standard prompts	x		x (PhoneMail only)
Change telephone output volume	x	x	x
Change telephone password (PIN)	x	x	x
Change of PIN after defined period of time	x	x	
PIN must not contain own name, phone number or repetition	x	x	
Change language	x	x	x
Save language of external caller	x	x	
Enable or disable fax tone recognition	x		
Help	x		
Select voice mail system			x
Cancel after x repetitions of greeting	x	x	
Incorrect entry recognition	x	x	
Cancel after x incorrect entries	x	x	

2.2.2 Main Differences Between PhoneMail and VMS

	PhoneMail	VMS
Station authentication for direct access/mailbox playback	By means of extension and password / PIN	With code number (= Hicom PIN) and password
Password optional	-	x
Termination of digit sequences	# (pound)	With * (star)
Return to main menu from all branches	-	With 0*
Dictation (privilege required)	-	x
Access to sent objects	-	x
Job processing	Session-oriented	Job-oriented
Help function	x	-
Quick reference	x	-
Sequence when sending messages	Record message - address message	Address message - record message
Broadcast message/call functionality	-	x (privileges required)
Variable forward access	x	-

2.3 File Formats for Recording Voice Messages

If a user has a voice message or greeting recorded via the IP APL, the IP APL generates a sound file in WAV (16 bit) format by default. The MTA then converts this file into a file of the format WAV (8bit). Both files are subsequently consolidated in a PMF file and stored on the XPR server computer system.

Example:

A voice message with a length of 10 seconds requires the following IP APL memory:

10 s x 8000 Hz x (2+1) Byte= 240.000 Bytes (corresponds to approximately 234 kB)

With the registry entry `VoiceRecFormat [REG_DWORD]` of the IP APL you can change this behavior and configure one of the following alternative storage formats for voice messages:

- A-Law 8 kHz Mono (value in the registry entry: 0x02000000)
- µ-Law 8 kHz Mono (value in the registry entry: 0x10000000)
- PCM 8 kHz Mono (value in the registry entry: 0xffffffff)

After you have configured one of these storage formats the IP APL will allocate only approximately a third of the original memory space for voice messages on the XPR server computer system. For, in this case voice messages will not be additionally stored in the WAV format.

NOTE:
If you want to change the relevant default behavior, you need to manually create this registry value in the registry first.

2.4 OpenScape Xpressions Access Numbers

A sequence of OpenScape Xpressions access numbers (grouped logically, not numerically) is assigned for the telephone user interface (VMS, PhoneMail).

OpenScape Xpressions offers the following access options:

- **Direct Access (main menu -** you can dial into your own mailbox)
  You can query and administer your own mailbox from any telephone with the phone number set here. If you use this number, you must enter your mailbox number and password at the server for identification purposes.
  You can then access all saved messages as well as the settings for your mailbox. Messages can be recorded for other subscribers and sent to them. This form of access offers the same options as your mailbox's main menu.
- **Guest Access (** you can dial into a foreign mailbox)
  You can dial the phone number set here from any telephone to leave a voice message for another mailbox owner irrespective of whether or not that subscriber is currently available. You must enter the mailbox number of the desired party after connection to the server.
  Depending on how the subscriber's answering options are configured, you can leave a message in the subscriber's mailbox or be forwarded to a referral extension.
  You can also switch from guest access to direct access by entering a code number and password (VMS only).
- **Forward Access (voice mailbox -** you can forward callers who dialed your extension to the mailbox)
  Calls received at your extension are then forwarded to your mailbox. Callers can leave messages there (as in guest access mode). In this way, you can use the mailbox as a voice-mailbox.
  The extension used here must be set as a call forwarding destination in the PBX if you want to reach the OpenScape Xpressions server with call forwarding or call forwarding no reply. To set up a call, this access type requires the phone number of the extension that activated call forwarding (redirecting number) to be transferred.
  In general, the mailbox number in OpenScape Xpressions and the phone number in the HiPath/OpenScape Voice PBX are identical. If this is not the case, calls cannot be forwarded to the forward access (to "enable" the voice-mailbox). The forwarded call is routed in this case to the mailbox number.

- **Callback Access** (you can use the telephone's mailbox key to check your mailbox if there are new messages present)

  PhoneMail: This form of access uses the callback number and is the same as direct access except that you do not have to enter your own phone number because the phone number of the device used is set for this instead.

  The callback access service can be reached as follows:

  – From your own extension or a cell phone that you have registered at the server, by entering the service access number for callback access along with your personal password.

  – From your own extension by pressing the *Mailbox* button, selecting *Play*, and entering your personal password when the mailbox LED lights up.

  – From all other internal or external telephones by entering the service access number for callback access, the phone number, and the personal password.

  VMS: In VMS, callback access does not start in the main menu but with the new messages received. In addition, this phone number is used to gain rapid access to the OpenScape Xpressions server by means of the *mailbox* > *output* key combination or the corresponding menu item. This feature depends, however, on the capabilities of the terminals and PBXs used.

  The callback access service can be reached as follows:

  – From all internal or external telephones by entering the service access number for callback access, the code number, and the personal password.

  – From your own extension by pressing the *Mailbox* button, selecting *Play*, and entering your personal password when the mailbox LED lights up.

- **Transfer Access (PhoneMail only -** you can route callers to the mailbox)
  If a caller called a postmaster account, the operator can forward the caller to transfer access and before transferring, specify the required mailbox number. This form of access is identical to guest access except that the caller is informed by the operator at the outset that he or she is connected to a voice mail system and will therefore hear a specially created announcement.
  If the caller is unable to enter an extension number for a subscriber, or if this extension number is hidden from the caller, then the caller can connect directly to a mailbox by dialing the number.

- **Universal Access**
  Like Guest Access with the additional option to switch to Direct Access for starting the log-in that eventually leads to the main menu after a corresponding identification check. This mode is addressed as soon as a redirecting number (RN) is received during connection setup.
  VMS: Leaving a message in someone's box.
  PhoneMail: In addition: dial your own mailbox; connect.

- **Outcall Access**
  New messages can be automatically signaled by a call to any telephone. Otherwise, this feature offers the same options as callback access.

- **Fax Access (PhoneMail only)**
  This phone number is a forward access number designed exclusively for the fax service. The destination mailbox is also evaluated on the basis of the redirecting number here.
  The number must be permanently set as the call forwarding destination for all Hicom users who have access to the *fax* service, but who only have a mailbox in OpenScape Xpressions rather than a separate fax device. Fax Access is possible with HiPath 3000/4000/5000 and Hicom 300. The use of a central fax access number is not permitted in Hicom 150.

In the case of Flexrouting, a Hicom ACD-G connection shortcoming is treated by default as a special feature of the PhoneMail script. Every callback access that contains a redirecting number is automatically executed as forward access. This function can be disabled if not required.
The service access numbers to be entered must be configured in such a way in the PBX that calls to these numbers are automatically transferred to the server.

Redirected Number

The following table shows which script responds to which entry and in which language:

	With Redirected Number		**Without Redirected Number**	
	A recognized	A unknown	A recognized	A unknown
Direct Access (DA)	As for FA		DA-dependent script. Language of A. Switch over to caller's language after identification if necessary.	DA-dependent script. Start with system language, switch over to caller's language after identification if necessary.
Guest Access (GA)	As for FA		GA-dependent script. Language of A. Switch over to caller's language after timeout if necessary.	GA-dependent script. Start with system language, switch over to caller's language after timeout if necessary.
Universal Access (UA)	As for FA		UA-dependent script. Language of A. Switch over to caller's language after timeout if necessary.	UA-dependent script. Start with system language. switch over to caller's language after timeout if necessary.

<table>
<tr><th></th><th colspan="2">With Redirected Number</th><th colspan="2">Without Redirected Number</th></tr>
<tr><th></th><th>A recognized</th><th>A unknown</th><th>A recognized</th><th>A unknown</th></tr>
<tr><td rowspan="2">Forward Access (FA)</td><td>Script of B. Language of A.</td><td>Script of B. System language.</td><td colspan="2" rowspan="2">As for UA
(if available, otherwise GA).</td></tr>
<tr><td colspan="2">Switch over to caller’s language after time-out if necessary.</td></tr>
<tr><td>Access-independent extension range</td><td colspan="4">As for FA, redirected number is not evaluated.</td></tr>
<tr><td>Callback Access (CA)</td><td colspan="2">As for FA</td><td>Script of A.
Language of A.</td><td>As for DA</td></tr>
</table>

Abbreviations used in the table:

DA	Direct Access	**CA**	Callback Access
GA	Guest Access	**A**	Phone number of the calling device
UA	Universal Access	**B**	Number called by A
FA	Forward Access		

The table also shows that you can use forward access with all the access codes configured if a redirected number is supplied by the PBX.

2.4.1 Parallel Use of PhoneMail and VMS

The two telephone user interfaces PhoneMail and VMS can both be configured on the same server in parallel and can be used according to the individual user's requirements. It is important that the scripts and the subscribers are configured correctly.

The following applies if PhoneMail and VMS are operated in parallel in a Xpressions system:

- A user can select his or her preferred voicemail system in the Web Assistant. As the caller has already been identified in the case of callback access by the access number supplied (ANI), the relevant voice mail system can be started correctly, even if the access number of the other voice mail system was called.
- For external callers, this means that the voice mail system is not switched.
- The access numbers must originate in the assigned extension range which naturally must **not** overlap for PhoneMail and VMS.

Configuring Scripts

Both voice mail scripts are supplied to the system by the proper Telematic APL. With the exception of callback access, each script must be assigned unique phone numbers for its access codes, enabling it to be individually addressed. This is sometimes desirable because the two scripts have a different scope of functions. Callback access is only assigned to the script with which most subscribers are expected to work. When phone number ranges are used, again, the script assigned should be the one which most people use. All the necessary switch-overs between the scripts take place automatically.

Example (see table in the previous section):

Exception:
PhoneMail is the script that is used the most, internal phone numbers contain five digits in the range 20000 to 69999, Guest access is not used. Universal access is used instead. The server number is suppressed except for the last position in the PBX.

Extensions	PhoneMail	VMS
Direct Access	8	7
Guest Access	-	-
Universal Access	98	97
Callback Access	90	-
Fax Access	99	-
Transfer Access	91	-
Independent extension range	20000-69999	

In this constellation, all extension numbers with a leading 0 or 1 can be used for other purposes, such as Fax on Demand or Automated Attendant.

2.5 PhoneMail or VMS Functionality

2.5.1 Overview of Functions

After entering the service access number (for example for direct access), your call number Hicom (PIN) and possibly also your password, you can use the mailbox without restriction:

- edit new or old messages:
  - play back messages,
  - forward messages with/without comment,
  - delete messages,
  - set up a direct connection to the originator of a message,
  - answer messages,
  - fast forward or rewind message playback,
  - repeat message playback and receive detailed information about the message,
  - output fax messages to your default printer or to any fax device (optional),
  - output e-mails to your default printer or to any fax device (optional),
  - play back e-mails as voice messages (only if the *text-to-speech* add-on software is installed on the server.
- send messages
- change your personal settings, which includes
  - your personal password for telephone access,
  - the personal greetings (up to nine different greetings for different situations) as well as a name greeting,
  - the language setting,
  - the name greeting,
  - the referral extension,
  - the mailbox stand-in,
  - the info service number (assignment of greetings to answering mode),
  - the answering mode (accept messages mode or info greeting only),
  - set the notification feature,

  - set the playback options.

- **Create, modify, check and delete** your personal distribution lists.
- Create broadcast calls or broadcast messages (VMS only).
- Record dictations (VMS only).
- Set up a connection to another user or to the switch
- The type of prompts (standard or abbreviated) (PhoneMail only).
- The “Xpressions folder” can also be administered when playing back messages. You can enter settings in the e-mail client to ensure that important messages are redirected to this folder and output first (PhoneMail only).
- Activate automatic fax tone recognition (for forward access) - optional (PhoneMail only).
- Decide which message types should be edited with the telephone (you can enter a setting to ensure that only voice messages and faxes are output, but no e-mails) (PhoneMail only).

2.5.2 PhoneMail and VMS Features

This section describes important PhoneMail and VMS features. You can find a list of all functions in Section 2.2.1, “Comparison of PhoneMail and VMS”.

You can modify a number of your personal settings if you can access the web-based configuration interface with personal settings (Web Assistant) (see table in Section 2.2.1, “Comparison of PhoneMail and VMS”).

2.5.2.1 General Features

Distribution lists

The recipient’s phone number is normally entered when messages are sent. Alternatively, it is possible to enter a distribution list number the user themselves have created, or to use a public distribution list. A distribution list contains users or more distribution lists. Public distribution lists are created by system administration.

A message can contain phone numbers, fax numbers, and SMS numbers as well as e-mail addresses (this can only be configured in the Web Assistant) and can be sent to multiple distribution lists simultaneously.

Referral extension

You can set a referral extension. Depending on the answering options set for your mailbox, callers who are redirected to the mailbox can actively connect to this referral extension or be automatically connected to this referral extension. This feature only applies to the voice service.

Default printer

The system administration can configure any network printer for use. Every user can set one of the printers in the list of printers available in OpenScape Xpressions as the default printer that can be accessed over the telephone.

Default fax device

All fax addresses can be set as default fax devices to make it easier to output e-mails and faxes using the telephone.

Memory restrictions

If you activated monitoring of the memory used and the limit has been reached in your own mailbox, you will receive a message when you open this mailbox. If the memory used by the mailbox is over 100% of the value set by your system administration, messages cannot be sent (forwarded, answered) to your own mailbox. This applies to all other voice mail service access options if the user has identified himself or herself at the Hicom. In this case, you should delete messages that you no longer need or contact the system administration. Callers can continue to leave messages irrespective of memory utilization by the mailbox.

Note: In a TUM environment the memory restrictions on the OpenScape Xpressions are non-functional. They can be configured via the Exchange or Lotus Notes administration if required.

2.5.2.2 User Prompts

The prompts in the mailbox are issued in the form of spoken announcements. The announcements are played back over the telephone handset. Users operating optiset telephones with an alphanumeric display in conjunction with a Hicom 300 or HiPath 4000 telephone extension also receive visual prompts on the display.

The user prompts invite you to press certain digit keys to select a function or to enter a phone number or a password, for example.

All inputs for mailbox utilization can be performed using the dialing keypad, in other words, with digit keys **0** to **9**, the ***** (star) key and the **#**(pound) key

Name dialing (Name dialing – PhoneMail only)

In addition to selecting subscribers on the basis of their phone number, subscribers can be identified by their name in guest access or direct access mode. Name selection is performed by programing a letter on the telephone keypad. As soon as Xpressions recognizes the minimum digit string entered or that the input is complete, it searches its database for suitable names. Up to six possible matches can be displayed at a time. You can view all matches by scrolling down the list. Matches are sorted in ascending order of phone numbers. Distribution list names or AMIS/VPIM addresses are not displayed.

Having system greetings repeated

If you do not press a key after a prompt, the announcement is repeated after a few seconds. To hear a prompt again, simply wait for the announcement to be repeated. This is helpful, for example, if you were unable to understand an announcement for acoustic reasons.

Requesting help (PhoneMail only)

You can request help when prompted to select an item from a menu. Additional help announcements then explain the current selection options in the menu.

You cannot request help when you are prompted to enter a phone number or a password, or when the 0 key is assigned a different meaning.

Wrong entries

If you entered an invalid digit, for example when selecting a menu item, the system puts out an appropriate announcement. You are then requested to repeat the entry. The call is disconnected after a certain number of incorrect entries. The number of misentries depends on the system and can be modified by the administrator.

Dialing one's own mailbox

You need a service access number, the phone number or code number and the password to access a mailbox. When you access the mailbox for the first time, you are prompted to assign or change a password in the interest of security. You can dial into your own mailbox from both your own telephone and any other telephone.

The system may also be configured to prompt you to record a name greeting the first time you access the mailbox, if there isn't one already recorded.

If you use the *Manual PIN* feature in Hicom 300 and HiPath 4000, you need not perform the otherwise obligatory identification by entering a password when dialing into your own mailbox.

Playing messages

An announcement is output providing information on the message categories available. Information is also provided on the number of mailbox messages that are unread, read, and to be sent as well as a breakdown of messages by type (voice message, fax message, e-mail).
If you enabled **Xpressions** folders in PhoneMail, the information starts with the name of the folder currently being processed.

Message header

The date and time of message receipt are announced at the beginning of each message. The name and extension number of the caller are also output for incoming messages, providing the caller is an internal subscriber. For external calls, the call number is played back if it was transferred with the message. The originator of e-mail messages is announced, provided text-to-speech (TTS) is installed and activated.

AMIS/VPIM addressing to foreign systems
A check of the entered phone number against the AMIS node with subscriber number length takes place. If the AMIS node matches, the node name recorded can be output as confirmation. The subscriber to be reached is entered by the user as usual without the message creator having to know the associated AMIS numbers.

2.5.2.3 Answering Options

- **Greetings and answering mode**
  Callers who are diverted to the mailbox receive an announcement (a system greeting is set by default). The following is a list of the types of greeting available; a maximum of nine different greetings can be recorded (sorted by priority):

  – Alternative greeting:
    When the alternative greeting is active, all callers receive this greeting.

– After hours greeting:
This greeting is played back to callers who dial an extension outside of business hours. This greeting can inform callers about the office's working hours. You can program working hours using the web-based configuration interface.

– Greeting when extension is busy:
The callers always receive this announcement when the telephone is busy. For example, you can set a greeting to inform the caller that the extension is currently busy.

– Personal greeting for external and internal callers:
One personal greeting can be set for external callers and another for internal callers. You can record a more formal greeting for external calls, for example, while internal callers can be told where they have reached you.

– Generic greetings:
The system offers up to nine generic greetings for selection. These generic greetings are created by the system administrator.

For any of these greetings, you can set whether or not callers who are diverted to your mailbox will be able to leave a message. You may want to prevent callers from leaving messages, for example, if you will be unreachable for an extended period. In this case, an appropriate announcement should be available advising the caller of your absence.

- **Company-specific greetings**
The administrator can configure global, company-specific greetings in the Web Assistant or via the Telephone User Interface (TUI).
In most cases the default greeting with number 0 is used as company greeting and put out to all external callers. You can also use a different file. The file to be played must be in WAV format (8000 Hz, 8 bit, mono, A-Law).

- **Call forwarding to a private referral extension**
You can set a private referral extension. If you have set *Greeting only* as the answering mode, the caller will be re-directed to your referral extension either automatically or by pushing a key, provided that the caller remains on the line after the greeting has been played. This number is also used for the settings in the programmable caller menu of the forward access service.

- **Name**
You can record your own name in the same way as you record a greeting. Other subscribers will then hear your name when they send messages or else receive messages.

- **Mobile availability – mobility**
You can set a phone number to allow callers to reach your cell phone. As in the case of the referral extension, the setting can also be used in the forward access menu.
The administrator configures an option for mobile availability within a region.

Mailbox owners then enter a contact phone number in the voice-mailbox options. This option must be played back to the caller as part of the personal greeting. Call forwarding can also be activated from an external location.

- **Mailbox stand-in**
  In case of your being absent you can set a OpenScape Xpressions subscriber here who will then receive a copy of all incoming messages.

2.5.2.4 Mailbox Options

- **Setting notifications**
  You can enter a setting ensuring that a text message (SMS message) is sent to your mobile telephone to signal the arrival of new messages. Xpressions can also try to call users at multiple (predefined) telephones or, if a pager is in use, reach the user with the pager.
- **Xpressions folder (PhoneMail only)**
  If operations are being performed in an integrated Lotus Notes or MS-Exchange environment or the OpenScape Xpressions server is also configured as e-mail system, the *Xpressions folder* can be used as inbox for special messages. This folder can be edited on the telephone via *PhoneMail*. The *Xpressions folder* is not available in the system by default. It must be created according to the respective instructions that you find in the corresponding OpenScape Xpressions manuals for the Exchange/Outlook or Lotus Notes connection.
- **Automatic message playback**
  You can set message playback without user interaction for inbox processing. Of course, you can interrupt message playback at any time by pressing a button.
- **Fax tone recognition (PhoneMail only)**
  If this is permitted in the system, you can enable or disable fax tone recognition in the mailbox in forward access. If there is no fax access number available in the system and the same forwarding destination is set for both voice messages and faxes, then callers are given the option of sending faxes in addition to voice messages to your mailbox. A call forwarding instruction must be set up, or your fax partners must be given an address for contacting you directly.
- **Language**
  You can change the prompt language. This applies to all other access options when calls are made from your extension, or from any other extension as soon as your own mailbox is dialed.
- **Language settings**
  The script is not aware of a user's language preferences before the user logs on. The script consequently uses the system language set during the installation. If the user does not understand this language and therefore does not press any buttons, the script displays a language list from which the user can choose a language. Once the user has successfully logged in, the language set is applied.

Using your mailbox for your cell phone

The mailbox can also be configured as a mailbox for a cell phone. The advantage of this is that all messages are saved in a single mailbox irrespective of whether they were addressed to the telephone, the workstation or the mobile phone. The cell phone can be set to forward calls to your mailbox. The cell phone's "*Call*

forwarding" function is used for this. Callers who dial your mobile number will be re-routed to the mailbox. Depending on the answering options set, callers can leave messages in the mailbox for you or connect to the PhoneMail referral extension.

Configuring a group mailbox

You can configure a group mailbox so that multiple users can share a single mailbox (see Section 10.3.3, “Using a Voicebox for multiple Subscribers (Group Mailbox)”)

Call forwarding (CF):

If you have programed fixed call forwarding (CF), calls are diverted to the mailbox when the telephone is busy, the call is not answered, or when call forwarding to your mailbox is active.

2.5.2.5 Broadcast Calls and Broadcast Messages

Broadcast Call / Broadcast Message

You can use the broadcast call and broadcast message functions to send voice messages, in particular, to a specific group of recipients. Messages can be sent to a significantly larger group of recipients than with the **Send to distribution list** feature. In the case of **broadcast call**, recipients are called directly and do not receive a message in their mailbox. In the case of **broadcast message**, on the other hand, all recipients receive a message in their mailbox. The subscribers you want to reach are grouped together in broadcast call and broadcast message distribution lists that you can select using reference extensions at the telephone. Special privileges are required to initiate a broadcast call or broadcast message.

- You can only send broadcast calls and broadcast messages with the VMS script.
- When sending a broadcast call/message using the voice mail script, you can enter a future delivery time. An expiry time for a broadcast transmission can be set as well.
- To reserve lines for incoming calls, we recommend limiting the number of telephone lines that can be used for outgoing calls.
- A distinction is made between broadcast call and broadcast message distribution lists. You can enter internal or external phone numbers in broadcast call distribution lists.
- Broadcast call distribution lists are dynamic lists. This means that the administrator can edit the lists after creating the broadcast call and before the delivery time. The delivery time distribution list is used.
- You can use different addresses, such as fax, SMS, e-mail, or Internet mail accesses in broadcast message distribution lists.

- Broadcast call/message distribution lists can only be administered by privileged users. These distribution lists can be created and edited by telephone and also with the Web Assistant or with the Communications client.
- You can also send a broadcast using the clients supported by OpenScape Xpressions. When sending by means of broadcast call, a phone number matching the subscribers in the distribution list is looked for in OpenScape Xpressions. If such a phone number is available, the message is put out via telephone.
- If broadcast calls are sent by the PC, a text can also be entered in the e-mail. Text-to-speech then reads this message out to all subscribers over the telephone.
- You can initiate broadcast calls for all OpenScape Xpressions subscribers (BCU).

2.5.3 Administrative Voice Mail Script Settings

2.5.3.1 Global Configuration of PhoneMail and VMS

PhoneMail and VMS support the same database layout for functions used globally, so that this configuration data can be set here globally by the OpenScape Xpressions administrator for both systems. You can enter settings in the system either for both PhoneMail and VMS or for each application separately.

The following settings are possible:

Changing the voice-mail data path: This would allow the voice mail systems to use either a shared directory or separate directories for all greetings recorded by the user or system prompts recorded by the administrator.

A short warning tone (beep) can be heard by default a few seconds before the end of a recording. This warning tone can be replaced by the option **Alternative warn prompt** field.

You can set a **mailbox quota** and enter a percentage value for the **Quota threshold**. When this value is reached, the telephone user interface warns the user that his or her mailbox quota is almost used up. Please note that this option is useless in True Unified Messaging environments where the Microsoft Exchange or Lotus Notes message store is used, since mailbox quotas are configured in Microsoft Exchange or Lotus Notes.

The number of messages offered by the telephone user interface can be limited in **Max. Inbox documents**. Depending on the sorting method set in the Web Assistant this setting always provides the first *n* messages, with *n* corresponding to the value set here.

The **Maximum length of name recording (in sec) can be restricted. This** refers to the name of a mailbox owner that can be recorded so that a caller is informed of the name. This helps the caller to make sure that he/she has dialed the correct number.

The mailbox owner can use **Max. length of announcements (in sec)** to restrict the length of his or her announcements/greetings that can be played back via the TUI.

The **Max. length of messages** determines the maximum message length a caller can use. Thus there is no endless talking.

You can use **Min. length of any recording (in ms)** to specify the (minimum) length of time that a recorded message, name recording or announcement must last for it to be recorded. If this option is set, a new message is not recorded if the caller hangs up immediately, for example.

The **Minimum PIN length** (**P**ersonal **I**dentification **N**umber, otherwise known as telephone password) specifies the minimum number of digits in a new PIN. Using **Amount of stored PINs**, you can instruct the system to save a number of previously used PINs in encrypted form and to use these for verification when a PIN is changed. This forces you to enter a genuinely new PIN rather than just alternating two PINs over and over, for example. **PIN expire days** specifies the number of days after which a PIN is considered invalid and the user is prompted to enter a new PIN.

Use **Max. tolerated login failures** to specify a value after which the actions enabled in the **Sanctions...** area should be activated. The system terminates the call when this value is reached and a new call must be set up. If the **Lock voice boxes** option is activated as well, no further dial-in attempts are possible and the mailbox must be re-enabled by the administrator.

You can enter a PIN for use by new users when logging on for the first time in the **Default PIN** field. This is generally followed by a prompt to enter a user-specific PIN.

A caller can opt to transfer to the **Default operator**. The user must specify the relevant extension or the user ID for this.

Calls are transferred to the PBX with the **Call transfers via PBX** option. This is not always possible, however. In this case, the option may not be set and the call is transferred via a second B-channel which the XPR server uses to dial out.

When **Allow blind transfers** is enabled, the system does not check if the destination is currently free. As a result, callers either receive a busy signal or are routed to the voice mail system in the voicebox of the user to whom they wished to be transferred.

The option **Allow call transfer from internal and/or external callers** can be used to specify if a caller can be forwarded to a deputy or the operator. A voicebox owner can thus set a deputy to whom a caller can automatically be transferred if he or she selects the relevant menu command.

2.5.3.2 Global Configuration for PhoneMail Only

The following functions can also be enabled by the administrator by entering the relevant parameters:

- Enable automatic fax tone recognition.
- Deactivate the Flexrouting mechanism available by default.
- Deactivate the password prompt when using direct or callback access from your own telephone.
- Deactivate the password prompt when using callback access from your own mobile phone. The number of the mobile phone must be transferred when the connection is set up and must be entered with the user data as trusted number.
- Ensure that the switchover is not performed by the telephone extension connected but rather by the OpenScape Xpressions server. Each switched connection seizes 2 B-channels in the server.
  For example, this is necessary for Hicom 150 H V1.0 predecessors (Hicom 150 E Office PRO or COM V3.0) which do not support this feature. In Hicom 150 H V1.0 and later, connections can also be switched via the PABX using the protocol "CorNet-N Variant 2 for OpenScape Xpressions".
  When only one S_0 card is used in the system, please remember that the server is not available for any other connections during a switching scenario.
- Delay in milliseconds before playing back the first announcement in forward access. This may be useful for ensuring that the announcement is not output twice in ACD applications.
- Prevent the use of personal distribution lists.
- MWI default settings when a user logs on for the first time.

2.5.3.3 Global Configuration for VMS only

If **Max. number of incorrect entries before connection is released** is selected, the connection is cleared down after the specified number of incorrect script entries. This is necessary, for example, to avoid maintaining connections with other automated devices for too long.

The **Time difference in milliseconds** is used to distinguish between two individual keystrokes and a double keystroke. This is needed for [44] and [66] commands during message processing.

The **Timeout when connecting** value specifies the number of seconds allowed to elapse before the connection attempt is canceled.

If the **Activate TTS** option is active, users may have messages read out via text-to-speech. The user needs the `TTS Capabilities privilege` for this.

Save language selection of external callers, so that callers will be served in the language they have selected when they call next time. This is only relevant in the case of multilingual installations.

The **Max. length of dictation** can be set in the **Dictations** area. The parameter **Offset of warning signal before end of recording** defines the length of time between the warning and the actual termination of the recording. As the recording time is longer for dictations than for messages, we recommend entering a correspondingly longer warning offset for the user. If you want to dictate a 30-minute letter, you will not want to receive a warning when you have only 30 s left. A warning 2 minutes before the end of recording would be much better in this case.

You can define the **Min. length of message for forwarded calls**. You can set the length (in seconds) that the messages must have for them to be accepted and saved. Since some callers hang up when they realize that the conversational partner is an answer machine, this feature prevents the generation of a message in this case. This parameter only applies to messages that are recorded as part of a call forwarding operation and which are terminated by handset replacement. A short message is also saved when the star key is used to correctly terminate message recording.

The parameter **Offset of warning signal before end of recording** is used for recording messages. It defines the time between the warning that the caller hears and the actual end of the recording time.

The option **Number of repetitions when selecting a menu** refers to the number of times a menu is offered for selection. Example: **Max. number of repetitions when selecting a menu** = 3, }the menu is displayed for the user once and then repeated three times before the connection is cleared down.

The **Time that must elapse before menu selection can be repeated** refers to the length of time that a user who has made an incorrect entry must wait before he or she can repeat menu selection. Should not be smaller than 15 seconds.

Pause before each prompt list (in milliseconds) specifies how long the system should pause for before a prompt list is played back.

The **Send a tone signal at the end of each menu selection** option is used to send a tone after each completed menu selection to indicate that the selection offered is finished.

Resolve distribution list names means that the distribution list names are resolved and individual addresses are represented in the case of status queries.

Disable recording hints when using personal announcements means that a caller only hears a personal announcement played, and cannot leave a message.

If the **Greeting service only with personal announcements** option is set, the Greeting only service (infomode) can only be combined with a personal greeting and not with standard announcements. This means that only personal greetings are sent to Greeting only services.

Show additional menu for printing out e-mail attachments allows the user to print out an e-mail attachment at a printer via an additional menu.

Send display texts to internal terminals is an option for sending displays for user prompts to the internal terminals used.

Also send display texts to external terminals is used for sending displays to external terminals. This is sometimes necessary in the case of Virtual Private Networks (VPN).

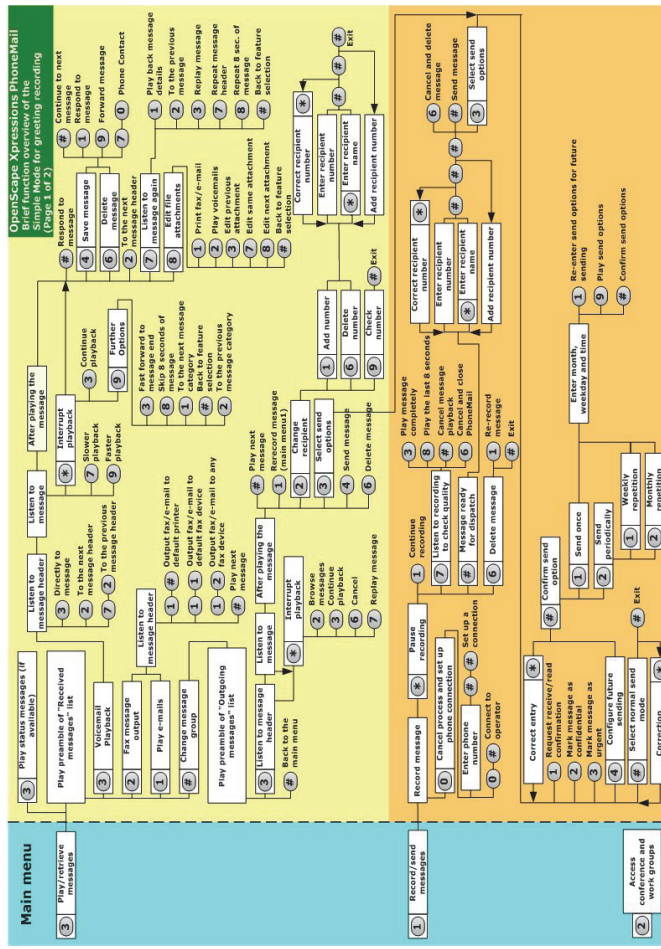
In the case of signaling via DTMF, the tone for ending a recording may also be recorded. To avoid this, a portion (in milliseconds) can be automatically **cut off the end of the recording**.

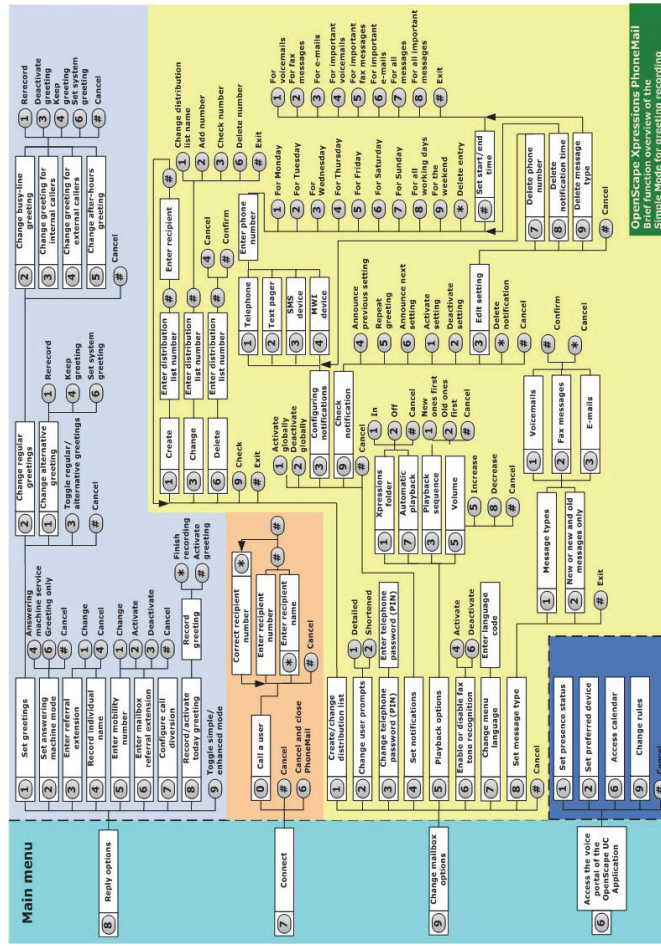
Suppression of user prompt **Please start speaking after the tone** at the end of a personal greeting (only applies to forward access)

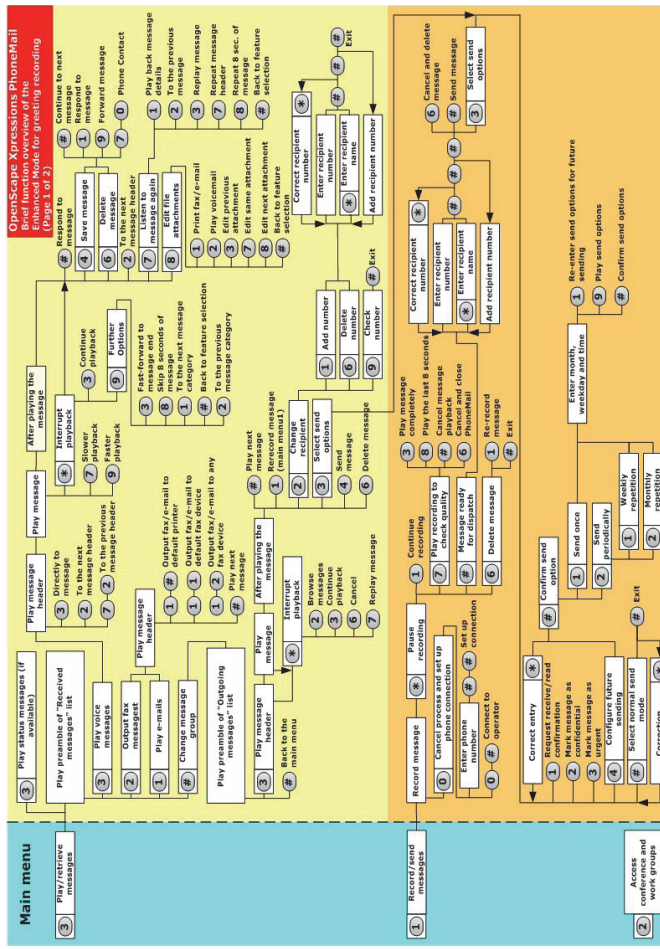
Suppression of the use **of the default PIN**. Users log on to VMS with their Hicom PIN. This option exempts users from having to enter the additional telephone password. If the user specifies a telephone password, it will mandatorily be queried.

