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OpenScape Business V2

Description

CSTA Interface Manual

Services for computer supported telecommunications applications (CSTA)

Phase III

Part 4: Escape Services

Version 1.3

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Table of History

Version	*Changes*
1.0	First Version
1.1	New contact email-address for Technology Partner Team
1.2	CSTA-XML
1.3	Formal release for OpenScape Business V2R0

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Introduction

OpenScape Business provides a link to host computers using the CSTA protocol (Phase III) defined in ISO18051 and ISO18052 (ECMA 269, ECMA-285).

- Part 1 of this document describes the ECMA-269 related matters.
- Part 2 of this document describes the ECMA-285 related matters. The provided parameters are shown at chapter PICS.
- Part 3 of this document describes in analogy to ECMA-TR/82 typical call flows.
- Part 4 of this document describes the supported Escape Services

CSTA is provided by the following OpenScape Business configurations:

- OpenScape Business X3/X5/X8 equipped with an UC Booster Card or UC Booster Server
- OpenScape Business Server

Note:
In this document one of the above described configurations is meant, when OpenScape Business is mentioned.
OpenScape Business does not support Escape-Services or private parameters on CSTA-XML.

1 Escape Services

1.1 CSTA Phase III (Common extensions)

Described below are the elements of Common extensions – CSTAPrivateData – PrivateData.

1.1.1 Layout of the Escape Service Message

1.1.1.1 Element manufacturer

OBJECT IDENTIFIER (0x06)
length
Siemens-PN ID

<length> lenght of the following data.

<Siemens-PN ID> {iso(1) identified-organization(3) icd-ecma(12) standard(2) (1107) (15)}

1.1.1.2 Element pnPrivateData

The pnPrivateData Element is coded as OCTET STRING.

OCTET STRING (0x04)
length
ApplicationHeader
Data-Element 1
Data-Element n

<length> lenght of the following data.

<ApplicationHeader> described below

<Data-Element 1 – n> described below

1.1.2 Application header

In order to define the relevant application and the corresponding action 7ob e carried out, the pnPrivateData started with an **application header** (APL).
This application header follows the application itself described in the following chapters.

APL (0x1A)
length (0x04)
aplid
action

<aplid> identifies the Escape-Service application to which the following message elements belong:

0x01	TDS	TDS
0x02	AMHOST	Administration
0x06	MAINT	Maintenance

<action> supplies information on the applications activities :

