estos ECSTA for OpenScape Voice

6.0.0.667

1 Introduction

estos ECSTA for OpenScape Voice offers multiple Telephony Service Providers for Microsoft® Tapi 2.1 (also 2.2 and 3.0). These Tapi drivers implement a central communication between a PC and the Telephony system (PBX). On this Server, all devices from the PBX are shown as Tapi lines.
All estos ECSTA for OpenScape Voice drivers use the powerful CSTA Interface to communicate with the PBX.

For installation and administration of the driver see Driver administration.
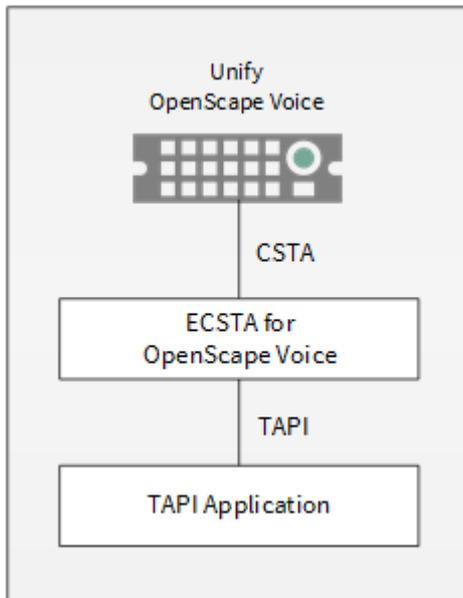
Supported PBX systems
All PBX systems of the Siemens Hipath 8000 / Unify OpenScape Voice family.

PBX	Driver
Hipath 8000 Version 3.1 and newer	ECSTA for OpenScape Voice
OpenScape Voice Version 3.1 or newer	ECSTA for OpenScape Voice

Using in the network
After installing the driver, you may use all configured line devices on the server as TAPI-lines. If you are using a server based CTI Software, you may install it now. To have the TAPI-devices available on all workstations, the TAPI-driver must be distributed in the network. There are the following options:

1. **estos UCServer**
   The estos UCServer is a CTI/UCC server software which distributes the telephony information across the network using a graphical client or a multi-line TAPI driver. Workgroups, domains, Active Directory® and Terminal Server are supported.
2. **estos CallControlGateway**
   The estos CallControlGateway for Lync/OCS is a gateway that connects the TAPI-lines with the Lync/OCS server. This enables the Lync/OCS client to use traditional telephone devices via Remote Call Control (RCC).
3. **Windows® Telephony Server**
   The Windows® Telephony Server is a component of Windows® server operating systems since Windows® NT. You will need a domain. The service is limited to domain users.

2 OpenScape Voice / Hipath 8000

During setup of the driver for the OpenScape Voice proceed as follows:

1. **Check network connection**
   Check the network connectivity to the CSTA Signaling Manager (ping hostname / IP Address).
2. **Configuration of the OpenScape Voice Server**
   Check access to the CSTA Signaling Manager. Configure the subscribers for CSTA. Siehe Configure OpenScape Voice.
3. **Driver installation**
   See also Settings

2.1 General Settings

The connection to the PBX system is established using TCP.
The connection is established directly to the CSTA Signaling Manager.

CSTA Signaling Manager
Enter the CSTA Manager Virtual IP 1. The default TCP port for the TCP connection is 1040.
See also OpenScape Voice Configuration.

2.2 Advanced Settings

Rules for detecting SIP lines
Choosing "Edit Rules" takes you to a dialog box that allows you to specify whether SIP lines should be detected by the ECSTA via a set of rules, filtered out and thus not forwarded to the TAPI's line management (See Set of Rules for Filtering Out SIP Lines).

Phone number format:
You may change the phone number format, that the driver reports to the applications. You may also change the phone numbers that are sent from the PC to the PBX. See Phone number formatting.

Advanced Parameters:

- Retry MonitorStart
  In case the driver cannot start the monitoring of an extension for example because the extension is not connected to the PBX, the driver will retry the montoring at regular intervals.
  Enter a time interval in seconds.

2.3 TAPI Lines

Please add all Lines, that should be available as TAPI lines on the PC.

