

MiVoice MX-ONE

# Terminal Selection Service and Multiplicity Configuration – Operational Directions

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# General

This document describes how to configure **Terminal Selection Service and multiplicity** (associating additional remote extension destination numbers).

Terminal Selection Service must be configured by the administrator. It gives extension users with multiple terminals the possibility of overriding the multiple terminal service (forking), and temporarily alerting a specific terminal among several forked terminals, without having to log off from the other terminals.

Although the service is primarily for remote extensions, it can be used for any generic extension type.

The service can be controlled through procedures or through CSTA3 requests.

## End-User and CSTA Application Control of TSS

When a user activates the Terminal Selection Service function from device (through procedure \*FC#), only the device from which the procedure (\*FC#) was dialed, will ring when the user is called.

To activate multiplicity, for example, to select a new predefined remote destination number, the user shall dial the procedure \*FC# calling in to R1/2/3 number from the new destination number.

When the user deactivates the Terminal Selection Service function (procedure #FC#), all the devices of the user will ring when the user is called (that is, when there is an incoming call).

Terminal Selection Service activation/deactivation functionality is always available for multi terminal extensions.

The functionality works also over the CSTA interface if the application has implemented it, and a CSTA event is sent when the Terminal Selection Service is set or changed through a command, procedure, or CSTA request.

Through CSTA interface, an user can also add additional remote extension destination numbers and select the active one.

## Glossary and Acronyms

For a complete list of abbreviations and glossary, see the description for *Acronyms*, *Abbreviations*, and *Glossary*.

# Prerequisites

Following are the basic prerequisite for enabling TSS:

- Extensions for which TSS must be initiated.
- CSTA3 and number conversion data must be correctly configured.
- Enhanced number conversion must be enabled for the destination to the route used for the remote extension.

## TDM-based Remote Extension

When TDM-based remote extension is configured:

- When calls are made to the remote extension, the remote device rings and is able to answer.
- The remote device is able to call R1/2/3 numbers and will be validated as the remote extension number.
- Received A-number and the configured remote number must be the same. The remote number must be the same as the numbers configured in conversion [Table 6.1](#). For the remote number to be validated against the received A-number, which is the number programmed in the number conversion [Table 6.1](#), the received A-number might first need to be converted as per conversion type 2 (see [Example 1, Remote Number, International Number Type](#)).

## SIP Remote Extension

When SIP remote extension is configured:

- When calls are made to the remote extension, the remote device rings and is able to answer the calls.
- Remote device is able to call R1/2/3 numbers and will be validated as the remote extension number.
- Received A-number and the configured remote number must be the same. That is, the remote number must match the numbers configured in conversion [Table 6.2](#). For the remote number to be validated against the received A-number, which is the number programmed in the number conversion [Table 6.3](#), the received A-number might first need to be converted as per conversion type 2 (see [Example 1](#) and [Example 2 in the section SIP Remote Number Examples](#)).

## CSTA Configuration

The CSTA server phase III interface must be configured and active, and the CSTA authentication configured. For more information, see the *CSTA Server (Phase III), Operational Directions*.

# Aids

I/O terminal.

# References

These Operational Directions refer to the following other commands and operation directions:

<b>Command descriptions:</b>	<code>csta_authentication</code> <code>number_conversion_initiate</code> <code>number_conversion_end</code> <code>number_conversion_print</code> <code>RODDI</code>
<b>Operational Directions:</b>	<i>Remote Extension over SIP</i> <i>Remote Extension</i>

# Procedure

Activate the TSS control and multiplicity by configuring the CSTA authentication function appropriately. Configure number conversion data for the remote extensions (if needed).



# Execution

## Initiating or Configuring TSS in the CSTA Service

There are two values - D3D4 in the parameter `--csta-session-serv` for the command `csta_authentication`, which control the TSS and information sent in TSS-related CSTA events. It can be configured whether TSS control over CSTA and multiplicity is enabled or not (D3) and whether the remote extension destination number will be presented in private unknown number format or in E.164 number format (D4).