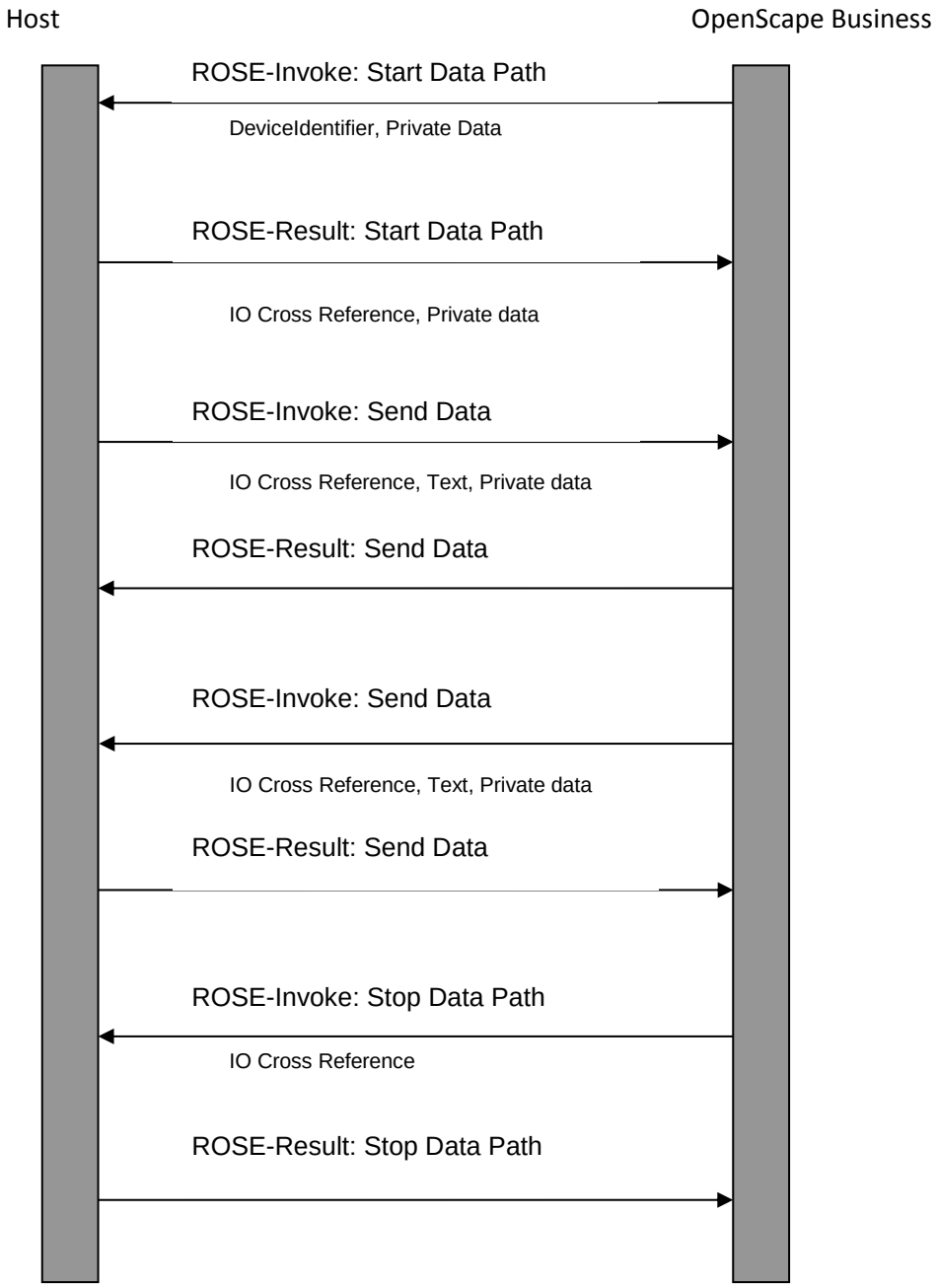
0xC0	START	Start Service
0xC4	AINFO	Application-specific information

1.2 TDS (telephone data service)

Before TDS can be used, the host has to register for TDS through Escape TDS Start to the OpenScape Business.

```
HOST                                          OpenScape Business
  |<APL>:TDS+START                            |  Command
  |------------------------------------------>|
  |                          <APL>:TDS+STARTACK|  Positive command acknowledgment
  |<------------------------------------------|
```

The Input/output service of CSTA is used to provide the feature TDS (telephone data service). After dialling the TDS access code from a phone a logical IO link to the host will be established. After this dialled digits are sent to the host and in other direction data from host will be displayed on the phone. The ApplSubID is only one Digit. TDS can only start from the User. Only one Application is supported at the same time.


Host
OpenScape Business
ROSE-Invoke: Start Data Path
DeviceIdentifier, Private Data
ROSE-Result: Start Data Path
IO Cross Reference, Private data
ROSE-Invoke: Send Data
IO Cross Reference, Text, Private data
ROSE-Result: Send Data
ROSE-Invoke: Send Data
IO Cross Reference, Text, Private data
ROSE-Result: Send Data
ROSE-Invoke: Stop Data Path
IO Cross Reference
ROSE-Result: Stop Data Path

Structure of Private Data for TDS:

Element:	0xe0
Length:	0x03
Cause:	0xxx
InputCtrl:	0xxx
ApplSubID:	0xxx

Cause:	0x74	Destination blocked = reorder tone
	0x77	Number unobtainable = no tone
	0x78	Wrong class of service = intercept tone
	0x87	Not possible = NAK tone
	0xF4	Try again, no resources = busy tone
	0xF5	Next parameter = recall dial tone
	0xF6	Last parameter = confirmation tone
	0x6D	Not enough digits = no tone
InputCtrl:	0x01	Accept and echo input
	0x02	Input is ignored
	0x03	Accept input and echo asterisk
ApplSubID:	0x30 – 0x39	

1.3 Administration and Maint. from host (Escape Service AMHOST)

1.3.1 General information

The application provides important functions for the administration of the OpenScape Business database from host.
A command from the host must contain all necessary parameters. The AMHOST services Display / Change can be requested for one device or one group at a time.
Concurrent database changes have to be avoided.