Manual Add/Remove Lines:
Select the Office Code, the extension belongs to. Enter the internal phone number of the extension. In the lower part of the window you see the appropriate OpenScape Service ID and the international phone number.

Extras - Query extensions for Office Codes:
You may read the available extensions directly from the PBX system. All subscribers will be read that are related to an Office Code.

Extras - Import Text:
You may import Text files. The content of the file must contain one phone number in each line. The phone numbers of the extensions must be fully international. For example
+49(89)7123-12345

+49(89)7123-12346
+49(89)7123-12347

Extras - Export Text:
You may export the actual line configuration to a text file.

Attention:
After the installation of the driver it may be necessary to restart the computer.

2.4 Office Code Settings

An Office Code is a prefix for a range of phone numbers for extensions. An Office Code is made from a Country Code, Area Code and Local Office Code.

An international phone number has the following format:
+Country Code(Area Code)Local Office Code-Extension

The lines of the estos ECSTA for OpenScape Voice are always represented as fully international phone numbers. The subscribers of the Hipath 8000 are represented as either international or national phone numbers.

The Office Codes are required to automatically read the available subscribers from the Hipath 8000 and to associate the international phone numbers with the appropriate Hipath 8000 Service ID.

Range of extensions
The Range of the extension phone numbers. First extension is for example 1000, last extension is 9999.

OpenScape Office Code
The parts of the Office Code as configured in the Hipath 8000.

Office Code International
The parts of the Office Code, to build an international phone number.

In most cases the configuration of the two Office Codes is equal.

Examples:

Examples	Germany	USA	Liechtenstein
International Phone Number	+49(89)722-12345	+1(991)882-1234	+423 9876-123
First Extension	10000	1000	100
Last Extension	19999	1999	999
Country Code	49	1	423
Area Code	89	991	
Local Office Code	722	882	9876

2.5   Configure PBX system

Validate CSTA Manager configuration

- **Open the Common Management Portal**
  Open the Common Management Portal in a Web Browser and log on.

- **Navigate to the CSTA Settings**
  Navigate to Hipath 8000 - Administration - Signaling Management - CSTA. Validate the Maximum Number of CSTA Sessions.

Maximum CSTA Sessions:	16
Maximum Monitored Endpoints:	100000
CSTA Manager Virtual IP 1:	● 10.20.10.115
CSTA Manager Virtual IP 2:	10.20.10.116
Connection Port:	● 1040

Validate Subscriber configuration

- **Open the Common Management Portal**
  Open the Common Management Portal in a Web Browser and log on.

- **Navigate to the Subscribers**
  Navigate to Hipath 8000 - Business Group - Members - Subscribers. Open the configuration of a subscriber. CSTA must be enabled on the Services page in section General.

General

	Account Code	No		...
	Authorization Code	No		...
	CSTA	Yes	CSTA Over Sip	

The CSTA Type must be set according to the connected device.

OptiPoint	Siemens Type 1
OpenStage	CSTA Over SIP
Others	Normal

-

Detailed descriptions for Administration of CSTA and subscribers can be found in the Hipath 8000 / OpenScape Voice Administration manuals.

- Volume 2, Configuration and Administration using Common Management Portal and HiPath 8000 Assistant
- Volume 3, Volume 3, Configuration and Administration Using CLI Application-level Management

3   Settings

- General Settings
- Office Code Settings
- TAPI Lines
- Advanced Settings
- Settings Licenses
- Phone number format
- Configure PBX system

4   Set of rules for filtering out SIP lines

You can enter rules that determine whether lines should be filtered out during readout or not. If "no detection of SIP lines" is selected, all read-in lines will be included in the line management. If "Rules for detecting SIP lines" is selected, a set of rules is applied when reading in lines, which determines whether a line should be filtered out or included in the line management. This set of rules consists of individual rules created by the user.

For each rule it can be defined whether a configurable character string can be searched for in the name or call number, in order to filter out the line in the case of a match. Alternately, a regular expression can also be defined via which a search pattern is determined which is then applied in the search in the line name or the line number. If the search is successful the line will be filtered out.
The following rules can be configured:

- Filtering out of lines via a character string in line names
  When reading in the lines, those lines are not included in the line management whose line name contains the character string entered in the "Search for:" column.
  Example: If lines whose line name contains the character string "Paul" should be filtered out, all lines having the line names "Paul Sample", "Pauline Sample", "Lukas Paulsen"... will be filtered out.

