

Managing Restcomm jSS7

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Restcomm jSS7 comes with a convenient user-friendly Graphical User Interface (GUI) and a Command Line Interface (CLI) that will allow you to configure, monitor and manage the Stack. While the CLI tool allows complete configuration and control of the Stack, the GUI-based management enhances the usability of the platform and gives you the ability to create different SS7 configurations and manage the platform dynamically. This chapter will explain how to manage the Stack effectively using both the GUI and the CLI.

Linkset Management

Using CLI

You can manage Linksets and Links using CLI or GUI. You can create, delete, activate and deactivate linksets and links using the Shell command `linkset` with appropriate parameters. The `linkset` command can be used only when dahdi based cards are configured.

Using GUI

The GUI will allow you to manage your linksets and links efficiently using a user-friendly interface. Open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'linkset' link in the left panel. The main panel will display the names of all configured Linkset Management units. To configure or view the settings of a particular Linkset Management Unit you must click on the name of that unit. The GUI will look similar to the figure below and is divided into two tabs.

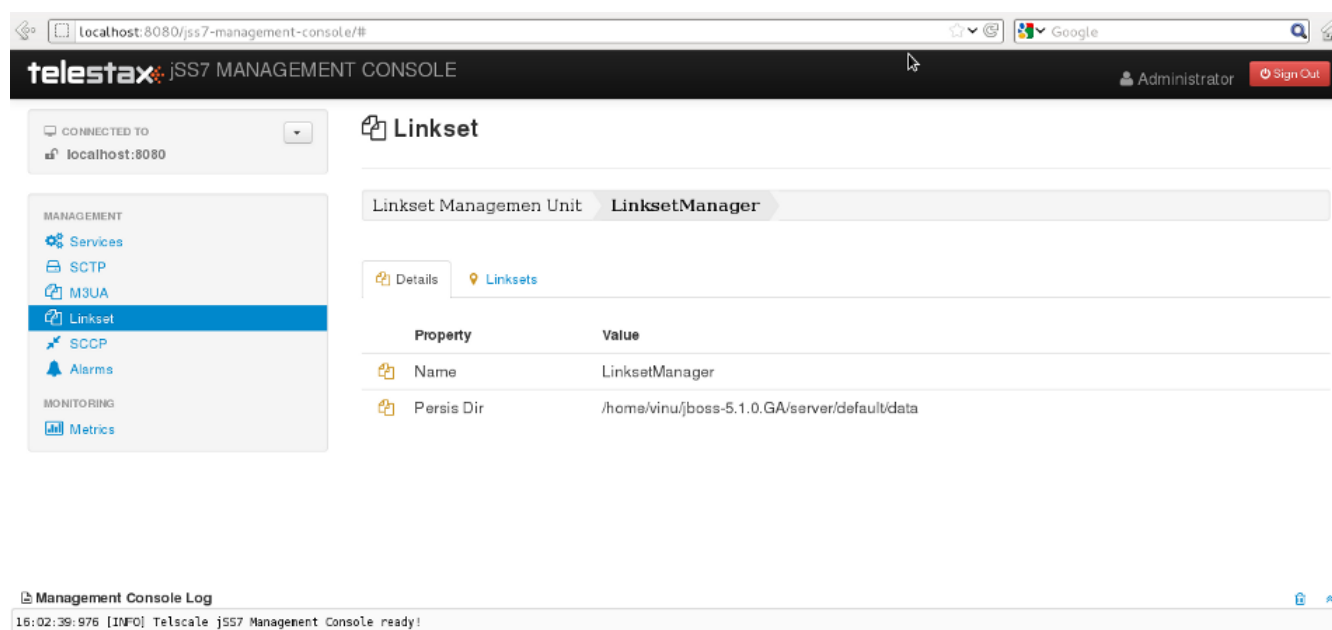


Figure 1. GUI - Linkset Management

The first tab will display the properties of the Linkset Management unit. These details displayed here are fetched from the XML descriptor file `jboss-beans.xml`, which is located at `$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF`, where `profile_name` is

the server profile name. These properties cannot be modified here in the GUI. To modify them you must modify the *jboss-beans.xml* and restart the Server. The GUI will then display the modified values.

The other tab will allow you to manage all Linksets and Links within this Linkset Management unit.

View all Linksets and Links

Using CLI

You can view the current status of all correctly configured Linksets and Links by issuing the command `linkset show` as described below:

Name

`linkset show`

SYNOPSIS

`linkset show`

DESCRIPTION

This command is used to view all Links and Linksets and their states.

The possible states of a Linkset are:

- UNAVAILABLE : Indicates that the Linkset does not have any 'available' links and cannot transport traffic.
- SHUTDOWN : Indicates that Linkset has been shutdown.
- AVAILABLE : Indicates that the Linkset has atleast one 'available' link and can transport traffic.

The possible states of a Link are:

- UNAVAILABLE : Indicates that the Link is not 'available' to transport traffic. A Link is 'unavailable' if the Link is remotely or locally inhibited by a user. It can also be 'unavailable' if MTP2 has not been able to successfully activate the link connection.
- SHUTDOWN : Indicates the Link has been shutdown in the configuration.
- AVAILABLE : Indicates the Link is active and 'available' to transport traffic.
- FAILED : Indicates that the Link is not 'shutdown' but is 'unavailable' at Layer 2 for some reason. For example, the Initial Alignment may fail, or the link test messages sent by MTP 3 are not being acknowledged.

Using GUI

Navigate to the specific Linkset Management unit and switch to the 'Linksets' tab. Here you can view a list of all the Linksets created. Every correctly configured Linkset will be displayed in a row and for each Linkset, the first column will display the name of the Linkset. The icon adjacent to the name will be lit 'green' if the Linkset is currently active or 'orange' if inactive. The second column will indicate the current mode of the Linkset (Configured / Not Configured), the third column will allow you to activate / deactivate the Linkset and the fourth column will allow you to delete the Linkset.

To view the details of all the Links created within a specific Linkset click on the name of the Linkset whose details you wish to view. This will launch the 'Links' view and display all the configured properties of the selected Linkset in the first tab. The second tab in this view will allow you to view all Links in this particular Linkset. You can click on any Link name here to view the configured properties. You can click on the bread crumbs at the top to return to any of the previous pages you navigated through.

Create a new Linkset

Using CLI

You can create a new Linkset by issuing the command `linkset create` with appropriate parameters as described below:

Name

linkset create

SYNOPSIS

```
linkset create dahdi opc <point-code> apc <point-code> ni <network-id>
<linkset-name>
```

DESCRIPTION

This command is used to create a new Linkset of type Dahdi as explained below. You must ensure that appropriate linkset factories are deployed prior to creating any linkset.

PARAMETERS

opc <point-code>	- MTP Point code of the originating signalling point. Takes an Integer Value.
apc <point-code>	- MTP Point code of the adjacent signalling point. Takes an Integer Value.
ni <network-id>	- Network Identifier and should be one of the following values 0 - International Network 1 - Spare (for International use) 2 - National Network 3 - Reserved for National use
<linkset-name>	- Name of the Linkset to be created. This will be used to identify the linkset. Takes a String value.

