A MITEL
PRODUCT
GUIDE

Unify OpenScape Xpert

CTI Interface

Interface Description
08/2024

A31003-X2080-S101-01-7620

Mitel

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Contents

1 Scope

While the OpenScape Xpert Client is sufficient for most users, some users have additional needs that can be met with the OpenScape Xpert CTI Interface. This document describes how to use the OpenScape Xpert CTI Interface and the HTE Protocol.

This document is valid for OpenScape Xpert V6.x, used in OpenScape 4000 and OpenScape Voice.

1.1 Overview

The OpenScape CTI Interface is an open interface based on a Local Area Network (LAN). It supports the proprietary layered HTE (Hicom Trading Evolution) protocol. It is possible to connect with up to 5 applications on the same port on Local Area Network (LAN).

The HTE Protocol (Data Communications - the HTE Protocol) can be running either in local mode or in master mode:

- In local mode, the HTE Protocol provides information about the local OpenScape Xpert Client. This local OpenScape Xpert Client and the PC running a telephone application program are connected through the CTI Interface. The PC can also control the OpenScape Xpert Client using control messages. The HTE Protocol provides the following type of information and controls:
  - NEW_LINE_STATE,NEW_TRIM_STATE, CONNECTED, NOT_CONNECTED, LOGGED_IN, LOGGED_OUT, RECEIVING_CALLS_ONLY, DATE_TIME, TB_RESET, ACTION_INFO
  - LOGIN, LOGOUT, RECEIVE_CALLS_ONLY, SEIZE, DISCONNECT, DIAL, POSTDIAL, HOLD_LINE, ACTION_CONTROL
- In master mode, the HTE Protocol provides information about all OpenScape Xpert Clients as well as about all configured lines. However, control of the OpenScape Xpert Clients is not provided. The HTE Protocol provides the following type of information:
  - NEW_LINE_STATE,NEW_TRIM_STATE, CONNECTED, NOT_CONNECTED, LOGGED_IN, LOGGED_OUT, RECEIVING_CALLS_ONLY, DATE_TIME, TB_RESET, ACTION_INFO
- In combined mode, the local and master modes are simultaneously running . Information is provided in master mode and controlling the Master Xpert client is done in local mode.

Used Terms in this Manual

See Abbreviations.

Manual Structure

- Chapter 1

  This chapter provides general information about the OpenScape Xpert Client itself and about its environment. The chapter also includes an overview of the protocol features. State transition diagrams help you to understand the general behavior of the OpenScape Xpert Client and of a subscriber line attached to it. Readers familiar with the subject matter can skip this chapter.

- Chapter 2

  This chapter tells about the basics of the HTE Protocol.
- Chapter 3

  This chapter describes data communications on the OpenScape Xpert Client. This important chapter provides a complete description of the HTE Protocol layers and data structures.
- Chapter 4

  This chapter describes the LAN specification and the IP address.
- Chapter 5

  This chapter contains some sample traces.
- Chapter 6

  This chapter contains some sequence diagrams.
- Chapter 7 and 8, Index

  This manual also contains a glossary, a list of abbreviations, and an index

Related Publications

Related publications are as follows:

- OpenScape Xpert Service Manual A31003-X2050-S100-*-7620
- OpenScape Xpert Feature Description A31003-X2050-F100-*-7618
- OpenScape Xpert Client Online Help / User Guide A31003-X2050-U100-*-7619

1.2 The OpenScape Xpert Client as a Key System

1.2.1 The Line Key in a Key System

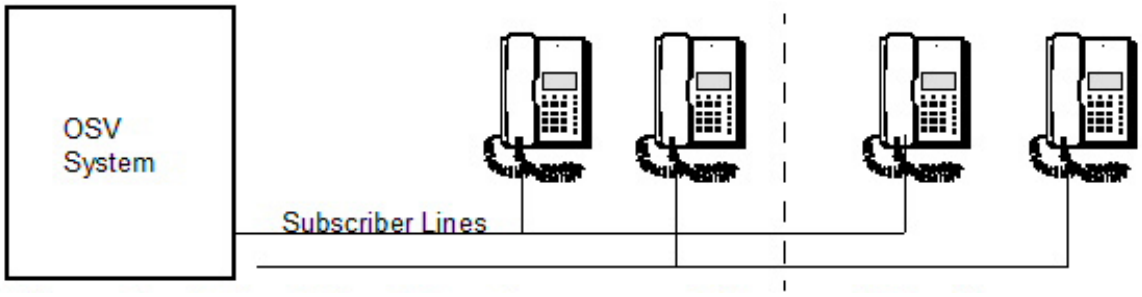


Figure 1: Ordinary subscriber installation with two phone sets parallel on one subscriber line.

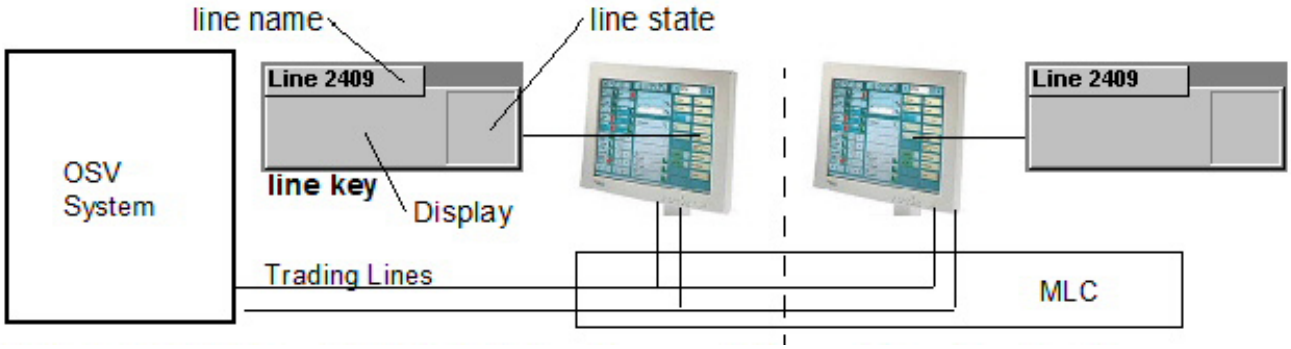


Figure 2: Similar Xpert installation with two Xpert clients with access to the same line using a Line Key.

In the Xpert System you select a line with its line key.

1.3 Line States in a Key System

Some user actions affect the lines connected to a OpenScape Xpert Client. To keep track of the user actions, the OpenScape Xpert Client models the lines as finite state machines (FSM).

The OpenScape Xpert Client defines the states of a line as follows, the transitions represent application layer messages:

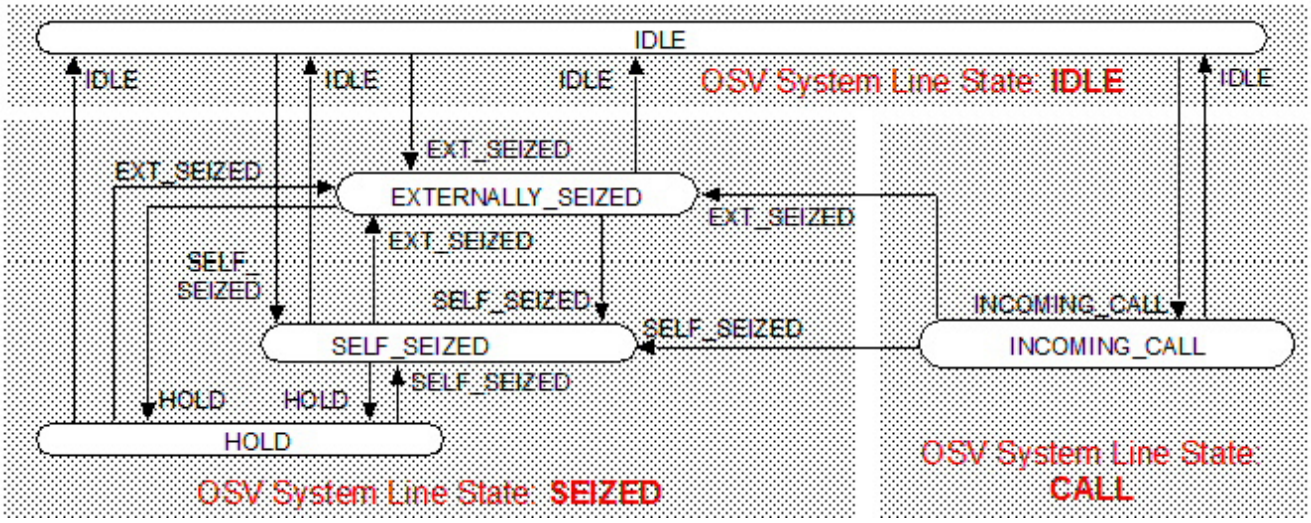
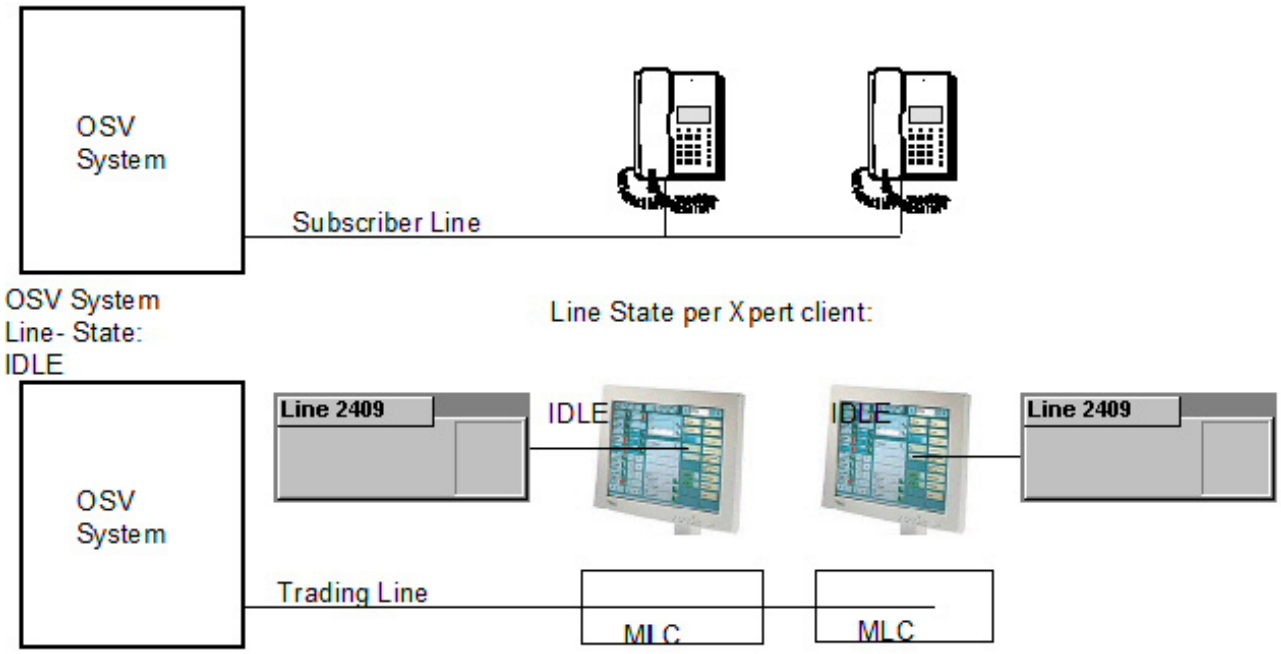


Figure 3: Trading State Transition Diagram for a Trading Line

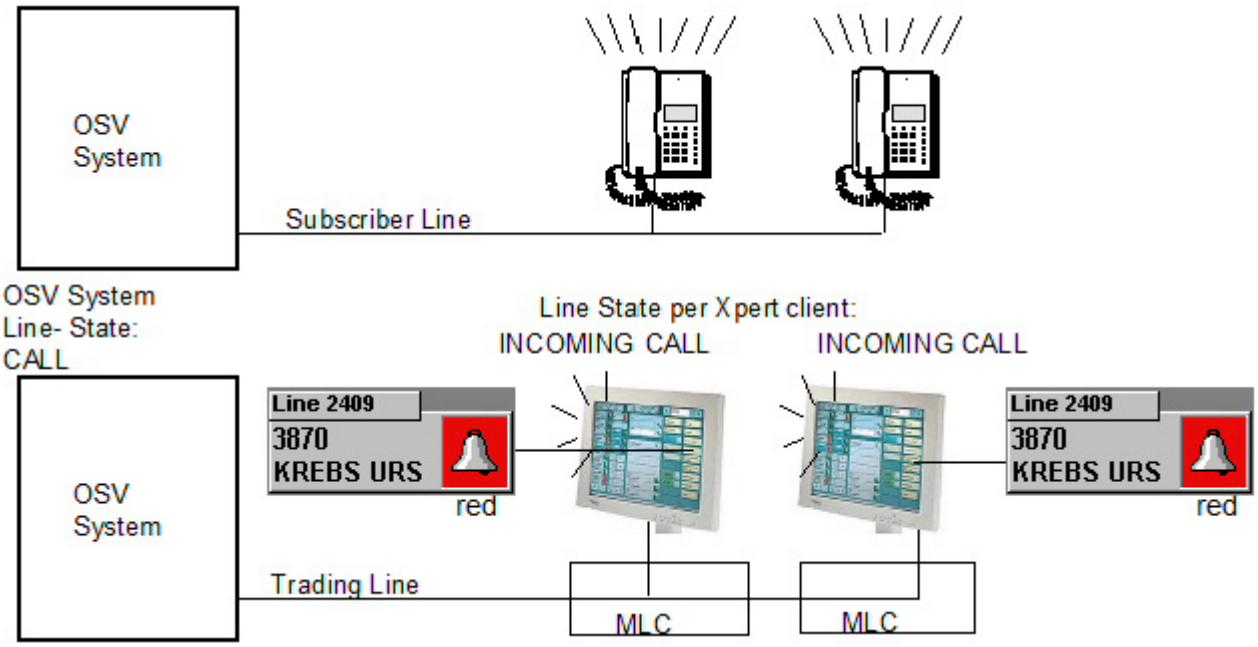
1.3.1 IDLE State

In the IDLE state, the line is available for outgoing and incoming calls. This state is valid for all OpenScape Xpert Clients sharing this line



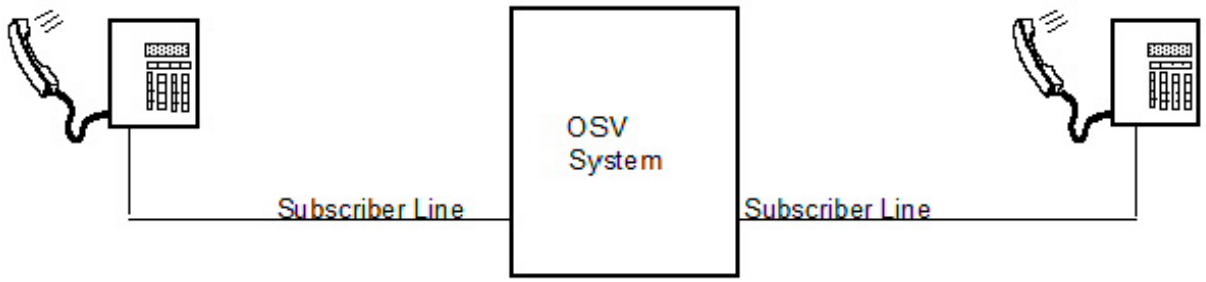
1.3.2 CALL State

In the INCOMING_CALL state, an incoming call is waiting to be answered on the line. The ring signal is applied. This state is valid for all OpenScape Xpert Clients sharing this line.



1.3.3 SEIZED State

If the call ist connected through the OSV System, the line is seized (OSV System Seized State).

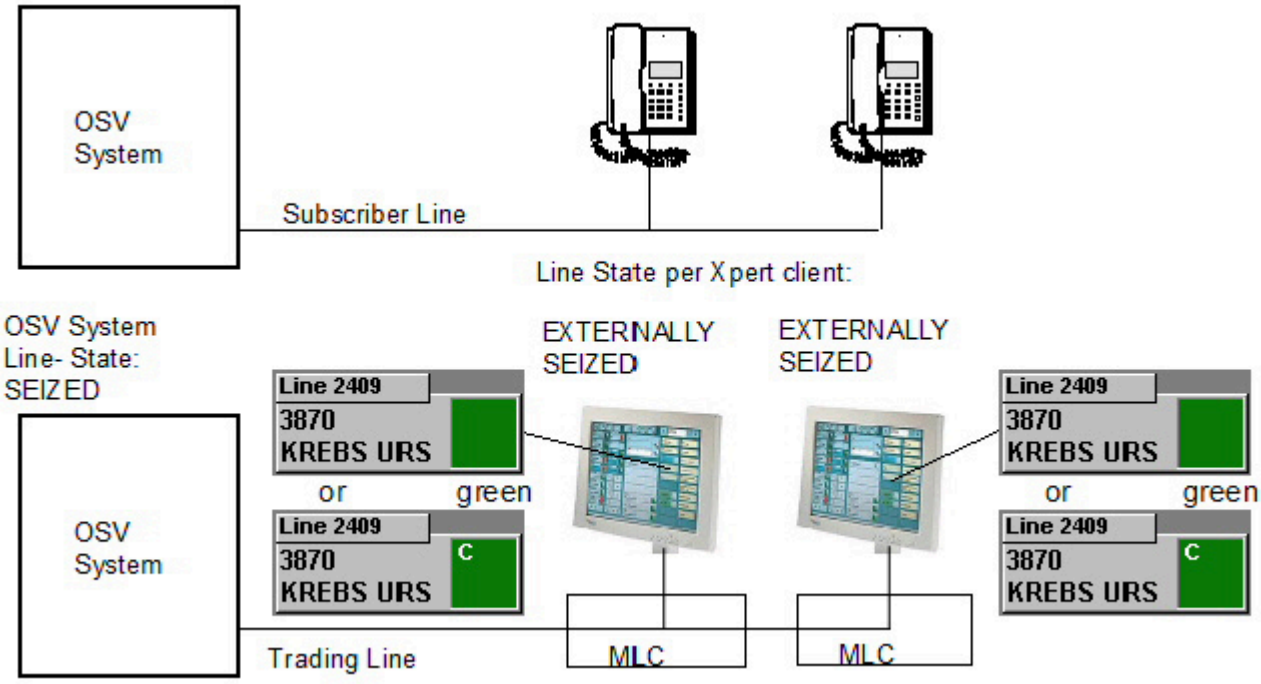


Since a seized line is shared with all OpenScape Xpert Clients, the seized state in the trading system is parted, so each OpenScape Xpert Client has his own seized substate:

1.3.3.1 EXTERNALLY_SEIZED State

If the line is seized in the OSV System but this OpenScape Xpert Client is not participating, the line is signaled as the EXTERNALLY_SEIZED state.

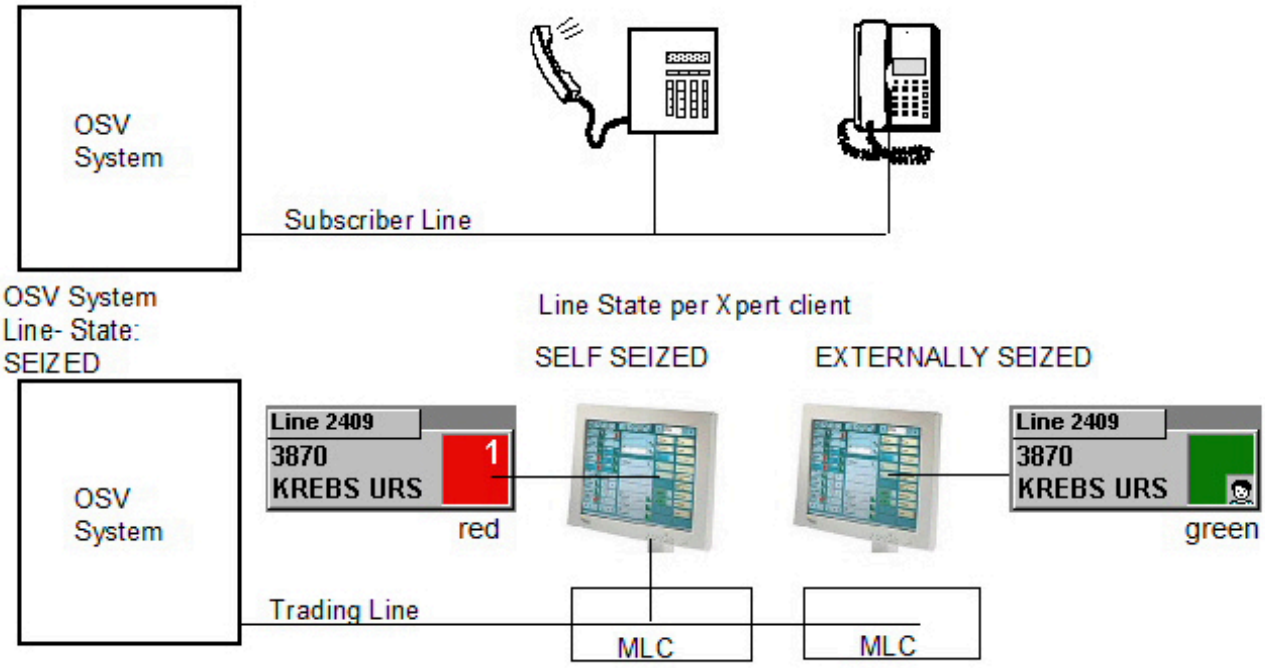
(The C appears, if the line is in common hold mode - refer to OpenScape Xpert User Manual).



1.3.3.2 SELF_SEIZED State

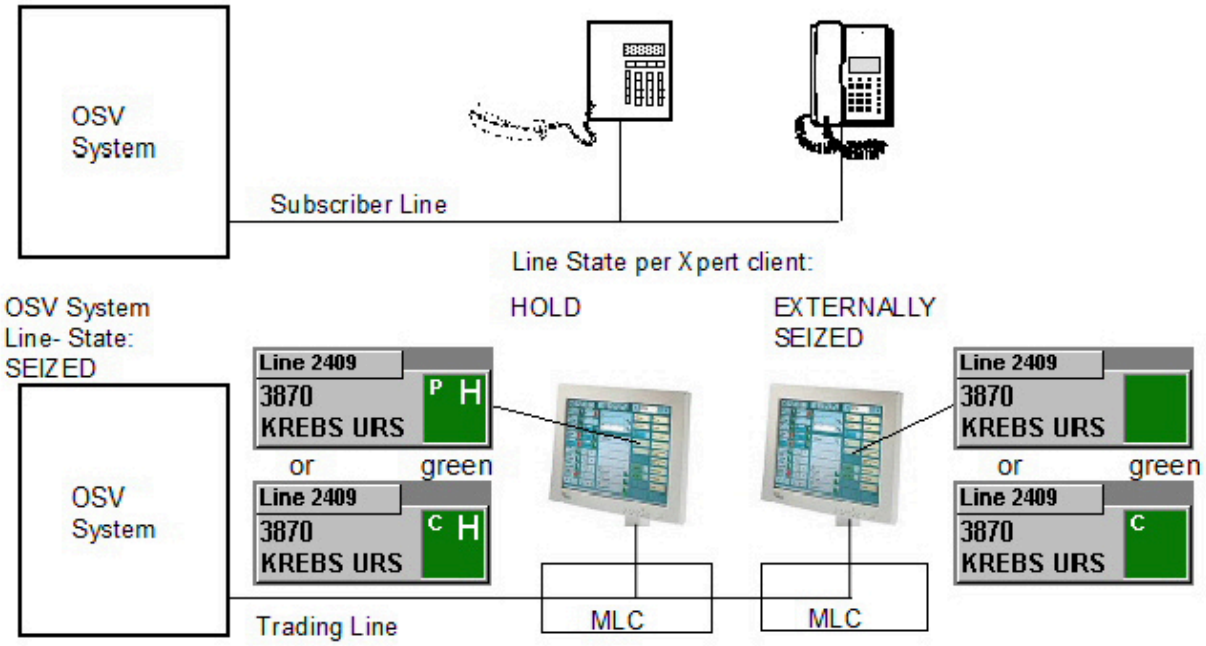
The SELF_SEIZED message should be sent out only if the line is in seized state which occurs when a call has already been made.