- Filtering out of lines via a character string in the line call number
  When reading in the lines, those lines are not included in the line management whose line call number contains the character string entered in the "Search for:" column.
  Example: If lines whose line number contains the character string "897" should be filtered out, lines with the line numbers "897", "089123456897", "0897123456", would be filtered out.

- Filtering out of lines via a search pattern in line names which is configured via a regular expression
  The character string in the "Search for:" column must be a regular expression. When reading in the lines, those lines for which the search was successful by means of the regular expression in the line name are not included in the line management.
  Examples of regular expressions are listed further below.

- Filtering out of lines via a search pattern in the line call number which is configured via a regular expression
  The character string in the "Search for:" column must be a regular expression. When reading in the lines, those lines for which the search was successful by means of the regular expression in the line call number are not included in the line management.
  Examples of regular expressions are subsequently listed.

  Here is a brief overview about the syntax of some regular expressions:A brief overview of the permitted expressions:

Character	regular expression	Description
^	^o or ^Max	The circumflex character (^), followed by a character string in a regular

		expression, checks whether the character string is at the beginning of the call number or name. Using the regular expression "^0" causes the program to check whether the digit '0' is at the beginning of the call number, or with the regular expression "^Max", whether the name begins with the character string "Max". In both cases the line would be filtered out.
$	15$ or mann$	A character string followed by a dollar sign ($) in a regular expression checks whether the character string is at the end of the call number or name. The regular expression "15$" checks whether the character sequence "15" appears at the end of the call number, or the regular expression "mann$" checks whether the name ends with the character string "mann". In both cases the line is filtered out.
|	64|72|73 or Max|mann|lich	The vertical pipe character (|) separates two or more alternative character strings in the search. A match occurs when one of the alternatives applies. With the regular expression "64|72|73" a search for the numerical sequence 64 or 72 or 73 is performed anywhere in the call number. With the regular expression "Max|mann|lich" a search in the character string "Max" or "mann" or "lich" is performed anywhere in the name. If the search is successful the line is filtered out.
.	5.6 or M..er	The dot (.) in the regular expression is a placeholder for any character in this position. A search with the regular expression "5.6" will find the digit sequences 506, 516, 526... in the call number. A search with the regular expression "M..er" will find the character sequences "Meyer", "Meier", "Mayer",... in the name. If the search is successful the line will be filtered out.
[]	[123] or [asd]	The square brackets ([]) indicate a quantity of characters to be searched for in the call number or name. A search with the regular expression "[123]" will filter out all call numbers in which the digits 1, 2 or 3 occur. A search with the regular expression "[asd]" will filter out all names in which the letters a, s or d occur.

Check:
You can directly check your set of rules in the "Rules for detecting SIP lines" dialog box. Enter a character string in the Search Text field that you want to test with the set of rules. In the "Detected as SIP line:" field, you can see whether a rule for filtering was successfully applied to the search text.

See also Advanced Settings.

4.1   Licenses

You can test the driver for 45 days with 25 lines without a license and without other limitations. Once the trial period has expired, the lines will automatically be removed. You can purchase licenses codes and activate the driver permanently with them. To purchase licenses, please contact your dealer.

As many lines as desired may be configured in the driver. Opening a line requires a license. Once the existing licenses have been assigned to lines, opening more lines will not be allowed.

If you have added multiple driver instances, all instances will share the license specified. You can distribute the lines to any instance as you desire.

4.2 Phone Number Format

You may enter rules for formatting the phone numbers.

The phone numbers that are reported from the PBX system to the PC and the numbers that are send from the PC to the PBX system may be modified with a Search and Replace function.

The phone numbers that are sent from the Tapi Application to the PBX (make call) may be modified as well.

Each line in the list contains an option if direct text compare or a regular expression is used.