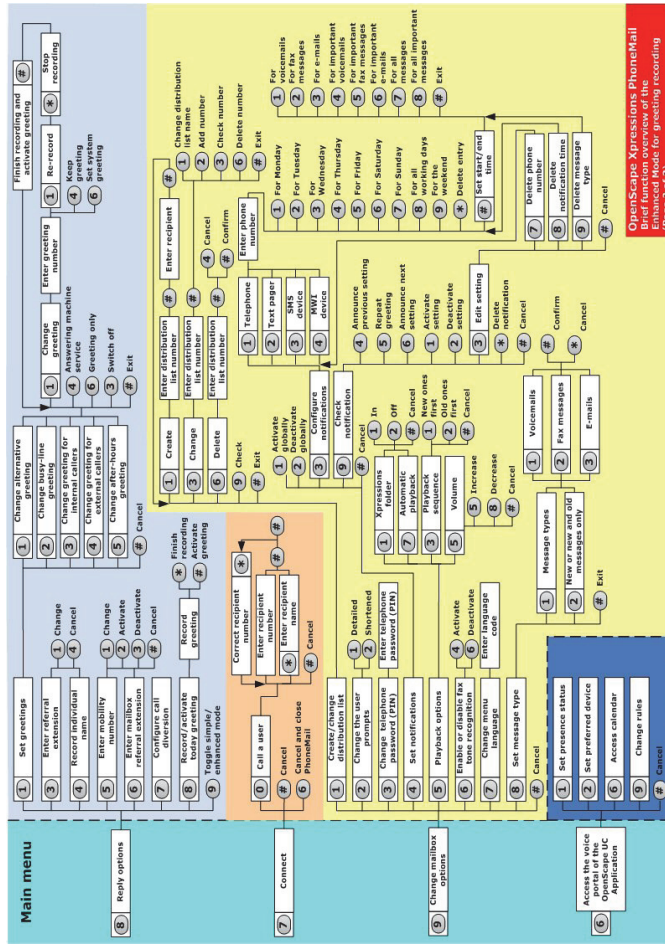
2.5.4 PhoneMail and VMS Function Trees

2.5.4.1 PhoneMail Function Tree

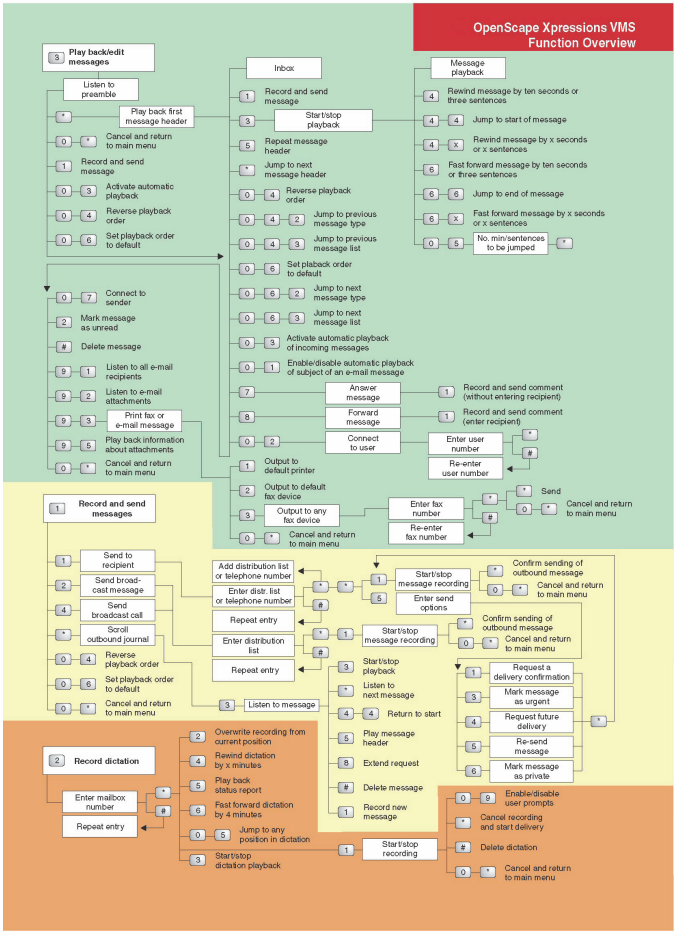


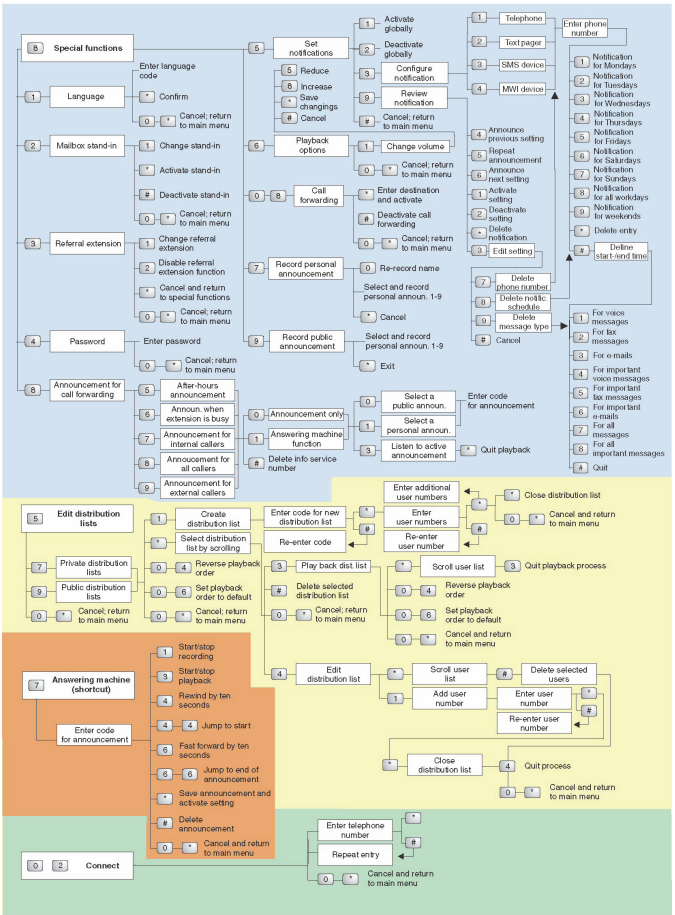

Main menu
OpenScape Xpressions PhoneMail
Brief function overview of the Simple Mode for greeting recording
(Page 2 of 2)


OpenScape Xpressions PhoneMail
Brief function overview of the
Enhanced Mode for greeting recording
(Page 1 of 2)
Main menu
Play/retrieve messages
Record/send messages
Access conference and work groups
Play status messages (if available)
Play preamble of "Received messages" list
Play voice messages
Output fax messageset
Play e-mails
Change message group
Play preamble of "Outgoing messages" list
Play message header
Back to the main menu
Play message header
Directly to next message
To the next message header
To the previous message header
Play message
Play message header
Output fax/e-mail to default printer
Output fax/e-mail to default fax device
Output fax/e-mail to any fax device
Play next message
Play message
After playing the message
Interrupt playback
Slower playback
Faster playback
Continue playback
Further Options
Fast-forward to next message
Skip 8 seconds of message
To the next message category
Back to feature selection
To the previous message category
After playing the message
Respond to message
Save message
Delete message
Listen to message again
Edit file attachments
Print fax/e-mail
Play voicemail
Edit previous recipient
Edit same attachment
Edit next attachment
Back to feature selection
Correct recipient number
Enter recipient number
Enter recipient name
Add recipient number
Play back message details
To the previous message
Replay message
Repeat message header
Repeat 8 sec. of message
Back to feature selection
Continue to next message
Respond to message
Forward message
Phone Contact
Cancel and delete message
Send message
Select send options
Exit
Record message
Pause recording
Cancel process and set up phone connection
Enter phone number
Set up connection
Connect to operator
Continue recording
Play recording to check quality
Message ready for dispatch
Delete message
Play message completely
Play the last 8 seconds
Cancel message playback
Cancel and close PhoneMail
Re-record message
Exit
Select send options
Send message
Cancel
Replay message
Play next message
Rerecord message (main menu)
Change recipient
Browse messages
Continue playback
Cancel
Delete message
Add number
Delete number
Check number
Exit
Correct recipient number
Enter recipient number
Enter recipient name
Add recipient number
Confirm send option
Correct entry
Request receive/read confirm
Mark message as confidential
Mark message as urgent
Configure future sending
Select normal send mode
Correction
Exit
Send once
Send periodically
Weekly repetition
Monthly repetition
Enter month, weekday and time
Re-enter send options for future sending
Play send options
Confirm send options


Main menu
OpenScape Xpressions PhoneMail
Brief function overview of the Enhanced Mode for greeting recording (Page 2 of 2)

2.5.4.2 VMS Function Tree




8 Special functions
1 Language
Enter language code
* Confirm
0 * Cancel; return to main menu
2 Mailbox stand-in
1 Change stand-in
* Activate stand-in
# Deactivate stand-in
0 * Cancel; return to main menu
3 Referral extension
1 Change referral extension
2 Disable referral extension function
* Cancel and return to special functions
0 * Cancel; return to main menu
4 Password
Enter password
0 * Cancel; return to main menu
6 Announcement for call forwarding
5 After-hours announcement
6 Announ. when extension is busy
7 Announcement for internal callers
8 Annoucement for all callers
9 Announcement for external callers
5 Set notifications
1 Activate globally
2 Deactivate globally
3 Configure notification
9 Review notification
Cancel; return to main menu
5 Reduce
8 Increase
* Save changings
# Cancel
6 Playback options
1 Change volume
0 * Cancel; return to main menu
0 8 Call forwarding
* Enter destination and activate
# Deactivate call forwarding
0 * Cancel; return to main menu
7 Record personal announcement
0 Re-record name
Select and record personal announ. 1-9
* Cancel
9 Record public announcement
Select and record personal announ. 1-9
* Exit
0 Announcement only
1 Answering machine function
Delete info service number
0 Select a public announ.
1 Select a personal announ.
3 Listen to active announcement
Enter code for announcement
* Quit playback
1 Telephone
2 Text pager
3 SMS device
4 MWI device
Enter phone number
4 Announce previous setting
5 Repeat announcement
6 Announce next setting
1 Activate setting
2 Deactivate setting
* Delete notification
3 Edit setting
7 Delete phone number
8 Delete notific. schedule
9 Delete message type
Cancel
1 Notification for Mondays
2 Notification for Tuesdays
3 Notification for Wednesdays
4 Notification for Thursdays
5 Notification for Fridays
6 Notification for Saturdays
7 Notification for Sundays
8 Notification for all workdays
9 Notification for weekends
* Delete entry
# Define start-/end time
1 For voice messages
2 For fax messages
3 For e-mails
4 For important voice messages
5 For important fax messages
6 For important e-mails
7 For all messages
8 For all important messages
Quit
5 Edit distribution lists
7 Private distribution lists
9 Public distribution lists
0 * Cancel; return to main menu
1 Create distribution list
* Select distribution list by scrolling
0 4 Reverse playback order
0 6 Set playback order to default
0 * Cancel; return to main menu
Enter code for new distribution list
Re-enter code
3 Play back dist. list
Delete selected distribution list
0 * Cancel; return to main menu
Enter additional user numbers
Enter user numbers
Re-enter user number
* Scroll user list
0 4 Reverse playback order
0 6 Set playback order to default
0 * Cancel and return to main menu
3 Quit playback process
* Close distribution list
0 * Cancel and return to main menu
7 Answering machine (shortcut)
Enter code for announcement
1 Start/stop recording
3 Start/stop playback
4 Rewind by ten seconds
4 4 Jump to start
6 Fast forward by ten seconds
6 6 Jump to end of announcement
* Save announcement and activate setting
# Delete announcement
0 * Cancel and return to main menu
4 Edit distribution list
* Scroll user list
1 Add user number
Delete selected users
Enter user number
Re-enter user number
* Close distribution list
4 Quit process
0 * Cancel and return to main menu
0 2 Connect
Enter telephone number
Repeat entry
0 * Cancel and return to main menu

2.5.5 Hicom 300 VMS

2.5.5.1 Comparison Between OpenScape Xpressions VMS and Hicom 300 VMS

Customers who have been using the Hicom 300 voice mail Service VMS up to now can receive and send their voice messages with a VMS-adapted user interface. This means that users do not have to familiarize themselves with a new user interface or even learn new operating logic. The functionality of the dictation unit was improved in particular. The user interface was extended to include Unified Messaging with OpenScape Xpressions. As part of system migration, a number of features were changed in comparison to the Hicom VMS interface.

The following well-known and frequently used Hicom VMS features

- scrolling with the mailbox key (without B-channel),
- mailbox access using "Mailbox - Play", if there are only old messages available,
- unidentified mailbox access with "Mailbox - Play",
- direct transmission of messages from the user's own mailbox without outbox entry (old function 2)

are not supported by the OpenScape XpressionsVMS also because of the modified connection.

These are replaced by new features:

- improved display support
- real dictation functionality
- improved positioning options
- language changing by the mailbox owner or the caller

Further differences:

- Unified Messaging for VMS (voice, fax, and e-mail messages can be edited at the telephone)
- The **multi-level greeting service** is performed by the **Automated Attendant** function
- AMIS addressing of the telephone user interface of OpenScape Xpressions
- Broadcast messages to everyone

The following features are no longer supported by OpenScape Xpressions because they were very rarely used by customers:

- Collective box separating destination information and actual message
- Time announcement
- Event signaling
- System-wide telephone-based recording of name greetings
- Recording prompts with the telephone

In the course of migration from VMS, the entire database can be transferred by AMIS to OpenScape Xpressions in the form of subscriber data, greetings and messages. This ensures that the user does not suffer any data losses and re-training costs are kept to a minimum because the new user interface is almost identical to the old one. The simultaneous use of the VMS and PhoneMail interface in the same system is supported for the first time in HiPath Xpressions V3.0.

2.5.5.2 Importing Subscriber Data from Hicom300 VMS with AMIS

This protocol is used to network different speech memory systems on the basis of the AMIS (Audio Message Interchange Specification) industrial standard.

2.6 Application Builder

NOTE: You find a comprehensive description of how this generator operates and is to be used in the Application Builder manual.

The Application Builder enables you to create interactive telephone applications for different usage scenarios. Synonyms for these applications are **voice dialog system, Automated Attendant** or **IVR** (Interaction Voice Response)[1]. Each application enables the automatic playback of **prompts**, entering telephone keys via **DMTF** and making voice entries by means of **speech recognition** as well as forwarding to other subscribers. For example, prompts may inform the caller and help to navigate in the application. Entries via keyboard and via speech recognition enable the caller to find his/her way through the application and to enter data and names. A prompt text may read like this:

"Welcome to the XY company. If you would like to be connected to one of our staff members and know his/her extension, please press 1. If you would like to be connected to our hotline, please press 2. If you would like ..."

In this way callers can be routed to a suitable conversation partner or routine jobs can be performed as automated procedures. Examples of usage scenarios of an application are simple information via telephone, automated reservation and order processes, automated telephone switchboards.

In the OpenScape Xpressions system the technical execution of an application is enabled and controlled by the **VOGUE** script. The VOGUE script routes callers to an application, executes the respective application features, forwards the call to a conversational partner and ends the application. All processes of the VOGUE script are performed **automatically**.

1. In the course of our descriptions the term IVR application, or application for short, will be used.

2.6.1 Creating IVR Applications

The Application Builder contains a graphic editor that allows the user to assemble and configure a model of an IVR application (application model, application workflow) in the form of a call flow (block diagram or flow chart).

A call flow consists of blocks and connections between these blocks. The call flow blocks are controls that, for example, play a sound file, perform a database query or establish a phone connection to a subscriber. The connection lines between the controls in the call flow indicate from which control a transition to another control is possible. Assembling means that the user determines which controls exist in the call flow and which controls are interconnected. Configuring means that the user may set control properties. For example, he/she can set for a control to play sound files which sound files to play and in which sequence. Furthermore, variables can be defined for storing data and grammar files applied for speech recognition. An application may have different call flows that may be interconnected.

The call flow is - as described above - only an IVR application model. Thus, it does not contain any information about the execution of the model, e. g. how sound files are accessed and how these sound files are forwarded to a PBX so that a caller can listen to these files. The Application Builder is thus a designer for IVR applications. The VOGUE script that is configured within a telematics APL executes the application.

The result delivered by the Application Builder is a folder with different XML definition files. These files comprise the data which define an application and differ from other applications. Besides the call flows (application models, application workflows) of an application with all its control and connection properties the files also represent the configuration of the applications and the properties of the variables, prompts and grammar files used.

While the creation of an application may occur offline, thus without the connection to an OpenScape Xpressions server, the provision of an application for executing an application must have a link to the server. The described folders and files are written in the OpenScape Xpressions server database upon their provision as well as stored in the setup directory of the OpenScape Xpressions server as compressed folder. Other Application Builder users can then import, view and edit existing applications.

2.6.2 Application Builder Features

The Application Builder possesses among other things the following features:

- Creating and editing applications
    - Chaining different applications

  - Searching for specific characteristics and elements of all applications. For example, all applications that use a specific prompt can be put out. In case of a successful search, the results also deliver the prompt position within the application.
  - Bookmarks for indicating the most different positions in the application
  - Integrating prompts in the respectively available languages
  - Supporting text-to-speech for announcing text
  - Definition of variables to store and forward data and information
  - Importing Application Generator applications used so far in the Application Builder
- Creating and modifying call flows that represent the possible functionality within an application
  - Creating a call flow by drag & drop of controls within a clearly structured graphical editor
  - Customizing call flow views
  - Attaching notes to a call flow
  - Linking different call flows
- Usage of TTS (text to speech)
- Language modification for GUI, documentation and online help after a program reboot

2.6.3 Features of an Application

An application created with the Application Builder may have the following features.

- Playing and re-recording of sound files
- Application-flow control by the caller using a menu and making entries via DTMF keys or voice
- Performing actions depending on date, weekday, national holidays and time considering the time zone (usage of time profiles)
- Branching in the menu navigation depending on statistic as well as dynamic values such as waiting loop length
- Forwarding to an extension inclusive return call initiation
- Speech recognition
- Creating and applying call flow rules using specific conditions

- Definition and flexible use of variables
- Sending documents of different formats
- Searching for contacts
- Selecting a supported language
- Database query
- Protection from infinite loops in the menu navigation

Creating statistic raw data for reporting usage

2.6.4 Operation Requirements

Requirements for operating the Application Builder to configure an IVR system are

- setting up the XPR server (see the XPR Server Installation manual),
- a respectively configured PBX system and
- binding of the Vogue script to a telematics APL (ISDN, IP or Dialogic APL) and assignment of an extension range,

We recommend the configuration of a Concurrent Version System (CVS) or similar systems for storing the files of an IVR system or controlling the access to such files.

Depending on the usage scenario the following requirements may have to be met:

- the installation of a DB APL,
- the creation of a data source, so that the Application Builder can be used to perform database queries and extensions,
- the installation of speech recognition software so that a user can make entries via DTMF keys and voice,
- the installation and configuration of the Report and Report Schedule APL for processing statistical raw data of the VOGUE script.

For further information on the installation and configuration of the OpenScape Xpressions server please refer to the corresponding installation or administration manuals.

2.6.5 Application Builder Features

The Application Builder is embedded in an **eclipse** framework by means of a Rich Client Platform (**RCP**). The Application Builder user guidance thus features the eclipse-typical views and editors for displaying or editing.

A **workspace** serves as superordinate container, which includes and manages all created elements and configured properties. A workspace contains any number of applications as elements, which, in turn, contain any number of callflows that can be linked to each other as elements. To execute the Application Builder, an individual folder must be created as storage for the workspace at the start. In this folder all configurations of the single workspace components are locally stored in XML definition files. These files and their contents cannot be used for the execution yet. Only an explicit deployment exports the files to the OpenScape Xpressions server and allows an execution.

For the entire workspace, available languages, databases, prompts, grammar files and variables are configured:

- Besides the licensed **languages**, further languages can be activated by means of their language codes and their locale ID. The languages are used for configuring prompts and grammar files.
- Already existing **databases** can be connected, so that data can be read out of the database and be stored in the database.
- **Prompts** are either assigned to sound files or are created by defining text and a text-to-speech engine. Each sound file is to be assigned to an available language, while for each activated language a text can be specified for creation by means of a TTS engine.
- **Grammar files** serve as basis for speech recognition and are assigned to an activated language each.
- **Variables** are wildcards and storage location for data such as statistical codes, phone numbers or DTMF entries. The names are freely selectable.

NOTE: The properties and components set in the workspace are globally valid and applicable for the entire workspace, i.e. also for all applications available in this workspace. Application-specific language and database settings are not possible. Workspace-specific prompts, grammar files and variables can be exported to other workspaces, though.

Applications are designed as models of IVR applications using the Application Builder. The application configurations are also locally stored in XML definition files. Not until the design is complete, applications can be compressed in the OpenScape Xpressions database or in a file and exported to the OpenScape Xpressions system for execution. Via one or several phone numbers assigned to the application the application and its call flows can be reached.

The properties and components configured in the workspace are “bequeathed” to every configured application and are thus immediately usable. Furthermore, prompts, grammar files and variables can be configured in each application and are only additionally available in the respective application. Application-specific language and database settings are not possible. Application-specific prompts, grammar files and variables can be exported to other applications, though.

Any number of **call flows** can be modeled in each application. A graphical editor is used for this purpose. Each call flow consists of **controls**, which represent specific features. For example, controls exist for playing controls, for selection in a menu, for entering DMTF keys or using time profiles. Each control can be used as often as you wish and be connected to other controls. Controls are connected according to specific events or conditions. For example, the connected control is forwarded to after the successful playback of a greeting or selecting a menu option with a DTMF key. In addition it is possible to connect different call flows within an application.

The prompts, grammar files and variables configured in a workspace or application are used in the single controls for the respectively possible functionality. Prompts are used as information greetings, grammar files as precondition for using speech recognition and variables for storing data.

The application can detect and represent syntactical errors in the workspace configuration, the applications and controls within call flows. While errors prevent the successful execution of an application and must therefore be rectified, warnings specify improvement options. The Application Builder cannot check the usefulness of a call flow design; this must be done by the user himself/herself.

The Application Builder can be operated offline, i.e. without connection to the OpenScape Xpressions server. When an application design is complete, there must, however, be a connection to the OpenScape Xpressions server for providing and executing this application. The workspace locally stored in files is stored in the OpenScape Xpressions server database as well as compressed in a file and exported to the OpenScape Xpressions server.

In addition, the VOGUE script must be installed and configured in a telematics APL. For, the VOGUE script is in charge of technically implementing the application. A phone number range is assigned to the VOGUE script in the telematics APL. The application is assigned a phone number from this range and it can then be reached via this phone number.

2.6.6 Function Overview

2.6.6.1 Applications

An application supports the following properties:

- For each application and control you can activate generating statistical raw data for creating reports. The raw data can be transferred by the Report APL to database tables and by the ReportSchedule APL to an evaluable report.
- In an application you can enter data by telephone keypad and also use the voice recognition feature: The ASR Menu and the ASR Expert control as well as the DTMF Entry control are controlled via voice commands. Voice recognition requires the installation of appropriate software such as *Speechworks*.
- Selecting and activating waiting music
- Definition of user phone numbers via which notifications occur in case of errors. The users may be globally or locally in the system.

2.6.6.2 Controls

Each control has an individual configuration dialog in which the behavior and functions of the control are configured. Further controls are assigned to each control and after the successful or faulty execution of the control a call is forwarded to these controls. For a detailed description of the individual controls please refer to the *Application Builder* manual. The following controls are available:

- Start: This control marks the beginning of the call flow and is mandatory for an application.
- End: This control marks the end of a call flow.
- Note: Using a note you can add comments and remarks to the callflow.
- Prompt: This control plays one or several greetings. (“Welcome to the XY company.“). Afterwards it diverts to another control (e.g. Menu control).
- DTMF Entry: Using this control a caller can enter digit strings, such as a customer number, via telephone keypad.
- DTMF Menu: This control enables the caller to navigate through a menu with the help of his/her phone keys (“If you would like to be connected to our hotline, please press 1. If you would like to be connected to our sales department, please press 2”).
- Language: With this control you can switch languages at runtime. Thus the caller can e.g. listen to announcements in his/her native language, if he/she switches to the appropriate language.
- Time Profile: Depending on the time a call occurred, various controls are branched to. ”You are calling outside our business hours. You can reach us from ... until ... Monday to Friday. Goodbye.“

- Contact Dialing: This control searches an XPR contact (name, phone number, fax number, etc.) for a short name.
- Name Dialing: Using this control a caller searches for desired users of the system.
- Holiday Greetings: This control enables recording greetings by calling an application and the playback of such greetings on any days with the help of time profiles.
- Questionnaire: This control queries the caller. The answers are recorded and then sent to the company's employee in charge via e-mail with a voice file attachment or as voice mail (for playback via telephone).
- Delay: This control allows interspersing breaks in the callflow.
- Record: This control enables re-recording an existing greeting by the caller.
- Connect: The function of this control is to dial a list of telephone numbers one after another after one or several greetings have been played. ("You will be connected to our hotline now. Please hold the line.").
- Document: With the help of this control, documents can be sent (e.g. e-mails, SMS, fax or voicemails).
- Custom DLL: Control for editing the parameters for the CustomVogue.dll
- Compare: Using this control you can execute comparisons according to a previously defined rule. You can specify a list of rules here, so that e.g. all incoming calls can be allocated to their original country on the basis of their leading telephone numbers.
- Script: This control starts another protocol (E-script) without using additional B-channels. With the help of this control you can arbitrarily extend the application.
- Definition: In this control you define the variables with the help of texts. I.e. I.e, you are able to define individual variables here and fill them with a content that you will need in other controls.
- ASR Menu: Using this control allows the recognition of single, defined voice commands and to forward the caller to the controls assigned to these commands.
- ASR Expert: With this control and by means of keys you can filter functional units (such as actions, locations, etc.) from entire sentences of a greeting and save them.
- DB Read: With the help of this control you can query data/data records from existing databases. A caller is e.g. able to query the current state of his/her order from a contact center.
- DB Write: With the help of this control you can enter data/data records in already existing databases. A caller is able to automatically enter an order.

- Correl DB Read: Control for reading Correl database entries.
- Correl DB Write: Control for writing entries in the Correl database.
- Connection: This control serves for linking two controls
- Callflow Link: This control enables connecting two independent callflows.

3 Fax Service

3.1 Features of Fax Transmission or Fax on Demand

The telematic protocols FAXG3 and FAXG3REV provide the following features:

3.1.1 Station ID and Page Header for Fax Transmissions

In the Telematic APL you can assign defaults that will be used instead of a user-specific Fax G3 identification and header line of the OpenScape Xpressions server under **Identification for fax transmissions** and **Page header for fax transmissions**. Personalized identifications and headers are always used by default if entered in the database by the user. As usual, the identification should correspond to the T.30 standard which only permits the identification to contain digits, blanks and “+” characters.

3.1.2 Fax Stationery

Fax stationery can be used as “templates” for sending fax messages. These templates usually consist of a cover page and the following pages, thus determining the fax layout. Furthermore, any number of fax templates can be created and compiled to a variety of fax stationery.

All fax stationery defined by the administrator can be selected by each user. Depending on the privileges applied to call the fax stationery selection dialog, the following settings can be performed:

- Definition of the default fax stationery for the calling user
- Compilation of fax stationery by the administrator
- Creation of fax sample pages by the administrator.

This function only works if the Internet e-mail address in your mail client is the same as the SMTP address of your *OpenScape Xpressions* mailbox and if the conversion of text to fax format is performed on the server.

3.1.3 Retransmission after an Interruption (not Fax on Demand)

If the **Retransmission enabled** option is selected, interrupted fax transmissions are retransmitted starting from the page where the interruption occurred. For identification purposes, the string administered here is inserted on the first page of the retransmitted fax document. Otherwise, the complete document is retransmitted until correctly received or the maximum number of repeat attempts is reached.

3.1.4 Repeat Counters and Time Intervals for Fax Transmission

As in all Telematic APL protocols, the number of redial attempts and the interval between redials can be configured if the destination address was not reached on first attempt.

3.1.5 Sending a Fax at favorable Rates

All e-mail clients that allow the priority of send jobs to be set also allow fax jobs with a preset time delay to be created, which in turn reduces charges incurred. These clients include, for example, Outlook, Outlook Express or Netscape Messenger. You need only set the priority to *Low* or *Very Low*, and the fax will not be sent until after a specified time (for example, during the night). The exact send times can be defined by the OpenScape Xpressions system administrator.

You can set the transmission time directly if you want to send a fax with the Communications Client.

3.1.6 Receiving a Fax in Existing OpenScape Xpressions Mailboxes Only

You can restrict fax receipt so that fax documents are only accepted for **existing mailboxes**. This option has various advantages:

- If a fax is received from an unknown extension, the server does not accept the call, thus eliminating any transmission costs to the originator.
- Since fax documents that cannot be assigned are not accepted in the first place, the routing account need not manually distribute them to the correct addressees.
- Hard disk storage space is saved since undeliverable fax documents are not accepted.

3.1.7 Fax G3 Formats

You can define the formats that can be processed by this protocol. Wherever possible, the OpenScape Xpressions server converts other formats into one of the formats listed here for outgoing calls. If conversion is not possible, the server generates an error message because the document cannot be sent with this protocol.

3.1.8 Disabling Incoming or Outgoing Fax Transmission

If you deactivate the Outgoing attribute and only permit Incoming, incoming fax documents can be received, but no fax documents delivered.

3.1.9 Fax Delivery Acknowledgment

In general, OpenScape Xpressions does not acknowledge successful fax transmission for faxes that are generated and sent by third-party mail systems instead of by Communications. Acknowledgment can be generated on the OpenScape Xpressions server, however, with report forms. The OpenScape Xpressions administrator can activate these report forms with Carbon Copy (automatic carbon copies) or other routing rules.

Report forms are simple text files, such as `report.std, fax-report.ok`, which contain variables for dynamic report generation:

Example: Report form fax delivery acknowledgement (fax-report.ok):

```
=====================================================
 OpenScape Xpressions fax report: delivery successful
=====================================================
 From:       {ORGNAME}
 To:         {RECNAME}
 Send time: {SENDTIME}
 Status:     {STATE}

 Subject:    {SUBJECT}
=====================================================
```

Variables supported in report forms

Variable	Description
{COST}	Billing information
{COSTUNITS}	Number of call charge units
{DATE}	Date of report generation
{DIGEST [,maxlength]}	Function that extracts <maxlength> characters from the actual text message and ignores unnecessary parts by using filters.
{FILENAME}	List of the file names of the original document including attachments
{FORMAT}	Document format
{MID}	Message number
{ORGID}	Sender ID for telematic services (identification)
{ORGNAME}	Sender name shown, e. g. *Miller Herbert*
{ORGNODE}	Name of the sending service, e.g. FaxG3
{ORGORGNAME}	Original sender name shown in forwarded jobs
{ORGRECNAME}	Original recipient name shown in forwarded jobs
{ORGUSER}	User part of sender address NVS:NODE/USER
{RECID}	Recipient ID for telematic services (ID)
{RECNAME}	Recipient name shown, e. g. *Miller Herbert*
{RECNODE}	Recipient-service name, for example *FaxG3*
{RECUSER}	User part of recipient address NVS:NODE/USER
{REPEATS}	Number of transmission repeats
{REPORTTIME}	Time at which the job was last reported
{SENDTIME}	Time at which the job was sent
{STATE}	Send state
{SUBJECT [,maxlength]}	Subject of the message in <maxlength> length
{TIME}	Time of report generation

3.1.10 Fax Archiving

Incoming fax messages containing important corporate data are optionally not only sent to the original recipient, but a copy of these messages can also be sent to a separate mailbox (to be centrally archived by an external application, for instance).

3.2 Sending Fax Documents

NOTE:
Fax documents can be transmitted in the following ways:
- Via the ISDN APL (classic fax)
- By G.711 via the IP APL (fax as tones)
- By T.38 via the IP APL (fax as data)

G.711 and T.38 can be transmitted via the IP APL via H.323, SIP or CorNet-IP, but not via TAPI.

In addition to sending fax messages from e-mail clients as described in Chapter 6, “PC User Interface”, fax transmission can take place by various other means:

Fax chaining

Faxes to one addressee can be grouped over a certain length of time and then faxed in a single transmission in OpenScape Xpressions with the document chaining feature.

This is only possible when using Dialogic/Eicon cards (ISDN APL). Prerequisite: The originator, the recipient, and the fax resolution used must match. Only fax mails with the priority *low* or *very low* are chained and sent. This is done at night by OpenScape Xpressions.

Group fax

For information on group fax configuration, see Section 10.3.2, “Configuring a Group Fax for several E-mail Accounts”.

Sending a fax message from your workstation

Documents are sent as fax messages from the workstation (desktop or Windows Explorer) by marking the document with the right mouse button and selecting the **Send To > Mail recipient**. The standard form for messages opens and the document is added as an attachment.

Please note that only file formats can be sent as fax that can be converted into the fax format on the server. The subject line is only sent with the fax if you have selected a cover page. However, even if unsent, the subject line is used as a sorting criterion in your **Sent Items** box.

Sending a fax message from Microsoft Office applications

Via the menu option

File > Send To > Mail Recipient (as Attachment)... (for Office 2003)

the currently open document can be sent as fax message from any Microsoft Office application. The standard form for messages opens and the document is added as an attachment.

Addressing in the fax text (Printer Embedded Codes)

OpenScape Xpressions supports special printer embedded codes by means of which a message can be addressed within a document text. When using these codes, merely a PostScript printer installed on the OpenScape Xpressions server need to be employed on the respective client computer.

The provided printer “HP LaserJet III PostScript Plus v2010.118” must be installed on the OpenScape Xpressions server and connected to the “XPR Server Fax Monitor” port. You can select an arbitrary printer name that ends on “EC“ for “Embedded Codes“. For example “XPR Server Printer with EC“. “EC“ must be preceded by a blank.

The Mail APL evaluates the embedded codes contained in the PostScript code of the print output and replaces these with blanks in the hardcopy.

An unlimited number of addresses can be entered in the fax document. You can send a message addressed in this way not only to fax addresses but also to Internet mail addresses (see table). The various address types can also be combined.

IMPORTANT: This is **no** form letter function!

The following embedded codes are supported with the precise syntax being configurable in each case. Normally available default:

Embedded Code Example	Meaning
`@FAX=263/@`	Recipient fax number.
`@SMTP=xy@unknown.de/@`	Recipient Internet e-mail address.
`@FROMUID=MAM/@`	Individual XPR user ID.
`@FROMNAME=Mark Maier/@`	Individual name or originator name.
`@SENDTIME=13:30:00/@`	Send time for delayed transmission.
`@SENDDATE=17.06.2001/@`	Send date for delayed transmission.
`@PRIO=normal/@`	Message priority
`@SUBJECT=Testing PEC/@`	Message subject. With fax this can be displayed on the optional cover page.
`@TONAME=Thomas Crown/@`	Recipient name.

3.2.1 Sending Faxes over Printer Drivers

OpenScape Xpressions provides the option to send fax documents directly via the printer driver „Tiff Fax G3 TurboBits printer“. If, for example, you print a Word document using a printer driver of this kind, the document is converted into a fax-compatible format and all you have to do is enter the address.

To do this, insert the OpenScape Xpressions AddOn CD and run the setup routine to install this driver on the application computer.

In the printer driver properties you can select the mail system to which you want to send the fax. Apart from the direct route to OpenScape Xpressions, you can also select the Exchange, Lotus Notes or SAP mail systems. This has the advantage that the default message routes are maintained (for example User (Outlook) - Exchange - OpenScape Xpressions - PBX system).

3.3 Fax Receipt

3.3.1 Fax Display

Incoming faxes are saved in OpenScape Xpressions in an internal fax format. This fax format can also be displayed by the OpenScape Xpressions client. Incoming faxes must be converted to a suitable format, however, if these faxes are to be displayed by a different mail client. Your system administrator configures one of the graphics formats listed below or the PDF format as the default conversion format on your system. This format is globally valid. Additional viewer software may be required if the mail client used cannot display this graphics format. You can have the system administrator set a different graphics format specially for your mailbox to facilitate access via IMAP4 or POP3. You should always try to convert all mailbox data to the same graphics format since this places the least demands on the system.

Wherever possible, the OpenScape Xpressions server converts other formats into one of the formats defined by system administration for all outgoing calls. If conversion is not possible, the server generates an error message because the document cannot be sent with this protocol.

The conversion process supports the following graphics formats:

BMP	Windows bitmap
BMP_COL	Windows bitmap with trilinear grayscale interpolation
DCX	Multi-page PCX format (standard Microsoft fax format)
JPG	JPEG format with nine grayscales (recommended when using Internet mail clients)
TIF	One-page compressed TIF fax format
TIF_BMP	For this compressed TIFF format a program can be configured via the registry database that performs a conversion of TIFF into any other format.
TG3	Multi-page compressed TIF fax format

In addition it is possible to convert incoming fax messages into the **PDF** format.

Possible Settings in the OpenScape Xpressions Server

These settings determine the appearance and format of fax documents that arrive as text documents on the server and need to be converted into fax messages for transmission. For this, the following settings can be performed in the MTA (Message Transfer Agent):

- Font for text to fax conversion (this font is only used if no fax template has been set. Otherwise the font defined in the fax template is applied.)
- Fax resolution for FAXG3 (200x200 or 200x100 dpi)
- Paper format (e.g. A4)
- Margin settings

3.3.2 Fax Archiving

Incoming fax messages containing important corporate data are not only sent to the original recipient, but a copy of these messages can also be sent to a separate mailbox (to be centrally archived by an external application, for instance).

3.4 Fax Legacy Support

This feature is necessary if your company already has a fax server and you want to use OpenScape Xpressions in addition without applying the fax server functionality.

OpenScape Xpressions is able to interpret and process fax messages that originate in fax servers by other manufacturers. At the moment, the products *Fax Sr.* from Omtool and *LightningFAX* from Interstar Technologies are supported. The OpenScape Xpressions server's Unified Messaging APLs (LnUmApl and ExUmApl) can retrieve the fax messages from a user's inbox and forward them to the OpenScape Xpressions server for further processing, for example using the telephone user interface (TUI).

This enables users (with MS Outlook or Lotus Notes) to send and receive fax messages via this third-party system. With the OpenScape Xpressions True Unified APL, incoming fax messages can be announced and processed (for example, forwarded to a fax device) using the TUI telephone user interface.

3.5 Using Fax-on-Demand Services

You can use fax-on-demand services in all e-mail clients. To do this, send a blank e-mail to FAXG3REV/<fax-on-demand number>@<myserver.domain>. This fax-on-demand number must be entered in international format. OpenScape Xpressions retrieves the required fax pages for you and places them in your mailbox.

See Section 3.1, "Features of Fax Transmission or Fax on Demand" for more functions of the fax-on-demand protocol.

3.6 OpenScape Xpressions as Standard Fax-on-Demand Server

Besides the configuration options for the *Fax-on-demand (Group 3)* protocol the are additional options for configuring the *Fax-on-demand* script. This script offers three modes for fax-on-demand and the polled-fax-documents behavior to the user.

Normal mode:

- Direct fax document polling with the telephone without DTMF entries.
- The extension number of the fax document is dialed via the keys of the telephone device and the fax document that is to be polled is diverted to a fax device or a fax number.
- Direct fax polling from a fax device in fax reverse polling mode.
- The extension of the fax document is dialed via the keys of the fax device. Subsequently, the start button of the fax device must be pressed to start the fax polling.

DTMF mode:

- Fax-on-demand with a telephone device by means of document selection via DTMF transmission.
  Dial a DTMF access number on the telephone. When the connection has been established you are prompted per voice menu to enter the extension number(s) of one or several fax documents. Thereafter you are asked to press the start button at your telephone/fax combination or to divert the fax document to another fax calling number.

Supervisor mode:

- Store, Rename and Delete fax-on-demand documents via DTMF transmission. You reach the administrator area via a specific access number and a PIN. Here you can execute administrative functions via a voice menu.

The default settings of the fax-on-demand script offer users the possibility to use the **Normal Mode**.

In OpenScape Xpressions, only direct fax polling from a fax device is enabled in fax reverse polling mode.

In direct fax polling with a fax device, you select a document by the extension number that you provide. The number of documents that can be accessed is limited by the number of available extensions, which is determined by the number of digits used for extension numbers. For each extension number allocated to the fax-on-demand script in the numbering plan, there must thus be a corresponding fax document saved.

The following options can be set in the script configuration:

- Phone number for access in the DTMF mode
- Path to the fax document filing directory
- Hiding the originator in the fax header on the sent fax
- Checking the caller for fax polling permission
- Prefix and suffix for naming fax documents
- Definition of default fax documents of unknown callers
- Access number, password as well as the number of allowed abortive attempts for the Supervisor mode
- further, customer-specific parameters

4 SMS Service

4.1 Overview

The acronym **SMS** stands for **Short Message Service**. The short message service in **GSM** standard allows the transmission of short messages to mobile phone subscribers. This service can be compared with paging, but exceeds paging options owing to the guaranteed data transmission.

Depending on the type of connection, thus point-to-point connection or broadcast transmission, messages consisting of 160 or 93 characters can be sent. Transmission occurs digitally via circuit switched dial connections or with GSM via the packet switched control channel. The transmission rate is between 400 and 500 bit/s. The waiting time before transmission at the Short Message Service Center (SMSC) is between 5 and 10 seconds.

4.2 Short Message Service Significance

The **SMS** has become increasingly important over the last years. Originally created as “by-product” in the GSM-standard signaling protocol and hardly known among users, this service accounts for considerable sales in the mobile phone sector these days. The SMS amounts to 90% of the data service sales, equaling a share of approximately 15% in the total sales.

With more than 25 billion short messages sent in 2003, Germany is top of the league in Europe. Besides mobile voice telephony, the SMS emerges as the most important data service. In this role it is by no means only significant in the private communication area but also in company-related fields, such as signaling, applications planning, logistics and increasingly also M2M (Machine to Machine) communication. Examples of SMS usage within companies are monitoring freight car and container sites and the automatic data transmission from gauging stations or electricity meters.

4.3 SMS and XPR

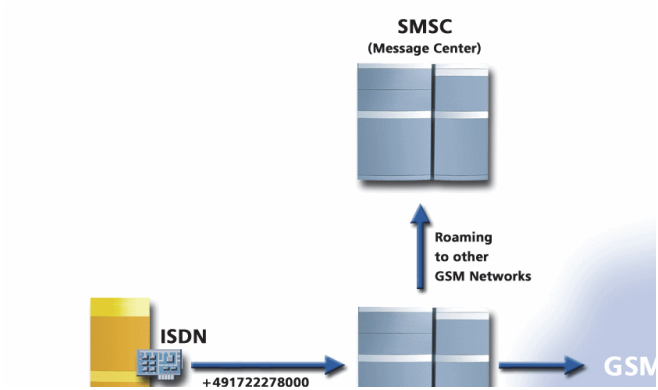
XPR provides three different, taylor-made SMS solutions to meet the various requirements in corporate divisions. These three solutions cover all characteristic requirements from the entry-level area to the professional high-performance area with direct provider coupling, which even enables the operation of the XPR server as independent message center.

The three solution options will be shortly introduced in the following. You find detailed information in the *Server Administration* manual.

4.3.1 SMS via ISDN

For applications in which only a small number of SMS messages is sent, the ISDN APL offers the option to transmit these messages directly via **S**hort **M**essage **S**ervice **C**enter (SMSC). Either the EMI/UCP or the TAP protocol is used for this.

The following diagram outlines such a transmission:



For sending a SMS message the connector in the XPR server dials the configured SMSC and leaves the message there. The SMSC subsequently attempts to immediately transmit the message with further SMSCs taking part if the recipient belongs to a GSM network that cannot be directly connected by the SMSC.

If the recipient is not available (e. g. the cell phone is switched off or the SMSC in charge of the recipient's network cannot be reached), the message will be buffered for a specific period, in most cases 48 hours. The delivery attempt will be repeated several times within this period. If the message could not be delivered during its maximum life span it becomes obsolete and is deleted from the SMSC.

With this type of transmission the XPR server is only informed about the message having been accepted by the SMSC or not. Status reports about successful or failed message delivery to the recipient do not reach the XPR server since there is no permanent connection between the XPR server and the SMSC.

SMS via ISDN is suitable as entry-level solution since no additional hardware is required and no contractual bindings to a provider exist. Compared to other methods charges per SMS message are higher though, and bulk discounts or the like are not possible owing to a missing contractual binding.

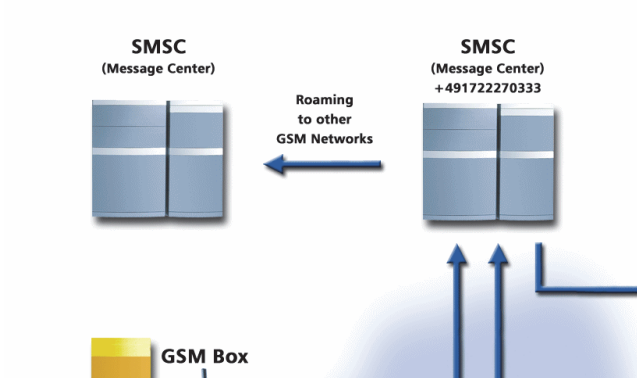
Depending on the protocol used and the SMSC dialed, the XPR server can with SMS via ISDN determine the originator address. This can be useful for calling the message originator on his/her cell phone.

4.3.2 SMS via GSM Boxes

NOTE: This type of connection is realized and configured via the *SMS Connector*. A detailed description is found in the *OpenScape XpressionsServer Administration* manual.

Using this transmission type SMS messages are routed via GSM boxes (also called GSM adapters) connected to the XPR server. These GSM boxes are special mobile phone devices optimized for usage in server applications. Special cell phones equipped with data cable are suitable for this transmission type as well. The XPR server acts here as a normal mobile phone subscriber.

The following diagram outlines this transmission type:



The advantage of this type of connection is that messages cannot only be sent but also received. Furthermore, the conclusion of a mobile phone contract optimized for the SMS helps considerably reducing costs compared to the *SMS via ISDN* method.

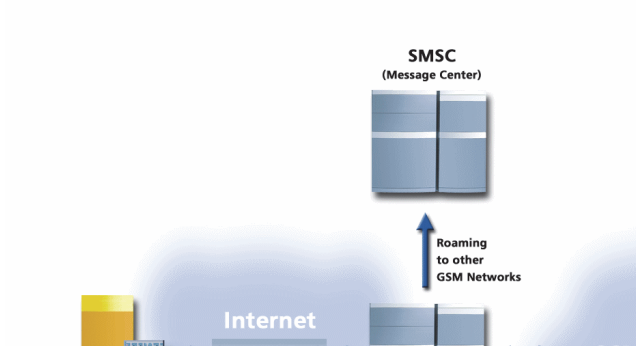
Each GSM box receives an individual number to which messages can be sent via the implemented SIM board. Special recipient tokens in the message text enable an explicit addressing to XPR users. Contrary to the *SMS via ISDN* method an originator address can be defined, which is always the number of the implemented SIM board. Several GSM boxes can be used at one XPR server.

4.3.3 SMS via direct Provider Coupling

NOTE: This type of connection is realized and configured via the SMS Connector. A detailed description is found in the *OpenScape XpressionsServer Administration* manual.