Note that if this line is also attached to a peer OpenScape Xpert Client, the state for this line is signaled on the peer OpenScape Xpert Client as EXTERNALLY_SEIZED.



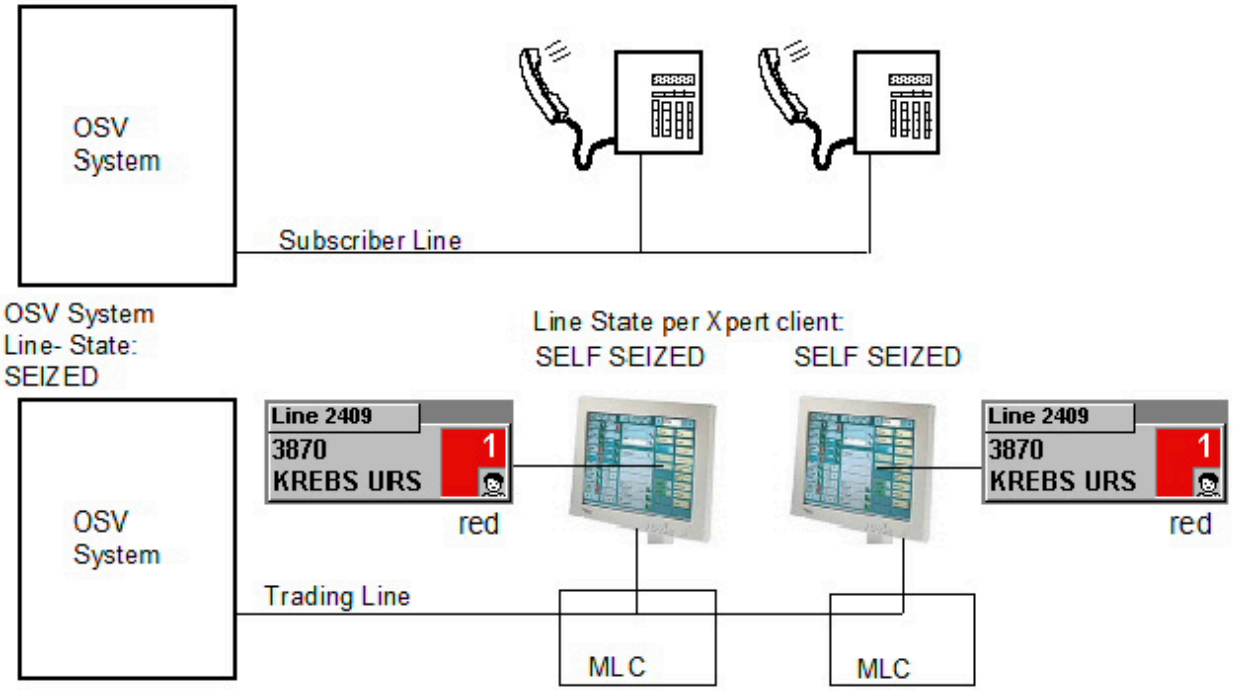
1.3.3.3 HOLD State

In the HOLD state, the line is put on private hold and the call remains intact but conversation is interrupted. Refer to OSV System Trading Manual for the definition of private and common hold.



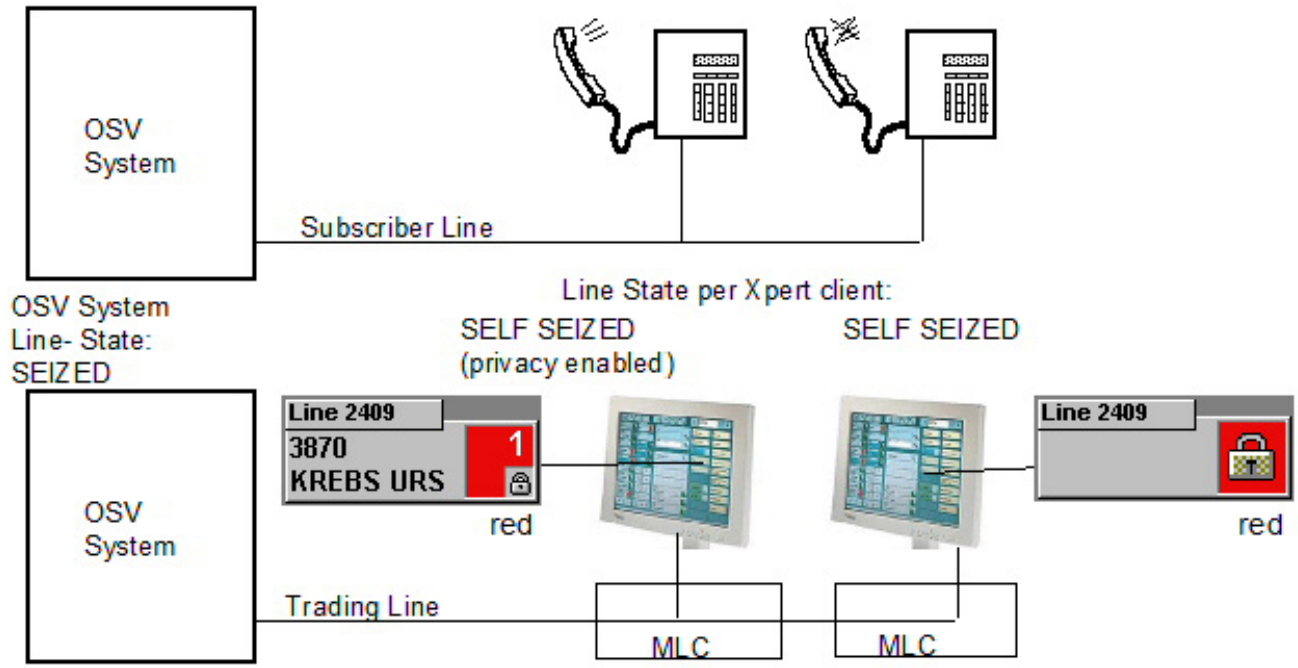
1.3.3.4 Multiple entries on a shared line

Up to 200 handsets can participate on the same call.



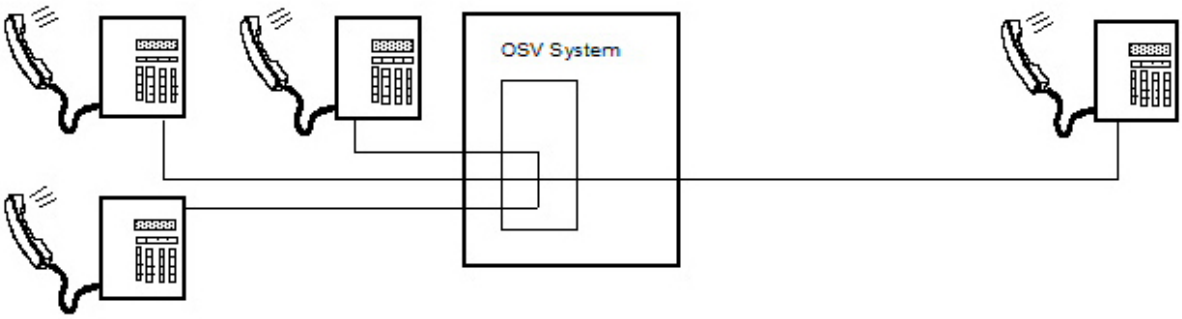
1.3.3.5 Privacy

If Privacy is enabled on a handset, all other OpenScape Xpert clients are excluded from the call and speech monitoring is not possible.



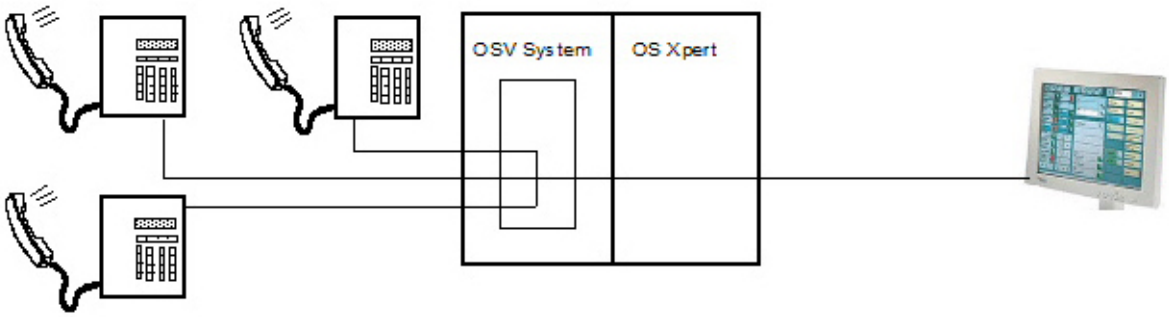
1.3.4 Conference

A conference connects the local user with two or more subscribers on the far end.



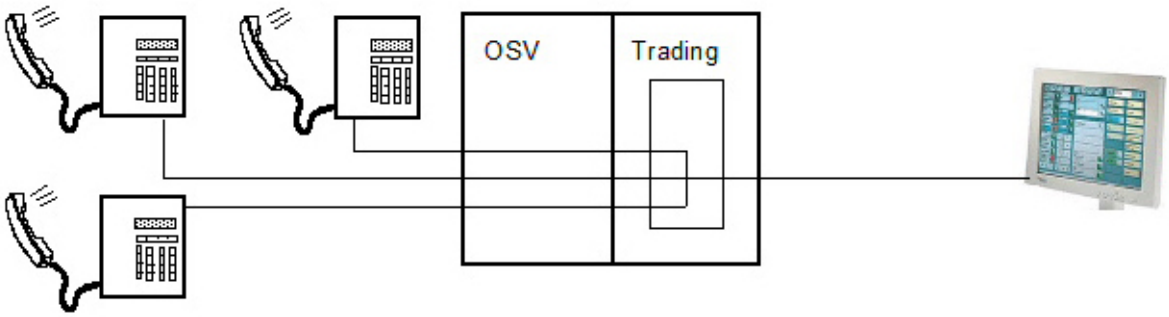
1.3.4.1 OpenScape Voice Conference

The subscriber can be conferenced in the OSV System using the OpenScape Voice function “Consultation“ and “Conference“. Only one Trading Line will be used.



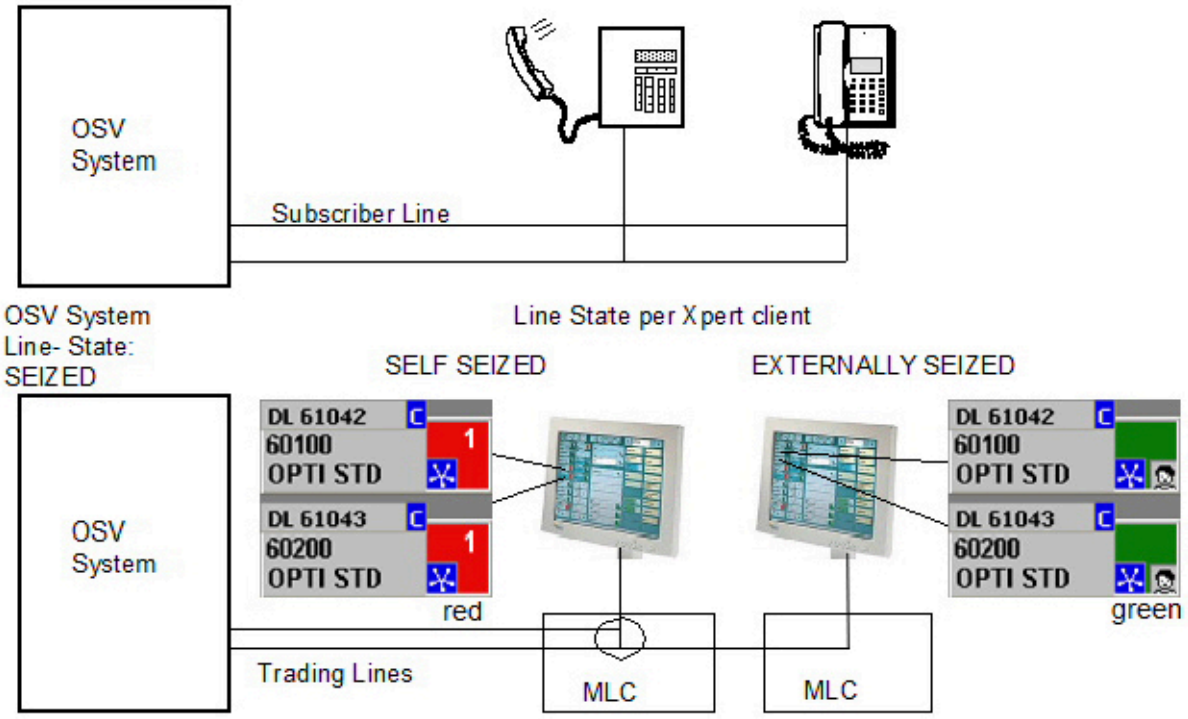
1.3.4.2 Trading Conference

Two or more Trading Lines can be conferred in the OpenScape Xpert System using the Xpert Function Keys “Line Conference“.



1.3.4.3 Trading Line Conference

In a Line Conference are two or more Trading Lines conferenced with at least one Turret.



1.4 OpenScape Xpert Client States

Since the OpenScape Xpert Client is implemented as a Finite State Machine (FSM), events are processed based on the current state. The CTI Interface operates while the OpenScape Xpert Client is in the RUNNING state. The figure below shows the OpenScape Xpert Client states.

Rule 1	Transitions between the superstates NOT_CONNECTED and CONNECTED lead to the same substates.
Rule 2	The RUN transition leads to the previous substate of superstate NOT_CONNECTED or CONNECTED. The first RUN transition leads to the LOGGED_OUT state of the NOT_CONNECTED superstate.
Rule 3	In the OpenScape Xpert Client state CONNECTED, both connections between OpenScape Xpert Client and MLC and System Manager (DB) have been established and the OpenScape Xpert Client can be controlled (call processing).

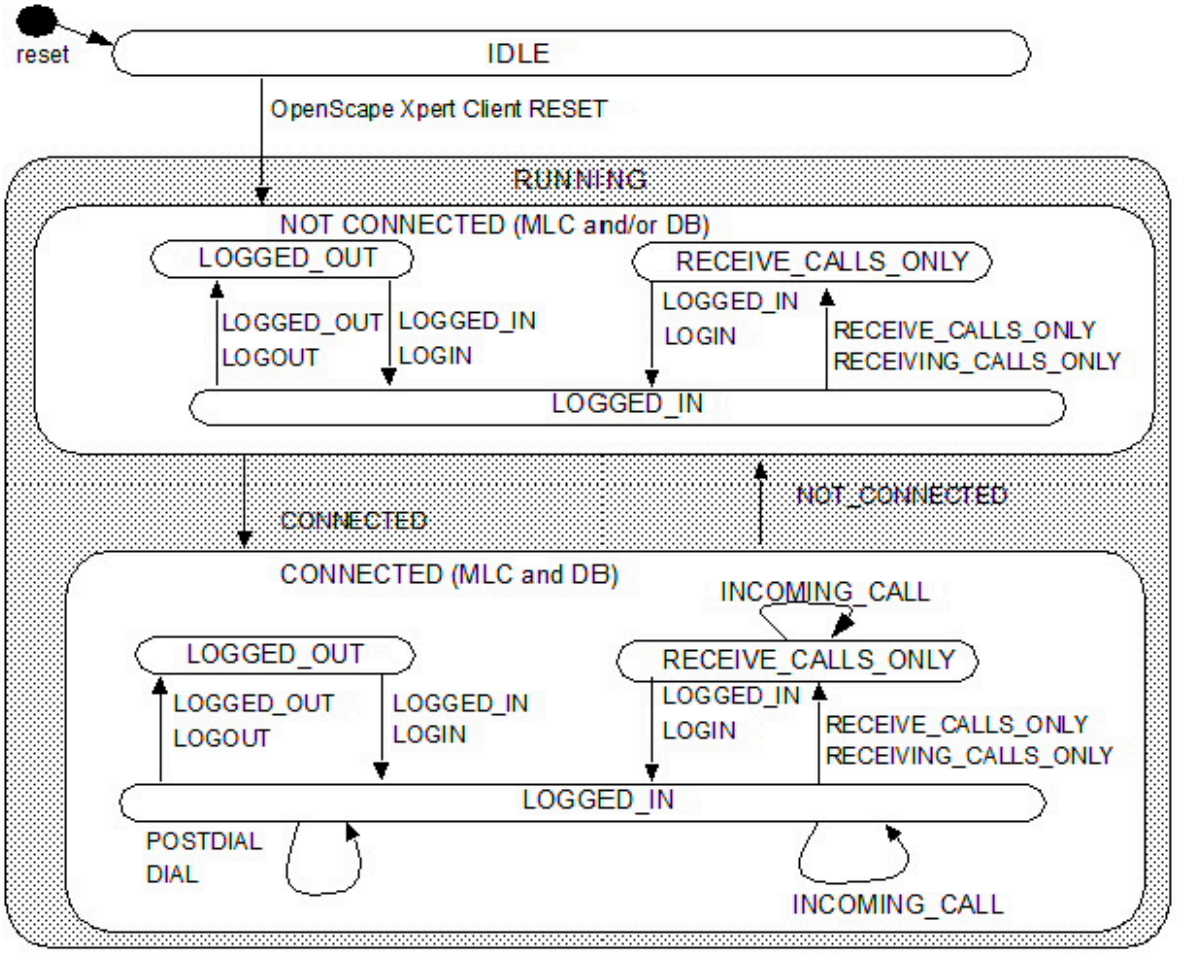


Figure 4: The OpenScape Xpert Client States

1.5 Trading Functions

1.5.1 Action

An action is a Trading function which has the same state on all OpenScape Xpert Clients in the system.

- In V6 there was a major change in Action keys. Ring Transfer and Ring Transfer Sequence is still available, cannot be controlled over CTI.
- Contact Key and Remote Key was merged together and have a new name: „Interface Action”.
- Action type “Interface Action”:

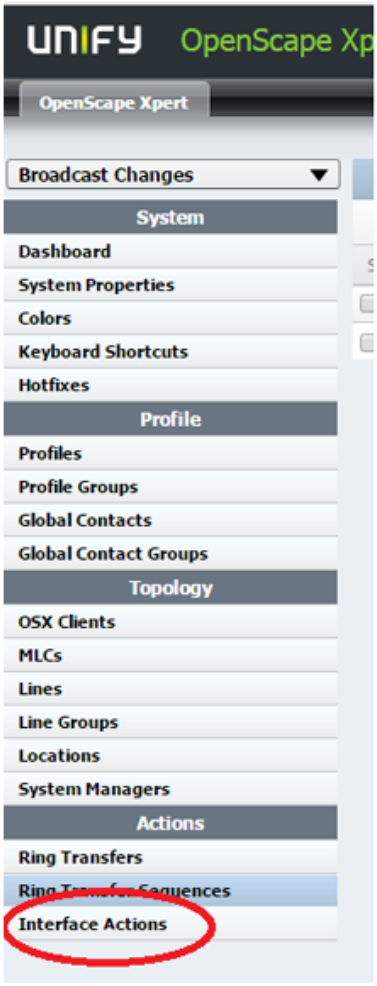
  The Interface Action is used to control the OpenScape Xpert Contact Interface or control another application over CTI interface. The Interface Action can be configured to change the state automatically on key press or that the state is only changed via the CTI interface. In this case there are 16 other states that can be used additional to the "active" / "inactive" states. The application can overwrite the text of the key. The Interface Action Key can

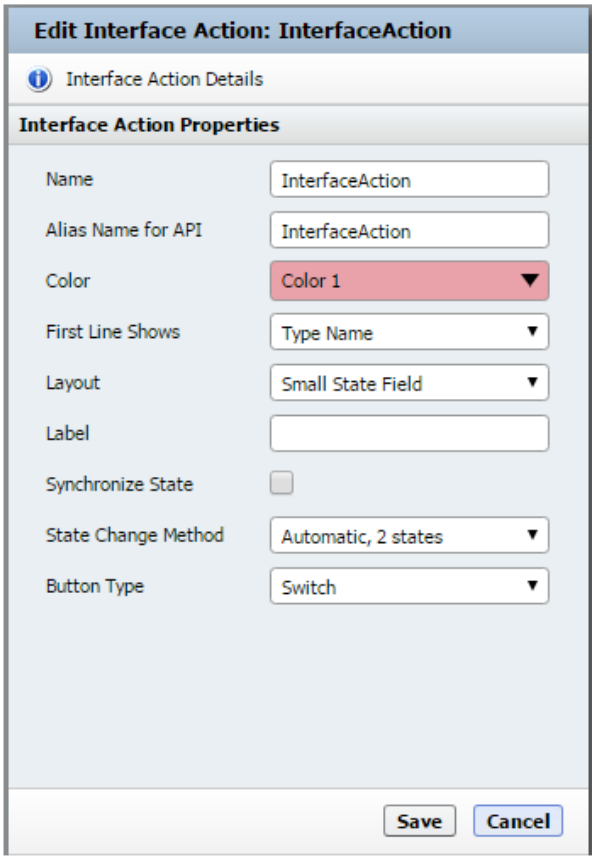
have a label field (similar to the Line Key). Its text can be overwritten via the CTI Interface as well.

- Action groups are completely removed.

OpenScape Xpert Management Portal

An interface action can be created in the OSXMP navigating to the **Interface Action** menu in the side menu:





- A **Name** is a mandatory property.
- The **Alias Name for API** must be unique in the system across all Actions. If not filled the system will automatically fill it with the name of the Action, but if this is not unique the user will have to correct it.
- **State Change Method**: Controls if the key should change the state to active/inactive by keypress or the state should be possible to change only over CTI.
- **Synchronize State**: If set, the state of the Action will be synchronized between the OSX Clients.