1.3.2 Message elements

1.3.2.1 AMHOST header

AMHSTHDR (0x1E)
length (0x08)
noun-nr
verb-nr
version
reserved (0x00)
amhstmt
0x00

<noun-nr> Number that specifies the item to be processed (e.g. Station).

0x01 : STN	Station
0x02 : SWCONGRP	Connection group switch over

<verb-nr> Number for identifying the activity (e.g. display, change).

0x01 : CHA	Change
0x02 : DIS	Display
0x04 : SWI	Switch

<version> Version number; at time don,t care(0x00); the system sends back 0x01.

<amhstmt> message type for command or data transfer.

0x01 : REG	Register
0x02 : REGACK	Register acknowledge
0x03 : REGREJ	Register reject
0x04 : CAN	Cancel
0x05 : CANACK	Cancel acknowledge
0x06 : DATA	Data
0x07 : DATAACK	Data acknowledge
0x08 : DATANAK	Data negative acknowledge

1.3.2.2 Cause

AMHSTCSE (0xAD)
length (0x04)
cause
dummy

<cause> Single-byte field that specifies a cause.

0x01 : No AMHOST header *)
0x02 : Wrong noun number *)
0x04 : Wrong verb number *)
0x05 : Wrong parameter
0x06 : Missing parameter *)
0x0D : Undefined error *)
0x0C : No contents (e.g. no display information available) *)
0x14 : Element is out of range
0x30 : No station
0x31 : Station does not exist
0x3C : Group does not exist
0x3E : Overflow destination does not exist
0x42 : Night destination does not exist
0x44 : Member does not exist
0x47 : Not member of group
0x49 : RCDA does not exist
0x52 : Member is already in an ACD group
0x54 : Call number does not exist

*) This cause element is not followed by the data element for which an error was found.

<dummy> If the host computer receives the cause element from OpenScape Business, this field is regarded as a dummy field. This means that the field is not evaluated and can contain any value.

1.3.2.3 Structure types

All other AMHOST data elements can be built from 4 so-called structure types by entering the element name in the first byte and the appropriate values below the length. Each structure type contains one item of logical information.

1.3.2.3.1 Structure type 1

Element name
4
Data byte
0x00 or dummy

The assignment of the data byte depends on the specified data element name.
0x00 or dummy: If the host computer sends the cause element to OpenScape Business, 0x00 must be entered in this field. If the host computer receives the structure type from OpenScape Business, this field is regarded as a dummy field. This means that the field is not evaluated and can contain any value.

1.3.2.3.2 Structure type 2

Element name
Length (even number)
Character counter
Up to 24 characters From The ASCII character set

The length of the structure type must be an even number. It may therefore be necessary to append the 0x00 character.
Character counter: Specifies the number of characters that follow. If the subsequent characters form a character string, the character counter specifies the length of the character string. The string does not end in 0x00. An additional 0x00 byte, which is appended to provide an even-numbered length, has no effect on the character counter.

1.3.2.3.3 Structure type 3

Element name
4
Low-order byte
High-order byte

The assignment of the low-order and high-order data byte depends on the specified data element name.

1.3.2.3.4 Structure type 4

Element name
Character counter
Up to 32 characters from the ASCII character set

The length of this structure type can be even or not. It is not necessary to append the 0x00 character.
Character counter: Specifies the number of characters that follow. If the subsequent characters form a character string, the character counter specifies the length of the character string. The string does not end in 0x00.

1.3.2.4 Element definitions

Each data element contains one item of logical information. The number in the "structure type" field specifies the structure type defined above to be used for this element.
The following table provides an overview of all elements that can be used in the AMHOST application. The respective types and value ranges for the information must be strictly observed.