EXAMPLES

```
linkset create dahdi opc 3 apc 4 ni 0 dahdilinkset1
```

The above command will create a new linkset of type Dahdi and name dahdilinkset1. The originating point code value is 3 and the adjacent point code value is 4 and the network is an international network.

Using GUI

Procedure: Create new Linkset using GUI

1. In the section for Linksets in the Linkset Management Unit window, click on the 'Create Linkset' button. This will launch a pop-up 'Create Linkset'.
2. In the 'Create Linkset' pop-up, add details of the new Linkset. You must ensure that you fill in all the mandatory parameters (OPC, DPC, NI and Linkset Name). For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new Linkset will be created with parameters as specified. If there is an error in creating the Linkset then you will find the details of the error in the Management Console Log section below.

4. Click on the 'Close' button to close the 'Create Linkset' pop-up.

Remove a Linkset

Using CLI

You can delete an existing Linkset by issuing the command `linkset delete` with appropriate parameters as described below:

```
Name
    linkset delete

SYNOPSIS
    linkset delete <linkset-name>

DESCRIPTION
    This command is used to delete an existing Linkset.

PARAMETERS
    <linkset-name>      -   Name of the Linkset to be deleted.

EXAMPLE
    linkset delete dahdilinkset1

    The above command will delete the Linkset identified by the name dahdilinkset1.
```

Using GUI

Procedure: Delete Linkset using GUI

1. Navigate to the 'Linksets' section in the Linkset Management Unit window and locate the row corresponding to the Linkset you wish to delete.
2. You must ensure that the Linkset is deactivated prior to deletion. If the Linkset is deactivated, the last column for 'Delete' will display a 'x' button in red and will be enabled. If the Linkset is currently active, the 'x' button will be disabled. You can only delete the Linkset if it is not active.
3. Click on the red 'x' button to delete the corresponding Linkset.

Activate Linkset

Using CLI

You can activate an existing Linkset by issuing the command `linkset activate` with appropriate parameters as described below:

Name

`linkset activate`

SYNOPSIS

`linkset activate <linkset-name>`

DESCRIPTION

This command is used to activate an existing Linkset.

PARAMETERS

`<linkset-name>` - Name of the Linkset to be activated.

EXAMPLE

`linkset activate dahdilinkset1`

The above command will activate the Linkset identified by the name dahdilinkset1.

Using GUI

Procedure: Activate a Linkset using GUI

1. Navigate to the 'Linksets' section in the Linkset Management Unit window and locate the row corresponding to the Linkset you wish to activate.
2. Click on the 'Activate' button in the actions column to activate the corresponding Linkset.
3. If the Linkset has been activated successfully you will find the status indicating the Linkset as 'Available' and the Linkset's icon will be lit green. If there is an error and the Linkset failed to activate, you will find details of the error in the Management Console log below.

Deactivate Linkset

Using CLI

You can deactivate a currently active Linkset by issuing the command `linkset deactivate` with appropriate parameters as described below:

Name

linkset deactivate

SYNOPSIS

linkset deactivate <linkset-name>

DESCRIPTION

This command is used to deactivate an existing Linkset.

PARAMETERS

<linkset-name> - Name of the Linkset to be deactivated.

EXAMPLE

linkset deactivate dahdilinkset1

The above command will deactivate the Linkset identified by the name dahdilinkset1.

Using GUI

Procedure: Deactivate a Linkset using GUI

1. Navigate to the 'Linksets' section in the Linkset Management Unit window and locate the row corresponding to the Linkset you wish to deactivate.
2. To deactivate a Linkset currently active, click on the 'Deactivate' button in the actions column of the row corresponding to the Linkset.

Create a new Link

Using CLI

You can create a new Link by issuing the command `linkset link create` with appropriate parameters as described below:

Name

linkset link create

SYNOPSIS

```
linkset link create span <span-num> code <code-num> channel <channel-num>
<linkset-name> <link-name>
```

DESCRIPTION

This command is used to create a new Link within a Linkset. The Linkset must be created prior to executing this command.

PARAMETERS

span <span-num> - Port number in the Card (indexed from 0).
Takes an Integer Value.

code <code-num> - Signaling Link code
SLS (Signaling link selection) assigned to this
Link. Takes an Integer Value.

channel <channel-num> - Time Slot number (TDM time slot).
Takes an Integer Value.

<linkset-name> - Name of the Linkset within which the new Link is
being created.

<link-name> - Name of the Link to be created. This will be used
to identify the Link. Takes a String value.

EXAMPLES

```
linkset link create span 1 code 1 channel 1 linkset1 link1
```

The above command will create a new Link identified as link1 within an existing Linkset identified as linkset1.

Using GUI

Procedure: Create new Link using GUI

1. In the section for Links in the Linkset Management Unit window, click on the 'Create Link' button. This will launch a pop-up 'Create Link'.
2. In the 'Create Link' pop-up, add details of the new Link. You must ensure that you fill in all the parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new Link will be created with parameters as specified. If there is an error in creating the Link then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Link' pop-up.

Remove a Link

Using CLI

You can delete an existing Link by issuing the command `linkset link delete` with appropriate parameters as described below:

Name

```
linkset link delete
```

SYNOPSIS

```
linkset link delete <linkset-name> <link-name>
```

DESCRIPTION

This command is used to delete an existing Link within a Linkset.

PARAMETERS

<link-name> - Name of the Link to be deleted.

<linkset-name> - Name of the Linkset within which the Link resides.

EXAMPLE

```
linkset link delete linkset1 link1
```

The above command will delete the Link identified by the name Link1 within the Linkset linkset1.

Using GUI

Procedure: Delete Link using GUI

1. Navigate to the 'Links' section in the Linkset Management Unit window and locate the row corresponding to the Link you wish to delete.
2. You must ensure that the Link is deactivated prior to deletion. If the Link is inactive, the last column for 'Delete' will display a 'x' button in red. If the Link is currently active, the 'x' button will be displayed in orange. You can only delete the Link if it is inactive and the 'x' button is displayed in red.
3. Click on the red 'x' button to delete the corresponding Link instance.

Activate Link

Using CLI

You can activate an existing Link by issuing the command `linkset link activate` with appropriate parameters as described below:

Name

`linkset link activate`

SYNOPSIS

`linkset link activate <linkset-name> <link-name>`

DESCRIPTION

This command is used to activate an existing Link within a Linkset.

PARAMETERS

`<link-name>` - Name of the Link to be activated.

`<linkset-name>` - Name of the Linkset within which the Link resides.

EXAMPLE

`linkset link activate linkset1 link1`

The above command will activate the Link identified by the name Link1 within the Linkset linkset1.

Using GUI

Procedure: Activate Link using GUI

1. Navigate to the 'Links' section in the Linkset Management Unit window and locate the row corresponding to the Link you wish to activate.
2. Click on the 'Activate' button to activate that Link within the Linkset.

Deactivate Link

Using CLI

You can deactivate a currently active Link by issuing the command `linkset link deactivate` with appropriate parameters as described below:

Name

linkset link deactivate

SYNOPSIS

linkset link deactivate <linkset-name> <link-name>

DESCRIPTION

This command is used to deactivate an existing Link within a Linkset.