The Search and Replace function uses regular expressions. If a search pattern matches, the result from replace with will be used as output. It the search pattern does not match, the original number will be reported unchanged. The entries in the list are processed one after each other. If one match is found the remaining enties will be ignored.

There are three categories:

- o **Incoming**
  This section is for phone number from incoming calls that are reported from the PBX system to the PC.
- o **Outgoing**
  This section is for phone number from outgoing calls that are reported from the PBX system to the PC.
- o **PC Dialing**
  This section is for phone numbers that are dialed on the PC and send to the PBX system

Search for:
Enter the regular expression that will be used to match the phone number.
Hint: The Caret Sign (^) is located on the german keyboard on top left.
Here is a short description of the available expressions:

character	description
^	The beginning of the search string (phone number). The expression "^0" matches '0' only at the beginning of the search string.
^	The caret (^) immediately following the left-bracket has a different meaning. It is used to exclude the remaining characters within brackets from matching the target string. The expression "[^0-8]" indicates that only digits from 0 to 8 are allowed.
$	The dollar sign ($) will match the end of the string. The expression "152$" will match the sub-string "152" only if it is at the end of the string.
|	The (|) character allows both characters between which it is located. The expression "8|9" allows '8' or '9'.

.	The dot (.) allows any character (or any digit).
*	The asterisk (*) indicates that the character to its left must be present 0 times or more.
+	The Plus sign (+) is similar to the asterisk, only the character to the left must be present at least once.
?	The question mark (?) indicates that the character to the left must be present 0 or 1 times.
()	The parenthesis affects the order of pattern evaluation and also serves as a tagged expression that can be used when replacing the matched sub-string with another expression.
[]	Brackets ([]) enclosing a set of characters indicates that any of the enclosed characters may match the target character.

Replace with:
Enter the expression how the output of the phone number should look like.
\1 represents the first matched expression enclosed by parentheses '( )' from the *search pattern* field.
\2 the second...

Check:
You can check your input directly here. Enter a call number in the Call Number field that you wish to test with the Search/Replace. In the Output field the modified call number is displayed. If there is an error in the regular expression, it is indicated here. If the expression from Search for is not found, the call numbers will be output directly without any changes.

Examples:

Effect	search pattern	replace with
Remove a leading 0 from the phone number	^0(.*)	\1
Replace a leading 80 at the beginning of the phone number by a 0	^80(.*)	0\1
Remove a private pin number that may be identified by a 50 followed by a 3 digit pin.	^50[0-9][0-9][0-9](.*)	\1
Suppress all phone numbers that are internal (not more than 3 digits).	^[0-9][0-9][0-9]$	
Add an access code (leading 0) to all numbers with more than 3 digits (e.g. all external numbers).	^([0-9][0-9][0-9].+)	0\1
Add an area code and prefix (03012345) to all internal numbers (1 to 3 digits).	^([0-9][0-9]?[0-9]?)$	03012345\1
Adding an area code to all numbers not beginning with 0 and	^([^0][0-9][0-	08151\1

containing at least 4 digits (thus not internal).	9][0-9].*)	

5   Driver administration

Installation
The driver is installed on the system with the Windows® Installer (msi) Packet. If the Setup Packet contains several drivers then you can choose during Setup which drivers are to be installed.

Driver instance
The driver can be used to connect one or several phone systems. For this purpose one or several driver instances are registered in Windows® Tapi System.

Register at Tapi System
During the installation, an instance in the already selected driver is registered at the Tapi System. For this purpose you indicate the necessary data in a Wizard in order to connect the driver with the telephone system.

Configuration of driver instance
The configuration of the driver instances takes place either via *Telephone and Modem options* in the Control Panel or via the provided program *Advanced Telephone Driver options*, that can be found in the Control Panel or Start menu.

Add further driver instances
If you want to connect the computer with a further telephone system, you must add a further instance of the driver to the Tapi system. This takes place with the aid of the provided program *Advanced Telephone Driver options*, that can be found in the Control Panel or in the Start menu.

Updates
To install an Update start the Windows® Installer Packet (msi).
If a driver instance is configured, this is removed during the update and is added after the update automatically again. If several drivers instances are configured, the computer must be restarted after the update.