Element name	Hexa-decimal value	Type/value range for the infor-mation	Information length (min/max)	Structure type	Description
DEVID (device ID)	0xD3	ASCII/ 0-9	1/32	4	call number of station
CALLNO (call/subscriber number)	0xA2	ASCII/ 0-9	0/32	2	Dialed station number (length 0: no valid CALLNO)
NAME (name)	0xA3	ASCII	0/16	2	Station name up to 16 characters (character counter=0 means: name is deleted)
PIN (personal iden-tification number)	0xA5	ASCII/ 0-9,*,#	1/12	2	Personal identification number
SWMODE (switch mode)	0xA8	integer/ 0x01or 0x02	1/1	1	0x01: deactivate code lock or change day COS 0x02 activate code lock or change night COS
SWTYPE (switch type)	0xA9	ASCII/ *	1/1	2	only * allowed
COSDN (cos day/night)	0xA1	integer/ 1-15	1/1	1	Class of service for day/night 1 no central office authorization to 15 full central office authorization

1.3.3 Commands

The following commands can be given from the host computer to OpenScape Business.

1.3.3.1 Commands for stations

1.3.3.1.1 Display station properties

<AMHSTHDR>:STN+DIS
<DEVID>:...

OpenScape Business output:

<AMHSTHDR>:STN+DIS
<NAME>:
<PIN>:
<CALLNO>:
<DEVID>:

1.3.3.1.2 Change name

<AMHSTHDR>:STN+CHA
<DEVID>:...
<NAME>:...

1.3.3.1.3 Change PIN

<AMHSTHDR>:STN+CHA
<DEVID>:...
<PIN>:...

1.3.3.2 Commands for Code Lock and day/night COS for a station

This function is used

- to switch the code lock for a station
- to change the connection rights (day COS / night COS) for a station.

The new rights are valid for a station starting with the next call.

1.3.3.2.1 Activate Code lock for a station

<AMHSTHDR>:SWCONGRP+SWI
<SWTYPE>: "*"
<CALLNO>:...
<SWMODE>: 2

1.3.3.2.2 Deactivate Code lock for a station

<AMHSTHDR>:SWCONGRP+SWI
<SWTYPE>: "*"
<CALLNO>:...
<SWMODE>: 1

1.3.3.2.3 Change day COS for a station

<AMHSTHDR>:SWCONGRP+SWI
<SWTYPE>: "*"
<CALLNO>:...
<SWMODE>: 1
<COSDN>:...

1.3.3.2.4 Change night COS for a station

<AMHSTHDR>:SWCONGRP+SWI
<SWTYPE>: "*"
<CALLNO>:...
<SWMODE>: 2
<COSDN>:...

1.3.4 Message flow

1.3.4.1 Command with positive or negative acknowledgment

```
HOST              OpenScape Business
  |<APL>:AMHOST+AINFO                                  |
  |<AMHSTHDR>:noun+verb+version+REG                    |
  |-------------------------------------------->       |        Command
  |                                <APL>:AMHOST+AINFO  |
  |                <AMHSTHDR>:noun+verb+version+REGACK |
  |<--------------------------------------------       |   Positive command acknowledgment
  |                                                or  |
  |                                <APL>:AMHOST+AINFO  |
  |                <AMHSTHDR>:noun+verb+version+REGREJ |
  |                                  <AMHSTCSE>:cause  |
  |                                        [<element>] |   (For most causes erroneous element is given)
  |<--------------------------------------------       |   Negative command acknowledgment
```

1.3.4.2 Transmission of display data from OpenScape Business

A station display command for example results in the following message exchange:

```
HOST                                                    OpenScape Business
 |                                                                  |
 |<APL>:AMHOST+AINFO                                                |
 |<AMHSTHDR>:STN+DIS+version+REG                                    |
 |<STN>:...                                                         |
 |-------------------------------------------------------------------> Display command from the host computer
 |                                        <APL>:AMHOST+AINFO        |
 |                          <AMHSTHDR>:STN+DIS+version+DATA         |
 |                                                  <NAME>:...      |
 |                                                    <PIN>:...     |
 |                                               <CALLNO>:...       |
 |                                                 <DEVID>:...      |
 |<------------------------------------------------------------------- Data from OpenScape Business
 |                                                                  |
```

1.3.4.3 Change, Set, or Switch operations

The data flow for those operations (verbs) is shown with an example for station name change:

```
HOST                                                    OpenScape Business
 |                                                                  |
 |<APL>:AMHOST+AINFO                                                |
 |<AMHSTHDR>:STN+CHA+version+REG                                    |
 |<STN>:...                                                         |
 |<NAME>:...                                                         (new name)
 |-------------------------------------------------------------------> Change command
 |                                        <APL>:AMHOST+AINFO        |
 |                       <AMHSTHDR>:STN+CHA+version+REGACK          |
 |<------------------------------------------------------------------- Acknowledgment
```

1.4 Maintenance of CSTA-Link (Escape Service MAINT)

1.4.1 General information

For supervision and maintenance of the CSTA-Link itself some additional functions are available for the host.