PARAMETERS

<link-name> - Name of the Link to be deactivated.

<linkset-name> - Name of the Linkset within which the Link resides.

EXAMPLE

linkset link deactivate linkset1 link1

The above command will deactivate the Link identified by the name Link1 within the Linkset linkset1.

Using GUI

Procedure: De-activate Link using GUI

1. Navigate to the 'Links' section in the Linkset Management Unit window and locate the row corresponding to the Link you wish to deactivate.
2. Click on the 'Deactivate' button to deactivate that Link within the Linkset.

SCTP Management

Using CLI

You can manage all SCTP related configurations through the Command Line Interface by using the **sctp** command. You can create, destroy, start and stop SCTP Servers / Associations by issuing the **sctp** command with appropriate parameters.

Using GUI

The GUI will allow you to manage your SCTP Servers and Associations efficiently using a user-friendly interface. Open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'SCTP' link in the left panel. The main panel will display the names of all configured SCTP Management units. To configure or view the settings of a particular SCTP Management Unit you must click on the name of that unit. The GUI will look similar to the figure below and is divided into three tabs.

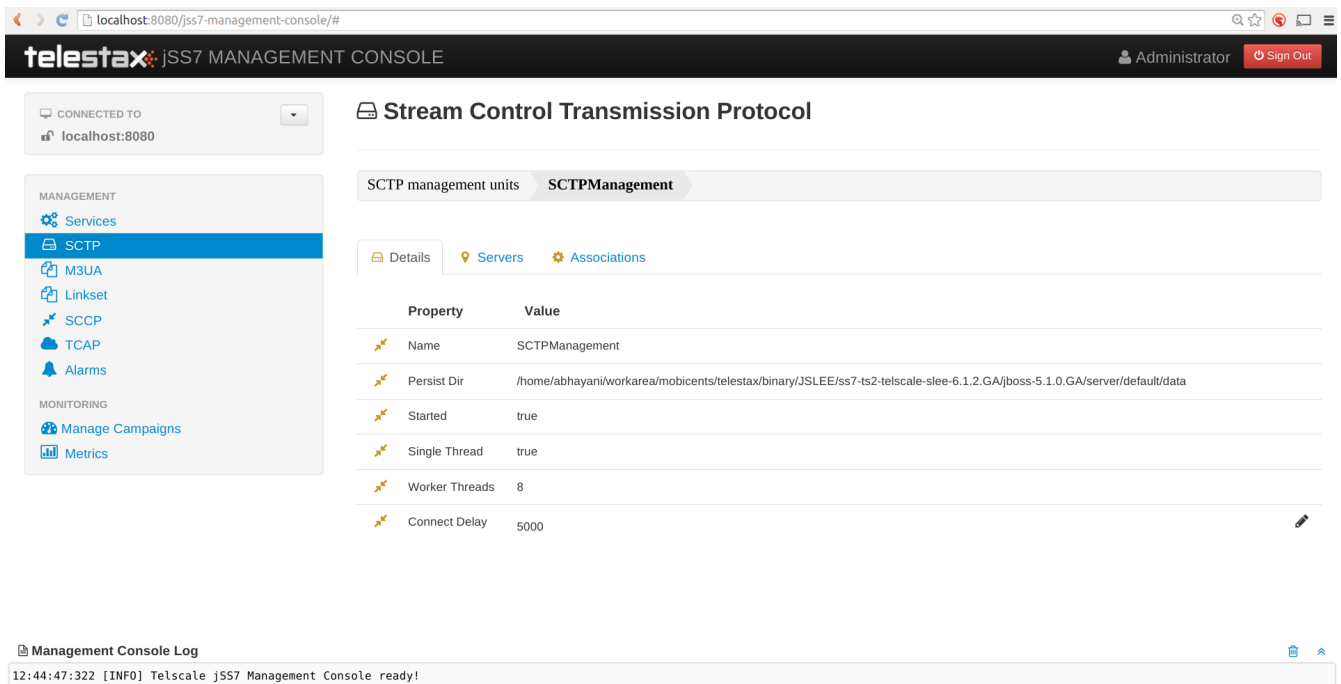


Figure 2. GUI - SCTP Management

The first tab will display the properties of the SCTP Management unit. These details displayed here are fetched from the XML descriptor file *jboss-beans.xml*, which is located at `$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF`, where `profile_name` is the server profile name. These properties can be modified here in the GUI. To modify them you must click the pencil, change the value and save. The GUI will then display the modified values.

The other two tabs will allow you to manage and monitor all Servers and Associations within this SCTP Management unit.

SCTP stack properties

Connect Delay

Using CLI

You can set the 'Connect Delay (milliseconds)' by issuing the command `sctp set connectdelay` with appropriate parameters as described below. You can verify this by issuing the command `sctp get connectdelay` which will display the value set for this property.

Name

sctp set connectdelay

SYNOPSIS

sctp set connectdelay <connectdelay> stackname <stack-name>

DESCRIPTION

If the SCTP Socket is client-side, connectDelay specifies the delay time in milliseconds after which a connection with the server will be attempted. This delay is necessary when there is network disruption and the connection between the client and the server breaks, so that the SCTP stack doesn't continuously attempt to reconnect.

Default is 30000 milliseconds.

PARAMETERS

Standard Parameters

<connectdelay> - Connect delay in milliseconds.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sctp set connectdelay 40000

Using GUI

On SCTP management page, click on pencil against the 'Connect Delay' property and text box becomes editable. Change value and save.

Single Thread

You can modify the settings for the parameter 'singlethread' only when the SCTP Stack is not running. In addition, this parameter cannot be modified through the CLI or GUI. You will have to invoke the setter function directly from the source code.

If you are using the JBoss Application Server, then you can set this parameter by adding a property (as shown below) to the XML descriptor file *jboss-beans.xml*, which is located at *\$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF*, where *profile_name* is the server profile name.

```
/*Add property for the parameter 'singleThread' to jboss-beans.xml file and specify
settings to true or false*/
<property name="singleThread">true</property>
```

The current settings of the parameter can be viewed in the GUI or by invoking the appropriate CLI command as described below.

Using CLI

You can retrieve the current settings of the parameter 'singlethread' by issuing the command `sctp get singlethread`. However as explained above, you cannot modify the settings through the CLI.

Name

`sctp get singlethread`

SYNOPSIS

`sctp get singlethread`

DESCRIPTION

This command is used to retrieve the current settings of the parameter 'singlethread'. The 'singlethread' parameter is used to specify if there can be more than one worker threads dedicated to call the applications above SCTP.

The default settings will dedicate only one thread for calling applications above SCTP. If you wish to assign multiple worker threads, then the value of the parameter 'singlethread' must be set to false before you can change the number of worker threads to more than one.

The settings can be modified only when the SCTP Stack is not running. To modify this parameter you must invoke the setter function directly from the code or if you are using the JBoss AS, you can add a property to the XML descriptor file jboss-beans.xml. You cannot change the settings through the CLI.