The direct provider coupling is the most complete type of connection since it exploits all originator and recipient options. In addition it offers high performance and security as well as the lowest costs. The XPR server is connected via the TCP/IP protocol. Additional security can be reached by the implementation of a **V**irtual **P**rivate **N**etwork tunnel (VPN tunnels) between customer and provider.

The following diagram outlines this type of connection:



It is realized via the *SMS Connector*, which uses the EMI/UCP transmission protocol in version 4.6 or SMPP.

The *SMS Connector* can establish any number of connections to one or several providers. Each connection can be configured individually and during operation without causing any interruptions. Extremely long SMS messages (up to 612 characters) are supported on the originator and recipient side as far as offered by the provider.

Furthermore, messages can be tracked since the protocol does not only deliver a mere confirmation of the message having been accepted or not but also more detailed information:

- **Delivery Notification**: The message was delivered.
- **Non-Delivery Notification**: The message could not be delivered.

- **Buffered Notification**: The message was buffered.

NOTE: The features described in the following must be supported by the provider. Therefore consult your provider in case of doubt.

The following receiving models can be realized with the *SMS Connector*:

Receiving via rerouted number

Short messages sent to one of the numbers assigned by the provider are not routed to a cell phone but directly delivered to the SmsIP APL by the message center. Subsequently the destination address is determined in the XPR server and the message routed to this address if it is accessible. In this way simultaneously received messages can be bundled and connections checked. In addition, XPR users can be directly addressed by a recipient token in the message.

Receiving via speed dialing code

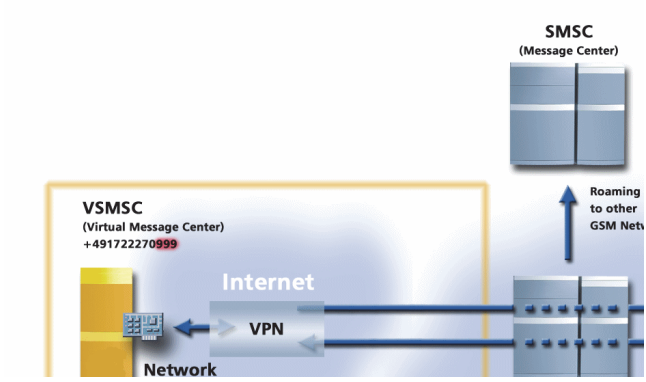
This is a special provider service, which couples a five-digit speed dialing code as recipient for short messages to the connection. SMS message transmission is thus simplified and message, subscription or premium services are enabled. Since the configuration of such a speed dialing code can always only occur in a radio network, such services are in most cases offered by so-called aggregation services. These are service companies that have reserved a large number of speed dialing codes at the various network operators and can therefore offer such a speed dialing number for the entire network.

VSMSC operation

This special type of connection exceeds the mere capability of receiving messages by far. **VSMSC** stands for Virtual Short Message Service Center, meaning that the connection represents an individual message center and receives an individual message center number.

Short messages are also sent by cell phones via a message center, the number of which has been preconfigured in the cell phone by the network operator or provider. If the XPR server is connected as VSMSC, it receives an individual message center number such as +491722270999. All SMS messages are then sent via the XPR server as VSMSC.

The following diagram outlines the function principle:


SMSC
(Message Center)
VSMSC
(Virtual Message Center)
+491722270999
Roaming
to other
GSM Net
Internet
VPN
Network

4.4 Connection Type Comparison Overview

Sending

Feature	Comment	ISDN	GSM box	SMS IP
Sending		✓	✓	✓
Extra long SMS messages	Up to 612 characters.	✗	✓	✓
Special characters	Depending on the receiving cell phone and provider.	✗	✓	✓
Euro sign	Depending on the receiving cell phone and provider.	✗	✗	✓
Performance	Depending on the provider.	300 SMS messages per hour	300 SMS messages per hour	30000 SMS messages per hour
Extended message tracking	The additional send reports: sent, saved, not saved.	✗	✓	✓
Adaptable originator recognition	If supported, then depending on the provider and contract.	✓	✗	✓

Editing

Feature	Comment	ISDN	GSM box	SMS IP
Editing		✗	✓	✓
Extra long SMS messages	Up to 612 characters.	✗	✓	✓
Special characters	Depending on the sending cell phone and provider.	✗	✓	✓
Euro sign	Depending on the sending cell phone and provider.	✗	✗	✓
Addressing via calling number		✗	✗	✓

Feature	Comment	ISDN	GSM box	SMS IP
Addressing via token in the message text		✗	✓	✓
Receiving via fixed calling number		✗	✓	✓
Receiving via speed dialing code		✗	✗	✓
Receiving as VSMSC		✗	✗	✓

Miscellaneous

Feature	Comment	ISDN	GSM box	SmsIP
Number of connections per connector	Connections to message centers. With GSM each box represents a connection.	Depends on the number of B-channels	1	Unlimited
Daily reports	Per performance/ day.	✗	✓	✓
Total reports	Per performance/ total.	✗	✓	✓
Security restrictions	Option to restrict the maximum number of messages sent per day.	✗	✓	✓

5 E-Mail Integration

5.1 Microsoft Exchange Connection

5.1.1 Supported Exchange Versions

For supported Exchange versions check the manual OpenScape Xpressions Release Notice.

5.1.2 Installation Versions

Microsoft Exchange can be connected to OpenScape Xpressions in three different ways:

- Unified Messaging
  Characteristic: Access to all messages (fax messages, voicemails and e-mails) via the Outlook journal. The XPR server serves here as forward server for receiving and sending fax messages and voicemails.
- Integrated Messaging
  Characteristic: Mailbox replication for message exchange between foreign systems and the OpenScape Xpressions server. Since all messages are also available on the XPR server they can also be accessed via telephone (TUI).

  NOTE: This setup version is not available with *Exchange Server 2007/2010*, if the server is connected via the Exchange Connector for Exchange Server 2007/2010 (Foreign Connector).

- True Unified Messaging
  Characteristic: Direct access via the XPR server to the mailboxes in the foreign system for TUI access.

You find more information on this in Section 1.3, “Messaging Overview”.

5.1.3 Function Overview

The following table provides on overview of the additionally available services and functions after integrating the XPR server in a *Microsoft Exchange* environment:

Function	Description
Fax and voice mail receiving	Access to fax and voice messages, received by the XPR server via the *MS Outlook* client. Convenient editing functions for fax messages and playback features for voice mails in *MS Outlook*.
Fax transmission	Individual form function in *MS Outlook* for sending fax messages.
Fax-on-Demand	Individual form function in *MS Outlook* for polling fax messages provided via special calling numbers.
SMS transmission	Individual form function in *MS Outlook* for sending SMS messages.
Voice mail transmission	Individual form function in *MS Outlook* for sending voice messages. Voice mail works similarly to an answering machine – but much more intelligently and with multifarious functions such as forwarding, answering or connecting to the message originator. Messages can be put out via telephone or a computer sound card with attached loudspeakers.
Voice annotation for message transmission	Supplementation to the voicemail form function for attaching voice comments before sending a message or forwarding it.
Message Icons	Automatic use of additional icons in the message journal of *MS Outlook*: • To indicate incoming fax and voice messages in the inbox journal. • To indicate call states in the telephone journal: successful, unsuccessful, separated according to in or outbound calls.

Table 1 Available Services and Functions after integrating the XPR Server

Function	Description
Functions of the ***OpenScape Xpressions optiClient 130***	You can use optiClient 130 as follows: • As efficient CTI client on an XPR server. In this function you can use it to control your desk telephone from your PC. • As softphone at an SIP communication system. • As softphone at a HiPath 3000 or Hipath 4000. In each of these configurations you can • initiate telephone calls, • accept telephone calls and • utilize more complex telephony functions – such as switching telephone conferences. optiClient 130 also supports you in: • conveniently managing private contacts in the contact list • setting up phone connections the easy way via the team bar • connecting external address books – for example via LDAP • integrating optiClient 130 features in Outlook and/or Lotus Notes clients. If you apply optiClient 130 on an XPR server, you can use further special features provided by the XPR server. Among these are: • optiClient 130-independent logging of successful and unsuccessful calls • The presence function, which informs you about the availability of other users.
	If you use optiClient 130 as SIP softphone at an OpenScape Voice system, you can: • conduct simple video connections and video conferences. • use the above special XPR server features, if your optiClient 130 is connected to an XPR server in parallel. Furthermore, the modular structure of optiClient 130 enables you to customize the features and representation of the application. optiClient 130 cannot only be used on individual user PCs. As CTI client, you can also deploy the program in a terminal server environment.
With *Exchange Server 2003* only: Display of additional information in the journal columns of *MS Outlook* (in the **Subject** line and in the **From** journal column)	If required or desired, further information can be displayed in the *MS Outlook* journal columns **Subject** and/or **From**.

Table 1 Available Services and Functions after integrating the XPR Server

5.1.4 The Components for the Exchange Integration

5.1.4.1 The Exchange Connector (Exch APL)

The XPR server is connected to *Microsoft Exchange Server 2003* respectively *Exchange Server 2007* via special connectors.

The XPR connector for connecting *Exchange Server 2003* is a so-called *SDK Connector*. Its executable file is the `E2kApl.exe`. You find this file in the `\bin` directory of the installed server.

The XPR connector for connecting *Exchange Server 2007* is a so-called *Exchange 2007 Foreign Connector*. Its executable file is the `E2k7Apl.exe`. You find this file in the `\bin` directory of the installed XPR server.

NOTE: In the XPR monitor both connectors are handled under the name **ExchApl**.

APLs (Access Protocol Layer) provide protocols for XPR kernel purposes to send documents to Exchange users and to exchange address information. Thus all additional XPR server services (for example fax, SMS, CTI etc.) are available to the Exchange user.

This gateway provides the functions required for *Store and Forward* operation.

NOTE: In this manual this connector is called "Exchange gateway" to differentiate it from the True Unified Messaging connector.

Integrating OpenScape Xpressions in the Exchange Server

For the connecting the XPR server to Microsoft Exchange the Exchange Connector must be installed. This connector is installed on the OpenScape Xpressions server and establishes a logical connection to the Exchange server. Essentially, the installation involves the following:

- Inserting the OpenScape Xpressions Exchange connectors in the Exchange structure.
- Inserting the ”MRS” address area. This enables forwarding messages that arrive via the XPR server to Exchange users and editing messages to be sent by Exchange users via the XPR server.

5.1.4.2 The LDAP APL

The LDAP APL is additionally required for the user address administration. It makes sure that address data, relevant to XPR and centrally maintenanced via the Active Directory as of version *Windows 2000* , can be replicated in both directions.

The Exchange gateway depends on the LDAP APL since this APL defines the cn=settings object in the XPR container. The LDAP APL must thus be installed first, which is automatically ensured when both components (Exch APL and LDAP APL) are selected for the installation.

The LDAP APL is installed on the XPR server. This helps minimizing the network data traffic.

A possibly required LDAP APL reinstallation for other directory services is also performed via the user defined XPR server setup by solely selecting this component for installation. You find more information about connecting other Directory Services via LDAP in the *Server Administration* manual.

Integration in the Windows Active Directory

Within OpenScape Xpressions, the LDAP connector is used as the default connector to the Microsoft Active Directory if a gateway to Exchange should be used.

This connector can be used both for connection to the default Active Directory server and for setting up other LDAP servers.

Containers holding the users whose attributes you want to replicate can be explicitly selected:

If you only want to replicate individual users to OpenScape Xpressions, you can use filter rules for specific selection. Another option is to define the users intended for replication in a special container.

The replication schedules can be set on the basis of the polling interval. Alternatively, a schedule definition can be used for performing replication.

The **Attributes** tab lists the Active Directory attributes with their assignment to the corresponding XPR data fields and the flags set.

Although the necessary attributes have already been set by entering the basic settings or by importing a configuration file, they can be extended.

With the LDAP connector installation, no schema extension is performed in the Active Directory. Beyond that, all generated objects can be removed from the system without after-effects.

Upon the installation of the Exchange 2003 connector and thus of the LADP connection, the following objects are created in the Active Directory in detail:

1. The "MRS" container under

   LDAP://CN=Microsoft Exchange, CN=Services, CN=Configuration, <DNSite>

   with three "localDXA" objects which contains among other things a reference to the associating "Administrative Group".

2. A 'mailGateway' object within the "Connections" container under

   LDAP://CN=Connections, CN=<RoutingGroup>, CN=Routing Groups, CN=<AdminGroup>, CN=Administrative Groups, CN=<Organization>, CN=Microsoft Exchange, CN=Services, CN=Configuration, <DNSite>

   with a number of attributes for connector configuration.

3. The MRS-specific user data are saved in the “ExtensionData” attribute with up to three named entries.

4. Address templates "MRS", "MRS FAX" and "MRS SMS" are generated under

   LDAP:// CN=Address-Templates, CN=Addressing, CN=<Organization>, CN=Microsoft Exchange, CN=Services, CN=Configuration,

   for the languages 407 and 409.

5. The address object MRS:i386 for the address type MRS is created under:

   LDAP://CN=Address-Types, CN=Addressing, CN=<Organization>, CN=Microsoft Exchange, CN=Services, CN=Configuration.

6. The DefaultPolicy is extended in the *gateway proxy* attribute by one MRS entry.

7. The “Active Directory User and Computer” Snap-In displays the additional MRS Settings tab after the installation of the MMC Snap-In. If this Snap-In is not available, the “Active Directory User and Computer“ Snap-In still behaves normally without displaying the additional tab.

8. No schema extension is performed during the installation, which means that all objects created can easily be removed from the system.

5.1.4.3 Exchange True Unified Messaging APL (ExUm APL)

True Unified Messaging enables direct access to the message store of an Exchange server. Thereby, the required message can be directly forwarded to e.g. a telephone interface from the Exchange data store via the XPR server without replication to the XPR server, so that messages need not be kept twice. The necessary query is realized by transactions. Prerequisite is of course that the corresponding script is able to initiate this TUM query, which applies to e.g. the Evo and PhoneMail script.

True Unified Messaging is realized via the ExUm APL connector. It is an add-on component that must be installed additionally to the standard Exch APL if True Unified Messaging is to be used. Select this component with the XPR server installation or with a reinstallation from the component selection tree in the XPR server setup.

The ExUM APL requires for its function the current **`CDO.DLL`** for direct access to the user mailboxes.

Via the ExUM APL the notification service (NOT APL) is connected as well. In system environments where the notification service is to be exclusively used, the installation of the Exch APL is also required. This is necessary for logging in the ExUM service at an Exchange account. Via the ExUM APL the Exchange users' inboxes are accessed for the notification function.

5.1.4.4 The MMC Snap-In Extension

When connected to an Exchange server, the MMC Snap-In (MMC = Microsoft Management Console) is required for displaying and configuring the XPR-specific user data and the connector setting pages. To this, additional tabs are displayed in the configuration dialogs that serve for setting XPR-specific data.

- The **MRS Settings** tab is provided to perform user settings for *Exchange Server 2003* and *Exchange Server 2007*. You reach this settings dialog via the administration program **Active Directory Users and Computers** and the **Properties** context menu function.
- The connector settings for *Exchange Server 2003* are performed via the *Exchange System Manager*. In the administrative group open the corresponding routing group in which the connector is installed. Switch to the corresponding **Connectors** directory and in there select **XPR Exchange Connector for i386** <*XPR server computer name*>:<*Exchange server computer name*>. Then, invoke the configuration dialog via the **Properties** feature of the context menu.

  NOTE: In case of a connection to *Exchange Server 2007*, connectors are exclusively configured via the Exch Apl settings dialog in the XPR monitor.

The MMC Snap-In can be smoothly uninstalled again.

5.1.5 Outlook/Exchange Extensions

5.1.5.1 Introduction

In the course of the XPR server development, Outlook extensions have been supplied with the product in different specifications and development stages. The following variants have been used by customers with the different XPR versions:

- With version HiPath Xpressions 3.0

  The HiPath Xpressions Outlook Extensions (HXOE)

- With version HiPath Xpressions 4.0

  The HiPath Xpressions Extensions (HXE). They comprise:

  – The Outlook forms (icon and message forms)

  – *SimplyPhone* Standard as CTI client with the following features
  - Call via phone number entry
  - Return call to selected journal entries
  - Finding telephone partners

  – *SimplyPhone* Advanced as CTI client with full CTI functionality

- With version HiPath Xpressions 5.0

  The optiClient extensions. They comprise:

  – The Outlook forms (icon and message forms)

  – HiPath Xpressions optiClient 130 as CTI client

- With version OpenScape Xpressions V6 and V7

  The optiClient extensions. They comprise:

  – The Outlook forms (icon and message forms)

  – *OpenScape Xpressions optiClient 130* as CTI client

  – The conference extension for Outlook.

The Outlook Extensions installation is described in the *Client Installations* manual.

5.1.5.2 Outlook Extensions Features

The Outlook/Exchange Extensions are very handy, additional features to everybody using *Microsoft Outlook* as client:

- Icon forms
  - Representation of specific message icons in the *Microsoft Outlook* inbox journal for different message types.
- Message forms
  - A simplified addressing method when fax messages are sent or polled.
  - A convenient method of sending SMS messages.
  - Forwarding of inbound messages independent from service (fax, e-mail or voice message) to one or several addresses. The message can previously be extended with a text and/or voice comment. The voice annotation can be recorded via telephone or via a microphone connected to the sound card.
  - Answering incoming messages. Depending on the service, different answering options are available. The message is then immediately furnished with the originator address, if it is contained in the system. The message can previously be extended with a text and/or voice comment. The voice annotation can be recorded via telephone or via a microphone connected to the sound card.

    NOTE: If the message is addressed to several recipients (for example as Carbon Copy, Cc), the reply can be simultaneously sent to all original recipients.

  - Transmission of new voice messages.
  - Reading or listening to incoming fax and voice messages in the preview window.

    NOTE: You cannot edit fax and voice messages in the preview window with *2003 Outlook*.

    When you open such messages with a double-click, a convenient fax editing function is available so that you can add text or graphic elements to incoming fax messages before they are forwarded. Voice messages can be played back either via sound card or the individual telephone and extended with a voice annotation before they are forwarded.

- Additional information can be displayed in the Outlook journal in the **From** and **Subject** columns. This is configured via the **Display Formats** and **Normalization** tabs of the advanced connector settings.
- With OpenScape Xpressions optiClient 130 you can use the full range of the XPR server CTI features from Outlook Precondition is that the required CTI components are installed on the XPR server.
- Use of the conference extension for *Microsoft Outlook.*

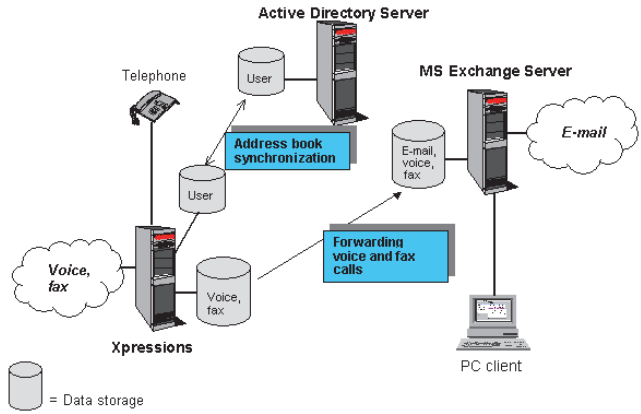
5.1.6 Mailbox Replication

In case of a connection to *Exchange Server 2003*, the mailbox replication feature and thus Integrated Messaging (IM) can be used. Mailbox replication is a mapping of all incoming Exchange messages of a user to a corresponding mailbox on the OpenScape Xpressions server. The mailbox contains all messages a user has received. The mailbox replication between Exchange and OpenScape Xpressions is handled via the Exchange Connector.

Mailbox replication can be enabled for all users, individual Exchange containers, or only for individual users.

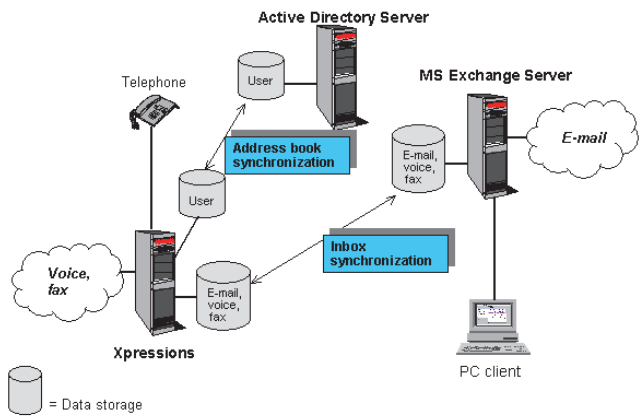
The following diagram shows the coupling to *Exchange Server 2003* without mailbox replication. In this coupling only the voice and fax messages are forwarded to the Exchange users via the OpenScape Xpressions server. No Exchange mails are sent to OpenScape Xpressions, though.

NOTE: In case of a connection to *Exchange Server 2007/2010*, the Integrated Messaging (IM) feature is no longer available.



:

If the mailbox replication has been configured, all messages are replicated between *Exchange Server 2003* and OpenScape Xpressions. This is necessary if users do not only want to access their messages in Exchange but also via the OpenScape Xpressions server's telephone user interface and True Unified Messaging is not possible. In this case, these messages must be stored both in Exchange and in OpenScape Xpressions. The message status must be synchronized simultaneously between both systems, so that messages indicated as read in one system do not appear as new in the other.



5.1.7 Exchange and OpenScape Xpressions on a Server PC

Installing OpenScape Xpressions on an Exchange server is not approved for the following reasons:

- The HTTP service required by *Exchange Server* and the WEB APL implemented by OpenScape Xpressions use the same port number.
- The *Exchange Server* server and the SMTP APL in OpenScape Xpressions use the same port number.

5.1.8 Multiple Exchange Connectors at one OpenScape Xpressions Server

You cannot install more than one Exchange connector to an Exchange server on a OpenScape Xpressions server.

NOTE: To improve the load distribution and for special environments you can install a distributed XPR system. An additional Exchange gateway is used then. See also the section “Installation of the ExchAPL or ExUMAPL on one satellite computer”, in the *OpenScape Xpressions Microsoft Exchange Gateway* manual.

5.1.9 Multiple OpenScape Xpressions Servers at one Exchange Site

It is generally possible to operate several OpenScape Xpressions servers at one Exchange site.

For example, several OpenScape Xpressions servers at one Exchange site are useful if a migration via the mixed operation of two different OpenScape Xpressions versions is realized.

The solution for such a OpenScape Xpressions environment may only occur project-specifically, though.

5.2 Lotus Notes/Domino Connection

OpenScape Xpressions can communicate with Lotus Domino servers (LN/Domino) using the Lotus Notes connector.

5.2.1 Supported Lotus Notes Versions

OpenScape Xpressions supports the following **versions**:

- Server
  - Connector components for Lotus Domino integration
    - Lotus Notes/Domino R 6.0 German/English
    - Lotus Notes/Domino R 6.5.1, 6.5.3 or 6.5.4 German/English
    - Lotus Notes/Domino R7 versions 7.0.0, 7.0.1, 7.0.2 German/English
    - Lotus Notes/Domino R8 versions 8.0, 8.0.x and 8.5.x German/English

    The Lotus Notes basic client is supported as connector component of the Lotus Domino integration but not the Lotus Notes default client.
- Clients
  - Lotus Notes/Domino
    - R 6.5.1, 6.5.3 or 6.5.4 German/English/French
    - R7 versions 7.0.0 and 7.0.1, 7.0.2 German/English/French
    - R8 versions 8.0, 8.0.x and 8.5.x German/English/French

5.2.2 Installation Versions

LN/Domino can be connected to OpenScape Xpressions in three different ways:

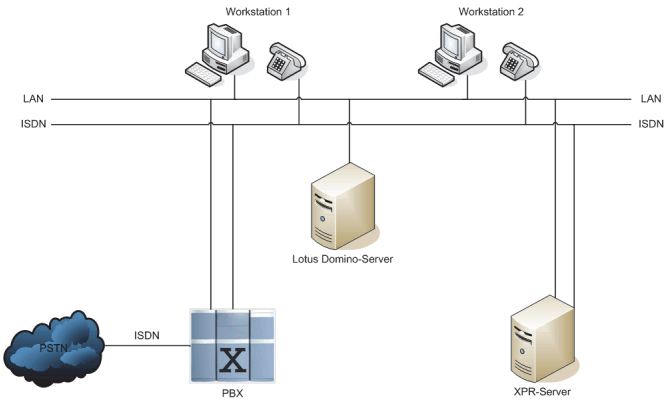
- Unified Messaging,
- Integrated Messaging or
- True Unified Messaging.

You find more information on this in Section 1.3, “Messaging Overview”.

5.2.3 General Structure Concept

The following draft shows how OpenScape Xpressions can be integrated in an available LAN respectively ISDN infrastructure. The Lotus Notes Gateway is installed on the OpenScape Xpressions, which performs all Unified Messaging functions. OpenScape Xpressions is connected to the available LAN and to a PBX.

Integration to the PBX may be via ISDN or LAN (Voice-over-IP), provided that the applied PBX supports Voice-over-IP technology.



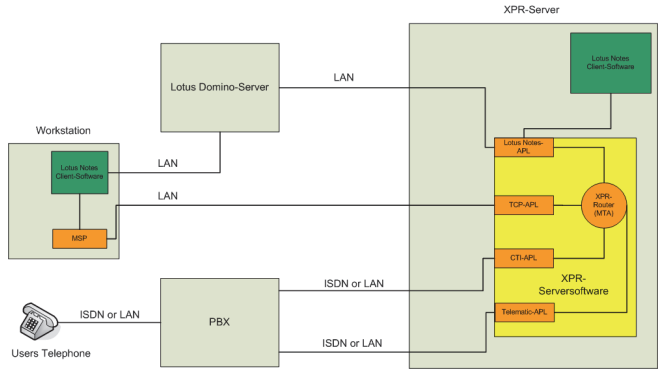
The users' workstation computers are connected to the Lotus Domino server via LAN. Each workstation has a telephone. Between the XPR server and the PBX a CTI link (via LAN or ISDN) can be established enabling the user to

- control telephones and other devices under Lotus Notes
- receive telephone journals under Lotus Notes

When connecting OpenScape Xpressions to Lotus Notes the user can use all message types from within his/her Lotus Notes work environment. The XPR system provides so-called mail file extensions via which the Unified Messaging features of the XPR system can be added to the default mail file of a Lotus Notes system.

The next draft shows the connection of OpenScape Xpressions to a Lotus Notes environment in a more detailed way. The OpenScape Xpressions server software and a Lotus Notes client are installed on OpenScape Xpressions. The Lotus Notes APL uses the Lotus Notes client information to connect with the Lotus Domino server. From the Lotus Domino server's point of view, the die Lotus Notes APL is nothing else but a user.

A Lotus Notes client is installed on the user's workstation computer, communicating with the Lotus Domino server via LAN. If a user applies the OpenScape Xpressions services fax, voice mail and SMS in addition to the normal e-mail functionality, these messages will be sent directly from the Lotus Notes client to the Lotus Domino server. The Domino server processes the messages and forwards them to the OpenScape Xpressions Lotus Notes APL from where they are delivered to a recipient via, for example, a Telematic APL (ISDN or IP).



In OpenScape Xpressions the connection request is routed to the CTI APL. The CTI APL sends the request via a LAN or ISDN connection to the PBX. The PBX will then establish the connection to the dialed phone number.

5.2.4 User Administration

In the course of the installation a **new administration user database** should be established in the LN/Domino environment. Without this database, every Lotus Notes user would have to be entered separately into the OpenScape Xpressions user database. With the administration user database, users are entered automatically. This ensures that the user administration can be performed with the LN client (administrator) and need not additionally occur in OpenScape Xpressions.

5.2.5 Lotus Notes Connector

The Lotus Notes connector to OpenScape Xpressions appears like a Lotus Notes client against the Lotus Notes server. Lotus Notes is accessed via the Lotus Notes API, the interface between LN client and the LN/Domino server. A fully functional Lotus Notes client must therefore be installed correctly on the PC on which the Lotus Notes APL should run. The Lotus Notes connector is installed on

the OpenScape Xpressions server.

OpenScape Xpressions addressing is performed in LN/Domino as a foreign domain. The OpenScape Xpressions services, such as FaxG3, FaxG4, SMS or Voice direct, can be addressed directly using alias domains.

Security

You will need a **Lotus Notes user ID** that must satisfy the following properties during OpenScape Xpressions Lotus Notes connector installation:

- Access authority for the **Name and Address Books of the Lotus Notes Domain**. The user ID must have **Editor** rights for the name and address books of the domain and must have the roles **NetCreator** and **NetModifier**.
- Access privilege for the database template **Mail Router Mailbox** (StdNotesMailbox, Mailbox.ntf) as **Reader**.
- Privilege for creating databases. The user ID must have the **privilege** to **create databases** on each server the Lotus Notes APL communicates with. This authority is required during the installation of a **Foreign Domain**.
- When *True Unified Messaging* is used, the user ID must have **Manager Rights** for the **User mailboxes**. This user right must be maintained for the later operation of the Lotus Notes gateway.

After you install the Lotus Notes gateway, you can reset the privileges of the user ID you used to the following rights:

- **Read privileges** for the Lotus Notes domain **Name and Address Books**.
- You can withdraw the access rights for the database template **Mail Router Mailbox** (StdNotesMailbox, Mailbox.ntf) because they are no longer needed.
- You can withdraw the privilege for creating databases because it is no longer needed.
- When *True Unified Messaging* is used, the **Manager Privilege for using the user mailboxes must be preserved**.

5.2.6 Supporting LN/Domino Clusters

The Lotus Notes connectors (LnAPL and LnUmAPL) create system-internal connections to Domino clusters. They use the same APIs and network libraries as the Lotus Notes client.

NOTE: No settings need to be performed in the LnAPL configuration dialog for the Domino cluster support, since the APL receives all cluster-relevant information via the Lotus Notes client.

To utilize the cluster functionality of Lotus Notes connectors, the following prerequisites must be met:

- The cluster mechanism of the Domino cluster must function without problems. Check carefully that the failover settings for mail routing are correct. For further information, please refer to the Lotus Domino help.
- The Lotus Notes connectors must work correctly.
- The user ID of the Lotus Notes connectors must have the **Author** user privilege and the role **NetModifier**.
- On each server in the Domino cluster a replica of the XPR administration database must exist (this database must be clustered).

In case of a failover the LnAPL automatically connects to another Domino server in the cluster. The LnAPL receives information on the Domino server existing in the cluster from the Lotus Notes client. If the connection to another Domino server has been established, the LnAPL starts to create the foreign domain needed on this server as well as the corresponding mailbox (e.g. notesgat.box).

The user ID of the LnAPL requires special installation user privileges which you can gather from the *OpenScape Xpressions Lotus Notes Gateway* manual.

5.3 SAP Connection

5.3.1 Overview

A XPR-SAP integration via *SAPconnect* is used in Unified Messaging environments. In the following we will describe a corresponding solution for the integration of fax messages in SAP R/3.

Scenario

Many companies would like to simplify fax message traffic. Since fax devices are still often used, the desire for simplification can be well understood.

The introduction of a Unified Messaging solution provides the option to send and receive electronic fax messages at any PC work center. Since you need printouts for classic fax transmission, sending fax messages directly from a PC saves time and money.

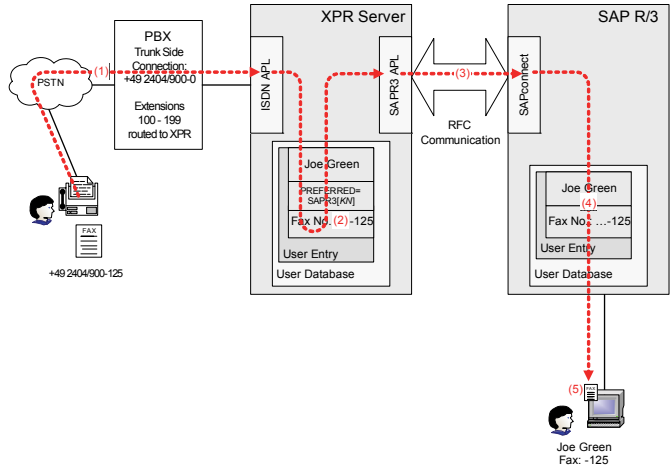
In the following scenario this simplification is achieved by using a SAP system. In and outgoing fax messages can be handled by any SAP user at his/her SAP work center. Precondition for this is the integration of Unified Messaging services in the SAP user interface as well as the provision of the services themselves by the XPR server.

In many cases, mere fax sending from SAP R/3 is desired. Incoming fax messages are then routed to another mail system connected to the XPR server. Common company platforms such as MS Exchange or Lotus Notes are supported.

How the Unified Messaging Solution works

Our system consists of two main components. One component is the XPR server, which provides the connection to the public telephone network via a PBX. The other component is the SAP system, with which the XPR server communicates via a *SAPconnect* interface and to which the SAP users are logged in via the SAPGUI of their PC work centers.

The following figure provides a simplified overview of the way our Unified Messaging example scenario works.



Let us see how a fax message is routed to the SAP user Joe Green:

1. An external subscriber sends a fax message to our SAP user. The fax transmission is accepted by the PBX, which has been configured for the extension range -100 to -199 with forwarding to the XPR server.

2. When the XPR server receives the fax message via its ISDN APL from the active PBX, it looks for the corresponding recipient on the basis of the fax number (-125) among the users entered in the XPR user database.
   The addressed user is in our case a SAP user who is to receive his/her fax messages under SAP R/3. Therefore a logical connection via the SAPR3 APL (PREFERRED=SAPR3[*KN*]) has been entered in his/her XPR user profile as preferred address.

3. The incoming fax message is consequently transmitted by the XPR server to the SAP system as copy.

4. SAP R/3 now looks for a user with the demanded fax number. This number is available with the SAP profile of Joe Green and the message accepted by the SAP system.

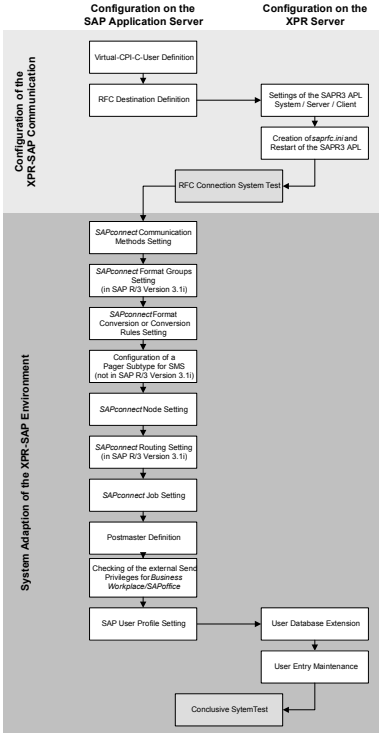
5. Finally the SAP user is informed about the arrival of a new message and he/she can now access the message via his/her SAP inbox.

The message, still available on the XPR server, is automatically deleted after expiration of a storage period configured in the XPR server. In the SAP system the message is present until the SAP user deletes it.

If a SAP user sends a fax message from within the SAP system, the new message is passed on to the XPR server by the SAP system in one of the system's cyclic transmissions. The MRS Server sends the fax message via the

PBX into the public telephone network and delivers a send confirmation or error message to the SAP system. The confirmation or message is transmitted to the SAP user who has generated the fax message.

The following flow chart provides a first overview of the steps required and described in detail on the pages to follow.



5.3.2 SAPconnect

The *SAPconnect* interface was introduced with SAP R/3 version 3.1G and provides the services fax (with document attachment), e-mail and pager/SMS. *SAPconnect* communication is based on the SAP-own RFC interface. This interface works client/server-oriented and exchanges queries and information via the so-called Remote Function Calls (RFC).

With the SAPR3 APL the XPR server provides a certified version of the *SAPconnect* interface.

5.3.3 SAPcomm

The *SAPcomm* interface is the oldest communication interface for connecting external systems to a SAP system. It was introduced with SAP R/2 and is beyond that also used in SAP R/3 environments. Since it merely supports fax service, it has largely been replaced with the more recent *SAPconnect* interface which provides a wider range of services.

Data interchange using the *SAPcomm* interface occurs via a file storing system. In this store, messages to be transmitted are filed by the sending side. The receiving side can then read out the information for forwarding.

SAPcomm will not be officially supported any more after SAP R/3 version 4.6.

5.3.4 SAPphone

The *SAPphone* interface was also introduced with SAP R/3 version 3.1G. It enables the use of CTI functions that optimize telephone communication in wide areas by integrating the PC work center. Some simple examples of this are setting up telephone calls with a mouse-click or using a journal. Such a journal documents incoming calls in a manageable way so that return calls can be easily initiated. An individual SAP workflow and telephone communication linkup or transporting data with a telephone call (Call Attached Data = CAD) is possible as well.

Just like *SAPconnect*, *SAPphone* is based on the subjacent SAP RFC communication.

With the SAPPHONE APL the XPR server provides a certified version of the *SAPphone* interface.

The following table lists the features realized in the *SAPphone* interface of the respective SAP R/3 versions:

SAP Version (as the case may be with SAP application)	Scope of Services
R/3 Versions 3.1G to 4.0B	• Connection setup • Connection acceptance • Connection clearance • Automatic SAP workflow start
R/3 Version 4.5B and higher	In addition to the previously mentioned features: • Consultation • Conference initiation • Logging off of / terminating a conference • Forwarding (with and without consultation) • Call Attached Data (CAD) • E-mail generation for missed calls (Call-back from e-mail) • Compatibility test of both sides • RFC connection tracing
CRM Version 3.0 and higher	In addition to all previously mentioned features: • Detailed connection status (partly implemented)

Table 2 Scope of Services of the SAPphone Interface under SAP

5.4 OpenScape Xpressions as POP3 or IMAP4 Server

OpenScape Xpressions can also be configured as a POP3 or IMAP4 Internet Mail Server. POP3 and IMAP4 are both realized via the SMTP APL and the transmission protocol SMTP. SMTP always attempts to deliver the messages directly to the recipient. Since most computers do however not run continuously or are not always directly connected to the internet, a POP3 (Post Office Protocol version 3) server is used.

A POP3 server receives e-mails and saves them until they will be retrieved by a POP3 client. Normally messages on the POP3 server are deleted after they have been retrieved and are only available on the client.

In contrast to the POP3 protocol the messages are kept on the server if the up-to-date IMAP4 (Internet Message Access Protocol version 4) is used and only the so-called message header is transferred to the requesting IMAP4 client. Only after an explicit request the messages will be transferred to the client completely. On the server, the messages are subject to the deleting rules that are valid there.

Compared with POP3, one advantage of IMAP4 is e.g. that messages can be sorted into different mailboxes already on the server. This improves the clarity. If the connection to the server is slow, the messages can be viewed on the basis of the message header and you do not have to wait for the complete transmission of all new messages on the client as with POP3.

5.4.1 Authentication

If POP3 or IMAP4 is used, the clients normally transmit the user ID and the password in clear text. This should only take place via an SSL secured connection. On the server these data is checked on the basis of the database fields `USER` and `PASSWORD`. If the database field `POP-PASSWORD` exists for a user, this is checked instead of `PASSWORD`.

The XPR server supports as POP3 server also the APOP procedure according to RFC 1939, for which no clear text password is transmitted. With APOP a character string identifying a mailbox and an MD5 digest are transmitted. To do this, however, the XPR server must know the plain text password, so the database field `POP-PASSWORD` for the users must be maintained.

The XPR server does not only support the APOP procedure but also the CRAM-MD5 procedure according to RFC 2095. Using this procedure also assumes that the database field `POP-PASSWORD` is maintained in the user data.

Furthermore, it is possible to use the Windows authentication in the Intranet. Therefore the Windows user account is transferred in the format `Domain\Account` or `Account@Domain`. In the XPR server the database field `LMACCOUNT` must be maintained respectively in the user data sets.

5.5 POP3 Mail Import from an Internet Mail Provider

NOTE: Realizing the POP3 mail import from another Internet mail provider is only possible within the scope of a project.

POP3 mail import

With the POP3 mail import, you can download Internet mail from another POP3 server to the OpenScape Xpressions server using either a PPP or preferably an RAS connection. To this, schedules that control the connection setup are defaulted either for an alias account under which all e-mails are collected for the users at the Internet Service Provider, or for each single user.

At these defaulted times new Internet e-mails are retrieved and individual messages sent.

It is possible to either have the Internet e-mails of the alias account be delivered to a pseudo account in OpenScape Xpressions, via which on a POP3 server e-mails are collected for all users of a company. Or e-mails are only delivered to users for whom an Internet e-mail address has been configured on a POP3 server. A combination of both these options is also possible.

5.6 Gateway to Other E-mail Systems

5.6.1 Overview

There are two ways of integrating third-party e-mail systems. The Internet e-mail clients present on the third-party system (including, for example, clients in a MAC or Linux environment) can be used to set up an SMTP/IMAP4 connection to OpenScape Xpressions (see Section 5.4, “OpenScape Xpressions as POP3 or IMAP4 Server”). On the other hand, OpenScape Xpressions provides the general file interface **File APL** on a project-specific basis. Possible applications are, for example, the dedicated fax gateway using SAPcomm to SAP R/2, the gateways to Novell Groupwise or HP Open Mail, and the connection of the HP Digital Sender.

5.6.2 File Interface

The File Interface APL supports OpenScape Xpressions transmission and receipt processes via a file interface. For this purpose, all necessary information is stored in special files which contain all details about the file structure. These files are evaluated and the documents referenced in them are then transmitted.

The host system inserts a header file with send information in a **Poll directory** for every send job. The host system then inserts the bodies of documents and message attachments associated with the header in the **Body directory**.

In the reverse direction, that is from the OpenScape Xpressions server to the host, you will also need one directory for the header (**Header directory**) and one for the bodies of incoming documents (**Body directory**). You must ensure that third-party e-mail systems support this process.

If fax documents are to be transmitted to the host system the file format must be defined.

Options

The interval can be specified in seconds in which the File Interface APL looks for new documents. The header file types to be located in the poll directory are defined in the **Header pattern** field.

You can default the **maximum number of jobs** to be read in and processed in one go. This temporarily distributes the load with a very large job.

5.7 Simultaneous Exchange, Lotus Notes and SAP Integration

In principle, you can also connect several different e-mail systems simultaneously.

