

# estos ECSTA for Communi5 Voice Application Server

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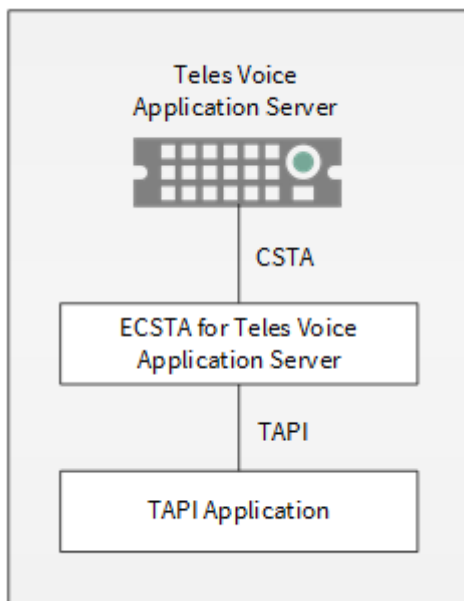
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## 1 Einleitung

estos ECSTA for Communig Voice Application Server provides a telephony service provider for Microsoft® TAPI 2.1 (also 2.2 and 3.0). These TAPI drivers establish central communication between a server and the telephone system. All devices of the telephone system are available as TAPI lines on this server. All estos ECSTA for Communig Voice Application Server drivers use the efficient interface CSTA in order to communicate with the telephone system.

For the installation and management of the driver see Driver Management.



### Supported Telephone Systems

PBX	Driver
Teles Voice Application Server	estos ECSTA for Communig Voice Application Server

### Using the driver 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 ECSTA for Communi5 Voice Application Server

When setting up the driver, follow these steps:

1. **Check network connection**  
Check the availability of the Teles Voice Application Server CSTA SIP Server (ping hostname / IP address).
2. **Enable CSTA functionality for the devices.**  
You must enable the CSTA feature in the Teles Voice Application Server configuration.
3. **Driver installation**  
See also Settings

### 2.1 General Settings

#### Connection

The connection to the Teles Voice Application Server platform is established using SIP/TCP. Enter the IP address of the CSTA SIP server. The Default Port for the SIP connection is 5075.

#### Login

Enter the user name and password for the login to the CSTA SIP Server. The user name should be entered without domain.

Enter the service domain. This is for example: teles.at

### 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 line management (See Set of Rules for Filtering Out SIP Lines).

#### Snapshot for active calls

The driver can validate existing calls. This prevents that calls are displayed on the PC that do no more exist in the PBX system.

The higher this value the longer it takes for the driver to detect a hanging call. The lower this value the higher is the load on the PBX.

Enter a time interval in seconds.

#### Retry MonitorStart

In the event that the driver cannot start monitoring an extension because, for example, the extension has not been connected to the PBX, the driver will attempt to start monitoring at periodic intervals.

Enter a time interval in seconds.

### 2.3 TAPI Lines

Enter the lines that the Tapi driver should provide as Tapi lines. The number is the internal phone number, the device-ID is the MAC address of the phone, the name will be used just for display. Optionally, each line may use additional line buttons from the phone as Tapi addresses. Enter the line buttons as semicolon separated list of phone numbers (e.g. 9011;9012;9013).

#### Phone Number Format

The lines must be canonically specified, for example +493012345123.

In the dialogue Location You can configure the country code, area code and local dialing prefix.

#### Menu Extras

This menu contains the following additional actions.

### **Load Lines**

The available lines can be read out from the platform. In the case of this query, the participants of a number range specified by you will be read out. To this end, enter the prefix for all the phone numbers (e.g. +4989444) and the range of the participants phone numbers (e.g. 100 - 200).

### **Manual addition of a line**

Specify the international phone number of the telephone (e.g. +49894441000. Optionally, a name can also be specified.

### **Import text**

You can import a list of lines from a text file. Each line must contain the phone number, name.

### **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 Settings**

- General Settings
- Location Settings
- TAPI Lines
- Advanced Settings
- Settings Licenses
- Phone Number Format

### 3 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 "^o" causes the program to check whether the digit 'o' 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.