Using GUI

In the SCTP management page, you can view the current settings of the 'Single Thread' property. But as explained above, you cannot change the settings in the GUI. But as explained above, you cannot change the settings in the GUI. For more details about this parameter, refer to the detailed description about the parameter in the above section for CLI.

Worker Threads

You can modify the settings for the parameter 'workerthreads' only when the SCTP Stack is not running. In addition, this parameter cannot be modified through the CLI or GUI. You will have to invoke the setter function directly from the source code.

If you are using the JBoss Application Server, then you can set this parameter by adding a property (as shown below) to the XML descriptor file *jboss-beans.xml*, which is located at *\$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF*, where *profile_name* is the server profile name.

```
/*Add property for the parameter 'workerthreads' to jboss-beans.xml file and specify the value*/  
<property name="workerThreads">4</property>
```

The current settings of the parameter can be viewed in the GUI or by invoking the appropriate CLI command as described below.

Using CLI

You can retrieve the current settings of the parameter 'workerthreads' by issuing the command **sctp get workerthreads**. However as explained above, you cannot modify the settings through the CLI.

Name

```
sctp get workerthreads
```

SYNOPSIS

```
sctp get workerthreads
```

DESCRIPTION

This command is used to retrieve the current settings of the parameter 'workerthreads'. The 'workerthreads' parameter is used to specify the number of worker threads dedicated to call the applications above SCTP.

The default settings will dedicate only one thread for I/O and one thread for calling applications above SCTP. If you wish to assign multiple worker threads, then the value of the parameter 'singlethread' must be set to false and the number of worker threads must be set using this parameter 'workerthreads'.

The settings can be modified only when the SCTP Stack is not running. To modify this parameter you must invoke the setter function directly from the code or if you are using the JBoss AS, you can add a property to the XML descriptor file *jboss-beans.xml*. You cannot change the settings through the CLI.

Using GUI

In the SCTP management page, you can view the current settings of the 'Worker Threads' property. But as explained above, you cannot change the settings in the GUI. For more details about this parameter, refer to the detailed description about the parameter in the above section for CLI.

View all SCTP (or TCP) Server Instances

Using CLI

You can view the details of all configured SCTP (or TCP) Server instances by issuing the command `sctp server show` as described below:

Name

`sctp server show`

SYNOPSIS

`sctp server show stackname <stack-name> stackname <stack-name>`

DESCRIPTION

This command is used to view the details of all SCTP Server instances created. The information displayed will include the socket type (SCTP or TCP), name of the Server, state (whether started=false or true), the IP address and port that the Server is bound to. For multi-home SCTP Servers it will display all the IP addresses that are configured.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCTP Management unit and switch to the 'Servers' tab. Here you can view a list of all the Servers created. Every correctly configured Server will be displayed in a row and for each Server, the first column will display the name of the Server. The icon adjacent to the name will be lit 'green' if the server is currently running or if the server is stopped the icon will be lit 'orange'. The second column will indicate the current state of the Server (Started / Stopped), the third column will allow you to Start / Stop the Server and the fourth column will allow you to delete the Server.

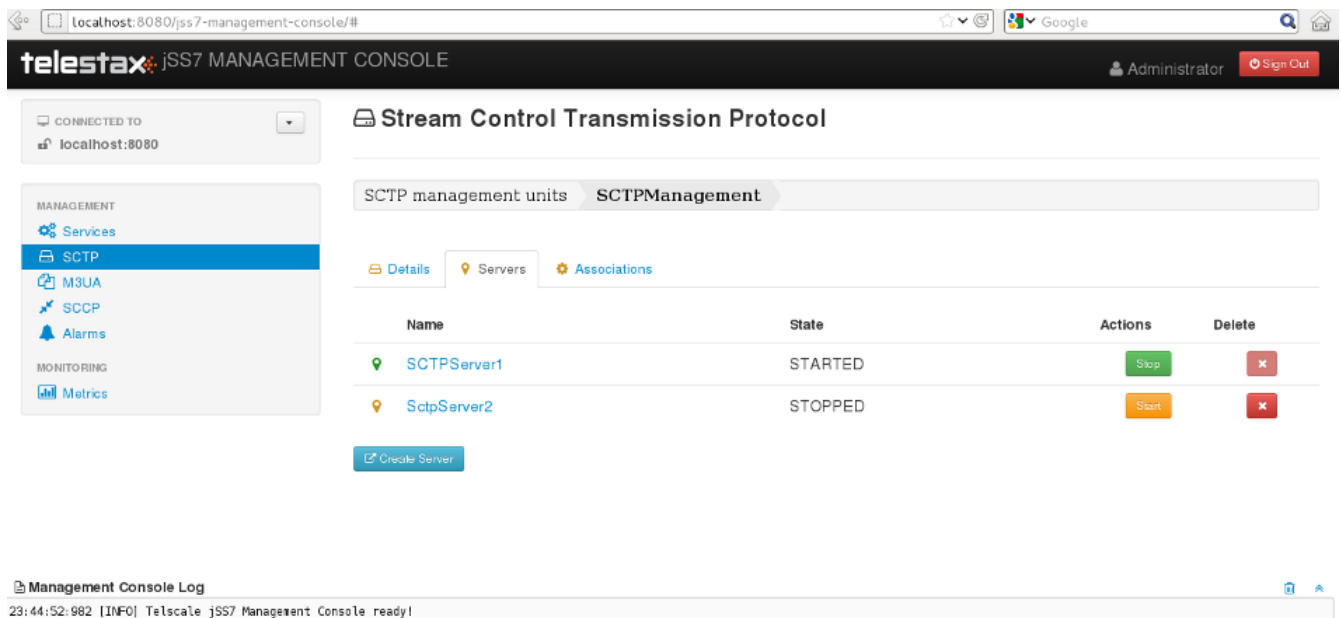


Figure 3. GUI - SCTP Management - Servers

In the screen above, click on the name of the Server whose details you wish to view. This will launch the Server Details and display all the configured properties of the selected Server. The second tab in this view will allow you to view all Associations linked to this particular Server. You can click on any Association name here to view the configured properties. You can click on the bread crumbs at the top to return to any of the previous pages you navigated through.