1.6 Overview of the IP System

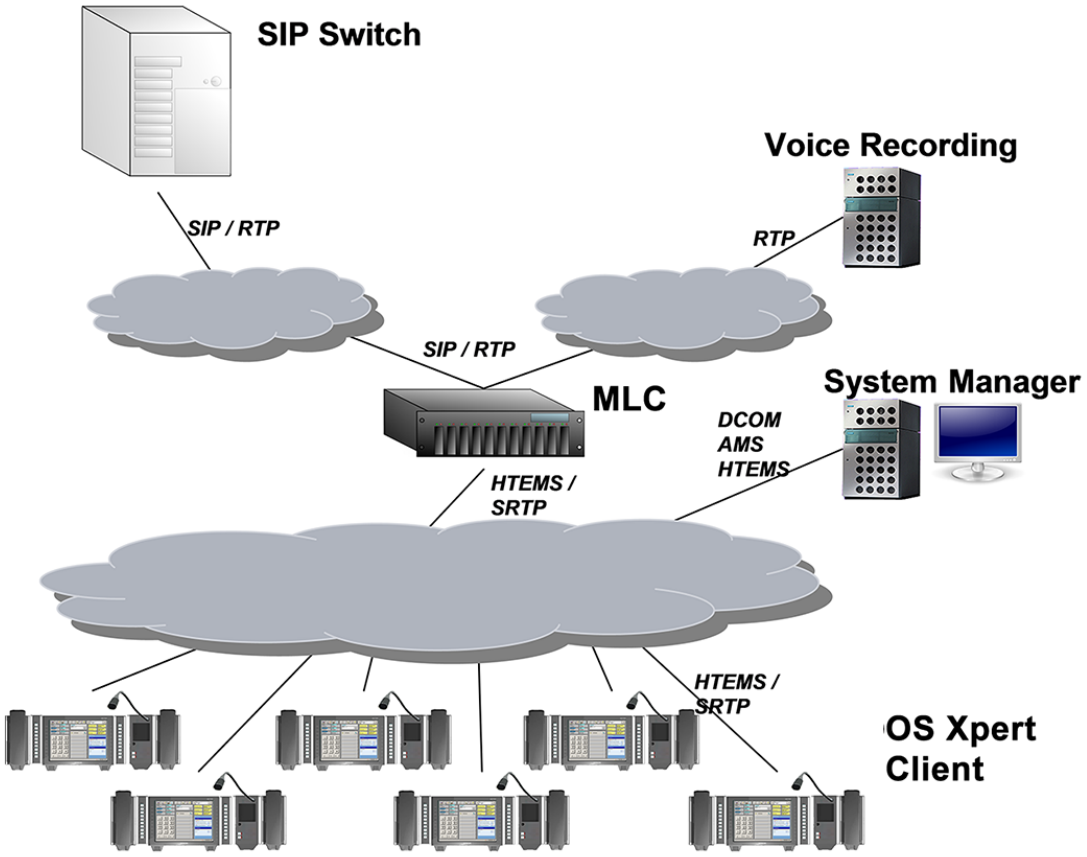


Figure 5: Overview of the IP System.

1.7 Field of Application of an IP System

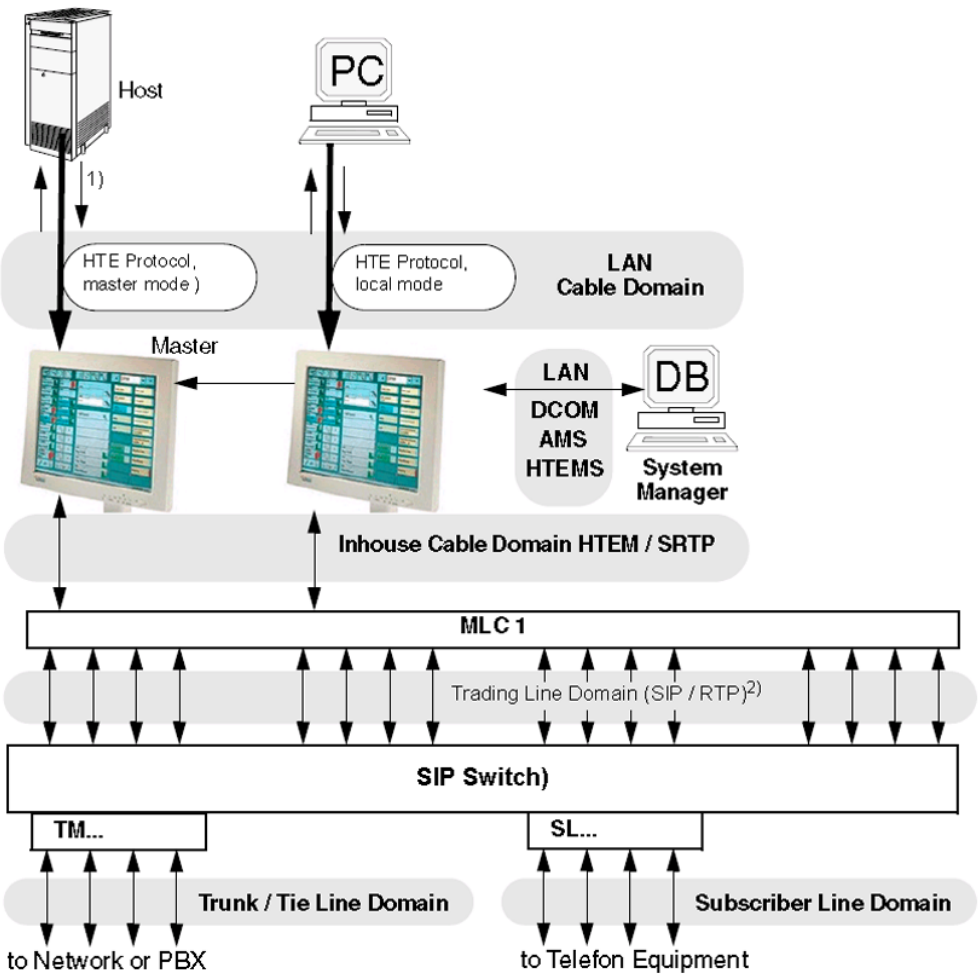


Figure 6: The Xpert Client CTI Interface Environment of an IP System

[1] Combined mode: The Master OpenScape Xpert Client can also be controlled in the local mode protocol.

[2] Trading Line Domain: Where the lines (ref. to LINE_NO) are located.

1.8 Trading Environment in an IP System

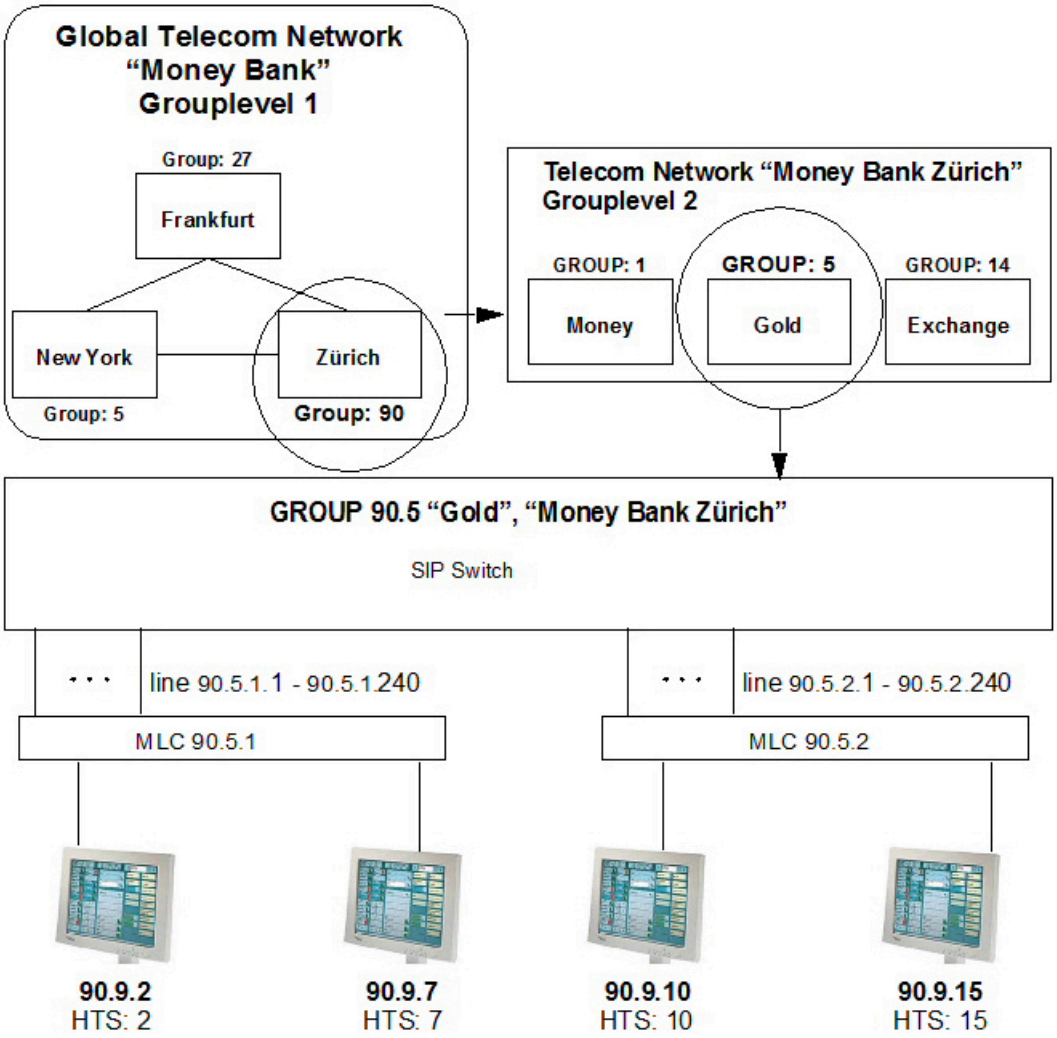


Figure 7: Global Distribution of an IP System

A Company can group their business units (e.g. New York, Frankfurt, Zürich), each with one or more OpenScape Xpert Systems, connected through a telecom network (Group Level 1). Every OpenScape Xpert System of a certain Group has one or more Subgroups (Group Level 2).

Every Subgroup can hold MLCs and/or OpenScape Xpert Clients.

2 Protocol Basics

This chapter describes the basics of the communication protocol.

2.1 Connections

The OS Xpert client has separate connections to the system and to the System Manager.

Connection to the System (Xpert Client <-> MLC)

The call processing (e.g. call setup and cleardown) and the voice itself are transmitted through this connection. Without this connection, no call can be done and therefore no terminal device can be controlled.

Connection to the System Manager (Xpert Client <-> SM)

This is a LAN connection to the database. The configuration and the terminal device data (e.g. ETD) are loaded and saved through this connection. Likewise, the CTI Interface receives the login status of all terminal devices through this connection. Without it, call can be made and terminal device can be controlled but there is no way to access the database which means that the terminal device cannot be logged in.

Connection to PC / Host

Refer to Physical Layer: How to Set the Hardware Configuration for the CTI Interface connection settings.

2.2 The HTE Protocol in Local Mode

In local mode, the HTE Protocol supports the following activities:

- Signaling the state of a subscriber line connected to the OpenScape Xpert client
- Signaling the state of the OpenScape Xpert client itself
- Signaling the state of the connection between the local OpenScape Xpert client, MLC and SM
- Controlling the local OpenScape Xpert client

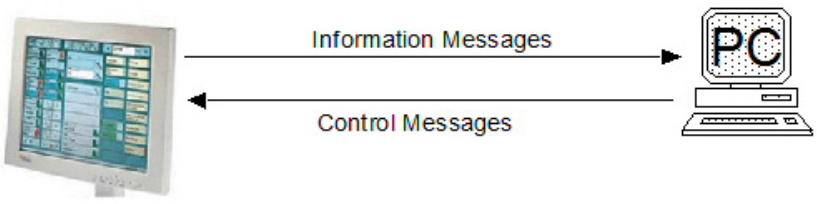


Figure 8: Event Flow in Local Mode

For detailed information, refer to Application Layer Information Messages from OpenScape Xpert Client to PC and Application Layer Control Messages from PC to OpenScape Xpert Client.

2.3 The HTE Protocol in Master Mode

In master mode, the HTE Protocol supports the following activities:

- Signaling the state of a subscriber line.
- Signaling the state of any OpenScape Xpert client (including itself).
- Signaling the connection state of any optical waveguide between any OpenScape Xpert client and any MLC and the System Manager.

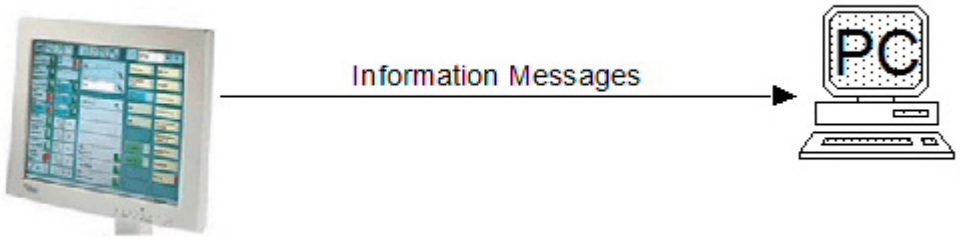


Figure 9: Event Flow in Master Mode

In master mode, it is important to know which OpenScape Xpert client is acting as the master. As depicted in the figure, only information messages can be exchanged with the PC. However, these information messages are for all peer OpenScape Xpert clients and the master OpenScape Xpert client itself. Refer to Application Layer Information Messages from OpenScape Xpert Client to PC.

2.4 The HTE Protocol in Combined Mode

The Master CTI OpenScape Xpert Client can also be controlled in local mode.

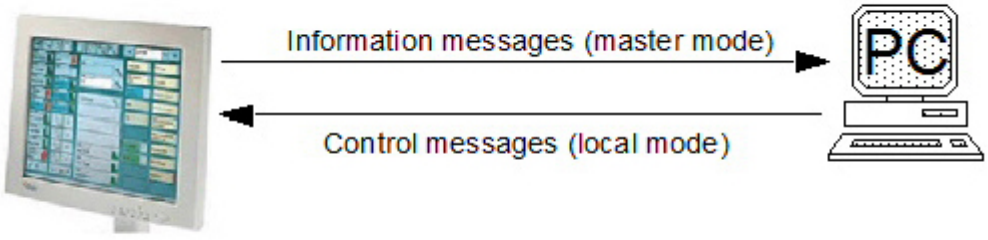


Figure 10: The combined mode event flow

2.5 OS Xpert Client Numbering in an IP System (Device Number Range)

The OpenScape Xpert client is an independent IP-Node (<tt>), organized in 2 different group levels (<group_1>,< group_2>) - (see Trading Environment in an IP System).

The OpenScape Xpert clients number is one value. According to the <slmy>.<muxy>.<tt> pattern of a TDM System, the <tt>.<dont_care>.<dont_care> pattern will be used

In order to integrate the IP Turret in 2 groups, the group number pattern <group_1>.<group_2> is added to the terminal device number.

The complete OpenScape Xpert client number format in the HTE Protocol is as follows:

<group_1>.<group_2>.<tt>.<dont_care>.<dont_care>

with value range:

<group_1>:	1 ... 250
<group_2>:	1 ... 250
<tt>:	1 ... 250
<dont_care>:	0

2.5.1 OpenScape Xpert Client Number in HTE Format

This format is used in the HTE protocol.

The entire OpenScape Xpert client designation is transmitted in two strings (null-terminated C strings):

“<tt>.<dont_care>.<dont_care>”		
“<group_1>.<group_2>”		
Example CTI OpenScape Xpert Client 1.1.52:	“52.0.0” “1.1”	(Hex: 35 32 2e 30 2e 30 00 31 2e 31 00)

For line-related messages which are not allocated to any OpenScape Xpert client, both numbers are left out (two empty strings as wildcards):

“ ” “ ”		(Hex: 00 00)

2.6 Line Numbering in an IP System (Line Number Range)

The numbering of trading lines follows the <mlc>.<line> pattern

In order to integrate the IP Turret in 2 groups, the group number pattern <group_1>.<group_2> is added to the terminal device number .

The complete line number format in the HTE Protocol is as follows:

<group_1>.<group_2>.<mlc>.<line>

with value range:

<group_1>:	1 ... 99
<group_2>:	1 ... 250
<mlc>:	1 ... 250
<line>:	1 ... 240

2.6.1 Line Number in HTE Format

The entire line number is transmitted in two strings (null-terminated C strings):

“<mlc>.<line>”		
“<group_1>.<group_2>”		
Example line 1.1.2.39:	“2.39” “1.1”	(Hex: 32 2e 33 39 00 31 2e 31 00)

The same pattern is valid for defining the lines in the control messages.

In order to define the default line, both numbers are left out (two empty strings as wildcards):

“ ” “ ”		(Hex: 00 00)

2.6.1.1 Line Selection

No line must be selected for protocol lines in V6. All lines in the system will be handled as protocoled lines by all OSX Clients if master or combined CTI mode is set. In case local CTI is set, all lines on the logged in profile will be protocoled.

2.7 Recording Channel Numbering in an IP System (TSL Number Range)

The IP Voice Recorder is an independent IP-Node with an own IP address. The former TSL is now called CHANNEL, wich constitutes an IP port of the recorders IP address. The MLC of the concerning line sends an RTP stream to this IP port (see Trading Environment in an IP System).

The numbering of recording channels follows the <recorder>.<channel> pattern. There is no relationship to any group of the IP System.(see Trading Environment in an IP System).

The complete recording channel number format in the HTE Protocol is as follows:

<dont_care>.<dont_care>.<dont_care>.<ip_recorder>.<channel>

with value range:

<recorder>:	1 ... 250

<channel>:	1 ... 120
<dont_care>:	0

The entire time slot designation is transmitted in two strings (null-terminated C strings). The string of the group will be left out (an empty strings as wildcard):

“<dont_care>.<recorder>.<channel>”		
“”		
Example TSL 2.110:	“0.2.110” “”	(Hex: 30 2e 32 2e 31 31 30 00 00)

If no timeslot is defined, both numbers are left out (two empty strings as wildcards):

“” “”		(Hex: 00 00)

2.8 Voice Recording

In OpenScape Xpert three voice sources can be recorded:

- handsets and goosenecks
- speech monitoring loudspeakers
- lines (direct lines and shared lines)

Each SPM loudspeaker can hold up to 4 different lines, but one single line can only appear once on the same loudspeaker.

2.9 Voice Recording in an IP System

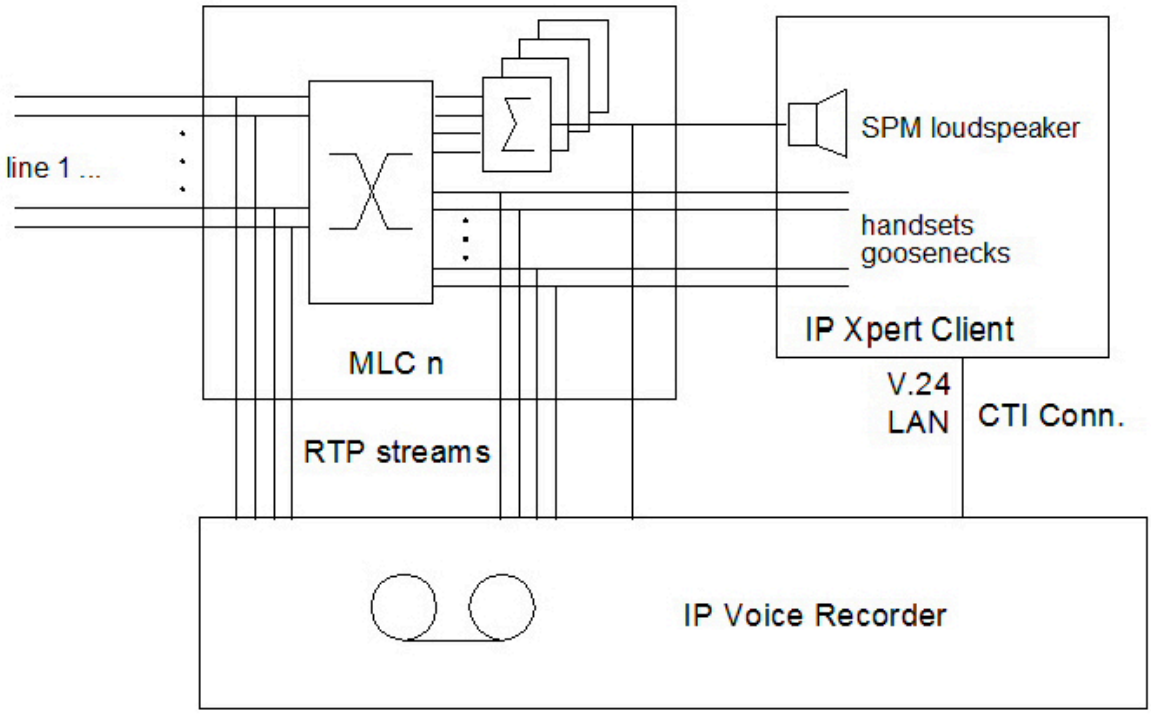


Figure 11: Voice Recording Connections

Each Ip Voice Recorder has his own IP address and can hold up to 120 IP ports.

The MLC of the concerning line sends an RTP stream to this IP port.

2.9.1 Recording Time Slot Assignment

To assign a line or a handset to a recording time slot, select the IP Voice Recorder at the System Manager and choose the Properties menu. Refer to Physical Layer: How to Set the Hardware Configuration to find out how to get to the IP Voice Recorder Properties.

Use drag and drop to set and delete an assignment.

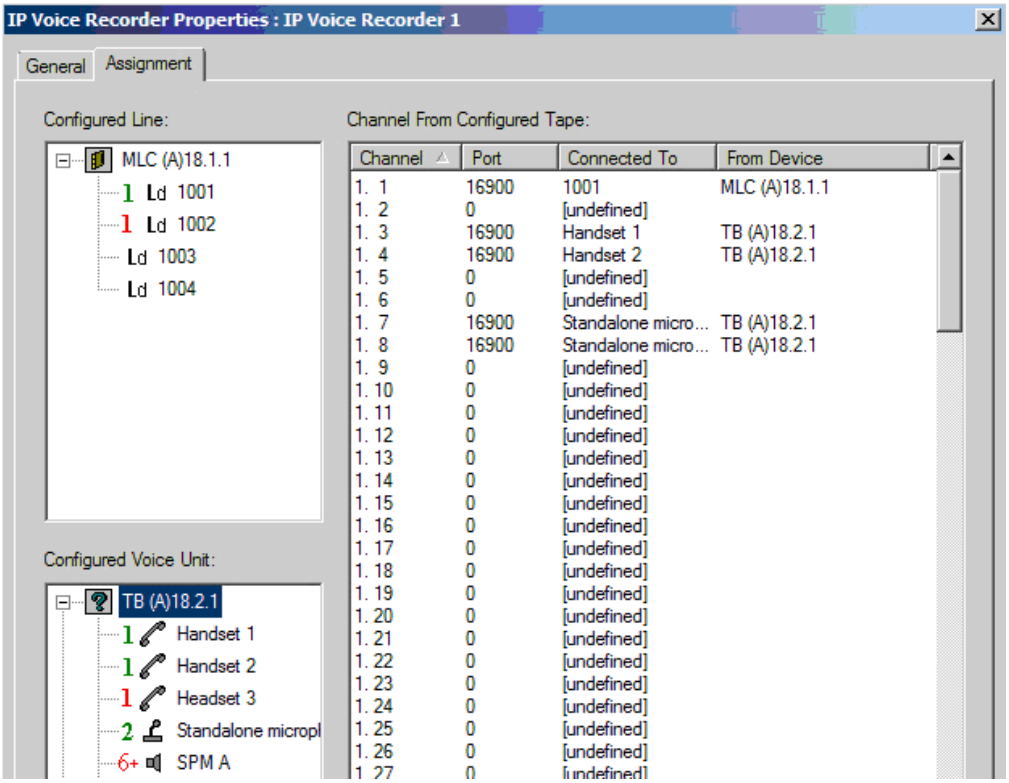


Figure 12: IP Voice Recorder Properties

2.9.1.1 Multiple Streaming

Beginning with version V4R5 lines, handsets or SPMs can be configured to be recorded by multiple Voice Recorders. The SM shows channels to be recorded by multiple Voice Recorders in red with the number of destinations also visible. A green number indicates multiple recording destinations (channels) on the same Voice Recorder.