However, incoming faxes or voice messages can only be forwarded to Exchange **or** Notes/SAP users (not to both simultaneously). The reason lies in the uniqueness of fax extension numbers.

In case of a multi-connector concept, consider the network flow-rate. The hard disk size on the OpenScape Xpressions server should also be generously dimensioned when using inbox replication.

6 PC User Interface

6.1 Overview

The following section contains a list of all options available to the OpenScape Xpressions user for editing Unified Messaging messages on a computer:

- Microsoft Outlook (in Exchange operation)
- Lotus Notes Client (on Lotus Notes/Domino)
- Internet mail client (POP3, IMAP4)
- Communications Client (proprietary OpenScape Xpressions client)
- Web Assistant (web-based mail access and configuration tool)
- XpressionsoptiClient 130
- OpenScape Web Client

In the next sections we will deal with the similarities of all clients:

Message forms

Received messages are handled as e-mails. If the original message is a voice mail or fax message, they are added to the e-mail as attachments.

Received voice mails are attached as sound file in the WAV format, which can be played or edited at the PC via soundcard, microphone, speaker/headphones and the corresponding output software. If a corresponding software link has been integrated in the operating system for the file format, a click on the sound file starts this software and the voice message can be played.

An incoming fax message is attached to an e-mail as a graphics file. Preview functions are available for viewing fax messages. The graphics file attached to the e-mail contains the actual fax, which is available in the TIFF format and can be edited by means of the corresponding graphics software.

Sending an SMS message from Outlook or other e-mail applications

When sending SMS messages from Outlook or other e-mail applications please note the following:

The **Subject:** entry line is ignored with message transmission but can be filled in with a message caption for individual filing.

An SMS message may be up to 160 characters long. Handling longer messages is set by the system administration. Special letters and characters are allowed, text formatting (e.g. fonts, sizes, colors etc.) are lost when sending the message.

Automatic signatures belong to the message body and are taken into account with calculating the available number of characters – therefore we recommend to keep automatic signatures out of SMS messages.

Simplified web access

Simplified web access enables accessing fax, voice or SMS messages via e-mails that contain links to such messages. You need not log on to the Web Assistant if you want to open such a message via the link.

When you click on the link contained in the e-mail, the Web Assistant opens in the Web Access mode. When you forward an e-mail with a link, you enable the respective recipients to read fax, voice or SMS messages via the link.

If the configuration of your e-mail client does not allow opening links in e-mails, you need to copy the link to the clipboard and insert it in your browser's address line to read the message.

6.2 The Conference Extension for *Microsoft Outlook* and *Lotus Notes*

The conference extension is the easy way to schedule and monitor conferences. It provides the following conference options:

- Scheduling and initiating a voice conference.
- Scheduling and initiating a web conference.
- Scheduling and initiating a combined voice/web conference.
- Monitoring a scheduled and initiated telephone conference via the *OpenScape Web Client*.

Conference extension for *Microsoft Outlook*

The *Microsoft Outlook* toolbar features an icon for the conference overview:

A click on this icon takes you directly into the **Conferences** dialog of the *OpenScape Web Client*. This dialog provides on overview of all scheduled telephone conferences and you can adjust the conferences displayed there if required.

Conference extension for *Lotus Notes*

The *Lotus Notes* toolbar features an icon for the conference overview:

A click on this icon takes you directly into the **Conferences** dialog of the *OpenScape Web Client*. This dialog provides on overview of all scheduled telephone conferences and you can adjust the conferences displayed there if required.

6.2.1 Voice Conferences

You stage this type of conferences exclusively via telephone. If the conference is configured in *Microsoft Outlook* or *Lotus Notes*, resources are checked as to whether they are sufficient for the number of invited participants at the scheduled time. Two additional conference ports are provided to hold resources for two unexpected participants.

The conference is configured by the conference server five minutes before its actual start date. Participants can join the conference by dialing in shortly before it starts and hear music while waiting. Five minutes before the conference ends, resources are checked as to whether they will last for another 30 minutes. If they will, the conference simply goes on. If continuation is not possible because other scheduled conferences are due, a corresponding message is played shortly before the conference ends.

You can start conferences scheduled via calendar and also unscheduled ones. In the latter case, OpenScape Xpressions will check resources every 30 minutes and end such a conference with a corresponding message when resources are required for a scheduled conference.

6.2.2 Web Conferences

You stage this type of conferences exclusively using an internet connection. The *Web Conference* client is deployed for this purpose. Web conferences describe the collective use of programs and documents during real-time computer conferences. If allowed by the user, a web conference enables reciprocally displaying the desktops of the persons taking part in the web conference. In this way all other conference participants can see the same image, knowing what everybody is on about. Documents and the entire desktop can also be shared for editing. Using additional features you can directly discuss and illustrate subjects. Among such additional features you find, for example, Chat and Whiteboard. In case of web conferences it is irrelevant where the conference participants are situated. All it takes is a PC connected to the internet and possibly a telephone. This ensures a high degree of flexibility and saves expenses for long journeys, accommodation etc. Since all session data is transmitted encrypted (256-Bit-AES encryption), sensitive data can be transmitted as well.

6.3 Internet Mail Clients (SMTP, POP3, IMAP4)

Supported SMTP clients

Each program operating SMTP-conformable can be used as client.

POP3/IMAP4

In principle, all e-mail clients that support an IMAP4 access can be used. Although OpenScape Xpressions supports the POP3 access mode, this access mode is not recommended since it does not include mailbox synchronization when connected to the Lotus Domino or a Microsoft Exchange server.

Profiles

Access to your OpenScape Xpressions mailbox is performed using a profile created in the Internet mail client. You can use a profile to communicate with a mailbox on a mail server. You must create a separate profile for every mail server if you are using a number of mail servers. You must enter the OpenScape Xpressions password when logging on with this profile.

Message forms

All incoming messages are e-mail messages. Voice and fax messages are received as additional data in the form of attachments to the e-mail.

An incoming voice message is attached to an e-mail as an audio file. Your PC must be equipped with a sound card, microphone, loudspeakers/headset and the relevant playback software to allow voice messages to be processed on your PC. If you have entered the relevant link for this file type (WAV) in the mail client, clicking the audio file starts the set application (for example Windows Media Player) and you can listen to your voice message.

An incoming fax message is attached to an e-mail as a graphics file. The relevant graphics software must be installed on your computer and be linked to the file type of the system in the mail client to allow fax messages to be viewed. The graphics file displays the fax. (If the administrator sets JPEG as the graphics format, Netscape Messenger and Outlook Express will display the fax directly in the message window).

Sending messages

All messages that you create and send using the Internet mail client are normal e-mail messages. The *OpenScape Xpressions* server can route your e-mail message, fax message or SMS to a distribution list, fax device or cell phone using a special addressing procedure.

Addressing

E-mail to OpenScape Xpressions user:

<username>@<myserver.domain>
Addressing with the mail address defined in OpenScape Xpressions, with <myserver.domain> being the OpenScape Xpressions domain address defined in the SMTPApl.

Messages to personal or public*OpenScape Xpressions* distribution lists:

```
<OpenScape Xpressions servername>/
<distributorname>@<myserver.domain>
```

Fax message for external fax numbers:

`FAXG3/+491717654321@myserver.domain` (the **+** character may be omitted)

Fax message for internal fax numbers:

`FAXG3/37877@myserver.domain`

Short message to the cell telephone:

`SMS/+491717654321@myserver.domain` (the **+** character may be omitted)

6.4 Communications Client

Communications is the central communication and administration program of the XPR server. The work station on which Communications runs is connected to the XPR server via a network. All communication processes that the user wants to initiate are handled and monitored via Communications. In addition the client serves as tool for configuring the XPR server as well as for defining and maintaining users and user groups and for configuring Communications itself.

Communications enables the user to send and receive messages with different services (e. g. SMS, fax, e-mail or voice). If configured, telephony features for telephone operation and monitoring can be used as well.

The administrator of the XPR server is provided with the functions for user administration and configuring the XPR server.

Communications is accessed via a user profile with password protection. The program functions can be selected according to the user privileges assigned.

6.4.1 Major Features

The following table provides an overview of the program's main functions:

Function	Description
Administration	Communications offers a large number of features for administering the entire system. After logging in with the corresponding privileges the you can perform the following settings: • Add User • Defining user groups • Assigning group privileges and thus bequeathing privileges to single users • Defining distribution lists • Addressing Fax G3 and G4, voice, e-mail and SMS services • Administering the global address book • Creating layout defaults for the Communications user interface • Designing fax stationery and providing it for all users • Modifying telephone access privileges
E-mail messages	E-mails are stored in mailboxes or in the receiving computer and retrieved as required. Received e-mail messages can be further edited.
Dial Wizard	Telephony user interface with features such as call, consultation, alternate, hold, and conference.
Notification	By means of the SMS/MWI/..., the XPR server can also inform the recipient about new messages in the mailbox (CIT).
Fax Messages	Sending and receiving of fax messages (Fax G3/Fax G4).

Voicemail	Voice mail works similarly to an answering machine – but much more intelligently and with multifarious functions such as forwarding, answering or connecting to the message creator. Message output can occur via telephone or via a computer sound card with attached loudspeakers/headset.
Fax poll	Polling of fax messages provided via special calling numbers.
Browser integration	A browser can be integrated in an individual work space window. Combined with the favorites administration in the Explorer directory, Internet pages can be accessed quickly.
Additional functions and settings for local users	The user can select a large number of additional features such as a search function, an inbox wizard, defining a deputy, signature settings, presence functions, automatic software updates.

6.4.2 Communications Client - User interface

Detailed information on the Communications client are found in the *OpenScape Xpressions Communications* manual.

You can change the layout of the Communications client. For example, the inbox journal, the preview window and the Explorer folders can be displayed on the interface. The following windows can be integrated:

Inbox Window

All incoming messages for the SMS, fax, voice and e-mail services are listed and edited in the Incoming Mail window.

By configuring new additional inbox folders and corresponding directory rules, it is possible to define a presorting of the incoming messages.

The header line name can be customized for all journal windows.

Outbox window

This window displays messages composed and sent by the user himself/herself. All the functions described for the Inbox window are also available in this window. There are also additional functions which are only useful here.

Preview window

In the Preview window you can see the contents of a message marked in the Inbox or Outbox window immediately. The functions provided in the preview window depend on the selected message type.

Explorer folders

You can create a window that, like the left pane in Windows Explorer, for example, displays the folder structure of the XPR system on your local computer. The structure lists the following ”folders”:

- Incoming Mail and Deleted Messages

- Outgoing Mail
- My Computer (all drives on the computer)
- Internet Favorites
- People (Explorer List window for administrators)
- User Groups and Distribution Lists

The window name can be customized in all journal windows.

6.4.3 Creating and Sending Messages

This feature is available under the **New** menu option. In particular the features for user administration require the corresponding administrative privileges in the system. The following features are available:

6.4.3.1 New Text Message

This option opens a dialog for entering a text message that does not contain any special formatting instructions. In addition to entering the address, subject and message text you can use the following features via the dialog menu bar:

Menu Function	Description
Sending	Initiates the document transmission.
Save	Saves a previously locally stored and reopened message.
Save As...	Saves the message under an arbitrary name in a directory of your choice. If *.PMF (Communications-individual format) is selected as filing format, attachments and address information are saved with the message.
Save Attachments...	Opens a file selection dialog for locally storing a file attachment in a directory of your choice.
Print...	Prints the message.
Information	Displays all available information concerning the message and the respective routing paths.
Delete	Deletes the message and closes the dialog.
Exit	Closes the dialog but you are previously queried as to whether the message should be saved.

6.4.3.2 New Rich Text Message

The user can format the message text using different fonts and styles (bold, italic, etc.). For this message version the message entry dialog does not only provide features for new text messages (cf. Section 6.4.3.1, “New Text Message”, on

page 118) but also the following ones in addition:

Menu Function	Description
Font...	After selecting this menu option you see a dialog in which you can choose formatting properties for your text. The following properties are available: • font • font style • size • color • effects
Bullet Style	Prefixes the beginning of a paragraph with a numeration dot.
Justification:	This option allows to arrange the text left-justified, right-justified or centered.
Tabs...	Opens a dialog for setting the tabulator positions.
Increase Indent	Increases the indent of the passage in which the cursor is located.
Decrease Indent	Decreases the indent of the passage in which the cursor is located.
Insert Date and Time...	Inserts the current date and time where the cursor is positioned.
Insert Attachment...	Encloses an attachment in the message.
text format	Switches to another text format. You can select **Plain Text Format**, **Rich Text Format** and **HTML Format**.

6.4.3.3 New HTML Message

The user can create a message in the HTML format. In addition to using the Rich Text Message formatting properties (cf. Section 6.4.3.2, “New Rich Text Message”, on page 118) it is also possible to combine paragraphs to a numbered list.

6.4.3.4 New Voicemail

This message version requires an adequate equipment of the user computer (sound card, microphone, loudspeakers). The voice mail generation dialog provides the following features:

Menu Function	Description
Recording a Voice Message	
Record	Starts recording via the PC hardware.
Record on Telephone	Recording via telephone.
Stop	Terminates recording.
Pause	Interrupts recording.

Menu Function	Description
Playing back Voice Messages	
Play on Telephone	Voice mail playback via telephone. The CTI functionality must have been installed for this purpose.
Play	Voice mail playback via the PC hardware.
Stop	Terminates playback. Rewinds to the message start.
Pause	Playback is interrupted and can be resumed from the same position.
Rewind	Rewinds the message in configurable steps.
Fast forward	Fast forwards the message in configurable steps.
Start of A/B repeat End of A/B repeat	Defined message clip is played.
Volume	Setting the recording volume using a microphone.

6.4.3.5 New SMS Message

The user can create a SMS message. The message entry dialog allows digits in the address field only. Since with SMS messages only a limited number of characters is transmitted, the dialog indicates how many characters can still be entered.

6.4.3.6 Options for sending Messages

The options listed here are not available for all message types.

- **CC** (Carbon Copy)
- **BCC** (Blind Carbon Copy)
- **Send Time**: Via this additional entry line a time can be entered at which the message is eventually sent.
- **Send Priority**: The evaluation of priorities depends on the system settings defaulted by the administrator.
- **Insert Attachment**
- **Text Format: Plain Text Format** (default) or **Rich Text Format**.
- **Send Again**
- **Find Address/ Name/ Contact**. The user database is searched. You can also search for text.

6.4.3.7 Addressing

Message type	Addressing Mode
E-mail	for Internet e-mail, for example peter.sample@offline.de[SMTP]
Fax message	for a message to an analog fax device, for example 12345678[FAXG3]
SMS	for an SMS (Short Message Service), for example 7654321[SMS]

- Internal addresses are auto-completed and marked green if valid.
- You can set the preferred transmission mode (for example, fax).
- External addresses, that is, the addresses specified are displayed in red for addresses with no database entries.

6.4.3.8 Distribution Lists

You can create new subfolders that are in fact private distribution lists in the folder named **My Private Groups"** under **People** in the **Explorer Folders** window. The folders are only available to the user who has defined them. Members of these groups are integrated by Drag&Drop from the user or contact folders.

So that a group can be addressed by voice mail script, each group can be assigned a unique numerical value.

6.4.3.9 Selecting Fax Stationery

Fax stationery consists of fax forms that you can use for sending faxes. These forms are in most cases a cover page (the first page) and the following pages. The system administrator prepares several templates from which you can make your selection. Creating new fax templates is only possible with administrative privileges.

6.4.3.10 Outgoing Mail/Send Journal

This window displays all documents that you have generated and transmitted. The outbox also offers the following features:

- Message transfer cancellation, provided the transmission has not yet been started by the XPR server
- Send Again
- Message status: message delivered / not delivered / in progress or message read / not read (messages tracking)
- Describe recipient (windows with recipient database entries)

6.4.4 Message Editing

You are automatically informed about incoming messages by a pop-up window which always appears in the foreground independently from the program currently in use. This can occur immediately or after a short delay, depending on the settings.

You can also choose acoustic notification (by announcement) for incoming messages if your computer has a sound card with a loudspeaker connected to it.

6.4.4.1 Inbox

The **Inbox** window displays all incoming messages of all message types.

Messages open in a special dialog that carries the message's subject as caption and contains the message text. From here the editing functions described in the following can be used:

- Special Fax Viewer for viewing and editing fax messages
- Special window for playing back a voice message
- Mark a message as read/unread.
- Marking a message as urgent

The basic message editing functions are:

- **Reply**
- **Reply to All**
- **Forward**
- Attach files to message

6.4.4.2 Preview Window

The “Preview” window displays information depending on the currently activated window and the entry selected in there. The message contents marked in the journal windows are displayed in the preview window as follows:

- Fax messages with Fax Viewer
- Voice messages with Message Player
- Contacts with database fields

The edit options reflect the features useful and allowed in the various windows. The following functions can be performed from these windows as well:

- Reply
- Forward
- Print
- Delete
- Save
- Magnify/minimize views
- Browse between fax pages.

6.4.4.3 Editing an Incoming Fax Message

Faxes cannot be edited directly in the Preview window. When opening a fax message in the Fax Viewer, the following fax edit features are available:

- Grid lines that furnish the representation with a raster
- Change to next/previous/last/first fax page
- Zoom in or out
- Rotate page
- Selecting objects already inserted
- Draw a line
- Insert a rectangle or round rectangle
- Insert an ellipse
- Insert an arrow
- Insert and format text
- Move objects to back or to front
- Insert or delete fax page
- Split fax message into two messages

6.4.4.4 Editing an Incoming Voice Message

Received voice messages can be played and edited in a separate window. The following functions are available:

- Playback can occur either via the workstation telephone or via PC hardware
- Total duration is displayed

- Current message status (position indicator control with the mouse)
- Playback can be stopped or interrupted
- Jump to start or end of message
- Attaching a written or spoken annotation to a received voice message before it is forwarded (recording by telephone or soundcard)

6.4.4.5 Deleted Messages

The Deleted Messages window contains all documents that have already been deleted in the Incoming Mail and Outgoing Mail journals, but that remain on the OpenScape Xpressions server for a little longer.

6.4.4.6 The Xpressions Folder

The **Xpressions** folder is located in the Explorer Folders window on the same level as the Incoming Mail folder. Messages in this folder are given priority when checking messages via the telephone.

This feature can only be used in conjunction with the *Phonemail* voice mail system. An appropriate folder rule must be defined to sort messages automatically in the Xpressions folder.

6.4.5 Appointing a Deputy

You can activate a mailbox deputy to divert incoming messages automatically to another user.

- Messages forwarded to a deputy are **not** additionally kept as copy in your inbox.
- The originator of a message is not informed that the message was forwarded to a deputy.

6.4.6 Customizing Communications Client

To a large extent, you can adapt the user interface of the Communications Client to meet the individual requirements of the user, which guarantees ergonomic work in a Unified Messaging environment. An inbox wizard supports message administration as it can be used for creating distribution rules.

6.4.6.1 Administering User Interface Layouts

The following options are available for modifying the Communications Client user interface:

- The system administrator should define at least one global layout. A maximum of four global layouts may be created.
- The user can create another four which are private then
- He/she can switch between various layouts
- You can lock layouts after creation. We recommend locking your layout if you want to rule out the possibility of inadvertently moving or closing a window
- You can restore the original layout after a layout modification
- You can customize the column header in the journal windows to display the status of the message in the inbox

6.4.6.2 Folder and Flag Rules

You can use the **Inbox Wizard** function and folder rules to automatically sort (move) incoming messages in specific folders. You can also use flag rules to ensure that messages from a certain subscriber are automatically assigned a flag in the inbox journal. You can define an arbitrary number of rules and modify or delete existing ones.

- The Xpressions folder (**My Xpressions folder)** takes on a special meaning in this context: If the appropriate function was enabled by the administrator, the messages stored in this folder are retrieved first when you poll your mailbox by telephone. An appropriate folder rule must be defined to move messages automatically to this directory. This function only exists in connection with PhoneMail.
- You can define a flag rule to display messages from specific originators with an “important” flag.

6.4.6.3 User-Defined Settings

You can make general program settings here.

Edit Print Layout

You can use this setting to set various options that affect how a layout is displayed when outputting documents from the journal windows (that is, the **Incoming Mail**, **Outgoing Mail** or **Deleted Messages** windows).

- **Document Information**: Additional information on the document can be inserted at the top or at the bottom of the hardcopy.

- **Fax Fit Strategy**: The **size of the fax page can be adapted to the hardcopy size, so that** an incoming fax is put out on one hardcopy.
- **Left Margin**: You can define a margin for the printouts so that no text is lost when subsequently binding the printed document.
- **Insert Additional Information**: You can define the information that you want to output with the associated document by entering the relevant parameters (along with any explanatory texts available) in one of the three input lines. Each line represents one line on the printout. An empty entry line (no matter which one) would reduce the info text printed on the hardcopy to two lines. During printing, the parameters are automatically replaced by the data available on the server. You can use the following parameters in the input lines:
  - Costs/call charge units incurred (only available if the relevant data was transferred by the PBX connected)
  - Cost ID
  - Date and time (arrival / transmission time stored on the server)
  - The message format (telex, ASCII, Fax G3, and so on)
  - Size of the document in bytes
  - Message ID (a consecutive ID number assigned to each message by the server)
  - Originator or recipient identification (for example in the case of fax)
  - The first originator or recipient of a forwarded message
  - Message recipient
  - Current page number
  - Total number of pages
  - Recipient of the message
  - Services (fax, e-mail, and so on)
  - Detailed message status
  - Subject of message
  - Delivery success or failure

Selecting a fax output device

You can select the printer on which you want to output your fax documents. This can be the Windows default printer, a fax device, or the OpenScape Xpressions server printer.

General settings

The following settings are accessible:

- Own phone number
- Local telephone number (if you are currently at a different location)
- Play back voice messages on own or local telephone
- Voice mail format (A-Law or µ-Law)
- Fax stationery paper size (A4 or Letter)
- Delete message cache on logout

Creating a signature

A maximum of four default signatures can be prepared. Depending on the setting, the first of each signature pair or one of the four can be automatically attached to the text document with a keyboard command. You can set the following:

- Signature only for new messages or also for replies
- Use signature 1 for external and signature 2 for internal messages

6.4.7 Internet Favorites

You can use the **Internet Favorites** option to integrate Internet windows in the client user interface. When you start this function to integrate such a window in the Client, the submenu that appears displays a list of your Internet favorites. You can select the Internet page that you want from this list. The operating options in this window correspond to those that you know from your Internet browser.

6.4.8 Contacts and Users

OpenScape Xpressions distinguishes between a global and a private address book. Both are kept on the XPR server so that it is possible to access this data regardless of which computer you are currently logged on to.

6.4.8.1 Editing Contacts

You can only access the global address book for editing if you are logged in at the OpenScape Xpressions system with administrative privileges.

- **Global contacts** are saved and can be seen by everyone in the **Explorer Folders** window. They can be retrieved here by the global contacts administrator and displayed and edited in the **Explorer List** window.
- **Private contacts** are stored in the **Explorer Folders** window. These can also be retrieved, and displayed and edited by the user in the **Explorer List** window.
- You can enter **private remarks** for every contact, as in a note book.
- You can assign a **preferred address** to every contact. Here you can determine which service is to be used as default for contacting the subscriber.
- Search for a contact (the **Find Contact** window opens).
- **Contact** generates a new global contract entry (may only be possible with special access rights).

6.4.8.2 Global Contacts

Global contacts are, contrary to private ones, accessible by all system users. They are at large the global address book on the XPR server.

Via the Communications menu the administrator or an authorized user can define new global contacts or edit existing ones.

Defining global contacts

This function serves to define a new global contact. The logged-in user must have the corresponding privileges for using it. The following fields and functions are available for creating a new global contact:

Field Name	Description
Dialog Header Portion	
User ID	Unique contact identifier (max. 26 characters).
Name (mandatory field)	Real contact name.

Field Name	Description
Addressing Tab	
Business fax G3	Fax G3 number
Business fax G4	Fax G4 number
Home Fax	Private fax extension
Business phone	Business phone number
Cell Phone	Cell phone number
Voicemail	Voice mail number
Private number	Private telephone number
SMS Number	Cell phone number
E-mail	E-mail address
Referral extension	Deputy number in case of absence
Preferred Address	Service preferred by the contact. All messages are sent to this contact through the service indicated here by default.
Personal tab	
All fields for postal addressing data	Postal specifications
Keyword	Search item

6.4.8.3 Private Contacts

Defines a new contact that can only be used by the user who is the creator. The fields and features for a new private contact correspond to those for global contacts (cf. Section 6.4.8.2, “Global Contacts”, on page 128).

6.4.8.4 User Administration

This function is only available to users having the corresponding privileges. You find detailed information on defining a new user in the *OpenScape Xpressions Communications* manual.

The following features are available for user administration:

- Defining a user
- Changing a user
- Assigning users to another group

6.4.8.5 User Groups

User groups are groups that contain the system users. Users can become member of a user group when they are created. User groups serve for privilege inheritance in the system.

The following features are available for user groups:

- Defining a new user group
- Setting group folder properties

6.4.8.6 Groups

Groups serve to pool several users for simultaneous addressing. The following features are available for groups:

- Defining Group Folders
- My Private Groups
- Distribution Lists

6.5 Web Assistant

Web Assistant is a convenient, browser-based application via which the XPR system can be used, administered and configured. By means of clearly structured HTML pages, all users of the XPR system can generate and administer messages of different types (e-mail, fax, SMS and voice messages).

Furthermore, users can access the personal parameters of the message services provided by the XPR system and customize them according to their personal requirements. Comprehensive options for system administration and configuration are available to the XPR system administrator via the Web Assistant.

Depending on the privileges of the logged-in user the Web Assistant operates in one of the following modes:

- User mode
- System administrator mode
- Network administrator mode

For detailed Information on the individual operation modes please refer to the *Web Assistant* manual.

6.5.1 General Features

The following features are available regardless the operation mode:

Logging in/out at

Logging in occurs in the first dialog which opens after the Web Assistant start. The user needs to enter a valid user name or a mailbox number as well as the corresponding password or the corresponding PIN. Furthermore, logging in can be encoded via Secure Socket Layer (SSL). This requires that your browser supports 128-bit encryption.

You can also use the Windows authentication. Therefore the Windows user account is transferred in the format `Domain\Account` or `Account@Domain`. In the XPR server the database field `LMACCOUNT` must be maintained respectively in the user data sets. If only one domain is used on the customer side, it can be specified in the Web APL configuration. Specifying the domain during login is then not necessary.

The user can log out actively (link in the upper window portion) or automatically after expiration of a waiting time in which no user action took place, set by the system administrator.

Selecting a language

The language set at the first Web Assistant start depends on the system configuration. The user can select a different user language immediately after logging in.

Setting the start page

During the first start the **Personal settings** page opens as start page. In the personal settings the user can define another page as start page.

Password forgotten

You can only use this function when reading your e-mails in Microsoft Outlook or Lotus Notes. This feature sends e-mails that contain a new password. Such e-mails are sent to your Microsoft Outlook or Lotus Notes mailbox.

6.5.2 User Mode

This operating mode is performed when a user's access privileges are employed. The following features are executable in this mode:

- The XPR system users can generate and administer messages of different types (e-mail,
  fax, SMS and voice messages).
- Furthermore, users can access the personal parameters of the message services provided by the XPR system and customize them according to their personal requirements.

The following menu options are available in user mode:

6.5.2.1 Menu Address Book

The address book consist of a private and a public part. Each user disposes of his/her own private section, in which he/she can create and administer his/her own contacts. All contacts in the public section are created and maintained by a member of the administrator group.

Private contacts are only available for the user who has created them. Every user can access the public contacts, e.g. to send a message to the contact or view its details.

Contact groups are defined via the menu option **Personal settings** > **Groups**. Existing contacts and contact groups are displayed in a table in the contact list.

The following functions are available in this menu:

- Creating a new contact
- Changing the contact / view details

- Deleting a contact
- Sending a message to a contact
- Looking for a contact
- Editing group settings

6.5.2.2 *Mail Client* Menu

Inbox

This option opens the inbox folder which displays all received messages in a list. The following functions can be performed in the inbox page:

- Deleting a selected message
- Flagging a selected message as read
- Flagging a selected message as unread
- Flag for follow up
- Clear flag
- Reading a text message
- Reading a fax message
- Listen to voice message
- Opening message attachments
- Changing the sorting
- Forwarding messages
- Replying to messages
- Answering a message without original message text

CTI Journal

This menu can only be used if the XPR server is equipped with the CTI functionality, which must have been enabled for each user in the user profile. This menu option opens a page that contains a list of all actions performed with the phone of the logged-in user. The list may contain entries of the following categories:

- Successful outgoing calls
- Unsuccessful outgoing calls
- Successful incoming calls
- Unsuccessful incoming calls

The CTI journal display can be customized as follows:

Option	Meaning
Page	If the CTI journal entries spread over several pages, one page can be selected here for display.
entries/page	Here you can define the number of journal entries to be displayed on one page (minimum 5 entries, maximum 100 entries).
Show ... calls	Journal entry filter according to the following criteria: – all Calls – all successful/unsuccessful incoming calls – all successful/unsuccessful outgoing calls – Incoming: Calls that have been reached/have not been reached – Outgoing: Calls that have been reached/have not been reached

Sent items

This page provides an overview of all messages the logged-in user has sent. The list representation can be customized as follows:

Option	Meaning
Page	If the CTI journal entries spread over several pages, one page can be selected here for display.
Messages/page	Here you can define the number of journal entries to be displayed on one page (minimum 5 entries, maximum 100 entries).
Refresh	Using this option you can set the automatic-update intervals for the **Sent items** page (minimum 5 seconds, maximum 5 minutes). The **off** option deactivates the update.
Save journal settings	A click on this button saves all page settings performed.

Creating a Message

On this page messages of different types are created, furnished with file attachments and sent. The following message types are possible:

- E-mail
- Fax
- Fax-on-demand
- SMS
- Voice message

The following functions are provided by the **Compose message** page:

- Select attachment
- Delete attachments

Query

This page provides functions to look for specific messages. The search takes place among received as well as sent messages. Only messages that have been sent or received via the XPR server are found. Messages that have been sent or received via the backends Lotus Notes or Exchange are not part of the enquiry. The following search options are available:

Search option	Meaning
Search messages in following folder	Sets the folder to be searched.
Originator/recipient information	Narrows the search for a message down to a recipient or originator address.
Time range	Search for messages sent or received within a specific period.
Priority	Search for messages with their priority as search criterion.
Status	Search for messages with their status as search criterion.
Maximum number of displayed messages	Sets the number of messages to be displayed on one result page.

6.5.2.3 *Personal settings* Menu

This menu offers features and settings that can be used by any user. These are in detail:

User data

This page displays information on the user currently logged-in. Some of these specifications can be edited and modified. The following settings can be made on this page:

- Change password of messaging system
- Simplified web access
- Select language for the voice mail system and the Web Assistant interface
- Start page after logging in

Voicemail system

On this page the following settings for the private voice mailbox of the user is performed:

- Change telephone password (PIN)
- Selecting the voicemail system
- Defining a referral extension
- Mailbox options

- Caller options
- Voice mail query without user identification
- Mobility number
- Forwarding incoming calls
- Editing messages via telephone
- Automatic speech recognition

Configuring Forwarding

On this page you configure forwardings. The actions depend on the call type (external, internal, outside of business hours etc.) and telephone keys can be assigned as well. The following actions are available:

Action	Description
Hang up	Disconnects the call if the caller presses the relevant phone key.
Callback access (callback mode)	Allows the caller to access your mailbox (analog to the mailbox *LED* on your terminal device).
Guest access (control mode)	Enables another mailbox owner to leave a message from any telephone.
Direct access (answering machine mode)	Activates the answering machine mode so that a message can be recorded.
Mobile phone number	Forwards calls to a pre-defined mobility number.
Operator	Forwards calls to the central postmaster.
Page the user	The caller pages you by pressing the relevant phone key.
Referral extension	Forwards calls to the deputy who has been specified.
Skip greeting	Allows the caller to skip the greeting.
Dial the calling number	Forwards calls to an arbitrary phone number.

Notification

On this page automatic notifications are set so that the user is informed about newly incoming messages in a way he/she has previously defined.

Notifications can be configured by the following options:

- Message type
- Only if urgent
- To specific devices
  - SMS
  - E-mail
  - Message Waiting Indicator (MWI)

- Time dependency

The following functions are available:

- Global notification settings
- Creating a new notification

Groups

A maximum of 10 private groups can be defined.

The following functions are available:

- Define/edit/delete group
- Admit users to the group
- Admit group to the group

If the logged-in user has administrator privileges, he/she can create public groups that are available to each user besides the private groups.

Fax templates

You can use the fax template created with your messaging system. Furthermore, the available fax templates can be viewed in a preview. New fax templates cannot be created.

Time profiles

With the help of time profiles you can define when and with which voice greetings your mailbox should react to incoming calls. Voice greetings to be integrated in a time profile must previously be created with the **Recordings** feature.

Recordings

With the help of this feature the user can record several personal greetings and a name greeting to be used by the user mailbox. Any telephone can serve as recording device.

Global greetings configured by the system administrator are replaced with personal greetings for the user.

The following functions are available:

- Recording and editing announcements
- Deleting announcements

Default Output Devices

On this page the printer for automatic printout of received fax messages is configured.

Mail tracking

On this page you configure whether read receipts are sent for a received e-mail. The following settings are possible:

- never
- always
- upon request

6.5.3 System Administrator Mode

This operating mode is performed when a user's access privileges are employed. The following features are executable in this mode:

- All *user mode* features. These then refer to the personal messages and settings of the system administrator. With the individual settings for **Recordings** and **Distribution lists**, **global system settings** can be performed.
- Extended features for the XPR system administration and configuration.

You find a summary of the administrative Web Assistant functions in Section 10.1.4, “Administrative Functions of the Web Assistant”. Please refer to the *Web Assistant* manual for a detailed function description.

6.5.4 Networkadministrator Mode

This operating mode is performed when you log in at the system with the network administrator user data. The following features are executable in this mode:

- Access to the configuration of voice mail networks and distributors.
- Administration and configuration of system networks.

You find a summary of the administrative Web Assistant functions in Section 10.1.4, “Administrative Functions of the Web Assistant”. Please refer to the *Web Assistant* manual for a detailed function description.

6.6 My Xpressions Folder

Every user can create a separate inbox-type folder named *Xpressions* in the e-mail system. In this folder messages can be collected or copied via the rule wizard and conditions. In this way important messages can be filtered and reduces reaction times. A distinction is made in this folder between new and read messages. If messages exist in this folder, they are played back at first by PhoneMail.

6.7 optiClient 130

You can use optiClient 130 as follows.

- As efficient client on the OpenScape Xpressions server. In this function you can use it to control your desk telephone from your PC
- As softphone at an SIP communication system.
- As softphone at a HiPath 3000 or Hipath 4000.

In each of these configurations you can

- initiate telephone calls,
- accept telephone calls and
- utilize more complex telephony functions – such as switching telephone conferences.

optiClient 130 also supports you in:

- conveniently managing private contacts in the contact list
- setting up phone connections the easy way via the team bar
- connecting external address books – for example via LDAP
- integrating optiClient 130 features in Outlook and/or Lotus Notes clients.

If you apply optiClient 130 as client on an OpenScape Xpressions server, you can use further special features provided by the OpenScape Xpressions server. Among these are:

- optiClient 130-independent logging of successful and unsuccessful calls
- the XPR-server-based presence function, which informs you about the availability of other users
- sending and receiving of instant messages (instant messaging).
- Web conferences

If you use optiClient 130 as SIP softphone at a HiPath 8000/OpenScape Voice system, you can:

- use the above special OpenScape Xpressions server features, if your optiClient 130 is connected to an OpenScape Xpressions server in parallel.

Furthermore, the modular structure of optiClient 130 enables you to customize the features and representation of the application.

Besides using optiClient 130 on individual user PCs it can also be applied in a terminal server environment.

IMPORTANT: Since the optiClient 130 uses the QoS (Quality-of-Service), a connection via VPN (Virtual Private Network) is not possible at the same time.

6.7.1 optiClient 130 Structure

optiClient 130 consists of different modules with each of these modules providing an individual feature. This type of structure enables you to activate precisely those optiClient 130 features that you actually need for your work. You can thus make optimum use of your PC's computing power, because: you will not waste system resources on features that you do not need. If, for example, you do not want to use external address books in optiClient 130, simply leave the corresponding optiClient 130 module inactive.

In optiClient 130 we distinguish the following module groups:

- The Main Bar
- The User Interface Modules
- The Provider Modules
- The Manager Modules

Let's have a look at these groups in detail.

The Main bar

The so-called main bar is the optiClient 130 basic module. It does not provide any communication functions itself. Instead, it is the program's central user interface, in which the activated user interface modules provide their operating elements.

The user interface modules

The user interface modules provide operating elements for you to control the functions of an associated provider module.

Among the user interface modules you find e.g.:

- the *easyCom*
- the *call journal*

The provider modules

Provider modules make available individual communication services. These are the modules that enable optiClient 130 to e.g. access an external address book or communicate with the connected XPR server in the first place.

The manager modules

Manager modules – like provider modules – take effect invisibly in the background. They perform general communication control functions. For example, the *Directory Manager* prioritizes the access to external address books, if more than one is configured in optiClient 130. Using the *KeyBoard Manager* you can control optiClient 130 via individual key combinations.

IMPORTANT: Changing the type or number of the installed or configured modules may restrict or disable the optiClient 130 function.

Therefore installed and configured modules may exclusively be modified after consulting your system administrator.

6.7.2 optiClient 130 Scope of Delivery

optiClient 130 comes with a large number of modules. During the program's basic installation these modules are all installed, but only modules required for operation at an XPR server are activated.

After the installation, single modules can still be manually activated or deactivated.

IMPORTANT: Changing the type or number of the installed or activated modules may restrict or disable the optiClient 130 function.

Therefore installed or activated modules may exclusively be modified after consulting your system administrator.

6.7.3 optiClient 130 Operation Requirements

The requirements and preconditions listed here apply to the optiClient 130 basic installation – thus for optiClient 130 at an XPR server. If optiClient 130 is used at another communication system or if additional modules are activated in optiClient 130, other or additional preconditions may apply.

optiClient 130 User Requirements

To make full use of optiClient 130,

- the user needs to know how to basically operate Windows application programs. For example, how to use the mouse or what to do in Windows dialogs and program windows.
- the user must be familiar with the Windows application program terminology. For example, with terms like *dialog*, *window* or *context menu*.

Requirements on the administrator of an optiClient 130 environment

To administer optiClient 130,

- the administrator needs to be able to basically administer Windows operating systems.
- the administrator must be familiar with the basic technical function and operation mode of the XPR server.
- the administrator needs to know how a client is connected to a XPR server via the MRS Service Provider (MSP).

Hardware and software requirements

NOTE: You may find further hard and software requirements in the XPR server Release Notes.

For operating optiClient 130 the following user computer requirements apply:

- The user computer must use one of the following operating systems:
  - *Windows 2000 Professional*
  - *Windows XP Professional*
  - Windows *Vista Business and Enterprise*
  - Windows server operating system as of *Windows Server 2003*

– *Windows 7 Professional*

IMPORTANT: The Windows Server 2003 operating system has only been released for usage in terminal server environments.

- An operable IP-network connection must exist between the user computer and the XPR server.
- If optiClient 130 is to be used with an Outlook integration, an Outlook client must already be installed on the user computer.
- If optiClient 130 is to be used with a Lotus Notes integration, a Lotus Notes client must already be installed on the user computer.
- If optiClient 130 is to be used as SIP softphone, you need to have the corresponding SIP licenses, which are administered in a license server (HLM server) . Your sales partner will provide further information.
- If optiClient 130 is to be used as softphone at a HiPath 3000 or HiPath 4000, you need to have the corresponding HFA licenses, which are administered in a license server (HLM server). Your sales partner will provide further information.
- If optiClient 130 is to be used as softphone at an SIP respectively HiPath communication system, the user PC needs to have the necessary audio hardware – e.g. via a optiPoint handset or a sound card. If a sound card is used, the user PC must furthermore have a microphone and speakers.

Further requirements on the system environment

Before optiClient 130 can be put into operation, the XPR server must have been configured.

If optiClient 130 cannot establish a connection to an XPR server, no XPR-server-based functions can be used in optiClient 130.

6.7.4 Special optiClient 130 Operation Restrictions

The user respectively location profiles of optiClient 130 can be configured independently for one of the following connections:

- **CTI connection**
  optiClient 130 is connected to an XPR server as CTI client
- **SIP connection**
  optiClient 130 is connected to an SIP communication system as softphone

- **HiPath connection**
  optiClient 130 is connected to a HiPath 3000 or HiPath 4000 as softphone
- **Combined connection**
  optiClient 130 is connected to an XPR server as well as to an SIP communication system in parallel.

  In this way it is possible to use optiClient 130 under one user account as CTI client at an XPR server and as SIP softphone at an SIP communication system under another user another.

Restrictions on the CTI connection

If you use optiClient 130 at an XPR server to control the Twin-Device of an Alcatel PBX, the following applies:
optiClient 130 always only accesses that of the two telephones that is entered as primary device in the XPR database field PHONE for the relevant XPR user.

Restrictions on the SIP connection

optiClient 130 cannot be used as SIP softphone under the Vista operating system.

Restrictions on the combined connection

If optiClient 130 is connected to an XPR server and an SIP communication system is parallel, it may solely use the following XPR services:

- The call journal
- The Presence function
- The server directory.

This connection version does in particular not allow the use of optiClient 130 as CTI client for monitoring and controlling a desk telephone.

If you create different user respectively location profiles, you can use optiClient 130 under a user account as CTI client at the XPR server and under another user account as softphone at an SIP respectively HiPath communication system.

Restrictions on the communication via VPN

If optiClient 130 is to communicate as SIP softphone via a VPN connection, the QoS packet planner **must not** be installed under the Windows operating system.