Deinstallation
Deinstallation takes place via Windows® Software Administration. In the Deinstallation, all instances of the driver are removed from the Tapi System and the software is uninstalled.

6 PBX systems

PBX	Driver
Hipath 8000 Version 3.1 and newer	ECSTA for OpenScape Voice
OpenScape Voice Version 3.1 or newer	ECSTA for OpenScape Voice

7   Software requirements

The estos ECSTA for OpenScape Voice can be installed on all Windows® systems that support Microsoft® TAPI 2.0 or higher. The following systems are supported in 32- as well as in 64-bit versions.

- o   Windows® 10
- o   Windows Server® 2012
- o   Windows Server® 2012 R2
- o   Windows Server® 2016
- o   Windows Server® 2019

7.1   Supported TAPI operations

This driver supports the following TAPI call control functions.

Action:	Corresponding TAPI function:
Dial	TSPI_lineMakecall
Hang up	TSPI_lineDrop
Answer call	TSPI_lineAnswer
Hold call	TSPI_lineHold
Retrieve call	TSPI_lineUnhold
Redirect call	TSPI_lineRedirect
Blind transfer	TSPI_lineBlindTransfer
Setup transfer	TSPI_lineSetupTransfer
Swap hold	TSPI_lineSwapHold
Complete transfer	TSPI_lineCompleteTransfer (LINETRANSFERMODE_TRANSFER)
Create conference	TSPI_lineCompleteTransfer (LINETRANSFERMODE_CONFERENCE)
Add to conference	TSPI_lineAddToConference
Remove from conference	TSPI_lineRemoveFromConference
Pickup	TSPI_linePickup

DTMF dialing	TSPI_lineGenerateDigits
Dial in dial tone mode	TSPI_lineDial
Forwarding	TSPI_lineForward TSPI_lineGetAddressStatus
Message waiting	TSPI_lineSetLineDevStatus TSPI_lineGetLineDevStatus

The following TAPI functions are implemented due to requirements of the TAPI subsystem.

Other functions exported by the driver:
TSPI_lineSendUserUserInfo
TSPI_lineClose
TSPI_lineCloseCall
TSPI_lineConditionalMediaDetection
TSPI_lineDevSpecific
TSPI_lineDevSpecificFeature
TSPI_lineGetDevConfig
TSPI_lineSetDevConfig
TSPI_lineGetAddressCaps
TSPI_lineGetAddressStatus
TSPI_lineGetAddressID
TSPI_lineGetCallAddressID
TSPI_lineGetCallInfo
TSPI_lineGetCallStatus
TSPI_lineGetDevCaps
TSPI_lineGetExtensionID

TSPI_lineGetIcon

TSPI_lineGetID

TSPI_lineGetNumAddressIDs

TSPI_lineNegotiateExtVersion

TSPI_lineNegotiateTSPIVersion

TSPI_lineOpen

TSPI_lineSelectExtVersion

TSPI_lineSetDefaultMediaDetection

TSPI_lineSetStatusMessages

TSPI_lineSetAppSpecific

TSPI_lineSetCallData

TSPI_providerCreateLineDevice

TSPI_providerEnumDevices

TSPI_providerFreeDialogInstance

TSPI_providerGenericDialogData

TSPI_providerInit

TSPI_providerShutdown

TSPI_providerUIIdentify

TSPI_lineGetCallIDs

TUISPI_lineConfigDialog

TUISPI_lineConfigDialogEdit

TUISPI_providerConfig

TUISPI_providerInstall

TUISPI_providerRemove	20
TUISPI_providerGenericDialog	
TUISPI_providerGenericDialogData	

TUISPI_providerRemove

TUISPI_providerGenericDialog

TUISPI_providerGenericDialogData

8 Info about estos ECSTA for OpenScape Voice

estos ECSTA for OpenScape Voice is a product of estos GmbH.

Product updates can be found under http://www.estos.de.

Frequently asked questions and answers, as well as support, can be found under https://www.estos.de/service.

Logging
To troubleshoot Log files can be created. These are stored in the specified path.
You may enter comma separated phone numbers in the 'Log Filter' field. In case you have entered phone numbers here, the log files will only contain relevant information for these extensions.

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