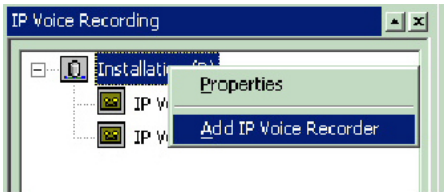


Figure 13: add Voice Recorder

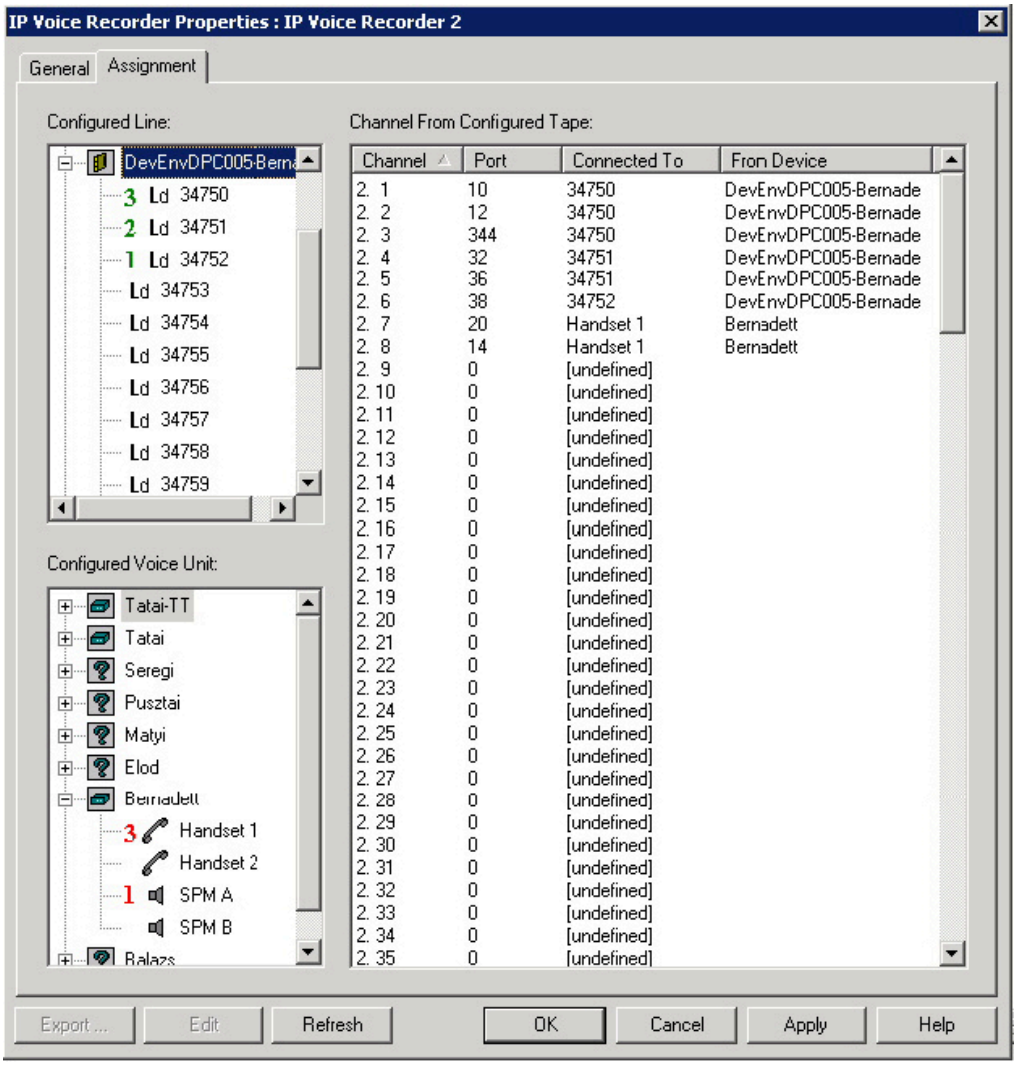


Figure 14: Multiple line, handset, SPM

2.10 Recording Behavior

Lines

A line will be recorded directly if a recording time slot is assigned and the line state in the OSV System is SEIZED. There will be no recording if the line state in the OSV System is IDLE or CALL. (Refer to Line States in a Key System).

SPM Loudspeaker

Each loudspeaker can hold up to four lines. The recording is the summary of the incoming and outgoing time slots of all four lines. The recording on / off messages will be sent for every assigned line. Therefore, recording of a loudspeaker starts once the first line sends a recording on message and stops with the last line sending a recording off message.

Handset and Gooseneck

The recording state of the handsets / gooseneck depends on the line settings. Choose a line in the configuration desktop of the System Manager to show the voice recording settings of the handset / gooseneck.

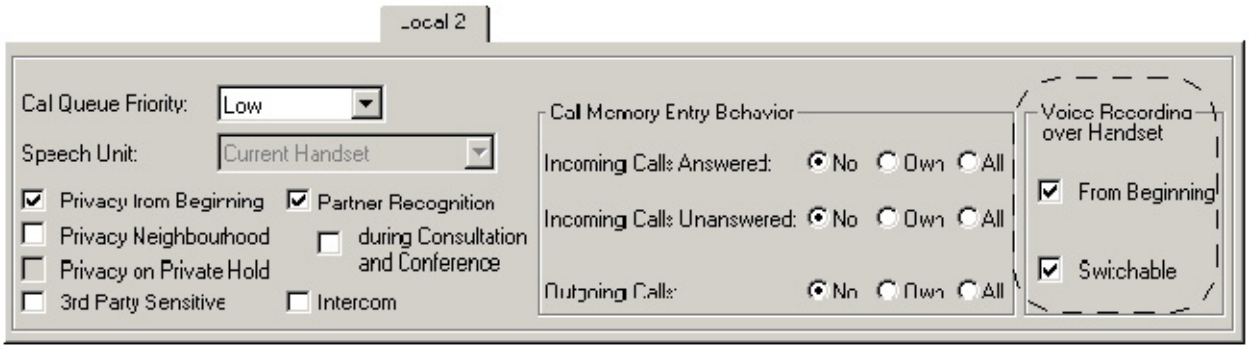


Figure 15: Voice Recording over Handset

If the “From Beginning” voice recording flag is set, the recording over the handset time slot starts immediately after seizing a line.

If the “Switchable” voice recording flag is set, the user can start / stop a recording via the “Voice Recording” function key. Stopping a recording manually by user leads to mute recording state. In this case, a mute tone can be switched to the recording time slot.

Privacy

If privacy is enabled on a handset, the recording states do not change. An idle signal will be on the recording time slots of the excluded handsets and speakers.

3 Data Communications - HTE Protocol

This chapter introduces the data capabilities of the OpenScape Xpert CTI Interface. The OpenScape Xpert client provides the HTE Protocol (OpenScape Xpert Client number in HTE format).

Data exchange between the OpenScape Xpert Client and your telephone application program is based on a layered protocol. Each layer is assigned its own well-defined tasks to reduce complexity. Each user action triggers a message to the network layer, which in turn sends messages to the link layer. The link layer packs the messages and sends them to the PC over the connection.

The link layer also receives messages that the telephone application program on the PC sends to the telephone. The link layer unpacks the data from the message and sends them to the network layer. The network layer interprets the messages and sends them to the application layer, which simulates user actions.

Note that the telephone application program running on the PC can, but need not, have the same architecture.

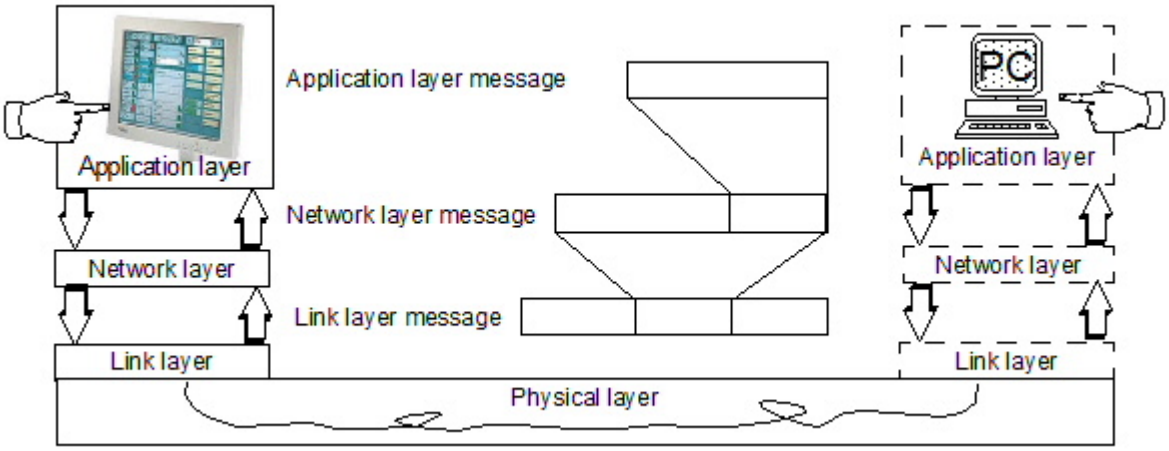


Figure 16: HTE Protocol Layers

Application Layer

The CTI Interface supplies information from the OpenScape Xpert Client to the remote computer and allows the remote computer to control the OpenScape Xpert Client. This section contains specific information about the application layer.

Definition 6	On the OpenScape Xpert Client, messages within the application layer are called events even if these messages carry additional data.

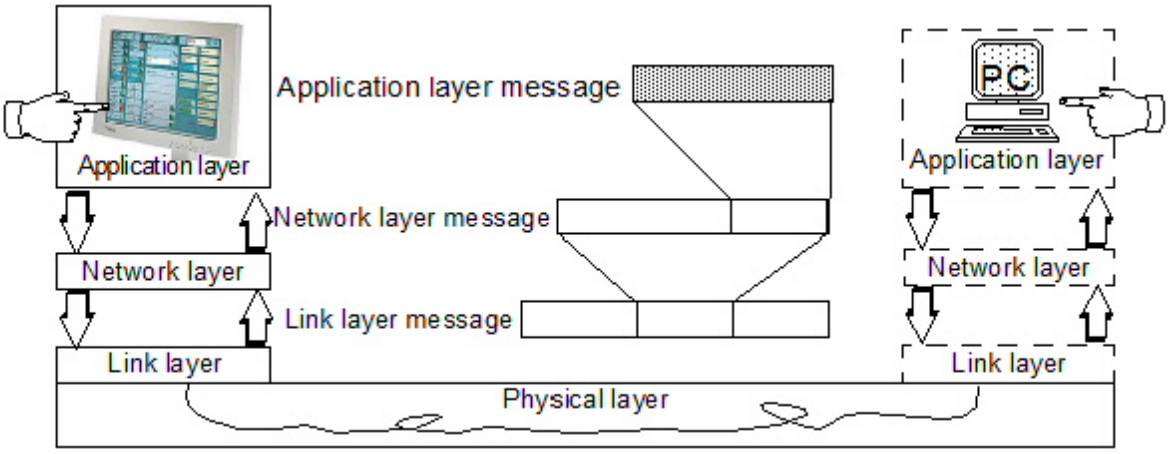


Figure 17: Application Layer Interface

The application layer is partitioned internally. Its parts communicate by sending and receiving application layer messages. Refer to the State Transition Diagram for the Subscriber Line. The figure below shows the structure of an application layer message. The individual parts are described in separate tables starting with section Event NEW-LINE-STATE.

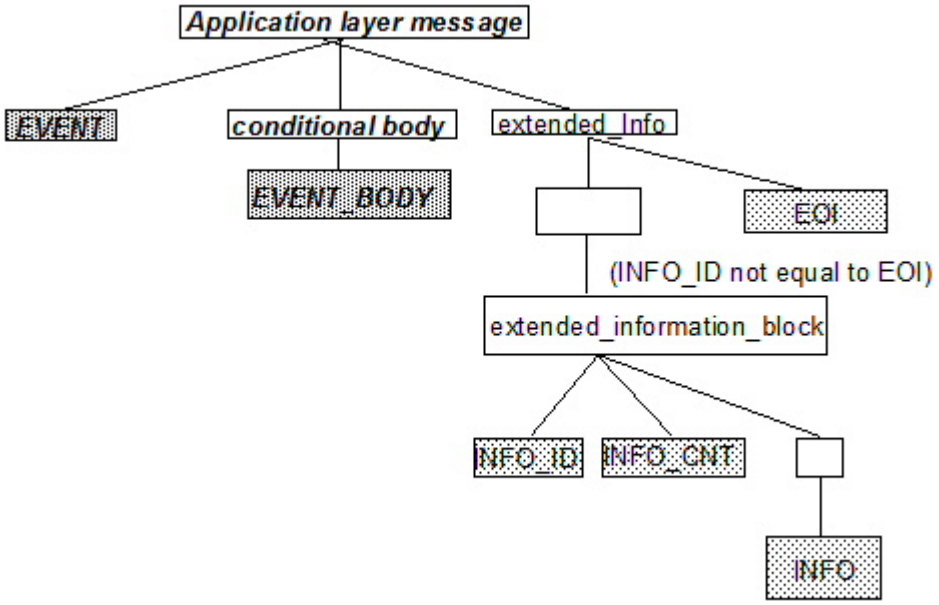


Figure 18: Data Structure of the Application Layer Message (JSP Notation)

The following notes apply to the application layer:

Note 2	Syntax: A grouping block containing other grouping blocks or terminal blocks is written in small letters. A terminal block representing data is written in capital letters.

Note 3	The EVENT field is mandatory. However, some events transport additional information in their EVENT_BODY field. The structure of the EVENT_BODY field is not depicted in the figure above because it depends on the EVENT field. This chapter describes the event formats, including the number of bytes required, the field name, the valid field values, and a field description. The tables in this chapter contain the structures of the application layer only. The field value column shows hexadecimal notation prefixed with 0x and, if possible, the corresponding ASCII characters enclosed in single quotes. Refer also to the state transition diagrams to learn how events are processed and discarded..
Note 4	The extended information for an event is contained in a number of extended information blocks. Some of these extended information blocks are mandatory and some are optional. If an optional extended information block is not sent, its default values apply. Remember that the default values are defined in the System Manager.

Network Layer

The network layer does the following:

- Frames application layer messages and sends them to the link layer.

- Unframes messages received from the link layer and sends them to the application layer.

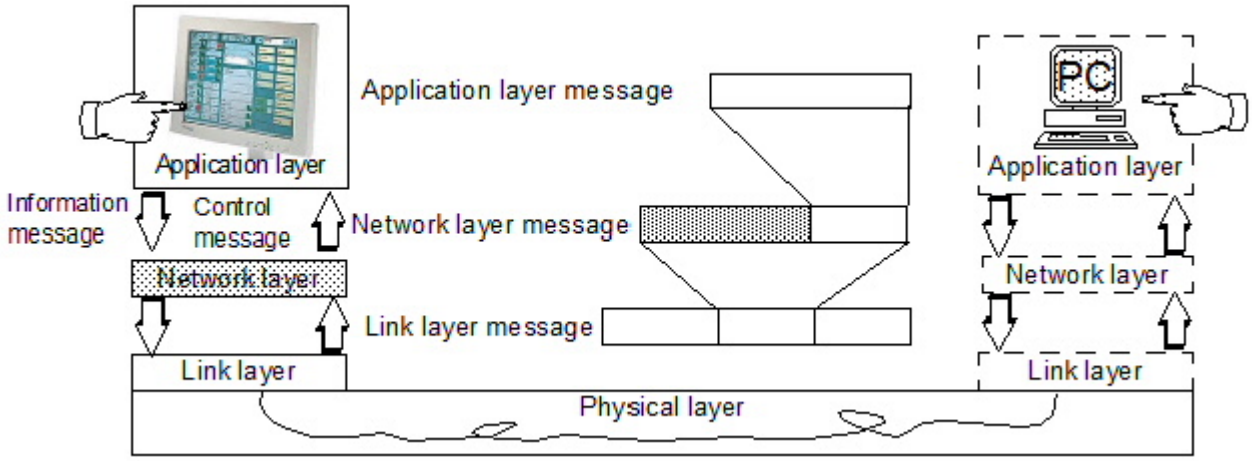


Figure 19: The Network Layer Interface

The network layer message is structured differently depending on the direction of the information flow. The framing information is marked in Figure: Data Structure of the Network Layer Message (JSP Notation).

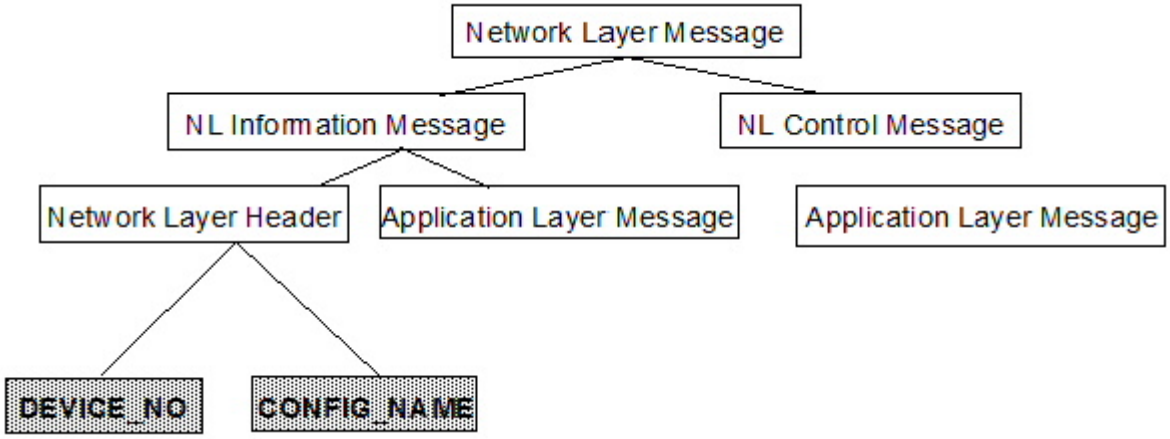


Figure 20: Data Structure of the Network Layer Message (JSP Notation)

Note 5	If the master OpenScape Xpert Client must report the status for a line, then that line must be connected to that master OpenScape Xpert Client. This section describes the format of the network layer messages, including the number of bytes required, the field name, the valid field values, and a field description.
Note 6	The tables hold the structure of the network layer only.

Link Layer

This chapter describes the message format for the link layer. The link layer organizes the framed transmission of data from its upper layer. The link layer provides the following:

- Frame delimiters ‚start of header', 'start of text' and 'end of text'
- Message type and sequence number assigned to each message
- Unprintable characters masked with the escape character
- Checksum

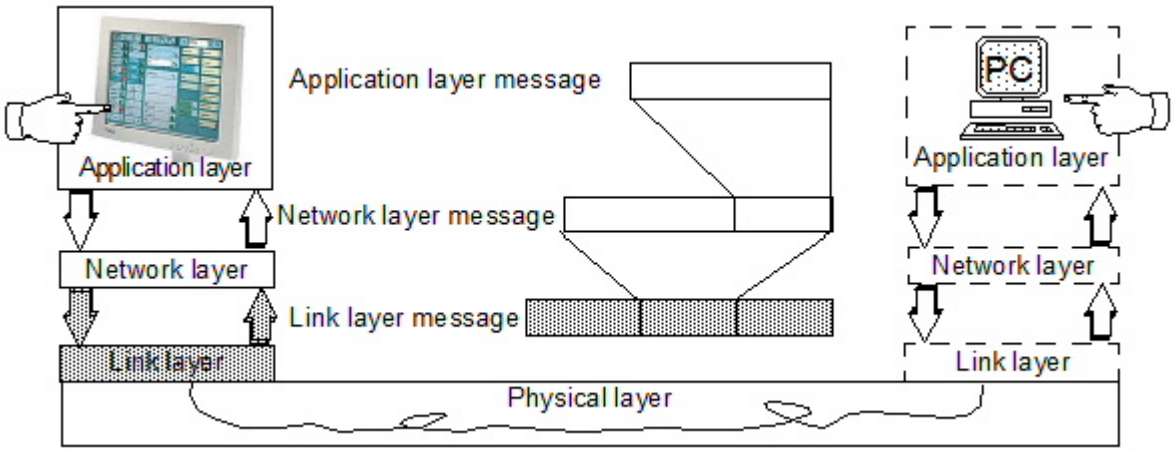


Figure 21: Link Layer Interface

The figure below shows the structure of a link layer message. The frames for this layer are flagged. Refer to Network Layer for more information on the network layer message.

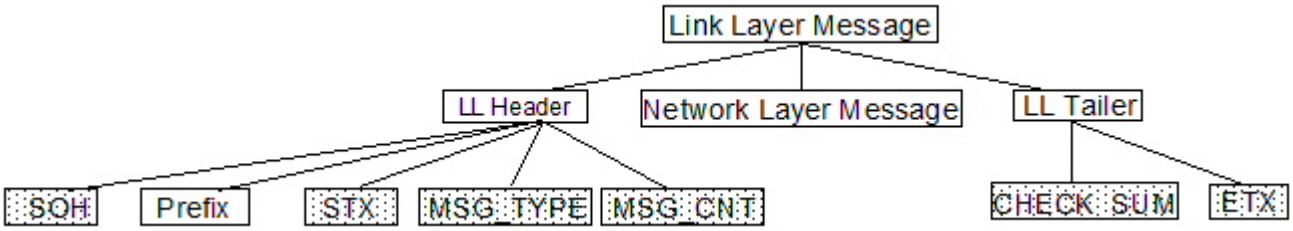


Figure 22: Data Structure of the Link Layer Message (JSP Notation)

The Link Layer Message will be transmitted from start of heading / start of text (first byte) to end of text (last byte) over the RS-232 cable or over the LAN as data.