Restrictions in a terminal server environment

As regards the terminal server support, the following restrictions apply for optiClient 130:

- optiClient 130 **must not** be used as SIP softphone in a terminal server environment

- The team bar is not supported
- The `shift key` may not be supported
- You **always** need to assign a password for logging on to optiClient 130. If you fail to do so, you may not be able to reach the login dialog during the program start.
  If this is the case, you can neither change your login settings, nor the settings that may only be changed via the **Manage** button of the login dialog.
- So that you can use the hotkeys configured in the keyboard manager, optiClient 130 must be executed in the foreground; optiClient 130 must thus be in the center of the local computer
- So that you can use the quick dialer, optiClient 130 as well as the application in which the number to be dialed is selected must have been published by the terminal server. In a terminal server environment optiClient 130 cannot dial a phone number selected in a locally executed application.
- If you want to dial from the clipboard, optiClient 130 as well as the application from which the phone number to be dialed has been copied must have been published by the terminal server. In a terminal server environment optiClient 130 cannot dial a phone number copied from a locally executed application.

Restrictions on the Outlook integration

The following restrictions apply for the Outlook integration:

- Each optiClient 130 user may access a total of 5 public Outlook address books for resolving phone numbers. Each of these address books may contain a maximum of 1000 contact entries. This access limitation must be implemented via appropriate read privileges in the relevant Exchange configuration.
- The Outlook integration must not be used in combination with the Microsoft Outlook Add-In CryptoEx Outlook Version 3.0.

6.7.5 Web Conferences

You can use the OpenScape Xpressions server to stage voice as well as web conferences. Web conferences describe the collective use of programs and documents during real-time computer conferences. If allowed by the user, web conferences enable mirroring the desktop. In this way all other conference participants can see the same image, knowing what everybody is on about. Documents and the entire desktop can also be shared for editing. Using the additional features like, for example, chat and whiteboard, issues can be discussed and illustrated. In case of web conferences it is irrelevant where the conference participants are situated. This ensures a high degree of flexibility and saves expenses for long journeys, accommodation etc. Since all session data is transmitted encrypted (256-Bit-AES encryption), sensitive data can be transmitted as well.

The solution used here is based on a web conference server and Windows clients. The client is integrated in optiClient 130 but is also available as independent client.

This client need not be installed. It is merely started via a down load link. The client is used in a web conference scheduled in Microsoft Outlook or Lotus Notes.

NOTE: The client is not available on the setup medium, because the IP address of the computer that hosts the web conference server must be written on the client. The client is therefore always shipped separately.

NOTE: For using web conferences, optiClient 130 must be operated at an XPR server.

Besides the standard communication between two subscribers it is also possible that more than two subscribers collaborate in a web conference. A maximum of one web conference can be started in optiClient 130.

Requirements for using web conferences in optiClient 130:

- optiClient 130 must be used at an XPR server
- the Connection APL must have been installed in the XPR server
- the Presence APL must have been installed in the XPR server
- the web conference server must have been installed in the XPR server.

6.7.5.1 Privilege /Feature Overview

Privileges/Features	Mode			
			Possible additional role	
	Subscriber	Moderator	Presenter	Master*
Application selection	✗	✗	✓	
Using the file board**	✓	✓		✓
Using the chat feature **	✓	✓		✓
Sending a URL	✗	✗	✓	
Assigning the Master role***	✗	✗		✓
Changing the viewing direction	✗	✓		✓
Disconnecting participants from a session ***	✗	✗		✓
Opening the whiteboard	✗	✓		
Using the whiteboard	✓	✓		
Adding presenters to a conference ***	✗	✗		✓
Allowing access to the presenter's mouse/keyboard	✗	✗	✓	
Having access to the presenter's mouse/keyboard	☝	☝		
Recording a session	✓	✓		
Disallowing the chat feature ***	✗	✗		✓
Disallowing the file board ***	✗	✗		✓
Stopping the desktop transmission	✗	✗	✓	
Changing the session password ***	✗	✗		✓
Access to the presenter's file system ****	✗	✓		
Hiding the remote desktop ****	✗	✓		
Sending hotkeys remotely ****	✗	✓		
Starting the task manager remotely ****	✗	✓		
Locking the remote screen ****	✗	✓		
Displaying the viewers' scroll position	✗	✗	✓	

* You can possess this role during a multiuser conference only!
** In a multiuser conference the Master can withdraw this privilege from you.
*** This feature is available during a multiuser conference only.
****Is only available to you as viewer.

What the icons mean:

: Action allowed

: Action not allowed without further roles

: Action must be allowed by Presenter

How the table is to be understood

Example	**Privileges**			**Possible additional role**	
		Subscriber	**Moderator**	**Presenter**	**Master***
1	Sending a URL	✗	✗	✓	
2	Recording a session	✓	✓		
3	Disconnecting participants from a session ***	✗	✗		✓

* You can possess this role during a multiuser conference only!

Rule: Privileges that allow an action count more than privileges that disallow an action.

Examples:

Example 1: Neither the Member nor the Moderator may send a URL to other members without further roles. So that this feature is available to you, you must be presenting.

Example 2: The Member as well as the Moderator have the privilege to record the session without assuming further roles.

Example 3: Neither the Member nor the Moderator may disconnect other participants from the session without assuming further roles. They are only allowed to do so in the role as Master.

6.7.6 Instant Messaging

optiClient 130 supports sending and receiving of instant messages (instant messaging). This requires optiClient 130 being operated at an XPR server.

Via instant messages you can fast and discretely contact other optiClient 130 users on text basis. The addressed users must be logged in with their optiClient 130 at the same XPR server like you with your optiClient 130.

Instant messages are exchanged in the scope of chats in which at least two subscribers take part.

6.8 OpenScape Web Client

The OpenScape Web Client is a fully developed presence management and communications control tool. With the OpenScape Web Client, co-workers can extensively handle and monitor their voice communication from their workstation. Co-workers whose job is very much dependent on information can use OpenScape Web Client to manage their lines of communication and to access security-relevant company resources in realtime. The OpenScape Web Client is a centrally configured service the features of which a user can access by web browser.

NOTE: A parallel setup with the ComAssistant, as it occurs e.g. in a Unified Communications Act Now integration, is not supported.

6.8.1 Function Overview

The OpenScape Web Client offers the following features:

- Telephony functions: e. g. dialing, hanging up, forwarding, alternating between, conferencing.

  NOTE: Not all of the telephony features described here may be available. They depend on the PBX used and its software level, as well as on the terminal devices used.
  The callback feature (in case of busy lines or unanswered phones) is not supported with the OpenScape Web Client.
  If multiline-compatible phones are used, the OpenScape Web Client supports the primary line only. See Section 6.8.1.1, “Multiline-compatible Telephones”, on page 151.
  If you have questions, please consult your system administrator.

- Journal features: e. g. displaying, printing, deleting, configuring, filtered views.
- Security features: e. g. logging on, logging off, changing the password.
- Features of the contact list: e. g. adding, deleting, modifying and displaying entries; search and print function.
- Common address books: e. g. assigning access privileges, adding, deleting, modifying, and displaying entries; search and print feature.
- Rule interpreter features: e. g. defining, modifying and deleting rules as well as activating or deactivating rule profiles.
- Selecting the view mode for the OpenScape Web Client to start with.

- Option for creating several views of the portal interface.
- Hotkeys for operating your telephone and direct dialing of a selected phone number from any application via installing the Desktop Integration.
- Setting of the user language via the web browser language settings. The current version supports the following languages: English, German, French, Spanish, Italian, Portuguese (Portugal), Portuguese (Brazil), Dutch, Turkish, Russian, and Chinese.

6.8.1.1 Multiline-compatible Telephones

The OpenScape Web Client does not offer the special features of multiline-compatible phones. A phone with at least two extensions, one main number (Primary Line) and at least one auxiliary number (Secondary Line) is called multiline-compatible. While each phone must have a main number, an auxiliary number is optional. You find the subscribers' main numbers usually in company directories, but not the auxiliary numbers.

An example: A spokesman of the managing board and his assistant have the main numbers 1000 respectively 1001, the latter also the auxiliary number 1000, so he can immediately pick up a call coming in for the extension 1000 – without the usual waiting period of some seconds. In addition, the assistant can use the number 1000 for telephoning, so that the callee cannot recognize that the assistant is calling and not the spokesman of the managing board.

Subscribers can unrestrictedly use main and auxiliary numbers to make and accept calls, but the OpenScape Web Client does neither display calls from an auxiliary extension on the screen nor are they logged in the journal. The OpenScape Web Client features cover calls with main numbers only.

7 Notifications

7.1 General Overview

Notifications about any new incoming message are created by the Notification APL. Notifications are server-generated and can be sent to arbitrary terminal devices to draw a user´s attention to new messages. This may occur for example by MWI (Message Waiting Indication), SMS or a call of the TUI (Telephone User Interface) at the user. In the latter case you can also directly play back the message or, for example, forward it to a local fax device. Via the Web Assistant you can freely define for which type of message a notification is generated and where it is to be sent to.

Especially on using True Unified Messaging (TUM) the Notification APL is the only option for sending new message notifications to users. The corresponding APLs regularly retrieve the mailbox status and actively notify the Notification APL.

Vice versa, the Notification APL always accesses the users' mailboxes via the TUM interface and thus in a Lotus Notes or Microsoft Exchange environment the APLs are compulsory for access via TUM. With XPR server updates the Notification APL adopts the type of notification set in the *CIT* database field.

The Notification APL provides the following options for defining notifications:

- Generation depending on the message type (e-mail, fax, voice mail).
- Within a definable period no further notifications occur once the user has been notified, even if new messages come in.
- Definition of a notification target. Several devices can be addressed parallel as well.
  You can set two alternative target definitions that are activated in succession if the notification fails.
- For each message type you can define whether a notification is only generated with messages labeled “urgent”.
- Definition of periods in which notifications are sent.

The single notifications are compiled in a notification list, which may contain a maximum of 99 entries per mailbox.

Each notification is internally mapped via the following structure: based on the message type and a time definition, notification target groups are selected. The target groups contain the notification targets. The notification targets are defined via service and address. Further targets can be specified here if the notification to the first target fails.

Which target address is eventually selected for the notification always depends on where the first valid entry is found in the process.

- **Message type**
  Selection for which type of message (e-mail, fax, voice mail or all) a notification is to be generated. In addition, notification can be made dependend on whether an incoming message is labeled “urgent”.
- **Time definition**
  - Determination of one or several periods in which notifications are to be sent within the course of a day (start/stop time).
  - Determination on which days the notification is to occur.
- **Notification target groups**
  Here the (multiple) notification targets are stored.
- **Notification target**
  The first entry defines the preferred notification target. You can also specify additional devices as alternative targets here. The targets are addressed in succession if transmission to one device fails.
- **Target**
  The service required for transmission is defined by the device entry (cell phone, MWI etc.). The device itself is specified by its address.

  The following services can be used for addressing:
  - Mobile phone (SMS)
  - MWI/LED (MWI)
  - E-mail (SMTP)
  - Pager (PAGER)

  and for User Outcall voicemail systems:
  - Evo
  - PhoneMail
  - VMS

The XPR service used for notification is stated in brackets each. If, for example, another protocol than MWI is to be used for setting an LED on the telephone, this change must occur by a routing rule to be correspondingly created. With the MWI protocol an additional notification text is written in the telephone display.

7.2 Privileges for Notifications

Contrary to the old MTA notification function the individual user privileges only partly determine which notifications can actually be activated. For the Notification APL the call privileges control whether a user may send a SMS message. The

special privilege for notifications via SMS (CIT_SMS) is no longer considered and obsolete just like the other CIT_* privileges when notifications occur via the Notification APL.

7.3 MWI Fallback Strategy

With initialized MWI the Notification APL browses the following database fields in succession:

- CIT
- PHONE
- VOICE

If the CIT field for a user should be empty, a number in the PHONE field is looked for. If no number is available there either, the last option is the VOICE field.

If several numbers have been assigned to a user, the MWI notification goes to all entered numbers. For the allocation the corresponding field must be assigned the *MULTI* flag.

7.4 SMS/E-Mail Notifications

It is possible to generate language-dependend texts for notifications to SMS and e-mail addresses. If these language-dependend versions are available, they are used instead of the registry default.

These texts are stored as files in the *<XPR Install>*\Userdata\Notification directory. For SMS these texts have the file name SMS_*<LCID>*.TXT; for SMTP the file name SMTP_*<LCID>*.TXT. *<LCID>* is the decimal Locale ID. The following values are currently supported:

<LCID>	Language (Country)	*<LCID>*	Language (Country)
1031	German (Germany)	1046	Portuguese (Brazil)
1033	English (USA)	1055	Turkish (Turkey)
1036	French (France)	2057	English (UK)
1040	Italian (Italy)	2070	Portuguese (Portugal)
1043	Dutch (Netherlands)	3082	Spanish (Spain)

It is also possible to store user-dependend text files. These are stored in the same directory and have the file name SMS_*<User ID>*.TXT, or SMTP_*<User ID>*.TXT. So that these text files can be taken for the respective user, an entry or the format *<User ID>*.TXT must be made in the user's CITFILE database field. If required, this database field is to be added since it is not present in the standard form. In

the event that an entry of the format `SMS_`<*User ID*>`.TXT` is stored in this database field, this file will only be used for SMS notifications; SMTP notifications still use the default.

7.5 Configuring a Repeat Strategy for User Outcall

With the User Outcall function the TUI protocols defined in a telematic APL are for outbound use, thus call a subscriber. So that this call is successful the set repeat strategy of these protocols should be checked and adapted if required.

Repeat strategy default are three attempts in a 60 seconds interval, then two attempts in a 120 seconds interval and another attempt after 300 seconds. If the user to be notified made a ten-minute call, all of these attempts would be futile as he or she could not be reached.

8 Number Conversion Objects (NCO)

NCO describes a concept for phone number conversion within the XPR server and is the successor to the previous DNO rules. It owes its name to the definition of so-called Number Conversion Objects, which form the central component for the NCO implementation.

NCO describes a quite complex part of the XPR server. Therefore do not worry if you get the feeling of not having understood NCO in full detail after reading this chapter. The information on the following pages will, however, enable you to take your first independent steps within the large area of NCO phone number conversion. Introductory examples will get you on the right way.

NCO supports you as beginner as it already delivers an executable basic configuration after its installation. This configuration already covers the bigger part of possible XPR server installations.

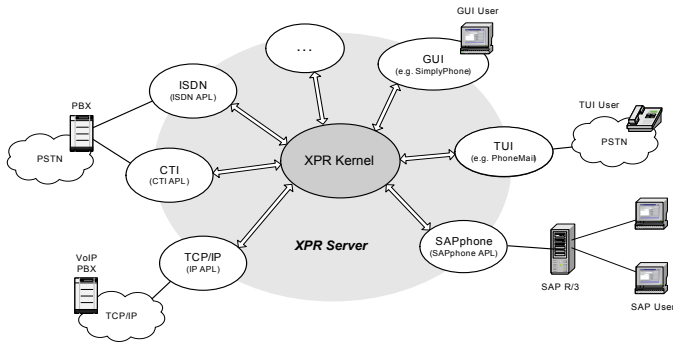
To deepen your knowledge we recommend independent experimenting at the system. Generate a copy of a location, call type checker, normalization and localization rule set each for this purpose. Then define a new NCO and assign it the generated copies. Based on this configuration and the NCO tester you can subsequently research the NCO behavior.

You find a detailed description of the Number Conversion Objects in chapter 11 of the OpenScape Xpressions *Server Administration* manual.

8.1 Calling Number Handling in the XPR Server

The XPR server as Unified Messaging platform brings together a large number of messages from different communication systems. Since the items of information received in this way are differently structured, an individual type of message processing is required.

The following figure represents an example of a Unified Messaging solution based on the XPR server. In this solution, different external communication systems are connected to the XPR server via individual interfaces. Thus e.g. a PBX via the ISDN APL, or TUI users via the voice mail script EVO.

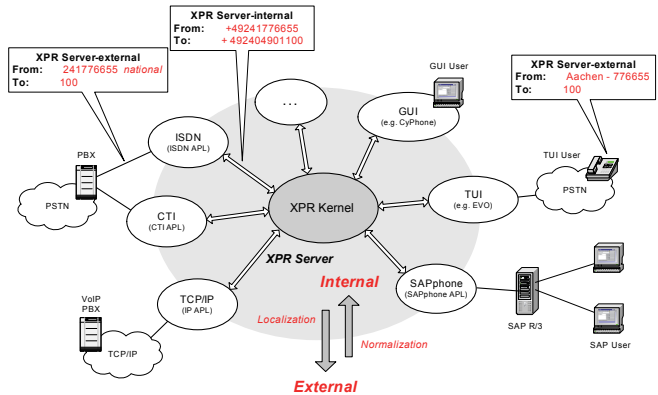


The central XPR server task is in this environment to evaluate and process the messages received by the connected systems. In this process, address and phone number information transmitted along with messages is particularly important.

The phone number information format often varies with the messages structured according to the system. Therefore a system-depending phone number conversion is required. Since the individual communication properties of the connected systems are in particular available in the external XPR interfaces, it is considered useful to perform this conversion exactly there.

The phone numbers received by the XPR server and so converted are administered in a defined format – the normalized phone number format – during the ensuing message processing within the server.

The following figure shows this phone number conversion as an example of our XPR server environment already seen.



The XPR server receives a call from the connected PBX via the ISDN APL. The phone number information contained therein is available in an external (local) phone number format. In order to prepare this information for further processing within the XPR server, the ISDN APL as receiving communication interface performs the described phone number conversion. This process is also called normalization. The result is a phone number in the internal (normalized) phone number format.

Example:

Local (external) Calling Number:	100
	⇩
Normalized (internal) Calling Number:	+ 492404901100

After being processed within the XPR server, the message leaves the server via another interface. This interface must make sure that the phone numbers contained in the message are converted in a format that the receiving system – a TUI user here – can evaluate. This process is called localization and results in an external (local) phone number.

Example:

Normalized (internal) Calling Number: + 492404901100

Local (external) Calling Number: 100

The described phone number conversion has two vital advantages:

- The external interface, performing the respective conversion, has all information about the external system. This enables an optimal evaluation of the transferred phone number information.
- As long as a phone number is processed within the XPR server, it is available in a uniform format. All XPR components with a fixedly defined phone number structure can work with this format.

8.2 Technological Concepts

8.2.1 The general NCO Concept

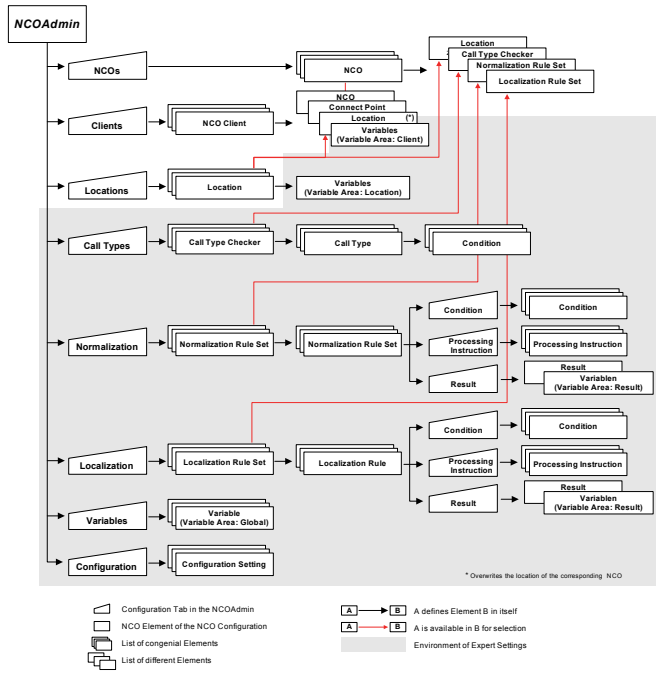
As already described, NCO is based on so-called Number Conversion Objects. Each of these NCOs combines all items of information required for a desired phone number normalization or localization. Among these are e.g. location or rule set information. Each configured NCO is addressed via a so-called connect point.

All NCO clients can access a NCO. The clients are mostly XPR server modules that communicate with external systems or components. They are in charge of converting phone numbers transferred to them on their interfaces.

If the ISDN APL receives, for example, a phone number on one of its ISDN trunk groups, it transfers this number to the NCO framework specifying an individual connect point. There the associating NCO is determined from the specified connect point. The phone number can then be normalized with the rules contained in the NCO. The result of the conversion is subsequently passed on to the ISDN APL.

8.2.2 The NCO Elements

NCO works on the basis of different components and modules. The following provides a first overview of all important NCO elements and their configuration relationship in the NCOAdmin.



Summary of the most important components and modules:

Component/Module	Description
NCOAdmin	This application serves for configuring all NCO elements. It can run in one of the following modes: • Locally on the computer on which the XPR server is installed. • On a computer found in the same network as the XPR server. • On a computer that can access the XPR server via the Internet.

Component/Module	Description
Number Conversion Objects	The Number Conversion Objects (NCO) are the central NCO modules. Each NCO combines the following four elements: • A location • A rule set for phone number normalization • A rule set for phone number localization • A call type checker
Locations	The term location describes all necessary phone number information required to determine its exact 'position' in the international hierarchical communication network. This information is the basis for a correct phone number localization or normalization. One item of the location information is e.g. the area code, which applies for the configured XPR server.
Normalization rule set	The normalization rule set defines the rules according to which the XPR server converts the phone numbers it receives. With the XPR server installation, various normalization rule sets are already configured. These are mostly sufficient for a common XPR installation.
Localization rule set	The localization rule set defines the rules according to which the XPR server converts the phone numbers it sends to external systems or assigns to a user. With the XPR server installation, various localization rule sets are already configured. These are mostly sufficient for a common XPR installation.
Call Type Checker	On the basis of location information the call type checker determines the call type of a phone number transferred to it. This information is used for checking privileges that can be configured in the XPR server for users. A call type checker can redeliver one of the following call types: • Internal • Local • National • International • Unknown

Component/Module	Description
NCO clients	All XPR server modules that communicate with external systems are counted among NCO clients. In this function they normalize or localize received phone numbers by calling the corresponding NCO program routines of the `NumberConversion.lib`. We differentiate two types of NCO clients: • Service-specific clients • User-specific clients
Connect points	Each NCO client provides connect points. The assignment of the individual client resources to these connect points depends on the client implementation. For instance, the ISDN APL provides one connect point per trunk group, whereas the CTI APL provides one connect point per CTI link.
Variables	Many settings in NCO are administered in the variable format. Among these are the configuration parameters of the configured locations, the transfer of special parameters during the conversion rule run-through, or the conversion results. All NCO variables are of type *String*. For the logical variable contents the string values “*true*“ and “*false*“ are used.

8.2.3 The normalized NCO Calling Number Format

Each normalized phone number can be represented under NCO in the following phone number structure:

<format identifier><phone number portion>;<appendix>

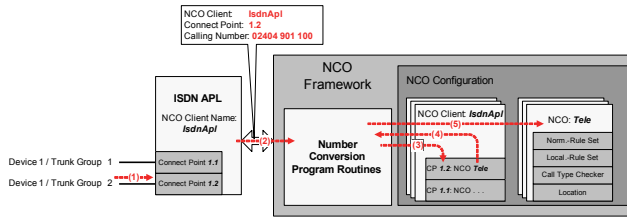
In the following table we take a closer look at the phone number elements.

Element	Description
Format identifier	Normalized phone numbers are available in two formats – the *international* or the *private* one. The format used for a phone number can be recognized by the leading identifier: • **+** international format • **p** private format
Phone number portion	This part of a normalized phone number defines the actual phone number information.
Phone number attachment	Processing phone numbers within the XPR server may require the administration of supplementing communication information. For this purpose it is possible to attach further information to a phone number in the variable format. Such an appendix is separated from the actual phone number by a semicolon (;).

8.2.4 NCO Clients and Connect Points

Service-specific NCO clients

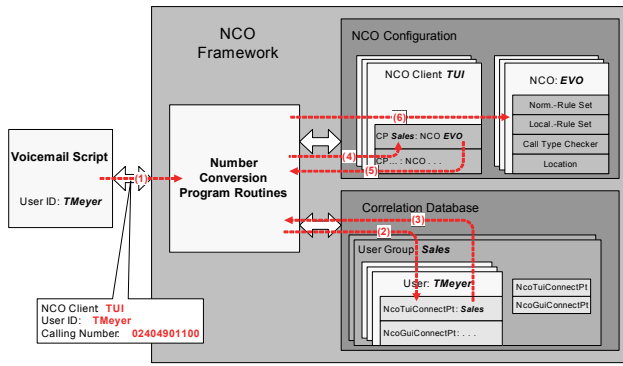
We select the ISDN APL as service-specific example.



The ISDN APL as service-specific NCO client defines connect points during its configuration. It does so for each of its trunk groups. On this basis it can later convert phone numbers group-dependently if required.

User-specific NCO clients

We select the TUI script EVO as user-specific example.



User-specific NCO clients do not address their associating NCO directly by transferring a connect point.

8.2.5 Location, Calling Numbers and Prefixes

The location information is a NCO basic information, thus significantly influencing the phone number conversion. It is composed of the following information:

Information	Description
Location codes	The location codes in the XPR server environment describe all necessary phone number information required to determine its exact position in the international hierarchical communication network. This information is the decisive base for a correct phone number normalization within the XPR server. The following location codes are available: • Country Code • Area Code • Subscriber Code • Range Code • Extension Code • Trunk Code
Location prefixes	Location prefixes describe the behavior of the PBX or the telecommunication network during the establishment of communication relations. The following location prefixes are available: • International Prefix • National Prefix • External Prefix • Trunk Prefix

8.2.6 NCO Conditions

Conditions are used within NCO at two points.

- Within the call type checker
  to determine the applying call type.

Within conversion rules
to define a condition under which the associating conversion rule is executed.

All conditions configured for a call type checker or an individual conversion rule can be linked via the logical operators AND or OR. An individual selection of these operators for specific conditions is not possible at this point. The *Set of conditions* condition type however enables such a configuration.

The following condition types are currently available:

Condition	Description
Batch condition	The batch condition defines in most cases several, single, regular-expression-based portions which replace the definition of a complex regular expression. This method of generating regular expressions is a significant facilitation for the administrator configuring a condition.
Negating condition	A negating condition negates one of the conditions it contains.
Number in range condition	The number range condition determines whether a transferred phone number falls into a defined number range. Various adaptions are selectable for this check.
Number length condition	This condition checks the length of a transferred phone number. Various comparison operators are selectable.
Regular expression condition	A rule of the regular expression type checks the format of a transferred input according to a defined regular expression.
Set of conditions	The condition type *Set of conditions* enables grouping of several conditions of an arbitrary type. These can then be arbitrarily linked with an AND or OR operator, which is independent from the linking operator of the superordinate condition level.
Variable condition	A variable condition compares the content of a variable to be defined with a value to be specified. Various operators are available for comparison.

8.2.7 Localization and Normalization Rules

These rules control the conversion behavior within NCO.

We differentiate three rule areas:

- **Preprocessing rules**

  Preprocessing rules are used for a preparative phone number adaption. With phone number normalization such adaptations are e.g. removing a location-individual cross connection number transferred by the PBX. Preprocessing enables establishing the conversion rules to follow on a generally valid phone number format. This simplifies re-using conversion rules at different NCO points. All rules defined in this area are run through in succession.

- **Conversion rules**

  Conversion rules are used for the actual phone number conversion. All rules of this area are run through to the first match. The conversion then continues with the first rule in the postprocessing area.

  NOTE: So that a rule is considered a match, its processing instruction as well as its associating, previously checked condition must apply.

- **Postprocessing rules**

  These rules are used for a post-adaption of phone numbers already converted. With phone number localization such an adaption can be e.g. adding the location-individual digit for outside line dialing in the PBX. Postprocessing enables establishing the previous conversion rules on a generally valid phone number format. This simplifies re-using conversion rules at different NCO points as well. All rules of this area are run through in succession again.

From the names of these three rule areas you can already gather the sequence in which they are run through. It must however be ensured that results of a rule already executed are passed on to the following one. This is in most cases done via the variables *NumberInput* and *NumberResult*.

The following rule types are available in the various rule areas:

- Batch rule
- Regular expression rule
- Set of rules

Rule Portion	Description
Condition	Defines the condition under which the associating processing instructions are applied to the transferred phone number.
Processing instruction	Describes the actual processing instruction according to which the transferred phone number is converted if the associating condition has been fulfilled.

Rule Portion	Description
Result	The result describes the composition of the converted phone number after running through the associating processing specification.
Corporate Pre-Processing	Represents a special case within the conversion rules and is merely used for the configuration of a Corporate Network environment.

8.2.8 Batch and regular Expressions

The processing instruction of a batch rule is based analog to a regular expression rule on a regular expression. Expressions of this type are known to be difficult to write and even more difficult to understand in their standard format. On the other hand, regular expressions are very effective and phone number conversion cannot be done without them. Therefore NCO integrates a simplified format of regular expression mapping – the staple or batch rule.

With such a batch rule a regular expression is divided into several smaller expression portions. For these, different properties can be configured by means of a GUI. The actual expression portion is formed by the expected character pattern, which may consist e.g. of the string *1234*, the regular expression *[0-9]* or the <*CountryCode*> variable. By means of further options the following properties can subsequently be configured for each expression portion:

- how often it is expected (e.g. 0-*, 5, 2-3, *)
- whether the matched pattern is to be stored in a runtime variable ($1, $2, ...) for further processing
- whether this regular expression is to behave *Greedy*ly

8.2.9 Call Type Checker and Conditions

On the basis of location information the call type checker determines the call type of a phone number transferred to it.

Each call type checker contains a call type list. At least one NCO condition is assigned to each of these call types. If several conditions are defined, they can be linked to each other via the logical operators AND or OR. An individual selection of these operators for specific conditions is not possible at this point.

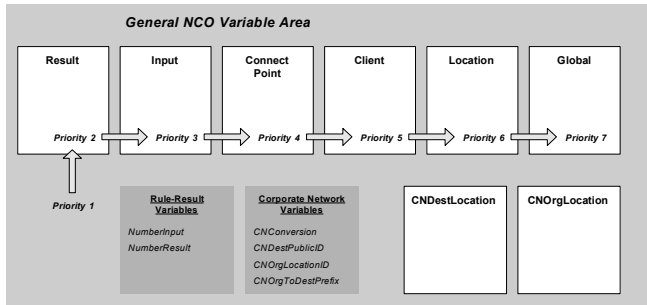
If all conditions of a call type are fulfilled, a match follows and the checked phone number is assigned the associating call type. The call type list is run through to the first match.

For the conditions of a call type checker, various condition types are available. These are:

- Number length conditions
- Number range conditions
- Variable check conditions
- Batch conditions
- Regular expression conditions
- Set of conditions
- Negating conditions

8.2.10 Administering NCO Variables – Name Areas

To improve the administration of the available NCO variables, they are in most cases assigned to different name areas. The following figure illustrates this structure and its internal cohesions.



Depending on the use of a variable, it is administered in one of the following name areas.

- Result
  Variables of this name area are in most cases used within the execution of rule records. Associating variables are configured in the NCOAdmin in the *Result* tab of the single conversion rules.
- Input
  contains variables transferred to NCO by the NCO clients within the scope of phone number conversion. Since variables of this name area are defined by the program code of the respective NCO clients, they are not to be added via the NCOAdmin.
- Client
  Variables of this name area can be defined for selected NCO clients and control the client-individual phone number conversion. Variables of the client name area are configured in the NCOAdmin in the *Clients* tab.
- Location
  contains variables that determine the location properties. Variables of this name area are configured in the NCOAdmin in the *Locations* tab.
- Global
  contains variables that are to be directly usable for all NCO elements. Variables of this name area are configured in the NCOAdmin in the *Variables* tab.
- CNOrgLocation
  contains variables that define the information of an originator location in a Corporate Network environment.

- CNDestLocation
  contains variables that define the information of a destination location in a Corporate Network environment.

Besides the variables of the described name areas also those are available that exist parallel to the described name areas, thus directly in the general NCO variable area.

8.2.11 Export and Import of NCO Elements

To realize a user-friendly configuration the XPR server supports the option to export and import NCO configuration data. In this process all relevant information is converted into XML-based files.

By means of the export/import function of the NCOAdmin application, configuration modifications can be optimized in a test environment. After their efficiency approval they can be copied to a productive system.

8.2.12 Range Lists

The range list is another NCO conversion variant. It serves for extension-dependent phone number conversion. By means of a phone number to be converted it is checked for being contained in the number range of a defined range list. If this is the case, the associating phone number conversion can be performed.

8.2.13 Saving the NCO Configuration

The NCO configuration contains the information of all NCO elements. It is stored in the `<XPR-Root>\NCO` directory under the share *MrsNCOConfig* and based on XML files. After the XPR server installation at least the two files `NCOMainTree.xml` and `VarableProposals.xml` are available.

The `NCOMainTree.xml` file contains the configuration of all defined NCOs with their location information and rule sets.

The `VariableProposals.xml` file includes a structured list of various variables provided to the administrator with the NCO configuration.

The additional files `NCOUpdateInfo.xml`, `NCOMainTreeLock.xml` and `NCOConfigLock.xml` are dynamically generated by the XPR server. They administer the access to the configuration data.

After modifications to the configuration the XPR server generates beyond that the two directories `MainTreebackup` and `DiffTree`. They serve for automatic updating the configuration or for logging the modifications performed.

8.2.14 Structure of the NCO Installation for a XPR Reinstallation

NCO is automatically installed with configuring a new XPR server. Three installation steps can be differentiated:

- Installation of NCO basic settings of the XPR server
- Installation of NCO basic settings of the NCO clients
- Further settings

8.3 NCOAdmin – Access to NCO Configurations

The XPR application NCOAdmin is part of the XPR server and serves for configuring NCO elements. In the course of a server installation it is installed in the `<XPR-Root>\bin` directory. Subsequently it can be started there with the `NumberConversionAdmin.exe` file. The NCOAdmin can be operated in three modes:

- **Locally**
  The NCOAdmin processes the configuration files of the local XPR server.
- **Via network**
  The NCOAdmin processes configuration files accessible via a local network.
- **Via Internet**
  The NCOAdmin processes configuration files accessible via an Internet connection.

The way the NCOAdmin starts after being called depends on its operation mode.

8.3.1 NCOAdmin with Access to a local NCO Configuration

With the NCOAdmin start the existence of a share called *MrsNCOConfig$* on the local computer system is checked. If it is available, the NCOAdmin is started in the *Local* mode and accesses the configuration files of the local XPR server.

8.3.2 NCOAdmin with Access to a non-local NCO Configuration

If the share named *MrsNCOConfig$* is not available on the local computer system, the initially started NCOAdmin demands further information on the storage location of the NCO configuration to be used. The NCOAdmin first queries whether the relevant data can be accessed via a network or via Internet.

Depending on the selected operation mode the correspondingly required access information is queried. This information is stored in the local system registry and evaluated with the next program start.

8.4 Configuring the NCO Elements

Among these elements are NCOs, locations, variables, number range lists, conditions and conversion rules. The following functions are available for NCO element configuration:

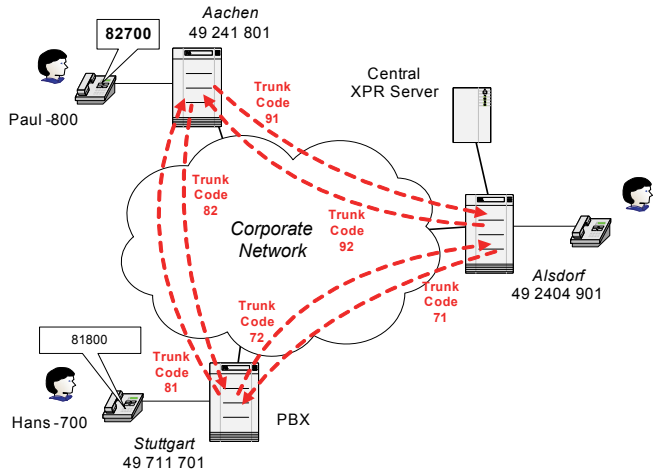
- Defining a new NCO
- Defining a new location
- Defining a new variable
- Defining a new number range list
- Defining a new condition
- Defining a new conversion rule set

8.5 NCO in a *Corporate Network* XPR Environment

This section describes the NCO *Corporate Network* functionality and under which circumstances it is used.

8.5.1 Corporate Network

The term *Corporate Network* describes an environment in which various locations share a central XPR server. The following example will illustrate this.



We see a corporate network with three PBXs linked via cross connections. The trunk codes are to be used for abbreviated dialing among the single subscribers.

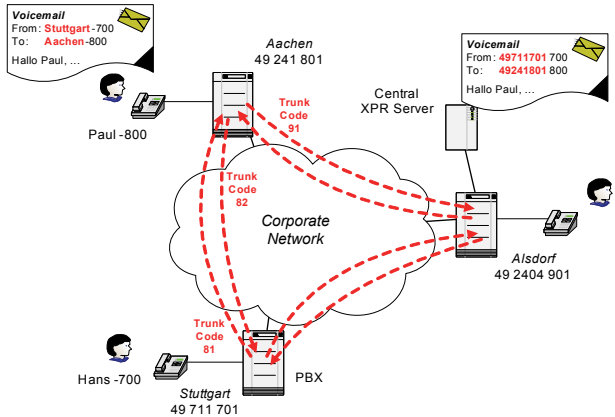
Example

Example: If Hans wants to call Paul, he dials in Stuttgart the trunk code for Aachen followed by Paul's extension – thus *81800*. Paul sees in this case the caller's number *82700* on his telephone display. This is the number under which Hans can be reached from Aachen.

All three locations use the central XPR server in Alsdorf. This server is to map the format of the above 'cross-connection code' with the output – thus localization – of phone numbers. The advantage of this behavior is that e.g. automatic return calls are automatically handled via the corporate network. Furthermore this phone number format fits seamlessly in the users' dial habits.

This localization behavior cannot be reached with the mechanisms described so far.

In the following example Hans sends a voice mail to Paul directly via the XPR server.



The XPR server saves this message internally with the normalized originator and recipient calling numbers. As soon as Paul retrieves his message from the XPR server, the associating phone numbers are localized. Since the localization algorithm does not have any information about the structure of the cross connections, such information is not available for the localization.

At this stage we get to the Corporate Network configuration. With the definition of the various Corporate Network locations the XPR server receives their location information and the associating trunk codes. NCO can then use this information in the course of phone number localization. Mapping of the above 'cross-connection code' is correspondingly enabled.

8.5.2 *Corporate Network* Rules

For a *Corporate Network* environment function different Corporate Network rules are predefined in NCO. They are part of each set of normalization or localization rules and comprise a preprocessing and a conversion rule each.

Corporate Network preprocessing rule

The Corporate Network preprocessing rule is listed in the preprocessing rule area. It cannot be displayed or edited in detail, but only moved to another position within the rule list. Once it has been inadvertently deleted, it can be added to the respective rule area as **Corporate Network preprocessing rule** again.

The only task of the Corporate Network preprocessing rule is to define the content of three NCO variables (CNCOnversion, CNDestPublicID and CNOrgToDestPrefix), which are later used in the conversion rule to be applied.

Corporate Network conversion rule

The conversion rule performs the actual conversion of the transferred phone number. It uses the variables predefined in the preprocessing rule.

In its predefined format it meets the requirements of most Corporate Network default configurations. Once it has been inadvertently deleted, it can be added to the respective rule area as **Corporate Network rule** again.

9 Network Integration

9.1 Distributed System with OpenScape Xpressions

The term “distributed system” is used for a OpenScape Xpressions server installation distributed over several computers.

A distinction is made in a distribution system between the kernel system (kernel server), which is only present once, and one or more associated satellite system(s) (satellite servers). The main advantage of distributed systems is the scalability of their hardware resources.

In principal, virtually all hardware components and their transport protocols (ISDN, TCP/IP, IP, etc.) can be distributed on one or more satellites. However, here we consider only two configurations:

- One or more satellite(s) on which ISDN hardware is installed and the associated software components are configured on the satellite(s).
- One satellite on which the Web-based Web Assistant application is running.

A OpenScape Xpressions system with Exchange Connectors on another computer is also a distributed system. The following table contains a list of program components that can be installed on a satellite computer:

Program Components

Program component	
Web Server	Web Assistant
Fax Server	Fax-on-Demand
Voice mail server	PhoneMail VMS Automated Attendant
Hardware	Dialogic/Eicon ISDN boards
Other components	• LDAP Directory Synchronization • SMS Server: SMS for GSM • IP telephony • MS Exchange 2003 Connector • MS Exchange True Unified Messaging Gateway

NOTE: A satellite installation of the *SMS for GSM* component is only possible if it has already been installed on the kernel computer.

Before a distributed system can be installed, the requirements listed in the following table must be fulfilled:

Topic	Description
Windows network and domain	• All computers in a distributed XPR system should reside in a common network segment. The top administration level in the operating system administration is a Windows domain. This domain may already exist or can be one specially generated for XPR. • All computers in the distributed XPR system must be members of a common domain.
Satellite computers	• The XPR kernel computer must be **active**, that is, switched on, during the installation and startup of the components on the satellite.
User account	• A new user login account should be configured for the operation of the distributed XPR system. This is assigned to all services of the kernel and satellite computers as login account, so that these can start the required networked services. • It may be necessary to set up a special user account for installation and startup, depending on the customer network configuration; local and global administration rights are at any rate required in this phase. We recommend the selection of user accounts that indicate their purpose. • The user accounts must be incorporated in the domain user and local administrator groups on all computers within the distributed XPR system. • A user password should not expire.
Kernel computer	• Components must **not** be installed parallel on a satellite computer and on the Kernel computer. • In the case of a new installation, you should deactivate the appropriate components in the component and driver selection of the setup program.

9.1.1 System Networking

System Networking (SN) is a mechanism for exchanging messages between different messaging servers (XPR or XPR and PhoneMail servers). The mechanism implements functions for the actual message exchange as well as a net-wide configuration management and a comprehensive system and message reporting.

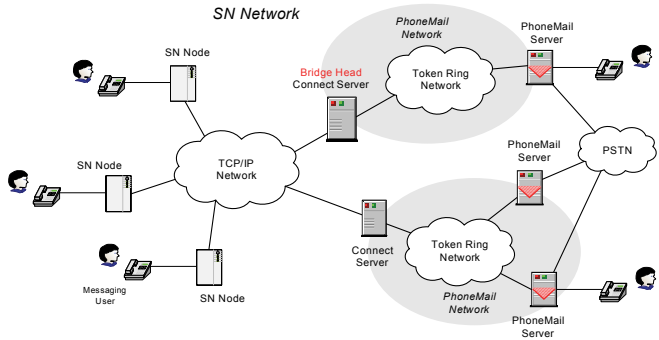
You find detailed information on the *System Networking* subject in the *Server Administration* manual.