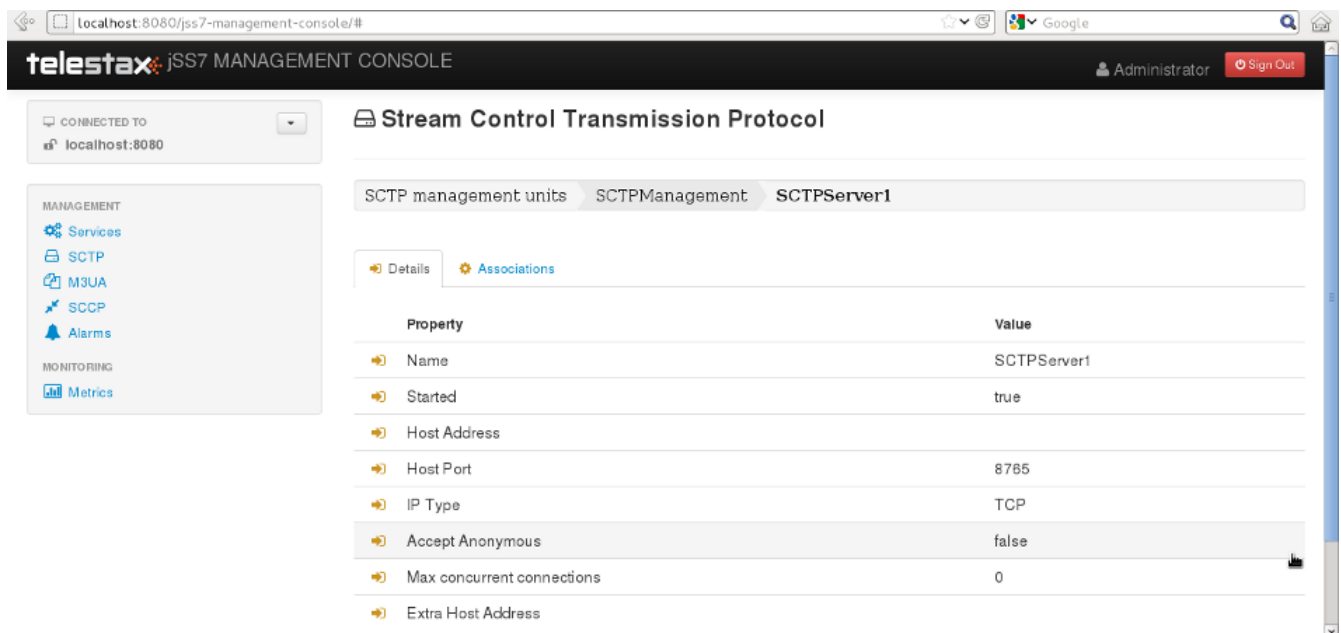


Figure 4. GUI - SCTP Management - Server Details

Create a new SCTP (or TCP) Server Instance

Using CLI

You can create a new SCTP Server by issuing the command `sctp server create` with appropriate parameters as described below:

Name

sctp server create

SYNOPSIS

```
sctp server create <server-name> <host-ip> <host-port> <socket-type> stackname  
<stack-name>
```

DESCRIPTION

This command is used to create a new SCTP Server (or TCP Server) instance.

PARAMETERS

Standard Parameters

<server-name> - Name of the new Server created. This must be unique and takes any String value.

<host-ip> - The host IP address to which the SCTP Server socket will bind to.

For SCTP multi-home support, you can pass multiple IP addresses as comma separated values. The Server socket will bind to the primary IP address and when it becomes unavailable, it will automatically fall back to secondary address. If the socket-type is TCP, these comma separated values will be ignored and the Server socket will always bind to the primary IP address (the first value in the comma separated list).

<host-port> - The host port to which the underlying SCTP Server socket will bind to.

Optional Parameters

<socket-type> - If you do not specify the socket-type as "TCP", by default it will be SCTP.

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sctp server create TestServer 127.0.0.1 2905
```

The above command will create a new SCTP Server identified as TestServer and bind the Server socket to the IP address 127.0.0.1 and port 2905.

```
sctp server create TestServerMulti 10.2.50.145,10.2.50.146 2905
```

The above command will create a new SCTP Server identified as TestServerMulti and

bind the Server socket to the IP address 10.2.50.145 and port 2905. If 10.2.50.145 is unavailable, the Server will automatically fall back to 10.2.50.146.

```
sctp server create TestServerTCP 127.0.0.1 2906 TCP
```

The above command will create a new TCP Server identified as TestServerTCP and bind the socket to the IP address 127.0.0.1 and port 2906.

Using GUI

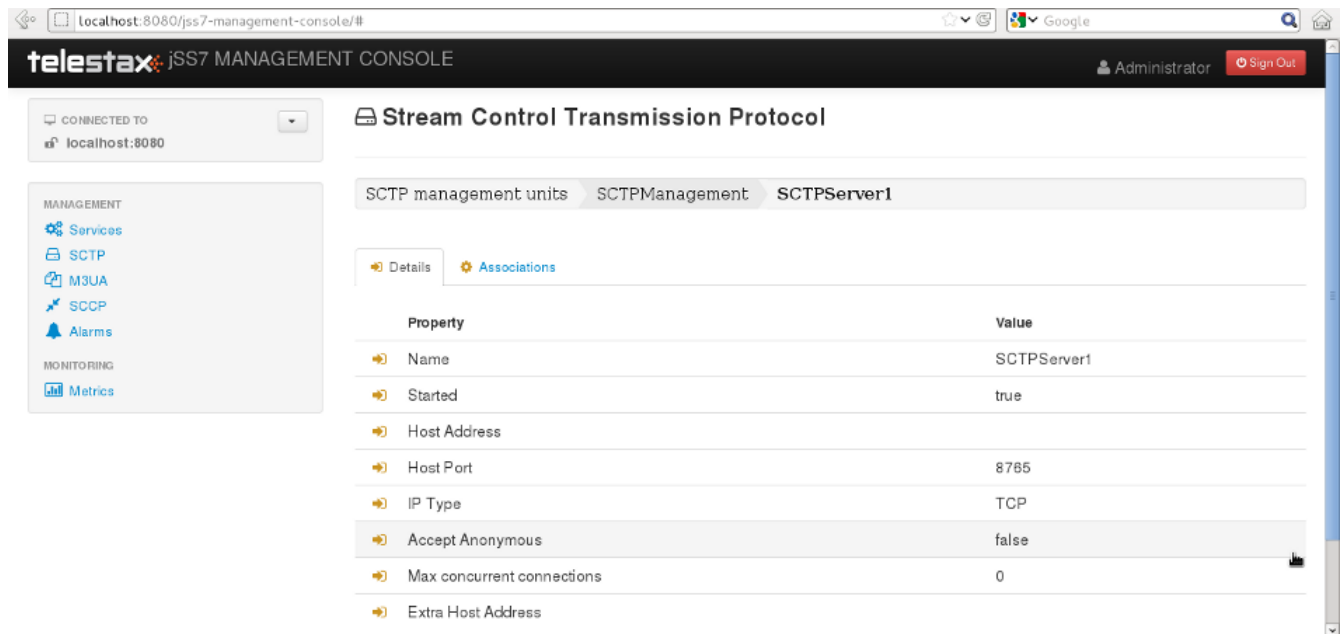


Figure 5. GUI - Sctp Management - Server Create

Procedure: Create new Sctp Server (or TCP Server) instance using GUI

1. In the section for Servers in the Sctp Management Unit window, click on the 'Create Server' button. This will launch a pop-up 'Create Server'.
2. In the 'Create Server' pop-up, add details of the new Server. You must ensure that you fill in all the mandatory parameters (Name, Host Address, Host Port, IP Type, Max Concurrent Connections). For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new Sctp Server (or TCP Server) will be created with parameters as specified. If there is an error in creating the Server then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Server' pop-up.

Delete a Sctp (or TCP) Server Instance

Using CLI

You can delete an existing Sctp Server by issuing the command `sctp server destroy` with appropriate parameters as described below:

Name

sctp server destroy

SYNOPSIS

sctp server destroy <server-name> stackname <stack-name>

DESCRIPTION

This command is used to delete an existing SCTP Server instance. You must ensure that the Server is stopped prior to deletion.

PARAMETERS

Standard Parameters

<server-name> - Name of the Server instance to be deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sctp server destroy TestServer

The above command will destroy the Server identified by the name TestServer.

Using GUI

Procedure: Delete SCTP Server (or TCP Server) instance using GUI

1. Navigate to the 'Servers' section in the SCTP Management Unit window and locate the row corresponding to the Server you wish to delete.
2. You must ensure that the Server is stopped prior to deletion. If the Server is stopped, the last column for 'Delete' will display a 'x' button in red and will be enabled. If the Server is currently running, the 'x' button will be disabled. You can only delete the server if it is stopped.
3. Click on the red 'x' button to delete the corresponding Server instance.

Start a SCTP (or TCP) Server Instance

Using CLI

You can start an existing SCTP Server by issuing the command `sctp server start` with appropriate parameters as described below:

Name

sctp server start

SYNOPSIS

sctp server start <server-name> stackname <stack-name>

DESCRIPTION

This command is used to start an existing SCTP Server instance. Upon executing this command, the underlying SCTP server socket is bound to the IP: Port configured for this Server instance at the time of creation using the "sctp server create" command.

PARAMETERS

Standard Parameters

<server-name> - Name of the Server instance to be started.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sctp server start TestServer

The above command will start the previously created Server instance identified by the name TestServer and bind the underlying socket to the IP address and port configured for TestServer at the time of creation.

Using GUI

Procedure: Start a SCTP Server (or TCP Server) instance using GUI

1. Navigate to the 'Servers' section in the SCTP Management Unit window and locate the row corresponding to the Server you wish to start.
2. Click on the 'Start' button in the actions column to start the corresponding Server instance. The SCTP Server will be started and the underlying SCTP server socket will be bound to the IP: Port configured for this Server instance at the time of creation.
3. If the Server has started successfully you will find the status indicating the Server as 'Started' and the Server's icon will be lit green. If there is an error and the Server failed to start, you will find details of the error in the Management Console log below.

Stop a SCTP (or TCP) Server Instance

Using CLI

You can stop a currently running SCTP Server by issuing the command `sctp server stop` with appropriate parameters as described below:

Name