Physical Layer

This section describes the physical layer, including the following:

- Setting the Hardware Configuration
  - Port specifications
  - Flow control
  - Electrical specifications
  - Cable specifications

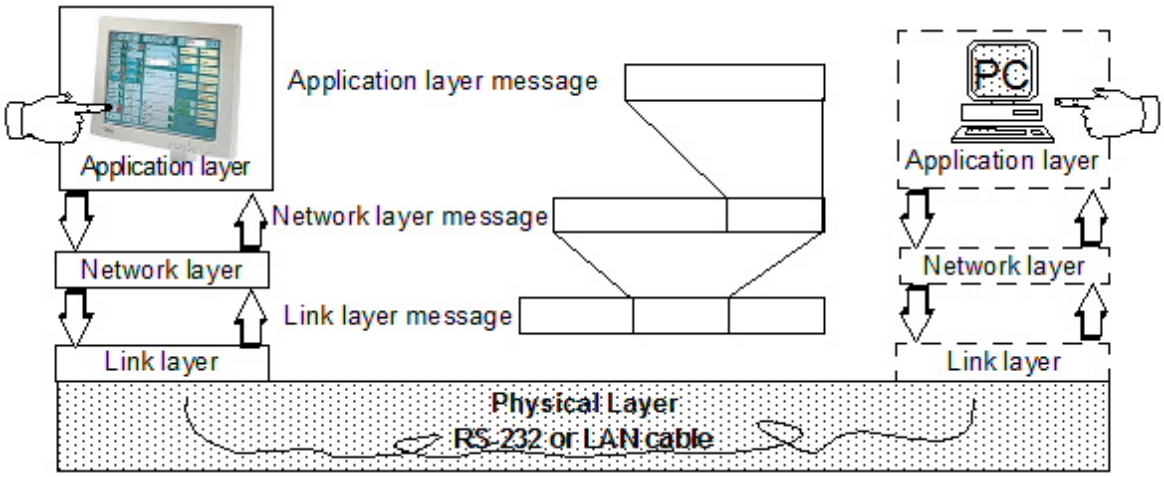


Figure 23: The Physical Layer

3.1 Application Layer Information Messages from OpenScape Xpert Client to PC

Application Layer Information Messages from OpenScape Xpert Client to PC

This section lists all events that carry information from the OpenScape Xpert Client to the CTI Interface.

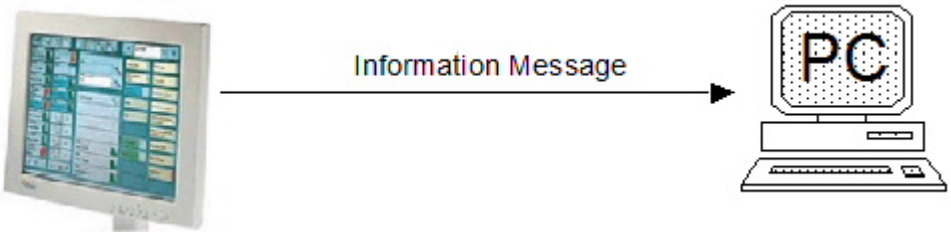


Figure 24: The Application Layer Event Flow: Information Messages

Definition 7	Information Message:= [NEW_LINE_STATE | NEW_TRIM_STATE | [DB_]CONNECTED | [DB_]NOT_CONNECTED || LOGGED_IN | LOGGED_OUT | RECEIVING_CALLS_ONLY | DATE_TIME | TB_RESET | ACTION_INFO]

Note that some events may occur more than once.

3.1.1 Event NEW-LINE-STATE

Event NEW_LINE_STATE

Table 1: Data Format of the NEW_LINE_STATE Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0030	The NEW_LINE_STATE event signals the current state or the display information of the given line. This event is valid only when the OpenScape Xpert Client is operational.
1 ... 15	LINE_NO	Line number range	Number of the line being checked. (refer to Line Numbering in an IP System (Line Number Range))
1	LINE_STATE	0x30 (‘0’), 0x31 (‘1’), 0x32 (‘2’), 0x33 (‘3’), 0x34 (‘4’), 0x35 (‘5’), 0x36 (‘6’), 0x00	This field signals the state of the line: Line is in the **IDLE** state. (Line is released.) Line is in the **incoming_call** state. Line is in the **self_seized** state. Line is in the **hold** state. Line is in the **externally_seized** state. SPM_ASSIGNED SPM_UNASSIGNED For master and combined mode only: If the line state has not changed, this field is set to zero. This value may be used, when display or extended information have been changed.
1	HANDSET	0x31... 0x34, (‘1’... ‘4’), 0x41..0x44 (‘A’..’D’) 0x00, 0x30 (0, ‘0’)	Number of the handset of the device, referenced in the DEVICE_NO field of the network layer header. If the line is in a seized state, then the HANDSET field holds the number of the handset currently connected to that line. If the line is in the hold state or in the externally_seized state, then the HANDSET field can hold the number of the speech monitor. If zero, the handset is not relevant.

NOTICE:

With OpenScape Xpert Clients you can enter with more than one handset in the same line.

HTE protocol: This event may occur several times for every used handset.

Table 2: Field name and descriptions

Bytes	Field Name	Field Value	Field Description
1	DISPLAY_TYPE	0x30 (‘0’) 0x31 (‘1’) 0x32 (‘2’)	This field distinguishes between the following text strings: Two empty text strings follow (no change, use last transmitted display text) One static text string follows. Two text strings follow. The blocks should be displayed alternately. **Note**: This field is supplied by the OSV System.
1..25	TEXT_1	printable ASCII	The text is a null-terminated ASCII string. The null terminator is supplied even if the text string is empty. **Note**: This field is supplied by the OSV System.
1..25	TEXT_2	printable ASCII	The text is a null-terminated ASCII string. The null terminator is supplied even if the text string is empty. It is possible for this text to contain meaningful information. However, if it is fully filled with blank characters, the TEXT_1 field will flash. **Note**: This field is supplied by the OSV System.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Table: Generic Data Format for an Extended_Information_Block. The extended_info field holds an unordered iteration of extended information blocks, followed by the EOI field (end of information). The extended information blocks are described in the tables of the section below from Table: Data Format for the Extended_Information_Block for HiPath Consultation through Table: Data Format for the Extended_Information_Block for the Context ID.

Extended Information Blocks

This section defines all possible extended information blocks for this event. Table: Generic Data Format for an Extended_Information_Block shows the generic data format. This format applies to all extended information blocks. Future enhancements are likely in this section.

NOTICE:

Always use this format to skip unexpected and unneeded extended information blocks.

Table 3: Generic Data Format for an Extended_Information_Block

Any Extended Information Block			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	printable ASCII, except the ‘EOI’ character	The INFO_ID field indicates the type of information contained in the next INFO field.
1	INFO_CNT	0x00..0xff	The INFO_CNT field holds the byte count of the next INFO field.
INFO_CNT	info	differs based on event	This field contains information relevant to an event. Its actual name is provided in the individual tables. This information may also be divided among several fields for an event. If the INFO_CNT field is zero, this field does not exist.

Table 4: Data Format for the End of Information (EOI)

EOI - End Of Information			
Bytes	Field Name	Field Value	Field Description
1	EOI	0x40 ‘@’	The EOI field indicates the end of the extended information. No more extended_info_blocks will follow.

NOTICE:

Extended Information Blocks apply only if the “Extended Informations” flag in the OpenScape Xpert Client Properties is set. If so, it contains at least the EOI (End of Information) field, which indicates the end of the extended information.

Table 5: Data Format for the Extended_Information_Block for HiPath Consultation

Extended Information Block ‘C’ - Consultation (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x43 ‘C’	The INFO_ID field is set to ‘C’ to indicate that the line is in the HiPath consultation state. This extended information block is optional. If it is not supplied (default), the line is not in HiPath consultation state.
1	INFO_CNT	0x00	No INFO field follows.

Table 6: Data Format for the Extended_Information_Block for HiPath Conference

Extended Information Block ‘c’ - Conference (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x63 ‘c’	The INFO_ID field is set to ‘c’ to indicate that the line is in the HiPath conference state. This extended information block is optional. If it is not supplied (default), the line is not in HiPath conference state.
1	INFO_CNT	0x00	No INFO field follows.

Table 7: Data Format for the Extended_Information_Block for Line Conference ID

Extended Information Block ‘L’ - Line Conference ID (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x4c ‘L’	The INFO_ID field is set to ‘L’ to indicate that the next INFO field contains the ID of the line conference. Optional extended information block: This information is sent only during a Line Conference.
1	INFO_CNT	2 0x02	The INFO_CNT field holds the byte count of the INFO field.

Extended Information Block ‘L’ - Line Conference ID (New Line State)			
Bytes	Field Name	Field Value	Field Description
INFO_CNT	CONF_ID	Null-terminated ASCII string	The CONF_ID field contains the ID of the line conference. This unique ID tags all lines who are connected in the same line conference. The value of the conference id of the CTI Interface Xpert client will be used. It can differ to value on other Turrets, including other CTI Xpert clients.

Table 8: Data Format for the Extended_Information_Block for Mute / PTT

Extended Information Block ‘M’ - Mute / PTT (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x4d ‘M’	The INFO_ID field is set to ‘M’ to indicate that the next INFO field contains the State of the „Push To Talk Key“ (PTT) of the Handset, referenced in the HANDSET field. Optional extended information block: This information is sent only when the line is in the **self_seized** state.
1	INFO_CNT	1 0x01	The INFO_CNT field holds the byte count of the INFO field.
1	PTT_STATE	0x31 (‘1’), 0x32 (‘2’)	This field signals the state of the PTT key: **Mute** - the microphone of the handset is muted. **Talk** - the microphone of the handset is activated.

NOTICE:

In Master and Combined Mode, Extended Information Block ‚M‘ apply only, if the device, referenced in the DEVICE_NO field of the network layer header, is set to the Master OpenScape Xpert Client. Note: If only the PTT_STATE changes and the LINE_STATE is zero (line state has not changed), the DEVICE_NO ist set to the Master OpenScape Xpert Client as well. No restriction in **Local Mode**.

Table 9: Data Format for the Extended_Information_Block for Name

Extended Information Block ‘N’ - Name (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x4e ‘N’	The INFO_ID field is set to ‘N’ to indicate that the next INFO field contains the name of the line. The OpenScape Xpert Client also displays this text during an incoming call or while the party is connected.
1	INFO_CNT	1 ... 17 0x01..0x11	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	NAME	Null-terminated ASCII string	The NAME field contains the text of the line key’s label (line name).

Table 10: Data Format for the Extended_Information_Block for Party

Extended Information Block ‘P’ - Party (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x50 ‘P’	The INFO_ID field is set to ‘P’ to indicate that the next information field contains the party member’s type. Optional extended information block: This information is sent only when the line is in the self_seized, hold, or externally_seized state.
1	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the info field.

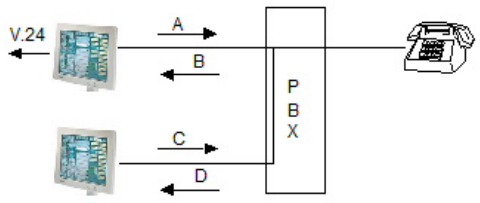
Extended Information Block ‘P’ - Party (New Line State)			
Bytes	Field Name	Field Value	Field Description
INFO_CNT	PARTY	0x41 ‘A’ 0x42 ‘B’ 0x43 ‘C’ 0x44 ‘D’	This device is the calling party (Outgoing call). This device is the called party (Incoming call). Another device is the calling party (Outgoing call). This applies in local mode only. Another device is the called party (Incoming call). This applies in local mode only.  The device is referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC).

Table 11: Data Format for the Extended_Information_Block for Ringer Priority

Extended Information Block ‘R’ - Ringer Priority (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x52 ‘R’	The INFO_ID field is set to ‘R’ to indicate that the next information field contains the ringer priority. Optional extended information block: This information is sent only if • the line is in the **incoming_call** state and the ringer bit is set in the Line Key menu and CTI OpenScape Xpert Client is logged in and the line is defined in the CTI Interface configuration.

Extended Information Block ‘R’ - Ringer Priority (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the info field.
INFO_CNT	RINGER_PRIO	0x30...0x3F ‘0’...’9’,';',':', '<','=','>','?'	The RINGER_PRIO field holds the priority of the call on the line. The OpenScape Xpert Client displays and handles incoming calls based on their priority. 0x30 is the lowest priority and 0x3F is the highest priority. In the case of the master protocol, the RINGER_PRIO field holds the master OpenScape Xpert Client’s priority instead of the originating OpenScape Xpert Client’s priority.

Table 12: Data Format for the Extended_Information_Block for Privacy

Extended Information Block ‘S’ - Privacy (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x53 ‘S’	The INFO_ID field is set to ‘S’ to indicate that the next INFO field holds the ‘PRIVACY’ information. Optional extended information block.
1	INFO_CNT	0x01..0x0b	The INFO_CNT field holds the byte count of the INFO field.
1	SEC_STATUS	0x30 ‘0’ 0x31 ’1’ 0x32 ‘2’	The INFO field contains the PRIVACY information. Possible values are: Privacy not activated (default): If the line is attached to this OpenScape Xpert Client, any user can use it. Privacy activated by private party: The local user invoked PRIVACY on this line. Even if the line is attached to another OpenScape Xpert Client, no other remote user can use the line. Privacy activated by foreign party: A remote user invoked PRIVACY on this line. Although the line is attached to this OpenScape Xpert Client, it cannot be used until PRIVACY is canceled.

Extended Information Block ‘S’ - Privacy (New Line State)			
Bytes	Field Name	Field Value	Field Description
0 ... 15	ACTIVATING_DEVICE	device number range 0x00	The device number uniquely identifies the OpenScape Xpert Client in the topology. You can determine your OpenScape Xpert Client’s device number from the System Info menu (refer to OS Xpert Client Numbering in an IP System (Device Number Range). If zero, the activating device number is unknown. This field is only sent if the SEC_STATUS is set to 0x32.
0 ... 30	ACTIVATING_CON-FIG	null-terminated ASCII string, empty string	The configuration name of the ACTIVATING_DEVICE is a null-terminated string. If no name is given, this field holds only the empty string.You can determine your OpenScape Xpert Client’s current configuration from the System Info menu. The activating configuration is unknown. The null terminator equals 0x00. This field is only sent if the SEC_STATUS is set to 0x32

Table 13: Data Format for the Extended_Information_Block for TRIM

Extended Information Block ‘T’ - TRIM (New Line State)			
Bytes	Field Name	Field Value	Field Description
In Hicom Trading E, this Extended Info Block will no longer to be sent. Refer also to Data Format of the NEW TRIM STATE Application Message while running in local mode.			

Table 14: Data Format for the Extended_Information_Block for the Context ID

Extended Information Block '#' - Context ID (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x23 '#'	The INFO_ID field is set to '#' to indicate that the next INFO field contains a unique ID for every call, starts with the first self_seized state (or extended_seized state if the MLC is auto-answering a line) and ends with the idle state (refer to Table: Data Format of the NEW_LINE_STATE Application Message). A call in the incoming_call state has not yet a Context ID. Note: This Extended Info Block will not be sent if no CONTEXT_ID is available (NO_CONTEXT = 0).
1	INFO_CNT	... 11 ... 0x0B	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	CONTEXT_ID	Null-terminated ASCII string	The CONTEXT_ID field contains a maximum 20-digit decimal number, transmitted as a null-terminated ASCII string. The Context ID represents an unsigned 64-bit integer value.

Table 15: Data Format for the Extended_Information_Block for the Ring state

Extended Information Block 'Q' - Ring state (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x51 'Q'	The INFO_ID field is set to 'Q' to indicate that the next INFO field contains the Ring state. This information is sent only when the line is in the ringing state.
1	INFO_CNT	2 0x02	The INFO_CNT field holds the byte count of the INFO field.
1	Call Queue state	'1' 0x31 '0' 0x30	Enable Disable
1	Ring Tone state	'1' 0x31 '0' 0x30	Enable Disable

NOTICE:

The Extended Information Block ‘Q‘ Ring state is only sent in Local and Combined modes.

Table 16: Data Format for the Extended_Information_Block for the Call state

Extended Information Block ‘X’ - Call state (New Line State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x58 ‘X’	The info field is set to indicate that the next info field contains the call state information.
1	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT = 1	CALL_STATE	0x30 (’0’) 0x31 (’1’) 0x32 (’2’) 0x33 (’3’) 0x00	This field shows the call state of the line: Not connected Ringing (incoming) Ringback (outgoing) Connected Unknown

3.1.2 Event NEW_TRIM_STATE

Event NEW_TRIM_STATE

Table 17: Data Format of the NEW TRIM STATE Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0031	The NEW_TRIM_STATE event signals the current recording state of the given line and the handset / loudspeaker. This event applies to the running state of the OpenScape Xpert Client only. NEW_TRIM_STATE message is only sent in CTI master and in combined mode.
1 ... 15	LINE_NO	0x00 Line number range	The number of the line concerned. (refer to Line Numbering in an IP System (Line Number Range).

Bytes	Field Name	Field Value	Field Description
1	TRIM_STATE	0x30 (‘0’), 0x31 (‘1’), 0x32 (‘2’), 0x33 (‘3’)	This field signals the recording state of the line: ‘recording on’: The Voice Recorder records the call on this HANDSET / LINE. ‘recording off’: The Voice Recorder does not record the call on this HANDSET / LINE. This is the default state for released lines. ‘recording deactivated by user’: The user pressed the Voice Recording key in order to stop recording (mute). ‘recording error’: If a call to be recorded on the MLC cannot be switched to the Voice Recorder, then a recording error (0x33) will be sent right after a recording on (0x30).
1	HANDSET	0x31... 0x34, (‘1’... ‘4’), 0x41..0x44 (‘A’..’D’) 0x00, 0	The number of the handset / loudspeaker of the device, referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC). The call will be recorded through the recording time slot of the HANDSET. The call will be recorded through the recording time slot of the speech monitoring loudspeaker. If the handset is zero (and the DEVICE_NO field of the network layer header is empty as well), the call will be recorded directly through the recording time slot of the line during the OSV System SEIZED state (see Figure 1 Line States in a Key System).
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks. The extended information blocks are described in the tables below from Table: Data Format for the Extended_Information_Block for the Context ID through Table: Data Format for the Extended_Information_Block for IP Voice Recorder.

Table 18: Data Format for the Extended_Information_Block for the Context ID

Extended Information Block '#' - Context ID (New TrimState)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x23 '#'	The INFO_ID field is set to '#' to indicate that the next INFO field contains an unique ID for every call, starts with the first self_seized state (or extended_seized state if the MLC is auto-answering a line) and ends with the idle state (refer to Table: Data Format of the NEW_LINE_STATE Application Message). A call in the incoming_call state has not yet a Context ID. Note: This Extended Info Block will not be sent if no CONTEXT_ID is available (NO_CONTEXT = 0).
1	INFO_CNT	... 11 ... 0x0B	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	CONTEXT_ID	Null-terminated ASCII string	The CONTEXT_ID field contains a maximum 20-digit decimal number, transmitted as a null-terminated ASCII string. The Context ID represents an unsigned 64-bit integer value.

Table 19: Data Format for the Extended_Information_Block for Line Conference ID

Extended Information Block 'L' - Line Conference ID (New Trim State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x4c 'L'	The INFO_ID field is set to 'L' to indicate that the next INFO field contains the ID of the line conference. Optional extended information block: This information is sent only during a Line Conference
1	INFO_CNT	2 0x02	The INFO_CNT field holds the byte count of the INFO field.

Extended Information Block ‘L’ - Line Conference ID (New Trim State)			
Bytes	Field Name	Field Value	Field Description
INFO_CNT	CONF_ID	Null-terminated ASCII string	The CONF_ID field contains the ID of the line conference. This unique ID tags all lines who are connected in the same line conference. The value of the conference id of the CTI Interface Xpert client will be used. It can differ to value on other Turrets, including other CTI Xpert Clients.

Table 20: Data Format for the Extended_Information_Block for Name

Extended Information Block ‘N’ - Name (New TRIM State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x4e ‘N’	The INFO_ID field is set to ‘N’ to indicate that the next INFO field contains the name of the line. The OpenScape Xpert Client also displays this text during an incoming call or while the party is connected.
1	INFO_CNT	1 ... 17 0x01..0x11	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	NAME	Null-terminated ASCII string	The NAME field contains the text of the line key’s label (line name).

Table 21: Data Format for the Extended_Information_Block for TSL

Extended Information Block ‘T’ - TSL (Recording Time Slot) (New Trim State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x54 ‘T’	The INFO_ID field set to ‘T’ indicates that the next INFO field holds the information about the recording time slot of this handset or speaker. Optional extended information block. **Note**: This Extended Info Block is not applicable for line recording on shared lines (HiPath Trading V3.0 and up).
1	INFO_CNT	0x03	The INFO_CNT field holds the byte count of the next INFO field.

Extended Information Block ‘T’ - TSL (Recording Time Slot) (New Trim State)			
Bytes	Field Name	Field Value	Field Description
1	REC_TRIM	0x31... 0x34 (’1’ ... ‘4’)	The INFO field contains the information, from which TRIM module, recording is being done.

NOTICE:

Ext Info Block ‘T‘ is old fashioned. For new developments use always Ext Info Block ‚t‘ (see Table: Data Format for the Extended_Information_Block ‘t’ for TSL).

NOTICE:

If a line or device (SPM or Speech Unit) is configured for Voice Recording more than once this message will be sent twice or more (for all configured channels and IP addresses) (Multiple Streaming).

Table 22: Data Format for the Extended_Information_Block ‘t’ for TSL

Extended Information Block ‘t’ - TSL (Recording Time Slot) (New Trim State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x74 ‘t’	The INFO_ID field set to ‘t’ indicates that the next INFO field holds the information about the recording time slot of this handset or speaker. Optional extended information block.
1	INFO_CNT	0x02 ... 0x11	The INFO_CNT field holds the byte count of the next INFO field.
2 ... 16	TSL_NO	TSL number range	The number of the recording time slot concerned. (refer to Recording Channel Numbering in an IP System (TSL Number Range)).

In the IP System,

- the existing Extended Info Block ‚t‘ (Recording Time Slot) will be transmitted with the same structure, but with the new TSL number range (refer to Recording Channel Numbering in an IP System (TSL Number Range)).
- the old fashioned Extended Info Block ‘T‘ (Recording Time Slot) is no longer available.
- With the NEW_TRIM_STATE event, the IP Voice Recorder data will be transmitted with a new Extended Info Block ‚V‘.