- If SIP remote extension is configured using E.164 international number format (`--uri "dest:04740@192.168.1.111;remote-number= +460407201"`), the number convert data must be set accordingly. The `csta_authentication --csta-session-serv D4` (see the Terminal Selection Service, TSS, convert number of the *MiVoice MX-ONE Technical Reference Guide, Unix Commands Description*) parameter must be set to Yes. The number conversion type 5 must be used to convert the configured remote number in private unknown format to E.164 format for TSS CSTA events.
- If SIP remote extension is configured using private unknown number format (`--uri "dest:04740@192.168.1.111;remote-number= 0407201"`), the number convert data must also be set accordingly. The `csta_authentication --csta-session-serv D4` (Terminal Selection Service, TSS, convert number) parameter must be set to No.
- For SIP remote extension, conversion type 1 must be used to convert remote number configured according to the number conversion [Table 6.1](#) to correct format (for example, remove trunk access code). The conversion type 1 number must be sent to the public SIP provider. In this scenario, conversion type 1 is used to convert the remote number for SIP remote extension (sent B-number) when set by TSS selection.

## Adding a User-defined Number in TSS

From an external application (such as MiCollab), it enables you to add a user-defined remote extension destination number through the CSTA interface.

The number added by the user shall be configured in unknown private number format. The number entered must include external destination code for the designated trunk or LCR code and the public number and it must pass a TCD check (the digits must be entered as being dialed from an office telephone). The number presented in the answer is converted depending on the `--csta-session-serv D4` settings specified in the `csta_authentication` command.

Alternatively (for small installations, where there is no different destinations used for SIP remote extensions), the number may be added by the user in E.164 format. When using E.164 format, the external application should send the number configured to MX-ONE without leading '+' sign.

**NOTE:** Using of LCR code is not allowed for SIP remote extension.

## Remote Extension Number Example

See Example 1 in *Remote Extension, RE Operational Directions*. The example shown in Table 6.1 is built on input data from these examples and use the National number type.

**Table 6.1: Remote extension over TDM trunk, example**

Variable	Example Value
<Remote_extension_number>	1111 (directory number)
<Public_number>	08649421891 (local number with a leading zero)
<Public_number 2>	070112233 (local number with a leading zero)
<Public_number 3>	070112244 (local number with a leading zero)
<Leading_zero>	1
<Route_access_code>	00
<External_number_length>	13 (route access code + public number length)
<Country code>	46
<Route_access_code_length>	2
Remote Number in Number Conversion conversiontype 6	0008649421891, 00070112233, 00070112244

When --csta-session-serv D4 is set to No, no number conversion and no more command execution are needed.

When --csta-session-serv D4 is set to Yes, the following commands must be executed to convert the remote number in private unknown format in the number conversion table 6 to E.164 format for TSS CSTA events.

- *Initiation of number conversion data to convert to E.164 format*
  - number\_conversion\_initiate -entry <Route\_access\_code> -numbertype 5
  - -conversiontype 5 -truncate <Route\_access\_code\_length> + <Leading\_zero> -pre <Country code> -newtype 1

Public number will now be sent as +468649421891 in CSTA responses and events.

# SIP Remote Extension Number Examples

## Example 1 – Remote Number, International Number Type

See Example 1 in *Remote Extension over SIP - Operational Directions*. The example in this following Table 6.2 is built on input data from that example.

**Table 6.2: Remote extension over SIP trunk, Example 1**

Variable	Example Value
<URI>	<i>dest:00@1.1.1.1;remote-number=+468719001234567</i> <b>NOTE:</b> Remote number in international number type.
<Route_access_code>	00
<Route_access_code_length>	2
<Route_number>	77
<Country code>	46
<international_prefix>	00, used in public network
<international_prefix_length>	2
<i>Remote Number in Number Conversion conversiontype 6</i>	0000468719001234567

- This SIP remote extension is initiated in international number type. Number conversion must be set to Yes.

```
csta_authentication -i --application_id default --csta_session_serv xx11
```

- Initiation of number conversion data to convert remote number configured in number conversion Table 6.2 to correct format (for example, remove trunk access code and set type of number to International) to be sent to the public SIP provider (B-number of remote device).

```
number_conversion_initiate -entry <Route_access_code> + <international_prefix> -conversiontype 1 -truncate <Route_access_code_length> + <international_prefix_length> -numbertype 5 -newtype 1 -route <Route_number> -targetdest <Route_access_code>
```

- Initiation of number conversion data to convert the remote number in private unknown format in conversiontype 6 to E.164 format for TSS CSTA events.

```
number_conversion_initiate -entry <Route_access_code> + <international_prefix> -conversiontype 5 -truncate <Route_access_code_length> + <international_prefix_length> -numbertype 5 -newtype 1
```

When a user shall add additional remote extension target number, the number configured in the application (for example, MiCollab client) shall be in the following format:

<Route\_access\_code>+<international\_prefix>+new number, for example, 00 00 46710007654321

## Example 2 – Remote Number, International Number Type

See Example 1 in *Remote Extension over SIP - Operational Directions*. The example in this following Table 6.3 is built on input data from that example with modified number conversion data.