```
sctp server stop
```

SYNOPSIS

```
sctp server stop <server-name> stackname <stack-name>
```

DESCRIPTION

This command is used to stop an existing SCTP Server instance. Upon executing this command, the underlying SCTP server socket is closed and all resources are released.

PARAMETERS

Standard Parameters

<server-name> - Name of the Server instance to be stopped.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sctp server stop TestServer
```

The above command will stop the currently running Server instance identified by the name TestServer, close the underlying socket and release all resources.

Using GUI

Procedure: Stop a SCTP Server (or TCP Server) instance using GUI

1. Navigate to the 'Servers' section in the SCTP Management Unit window and locate the row corresponding to the Server you wish to stop.
2. To stop a Server currently running, click on the 'Stop' button in the actions column of the row corresponding to the Server instance. When the Server is stopped the underlying SCTP server socket will be closed and all resources are released.

View all SCTP (or TCP) Associations

Using CLI

You can view the details of all configured SCTP (or TCP) Associations by issuing the command `sctp association show` as described below:

Name

```
sctp association show
```

SYNOPSIS

```
sctp association show stackname <stack-name>
```

DESCRIPTION

This command is used to view the details of all SCTP Associations created. The information displayed will include the Association type (SERVER or CLIENT), name of the Association, state (whether started=false or true). For a CLIENT Association it will also display the host-ip, host-port and peer-ip, peer-port values.

For multi-home SCTP, it will display all the IP addresses that are configured. For a SERVER Association, it will display the configured peer-ip and peer-port values.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCTP Management unit and switch to the 'Associations' tab. Here you can view a list of all the Associations created. Every correctly configured Association will be displayed in a row and for each Association, the first column will display the name of the Association. The icon adjacent to the name will be lit 'green' if the Association is currently running or if the Association is stopped the icon will be 'orange'. The second column will indicate the current state of the Association (Started / Stopped) and the third column will allow you to delete the Association.



You cannot start or stop a SCTP Association here in this window. Every SCTP Association must be associated with an ASP (M3UA) and will automatically start or stop when the associated ASP is started or stopped. For more details on how to associate with an ASP, please refer to [M3UA Management](#).

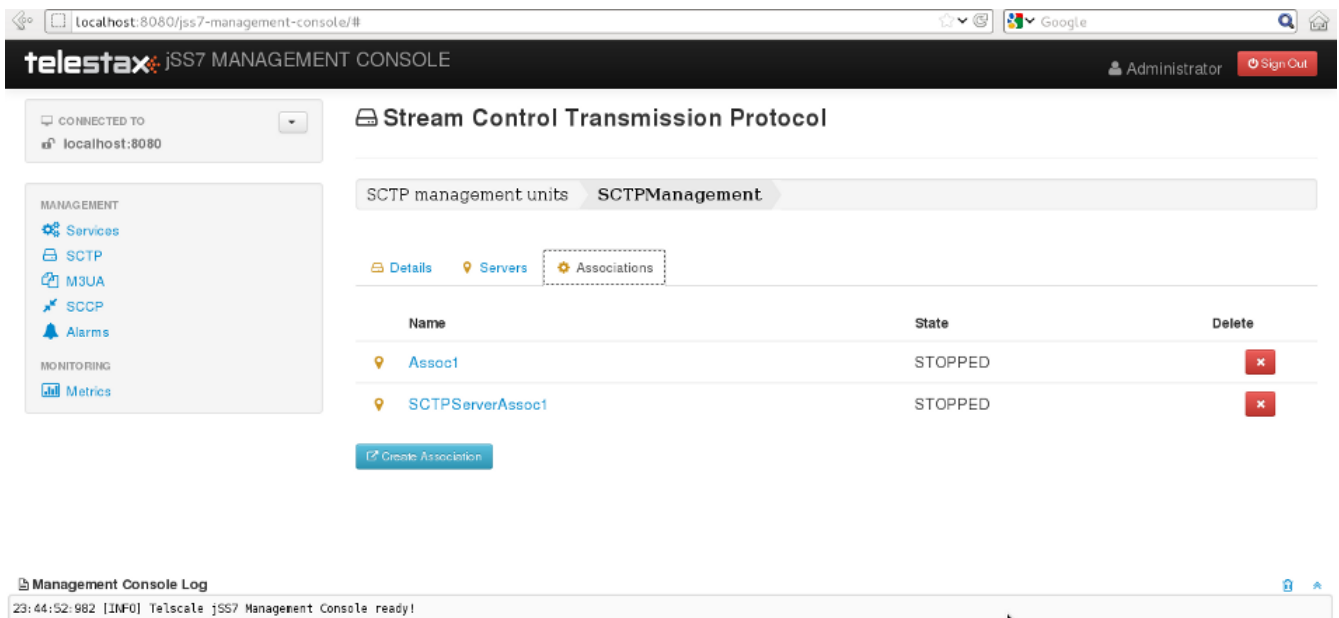


Figure 6. GUI - Sctp Management - Associations

In the screen above, click on the name of the Association whose details you wish to view. This will launch the Association Details and display all the configured properties of the selected Association.