Table 23: Data Format for the Extended_Information_Block for IP Voice Recorder

Extended Information Block ‘V’ - IP Voice Recorder Address (New TRIM State)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x56 ‘V’	The INFO_ID field is set to ‘V’ to indicate that the next INFO field contains the IP Address and IP Port number of the IP Voice Recorder. Optional extended information block.
1	INFO_CNT	13 ... 22 0x0d..0x16	The INFO_CNT field holds the byte count of the INFO field.
8 ... 16	IP_ADDRESS	Null-terminated ASCII string	The IP_ADDRESS field contains the IP Address of the IP Voice Recorder. e.g. „10.10.202.152“
5 ... 6	IP_PORT	Null-terminated ASCII string	The IP_PORT field contains the port number of the IP Voice Recorder Channel. e.g. „8102“

3.1.3 Event LOGGED_IN

Event LOGGED_IN

Table 24: Data Format for the LOGIN Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0042	The LOGGED_IN event indicates that a user has logged in on the OpenScape Xpert Client referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC). This event may occur repeatedly. This event is valid only while the OpenScape Xpert Client is active. The OpenScape Xpert Client is ready for use at the end of this event.

Bytes	Field Name	Field Value	Field Description
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks. The extended information blocks are described in Data Format for the Extended_Information_Block 't' for TSL and Table: Data Format for the Extended_Information_Block 't' for TSL.

NOTICE:

For new developments use always Ext Info Block 't' (Table: Data Format for the Extended_Information_Block 't' for TSL).

Table 25: Data Format for the Extended_Information_Block 't' for TSL

Extended Information Block 't' - TSL (Recording Time Slot) (LOGGED_IN)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x74 't'	The INFO_ID field set to 't' indicates that the next INFO field holds the information about the recoding timeslot of this device.
1	INFO_CNT	0x00 0x09 ... 0x88 (9 ... 136)	No handset / loudspeaker can be recorded. The INFO field does not exist. The INFO_CNT field holds the byte count of the next INFO field.
1	HANDSET	0x31... 0x34 ('1' ... '4') 0x41... 0x44 ('A' ... 'D')	Handset to be recorded. Loudspeaker to be recorded.
8 ... 16	TSL_NO	TSL number range	The number of the recording Timeslot concerned. (refer to Recording Channel Numbering in an IP System (TSL Number Range))
...	The two last INFO fields (HANDSET, TSL_NO) are sent for every handset / loudspeaker who is to be recorded. The INFO fields for the non recording handset / loudspeaker are not to be sent!		

In the IP System,

- the existing Extended Info Block ‚t' (Recording Time Slot) will be transmitted with the same structure, but with the new TSL number range (refer to Recording Channel Numbering in an IP System (TSL Number Range)).
- With the LOGGED_IN event, the IP Voic Recorder data will be transmittet with a new Extended Info Block ‚V'.

Table 26: Data Format for the Extended_Information_Block for IP Voice Recorder

Extended Information Block ‘V’ - IP Voice Recorder Address (LOGGED_IN)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x56 ‘V’	The INFO_ID field is set to ‘V’ to indicate that the next INFO field contains the IP Address and IP Port number of the IP Voice Recorder.
1	INFO_CNT	14 ... 72 0x0e..0x48	The INFO_CNT field holds the byte count of the INFO field.
8 ... 16	IP_ADDRESS	Null-terminated ASCII string	The IP_ADDRESS field contains the IP Address of the IP Voice Recorder. e.g. „10.10.202.152“
1	HANDSET	0x31... 0x34 (’1’ ... ‘4’) 0x41... 0x44 (’A’ ... ‘D’)	Handset to be recorded. Loudspeaker to be recorded.
5 ... 6	IP_PORT	Null-terminated ASCII string	The IP_PORT field contains the port number of the IP Voice Recorder Channel. e.g. „8102“
...	The last two INFO fields (HANDSET, IP_PORT) are sent for every handset / loudspeaker who is to be recorded. The INFO fields for the non recoding handset / loudspeaker are not to be sent!		

NOTICE:

If more than 1 IP Address is used to record the handsets / loudspeaker of a single OpenScape Xpert Client, this Extended Info Block ‚V‘ will be sent for every IP Address.

3.1.4 Event LOGGED_OUT

Event LOGGED_OUT

Table 27: Data Format for the LOGOUT Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0043	The LOGGED_OUT event indicates that a user has logged out from the OpenScape Xpert Client referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC). The OpenScape Xpert Client disconnects all lines in a party. At the end of the LOGOUT event, the only possible user action is the LOGIN event. This event may occur repeatedly.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.5 Event RECEIVING_CALLS_ONLY

Event RECEIVING_CALLS_ONLY

Table 28: Data Format for the RECEIVE_CALLS_ONLY Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0044	The RECEIVING_CALLS_ONLY event locks the OpenScape Xpert Client, referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC), so that only incoming calls may be received. Outgoing calls are not possible until the user logs in on the OpenScape Xpert Client. This event may occur repeatedly.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.6 Event CONNECTED

Event CONNECTED (call processing and voice connection OpenScape Xpert Client <-> MLC)

Table 29: Data Format for the CONNECTED Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0040	The CONNECTED event signals that the OpenScape Xpert Client, referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC), is connected to the MLC (call processing and voice connection). This OpenScape Xpert Client is only ready to operate if the connection to the System Manager is also established (see Data Format for the DB_CONNECTED Application Message). This event may occur repeatedly.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.7 Event DB_CONNECTED

Event DB_CONNECTED (DB connection OpenScape Xpert Client <-> SM)

Table 30: Data Format for the DB_CONNECTED Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0048	The DB_CONNECTED event signals that the OpenScape Xpert Client, referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC), is connected to the SM (DB connection). This OpenScape Xpert Client is only ready to operate if the connection to the MLC is also established (see Data Format for the CONNECTED Application Message). This event may occur repeatedly.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.8 Event NOT_CONNECTED

Event NOT_CONNECTED (call processing and voice connection OpenScape Xpert Client <-> MLC)

Table 31: Data Format for the NOT_CONNECTED Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0041	The NOT_CONNECTED event signals that the OpenScape Xpert Client, referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC), is not connected to the MLC (call processing and voice connection) and therefore not ready to operate. This event may occur repeatedly. The polling mechanism may cause this event to be delayed up to one minute.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.9 Event DB_NOT_CONNECTED

Event DB_NOT_CONNECTED (DB connection OpenScape Xpert Client <-> SM)

Table 32: Data Format for the NOT_CONNECTED Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0049	The DB_NOT_CONNECTED event signals that the OpenScape Xpert Client, referenced in the DEVICE_NO field of the network layer header (see Network Layer Information Messages from OpenScape Xpert Client to PC), is not connected to the System Manager and therefore not ready to operate. This event may occur repeatedly. The polling mechanism may cause this event to be delayed up to one minute.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.10 Event DATE_TIME

Event DATE_TIME

Table 33: Data Format for the DATE_TIME Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0045	The DATE_TIME event outputs the date and the time supplied by the OSV System. This event occurs every minute. This event is valid only while the OpenScape Xpert Client is operational.
1. n	DATE_TIME	printable ASCII	The DATE_TIME field is a null-terminated string. Since the date and time are supplied by the OSV System, both the contents and the layout depend on the OSV System configuration. Refer to the service documentation. For example, if the OSV System is configured for German language, this field would contain “DI 05.04. 17:41:00” followed by the null terminator = 0x00.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.11 Event TB_RESET

Event TB_RESET

Table 34: Data Format for the TB_RESET Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0046	The TB_RESET event signals that the OpenScape Xpert Client was reset and is ready to operate. This event may occur repeatedly.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

3.1.12 Event ACTION_INFO

Event ACTION_INFO

Table 35: Data Format for the ACTION_INFO Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x004B	The ACTION_INFO event signals • the current state of an action or • a negative acknowledgement after an ACTION_CONTROL event.
1	ACTION_ TYPE	0x34 (‘4‘)	‘INTERFACE_ACTION’ **Note**: The types RING_TRANSFER, ACTION_SEQUENCE and CONTACT are not supported in version V6.0 and above.
1 ...	ACTION_ ALIAS	printable ASCII 0x20 ... 0xff	This field signals the alias of the given action: The alias of each action is a unique null-terminated ASCII string. The ACTION_ALIAS is not case sensitive (a = A).
1	ACTION_ INFO	0x31 (‘1’), 0x32 (‘2),’ 0x41 (‚A‘) ... 0x5A (‚Z‘) 0x63 (‘c‘) 0x64 (‘d‘) 0x65 (‘e‘) 0x6e (‘n‘) 0x73 (‘s‘) 0x74 (‘t‘)	This field signals the current state of the given action: ‘ACTIVE’ ’INACTIVE’ ‘STATE_A‘ ... STATE_Z‘ for ACTION_TYPE ‘INTERFACE_ACTION‘ only or a negative acknowledgement in response to an ACTION_CONTROL: ‘NO_CONFIG_LOADED –No profile is logged in. An action key can be controlled only if a profile is logged in or is in Receive Calls Only state. ‘DISPLAY_ONLY – If the referred Action key has the “Only Signalization” flag set. ‘ERROR‘ - General error. ‘ACTION_NOT_AVAIL‘ - The given action key is not available on the logged in Profile ‘TYPE_MISMATCH‘ The ACTION_TYPE parameter does not match the type of the Action key referred by ACTION_ALIAS, or an Interface Action configured for 2 states was tried to set to another state as ACTIVE or INACTIVE ‘SYSTEM_NOT_CONN‘ - No connection to Systemmamanger

Bytes	Field Name	Field Value	Field Description
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

Table 36: Data Format for the Extended_Information_Block 'B' for the Button State

Extended Information Block 'B' - Button State (ACTION_INFO)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x48 'B'	The INFO_ID field is set to 'B' to indicate that the INFO field contains the state of a push remote button. **Note**: Optional Extended Info Block. This block is only sent if the type of the action is INTERFACE_ACTION and pushbutton. The block is only sent when the event was generated because of a user action. E.g. It is sent when the user presses the button, but it is not sent when the state change was caused by another turret or because of a CTI message.
1	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	PUSH_STATE	0x30 ('0') 0x31 ('1')	Pushed Released

NOTICE:

The ACTION_INFO event applies only if the "Send Info about Action" flag in the OpenScape Xpert Client Properties is set, the action is defined in the CTI Interface configuration, the CTI OpenScape Xpert Client is loggedin or loggedout but configuration loaded (transient).

3.2 Application Layer Control Messages from PC to OpenScape Xpert Client

This section describes the events that carry commands from the PC to the OpenScape Xpert Client. Control messages apply either to the entire OpenScape Xpert Client or to only a single line. Messages that apply to only a single line must contain the 'LINE_NO' field.

Because the OpenScape Xpert Client needs a connection to the MLC to perform these events, line control messages apply only when the OpenScape Xpert Client is in the CONNECTED state.

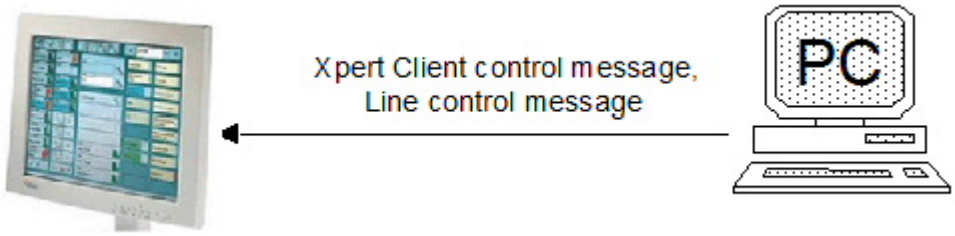


Figure 25: Application Protocol Event Flow: Control Messages

Definition 8	OpenScape Xpert Client Control Message: = [LOGIN | LOGOUT | RECEIVE_CALLS_ONLY]
Definition 9	Line Control Message: = [SEIZE | DISCONNECT | KILL_LINE | HOLD_LINE | DIAL | POSTDIAL | HOOK-OFF | ACTION_CONTROL]

3.2.1 Event LOGIN

Event LOGIN

Table 37: Data Format for the LOGIN Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0054	The LOGIN event logs a user in on an OpenScape Xpert Client. Once the LOGIN event completes, the OpenScape Xpert Client is ready for use.
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

Table 38: Data Format for the Extended_Information_Block for the Username

Extended Information Block ‘U’ - Username (LOGIN)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x55 ‘U’	The INFO_ID field is set to ‘U’ to indicate that the INFO field contains the username to log in. Note: Optional Extended Info Block.
1	INFO_CNT	0 ...	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	USERNAME	Null-terminated ASCII string	This field contains the configuration name the user wants to log in with.

Table 39: Data Format for the Extended_Information_Block for the Password

Extended Information Block ‘P’ - Password (LOGIN)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x50 ‘P’	The INFO_ID field is set to ‘P’ to indicate that the INFO field contains the password. Note: Optional Extended Info Block.
1	INFO_CNT	0 ...	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	PASSWORD	Null-terminated ASCII string	This field contains the password the user wants to log in with. It is possible to use the master password too.

3.2.2 Event LOGOUT

Event LOGOUT

Table 40: Data Format for the LOGOUT Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0055	The LOGOUT event logs out on an OpenScape Xpert Client. Once the LOGOUT event completes, PC control is suspended and no more user actions are possible except for the LOGIN event.

3.2.3 Event RECEIVE_CALLS_ONLY

Event RECEIVE_CALLS_ONLY

Table 41: Data Format for the RECEIVE_CALLS_ONLY Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0056	The RECEIVE_CALLS_ONLY event locks the OpenScape Xpert Client, disabling outgoing calls. The OpenScape Xpert Client may still receive incoming calls. Enter the LOGIN event to exit this state.

3.2.4 Event SEIZE

Event SEIZE

Table 42: Data Format for the SEIZE Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0050	The SEIZE event seizes a line from any state if possible. If the line is not available, no action is performed.
0 ... 15	LINE_NO *)	Line number range 0x00	The number of the line to be seized (refer to Line Numbering in an IP System (Line Number Range)). If zero, the prime line is seized; otherwise, the specified line is seized.
0 ...1	HANDSET *)	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be seized. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used. A line on this handset will be held or disconnected.
0 ... 25	DIGITS *)	0x30. . 0x39 (’0’. . ’9’), 0x23, 0x2A (’#’, ’*’), 0x2D, 0x20 (’-’, ’ ’) 0x00 (0)	The number of the subscriber to be called. The DIGIT field is a null-terminated ASCII string with a maximum length of 24 characters.

*) These fields are optional (from backwards). If they are not filled out, zero (0x00) or empty strings are assumed.

3.2.5 Event DIAL

Event DIAL (Outgoing Call)

Table 43: Data Format for the DIAL Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0058	The DIAL event starts an outgoing call if a line is idle and available.
0 ... 15	LINE_NO *)	Line number range 0x00,	The number of the line (refer to Line Numbering in an IP System (Line Number Range)). If zero, the OpenScape Xpert Client dials on the prime line; otherwise, it dials on the specified line.
0 ... 1	HANDSET *)	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be seized. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used.
0 ... 25	DIGITS *)	0x30.. 0x39 (‘0’.. ‘9’), 0x23, 0x2A, 0x50, 0x70 (’#’, ’*’, ’P’, ’p’), 0x2D, 0x20 (’-’, ’ ’) 0x00 (0)	The number of the subscriber to be called. The DIGIT field is a null-terminated ASCII string with a maximum length of 24 characters.

*) These fields are optional (from backwards). If they are not filled out, zero (0x00) or empty strings are assumed.

3.2.6 Event POSTDIAL

Event POSTDIAL

Table 44: Data Format for the POSTDIAL Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0053	The POSTDIAL event allows the user to submit additional digits on a line that is already self_seized. This event applies only in the SELF_SEIZED state of the line.
1 ... 15	LINE_NO	Line number range 0x00,	The number of the line. (refer to Line Numbering in an IP System (Line Number Range)) If zero, postdialing applies to the line associated with the currently active handset; otherwise, it applies to the specified line.
1	HANDSET	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be dialed. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used. This field is only sent with the HTE-Protocol
1.. 25	DIGITS	0x30.. 0x39 (‘0’.. ‘9’), 0x23, 0x2A, 0x50, 0x70 (’#’, ’*’, ’P’, ’p’), 0x2D, 0x20 (’-’, ’ ’) 0x00 (0)	The number of the subscriber to be called. The DIGIT field is a null-terminated ASCII string with a maximum length of 24 characters.

3.2.7 Event XFER

Event XFER (Outgoing Call)

Table 45: Data Format for the XFER Application Message

Bytes	Field Name	Field Value	Field Description
This control message exists no longer in HTE.			

3.2.8 Event HOOK-OFF

Event HOOK-OFF (Incoming Call)

Table 46: Data Format for the HOOK-OFF Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0X0057	The HOOK_OFF event receives an incoming call.
0 ... 15	LINE_NO *)	Line number range 0x00,	The number of the line to be hooked off. (refer to Line Numbering in an IP System (Line Number Range)) If the line is not in the INCOMING_CALL state, no action occurs. If zero, the OpenScape Xpert Client enters the incoming call that is at the top of queue.
0 ... 1	HANDSET *)	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be seized. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used.

3.2.9 Event HOLD_LINE

Event HOLD_LINE

Table 47: Data Format for the HOLD_LINE Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0052	The HOLD_LINE event puts the specified line in the HOLD state.
0 ... 15	LINE_NO *)	Line number range 0x00	The number of the line to be put on hold. (refer to Line Numbering in an IP System (Line Number Range)) If zero, the OpenScape Xpert Client holds the line number assigned to the handset defined in the handset field. However, no action takes place if this handset does not have an associated line; otherwise, the OpenScape Xpert Client uses the specified line independent of the handset field.

Bytes	Field Name	Field Value	Field Description
0 ... 1	HANDSET *)	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be held. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used.

*) These fields are optional (from backwards). If they are not filled out, zero (0x00) or empty strings are assumed.

3.2.10 Event DISCONNECT

Event DISCONNECT

Table 48: Data Format for the DISCONNECT Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x0051	The DISCONNECT event disconnects this line on the connected OpenScape Xpert Client and puts it in the externally_seized state.
0 ... 15	LINE_NO *)	Line number range 0x00	The number of the line to be disconnected. (refer to Line Numbering in an IP System (Line Number Range)). If zero, the OpenScape Xpert Client disconnects the line number assigned to the handset defined in the handset field. However, no action takes place if this handset does not have an associated line; otherwise, the OpenScape Xpert Client uses the specified line independent of the handset field.
0 ... 1	HANDSET *)	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be disconnected. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used.

3.2.11 Event KILL_LINE

Event KILL_LINE

Table 49: Data Format for the KILL_LINE Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x005A	The KILL_LINE event releases the line immediatly, independent of the line state of any OpenScape Xpert Client and puts it in the idle state.
0 ... 15	LINE_NO *)	Line number range 0x00	The number of the line to be killed. (refer to Line Numbering in an IP System (Line Number Range)) If zero, the OpenScape Xpert Client kills the line number assigned to the handset defined in the handset field. However, no action takes place if this handset does not have an associated line;otherwise, the OpenScape Xpert Client uses the specified line independent of the handset field.
0 ... 1	HANDSET *)	0x00, 0x30 (0, ’0’) 0x31... 0x34, (‘1’... ‘4’)	The number of the handset to be killed. If zero, the OpenScape Xpert Client uses the number of the currently active handset; otherwise, the specified number is used.

*) These fields are optional (from backwards). If they are not filled out, zero (0x00) or empty strings are assumed.

3.2.12 Event SET_WEBPAGE

Event SET_WEBPAGE

Table 50: Data Format for the SET_WEBPAGE Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x005D	The SET_WEBPAGE event sets a web page on a webbrowser of the connected OpenScape Xpert Client.
0 ...	ALIAS	printable ASCII 0x20 ... 0xFF empty string	This field defines the alias name of the webbrowser. This name can be configured on the System Manager. The alias of each action is a unique null-terminated ASCII string.

Bytes	Field Name	Field Value	Field Description
0 ...	URL	printable ASCII 0x20 ... 0xFF empty string	This field defines the URL to be set on the webbrowser. The URL of each action is a unique null-terminated ASCII string.

3.2.13 Event ACTION_CONTROL

Event ACTION_CONTROL

Table 51: Data Format for the ACTION_CONTROL Application Message

Bytes	Field Name	Field Value	Field Description
2	EVENT	0x005B	With the ACTION_CONTROL event, the state of the action in the Trading System can be changed or queried. Every ACTION_CONTROL event will be acknowledged always with an ACTION_INFO event if the State Change Method is “Automatic 2 states” If the State Change Method is “API/CTI, 16+2 states” it will be acknowledged only if an error occurred or the ACTION_STATE is set to QUERY.
1	ACTION_ TYPE	0c34 (‘4‘)	Unused. In V6 Only Interface Key types can be controlled.
1 ...	ACTION_ ALIAS	printable ASCII 0x20 ... 0xFF	This field defines the Interface Key to be changed: The alias of each action is a unique null-terminated ASCII string with a maximum length of 20 characters. The ACTION_ALIAS is not case sensitive (a = A). Refer to Action. The ACTION_ALIAS can only be empty if the ACTION_STATE is set to QUERY

Bytes	Field Name	Field Value	Field Description
1	ACTION_ STATE	0x30 (‘0’), 0x31 (‘1’), 0x32 (‘2’) 0x41 (‚A‘) ... 0x5A (‚Z‘)	‘QUERY’: Queries the state of the Interface Key. If ACTION_ALIAS is empty, the current state for all Interface Key will be sent. To change the state of an action, use: ‘ACTIVE’ ‘INACTIVE’ ‚STATE_A‘ ... ‚STATE_Z‘
1..n	extended_info	to be specified	The extended_info field contains extended information of various types and sizes. Refer to Extended Information Blocks.

NOTICE:

The ACTION_CONTROL event works only if the “Send Info about Action“ flag in the OpenScape Xpert Client Properties is set, the action is defined in the CTI Interface configuration, the CTI OpenScape Xpert Client is loggedin or loggedout.

Table 52: Data Format for the Extended_Information_Block for the Key Text

Extended Information Block ‘K’ - Key Text (ACTION_CONTROL)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x48 ‘K’	The INFO_ID field is set to ‘K’ to indicate that the INFO field contains the text to be shown on the 2nd line of the Action Key Note: Optional Extended Info Block. If this block will not to be sent, the 2nd line text on the Action Key will not change.
1	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	KEY_TEXT	Null-terminated ASCII string	The KEY_TEXT field contains the text to be shown on the 2nd line of the Action Key. The null terminator (0x00) must be supplied even if the text string is empty. To delete the text on the 2nd line of the Action Key, this field KEY_TEXT can be left out (INFO_CNT = 0) or an empty string can be supplied.

Table 53: Data Format for the Extended_Information_Block 'L' for the Label Text

Extended Information Block 'L' - Label Text (ACTION_CONTROL)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x49 'L'	The INFO_ID field is set to 'L' to indicate that the INFO field contains the text to be shown on the Label (tab) of the Action Key. Note: Optional Extended Info Block. If this block will not be sent, the label text on the Action Key will not change.
1...n	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the INFO field.
INFO_CNT	LABEL_TEXT	Null-terminated ASCII string	The LABEL_TEXT field contains the text to be shown on the label (tab) of the Action Key The null terminator (0x00) must be supplied even if the text string is empty. To delete the text on the label of the Action Key, this field LABEL_TEXT can be left out (INFO_CNT = 0) or an empty string can be supplied.