**Table 6.3: Remote extension over SIP trunk, Example 2**

Variable	Example Value
<URI>	<i>dest:00@1.1.1.1;remote-number=+468719012131415</i> <b>NOTE:</b> Remote number in international number type.
<Route_access_code>	00
<Route_access_code_length>	2
<Route_number>	77
<Country_code>	46
<international_prefix>	00, used in public network
<international_prefix_length>	2
<i>Remote Number in Number Conversion conversiontype 6</i>	46719012131415

- This SIP remote extension is initiated in international number type. Number conversion must be set to Yes.

```
csta_authentication -i --application_id default --csta_session_serv xx11
```

- Initiation of number conversion data to convert remote number configured in number conversion Table 6.3 to correct format (for example, remove trunk access code and set type of number to international) to be sent to the public sip provider (B-number of remote device).

```
number_conversion_initiate -entry <Country code> -conversiontype 1 -numbertype5 -newtype 1  
-route <Route_number> -targetdest <Route_access_code>
```

- Initiation of number conversion data to convert the remote number in private unknown format in number conversion conversiontype 6 to E.164 format for TSS CSTA events.

```
number_conversion_initiate -entry <Country code> -conversiontype 5 -numbertype 5 -newtype 1
```

When a user shall add an additional remote extension target number, the number configured in the application (for example, MiCollab client) shall be in format:

<Country code>+new number, for example, 46710007654321

## Example 3– Remote Number, Private Unknown Number Type

See Example 3 in *Remote Extension over SIP - Operational Directions*. The example in this following Table 6.4 is built on input data from that example.

**Table 6.4: Remote extension over SIP trunk, Example 3**

Variable	Example Value
<URI>	<i>dest:00@192.16832.12;remote-number=01421163</i> <b>NOTE:</b> Remote number in national number type.
<Route_access_code>	00
<Route_access_code_length>	2
<i>Remote Number in Number Conversion Conversiontype 6</i>	0001421163

- This SIP remote extension is initiated as a private unknown number type. --csta-session-serv must be set to No; no number conversion is required.

```
csta_authentication -i --application_id default --csta_session_serv xx10
```

- Initiation of number conversion data to convert remote number configured in number conversion Table 6.4 to correct format (for example, remove trunk access code and set type of number to international) to be sent to the public sip provider (B-number of remote device).

```
number_conversion_initiate -entry <Route_access_code> -numbertype 5 -conversiontype 1 -truncate  
<Route_access_code_length> -newtype 2 -route <Route_number> > -targetdest <Route_ac-  
cess_code>
```

When a user shall add additional remote extension target number, the number configured in the application (for example, MiCollab client) shall be in the following format:

<Route\_access\_code>+new number, for example, 00 0719876543>

## Removing TSS

Use the command `csta_authentication -e` to erase or to reset TSS-related data.

Use the `number_conversion_end` command to the erase the number conversion settings.

## Printing the TSS-related Data Settings

After erasing or resetting TSS-related data, verify the changes by using the corresponding print commands.

Use the command `csta_authentication -p` to print the TSS-related data settings.

Use the `number_conversion_print` command to print number conversion settings.

# Limitations

Following are the limitations in using the Terminal Selection Service:

- TSS works only for forked extensions.
- The SIP remote number must be configured with the `dest` parameter in uri string.
- User can have only one remote device configured in the multi-terminal list and have either one remote extension or one SIP remote extension only.
- Changing the number convert flag (`--csta-session-serv D4`) can lead to multiple entities of the user-defined number in the application, which might or might not be in the converted format.
- When number multiplicity flag is set to No, user-defined numbers cannot be added or changed for multiplicity remote numbers.
- Allowed to have only one user defined remote extension destination number in MX-ONE. User can add several remote extension destination numbers in an external client application (such as MiCollab) and then choose between them, which one number should be active in MX-ONE.

# Termination

If any exchange data will be changed, a dump to backup media must be performed. See the operational directions in the *ADMINISTRATOR USER'S GUIDE*.