9.1.1.1 General Structure of an SN Network

A SN network is established to combine several individual messaging systems to a virtual total system. In such a scenario the users of the systems involved can exchange messages. The relevant users then get the impression as if operating with a joint messaging system.

To achieve this, different information must be interchanged between the single messaging systems. Individual information of the respective system sites as well as address information of the associated messaging users is contained in these exchanged information items. The exchange occurs via the so-called site or network profiles.

The following figure outlines the principle SN network structure:



SN networks different XPR servers. The message and data transport occurs via SMTP and thus via the TCP/IP transport protocols.

For connecting PhoneMail systems to a SN network serves a so-called *Bridge Head Connect server*. In the SN network it is represented as virtual XPR server. The Bridge Head Connect server handles all configuration management communication between the PhoneMail and SN networks. It does however not always take part in the actual message exchange since this communication always occurs between the XPR and connect servers involved.

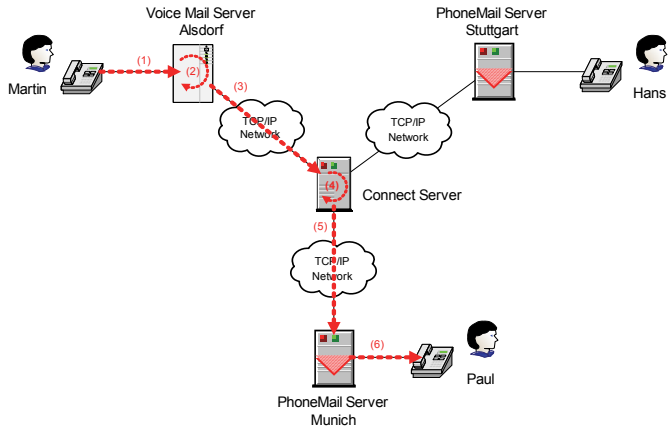
The voice mail user configuration and administration is performed at the respective XPR and PhoneMail systems.

9.1.1.2 Connection of a Hardware-based PhoneMail System

Exchanging voice messages between *hardware-based* PhoneMail systems and a XPR server is realized via the so-called *Connect Server*. This is star-shaped and connected to all systems that are to exchange message with each other.

In the case of PhoneMail messages are transmitted between the single voice mail systems on the basis of a transport protocol similar to SMTP. The task of the connect server is to convert the sent voice messages into the “WAV” format and assume the central routing.

The following figure gives an overview over the functionality of a hardware-based PhoneMail connection to an XPR server. It shows the transmission of a voice message from the XPR server to the PhoneMail server.



1. *Martin* as the sending party sets up the connection to his voice mail system and starts e.g. with the recording of a new voice mail. He wants to send this message to *Paul*, subscriber of a Phonemail system later on.
2. The voice mail system in Alsdorf records the new voice message. Then it requests the entry of a phone number via which the recipient can be addressed.
3. The voice mail system forwards the message as `wav` file to the connect server. It uses a protocol that is similar to SMTP and sends the information that is to be transmitted practically as e-mail.
4. The connect server converts the `wav` file to the PhoneMail voice format and
5. then sends the message similarly to the PhoneMail server that has been addressed in the message – in our case the server in Munich. After having received the message, the PhoneMail server in Munich forwards the received message to the voice mailbox of the subscriber *Paul* who has been addressed.
6. Afterwards, *Paul* can listen to the newly received voice mail after he has entered his voice mailbox.

In case of the transmission of a voice message from a PhoneMail server to the XPR server, the connect server converts the incoming voice message from the PhoneMail voice format to a `wav` file. This can then be sent to the XPR server.

9.1.2 The XPR Location Profile

The location profile contains all information of an SN network node. It is exchanged between the single SN nodes in the scope of the configuration management. In this way each network node receives a precise image of any other node of the SN network.

9.1.2.1 Site Profile Information

The fields of a location profile specify the information defined by the associated SN node and exported to other SN network nodes. These are the fields:

- XPR server name
- Display name
- Location prefix
- Location number
- Location name
- Address
- Location name recording
- Extension range
- Default protocols
- Default database fields
- Public key

You find a description of the single fields in the *OpenScape Xpressions Server Administration* manual.

9.1.3 The XPR Network Profile

Network profiles serve for exchanging information of single messaging users and distributors between SN locations.

If e. g. a user's information is to be exchanged between his/her local and a remote SN network node, the local network node generates a network profile to this. This profile contains all relevant address fields of the user of the local correlation database that were defined in the local location profile for data exchange with the relevant remote network node.

After transmission of this network profile to the remote SN network node, the database information contained therein is stored in the correlation database. The SOURCE database field, which is assigned the name of the original XPR server as value, is added to this entry.

Furthermore, the following two database entries are made for an additional user group and an additional contact in the remote network node for the original SN network node.

The "Node_<*SN Network Node*>" User Group

This user group contains the name *Node_<name of the original server>* and is granted the privileges that correspond to those of a newly defined XPR user. The users received by a server are added to the associated user group and are thus correspondingly privileged to send and receive messages.

The *"Broadcast"* Contact

This contact named *Broadcast* is assigned to the user group of the original SN network node. It is used for addressing all messaging users of the associating SN network node.

9.1.4 Configuration Management (SN internal)

The configuration management of the SN network comprises two areas:

1. Exchange of SN node configuration (location profiles) information between all SN network nodes
2. Exchange of messaging user and distributor (network profiles) information between defined SN network nodes
3. Remote access to each SN network node for configuring the local location profiles

For detailed information on these points, please refer to the *Server Administration* manual.

9.1.5 Configuration Management in a PhoneMail Network (SN external)

If a SN network is connected to a PhoneMail network, each administrative information exchange between these networks occurs via the *Bridge Head Connect server*. This server is thus sender and recipient of each SN-internal message directed to an arbitrary node of the PhoneMail network.

The Bridge Head Connect server is an element of the Phonemail network and behaves towards the SN network like a SN network node.

The configuration management comprises the following features:

- Exchange of configuration modifications
- Exchange of information modifications of the messaging users and distributors
- Remote access

For detailed information on these points, please refer to the *Server Administration* manual.

9.1.6 Configuration of an SN Network

The establishment of a new SN network is divided into the following areas:

- Configuring the first Node of an SN Network
- Adding a node to an existing SN network
- Recovering a SN node
- Connecting a SN network to a PhoneMail network

An exact step-by-step configuration guide is found in the XPR manual *Web Assistant*. A short overview follows:

Configuring the first Node of an SN Network

The first SN node is configured in the Web Assistant on the relevant XPR server:

1. Assignment of a network administrator password
2. Configuration of the local location profile for the node

Adding a node to an existing SN network

Requirements for adding a new SN node are:

- A XPR server as new SN node, installed ready-for-use with the SN
- TCP/IP connection to the entry point
- The entry point IP address

The procedure that adds a new node is described in the *Server Administration* and *Web Assistant*.

Recovering a SN node

SN provides a special mechanism for this case. This mechanism optimizes the configuration of a node to be recovered by recreating the node's former location profile from the still existing SN network information. Requirement for this recovery is that the XPR node name used with the initial integration is maintained after the node platform recovery.

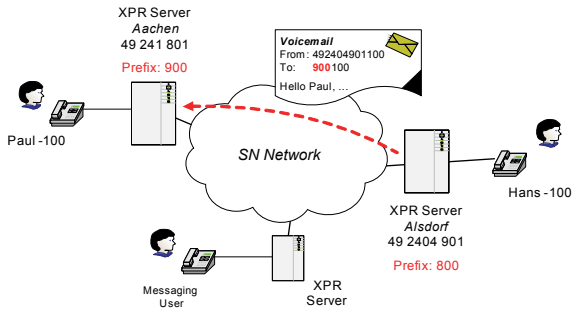
Connecting a SN network to a PhoneMail network

SN and PhoneMail networks are connected via a Bridge Head Connect server. This server is an element of the Phonemail network and behaves towards the SN network like a normal SN network node. You find more detailed information on this topic in the product documentation on the Bridge Head Connect server.

9.1.7 User-Message Exchange between SN Network Nodes

Messages are routed between different SN network nodes on the basis of prefixes assigned individually for each node. When addressing a recipient, the desired address must be correspondingly prefixed.

The following figure shows the addressing of a voice message within a SN network:



9.1.8 User Message Exchange between SN and PhoneMail Networks

Addressing messages to be sent between SN and PhoneMail nodes corresponds to addressing within a pure SN network.

9.1.9 Security Mechanisms

For any communication with other network nodes SN uses a combination of a symmetric and an asymmetric encoding procedure. Furthermore, all profile and password data in the single network nodes are administered encoded.

Each SN network node generates an individual, asymmetrical private/public pair of keys during its initial installation. This pair of keys is used for the entire following communication with other network nodes. Since asymmetrical encoding is very computation-bound, not all message data to be transmitted are encoded applying this method. Instead, each message is encoded with a symmetric key specifically developed for it. Only this key is subsequently asymmetrically encoded and attached to the symmetrically encoded message. The recipient of the respective message subsequently decodes the symmetric encoding first, then decodes with it the actual message.

9.1.10 Co-location

For message addressing SN uses the location prefixes of the various SN nodes followed by the desired subscriber extension. These prefixes are already specified when the originator enters an address for the message.

At a XPR server location, dialing and TUI representation of the relevant location prefixes can be omitted for specific locations via definition of collocations. In this case the SN nodes for which the prefix specification is to be omitted are configured on the sending node as collocations.

Precondition for this configuration is that the sending node and those defined as collocation use different extension ranges.

9.1.11 Application for configuring a SN Network

The SN nodes are configured with the Web Assistant application. More information on this is available in the Web Assistant user manual.

9.2 Cluster

9.2.1 OpenScape Xpressions on a Microsoft Cluster Server

The installation of OpenScape Xpressions on Microsoft cluster servers is only released on a project-specific basis.

9.2.1.1 Terminology and Architecture

Active - Active Cluster: OpenScape Xpressions is running simultaneously on both cluster servers. While one server is actively running, all data and actions must be replicated to the other cluster server in real time. In the event of a malfunction, the other server can *immediately* take over from the failed server. This form of active/active clustering is **not available with** OpenScape Xpressions.

Active - Passive Cluster: OpenScape Xpressions is also installed on both cluster servers in this model, but only one OpenScape Xpressions server is active. If this server crashes, OpenScape Xpressions is unavailable for the time it takes to start OpenScape Xpressions on the other server.

Fail over: Deliberate cluster server changeover or changeover in the event of a malfunction. In the case of active/passive clustering, this means shutting down OpenScape Xpressions on cluster server A, changing the cluster server and starting OpenScape Xpressions on cluster server B.

Virtual Cluster IP: This is the IP used for contacting a cluster server from an external location, irrespective of the cluster server on which OpenScape Xpressions is currently active. Multiple IPs are used within clusters.

Quorum Q: This is a common disk drive on the MS Windows cluster system. It cannot be used for applications.

Disk R: This is a common disk drive on the MS Windows cluster system, which is freely available for the applications that are to be installed on the cluster system. We recommend creating the following OpenScape Xpressions folders on the common disk drive, Disk E:\. All others can remain on the two cluster servers.

- Database
- Userdata (cannot be output during installation)
- Folder
- Outlook Extensions

9.2.1.2 Planning and Preparation

You need a special Xpressions cluster license to install OpenScape Xpressions on an MS cluster server. If you have this cluster license, you only have to purchase the other Xpressions licenses once, even if OpenScape Xpressions is installed on two servers within the cluster.

A Microsoft cluster installation and thus also the OpenScape Xpressions installation is possible under Windows Server 2003.

The entire OpenScape Xpressions server could of course be installed on the shared disk drive `Disc E`. In this case the Xpressions itself is not duplicated. Also software updates or repairs could only be performed by stopping OpenScape Xpressions and thus by the absence of OpenScape Xpressions server, so that this procedure is not recommendable.

The following scenarios are possible for an installation on a cluster:

- As a OpenScape Xpressions server is installed on each cluster server, a separate ISDN board is needed for each cluster server, i.e. in case of a fail over of the cluster the ISDN line must be switched manually. The greatest disadvantage of this solution is the necessity of a manual intervention in case of a fail-over.
- On the Hicom/HiPath side two ISDN tie trunks with identical tie trunk numbers are configured for OpenScape Xpressions. This solution requires redundant hardware in the PBX, which might represent a cost factor.
- In addition to the cluster, two satellite systems with one ISDN card each are configured. In the PBX two ISDN tie trunks are available and are configured with the same tie trunk number. This solution also requires redundant hardware in the PBX and additionally two more computers for the satellites, but it provides the highest possible security in case of a fail-over.

A similar problem occurs when an SMS-GSM box is installed on every cluster server. You must move the mobile service provider’s SIM card from one SMS box to the other, following cluster server changeover after “fail over” at the first box, unless you purchase a second card. For this problem a satellite solution with each satellite disposing of a GSM box is also ideal.

9.2.1.3 Hints

The OpenScape Xpressions is not certified for clusters. This means there is no file (dll) to take care of the OpenScape Xpressions start/stop tasks on a cluster server. Consequently, all cluster resources, groups and folders necessary for the OpenScape Xpressions must be configured separately in the Cluster Manager. When OpenScape Xpressions is started, a number of error messages may appear on the OpenScape Xpressions Monitor. However, these should not have any impact on functional operation.

OpenScape Xpressions may only be started/stopped with the Cluster Administrator, not by using the familiar OpenScape Xpressions buttons or a customer application. Naturally, this only works if the OpenScape Xpressions cluster resources are completely configured.

The Cluster Manager and the OpenScape Xpressions server must always be operated on the same server in the cluster, otherwise data access is not possible and the Web Assistant cannot be reached.

The OpenScape Xpressions Standard Host Name must be changed to the Cluster Host Name in the SMTP Apl. In addition, the Bind address must be selected and the Cluster IP received. The new SMTP host name must be entered correctly in DNS. If this is not done correctly, you will encounter repeated problems with the SMTP clients in the event of “fail over”.

The Web Assistant must be restarted in the event of “fail over” because it is then running on a different server. An error message is output if you log on during a cluster server changeover at the time when no server is available. You invoke the Web Assistant via http://<Clustername>/cgi_bin/webassistant/start.

9.2.2 OpenScape Xpressions at a Lotus Domino Cluster

The Lotus Notes connectors (LnAPL and LnUmAPL) create system-internal connections to Domino clusters. They use the same APIs and network libraries as the Lotus Notes client.

To utilize the cluster functionality of Lotus Notes connectors, the following prerequisites must be met:

- The cluster mechanism of the Domino cluster must function without problems. Check carefully that the failover settings for mail routing are correct. For further information, please refer to the Lotus Domino help.
- The Lotus Notes connectors must work correctly.
- The user ID of the Lotus Notes connectors must have the **Author** user privilege and the role **NetModifier**.
- On each server in the Domino cluster a replica of the XPR administration database must exist (this database must be clustered).

9.2.2.1 Failover Functionality

If a failover takes place in a domino cluster, the LnAPL automatically connects to another Domino server in the cluster. The LnAPL receives information on the Domino server existing in the cluster from the Lotus Notes client.

If the connection to another Domino server has been established, the LnAPL starts to create the foreign domain needed on this server as well as the corresponding mailbox (e.g. notesgat.box).

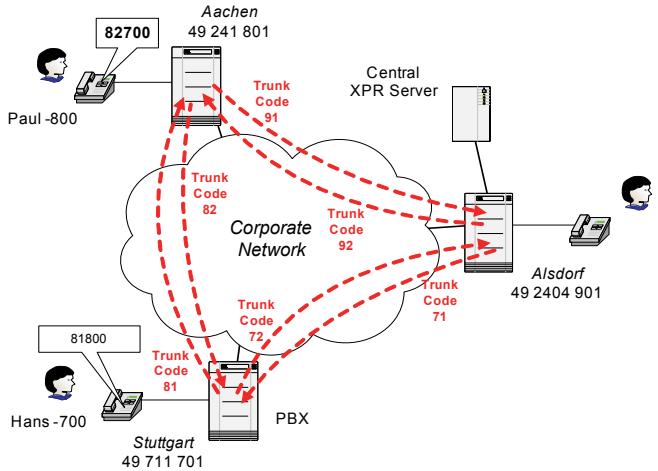
For these steps the user ID of the LnAPL requires the installation user privileges described in the administration manual *Lotus Notes Gateway*. After this process has been completed, the original LnAPL functionality has been reestablished.

The connection to this Domino server remains until the next failover.

You find detailed information in the *Administration manual of the Lotus Notes Gateway.*

9.3 Corporate Network

The term *Corporate Network* describes an environment in which various locations share a central XPR server. The following sketch shows an example scenario:



We see a corporate network with three PBXs linked via cross connections. The trunk codes are to be used for abbreviated dialing among the single subscribers.

Example:
If Hans wants to call Paul, he dials in Stuttgart the trunk code for Aachen followed by Paul's extension – thus *81800*. Paul sees in this case the caller's number *82700* on his telephone display. This is the number under which Hans can be reached from Aachen.

All three locations use the central XPR server in Alsdorf. This server is to map the format of the above 'cross-connection code' with the output – thus localization – of phone numbers. The advantage of this behavior is that e.g. automatic return calls are automatically handled via the corporate network. Furthermore this phone number format fits seamlessly in the users' dial habits.

Please obtain detailed information from the *Server Administration* manual.

9.4 Clients on Terminal Servers

The Outlook client components can be integrated in the Outlook versions of the Microsoft Office versions XP, 2003, 2007 and 2010.

The following components are approved for operation on terminal servers:

Client Component	Microsoft 2003/2008 Terminal Server	Citrix MetaFrame XP
optiClient 130	Yes*	Yes*
Outlook message forms	Yes	Yes
MAPI fax printer drivers	No	Yes

* The support of optiClient 130 in Microsoft terminal server respectively Citrix MetaFrame environments is restricted to the use of CTI features. Usage as IP client is not possible here.

The OpenScape Xpressions Communications Client and the Notes Client are not released for terminal server operation.

10 System Administration

10.1 Administrator Tools

10.1.1 Overview of Administrator Tools

Administration in OpenScape Xpressions can be divided into the following areas:

- **System configuration** - Configuration and supervision of OpenScape Xpressions components
- **User administration** - Configuration and supervision of user data and user groups
- **System administration** - Configuration of global elements, such as fax cover pages, system prompts or public distribution lists

The interfaces for the administration and operation of OpenScape Xpressions consist of

- **OpenScape Xpressions Monitor** (system configuration),
- Web Assistant, a web-based tool for the user's mailbox administration and a web-based tool for the administrator to manage the XPR system (parts of user and system administration),
- OpenScape Xpressions Administration and mail client **Communications** (user and system administration),
- A series of helpful support **tools** for use at command line level (mainly system configuration; use optional),
- **Telephone User Interfaces** (parts of system administration; use optional),

10.1.2 OpenScape Xpressions Monitor

10.1.2.1 Overview

The OpenScape Xpressions administrator uses the OpenScape Xpressions monitor to display status, performance, diagnostics messages, etc., for the entire OpenScape Xpressions system. This tool is also used for configuring the individual OpenScape Xpressions components, but not for user administration.

You can invoke the monitor from any Windows computer within the network, so that administering the OpenScape Xpressions server is convenient. This is enabled by the Extended Message Reporter Service (XMR), which collects all log information from the OpenScape Xpressions components. Monitor processes distributed over the network can be logged-in with XMR-Service giving various and dissimilar system reports. This also applies to distributed systems.

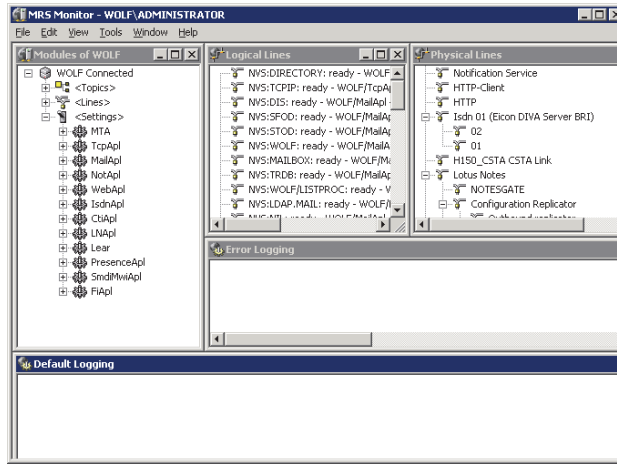
Special surveillance terminals, for example, can be configured very easily in this way. Security information could be displayed on one monitor while all fax log information is shown on another monitor.

Remote maintenance can also be performed by trained personnel using the Remote Access Service (RAS) from Windows (this means that the personnel does not have to be on site).

You must log on to the Xpressions server before you can work with the XPR Monitor. Via the log-in options you can specify whether this logging in is to be permanent for a session or is to become automatically invalid after a configurable period.

After installation, data pertaining to the local computer on which the OpenScape Xpressions server is running are displayed by default on the OpenScape Xpressions monitor. The following windows are used for this:

- **Modules of XPR**
- **Logical Lines**
- **Physical Lines**
- **Error Logging**
- **Server Logging** (default logging)



10.1.2.2 Components

The **Modules of XPR** window shows all OpenScape Xpressions components (APLs) installed. You can configure any component that supports a configuration (for example the ISDN Apl) in the **Settings** submenu.

10.1.2.3 Line Window

The **Physical Lines** window shows all components that administer physical lines. The Line Window displays all lines. When a connection is established on one line, the Line Window displays the corresponding information, such as the fax number called.

The OpenScape Xpressions Monitor can be used in a number of different situations. One possible application is, for example, as a type of activity monitor in which only the activity of the physical lines is displayed in a small window.

The **Logical Lines** window, on the other hand, contains all connections to other modules, irrespective of whether these use the same physical lines. This window shows whether these connections are active or terminated.

10.1.2.4 Logging Monitor

All general information, errors, and warning reports are displayed by default in the **Logging Window**. If you want to add a component at a later time or would like special debugging information for error analysis, you can simply include the required topic, output it in a separate logging window, or save it in a file.

Additionally, it is possible to forward error messages to the fault management of a Hicom/HiPath/OpenScape Voice PBX. For further information please refer to the *Server Administration* manual.

Different logging levels can be set:

- **Fatal Errors**: errors that normally lead to module failure. These are displayed in the separate **Error Logging** window.
- **Errors**: Non-critical errors. In most cases the module remains in a functioning state.
- **Warnings** that inform e.g. about inconsistent configurations.
- **Info Reports** that inform about the normal module function flow.
- Various levels of **Debug Information** used by developers and service personnel for diagnostic purposes. For the average user these reports are meaningless.
- **Privileged Messages** are messages that, in addition to their classification, have another property that can be used for selection purposes; for example, several important informational messages also have this privileged property.

RotoLogger

The **RotoLogger** option is a new feature which can be used to limit the size of log files and at the same time define the number of log files to be archived. Debug log file size can get very large when searching for a rare error or after numerous hours of extreme server usage. Frequently, the only relevant information in the debug log file involves the last few details output at the time of the error.

The log files are overwritten by RotoLogger in a round-robin process so that the maximum size specified for all log files is not exceeded.

Main Log File

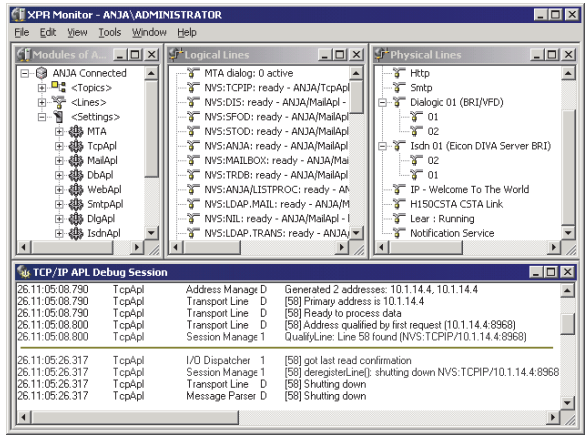
Filter settings can be made for the main log file. This log information is always included with the main log file. The user must be logged on before these log filter settings can be modified.

Active Alert

Filter settings for active alert reports generated by the MTA (see Section 11.2.5, “Active Alerts”). All of the log reports listed in this dialog can be used for active alerts. Active alerts could be used, for example, to report an error to an administrator or the accountable service hotline.

Example of a special analysis session

When specific modules require a more detailed examination, an individual logging monitor should be created in which the various reports are stored and all possible filters conditions are set.



As seen in the above illustration a monitor has also been created for the TCP/IP module. Press the spacebar to insert a line in the logging window as a visual separation for the easy identification of test phases. Thus you can quickly find the beginning of the test later on.

10.1.2.5 Monitor Layout

You can create and save a complete Monitor layout in OpenScape Xpressions Monitors. Naturally, you can also use one of the Monitor layouts provided.

10.1.3 Administrative Communications Features

The default admin client for user administration in OpenScape Xpressions is Communications. It is used in systems that do not apply Integrated Messaging.

Communications moves to the background when it encounters a gateway to another system used for user administration (for example Exchange). User data not replicated from the *third party* user administration to OpenScape Xpressions must still be maintained in Communications. In case of a replication with the Active Directory via the LDAP APL you should be able to enter all user data in the Active Directory.

In all OpenScape Xpressions systems, the administrator can use Communications to create distribution lists, fax cover pages and so on.

All masks for user administration are available after you log on as an administrator. These include masks for:

- administering user groups inclusive privileges
- user administration (if no other management system is used) inclusive privileges
- creating global distribution lists
- Create fax stationery
- creating global Communications layouts
- creating global greetings
- configuring public folders (Remote Server directory)

10.1.4 Administrative Functions of the Web Assistant

Depending on the privileges of the logged-in user the Web Assistant operates in one of the following modes:

User mode

This mode is used if the logged-in user has normal privileges. Such a user may send and receive messages of various types as well as change his/her personal settings.

System administrator mode

This mode is performed if a user logs in with administrative privileges. Such a user may perform all functions of the user mode and in addition configure and administer the system with extended features.

Network administrator mode

This mode is performed if a user logs in with the privileges of a network administrator. Such a user may configure and administer voice mail networks and broadcast message distributions lists as well as system networks.

In the following we will provide an overview of the functions of the system administrator and network administrator mode. You find a detailed description in the *Web Assistant* manual. You find an overview of the user mode functions in Section 6.5.2, “User Mode”.

10.1.4.1 System Administrator Mode Function Overview

***Server settings* Menu**

- User administration

  On this page user and user groups are defined and administered. Users and user groups already present are displayed in a list and can be edited from there. A search function is additionally available which allows searching for users via various properties (e. g. user name).

  The following functions are available in the user administration:

  – Define user/define user with template

  – Edit user

  – Create new user group

  – Edit user group

  – Delete user/group

  – Activate/deactivate user

  – Lock/unlock user

  – Rename user

  – Reset MWI status/PIN/password

  – Move messages to another mailbox

  – Upgrading Voice-only Users

  – Acting on behalf of somebody else

  Before a group can be deleted, all of its members must first be assigned to another group to maintain defined privileges for these users.

  The system administrator can act on behalf of each user, which temporarily assigns him/her the privileges of the respective user and enables him/her to view the user's personal settings for e. g. correcting misconfigurations.

- XPRAuthentication

  On this page you set the method for users to authenticate at the Web Assistant. Furthermore, the guidelines a password must comply with for being recognized by the system are defaulted.

  There are two XPR authentication methods:

  - XPR & Windows
  - Windows

The **XPR & Windows** authentication method allows users to log on using a Windows user account as well as an XPR account. So that a user may use his/her Windows account, the **Windows Account** field must be maintained in the user data.

When applying the **Windows** authentication method, each user must be assigned a Windows user account in the **Windows Account** field of the Web Assistant. Users may then log on to the Web Assistant with their Windows logon data. The system administrator can create the ADMINISTRATOR and POSTMASTER account during the account installation, though, and allow authentication via the XPR method. This is useful for enabling such accounts to log on to clients that do not support the Windows authentication (for example XPR monitor).

- Web access security

  On this page the system administrator defines the Web Assistant's behavior in case of failed login attempts via the internet or intranet. The following settings are possible:

  – Max. number of failed login attempts (before access is denied)

  – Time (in minutes) until locked users are granted access again

  If a user reaches the maximum number of failed login attempts set, he/she cannot log in with the correct name or password any more. This user account is then automatically unlocked again after the time specified.

- SMTP Mail Size

  On this page the maximum SMTP mail size is defined. The setting is performed separately according to incoming or outgoing messages. Selecting the setting should be based on the network conditions and user requirements. To decrease the network load, sending of e. g. large file attachments can be prevented by specifying a low value (e. g. 500 KB) for outgoing messages. The current setting is displayed at the beginning of the page.

- spam filter

  On this page settings for keeping out unwanted messages are performed. The spam recognition criterion is the messages subject text. The spamfilter set here is stored as routing rule in the XPR server. This page displays all routing rules and the page for editing such rules can be opened from here.

- Default user time profile

  Here you can define when and with which greetings the user mailboxes react to incoming calls. The settings made here are canceled by a user's personal settings.

  It is possible to set a single time profile for each weekday or a uniform timeprofile for all weekdays. The following options are available:

  - Message recording not allowed
  - Greeting not interruptible

  Additionally, it is possible to define system-wide greeting texts for different call types.

- Welcome profile

  On this page you can define when and with which welcome greetings the voice mail system is to react to incoming calls. The profiles configured here are used throughout the system as greeting messages.

- Mail tracking

  Here you globally define the handling of read confirmation requests. The settings made here are canceled by the users' personal settings.

***Special server settings* Menu**

- APL

  This page displays the status of the single APLs. Furthermore, APLs can be stopped and started. The following features are available on this page:

  – Updating information

  – Start APL

  – Stop APL

- XPR-Log files

  This page displays the current of saved XPR server protocol files. Moreover, the content of the log files can be filtered.

  If the WebApl is installed of a satellite, adaptations must be performed for the display of the log files.

- Hard Disk Capacity

  This page displays the storage capacity utilization. The hard disk memory specifications refer to the hard disk on which the documents (messages and attachments) and the database (contains user data, information on incoming and outgoing messages, system information) are stored.

- Voice Mail Networking

  On this page you can perform settings for networking voice mail systems by different manufacturers. The *AMIS* and *VPIM* protocols can be selected for networking.

- Routing rules

  Here you can set the automatic handling of incoming messages. The following features are available on this page:

  – Creating a new rule

  – Viewing an existing rule

  – Editing an existing rule

  – Saving a rule

  – Deleting a rule

- Mask editor

  This page enables adding fields to a database mask. Database masks can also be edited with programs such as InfoTool or DbTool. In such a case the script need to be restarted via the XPRmonitor.

- Global enquiry

  Here several options are provided to search for sent or received messages. This search involves the entire system, so that all user mailboxes are searched according to the criteria entered here. The following settings are possible:

  – Restricting the search to an originator or recipient address

  – Searching within a time range

  – Searching for messages of a specific priority

  – Searching for messages of a specific status

  The number of messages to appear in a result list can also be set.

- Voice mail profiles

  Here the voice mail system configuration profiles are defined. Newer voice mail systems support a shared database layout for globally used features which means that this configuration data can be globally configured for all these systems. Configuration profiles with these global settings can be configured and assigned to the respective protocols for simplification.

  During the installation of the XPR server the default profile *$DEFAULT* is configured. It is not possible to change the settings that are predefined here. The following functions are available:

  – Creating a new profile

  – Copying a profile

  – Deleting a profile

  – Saving a profile

- NCO (Number Conversion Objects)

  On this page the NCO administration tool and the NCO configuration files can be downloaded, so that the NCO configuration can be edited.

- System Type

  A global parameter can be set on this page that determines the system behavior with regard to send receipts, if a user logs on via VMS/PhoneMail.

  This behavior depends on the fact whether the system is a Unified Messaging System or a voice-only server system.

  The available selections have the following effects:

  Unified Messaging Server (UMS)
  With this selection, notices of receipt are sent according to the settings the user has made in the Web Assistant or in Communications. You must select this setting if the XPR server is connected to Microsoft Exchange or Lotus Notes.

  Voice-Only-Server
  With this selection, the settings a user has made in the Web Assistant or in Communications for notices of receipt are ignored. Notices of receipt are always sent.

- Session Monitoring

  This feature offers access to the log file kept by the web server that runs the Web Assistant. The following information can be displayed:

  - User ID of logged in users
  - Browser client used
  - Platform
  - IP address

10.1.4.2 Network Administrator Mode Function Overview

***System networking* Menu**

In this menu network connections between XPR servers are established and administered. This requires a network administrator account.

- Changing a password

  This page allows changing the network administrator password. To change the current password it must be known.

- Site profiles

  This page serves for administering the site profiles of the network nodes available in a network. When you open this dialog for the first time, a local site profile must be created, which describes the local network node properties.

  The created site profiles are exchanged between the single network nodes so that each node is provided with an exact image of each other node.

  The following functions are available:

  – Creating a local site profile

  – Adding network nodes to a network

  – Defining connection relationships between network nodes

- Network profiles

  By means of the functions available here, local user data records can be distributed among other network nodes. The following functions are available:

  – Searching for users to be pushed

  – Selecting the destination sites

  – Distributing users

  – Pushing users

- Public key

  This page displays the public key of the local node and the check sum calculated about the search key. This information is required with using the local node as entry point for a new network node.

- Message state

  This page serves for monitoring the status of messages that were transmitted via the system network. The transfer rate can be very high with transmissions by SMTP, therefore you can use this section for analyzing transmission problems and error scenarios.

10.1.5 Administrator Tools

The following tools are suitable for maintenance and analysis.

Lear

The main task of the Lear tools is to send any test messages within the system. You can indicate different originator or recipient addresses as well as different message sizes. Additionally, the amount of messages in a certain period of time can be configured. Furthermore, it is possible to perform transactions such as establishing a phone call within the system to test the feature here and determine load limits.

SystemVersionInfo

This program issues the installation history and the version state of all installed OpenScape Xpressions system components. It is also possible to display the imported hotfix versions. Further items of information displayed are the licenses available and used, the version numbers of the installed E-scripts, NCO rules, driver and operating system information. Using the **File > Save** option you can write all this information as several text files into a zip archive.

InfoTool

Enables accessing the Correlation database via a command line. This tool requires complete understanding of the database entries and the XPR server functionality.

DBTool

GUI-based tool for editing entries of the **Correlation Database** of the XPR system. It requires complete understanding of the database entries and the XPR server functionality.

TimeZoneSupport

The Time Zone Support Tool controls the usage of time zones in the XPR server.

CtiTest

With CtiTest you can test CTI features of the XPR server.

UnifiedLogTool

If required, you can activate logging for all clients of the XPR server.

ZombiDetect

Using ZombiDetect the administrator can check the XPR Message Store integrity.

10.1.6 Telephone User Interface

A series of administrative settings can also be made using the TUI. This is possible in particular by assigning specific administrative privileges to certain users or else administrators. Possible administrative settings include the transmission of broadcast calls or the creation of system prompts.

10.2 Report Creation

NOTE:
You find a comprehensive description of the Report and Report Schedule APL functionality and configuration as well as a reference to all available layout files and statistical raw data in chapter *Report APL and Report Schedule APL* of the *Server Administration* manual.

Requirements

For successfully creating reports the following requirements must be met:

- Installation of the OpenScape Xpressions server with Report APL and Report Schedule APL
- Installation of a runtime component for creating reports (Crystal Reports XI or BIRT). While you need to purchase a valid license for using Crystal Reports, BIRT is an open source product of the eclipse foundation. If both report engines (runtime components) of Crystal Reports and BIRT are installed on one system, the Report Schedule APL uses only the Crystal Reports engine. BIRT is shipped on the OpenScape Xpressions setup medium and installed in the <*XPR Install*>`/ReportEngine` directory during the ReportScheduleApl setup.
- Configuration of an SQL database or of an existing database (dBase or SQL)

NOTE: Please note that dBase databases under the database access process CodeBase are no more supported except for upgrades. In case of new installations, SQL databases must be used under the ADO process.

Installing the BIRT runtime component

For successfully installing BIRT (Business Intelligence and Reporting Tool) to connect the OpenScape Xpressions server please consider special requirements.

- The BIRT runtime component is shipped on the OpenScape Xpressions setup medium and installed in the <*XPR Install*>`/ReportEngine` directory during the ReportScheduleApl setup. If layout files are to be modified, the BIRT report designer component must be downloaded from *www.eclipse.org/birt* and installed in the same directory considering the appropriate Eclipse components and versions.
- BIRT requires the **Sun-Java runtime environment** version 6 or higher. BIRT does not work with an older version or with a JVM of another producer. The JRE must be installed on the same computer as the ReportSchedule APL. The JVM is neither shipped nor installed with the XPR. You can download it

from *http://java.sun.com* free of charge.

- BIRT requires a configured Microsoft SQL Server 2005 JDBC driver. This driver is neither shipped nor set up with the XPR. You can download it from *http://msdn2.microsoft.com/en-us/data/aa937724.aspx* free of charge. Extract the sqljdbc.jar file from the downloaded file and copy it to the *<XPR Install>*`/ReportEngine/plugins/org.eclipse.birt.report.data.oda.jdbc_2.2.0.v20070615/drivers` directory.

Functionality

The reporting function is taken on by the Report and Report Schedule APL.

The Report APL is an easily configurable, universal option to access the internal OpenScape Xpressions server data and to process these in database tables. The Report Schedule APL accesses these database tables, processes the data in a clear format and forwards them in a file to a OpenScape Xpressions address to be specified. In doing so the Report APL uses pre-prepared default layouts for the statistical processing of data in reports. All configured report jobs are listed in the display area. The actual report generation is taken on by a runtime component of the reporting tools Crystal Report respectively BIRT.

Databases and statistical raw data

The Report APL can access data stored in the databases `JOURNAL`, `GEB` and `CORREL`. Furthermore, the Report APL can use statistical raw data, which are transferred to the `XMR Service` by APLs or scripts. Statistical raw data are delivered, for example, by the telematics APLs and stored in database tables of the telephone user interfaces (TUI). In addition, raw data about NCO site information and about information of configured applications and boxes exist in the VOGUE script.

For the Report Schedule APL function the `JOB` and `JOBINFO` databases are used.

Default layouts

With OpenScape Xpressions several predefined reports are available. These are based on the report structure of the hardware-based PhoneMail and cover users with PhoneMail or VMS user interfaces. These reports focus on the following:

- statements on system usage or system-wide utilization
- statements on subscriber usage
- announcement service usage, for example Automated Attendant, call processing
- system security, for example unauthorized system access
- AMIS networking statistics

- In addition, the OpenScape Xpressions database interface is disclosed, so that the supplied layout files can be adjusted or customized reports easily created using standard reporting tools such as Crystal Reports (no OpenScape Xpressions component) or BIRT.

Besides default layout files for billing and fax message transmission you can create individual layout files using the Professional Services or on your own authority deploying the editors of reporting tools such as Crystal Reports XI or BIRT.

You can create your own complex reports using the Crystal Reports software (no OpenScape Xpressions component) or by means of the Open Source software BIRT of the eclipse foundation. Depending on the program used you can only deploy layout files in a specific format: layout files in the format `rpt` can only be used with Crystal Reports, while BIRT only considers the `rptdesign` format.

BIRT only provides the export formats PDF and HTML. We recommend PDF exports. Layout files for BIRT are currently only available in English language.

The layout files enclosed in OpenScape Xpressions only refer to creating lists about PhoneMail respectively VMS activities. Reports about sent SMS messages are not available by default; but you find a list of sent SMS messages with target number on your service provider bill of the SMS-GSM box SIM card.

An example of a default layout is the billing layout. All necessary information (in particular the subscriber number) is transferred to the Hicom/HiPath/OpenScape Voice PBX and included in the billing there. All send and receive operations associated with every subscriber configured in OpenScape Xpressions are also saved in the OpenScape Xpressions system journal. This does not apply to SMS messages sent by a GSM box.

10.3 Collective and Group Accounts for Voice, Fax, or E-mail

10.3.1 Using a Telephone (Voicebox) for multiple Exchange Users

Your objective here is to have multiple subscribers share a telephone and be able to use a common voice-mailbox. The subscribers, however, all have their own mail accounts in Exchange.

Set up a group in Exchange (such as “collection box”) that is assigned an e-mail address (such as “collectionbox@company.de”). Add the members who you want to share the telephone to this group. All members of this group now also receive e-mails that are sent to the e-mail address of the group “collectionbox@company.de”.

User “XYZ” is now configured in Xpressions. This user is only assigned the telephone number of the shared telephone and the e-mail address of the group configured in Exchange “collectionbox@company.de”.

Voice and fax messages for all members of the “collection box” group are now sent to the Exchange mailboxes.

10.3.2 Configuring a Group Fax for several E-mail Accounts

The procedure is the same as in the previous section. In other words, a user such as “group fax” is configured in Xpressions. This user is assigned the number of the shared group fax and the e-mail address of the new public folder configured in Exchange, such as “groupfax@company.de”. All Xpressions users who belong to the fax group can access this public folder.

10.3.3 Using a Voicebox for multiple Subscribers (Group Mailbox)

You must set up an additional voice mail extension number range in OpenScape Xpressions to allow multiple users to share a voicebox. A OpenScape Xpressions user is assigned one of the new numbers created as a mailbox number. The group members now forward their telephone directly to this mailbox number and not to the usual forward access option. Notifications (MWI) can be configured in the Web Assistant in such a way that the mailbox LEDs are connected to the terminals of all group members.

A locking mechanism is incorporated so that only one group member at a time can access or retrieve items from the mailbox. Only one version of name announcements and greetings is available; the times at which changes are made should therefore be agreed by all group members.

Normally, the mailbox number in OpenScape Xpressions and the phone number in HiPath/OpenScape Voice are identical. If this is not the case, calls cannot be forwarded to the forward access (to enable ”the voice-mailbox”). The forwarded call is routed in this case to the mailbox number.

10.4 User Administration from Third-Party Management Systems

You can link OpenScape Xpressions to different management systems for the purposes of user administration. LDAP is used as the default protocol for this. HiPath Xpressions can also be linked to

- Microsoft Exchange 2003/2007 - Active Directory (see Section 5.1.4.2, “Integration in the Windows Active Directory”, on page 89),
- Lotus Notes (see Section 5.2.4, “User Administration”, on page 99),

10.5 User Privileges

Almost every function requires a privilege by the executing user. He/she already inherits privileges from the group he/she is assigned to, so that the explicitly granted privileges and the group privileges map the amount of privileges a user has in the system.