Table 54: Data Format for the Extended_Information_Block 'F' for the First Line Text

Extended Information Block 'F' - First Line Text (ACTION_CONTROL)			
Bytes	Field Name	Field Value	Field Description
1	INFO_ID	0x46 'F'	The INFO_ID field is set to 'F' to indicate that the INFO field contains the text to be shown on the 1st line of the Action Key This extended info block works in version V4R5 or later. Note: Optional Extended Info Block. If this block is not sent, the 1st line text on the Action Key will not change.
1	INFO_CNT	0x01	The INFO_CNT field holds the byte count of the INFO field.

Extended Information Block ‘F’ - First Line Text (ACTION_CONTROL)			
Bytes	Field Name	Field Value	Field Description
INFO_CNT	KEY_TEXT	Null-terminated ASCII string	The KEY_TEXT field contains the text to be shown on the 1st line of the Action Key. The null terminator (0x00) must be supplied even if the text string is empty. To delete the text on the 1st line of the Action Key, this field KEY_TEXT can be left out (INFO_CNT = 0) or an empty string can be supplied.

3.3 Network Layer Information Messages from OpenScape Xpert Client to PC

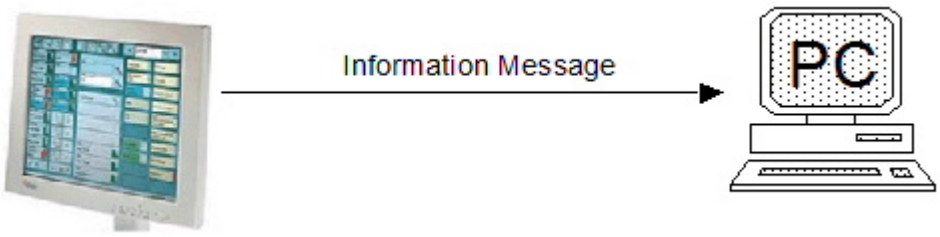


Figure 26: The Network Protocol Event Flow: Information Message

Table 55: Format of the Network Layer Data: Information Messages

Bytes	Field Name	Field Value	Field Description
1 ... 15	DEVICE_NO	device number range	The device number uniquely identifies a OpenScape Xpert Client within the topology. The Application Layer Message is only valid for this device. If the DEVICE_NO is 0x00, the Application Layer Message is valid for any OpenScape Xpert Client. You can determine your OpenScape Xpert Client’s device number from the System Info menu. (refer to OS Xpert Client Numbering in an IP System (Device Number Range))

Bytes	Field Name	Field Value	Field Description
1..30	CONFIG_NAME	Null-terminated ASCII string	The configuration name uniquely identifies a configuration in the System Manager. Each user will normally have a personal configuration, but a configuration can also be shared by several users. The configuration name is a null-terminated string. If the configuration is unknown or the DEVICE_NO is 0x00, the value for this field is only the null terminator (equals 0x00). You can determine your OpenScape Xpert Client's current configuration from the System Info menu.
			The Application Layer Message Refer to Application Layer Information Messages from OpenScape Xpert Client to PC for this information.

The values of the DEVICE_NO and CONFIG_NAME, respectively, are set as follows depending on event and mode:

- In Local Mode: These fields contain the values assigned to the local OpenScape Xpert Client.

  In Master Mode:
- With events DATE_TIME or TB_RESET: These fields contain the values assigned to the master OpenScape Xpert Client.
- With all events related to a specific device: These fields contain the values assigned to the OpenScape Xpert Client that triggered the message. For example, in the NEW_LINE_STATE event, the LINE_STATE field is set to the self_seized state, the hold state, or the externally_seized state.
- With all events not related to a specific device: The DEVICE_NO field is set to zero and the CONFIG_NAME field is assigned the null terminator only. For example, in the NEW_LINE_STATE event, the LINE_STATE field is set to either the IDLE state or the incoming_call state, or no state is signaled.

3.4 Network Layer Control Messages from PC to OpenScape Xpert Client

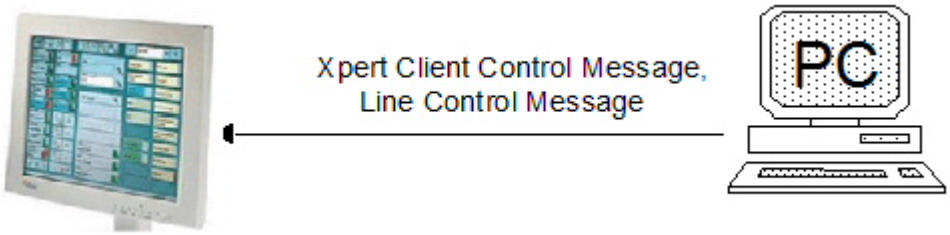


Figure 27: Network Protocol Event Flow: Control Messages

The network layer control message maps fully to the application layer message. It does not require a layer-specific header.

Table 56: Format of the Network Layer Data: Control Messages

Bytes	Field Name	Field Value	Field Description
			Application Layer Message Refer to Application Layer Control Messages from PC to OpenScape Xpert Client for this information.

3.5 Link Layer: Transmission and Masking

Rule 4: Transmit sequence: When transmitting a word (equals 2 bytes), the OpenScape Xpert Client sends or receives the low byte before the high byte.

Rule 5: The escape character (ESC, equals 0x1B) precedes any special character within the prefix and between start of text and end of text (any unprintable character in the range 0x00 to 0x1F). This special character is also ORed with the value 0x40. For example, to transmit the special character 0x05, build the sequence: 0x1B, 0x45.

Table 57: Format of the Link Layer Data

Bytes	Field Name	Field Value (hexadecimal)	Field Description
1	SOH *)	0x01 constant	Start of heading; this is the first byte of the prefix.
	Prefix *)	refer to Table 59 on page 94	Time stamp (MSG_TIME) and space for future application. The end of the prefix is always STX of the message.
1	STX	0x02 constant	End of heading, this is the last byte of the prefix. Start of text; this is the first byte of a message.
1	MSG_TYPE	constant 0x32	The message type serves as a protocol descriptor: - HTE protocol, OpenScape Xpert Client number in HTE format
1	MSG_CNT	0x00..0xFF	Message count Each message transmitted is numbered modulo 256 (equals 2 to the 8th power) in order to uniquely identify it among all 256 messages that may have preceded or followed it.

Bytes	Field Name	Field Value (hexadecimal)	Field Description
	Network Layer Data		Network Layer Message Refer to Network Layer Information Messages from OpenScape Xpert Client to PC for this information.
1	CHECK_SUM	0x40..0xFF	Checksum To calculate the checksum, the OpenScape Xpert Client adds the Prefix, MSG_TYPE, MSG_CNT, and Network Layer Data fields to modulo 256. The final checksum is the result of the operation sum OR 0x40.
1	ETX	0x03 constant	End of text; this is the last byte of a message.

*) The prefix of an information message applies only if the “Link Layer Prefix” flag in the OpenScape Xpert Client Properties is set.

Link Layer Prefix

The link layer prefix differs in Information and Control messages

Link Layer Prefix in Information Messages

The prefix holds at least the PREFIX_ORIGIN and the MSG_TIME field. For future applications, it can hold additional fields to be defined.

Note, that the end of the prefix is always start of text of the associated message. Find the STX field to skip any prefix data. Be sure to count any prefix data to get a correct checksum.

Table 58: Format of the Link Layer Prefix

Bytes	Field Name	Field Value (hexadecima	Field Description
1	PREFIX_ ORIGIN	0x3f(‘?‘) 0x54 (‘T‘) 0x53 (‘S‘) 0x4c (‘L‘) 0x46 (‘F‘) 0x41 (‘A‘) 0x4f (‘O‘)	Application, who added the prefix to the message: Unknown OpenScape Xpert Client (Sender) CTI Interface Receiver, connection over serial (COM) CTI Interface Receiver, connection over LAN CTI Interface Receiver, read from a file CTI Interface as Sender Other

Bytes	Field Name	Field Value (hexadecima	Field Description
1 ... n	MSG_TIME	printable ASCII	The time at the point of adding this prefix. The MSG_TIME is a null-terminated string in the form: "h:m:s" (24 hours). h: hour 0 ... 23, m: minute 0 ... 59, s: second 0 ... 59 The null terminator is supplied even if the string is empty.

Example: "16:9:14", Hexadecimal: 36 31 3a 39 3a 31 34 00

NOTICE:

The prefix of an information message applies only if the “Link Layer Prefix” flag in the OpenScape Xpert Client Properties is set.

Link Layer Prefix in Control Messages

Currently is no prefix defined for control messages.

NOTICE:

The Start of Heading (SOH) field can be left out even if the „Link Layer Prefix“ flag is set in the OpenScape Xpert Client Properties and vice versa.

3.6 Physical Layer: How to Set the Hardware Configuration

Prerequisites

Use the system manager to set the CTI Interface configuration and the protocol.

Step by Step

1) In the **Topology Desktop** window, select the CTI OpenScape Xpert Client and choose the Properties menu.

2) The following properties appear:

- **Protocol**

  Select:

  HTE for new development,
- **Properties (HTE Protocol Lines)**

  With the properties, you have to select the trading lines to be logged with the HTE protocol. Refer to Line Selection.
- **Mode**

  Refer to

  The HTE Protocol in Local Mode

  The HTE Protocol in Master Mode.

  The HTE Protocol in Combined Mode.
- **Extended Information**

  If you don‘t need any extended information in the HTE protocol, you can disable the check box “Extended Information“ to decrease data volume.

  Application Layer Information Messages from OpenScape Xpert Client to PC
- **Link Layer Prefix**

  To activate the time stamp in any information messages in the HTE protocol, you have to enable the check box “Link Layer Prefix in Information Messages“.
- **Ignore ‘AT H0‘ command**

  If the Application sends a AT H0 command to connect, this check box must be checked.
- **Send Info about PTT**

  If this box is checked, the HTE protocol will send any state change of the Push To Talk key on the handset. To get information about the PTT key, the Extended Informations box must be checked as well.

  Table: Data Format for the Extended_Information_Block for Mute / PTT

  This check box will be grayed out if the Mode is set to Master or if the Extended Informations box is disabled.
- **Send Info about Action**

  If this box is checked, if

  - the HTE protocol will send the state change of any in the CTI OpenScape Xpert Client configured Action key.

  - any Action key of the CTI OpenScape Xpert Client configuration can be controlled through the CTI Interface.

  NOTICE:

  See:

  Table: Data Format for the ACTION_INFO Application Message

  Table: Data Format for the ACTION_CONTROL Application Message

This check box will be grayed out if the Mode is set to Master

- **Port Specification**

  With the Port field you can verify the connection type:

  LAN (n), refer to LAN Specification,

  where n defines the port number:

  LAN: Default port is 9000.

3) After changing the hardware configuration, the OpenScape Xpert Client must be released.

4 Connection: Local Area Network (LAN)

This chapter describes the LAN specification and the IP address.

4.1 LAN Specification

The OpenScape Xpert Client acts as a LAN server and the Application on the far end as a client. It is possible to connect with up to five applications on the same port on Local Area Network (LAN).

If the OpenScape Xpert Client is a OCT, the client can be installed on the same PC (IP address: localhost).

The Link Layer Data will be transfered as application data of the Transmission Control Protocol (TCP) - Tunnelling.

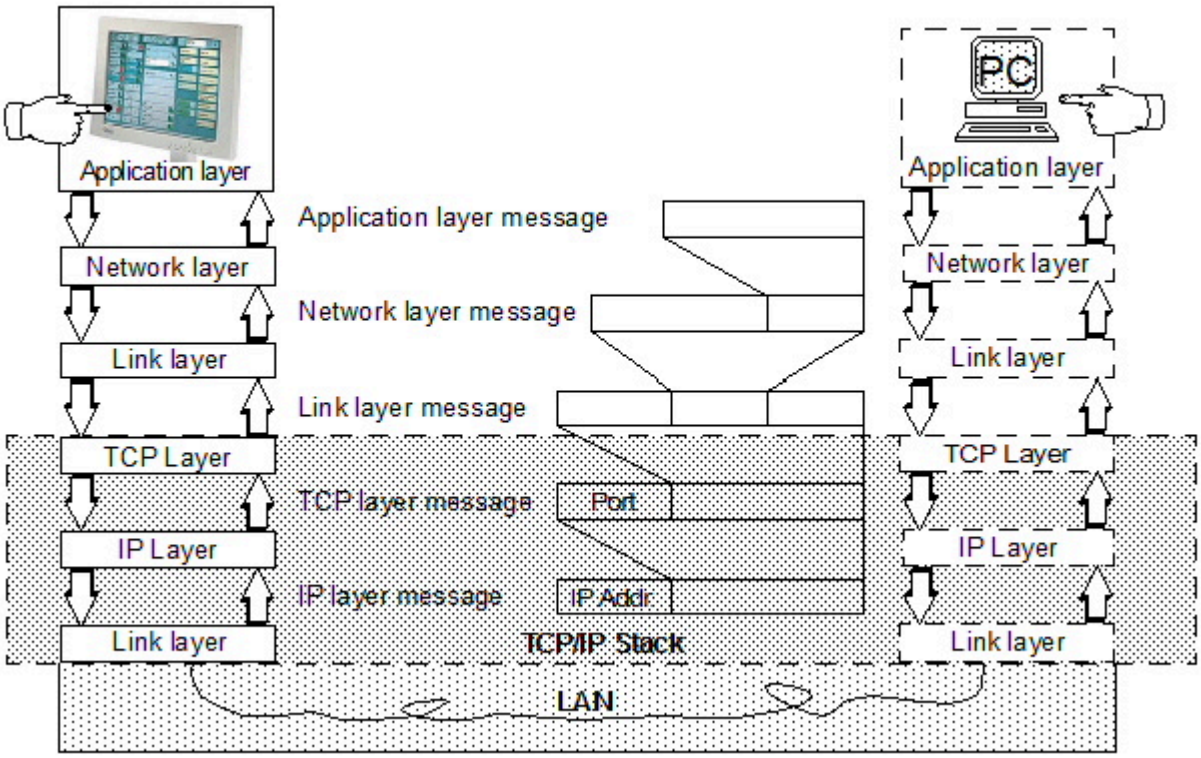


Figure 28: Connection through the LAN

4.2 IP Address

The IP address of the CTI Interface LAN server is the same as the CTI OpenScape Xpert Client. Use the IP address, MAC address or computer name to connect the client with the server.

Type „ipconfig“ in the cmd window (C: \WINNT\system32\cmd.exe) of the OpenScape Xpert Client to get the IP address.

The server port number is 9000 (default). The client takes any available port number.

5 Trace Examples

5.1 Interpretation

HTE Protocol (with Extended Info)

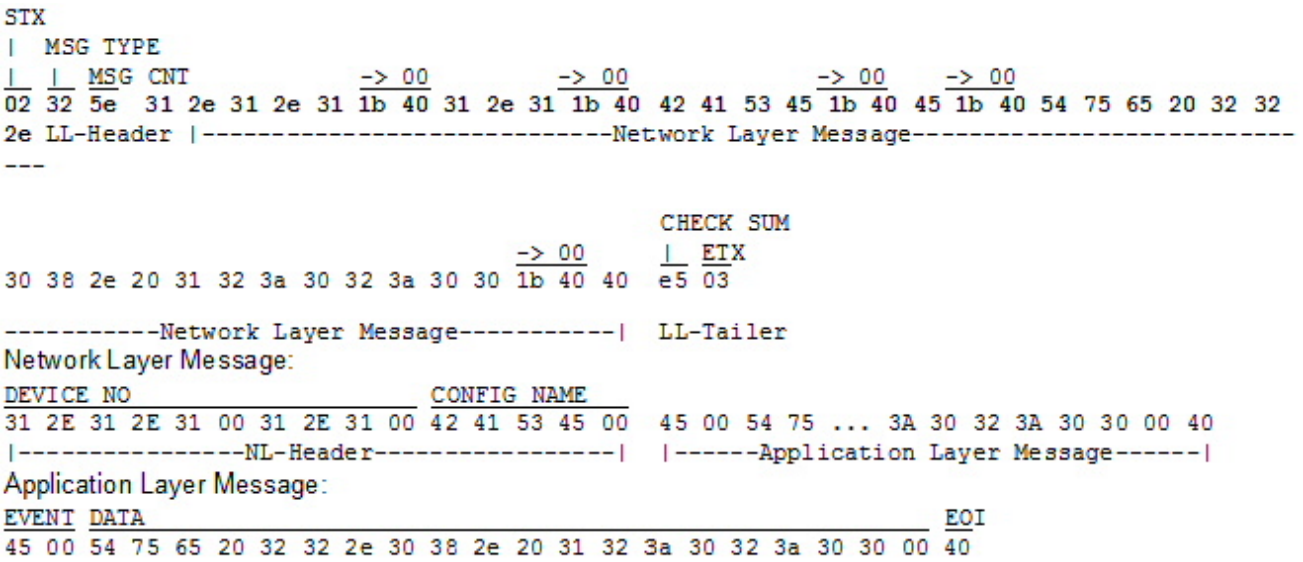


Figure 29: Link Layer Message:

5.2 Outgoing Call

HTE Protocol (with Extended Info)

Selecting line 1.41 at OpenScape Xpert Client 2.2.10, with the configuration “OLIVER MUENCH” , handset 1, and dialing the extension 3141. Voice Recording on at beginning:

```
Seizing line 1.41 (name:"3341") at TT 2.2.10 (configuration
“Oliver Muench”), handset 1, State: SELF_SEIZED, Display:
empty, privacy not activated

02 32 5f 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40 32
31 30 1b 40 1b 40 4e 1b 45 33 33 34 31 1b 40 53 1b 41 30 40
f5 03

Recording ON for TT 2.2.10 (Configuration "Oliver Muench"),
handset 1,assigned to line 3.41, recording over TRIMY 1
(11), HWY 1, TSL 1

02 32 60 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 31 1b 40 31 2e 34 31 1b 40 1b 40 30
31 54 1b 43 31 1b 41 1b 41 40 f7 03

Clearing the display for line 1.41 (name: "3341"), valid
for any TT, (no state change)
```

```
Display, one text string: "                          " ""

02 32 61 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 50 1b 41 41 53 1b 41 30 40 66 03

Dialing '3' on line 1.41 (name: "3341"), valid for any TT
(no state change),

Display, one text string: "3                         " ""

02 32 62 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 33 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 50 1b 41 41 53 1b 41 30 40 7a 03

Dialing '1' on line 1.41 (name: "3341"), valid for any TT
(no state change),

Display, one text string: "31                        " ""

02 32 63 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 33 31 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 50 1b 41 41 53 1b 41 30 40 4c 03

Dialing '4' on line 1.41 (name: "3341"), valid for any TT
(no state change),

Display, one text string: "314                       " ""

02 32 64 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 33 31 34 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 50 1b 41 41 53 1b 41 30 40 61 03

Dialing '1' on line 1.41 (name: "3341"), valid for any TT
(no state change),

Display, one text string: "3141                      " ""

02 32 65 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 33 31 34 31 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 50 1b 41 41 53 1b 41 30 40 73 03

Dialing complete on line 1.41 (name: "3341") (name found
for destination: OPTI ADV 2), valid for any TT, (no state
change),

Display, one text string: "3141 OPTI ADV 2        " "" ,
privacy not activated

02 32 66 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 33 31 34 31 20 4f 50 54 49 20 41 44 56 20 32
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 50 1b 41 41 53 1b 41 30 40 fd 03

Releasing line 1.41 from OpenScape Xpert Client 2.2.10
(release from near end):

Disconneting the Line 1.41 (line name: "3341" from TT TT
2.2.10 (with configuration "Oliver Muench"), handset 1,
State: EXTERNALLY_SEIZED,
```

```
Display, one text string: " " ""

02 32 67 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40 34
31 31 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31 1b 40 53
1b 41 30 40 40 03

Recording OFF for TT 2.2.10 (Configuration "Oliver
Muench"), handset 1,

assigned to line 3.41, recording over TRIMY 1 (11), HWY 1,
TSL 1

02 32 68 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 31 1b 40 31 2e 34 31 1b 40 1b 40 31
31 54 1b 43 31 1b 41 1b 41 40 40 03

Releasing the Line 1.41 (line name: "3341") from the
switch, valid for any TT,

State: IDLE, Display, one text string: " " ""

02 32 69 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
30 1b 40 31 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31 1b
40 40 77 03

Showing the own extension number in the display for line
1.41 (line name: "3341"),

Display, two text strings: "                        "
"3341                    ", valid for any TT,

02 32 6a 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 32 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 33 33 34 31 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 1b 40 4e 1b 45
33 33 34 31 1b 40 53 1b 41 30 40 ce 03
```

5.3 Incoming Call

HTE Protocol (with Extended Info)

Call from 3341 to line 1.41, pick up the line at OpenScape Xpert Client 2.2.10 with Configuration “OLIVER MUENCH” on handset 1. Voice Recording on at beginning:

```
Display info for line 1.41 (name: "3341") from the switch,
valid for any TT,

Display, one valid text string: "3141 OPTI ADV 2 " ,
privacy not activated

02 32 f3 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 31 33 31 34 31 20 4f 50 54 49 20 41 44 56 20 32
20 20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31
1b 40 53 1b 41 30 40 5d 03

Call on line 1.41 (name: "3341"), valid for any TT, display
not changed
```

```
02 32 f4 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
31 1b 40 30 1b 40 1b 40 4e 1b 45 33 33 34 31 1b 40 40 c2 03

Seizing line 1.41 (name: "3341") from TT 2.2.10 (with
configuration “Oliver Muench”)

on handset 1, State: SELF_SEIZED, display not changed,
privacy not activated

02 32 f5 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40 32
31 30 1b 40 1b 40 4e 1b 45 33 33 34 31 1b 40 53 1b 41 30 40
cb 03

Recording ON for TT 2.2.10 (Configuration "Oliver Muench"),
handset 1,

assigned to line 3.41, recording over TRIMY 1 (11), HWY 1,
TSL 1

02 32 f6 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 31 1b 40 31 2e 34 31 1b 40 1b 40 30
31 54 1b 43 31 1b 41 1b 41 40 cd 03
```

Release from the line (release from far end):

```
Releasing the Line 1.41 (name: "3341") from the switch,
valid for any TT,

State: IDLE, Display, one text string: “ “ ““

02 32 fb 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
30 1b 40 31 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 1b 40 1b 40 4e 1b 45 33 33 34 31 1b
40 40 c9 03

Recording OFF for TT 2.2.10 (Configuration "Oliver
Muench"), handset 1,

assigned to line 3.41, recording over TRIMY 1 (11), HWY 1,
TSL 1

02 32 fc 32 2e 32 2e 31 30 1b 40 1b 40 4f 6c 69 76 65 72 20
4d 75 65 6e 63 68 1b 40 31 1b 40 31 2e 34 31 1b 40 1b 40 31
31 54 1b 43 31 1b 41 1b 41 40 d4 03

Showing the own extension number in the display for line
1.41 (name: "3341"),

Display, two text strings: “                          “
“3341                    “,

valid for any TT,

02 32 fd 1b 40 1b 40 1b 40 30 1b 40 31 2e 34 31 1b 40 1b 40
1b 40 1b 40 32 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 1b 40 33 33 34 31 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 1b 40 4e 1b 45
33 33 34 31 1b 40 53 1b 41 30 40 61 03
```

5.4 Action Remote Control

ACTION_CONTROL

```
EVENT = ACTION_CONTROL
|     ACTION_TYPE = RING_TRANSFER
|      |  ACTION_ALIAS = „017 -> 09"    ACTION_STATE = ACTIVE
|____ |_ |____________________________ |_
5B 00 32 30 31 37 20 2D 3E 20 30 39 00 31
Link Layer Message:
STX
|  MSG TYPE
|  |  MSG CNT                                                    CHECK SUM
|_ |_ |_      -> 00                               -> 00        |_ ETX
02 32 fc   5B 1B 40 32 30 31 37 20 2D 3E 20 30 39 1B 40 31   50 03
LL-Header  |----------Application Layer Message----------|   LL-Tailer
```

Figure 30: Application Layer Message:

ACTION_INFO

An Action is valid for any OpenScape Xpert Client in the Xpert system. The Network Layer Header will be different:

- In Combined Mode: the DEVICE_NO ist set to 0 (0x00) and the CONFIG_NAME contains the empty string.
- In Local Mode, the DEVICE_NO and the CONFIG_NAME are set to the values of the CTI OpenScape Xpert Client
- The following trace shows the message in the Combined Mode.