Create a new Sctp (or TCP) Association

Using CLI

You can create a new Sctp Association by issuing the command `sctp association create` with appropriate parameters as described below:

Name

```
sctp association create
```

SYNOPSIS

```
sctp association create <assoc-name> <CLIENT | SERVER> <server-name> <peer-ip>
<peer-port> <host- ip> <host-port> <socket-type> stackname <stack-name>
```

DESCRIPTION

This command is used to create a new Sctp (Client side or Server side) association.

PARAMETERS

Standard Parameters

`<assoc-name>` - Name of the new Association created. This must be unique and takes any String value.

`<CLIENT | SERVER>` - Specify if this association is client side or server side. If it is client side, it will initiate the connection to peer. If it is server

side, it will wait for peer to initiate the connection. The connection request will be accepted from peer-ip: peer:port.

<peer-ip> - In a client side association, the server IP address to which the client is connecting to.

In a server side association, the client IP address from which connections will be accepted.

<peer-port> - In a client side association, the server Port to which the client is connecting to.

In a server side association, the client port from which connections will be accepted.

<host-ip> - In a client side association, the local IP address to which the socket will bind to.

For SCTP multi-home support, you can pass multiple IP addresses as comma separated values. The Association will bind to the primary IP address and when it becomes unavailable, it will automatically fall back to secondary address. If the socket-type is TCP, these comma separated values will be ignored and the Association will always bind to the primary IP address (the first value in the comma separated list). This is required only for a client side Association.

For a server side association, even if you specify these values it will be ignored.

<host-port> - In a client side association, the local port to which the socket will bind to. This is required only for a client side Association.

For a server side association, even if you specify these values it will be ignored.

<server-name> - In a server-side association, the server-name must be passed to associate with the Server identified by that name. You must ensure that the Server identified by server-name has already been created using the sctp server create command.

In a client-side association, this is not required and you should not pass this parameter.

Optional Parameters

`<socket-type>` - If you do not specify the socket-type as "TCP", by default it will be SCTP. If it is a SERVER SCTP Association, the socket-type must match with the one specified while creating the Server.

`<stack-name>` - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sctp association create Assoc1 CLIENT
192.168.56.101 2905 192.168.56.1,192.168.56.1 2905
```

The above command will create a new CLIENT SCTP Association identified as Assoc1. The client side will initiate the connection. It will bind the host-ip 192.168.56.1 and host-port 2905 to the Server IP 192.168.56.101 and port 2905.

```
sctp association create Assoc2 SERVER TestServer 192.168.56.1 2905
```

The above command will create a new SERVER SCTP association with the Server identified as TestServer and accept connections from peer whose IP address is 192.168.56.1 and port 2905.

Using GUI

Procedure: Create new SCTP (or TCP) Association (Client side or Server side)

1. In the section for Associations in the SCTP Management Unit window, click on the 'Create Association' button. This will launch a pop-up 'Create Association'.
2. In the 'Create Association' pop-up, add details of the new Association. You must ensure that you fill in all the mandatory parameters: Name, Peer Address, Peer Port, Server Name (for Server side Association), Host Address and Host Port (for Client side Association). For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new SCTP Association (or TCP Association) will be created with parameters as specified. If there is an error in creating the Association then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Association' pop-up.

Delete a SCTP (or TCP) Association

Using CLI

You can delete an existing SCTP Association by issuing the command `sctp association destroy` as described below:

Name

sctp association destroy

SYNOPSIS

sctp association destroy <assoc-name> stackname <stack-name>

DESCRIPTION

This command is used to delete an existing SCTP Association identified by the name assoc-name.

PARAMETERS

Standard Parameters

<assoc-name> - Name of the Association to be deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sctp association destroy Assoc1

The above command will destroy the Association identified by the name Assoc1.

Using GUI

Procedure: Delete SCTP Association (or TCP Association) instance

1. Navigate to the 'Associations' section in the SCTP Management Unit window and locate the row corresponding to the Association you wish to delete.
2. You must ensure that the Association is stopped prior to deletion. If the Association is stopped, the last column for 'Delete' will display a 'x' button in red. If the Association is currently running, the 'x' button will be displayed in orange. You can only delete the Association if it is stopped and the 'x' button is displayed in red.
3. Click on the red 'x' button to delete the corresponding Association instance.

M3UA Management

Using CLI

You can manage all M3UA Application Server, Application Server Process and Route related configurations through the Command Line Interface by using the **m3ua** command. You can create, destroy, start and stop ASPs by issuing the **m3ua asp** command with appropriate parameters. You can create, destroy, add and remove AS by issuing the **m3ua as** command with appropriate parameters.

You can add and remove M3UA Routes by issuing the `m3ua route` command with appropriate parameters.

Using GUI

The GUI will allow you to manage your M3UA configurations efficiently using a user-friendly interface. Open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'M3UA' link in the left panel. The main panel will display the names of all configured M3UA Management units. To configure or view the settings of a particular M3UA Management Unit you must click on the name of that unit. The GUI will look similar to the figure below and is divided into four tabs.

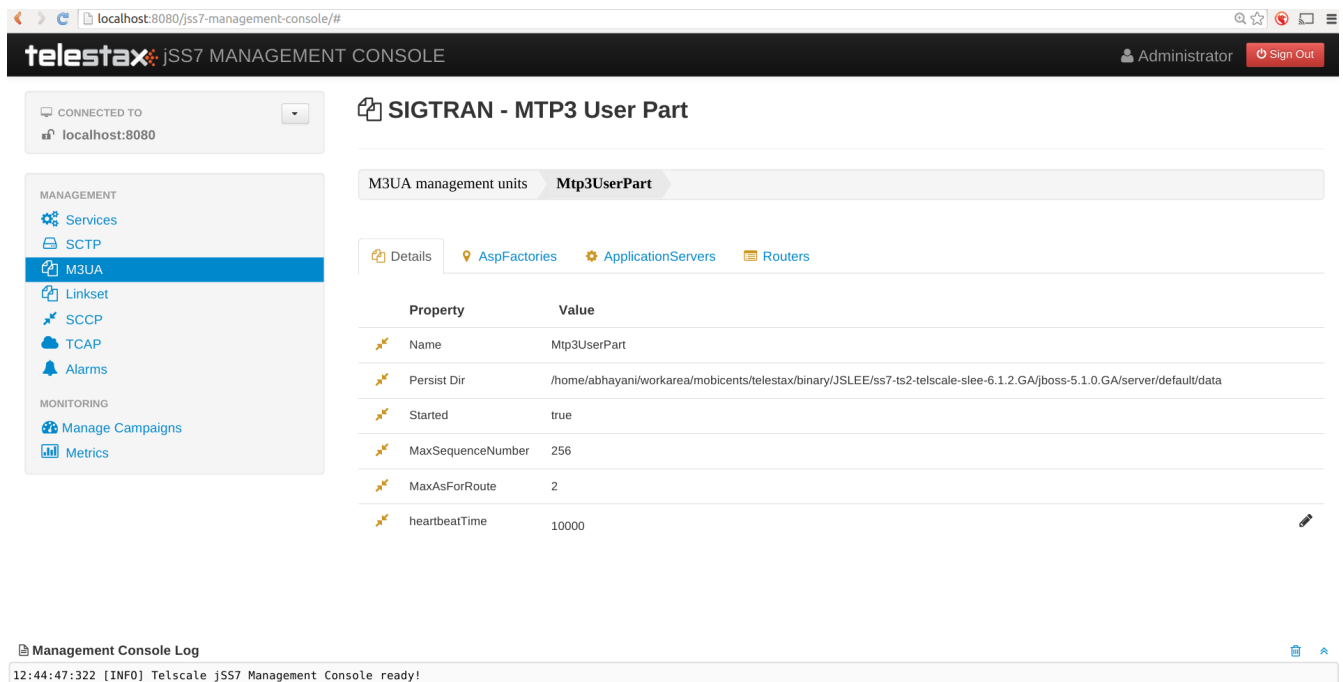


Figure 7. GUI - M3UA Management

The first tab will display the properties of the M3UA Management unit. These details displayed here are fetched from the XML descriptor file `jboss-beans.xml`, which is located at `$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF`, where `profile_name` is the server profile name. These properties can be modified here in the GUI. To modify them you must click the pencil, change value and save. The GUI will then display the modified values.

The other three tabs will allow you to manage and monitor all Servers, ASPs and Routers within this M3UA Management unit.

M3UA stack properties

Maximum Sequence Number

You can modify the settings for the parameter 'maxsequencenumber' only when the M3UA Stack is not running. In addition, this parameter cannot be modified through the CLI or GUI. You will have to invoke the setter function directly from the source code.

If you are using the JBoss Application Server, then you can set this parameter by adding a property (as shown below) to the XML descriptor file *jboss-beans.xml*, which is located at *\$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF*, where *profile_name* is the server profile name.