### 3.1 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 Location Settings

The phone numbers of the telephone system are defined in the Location Settings

### **Extension Range**

Enter here which internal phone numbers exist in the PBX system. This information is used to detect internal calls. The internal phone numbers of the telephone system and the phone number information of a call are used to determine whether it is an internal or an external call. In addition, when lines are generated automatically, estos UCServer checks whether the number of the line to be generated automatically lies within the range of internal numbers. Only then is the line generated by estos ECSTA for Communi5 Voice Application Server and the TAPI notified.

### **Location**

Indicate here which international phone numbers precede the internal extension numbers. The input of this location information should only be carried out if you use several driver instances and have connected several telephone systems. This location information can only be configured when the option Use Location is switched on. If you enter a location here, all extension phone numbers are entered fully international.

Example: With location information '49(89)1234' the extension '100' is formatted as '49(89)1234-100'.

### **Phone Number Format**

The phone number registered from the driver at the application can be changed with rules. Moreover, you can also change phone numbers sent by the PC to the telephone system. See Phone number formatting.

## 5 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. If 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:

- **Incoming**  
This section is for phone number from incoming calls that are reported from the PBX system to the PC.
- **Outgoing**  
This section is for phone number from outgoing calls that are reported from the PBX system to the PC.
- **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 find a phone number.

Hint: The caret (^) can be found on the upper left key of a keyboard with German layout.

An overview of allowed expressions:

Character	Description
^	The beginning of the phone number. The expression "^o" matches 'o' only at the beginning of a phone number.
^	The caret (^) immediately following the left square bracket has a different meaning. It is used to exclude the remaining characters within brackets from matching the target string. The expression "[^o-8]" indicates that only the digits o to 8 are allowed.
\$	The dollar sign (\$) will match the end of the string. The expression "152\$" will match the substring "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 o 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.
[]	The square brackets ([]) indicate a quantity of characters that are allowed at this position.

**Replace with:**

Enter the expression that defines how the number is to be formatted.

\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:**

Result	Search for	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 internal numbers having a 3-digit extension.	^[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 the PBX system root number (03012345) to all internal numbers (with 1 to 3 digits)	^([0-9][0-9]?[0-9]?)\$	03012345\1
Adding an area code to all numbers not beginning with 0 and containing at least 4 digits (thus not internal).	^[^0][0-9][0-9][0-9].*	08151\1

See also Location.

## 6 Driver Management

### Installation

The driver is installed on the system with the Windows® Installer (msi) package. If the set-up package contains several drivers, you can select which drivers should be installed during the set-up.

### 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 from the selected driver is already registered at the Tapi system. Thereby, you select 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 over *Telephone and Modem option* in the Control Panel or over the standard program *Advanced Telephone Driver option* that can be found in the Control Panel or in the 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 Help in the standard 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 Package (msi).

If a driver instance is configured, this is deleted during the Update and is automatically added again after the Update is completed. If several driver instances are configured, the computer must be restarted after the Update.

### De-installation

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

## 7 Software Voraussetzungen

The estos ECSTA for Communi5 Voice Application Server 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.

- Windows® 10 64bit
- Windows® 11 64bit
- Windows Server® 2016
- Windows Server® 2019
- Windows Server® 2022

## 8 Supported TAPI operations

The driver offers the following TAPI call control operations.

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
Dial in dial tone mode	TSPI_lineDial
Forwarding	TSPI_lineForward TSPI_lineGetAddressStatus <ul style="list-style-type: none"> <li>○ LINEFORWARDMODE_UNCOND</li> </ul>
Do Not Disturb	TSPI_lineForward TSPI_lineGetAddressStatus

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
TUISPI_providerGenericDialog
TUISPI_providerGenericDialogData

## 9 Info about estos ECSTA for Communi5 Voice Application Server

estos ECSTA for Communi5 Voice Application Server 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**

For diagnostic purposes the driver can create log files. These are stored in the specified path.

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