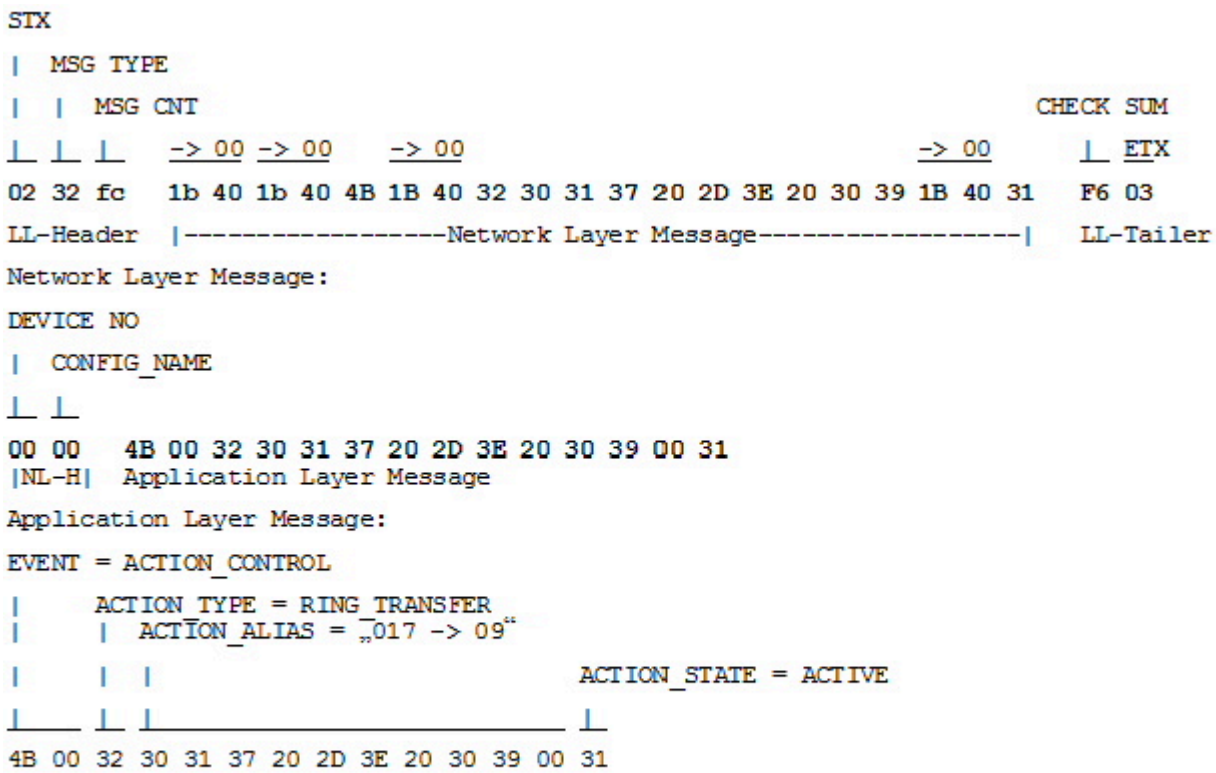


Figure 31: Link Layer Message:

6 Sequence Diagrams

6.1 Action

In order for ACTION_CONTROL messages to be processed and for ACTION_INFO messages to be sent, the “Send Infos about Action“ flag must be set at the system manager.

6.1.1 Controlling an Action from an External Application

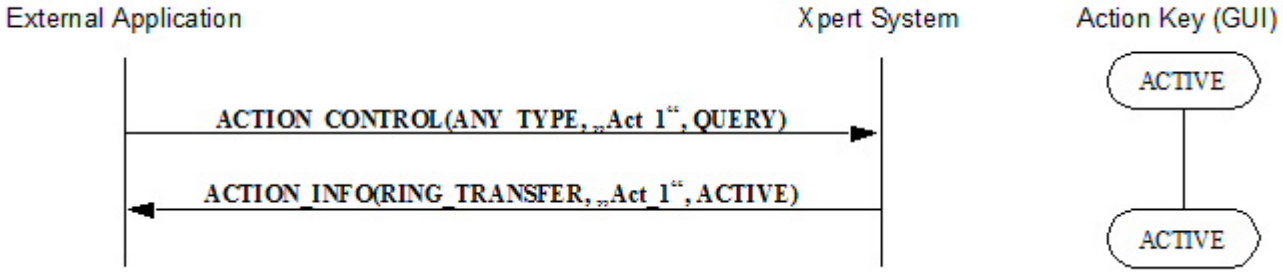


Figure 32: External Application queries the State of an Action

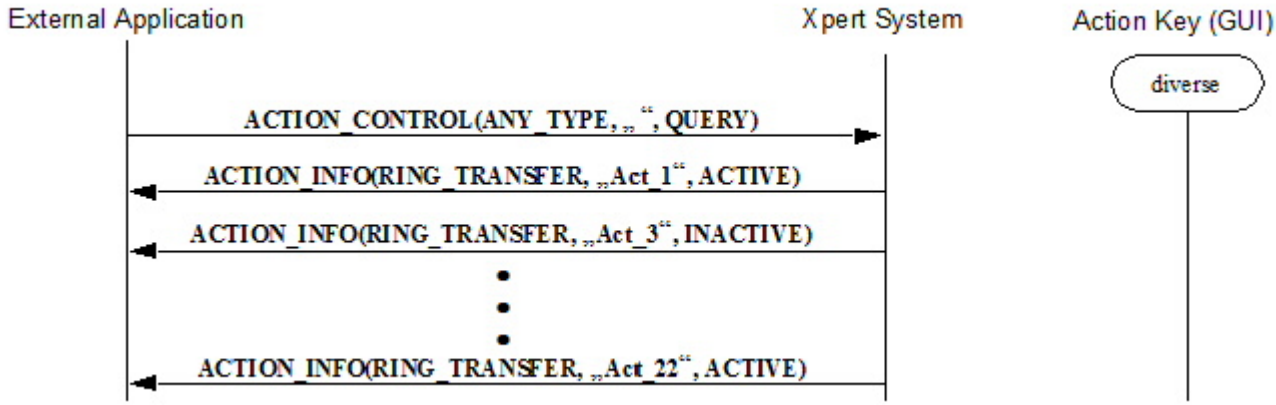


Figure 33: External Application queries the State of any Actions in the Configuration

Instead of ANY_TYPE, the set of actions can be confined with the appropriate type, e.g. RING_TRANSFER.

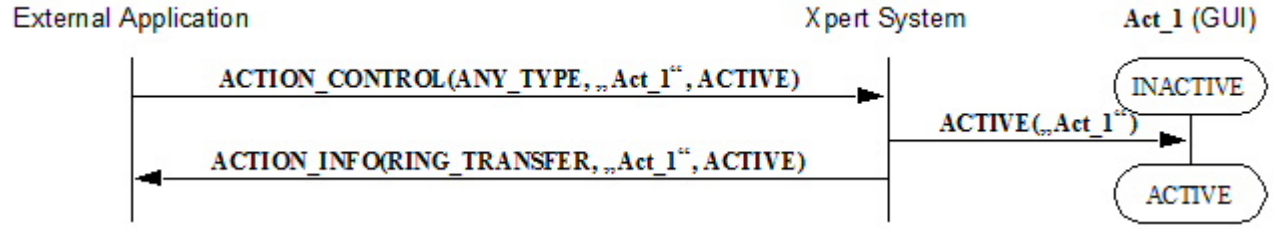


Figure 34: External Application changes the State of an Action

Once the action has the designated state, no change takes place in the Xpert system. The set state is acknowledged with ACTION_CONTROL message. Once this action is in a “Keep Active Group“, a deactivation of an action is only possible if it is not the last active action in this group. In this case, no error message will be shown but the unchanged state (ACTIVE) will be acknowledged with ACTION_CONTROL message.

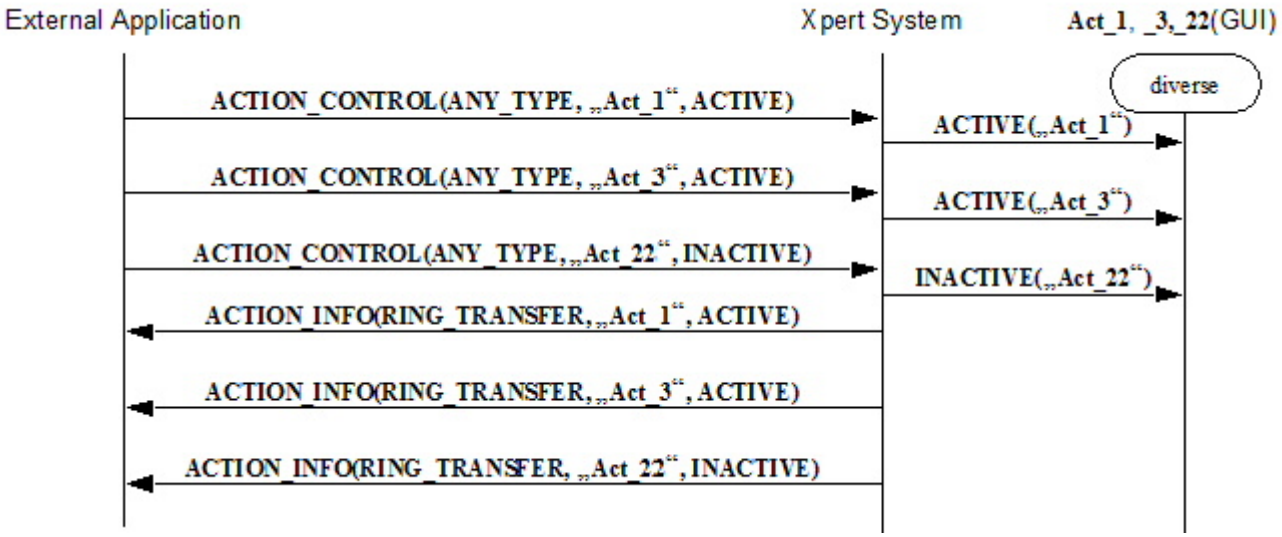


Figure 35: External Application changes the State of several Actions

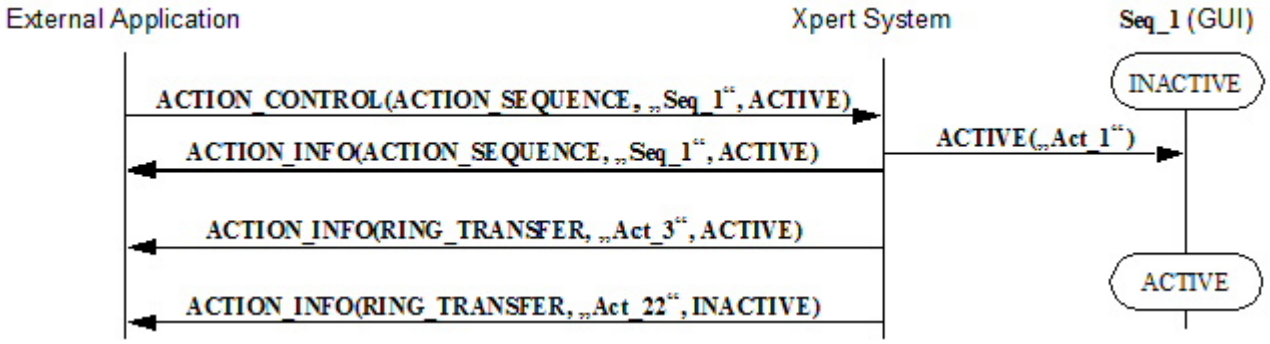


Figure 36: External Application changes the State of an Action Sequence

An “Action Sequence“ is an action that activates and deactivates several actions similar to a macro function.

6.1.2 Error handling while controlling from an external Application

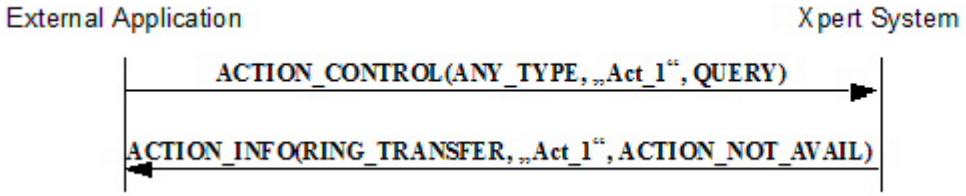


Figure 37: External Application queries the State of a not available Action

In an ACTION_CONTROL message, in case the type does not correspond with the action, it will be acknowledged as an error with TYPE_MISMATCH (instead of ACTION_NOT_AVAIL) message.

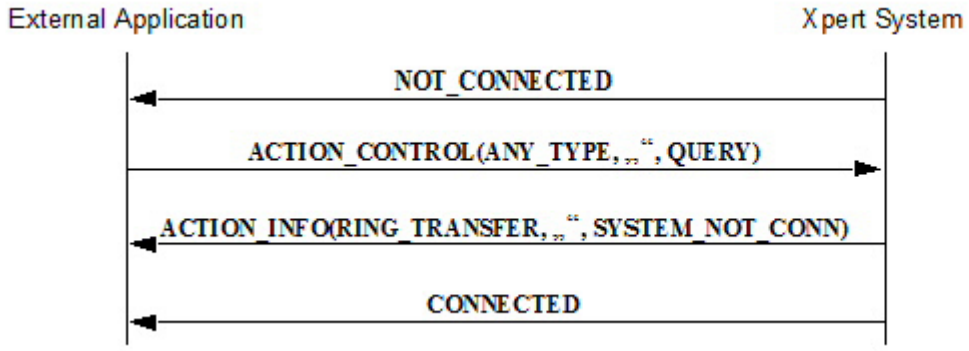


Figure 38: Disconnection in the Xpert System (OpenScape Xpert Client -> System)

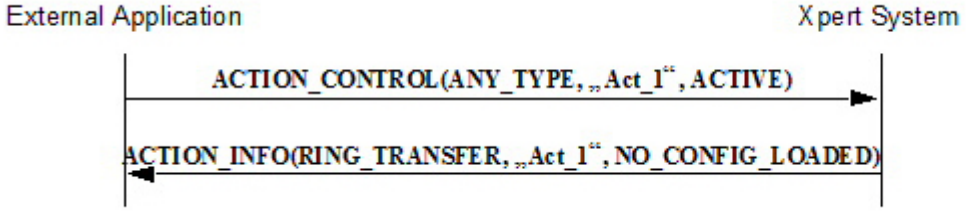


Figure 39: No Configuration loaded on the CTI OpenScape Xpert Client

6.1.3 Controlling by an Action Key in the Xpert System

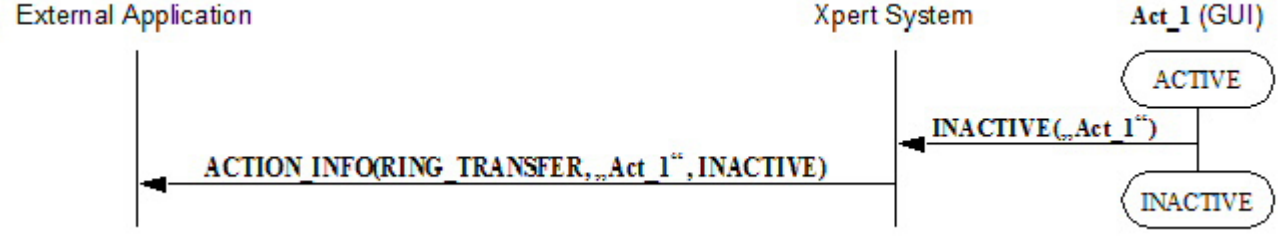


Figure 40: OpenScape Xpert Client changes the State of an Action

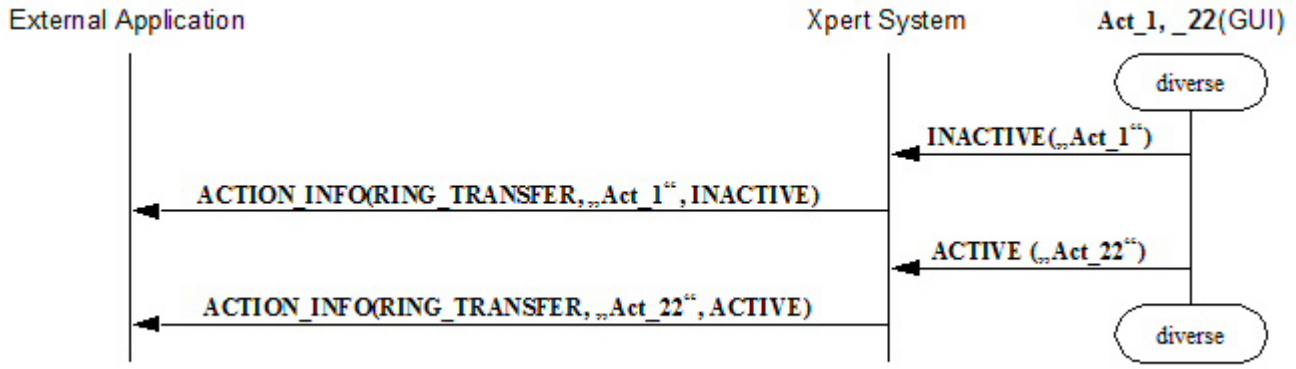


Figure 41: OpenScape Xpert Client changes the State of several Action (Action_Sequence)

7 Glossary

Action

Common line

Configuration

CTI Xpert Client

Device number range

Event

Finite State Machine

HTE Protocol

Key System

Layer

Line

Line Number Range

Local Mode

Master Mode

Master OpenScape Xpert Client

Multiple Subscriber Line Device

OSV System

Packing Data

Port

Prime Line

Protocol

State

Unpacking Data

Refer to finite state machine.

A key element of expanded telephone technology is the installation of common lines. They interconnect terminals. Any member of the group with this common line has equal-ranking access to all calls at any time.

Defines a set of features available on an OpenScape Xpert Client. Use the System Manager to save, edit, or load a certain configuration.

The OpenScape Xpert Client that is connected to the host / pc.

See OS Xpert Client Numbering in an IP System (Device Number Range)

Occurrence of an incoming signal. This signal can be a message or can indicate that a defined state was reached. Refer to finite state machine.

A tuple of state, event, action, and next state that is assigned to a data type. In a given state, an event yields an action, possibly changing the state of the machine.

The HTE Protocol is adapted to OpenScape Xpert based on the SAZ protocol.

A system capable of attaching multiple lines to multiple subscriber sets.

A means of subdividing in order to reduce the complexity of the whole. In this case, information from inside the OpenScape Xpert Client needs to be transformed via the CTI Interface for use in the outside world. In a layered protocol, each layer uses the layers below it and serves the layers above it. If two communicating nodes have the same layers, then the corresponding layers on the individual nodes communicate with one other.

In terms of a PABX, a line is the linking medium to a subscriber or to another exchange node. If not otherwise mentioned in the context of the OpenScape Xpert Client software, the term line is used as a short form of the abstract representation of the subscriber line. The line is modeled as a finite state machine. (Refer to prime line.)

See Line Numbering in an IP System (Line Number Range)

In the HTE Protocol, the local mode allows the user to control the local OpenScape Xpert Client and to query the OpenScape Xpert Client state, the states of the lines attached to the OpenScape Xpert Client, and incoming and outgoing calls.

In the HTE Protocol, the master mode allows the user to query the OpenScape Xpert Client state, the states of the lines attached to the OpenScape Xpert Client, and incoming and outgoing calls on all peer OpenScape Xpert Clients. Neither the (local) master OpenScape Xpert Client nor any peer OpenScape Xpert Client can be controlled in this mode.

The OpenScape Xpert Client that runs the HTE Protocol in master mode.

Allows concurrent operations on the lines attached to it, e.g., to handle multiple incoming and outgoing calls, transfer calls, manage conferences. (Refer to key system.)

This is a private automatic branch exchange. A trademark of Unify.

Information relevant to the packing layer is added to existing data.

A connection or interface point on a computerized device (such as OpenScape Xpert Client CTI Interface).

The preferred line on the OpenScape Xpert Client. Unless specified otherwise, the OpenScape Xpert Client operates on the prime line. Refer to line.

An interface specification of a class or of a layer, offering a set of services. A service fulfills a certain function or can handle a message to or from this layer.

A defined situation of the system or object considered. One or more combinations of a set of variables map to a state. (Refer also to finite state machine.)

Information relevant to the unpacking layer is removed from existing data.

8 Abbreviations

This table shows some important abbreviations.

ASCII	American Standard Code for Information Interchange
CTI	Computer Telephony Integration
Channel	IP Voice Recorder Channel, sending RTP Streams to the respective IP Port (corresponds to a TSL in a TDM System)
DB	Data Base
DCE	Data Communication Equipment or Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
FSM	Finite State Machine
HTE	Hicom Trading Evolution (OpenScape Xpert)
HTE Format	Numbering Format for the HTE systems
HTE Protocol	Protocol using the HTE Format
ITU	International Telecommunication Union
ITU-T	Telecommunication Standardization Sector of ITU
IP-Port	Port of an IP Recorder
IP-Recorder	Voice Recorder as an IP Node receiving RTP Stream (corresponds to the PCM-Highway of a TDM System)
IP System	HiPath Trading System, using VoIP
JSP	Jackson System Programming Notation
LAN	Local Area Network
MLC	Multi Line Controller
PABX	Private Automatic Branch Exchange
PC	Personal Computer
PCM	Puls Coded Multiplex
SM	System Manager
TT	OpenScape Xpert Client (Trading Turret)
Trading Classic	Hicom Trading 300 (HTS)
Trading E	Hicom Trading Evolution (HTE)
Trading Protocol	Unify Protocol, running on the CTI Interface between an OpenScage Xpert client and the Customer Application.

TSL	Time Slot of an PCM Highway

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