The following table shows the privileges that can be assigned to a user. The privileges of the (USER) user group for new users are **bold** highlighted. Privileges are edited with a client application such as the Communications client or the Web Assistant.

Privilege	Meaning	Use
Receive Dictates Privilege (DICTATE_RECEIVE)	The user may receive dictations in VMS.	VMS
e-Mail dialog (DLG_EMAIL)	Obsolete.	None
Telex dialog (DLG_TLX)	Obsolete.	None
Voice dialog (DLG_VOICE)	Obsolete.	None
Internal Fax Privilege (FAX_INTRNL)	Internal fax forwarding is allowed in the TUI.	PhoneMail, VMS
International Fax Privilege (FAX_INTRNT)	World-wide fax forwarding is allowed in the TUI.	PhoneMail, VMS
Local Fax Privilege (FAX_LOCAL)	Local fax forwarding is allowed in the TUI.	PhoneMail, VMS
National Fax Privilege (FAX_NATL)	Fax forwarding within a country is allowed in the TUI.	PhoneMail, VMS
Answering Options Menu Privilege (MENU_ANSW_OPTS)	In PhoneMail the user is enabled to modify their answering options, e.g. welcome greetings, via key 8.	PhoneMail
Automatic Playback Menu Privilege (MENU_AUT_PB)	In PhoneMail, the user is enabled to set the automatic playback via the key sequence 9, 5 and 7. In addition, this depends on the privileges *Mailbox Options Menu Privilege* and *Playback Options Menu Privilege,* via which option 9 or 5 can be deactivated.	PhoneMail
Call Forwarding Menu Privilege (MENU_CALL_FWD)	In PhoneMail, the user is enabled to set a call rerouting via the key sequence 8 and 7. In addition, this depends on the privilege *Answering Options Menu Privilege*, via which option 8 can be deactivated.	PhoneMail

Privilege	Meaning	Use
Cell Phone Number Menu Privilege (MENU_CELL_NR)	In PhoneMail, the user is enabled to change his/her mobility number via the key sequence 8 and 5. In addition, this depends on the privilege *Answering Options Menu Privilege*, via which option 8 can be deactivated.	PhoneMail
Change Language Menu Privilege (MENU_CHNG_LANG)	In PhoneMail, the user is enabled to set the voice prompts language via the key sequence 9 and 7. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Change Password Menu Privilege (MENU_CHNG_PWD)	In PhoneMail, the user is enabled to change his/her PIN via the key sequence 9 and 3. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Distribution List Menu Privilege (MENU_D_LIST)	In PhoneMail, the user is enabled to change or create distribution lists via the key sequence 9 and 1. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Faxtone Recognition Menu Privilege (MENU_FAXRECOG)	In PhoneMail, the user is enabled to set the fax tone recognition via the key sequence 9 and 6. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Mailbox Options Menu Privilege (MENU_MBX_OPTS)	In PhoneMail the user is enabled to modify their mailbox options, such as modifying their PIN via key 9.	PhoneMail
Mailbox Stand-In Menu Privilege (MENU_MBX_STDIN)	In PhoneMail, the user is enabled to set a mailbox rerouting via the key sequence 8 and 6. In addition, this depends on the privilege *Answering Options Menu Privilege*, via which option 8 can be deactivated.	PhoneMail
Messagetype Menu Privilege (MENU_MEDIATYPE)	In PhoneMail, the user is enabled to set the retrievable message types via the key sequence 9 and 8. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Playback Options Menu Privilege (MENU_PB_OPTS)	In PhoneMail, the user is enabled to set the playback options via the key sequence 9 and 6. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail

Privilege	Meaning	Use
Prompt Level Menu Privilege (MENU_PMP_LEVEL)	In PhoneMail, the user is enabled to toggle between detailed or short menu prompts via the key sequence 9 and 2. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Recording Menu Privilege (MENU_REC)	In PhoneMail the user is enabled to record messages via key 1.	PhoneMail
Change Referral Extension Menu Privilege (MENU_REF_EXT)	In PhoneMail, the user is enabled to change his/her referral extension via the key sequence 8 and 3. In addition, this depends on the privilege *Answering Options Menu Privilege*, via which option 8 can be deactivated.	PhoneMail
Sequence Menu Privilege (MENU_SEQ)	In PhoneMail, the user is enabled to set the output sequence via the key sequence 9, 5 and 3. In addition, this depends on the privileges *Mailbox Options Menu Privilege* and *Playback Options Menu Privilege,* via which option 9 or 5 can be deactivated.	PhoneMail
Set Notifications Menu Privilege (MENU_S_NOT)	In PhoneMail, the user is enabled to set his/her notification options via the key sequence 9 and 4. In addition, this depends on the privilege *Mailbox Options Menu Privilege* , via which option 9 can be deactivated.	PhoneMail
Transfer Menu Privilege (MENU_TRANSFER)	In PhoneMail, the user is enabled to be connected to a subscriber via key 7.	PhoneMail
Use Programmable Short Cuts Menu Privilege (MENU_USE_S_CUTS)	You can activate programmable speed dialing keys in Ergo, which perform a key sequence defaulted by the Web Assistant. With installed Ergo the corresponding settings dialog is only displayed in the Web Assistant if this privilege is set.	ERGO, Web Assistant
Volume Menu Privilege (MENU_VOL)	In PhoneMail, the user is enabled to set the playback volume via the key sequence 9, 5 and 5. In addition, this depends on the privileges *Mailbox Options Menu Privilege* and *Playback Options Menu Privilege,* via which option 9 or 5 can be deactivated.	PhoneMail

Privilege	Meaning	Use
Xpressions Folder Menu Privilege (MENU_XPR_FLD)	In PhoneMail, the user is enabled to set the Xpressions folder playback via the key sequence 9, 5 and 1. In addition, this depends on the privileges *Mailbox Options Menu Privilege* and *Playback Options Menu Privilege,* via which option 9 or 5 can be deactivated.	PhoneMail
No obligation to record name after first login (NO_OBLIG_NAME)	The user is not obliged to record their name in the TUI after the initial login.	PhoneMail, VMS
No obligation to change password after first login (NO_OBLIG_PWD)	The user is not obliged to change his/her PIN in the TUI after initial login. When using VMS, a PIN may be enabled for the user by means of a customer parameter. This is particularly useful when the user has already identified him/herself by his/her Hicom-PIN. Users who do not yet have a PIN and have not been assigned this privilege are prompted to assign an individual PIN the first time they log on with the default PIN 000000. This default PIN only applies to the default TUI configuration profile! If the user or administrator have already defined a PIN via the Web Assistant, this PIN is used without the user being compelled to assign a new one. In the Web Assistant the user may keep a default password or PIN assigned by the administrator and is not prompted to change it at the initial log-in.	PhoneMail, VMS, Web Assistant
ConnectToInfoboxOfUser is prompted (PMP_CIU)	Special privilege for VMS. The announcement “You are connected with the mailbox of...” is played for this user.	VMS
Company announcement file enabled (PMP_COMP_ANN)	Special privilege for VMS. The specific company announcement is played for this user.	VMS
Long prompts available (PMP_LONG)	Special privilege for PhoneMail. The user can choose between long and short voice prompts.	PhoneMail
VoiceMailSystem is prompted (PMP_VMS)	Special privilege for VMS. For this user the greeting “This is the voice mail system“ is played.	VMS
Receive broadcast privilege (RCV_BROADCAST)	Messages sent via the broadcast service are delivered to the user's mailbox.	MTA

Privilege	Meaning	Use
Additional Recording Info Privilege (REC_INFO)	Special privilege for VMS. For recordings, additional information is included in the announcement.	VMS
Short Recording Start Info Privilege (REC_SHORT)	Special privilege for VMS. The caller only hears “Please speak after the tone“ without indication of the maximum recording time.	VMS
File Group Access (SFT_GROUP)	This privilege is not a user privilege but an access privilege for files and folders in the virtual file system of the OpenScape Xpressions server. If it is set, only users sharing the same user group as the generator/owner of a file or folder may access these. Direct assignment to a user is pointless.	MTA
File Owner Access (SFT_OWNER)	This privilege is not a user privilege but an access privilege for files and folders in the virtual file system of the OpenScape Xpressions server. If it is set, only the generator/owner of a file or folder may access these. Direct assignment to a user is pointless.	MTA
AMIS/VPIM Privilege (SND_AMIS)	External voice mail servers may be addressed via AMIS or VPIM protocol.	MTA, PhoneMail, VMS
Send broadcast privilege (SND_BROADCAST)	This user may use the broadcast service. All resulting send jobs are transmitted, even if this user does not have the relevant privilege.	VMS
Send dictates privilege (SND_DICTATE)	This user may record dictations. In contrast to a normal voicemail these may become rather long and require the corresponding space.	VMS
e-Mail Privilege (SND_EMAIL)	Internal mail may be sent. This is for example a voicemail or e-mail that a OpenScape Xpressions server user sends to another user.	MTA
FAX G3 Privilege (SND_FAXG3)	Fax G3 may be transmitted	MTA, PhoneMail, VMS
FAX G3 Poll Privilege (SND_FAXG3REV)	Fax documents may be polled from a fax-on-demand server.	MTA
FAX G4 Privilege (SND_FAXG4)	Fax G4 may be transmitted.	MTA

Privilege	Meaning	Use
Send network wide broadcast privilege (SND_N_BROADCAST)	This user may send messages via the broadcast service and also to global distribution lists via OpenScape Xpressions servers connected by system networking. All resulting send jobs are transmitted, even if this user does not have the relevant privilege. In the Web Assistant this privilege is queried for generating network-wide distribution lists.	PhoneMail, VMS, Web Assistant
Paging Privilege (SND_PAGER)	The pager service may be used.	MTA, PhoneMail, VMS
Short Message Privilege (SND_SMS)	Short messages (SMS) to cellular phones may be transmitted.	MTA, PhoneMail, VMS
Internet Mail Privilege (SND_SMTP)	Internet mail may be sent.	MTA
Telex Privilege (SND_TLX)	Obsolete.	None
Voice Privilege (SND_VOICE)	Voice mails may be put out via telephone.	MTA, PhoneMail, VMS
Trusted Domain Privilege (SYS_ACTASDOMAIN)	This privilege can be used for services and gateways. Through the configuration of a pseudo user FAX G3 or XPRNAME, privileges assigned to the pseudo user are also assigned to all incoming FAX G3 documents or documents coming in over the remote system XPRNAME. This is used for example when further costs are accumulated by a routing where the originator does not have the necessary authority. This privilege is required for the validation of Remote System Links.	MTA
Local Call Privilege (SYS_AMT)	Telematic services can be locally used within the individual area code range. If required, this privilege is checked with Notification APL jobs as well.	Ergo, MTA, PhoneMail, VMS
External Archive Query (SYS_ARCHIVRECH)	Obsolete.	None
Client Beta Tester (SYS_BETATESTER)	Obsolete.	None
Fax Logo- and Coverpage-Editor (SYS_EDITLOGO)	Fax stationery may be created or modified with Communications.	Communications

Privilege	Meaning	Use
Internal Call Privilege (SYS_INTERNAL)	With a TUI the user is permitted to recouple. The user may thus connect to an internal extension from within PhoneMail. In addition, a *User Outcall* can be configured as notification for an internal extension.	Ergo PhoneMail, VMS
International Call Privilege (SYS_INTERNAT)	Telematic services can be used worldwide. If required, this privilege is checked with Notification APL jobs as well.	Ergo, MTA, PhoneMail, VMS
Local File Access (SYS_LOCALFILE)	Obsolete.	None
National Call Privilege (SYS_NATIONAL)	Telematic services can be used within the individual country. If required, this privilege is checked with Notification APL jobs as well.	Ergo, MTA, PhoneMail, VMS
Private Query (SYS_PRIVRECH)	Obsolete.	None
Login via Phone possible with PIN from all devices (SYS_PWD_LOGIN)	Obsolete.	None
Server Query (SYS_RECH)	You can perform a global research in the Web Assistant.	Web Assistant
Global Distribution List Editor (SYS_REDIT)	Global distribution lists can be created or modified with the client's editor.	Web Assistant, Communications
ISDN Service Remote Access (SYS_REMACC)	Obsolete.	None
Global Distribution List Send Privilege (SYS_RSEND)	Messages can be sent to global distribution lists.	Ergo PhoneMail, VMS
Global Alias Editor (SYS_SEDIT)	The global contact information can be created or modified with the client's editor. Local or private contacts are always permitted. With a remote system link this privilege is required for the user account via which the remote MRS server is validated if user data synchronization is to occur. In this case the remote server users are defined on the local OpenScape Xpressions server as contacts so that they are addressable.	Communications, MTA
Server File Access (SYS_SERVERFILE)	Access to the OpenScape Xpressions Server's virtual file system through the server file manager on the client.	Communications, MTA

Privilege	Meaning	Use
SERVICE Privilege (SYS_SERVICE)	Database fields can be so created that this privilege is required to make modifications. Furthermore it authorizes the restricted use of the user data editor and the OpenScape Xpressions monitor via which the OpenScape Xpressions server is configured.	Communications, XPR Monitor, Web Assistant
Special Delivery Options Privilege (SYS_SPECIAL_DEL)	Special privilege for PhoneMail and VMS. With the privilege set, the user is queried for special options such as acknowledgement of receipt, private flag, urgent flag, and future delivery.	PhoneMail, VMS
SUPERVISOR Privilege (SYS_SUPERVISOR)	Database fields can be so created that this privilege is required to make modifications. Furthermore it authorizes the use of the user data editor and the XPR monitor via which the OpenScape Xpressions server is configured. **Attention:** With this privilege all rights are implicitly assigned even if some of the following privileges have not been assigned to the corresponding user.	All modules
Document Chain Query (SYS_TREE)	Document routing and response tracking may be viewed.	
TTS Capabilities Privilege (SYS_TTS)	The user is permitted to play back messages via a TUI per Text-to-Speech.	Ergo PhoneMail, VMS
USER Privilege (SYS_USER)	This privilege is mandatory for server access. Entries in the correlation database without this privilege are contacts, thus no users!	All modules
Query Result Document View (SYS_VIEWRECHDOC)	Documents given by a research of server, routing or reply tracking may be viewed. Without this privilege only the header information can be read.	
VMS Administrator Privilege (SYS_VMS_ADMIN)	Special administrator privilege for VMS.	VMS
Web Assistant Access (WEB_ASSISTANT)	In the Web Assistant access to the available configuration options is enabled.	Web Assistant
Web Mail Access (WEB_MAILCLIENT)	In the Web Assistant message access is enabled.	Web Assistant

10.5.1 Privileges for Voicemail Systems

The OpenScape Xpressions administrator has the following options for assigning or disabling rights:

Privilege	Default	voice-mail System	Meaning
VMS administrator Privilege		VMS	Privilege for the PhoneMail voice mail system.
special delivery options privilege	X	VMS and PhoneMail	Privilege for VMS and PhoneMail.
TTS capabilities privilege	X	VMS and PhoneMail	The user may have messages read out over a telephone user interface using the text-to-speech function.
internal call privilege	X	VMS and PhoneMail	Switching is permitted for this user in the PhoneMail voice mail system.
global distribution list editor			Global distribution lists can be created or modified with the client's editor.
global distribution list send privilege	X	VMS and PhoneMail	Messages can be sent to global distribution lists.
local call privilege	X	VMS and PhoneMail	Telematic services can be locally used within the individual area code range. This privilege also applies to the Notification feature (Notification of new incoming messages).
national call privilege	X	VMS and PhoneMail	Telematic services can be used within the individual country. This privilege also applies to the Notification feature (Notification of new incoming messages).
international call privilege	X	VMS and PhoneMail	Telematic services can be used worldwide. This privilege also applies to the Notification feature (Notification of new incoming messages).
AMIS privilege	X	VMS and PhoneMail	Voice mail servers (PhoneMail and VMS) may be addressed via the AMIS protocol.
send dictates privilege		VMS	In the case of VMS, this user may record dictations. This can take quite some time and thus requires a lot of memory.
send broadcast privilege		VMS and PhoneMail	This user may use the Broadcast service. All resulting send jobs are transmitted, even if this user does not have the relevant privilege.
Paging Privilege (U.S. only)	X	VMS and PhoneMail	The Pager service may be used.

internal fax privilege	X	VMS and PhoneMail	PhoneMail allows fax messages to be forwarded to internal destinations.
local fax privilege	X	VMS and PhoneMail	PhoneMail allows fax messages to be forwarded to destinations with the same area code.
national fax privilege	X	VMS and PhoneMail	PhoneMail allows fax messages to be forwarded to destinations within the same country.
international fax privilege	X	VMS and PhoneMail	PhoneMail allows fax messages to be forwarded to destinations worldwide.
login via phone possible with PIN from all devices	X	VMS and PhoneMail	Without this privilege, VMS and PhoneMail will not allow you to dial into your own mailbox from a telephone other than your own.
Message Save Privilege	X	PhoneMail	The user receives this menu in PhoneMail.
Recording menu privilege	X	PhoneMail	The user receives this menu in PhoneMail.
Mailbox Options menu privilege	X	PhoneMail	The user receives this menu in PhoneMail.
Change Referral Extension menu privilege	X	PhoneMail	The user receives this menu in PhoneMail.
Answering Options menu privilege	X	PhoneMail	The user receives this menu in PhoneMail.
receive dictates privilege		VMS	The user may receive dictations in VMS.
no obligation to change password after first login		VMS and PhoneMail	The user is not obliged to change his or her PIN in VMS and PhoneMail after initial login. When using VMS, the telephone password may be enabled for the user by means of a customer parameter. Users must first identify themselves with their Hicom PIN. **Note**: Users who do not yet have a telephone password and have not been assigned this privilege are prompted to assign a relevant password the first time they log on. If a password was already defined by the user or administrator, this password is adopted and the user is not forced to assign a new password.

No obligation to record name after first login	X	VMS and PhoneMail	The user is not obliged to record his or her name in VMS and PhoneMail after initial login.
company announcement file enabled	X	VMS and PhoneMail	Special privilege for PhoneMail and VMS.
VoiceMailSystem is prompted		VMS	Special privilege for VMS.
connectToInfobox OfUser is prompted		VMS	Special privilege for VMS.
long prompts available	X		Special privilege for PhoneMail. The user can choose between long and short voice prompts.
additional recording info privilege		VMS	Special privilege and VMS.
short recording start info privilege		VMS	Special privilege and VMS.

11 Security

All security aspects relevant to the system on which the OpenScape Xpressions server operates always correspond to the security policy of Windows operating systems.

11.1 Virus Scanner

Please refer to the OpenScape Xpressions Release Notice for possible antivirus programs.

11.2 Automatic Maintenance in the MTA

The administrator can set up the following maintenance functions.

11.2.1 Automatic Cleanup

The administrator can specify the time in days after which the server will delete all documents in the system.

The purge operation can also be activated immediately. This is especially useful with acute shortage of storage space.

The **Maintenance priority** option can be used to set one of five possible priority levels for purge operations as well as those of all other maintenance script jobs. By setting a low priority, computer-intensive processes, such as the simultaneous operation of multiple voice mail users, can be performed without difficulty.

Furthermore, purge times can be set that concern only specific documents, e. g. purge times can be defined in days for

- CIT notifications (Mailbox LED),
- e-mails,
- outgoing documents and
- incoming documents.

NOTE: The descriptions of the setting options available on the **Maintenance Cleanup Options** tab refer to their use in the unchanged maintenance script. As soon as the maintenance script is modified and the variables are used in other applications, their meaning changes immediately.

11.2.2 System Monitoring

The system monitors the **memory usage** (RAM) and **hard disk space**, so that in the event of a critical decrease in memory/hard disk capacity, a warning/error message is displayed and a mail notification may be sent.

11.2.3 Watchdog

The Watchdog monitors the Service Control Manager (Windows services) on every computer in a OpenScape Xpressions system. Naturally, the Watchdog also monitors a distributed OpenScape Xpressions server in this way.

If an error occurs in an APL, the OpenScape Xpressions attempts to restart the APL up to ten times within an hour. If a kernel module crashes, the entire OpenScape Xpressions server is restarted up to three times within an hour.

11.2.4 Maintenance Script

The OpenScape Xpressions server can perform maintenance and cleanup jobs automatically. This script is particularly useful for regular backups, which can be used for a restore when servicing. A script language enables the OpenScape Xpressions administrator to define the respective tasks more precisely. A script can contain any amount of task groups which are activated at a specified time. Here are some examples:

- Exports entire database at specific times.
- Exports address book at specific times.
- Deletes all journal database entries including documents older than x days.
- Deletes all charges database entries older than x days.
- Recursively deletes all files older than x days.

11.2.5 Active Alerts

By means of **Active Alerts** all messages transferred to the OpenScape Xpressions monitor can be supervised. Due to the search options applied to these messages, either an alarm message (such as an e-mail) can then be sent immediately or a regular status report showing all error messages, for example, can be transmitted.

Any OpenScape Xpressions address can be used as the **Recipient** for these notifications. The default address is that of the administrator.

Further settings that can be made are:

- The **Log Events** can be collected and regularly sent at a certain time.
- An appropriate entry can be made in the **Windows Event Viewer**.
- The WE2XT component enables the error messages to be forwarded from the Windows Event Viewer. To prevent loops forming, however, this should not be combined with the selection of an event viewer entry as described above.
- In the **Search for** field, enter the search criteria that log messages must contain as a prerequisite for message transmission.
- Using the OpenScape Xpressions administrator tool *logserv* (see Section 10.1.5, “Administrator Tools”), you can even arrange for external Windows events to be transmitted with this feature.

11.3 TCP/IP Ports used by the XPR Server

The XPR server uses the following TCP/IP ports:

Component	Port	Comment
SMTPAPL	25	SMTP server
WEBAPL	80	HTTP server
CTIAPL	102	Hicom 300 (ACL-H3)
SMTPAPL	110	POP3 server
All	137	Distributed XPR Server
All	138	Distributed XPR Server
All	139	Distributed XPR Server
SMTPAPL	143	IMAP4 server
LDAPAPL	389	LDAP APL anonymous bind or simple bind
WEBAPL	443	Secure HTTP server
All	445	Distributed XPR Server (SMB via TCP/IP)
LDAPAPL	636	LDAP APL strong authenticated bind (secure sockets)
SMTPAPL	993	IMAP4 server with secure sockets
SMTPAPL	995	POP3 server with secure sockets
CTIAPL	1040	Hicom 300 (CallBridge), HiPath 4000 (CAP) and OpenScape Voice (CSTA).
TCPAPL	1107	With updates of old versions this port can still be used for client access.
REPAPL	1433	ODBC port for accessing SQL servers.
IPAPL	TCP 1720	H.225, H.245 signalling (CorNet-IP)
ABCAPL	2533	ABC-A protocol of the Alcatel 4400 PBX.
CTIAPL	2555	Alcatel 4200, Alcatel 4400 and Alcatel OmniPCX Office (CSTA).
CTIAPL	3211	EADS TELECOM 65xx (CSTA)
CONAPL	TCP 5004	XML-RPC or the web conference server.
IPAPL	UDP 5004 to UDP 5006	RTP, RTCP, T.38 initialization (CorNet-IP)
PRESENCEAPL	5060	Microsoft Live Communications Server query. Cannot be used combined with the IP APL SIP connection.
IPAPL	5060	SIP via TCP or UDP Cannot be used in combination with the Microsoft Live Communications Server connection via the Presence APL.
IPAPL	5061	SIP via TLS.

Table 3 XPR Server ports used

Component	Port	Comment
CONAPL	5432	Access to PostgrSQL database
CTIAPL	7001	HiPath 3000 (CSTA)
CONAPL	8443	Access port for the client access of the *OpenScape Web Client*.
TCPAPL	8944	Client access
TCPAPL	8945	Client access by SSL
MSP	8945	XPR Service Provider (client applications) by SSL
MSP	8968	XPR Service Provider (client applications)
LICSVC	13010	License service
CSTAAPL	13040	Access port for the client access of the *OpenScape Web Client*.
IPAPL	29100 to 29100 + 240	RTP port range First RTP port (29100) configurable.
IPAPL	12500 to 12500 + 120	T.38 port range First T.38 port (12500) configurable.

Table 3 XPR Server ports used

These ports should not be blocked with usage of the respective feature via firewall.

12 Licensing and Order Tool

12.1 Licensing

License keys are automatically generated by selecting the items in the OpenScape Xpressions order tool. This also applies to follow-up orders and OpenScape Xpressions upgrades, insofar as the old order number is used.

The OpenScape Xpressions product is always licensed as such through a **Product Key**, which licenses the major OpenScape Xpressions components but also defines certain restrictions regarding extensions. Only the following unlimited product key exists:

- Advanced

If necessary, the order tool adds **Feature Keys**, **User Licenses**, **Channel Licenses** and **Language Licenses** to this product key. These are then visible to the administrator in the Xpressions monitor and are checked by the OpenScape Xpressions software. However, if the quantity of user licenses is exceeded, OpenScape Xpressions users are randomly deleted.

The licenses for external software are not included in the OpenScape Xpressions license keys.

A new license must be created on the license server for upgrades to OpenScape Xpressions even if no new features are bought by the customer. A correct order with at least BDB255 must however have been made beforehand.

After the installation the system may be used 30 days without restriction (grace period). In this period the XPR server may be rebooted. After expiration of this period the XPR server cannot be started again.

12.1.1 HiPath License Management (CLM)

Using the CLMs, licenses for Unify Software and Solutions GmbH & Co. KG products are centr
administered and provided in a network.

Before you can install OpenScape Xpressions server, the following requirements must be met:

- A CLM must be available in the network.
- A HiPath Client License Agent (CLA) must be installed. The CLA can be installed on any computer in the network. Please heed the scenarios described in the following.
- The licenses you have purchased must be activated via the CLM and transferred to the corresponding CLA. Please read the corresponding section in the CLM help on this.

12.1.1.1 The CLM Operation Mode

The CLM operation mode is comprehensively explained in the product documentation, which you can open via the **Help** button in the CLM product interface. Here, we only provide a short outline:

1. The CLM and the XPR server are uninstalled
2. By means of the CLM and via the Internet you generate the required licenses at the Central License Server (CLS). To do this you need the authorization code and the MAC ID of the computer on which the CLA is installed (locking ID). The authorization code and the locking ID are sent by the CLM to the CLS.
3. With the help of the authorization code and your specific locking ID the CLS generates a license file and returns this file to your CLM. Thus the licenses are bound to the MAC ID of the computer on which the CLA has been installed. This affects the scenarios described further below.
4. Using the CLM the license file is transferred to the selected CLA. Based on the locking ID the latter checks whether the license file is valid for the XPR server. If the locking ID matches the one in the license file, the XPR server is released, otherwise the XPR server is not released.
5. The license service that communicates with the CLA using the CLC was automatically installed on the computer on which the XPR server is installed. The CLC is a function library (DLL = Dynamic Link Library), which provides functions required for communication between the license service and the CLA.

6. When the XPR server starts, the installed APLs query the license service for an available license. Using the CLC the license service transfers this request to the CLA. The CLA checks whether a license is available on the specific XPR server for the corresponding APL and answers accordingly. After a successful check the APL starts and may be used.

12.1.1.2 Possible Scenarios for the CLM

IMPORTANT: When you select your scenario make sure the licenses are always bound to the MAC ID of the computer on which the CLA is installed and operates.

Scenario 1:

The XPR server is installed on an individual computer. CLM and CLA are installed on other computers in the network. This can be considered the scenario most commonly used.

Scenario 2:

The XPR server and the CLA are installed on one computer. The CLM is installed on another computer in the network. In this case you need an individual license pack for each installed XPR server.

Scenario 3:

The XPR server, the CLM and the CLA are installed on the same computer.

13 Hardware Overview

13.1 Server Solutions

13.1.1 Single Server Solution

In a single server solution OpenScape Xpressions with its ISDN and, if applicable, its resource cards, is installed on one PC. The main advantage of distributed systems is the scalability of their hardware resources.

Information on the hardware prerequisites can be found in the technical information or in the installation manual for OpenScape Xpressions. In there you find the following as default:

NOTE: The load and dimensioning tool is a supplement to the release notice. It enables calculating the load based on the available number of kernels, workstation memory, harddisk memory, satellite computers, users, channels, the assumed frequency of voicemail, fax documents, calls, the medium size of voice-mails, fax documents etc.

NOTE: Please obtain the hardware requirements for an upgrade from the *OpenScape Xpressions Upgrade* installation guide.

Processor

- At least Intel Pentium 4 (or compatible) (Xeon processor or dual core system), at least 2 GHz
- Using T.38 Fax on more than two parallel lines requires a server with at least 2 GHz, at least 2 GB RAM and at least one dual core CPU.
- For conferencing usage one additional core per 50 voice channels
- Depending on the number of users and sessions a powerful processor is required for using the OpenScape Web Client. The performance requirements per OpenScape Web Client user are approximately twice as high as for an optiClient 130 user.

RAM requirements:

- 2 GB (recommendation: 4 GB)
- in case of TTS usage

  - additional 100 MB per installed TTS voice of RealSpeak Telecom V4.0 and
  - additional 2 MB per channel

  at least, however, 1 GB in addition
- in case of ASR usage 512 MB in addition

NOTE: TTS and ASR have been released on this operating system on real hardware or on VMware ESX 4.0 only. Which operating systems are permitted, please refer to the OpenScape Xpressions Release Notice.

- in case of conferencing usage 2 GB in addition
- in case of the OpenScape Web Client at least 1 GB in addition

Hard disks

- 2 hard disks with at least 100 GB (IDE or SCSI) each.
- Be sure that the partition on which the XPR server software is installed has a minimum size of 10 GB. Additionally, the target path must not contain any blanks (e. g. c:\OpenScape Xpressions\xpr)!
- Second hard disk for data backup recommended

LAN

- When the XPR and web conference server are operated in parallel on the same computer, the following requirements must be complied with:
  - The computer must have two IP addresses or two DNS host entries that point to the same IP address.

- Port 80 (TCP) and port 5000 (TCP) must be accessible.

IMPORTANT: The installation of an XPR system on substituted drives is not possible, since the setup program cannot create the required directory shares of the XPR system.

IMPORTANT: Installing the XPR system on a domain controller is not permitted.

IMPORTANT: You may not set up an XPR on a computer on which a ComAssistant is installed. In this context it is irrelevant whether or not the XPR is integrated in the ComAssistant.

NOTE: OpenScape Xpressions can only be used as a single server solution for a maximum of 2000 users and a maximum of 5 x S_2.

13.1.2 Distributed System

The term “distributed system” is used for a OpenScape Xpressions server installation distributed over several computers.

To find out which OpenScape Xpressions components can be installed on other PCs, please refer to Section 9.1, “Distributed System with OpenScape Xpressions”.

13.1.3 Remote System Link

Remote system links permit the networking via LAN of several OpenScape Xpressions systems, which may each consist of a single server or a distributed system. For detailed information on the possibilities of the shared protocol usage or user administration and the connection to several PBX systems please refer to the *System Administration* manual.

13.2 XPR in a virtual Environment

NOTE: Please refer to the *OpenScape Xpressions Release Notice* to see which Virtual Machine Server versions have been released for using XPR in a virtual environment.

When operating an XPR server in a virtual environment with the virtualization software (e.g. VMWare server), please note the following:

- The host system must meet the sum of system requirements that results from the system requirements of all virtual systems and system requirements of the host system itself. This applies in particular for RAM and hard disk capacity. Besides the system requirements of the host system and of the software installed on the system, the system requirements of the operating systems of all intended virtual machines and the system requirements of the software installed in the virtual machines must be taken into account.
- When using the load and dimensioning tool you need to set that the values for a virtual environment shall be calculated.
- A host system not properly dimensioned results in a reduced performance of the XPR server and of all operated virtual machines. This is particularly true when load-intensive applications are operated or high loads are generated by a large number of accesses. During TUI operation, greeting playback may then, for example, be delayed or distorted.
- Please also note, that the host system represents a so-called *Single Point of Failure*. This means that as soon as a hardware defect occurs in the host system, the virtual machines are no longer operable. For this reason it is not possible to enable a highly available solution with a single host system.
- The number of possible guest operating systems in which an XPR server can be set up and operated strongly depends on the performance of the host system. Common server computers may operate up to five virtual systems. In this context we wish to point out, though, that the actual load occurring in "real-life" operation is hard to forecast as it depends on many factors. We therefore recommend comprehensive load tests before a host system is put into "real-life" operation.

13.3 Communication Hardware

To address OpenScape Xpressions using the telephone user interface and/or to send and receive fax messages, you need at least one S_0 or S_2 Dialogic/Eicon board. Preferably boards with a universal PCI bus (3.3 and 5 volts) are installed with all new deliveries for V7. All Dialogic/Eicon boards are 3.3 volt-compatible.

IMPORTANT: At times, Dialogic uses different version numbers for the same board. For example, the hardware description features a specific version number for a board, but in the Eicon Manager Tool you find another version number for the same board. The version numbers used for Dialogic ISDN boards in this XPR V7 system description are always the version numbers specified in the Eicon Manager Tool!

The following Dialogic ISDN boards are supported by the drivers (version 8.5.10) on the XPR V7 setup medium:

- Diva BRI media boards (version 2.0)
  - Diva BRI-2 PCI
  - Diva BRI-2 PCIe
  - Diva 4BRI-8 PCI
  - Diva 4BRI-8 PCIe
- Diva PRI/E1/T1 media boards (version 3.0)
  - Diva PRI/E1/T1-8 PCI
  - Diva PRI/E1-30 PCI
  - Diva PRI/E1-30 PCIe
  - Diva PRI/T1-24 PCI
  - Diva PRI/T1-24 PCIe
- Diva PRI/E1/T1 media boards (version 4.0)
  - Diva V-PRI/E1-30 PCI
  - Diva V-PRI/E1-30 PCIe
  - Diva V-PRI/T1-24 PCI
  - Diva V-PRI/T1-24 PCIe
  - Diva V-2PRI/E1-60 PCI
  - Diva V-2PRI/T1-48 PCI
  - Diva V-4PRI/E1-120 PCI

- Diva V-4PRI/T1-96 PCI
- Diva V-1PRI/T1-24 PCIe HS
- Diva V-1PRI/E1-30 PCIe HS
- Diva V-2PRI/T1-48 PCIe HS
- Diva V-2PRI/E1-60 PCIe HS
- Diva V-4PRI/T1-96 PCIe HS
- Diva V-4PRI/E1-120 PCIe HS
- Diva V-1PRI/E1/T1-30 CorNet
- Diva V-1PRI/E1/T1-30 Fax enabled CorNet

  HS: Half size

IMPORTANT: Dialogic ISDN PRI boards of version 2.0 are not supported.

Mixed operation between different BRI or PRI cards as well as mixed operation of BRI and PRI cards on a server computer is not released.

13.3.1 GSM Transmitter

If OpenScape Xpressions is to be installed with the SMS (Short Message Service) component for GSM for sending SMS messages, at least one GSM dual band transmitter (900/1800MHz) must be connected to a COM interface of the server. Furthermore, one SIM card for network access to the desired service provider is required per SMS box.

A **Leiser Kit** is required for extending the V.24 cable to a remote GSM box with antenna.

Not more than two SMS boxes are allowed per server.

13.4 Modem

The remote service occurs via a modem. In addition, a modem can be installed to control the mailbox LED when the ISDN protocol EUROISDN (DSS-1) is used.

13.5 Com Interface Multiplier

If additional COM interfaces are required (for modem, GSM box), an interface expansion card must be installed.

13.6 LAN Integration

If the OpenScape Xpressions server is to be integrated in a LAN, this must be done before the OpenScape Xpressions
2000 software is installed, otherwise the network services cannot be started by the Windows 2000 operating system which causes faulty OpenScape Xpressions server configurations. All TCP/IP networks are supported.

14 Software Overview

14.1 OpenScape Xpressions Server Software

14.1.1 System Software

Operating system

You find Information about the operating systems supported by the XPR server in the *Release Notes*.

Additional components

- **WEB access**

  Via OpenScape Xpressions Web server (WEB APL) - the Internet Information Server (IIS) or Personal Peer Web Service used in previous versions is no longer necessary and is deactivated during installation. No external Web applications are allowed to run from the OpenScape Xpressions server.

- **Protocol stack**

  Correctly configured TCP/IP protocol stack

- **Drivers**

  At least one installed printer driver (at least a generic printer, text only)

14.1.2 Additional Software

Nuance Vocalizer for Networks 5: Required for the Text-To-Speech feature (reading out e-mails on the telephone).

The following languages have been licensed for OpenScape Xpressions: German, English, French, Brazilian, Italian, Dutch, Portuguese, Russian, Spanish and Turkish

Acrobat Reader (is contained in the Xpressions setup medium) for reading OpenScape Xpressions documentation.

Lotus Notes Client is required for a Notes integration on the server.

Microsoft Office may be necessary for converting documents on the server; for example, when faxing a Word document. All conversion software which may be necessary is listed in the following chapter.

14.1.3 Conversion Software

Application converters are available with the following programs for the formats:

Microsoft Office 2003:

Microsoft Word	doc, rtf, htm
Microsoft Excel	xls
Microsoft PowerPoint	ppt, pps

14.1.3.1 Format Conversions

To ⇨ / From ⇩	TLX	ASC	ANS	TTX	FG3	FG4	WAV	PCM	AS7	DCX	PS	DIB	DIBC	TIF DIBM	TIF FAX	BIN	JPG	AIFF	AU	TG3	TG4	WAV A	WAV U	WAV C
TLX		X	X	X	X	X	TTS	TTS	X	X	0	0	0	0	0	0	0	0	0	X	X	TTS	TTS	0
ASC	X		X	X	X	X	TTS	TTS	X	X	0	0	0	0	0	0	0	0	0	X	X	TTS	TTS	0
ANS	X	X		X	X	X	TTS	TTS	X	X	0	0	0	0	0	0	0	0	0	X	X	TTS	TTS	0
TTX	X	X	0		X	X	TTS	TTS	X	X	0	0	0	0	0	0	0	0	0	X	X	TTS	TTS	0
FG3	0	OCR	OCR	0			OCR +TTS	OCR +TTS	OCR	X	0	X	X	X	X	OCR	X	0	0	X	X	OCR +TTS	OCR +TTS	0
FG4	0	OCR	OCR	0	X		OCR +TTS	OCR +TTS	OCR	X	0	X	X	X	X	OCR	X	0	0	X	X	OCR +TTS	OCR +TTS	0
WAV	0	ASR	ASR	0	ASR	ASR		X	0	0	0	0	0	0	0	0	0	X	X	ASR	ASR	X	X	X
PCM	0	ASR	ASR	0	ASR	ASR	X		0	0	0	0	0	0	0	0	0	0	0	ASR	ASR	X	X	X
AS7	X	X	X	X	X	X	TTS	TTS		X	0	0	0	0	0	0	0	0	0	X	X	TTS	TTS	0
DCX	0	0	0	0	X	X	0	0	0		0	0	0	0	0	0	0	0	0	X	X	0	0	0
PS	0	0	0	0	PS	PS	0	0	0	0		0	0	0	0	0	0	0	0	PS	PS	0	0	0
DIB	0	0	0	0	X	X	0	0	0	0	0		0	0	0	0	0	0	0	X	X	0	0	0
DIBC	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
TIF DIBM	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
TIF FAX	0	0	0	0	X	X	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
BIN	0	0	0	0	BIN	BIN	0	0	0	0	0	0	0	0	0		0	0	0	BIN	BIN	0	0	0
JPG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	X	0	0	0	0	0
AIFF	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0		X	0	0	0	0	0
AU	0	0	0	0	0	0	X	0	0	0	0	0	0	X	X	OCR	X	X		0	X	0	0	0
TG3	0	OCR	OCR	0	X	X	0	0	OCR	X	0	X	X	X	X	OCR	X	0	0		X	ASR	ASR	0
TG4	0	OCR	OCR	0	X	X	0	0	OCR	X	0	X	X	X	X	OCR	X	0	0	X		ASR	ASR	0
WAV A	0	ASR	ASR	0	ASR	ASR	X	X	0	0	0	0	0	0	0	0	0	X	X	ASR	ASR		X	X
WAV U	0	ASR	ASR	0	ASR	ASR	X	X	0	0	0	0	0	0	0	0	0	0	0	ASR	ASR	X		X
WAV C	0	ASR	ASR	0	ASR	ASR	X	X	0	0	0	0	0	0	0	0	0	0	0	ASR	ASR	X	X	

Meaning:

X	Conversion always possible.
TTS	Conversion possible if text-to-speech software is installed and licensed (Lernout & Hauspie, or using Speech API).
ASR	Conversion possible if automatic voice recognition software is installed and licensed (not supported at present).
PS	Conversion possible if gnu Ghostscript is installed (default).
OCR	Conversion possible if OCR software is installed and licensed (not supported at present).
BIN	Conversion possible if fax service software is installed and licensed.
0	One-step conversion not possible (in general, conversion is not possible on white background).
BLUE	Sound formats
GREEN	Text formats
YELLOW	Two-step conversion possible.
GRAY	One-step conversion.

Multi-format documents

Conversion between PMF and E-MAIL is possible.

- PMF:

  A PMF file contains several conversions or representations of a document. All simple document formats can be added to a PMF file.

  PMF can create new representations of a document contained or extract it as a document type, if permitted by the above matrix.

  Two-step conversions are also possible:

  e.g. FG3 to WAV: can be created by FG3 > TXT > WAV (fax reader)

  e.g. PS to DCX: can be created by > FG4 > DCX

- E-Mail:

  An e-mail file contains a body text and no, one or multiple attachments.

  Every document format can be converted into e-mail.

  One-step conversions make working with a built-in viewer convenient.

- Original format is FG3:

  E-mail can contain an FG3 attachment (no one-step conversion).

  E-mail can contain a TIFF attachment (one-step conversion required for Outlook Extensions).

  E-mail can contain a JPEGC attachment (one-step conversion).

- Original format is PCM:

E-mail can contain an AU attachment (no one-step conversion, no playback software available).

E-mail can contain a WAV attachment (one-step conversion, playback software available).