Heartbeat : the host may request OpenScape Business to send a message every 10 to 600 seconds to detect an interruption of the CSTA-Link. The message contains the OpenScape Business system time.

The maintenance application can be started from the host computer over every CSTA-Link.

1.4.2 Message elements

1.4.2.1 Maintenance header

MNTHDR (0x22)
length (0x04)
mntmt
cref

<mntmt> (maintenance message type) defines the message following this header.

0x01	reserved	
0x02	HBEAT	Heartbeat message
0x03	HBEATON	Switch heartbeat on
0x04	HBEATOFF	Switch heartbeat off

<cref> Identifier for the CSTA-Link. OpenScape Business gives the crossref Information (cref) in the Result Message of the Heartbeat-ON command. The crossref value has to be sent to the OpenScape Business with the Heartbeat-OFF command. In the other messages the crossref parameter has to be ignored.

1.4.2.2 System date

SYSDATE (0xB8)
length (0x06)
reserved
day
month
year

<reserved>	0xFF	has to be ignored if received.
<day>	0x01 - 0x1F	reports the OpenScape Business system day (1 to 31).
<month>	0x01 - 0x0C	reports the OpenScape Business system month (1 to 12).
<year>	0x00 - 0x63	reports the OpenScape Business system year (00 to 99).

1.4.2.3 System time

SYSTIME (0xB9)
length (0x06)
reserved
hours (0-23)
minutes (0-59)
seconds (0-59)

<reserved>	0xFF	has to be ignored if received.
<hours>	0x00 - 0x17	reports the OpenScape Business system hours (0 to 23).
<minutes>	0x00 - 0x3B	reports the OpenScape Business system minutes (0 to 59).
<seconds>	0x00 - 0x3B	reports the OpenScape Business system seconds (0 to 59).

1.4.2.4 Repetition time

REPTIME (0x23)
length (0x04)
rep (low byte)
rep (high byte)

<rep>	0x000A - 0x0258	gives the repetition time for the heartbeat messages from OpenScape Business. The value has to be in the range of 10 - 600 seconds.

1.4.3 Possible combinations of message elements

	-> Message elements	SYSDATE	SYSTIME	DATA	REPTIME
Message type	HBEATON				M
	HBEATOFF				
	HBEAT	M	M		

M = mandatory, C = conditional, O = optional

1.4.4 Message flow

1.4.4.1 Heartbeat function

```
HOST            OpenScape Business
  |<INVOKE>:EscService                                |
  |<APL>:MAINT+AINFO                                  |
  |<MNTHDR>:HBEATON                                   |
  |<REPTIME>:rep                                      |
  |------------------------------------------------>| Switch heartbeat on
  |                                <RESULT>:EscService|
  |                                 <APL>:MAINT+AINFO|
  |                             <MNTHDR>:HBEAT+CREF  | CREF = Crossref of CSTA-Link
  |                                        <SYSDATE> |
  |                                         <SYSTIME>|
  |<------------------------------------------------| First heartbeat message as result (sent immediatly)
  |                                <INVOKE>:EscService|
  |                                 <APL>:MAINT+AINFO|
  |                                   <MNTHDR>:HBEAT |
  |                                        <SYSDATE> |
  |                                         <SYSTIME>|
  |<------------------------------------------------| Following heartbeat message (sent after rep seconds)
  |<INVOKE>:EscService                                |
  |<APL>:MAINT+AINFO                                  |
  |<MNTHDR>:HBEATOFF+CREF                             | CREF = Crossref of CSTA Link
  |------------------------------------------------>| Switch heartbeat off
```

NOTE ! CSTA allows an Invoke not to be acknowledged, so no Result has to be sent.

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