Explanation of simple formats:

Token	Format Description
BIN	All file formats not recognized by XPR. These are especially binary formats like Word files, Excel Sheets, … A conversion through the applications converter of the XPR Server is only possible to fax format.
EML	Internet MIME standard electronic mail format.
PMF	Cycos Multi Document Format.
AS7	7-Bit ASCII
ASC	Text ASCII Character set (Codepage 437, Standard DOS Character set with IBM Symbols)
MIT	7-Bit ASCII coded 8-Bit Mime text. Display is as TXT.
TLX	Telex ITA2 Character set
TTX	Teletex T.61 Character set
TXT	Text ANSI Character set (Codepage 850, Standard Windows Character set)
BMP	Windows Bitmap. Result of fax conversion.
DCX	Multi-page PCX format (standard fax format from Microsoft)
FG3	Cycos Fax G3 Format (This format has been replaced with the new standard fax format TG3).
FG4	Cycos Fax G4 Format (This format has been replaced with the new standard fax format TG4).
BMP_COL	Fax data converted to Windows BMP standard. A trilinear gray scale interpolation is performed.
JPG	Occurs usually when fax data has been converted into a JPEG format with 9 grayscales.
PS	Adobe Postscript Format
TG3	Compressed multi-page TIFF Fax G3 Format
TG4	Compressed multi-page TIFF Fax G4 Format
TIF	Single-page, compressed TIFF fax format.
AIFF	Audio-Format
AU	Audio-Format, found mostly in UNIX environments.
PCM	Cycos ISDN Voice PCM coding.
WAV	Windows Wave RIFF audio format (uncompressed).
WAV_A	Windows Wave RIFF Audio-Format (Compressed, A-Law encoded, 8 KHz Mono).
WAV_MU	Windows Wave RIFF Audio-Format (Compressed, µ-Law encoded, 8 KHz Mono).
WAV_C	Windows Wave RIFF Audio-Format (Compressed, non-WAV_A or WAV_MU).
WAV_16	Voice over IP

Token	Format Description
TIF_BMP	This single faced compressed TIFF fax format is not supported any more. When you select this format, a configurable program is called, which executes a conversion from TIFF into an arbitrary format instead. On the Add-On CD you find for example a converter for delivering fax documents as PDF. When you activate this external conversion, further fax formats must not have been selected beforehand.
TIF_MUL	Compressed multi-page TIFF fax format (obsolete and should not be used).

14.1.4 Client PC Software

The following software is supported as client software:

- Operating systems: Windows 7 Professional , Windows XP , Windows Vista Business or Enterprise with current service package
- Installed printer driver
- MS Outlook from the MS Office versions XP, 2003, 2007 and 2010 with current service package for the Exchange integration/ SMTP mail client and Outlook Extensions
- Lotus Notes client for Notes integration and Notes Extensions
- Internet browser for the Web Assistant (for example, MS Internet Explorer 6.0 (or later) or Netscape Communicator 4.7.2, 6.0 (or later))
- SMTP client for the internet mail connection
- “Communications” as OpenScape Xpressions client

14.2 OpenScape Xpressions Server Structure

14.2.1 OpenScape Xpressions Structure

The XPR software consists of

- several Windows services, which implement the server functionality,
- some GUI applications (Graphical User Interface) and other tools, which enable the operation and administration,
- as well as TUI applications (Telephone User Interface) for the terminal user.

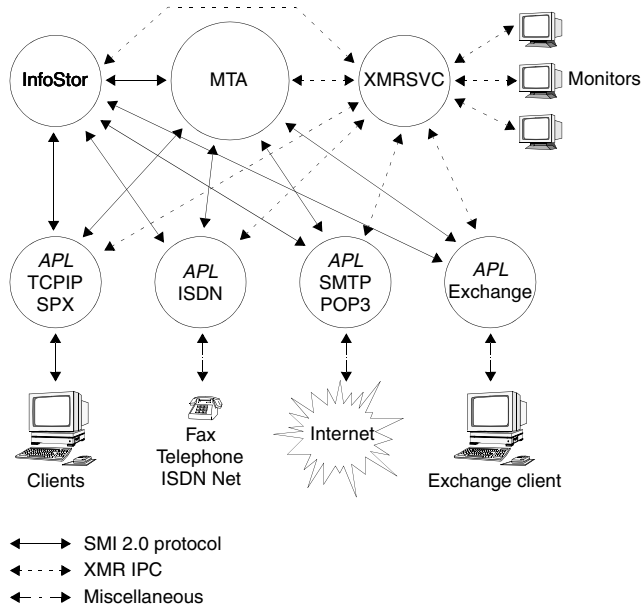
The Windows services can then be split into four groups:

- License service

- OpenScape Xpressions kernel components,
- XPR APLs (Access Protocol Layers),
- External components.

The OpenScape Xpressions has a modular structure with the APLs grouped around the kernel.

The following diagram provides an overview of the OpenScape Xpressions process structure.



14.2.2 OpenScape Xpressions Access Protocol Layers (APLs)

A more detailed description of the APLs listed here is available in the *Server Administration* manual.

Component	Description
Computer Telephony Integration APL (CTIAPL)	Connection of telephone exchanges for CTI functionality.
Connection APL (CONAPL)	The Connection APL serves two purposes. On the one hand it is a middleware to provide Java programs with the XPR server transactions. On the other hand it manages all components that are not available as normal APL.
CSTA APL (CSTAAPL)	Abstraction layer for CSTA. Allows CSTA client applications to cooperate with all PBXs supported by the XPR server.
Database APL (DBAPL)	Connection to external databases. Data can be retrieved by other APL´s via transactions. See also *OpenScape XpressionsServer Administration* manual.
Directory Service APL (DIRSVC)	The Directory Service is an XPR service that enables other XPR components to perform address queries. It is installed as part of the kernel setup and used by the Web APL to display the real name (display name) associated to an e-mail address.
Microsoft Exchange 2003 APL (E2KAPL)	Gateway to Microsoft Exchange 2003/2007.
Microsoft Exchange True Unified Messaging APL (EXUMAPL)	Connector for True Unified Messaging in case of a Microsoft-Exchange 2003 connection.
File Interface APL (FIAPL)	General File Interface. Any file exchange formats can be defined via a script language.
HiPath Management APL (HPMAPL)	Administering user data via HiPath User Management.
Integrated Services Digital Network APL (ISDNAPL)	This APL implements the ISDN protocols Voice, Fax G3, Fax-on-Demand and Fax G4. These protocols address Dialogic/Eicon hardware. The CorNet-N/NQ protocol is supported in addition.
Internet Protocol (IPAPL)	VoIP interface to connect XPR to HiPath systems for voice mail. Components used in the IP APL context are: • Voice mail systems • Fax over IP (FoIP, T.38) • HiPath H.323 Service Provider
Lightweight Directory Access Protocol APL (LDAPAPL)	This APL implements the interface to the Active Directory in the case of a Gateway function or integration in Exchange 2003/2007 via the LDAP protocol.
Lotus Notes APL (LNAPL)	Gateway for Lotus Notes versions listed in Section 5.2.1, “Supported Lotus Notes Versions”.

Component	Description
Lotus Notes True Unified Messaging APL (LNUMAPL)	Additional connector that allows True Unified Messaging in a Lotus Notes connection.
Mailbox APL (MAILAPL)	The Mailbox APL implements the OpenScape Xpressions e-mail protocol. It provides a mailbox for every user's messages.
Notification Module (NOTAPL)	The Notification APL is used to send server-generated notifications about new messages received (e-mails, fax or voice mails) to PBX lines. Notification can be via MWI, SMS or a TUI call (User Outcall).
Presence (PRESENCEAPL)	Presence status and Instant Messaging Provider. Is also required for web conferences.
Print APL (PRINTAPL)	Automatic printing of in and outbound documents can be configured through use of the *Carbon Copy Rules.* The (tele)phone user interface can be used to print out documents using network printers.
Report APL (REPAPL)	Generates databases from the statistical raw data of the XPR components.
Report Schedule APL (REPSCHEDULEAPL)	Generates various statistics from the databases created by the Report APL.
SAPphone APL (SAPPHONEAPL)	CTI functions for SAP R/3 via the SAPphone interface.
SAP R/3 APL (SAPAPL)	Gateway to SAP R/3 using the SAPconnect interface.
SAP Business Routing APL (SAPROUTEAPL)	Exchange of data between SAP and XPR.
SMS Connector (SMSAPL)	Sending and receiving SMS messages via GSM adapters or a direct provider coupling.
Internet Mail APL (SMTPAPL)	Gateway to the Internet. Messages can be sent and received via the SMTP protocol. POP3 and IMAP4 clients can log on to the XPR server and receive inbound documents. User mail can be retrieved from other mail servers via POP3. Voice mail servers can be networked via VPIM protocol.
TCP/IP Transport APL (TCPAPL)	This Network APL implement the client-server communication over the Windows network protocol TCP/IP.
V.24 APL (V24APL)	The V.24 APL enables the use of fax with fax class 2 modems. You can use the script language to create any V.24 protocols to deliver and receive documents. The protocols implemented are, for example, analog Message Waiting Indication for Hicom systems.
Web Server APL (WEBAPL)	The XPR Web Server can respond to normal HTTP 1.1 queries and via an E-Script, insert various XPR functionalities in transmitted HTML pages.
Web Services APL (XMLAPL)	The XML APL serves as an interface via which the XPR server functions are provided as Web service.

Component	Description
Vm2Txt APL(Vm2TxtApl)	Conversion of speech into text.

15 PBX System Integration

15.1 Telematic APL

A Telematic APL (Application Protocol Layer), for example the ISDN APL for ISDN boards by Dialogic/Eicon serves in OpenScape Xpressions as interface to the PBX. The PhoneMail and VMS voice mail scripts run under the IP APL.

15.1.1 PBX System Connection

For an understanding of some of OpenScape Xpressions features, we recommend taking a brief look at the point-to-point connection options.

The prefixes for national and international phone numbers can be set for **trunk seizure** over the PBX system.

In a **system connection** of this kind, the Telematic APL behaves vis-à-vis the PBX system as a satellite system that is connected via a **tie trunk**.

B-channels can be so assigned that not all of them are simultaneously used for **outgoing fax traffic** but some are available for receiving faxes.

Incoming calls are linked to the protocols configured (see following section) by means of **extension ranges** based on the numbering plan. There must be no overlapping between the FAXG3, VFS script, and E-script extension ranges.

The **Variable length of the number called from outside** flag can be enabled. The selected extension number range specifies the maximum length of the incoming number. In the case of a range from 700000 to 999999, the numbers 7-9, 70-99, and so on, 700000-999999 are possible, in other words all suitable combinations containing up to six digits are possible.

By default, the Telematic APL interprets every number containing more than nine digits as a number in **international format** (exceptions are permitted on a project-specific basis).

The OpenScape Xpressions can also be connected directly to the central office without a PBX system.

A sequence of OpenScape Xpressions access numbers (grouped logically, not numerically) is assigned for the telephone user interface (VMS, PhoneMail). These are described in Section 2.4, “OpenScape Xpressions Access Numbers”.

15.2 PBX Systems Supported

You find an overview of supported PBXs in the *Release Notice*.

15.2.1 Features of CorNet-N/NQ

The protocols **CorNet-N** and **CorNet-NQ** allow a number of additional features partly used by OpenScape Xpressions. Some of these features are shown in the following overview. Basic QSIG protocol functions are assumed here.

Feature	QSIG	CorNet-N	CorNet-NQ
Basic Call	X	X	X
Generic Functional Procedures	X	X	X
Line Identification	X	X	X
Name Identification	X	X	X
Call Transfer (by join)	X	X	X
Single Step Call Transfer (blind and supervised)	X	X	X
Simple Dialog	X	X	X
Message Waiting Indication	X	X	X
Call Diversion	X	X	X
Path Replacement	X	X	X
Advice of Charge	X	X	X
Common Information	X	X	X
CorNet-N Transport		X	X
Hicom 300/HiPath 4000 PIN		X	X
User-to-User Signaling		X	X
Redirected Number		X	X
Classmark: DTMF/Keypad selection		X	X
Classmark: Display support YES/NO		X	X
Classmark: Call Forwarding allowed		X	X
Classmark: Consultation Call allowed		X	X
Classmark: Remote Speaker Phone Control allowed		X	X
Classmark: User-to-User Info allowed		X	X
Classmark: Call Pickup allowed		X	X
Classmark: all Transfer allowed		X	X
Classmark: Server on Hold allowed		X	X
Classmark: Invocation of CCBS/CCNR allowed		X	X

Feature	QSIG	CorNet-N	CorNet-NQ
Classmark: Attendant Call Info		X	X
Classmark: Reliable Disconnect Info		X	X
Enhanced Message Waiting Indication			X
Remote Call Completion on Busy			X
Remote Call Completion on Ring-No-Answer			X

The following is a number of OpenScape Xpressions functions that can be reached using the CorNet-N protocol functions (Dialogic/Eicon S_0 or S_2 connection):

- Phone number of the caller
- Called user's number
- Transfer of the services (voice, Fax G3, data,...)
- Exchange of end system skills by means of classmarks
- Information transfer relating to external/internal call
- Transfer of the basis for call forwarding (fixed/variable CFW) or forwarding no answer (CD) or forwarding on busy
- Transfer of the number of the user who was originally called in the case of call forwarding (CFW)/forwarding no answer (CD) (number of the forwarder)
- Consultation via only one connection (log. remote transfer) (not for Hicom 150/HiPath 3000)
- Control of the server via a keypad within a digital Hicom 300 network (not for Hicom 150 or HiPath 3000)
- Connection-based user signaling via the telephone display (not for Hicom 150 or HiPath 3000)
- Setting or deleting the message waiting indication (MWI) by assigning a B-channel

15.3 ISDN Connection to Hicom and HiPath Systems

15.3.1 Numbering Plan and Addressing

The PBX systems may also be located in a network. The following points in particular should be taken into account:

Open numbering

In the case of open numbering, the individual systems in a Hicom/HiPath network are numbered separately. Each system has its own set of numbers.

A number is therefore only unique within a single system. If a connection is established between two systems, the number must be prefixed by a route ID. When a number belonging to a user within the same system is dialed, the route ID for this system can also be dialed. During digit analysis, the system recognizes that the destination being dialed lies within the same system and ignores the route ID. Since the introduction of least cost routing, a number in international format can also be used.

Closed numbering

With closed numbering, all numbers are uniquely assigned network-wide. With this type of numbering the system functions like a large PBX.

Hicom or HiPath together with OpenScape Xpressions uses a combined system of open and closed numbering.

In order to minimize the administrative effort required in the Hicom or HiPath or, more specifically, in Hicom or HiPath networks, the connection of the OpenScape Xpressions product with CorNet-N is based on the basic rules of open numbering. This means that a separate route ID is defined for the tie trunk to OpenScape Xpressions and that, consequently, all numbers that begin with this ID are automatically assigned to the server (as network nodes) and are basically unknown to the Hicom/HiPath.

Example:
For conventional five-digit closed Hicom numbering, the route ID could be 950, for example, and the last two digits could then be used for any OpenScape Xpressions applications. For example, 10 for forward access, 11 for direct access and 20 for the first fax-on-demand application. The Hicom should be set up in a way that the route ID is not transmitted as well. Numbers of this type, for example 88, may also represent server mailboxes the numbers of which are unknown in the Hicom. The Hicom 300 system will route all calls with numbers between 95000 and 95099 to OpenScape Xpressions. There is no fixed assignment of these numbers to the ports in OpenScape Xpressions.

15.3.2 Message Waiting Indication

In the case of S_0 and S_2 connections, the OpenScape Xpressions MWI is completely integrated in the Hicom or HiPath mailbox and is available throughout the entire network over CorNet. If there are new messages available, a user can connect directly to the relevant mail server (callback access).

In general, Message Waiting Indication is performed for all subscribers in a Hicom 300/HiPath 4000 network via the CorNet-N/NQ interface. In the case of Euro-ISDN (DSS-1), an additional analog subscriber line is needed for modem operation.

15.3.3 Remote Service Access

For the feature “Remote Service Access for OpenScape Xpressions“, an analog port is required on the Hicom 300, Hicom 300 E/H and HiPath 4000 for connecting a modem used by the service to remotely connect to the OpenScape Xpressions (if so desired by the customer).

15.3.4 Postmaster Accounts

The **postmaster accounts** at Hicom 300 V3.5 or higher or E V1.0 and the PC postmaster account at Hicom 150 can use the features of OpenScape Xpressions directly.

15.3.5 CorNet-N/NQ Connection to Hicom 300 and HiPath 4000

15.3.5.1 Hardware/Software Requirements

The OpenScape Xpressions product is connected to the Hicom 300, Hicom 300 E/H and HiPath 4000 communication systems over digital S_2 tie line connections.

The licenses required for basic telephone and networking functions in the case of a Hicom 300 E/H are provided automatically by the configuration (L30220-Z622-A811/-L806/-L827).

The OpenScape Xpressions features (such as callback access) can be used from all telephone extensions in a digital Hicom 300 network running software version V3.4 or higher.

The following modules with free ports are necessary for connecting the OpenScape Xpressions:

	Protocol	S_0 connection	S_2 connection
Hicom 300	CorNet N	STMD	DIUS2
Hicom 300 E/H	CorNet N	STMD STMD2 SLMS STHC	DIUS2 DIUN2 DIUN4
Hicom 300 (U.S.)	CorNet T	SLMS	
HiPath 4000	CorNet NQ	STMD STMD2 SLMS STHC	DIUN2 DIUN4

The STMD2 and DIUN2 modules can be implemented in Hicom 300 E V1.0 or higher. The DIUN4 and STHC modules can only be implemented in Hicom 300 E V3.0 or H V1.0 or later. The STHC module can only be implemented in Hicom 300 E V3.0 and H V1.0 or later and in HiPath 4000 V1.0 or later.

A DIUS2 or STMD module is required for all older Hicom 300 systems up to V3.6.

15.3.5.2 General Information on Hicom 300/HiPath4000 Configuration with S_0/S_2 Connection

The OpenScape Xpressions is connected to the home PBX using a route ID; in other words by means of open numbering. The connection can only be set up with an S_0 or S_2 interface to the Hicom or HiPath.

Note that the current V7 version OpenScape Xpressions only supports Hicom or HiPath networks with closed numbering. This means that for larger networks, a separate OpenScape Xpressions server is required for each subnet with closed numbering. Multiple OpenScape Xpressions servers can then be networked together via system networking as a project-specific solution.

Incoming calls for a user who has forwarded to OpenScape Xpressions can be recorded by number by the Hicom 300 call charge registration function.

In homogeneous Hicom 300 and HiPath 4000 networks and for the connection of OpenScape Xpressions via the CorNet-N/NQ interface, the OpenScape Xpressions telephone user interface automatically uses the function for transmitting characters and display information via the D-channel, while DTMF characters are used for external or specific telephones.

In contrast with Hicom VMS, TCS or FMS connection or integration over S_0, the message waiting indication for the Hicom 300 is restart-tolerant in the case of OpenScape Xpressions with an S_0/S_2 connection.

The phone number of the OpenScape Xpressions appears on the display of the digital telephone at Hicom 300/300E/300 H and HiPath 4000 when you press the **mailbox button**. In analog and digital telephones without a display, new messages are only signaled by an audio prompt. You can call up messages using the default access to your own mailbox (by selecting **Mailbox > Play** on the telephone or by selecting callback access directly.)

15.3.5.3 General Aspects

Some Hicom features which modify the behavior of a user connection can only be used system-wide, and not on a user-specific basis, in the case of Hicom 300 systems. This includes the feature forwarding on busy for voice connections and Fax G3 connections. In the central Hicom system data you can set whether or not forward on busy should be applied for all calls. You can also set whether forward on busy should only be applied to calls from the central office or for all calls.

NOTE: For Hicom 300 users who have activated the camp-on feature, *Busy* is never signaled on the interface to OpenScape Xpressions, but always *forwarding no answer*!

For Hicom 300/HiPath 4000 network configurations with internal subscribers outside of the OpenScape Xpressions home PBX, you must ensure that mailbox access is configured for every Hicom -300 system and that the transmission of message waiting indications via temporary signaling connections is enabled for all cross connections.

15.3.5.4 Voice Messaging Aspects

The OpenScape Xpressions marketing goal is to have a mailbox for voice assigned to all default telephone users and to have *fixed CFW* set up – but not activated – to the forward access number of OpenScape Xpressions.

By activating and deactivating fixed call forwarding the user is able to switch at selected times between fixed forwarding to the voice mailbox and forwarding to the mailbox when there is no answer.

Using the Hicom 300/HiPath 4000 feature *forward on busy to the OpenScape Xpressions voice mailbox function* should depend on the individual customer scenario. If, for example, the customer is operating in a predominantly digital ISDN environment in which the callback feature is used frequently, it may be useful not to have the function for forwarding to the answering machine on busy activated. The setting up of forwarding on busy for CO calls (not internal calls) is still recommended as the default for voice messaging.

15.3.6 CorNet-N Connection to Hicom 150 and HiPath 3000

15.3.6.1 Hardware/Software Requirements

The technical connection between the OpenScape Xpressions product and the Hicom 150 E and Hicom 150 Office communication systems (in short Hicom 150) or HiPath 3000 is set up via digital S_0 or S2m (project-specific) cross connections with the CorNet-N networking protocol at the following modules:

	Protocol	S_0 connection	S_2 connection
Hicom 150 Office PRO/COM	CorNet N	STMD STMD2 STLS	
Hicom 150 E/H	CorNet N	STMD STMD2 STLS	DIUS2 (project-specific)
HiPath 3000 (U.S.)	CorNet N		
HiPath 3000	CorNet N	STMD STMD2 STLS	DIUS2 (project-specific)

	Release	Connection of OpenScape Xpressions V7 technically possible?	Release for OpenScape Xpressions V7	Comment
Hicom 150 E	R1.0	Yes	Project-specific	An upgrade to Hicom 150 E R2.1 is recommended.
	R2.0	Yes	Project-specific	An upgrade to Hicom 150 E R2.1 is recommended.
	R2.1	Yes	Yes	
	R2.2	No	No	
Hicom 150 Office	Pro V2.2 or higher	Yes	Yes	
	Com V2.2 or higher	Yes	Yes	
	Point	No	No	
	One	No	No	
Hicom 150 H	V1.0	Yes	Yes	
HiPath 3000	V3.0	Yes	Yes	
	V4.0	Yes	Yes	

15.3.6.2 Configuring the Hicom 150 S0 Interfaces to OpenScape Xpressions

OpenScape Xpressions V7 only supports the voice and fax group 3 services. Transparent 64 kilobit data is not supported.

Consultation connections are not supported for OpenScape Xpressions V7.

Because Hicom 150 Office V1.0 does not support network-wide forwarding no answer, forwarding no answer to a local, virtual number (type=answering machine) must be set up for each user; this number then points to the forward access number of the server by means of fixed CFW (which is network-wide). We therefore urgently recommend an upgrade to Hicom V2.2.

15.3.6.3 Restrictions on Hicom 150/HiPath 3000

The individual steps are only signaled by audio prompts when you use the voice mail scripts - no visual displays are provided. This feature is not implemented in Hicom 150 E/H and HiPath 3000.

Visual and acoustic signaling: On digital telephones with a display, incoming messages are visually signaled by an illuminated mailbox LED and by an announcement when you lift the handset.

When you press the mailbox key on a digital telephone, a new message in OpenScape Xpressions is signaled acoustically.

On analog and digital telephones without a display and Hicom 150/150 E/150 H/ HiPath 3000 connections, new messages are only signaled by an acoustic announcement (the new message is not shown on the display). You can call up messages using the default access to your own mailbox (on the telephone by selecting Mailbox - Play, or by directly dialing callback access).

CorNet-NQ is not supported by HiPath 3000 V4.0 or earlier.

15.3.6.4 Voice Messaging Aspects

Fixed call forwarding, call forwarding no answer when available and, if required, call forwarding on busy for OpenScape Xpressions must be set individually for each Hicom 150 or HiPath 3000 user's telephone.

Use of the Hicom 150 feature *Forward on Busy* should be made dependent on the individual customer scenario. If, for example, the customer is operating in a predominantly digital ISDN environment in which the *callback* feature is used frequently, it may be useful not to have the function for forwarding to the answering machine on busy activated.

15.3.6.5 Fax Messaging Aspects

So that users can internationally be reached using the fax service, they normally require a short calling number as specified in IUT Recommendation E.164.

15.4 Connection to HiPath 8000/ OpenScape Voice via SIP

NOTE: The OpenScape Voice PBX used to be called HiPath 8000 before the product version 3.1 R2. All general OpenScape Voice information provided in this document also applies for the HiPath 8000 predecessor.

An OpenScape Voice is connected to the XPR server via the IP APL and the SIP protocol. The PBX and the XPR server form one SIP domain. In this domain the OpenScape Voice operates as SIP Proxy and as SIP Registrar server.

15.4.1 Configuring the OpenScape Voice

In the following we will provide a general overview of the configuration of a connection between an XPR server and an OpenScape Voice. You find detailed instructions and descriptions in the following OpenScape manuals:

- Configuration and Administration using NetManager NMC
- Configuration and Administration using CLI
- Subscriber Account/Services Administration using NetManager SMC

Before it is possible to establish a connection between the XPR server and OpenScape Voice, the following requirements must be complied with:

- The OpenScape Voice administration is managed via the NMC and the SMC client. To install the connection between the XPR server and OpenScape Voice, accounts with sufficient privileges are required on the SMC as well as on the NMC.
- A dialing plan (E.164[1] or private) must exist in order to access the XPR server.
- The office codes and the connected home dial numbers must have been already entered with the help of the Home DN Managers in the NMC.
- If an SIP authentication has been configured for clients, the XPR server must become a permanent entry in the NMC for an outcall (e.g. voice mail output via telephone). Otherwise the outcall will be refused due to the lacking authorization.

1. Standard for Carrier Dialing Plan (see OpenScape Voice documentation)

15.5 Connection to Other PBX Systems

Connecting PBXs via EuroISDN (DSS-1) or QSIG protocol to OpenScape Xpressions is generally possible based on a project, but the following restrictions against CorNet protocols must be considered:

- Control of the message waiting LED on the telephone is not possible via the protocol, but must be signaled via an external modem to the system (analog subscriber interface for modem operation).
- The menu navigation of the voice mail scripts (PhoneMail, VMS) is not supported for the terminal-device displays (display of dialed digits only).
- All features that require the *Redirected Number* do not work. These include:
  - Callback via same line (two B-channels are occupied here).
  - Forwarding via OpenScape Xpressions (two B-channels are occupied here as well).
  - Differences when accessing the OpenScape Xpressions access numbers (see table in Section 2.4, “OpenScape Xpressions Access Numbers”).
  - Remote System Link restrictions and usage of several trunk access points.
  - Call rerouting to <cross dialing><individual phone number> (telephone number is also administered as user voice box number).
    Binding of additional extension number ranges necessary because without Redirected Number, call rerouting cannot be set to the Forward Access Number but must be set individually to a mailbox number. Each mailbox number must be included in the extension number range.
  - Individual extension range required for fax.
- Dialogic/Eicon 4BRI or PRI can be used only.

15.6 Voice over IP at HiPath 5000 V3.0

The IP APL is installed for two different purposes. On the one hand, it is used to connect OpenScape Xpressions to a HiPath 5000 V3.0 system and thus to facilitate IP-based communication. You can set up PhoneMail or VMS over the IP APL in such a way that the exchange numbers used in the gatekeeper are passed on to the IP APL and that the voice mail application assigned to the user is started.

Connections using the IP APL are only released for OpenScape Xpressions on a project-specific basis.

Here follows an overview of the services, components and protocols that are possible with the HiPath 5000 V3.0:

- HiPath telephony service provider
- PhoneMail
- VMS
- Playwave (for playing back saved voice messages)
- CTI light
- MWI Interrogate Service
- MWI/MWIVoice.e

Please note that the TSP can only process sixteen voice channels and that there is thus a maximum of sixteen channels or ports per server on HiPath 5000 V3.0.

Connection to HiPath 5000 V4.0 is no longer supported. CorNet-T and Dialogic/ Eicon ISDN boards are used exclusively for this.

A Features (History)

The following is a feature overview based on the OpenScape Xpressions stages of development.

FMS (11/1997)

- Basic MRS 3.02 of the company Cycos AG
- Fax server
- Simple telephone user interface
- MWI
- POP3 connection for Xpressions clients
- Gateway to Microsoft Exchange
- based on Microsoft Windows NT 4.0

Hicom Messenger V1.0 (07/1998)

- Basic MRS 3.10
- Unified Messaging E-mail, Fax, Voice, SMS
- PhoneMail telephone user interface
- Text-to-Speech (Lernaut & Hauspie)
- Client Assistant (CLA)
- SMS for GSM 900 network via box
- FaxOnDemand server
- CorNet-N with Dialogic-S2 board
- Connection to Hicom 300
- Xpressions IMAP4 connection for clients

Hicom Messenger V1.01 (12/1998)

- Connection to Hicom 150
- ITK-S_0 boards (up to V2.0 only)
- Exchange integration

Xpressions450 V1.0 (06/2000)

- Basic MRS 3.20
- PhoneMail with fax tone recognition
- Recoupling to the external
- Positioning with Text-to-Speech also
- Lotus Notes integration
- SAP/R3 integration
- Subscriber data import from Hicom
- Outlook Extensions
- Reporting
- Voice compression
- Address book import for IMAP4 clients
- Distributed system
- Remote System Link
- Sending a fax with time delay
- POP3 mail import
- CorNet-N with Dialogic-S_0 boards
- Bilingualism on user level (German, English)

Xpressions450 V2.0 SA09 (03/2001)

- Basic MRS 4.10
- ISA-less PC
- Windows 2000
- Outlook Extensions for Outlook 2000
- SMS for Belgium, the Netherlands, Luxembourg
- Deputy functionality
- Alarm interface to HDMS of the Hicom 300
- Support of the SAPI interface (ELAN Speech Cube)
- VMS telephone user interface
- Migration from Hicom VMS
- Subscriber management via HDMS (up to V2.1)
- Additional user languages: French, Dutch, Spanish
- Parallel use of a maximum of four user languages

Xpressions450 V2.0 SA11 (07/2001)

- Basic MRS 4.10
- CorNet-N with Dialogic/Eicon Diehl S0 for H150
- Single System Image with Remote System Link
- Product version Xpressions451 (entry-level version for Unified Messaging up to 30 users)
- Product version Xpressions452 (Voice only: PhoneMail or VMS)
- Dual-band SMS box (for GSM 900 and 1800 network, not for 1900 network (USA))
- Additional user languages Italian, Portuguese, Brazilian, US English

Xpressions450 V2.1 (1/2002)

- Basic MRS 4.21
- CorNet-NQ via Dialogic at HiPath 4000
- CorNet-N with Dialogic/Eicon Diehl S_0 for H300
- One setup for all product versions
- Directory integration LDAP connector
- Microsoft Exchange 2000 integration
- Automated Attendant
- CLA: Locking of database fields
- Windows events in the OpenScape Xpressions monitor
- Outlook Extensions Entry/Standard (integration of SimplyPhone)

HiPath Xpressions V3.0 Level 1 (early delivery) (9/2002)

- Basic MRS 5.00
- Web APL (CLA replaced with Web Assistant)
- PhoneMail as E-script
- IP APL at HiPath 5000 V3.0
- Lotus Notes Extensions
- CorNet-T with Libra Card via IP APL
- True Unified Messaging (TUM)
- *MyXpressions* folder
- Communications Client
- Sales structure Entry, Standard, Advanced

HiPath Xpressions V3.0 Level 2 (complete delivery) (5/2003)

- Basic MRS 5.1
- PhoneMail with MyXpressions folder from Outlook
- Uniform data layout for voicemail protocols
- VMS for Unified Messaging
- VMS broadcast
- PhoneMail and VMS parallel
- CorNet-NQ via Dialogic/Eicon
- Migration of PhoneMail/Xpressions470
- Continuative notifications
- Pager support
- Standard reports (via PhoneMail)
- Several central offices at one OpenScape Xpressions
- Web-based Unified Messaging client (OpenScape Web Client)
- Web-based administration (Web Assistant extension)
- CorNet classmarks
- Legacy fax support
- Cluster for Lotus Notes
- Cluster for Microsoft
- AMIS analog
- Networking via Connect server with PhoneMail LDN
- Server languages (relevant for OpenScape Xpressions administrator): German, US English. The set server language is also valid as default language for the voicemail systems PhoneMail and VMS as well as for the Web Assistant.
- User languages (telephone and display as well as Web Assistant): German, UK English, US English
- User languages as of III. quarter/2003 (telephone and display as well as Web Administrator):
  French, Canadian French, Dutch, Spanish, Italian, Portuguese, Brazilian, Spanish (USA), Turkish, Russian.

HiPath Xpressions V3.0 SA10 (7/2004)

- Basic MRS 5.50
- New multilingual Lotus Notes database templates for Lotus Notes as of version 6.x
- Support of the VPIM protocol in version 2.0 and with the audio format 32k ADPCM
- Improved IP APL capability to enable CorNet-N functions in an IP connection with HiPath 3000 and HiPath 5000 PBXs.

HiPath Xpressions V4.0 (03/2005)

- Basic MRS 6.0
- Improved and accellerated installation
- Administration and configuration improvements: Display of configuration changes, available licenses and module versions as well as the option to export report data to an SQL database.
- CTI functions available for the Web Assistant
- *Multiple Addressing*: Several addresses of the same type possible for one user
- *Single Number Service*
- Searching for and selecting messages facilitated for administrator and user in the Web Assistant
- Separate cover pages possible for expert messages
- Improved compatibility with text-to-speech systems and the Motorola TIF format
- Support of all international telephone area codes for NCO
- Improved functionality of Vogue (IVR) and Application Generator
- Improved network properties of the HiPath Xpressions server for establishing larger and more complex network topologies.

HiPath Xpressions V4.0 SA10 (09/2005)

- Basic MRS 6.01
- *Silent Setup* as preconfigured installation without user interaction
- Changed properties of the access roles to the HiPath Xpressions server
- The default database for exporting report data changes from Codebase to Microsoft SQL Server Desktop Edition (MSDE).
- Queue for storing incoming messages with restriction in TUM/IM environment
- Improved PhoneMail for controlling voicemail playback via *1-press buttons*
- Improved PhoneMail for continuative voicemail playback
- Facilitated creating of new users in the Web Assistant based on a template
- Only functions installed on the HiPath Xpressions server can be managed via the Web Assistant
- Adjusted web user interfaces in the Web Assistant for different user groups possible at the same time
- Playing voicemails on a phone while using the Web Assistant
- Improved password management for the Web Assistant for changing the default password and in case of forgotten passwords
- Recognition of HiPath Xpressions V2.5 voice messages in the Web Assistant
- Control characters of incoming SMS messages can be adjusted to improve the identification and routing of such messages
- SIP support
- Support of T.38 Fax over IP

HiPath Xpressions V5.0 R0 (10/2006)

- Basic MRS 7.00
- *Web message access* to integrate external mail systems
- *HiPath license management* to administer licenses
- Access to individual calendar information in Microsoft Outlook and Lotus Domino/ Notes via TUM (Evo)
- Some PhoneMail menu sections can be deactivated by means of privileges
- New PhoneMail menu for greeting configuration
- Modified logic of privilege assignment to users
- IP connection via MEB to HiPath 3000 and HiPath 4000 systems
- IP connection to HiPath 8000 systems by means of an integrated IP stack
- Compatibility to T.38 via SIP
- Support of the Lotus Domino server 7

HiPath Xpressions V5.0 R1 (03/2007)

- Basic MRS 7.01
- Windows XP Professional SP2 as platform
- *optiClient 130* as replacement of *SimplyPhone* in case of a new installation
- Support of further languages
- Extension of the support for Russian and Turkish
- Integrated conversion of PDF to Fax
- LDAPs APL functionality integrated in the LDAP APL

HiPath Xpressions V5.0 R2 (08/2007)

- Basic MRS 7.10
- Support for German, English and French only (TUI support for German, US English, British English, French and Canadian French)
- Support of Windows Vista for clients
- *optiClient 130* as replacement of *SimplyPhone* in case of a new installation
- *Exchange 2007 connector* via Exchange 2003 gateway
- Extensions of the voice mail system: language adjustment for external callers by prefixing the normalized phone number
- *EVO* extensions: processing of received invitations

- Outlook extensions for Microsoft Outlook 2007
- Vogue (IVR) extensions: creation of statistical raw data
- Web Assistant extensions: Bookmarks and short cuts for users as well as specification of the language for external callers by the administrator
- Serial-letter support in the Printer Embedded Codes

HiPath Xpressions V5.0 R3 (01/2008)

- Basic MRS 7.11
- Support of further languages
- Extension of the support for Russian and Turkish

HiPath Xpressions V5.0 R4 (04/2008)

- Basic MRS 7.11
- With restrictions Windows Vista Business and Windows Vista Enterprise in the 32 bit version as operating systems for an XPR server
- Connection to Lotus Domino 8.0 server.
- Connection to Lotus Notes 8.0 clients
- Connection to Microsoft Exchange Server 2007 via Exchange 2007 Foreign Connector
- MEB not required anymore
- T.38 and Fax via G.711 for H.323, SIP and CorNet-IP
- Received fax messages can be converted into the PDF format
- BIRT as alternative runtime component for creating reports

OpenScape Xpressions V6 R0 (03/2009)

- Basic MRS 8.01
- Windows Server 2008 Enterprise Edition in the 32-bit version released as operating system for an XPR server
- SP3 of Windows XP released for server and clients
- Voice conferences
- Web conferences
- OpenScape Web Client
- Instant messaging
- Supported languages: German, US English, French, Italian, Spanish

- Application Builder replaces Application Generator
- optiClient 130 supports further operating systems
- Connection to Lotus Domino 8.0.x servers
- Connection to Lotus Notes 8.0x clients
- Rename Server
- Activating predefined log profiles
- Smart backup & restore

OpenScape Xpressions V6 R1 (10/2009)

- Basic MRS 8.02
- Smart Client Updates
- optiClient 130 supports NCO settings in the Connection Provider. Extended Lotus Sametime integration.
- IP APL supports Extended Fast Connect (EFC) and Qualitiy of Service Data Collection (QDC).
- SMS APL and SMS IP APL were combined to a common connector.
- The SMPP protocol is supported in the new SMS connector.
- Support of the Smart Service Delivery Platform (SSDP).
- Support of further languages: Dutch, Portuguese, Brazilian, Turkish, Russian and Slovenian.

OpenScape Xpressions V6 R2 (08/2010)

- Basic MRS 8.03
- The XPR client setup offers HFA, MS CRM and ACD.
- New team properties in the OpenScape Web Client
- Connecting OpenScape UC Application via HiPath 4000 or HiPath 4000 to OpenScape Voice
- XPR server on a virtual computer by means of VMware Server ESX V4 or VMware ESXi Server V4
- Multi Tenancy
- Terminal server 2008
- Sending fax messages from Outlook or Lotus Notes on behalf of other users
- Receiving fax messages using ERGO or Phonemail on an IP APL
- Phonemail can only act as info box if desired

- Support of Office 2010
- Web conference server on several computers
- The CTI APL supports a connection to an OpenScape Voice with Geographic Node Separation
- Connection to Microsoft Exchange Server 2010
- Exchange FailSafe for connecting Exchange Server 2007 and 2010 also
- Lotus FailSafe
- Plug-in that allows dialing from Microsoft Outlook via OpenScape Web Client (Click-to-Call)
- Smart server update
- Automatic installation of the Smart Service Delivery Platform
- System monitoring using system information (service dashboard information) and Rapid State in a browser
- Support of
  - Windows Server 2008 R2, 64-bit, Enterprise Edition
  - Windows Server 2008 SP1, 64-bit, Enterprise Edition
  - Windows Server 2008 SP1, 64-bit, Standard Edition
  - Windows Server 2003 R2 with SP2, 64-bit, Enterprise Edition
  - Windows Cluster based on Windows Server 2008 R2, 64-bit, Enterprise Edition
  - Windows Cluster based on Windows Server 2003 SP2, 64-bit, Enterprise Edition
- Connection to OpenScape Voice V5
- Connection to R8300 (HiPath 4000 with reduced scope of service; project-specific only)
- Application Builder has ASR (Automatic Speech Recognition) and ACD (Automatic Call Distribution)

OpenScape Xpressions V7 R0 (12/2011)

- Connection to
  - OpenScape Voice V6
  - Cisco UC Manager 8.6
  - Alcatel OmniPCX Enterprise (OXE) R9.1
  - HiPath 4000 V6 R1 via CorNet-IP (restricted) or SIP
  - Cisco Unified Communications Manager 8.6
- Setup medium USB stick (no more DVD)
- Support of
  - Windows 7 Professional for servers and clients
  - only 64-bit operating systems for servers
- TTS and ASR
  - TTS is performed by Nuance Vocalizer for Networks 5 and
  - ASR by Nuance Recognizer 9

OpenScape Xpressions V7 R1 (04/2012)

- VM2TXT APL
- Java IBM JRE
- ERGO: Trusted Transfer Mode to the voice portal of the OpenScape UC Application
- Web Assistant
  - Configurable request for a new PIN
  - Display of user licenses available in total and already used
  - New XPR user groups integrated in the reference appendix.
- Microsoft SQL Server 2008 and SQL Server 2008 R2 are supported in the following editions
  - Datacenter Edition
  - Enterprise Edition
  - Standard Edition
  - Workgroup Edition
  - Web Edition
  - Developer Edition

- Express Edition
- Microsoft Exchange Server
  - Support of multi-connector operation for Exchange Server 2003, 2007 and 2010
  - Client Access Server Array support for setting up the Exchange Server 2010 connectors
  - Database Availability Group support for setting up the Exchange Server 2010 connectors
- Multi Tenant
  - Caller Guide support
  - Administrative privileges for tenant management
  - User group Tenant Supervisor Group
- Support of the Outlook extension with MS Outlook 2010 64-bit
- New user group Help Desk Group
- SNMP traps for errors and warnings
- Error messages in case of missing licenses
- Installation of LocalFormsSmtp without Outlook profile
- Support of the OpenScape Voice Trace Manager
- Conferencing
  - Entrance Grace Period
  - Termination Grace Period
- Crystal Report Runtime
- XPR version in the program overview
- New documentation available: “OpenScape Xpressions V7 Security Check List”
- No support for MMCC/ACD anymore.
- No support for SAP Business byDesign anymore.

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