```
/*Add property for the parameter 'maxsequencenumber' to jboss-beans.xml file and
specify the value*/
<property name="maxSequenceNumber">128</property>
```

The current settings of the parameter can be viewed in the GUI or by invoking the appropriate CLI command as described below.

Using CLI

You can retrieve the current settings of the parameter 'maxsequencenumber' by issuing the command `sctp get maxsequencenumber`. However as explained above, you cannot modify the settings through the CLI.

Name

m3ua get maxsequencenumber

SYNOPSIS

m3ua get maxsequencenumber

DESCRIPTION

This command is used to retrieve the current settings of the parameter 'maxsequencenumber'. The 'maxsequencenumber' parameter is used to specify the maximum sequence number used for load-balancing algorithm.

Sequence number or Signalling Link Selection (SLS) is used for load-balancing between ASPs in AS and also between various AS for the same point-code. The parameter 'maxsequencenumber' controls the maximum SLS that should be used for this. It is safe to leave it at 256.

The settings can be modified only when the M3UA Stack is not running. To modify this parameter you must invoke the setter function directly from the code or if you are using the JBoss AS, you can add a property to the XML descriptor file *jboss-beans.xml*. You cannot change the settings through the CLI.

Using GUI

In the M3UA management page, you can view the current settings of the 'Max Sequence Number' property. But as explained above, you cannot change the settings in the GUI. For more details about this parameter, refer to the detailed description about the parameter in the above section for CLI.

Maximum AS for route

You can modify the settings for the parameter 'maxasforroute' only when the M3UA Stack is not running. In addition, this parameter cannot be modified through the CLI or GUI. You will have to invoke the setter function directly from the source code.

If you are using the JBoss Application Server, then you can set this parameter by adding a property (as shown below) to the XML descriptor file *jboss-beans.xml*, which is located at *\$JBoss_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF*, where *profile_name* is the server profile name.

```
/*Add property for the parameter 'maxasforroute' to jboss-beans.xml file and specify the value*/  
<property name="maxAsForRoute">4</property>
```

The current settings of the parameter can be viewed in the GUI or by invoking the appropriate CLI command as described below.

Using CLI

You can retrieve the current settings of the parameter 'maxasforroute' by issuing the command `sctp get maxasforroute`. However as explained above, you cannot modify the settings through the CLI.

Name

`m3ua get maxasforroute`

SYNOPSIS

`m3ua get maxasforroute`

DESCRIPTION

This command is used to retrieve the current settings of the parameter 'maxasforroute'. The 'maxasforroute' parameter is used to specify the maximum routes for destination point code.

Every destination point code should be configured in M3UA with the corresponding AS. The parameter 'maxasforroute' controls the maximum number of AS that can be used to route the message to the same Destination Point Code.

It is better to always maintain this parameter as an even number for better load-sharing and a maximum of 2 is standard and widely accepted. You should not change this value if there is at least one route defined, else it will throw Exception for that route. You have to delete all the routes, change this property and redefine routes.

The settings can be modified only when the M3UA Stack is not running. To modify this parameter you must invoke the setter function directly from the code or if you are using the JBoss AS, you can add a property to the XML descriptor file jboss-beans.xml. You cannot change the settings through the CLI.

Using GUI

In the M3UA management page, you can view the current settings of the 'Max As for Route' property. But as explained above, you cannot change the settings in the GUI. For more details about this parameter, refer to the detailed description about the parameter in the above section for CLI.

Heart Beat time

Using CLI

You can set the 'heartbeattime' by issuing the command `m3ua set heartbeattime` with appropriate parameters as described below. You can verify this by issuing the command `m3ua get heartbeattime` which will display the value set for this property.

Name

`m3ua set heartbeattime`

SYNOPSIS

`m3ua set heartbeattime <heartbeattime> stackname <stack-name>`

DESCRIPTION

Each ASP can send HEART_BEAT to peer to determine the availability of link. If there is no traffic M3UA will initiate heart beat every 'heartbeatTime' milli seconds. If 3 consecutive HEART_BEAT are missed, stack will close and re-initiate connection.

PARAMETERS

Standard Parameters

`<heartbeattime>` - Heart Beat time in milliseconds.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`m3ua set heartbeattime 30000`

Using GUI

On M3UA management page, click on pencil against the 'Worker Threads' property and text box becomes editable. Change value and save.

View all M3UA Application Server Processes

Using CLI

You can view the details of all configured M3UA Application Server Processes by issuing the command `m3ua asp show` as described below:

Name

m3ua asp show

SYNOPSIS

m3ua asp show stackname <stack-name>

DESCRIPTION

This command is used to view the details of all configured Application Server Processes. The information displayed will include the name, the SCTP Association name and if it is started or stopped.

PARAMETERS

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific M3UA Management unit and switch to the 'AspFactories' tab. Here you can view a list of all the ASPs created. Every correctly configured ASP will be displayed in a row and for each ASP, the first column will display the name of the ASP. The icon adjacent to the name will be lit 'green' if the ASP is currently running or if the ASP is stopped the icon will be lit 'orange'. The second column will indicate the current state of the ASP (true / false), the third column will allow you to Start / Stop the ASP and the fourth column will allow you to delete the ASP.

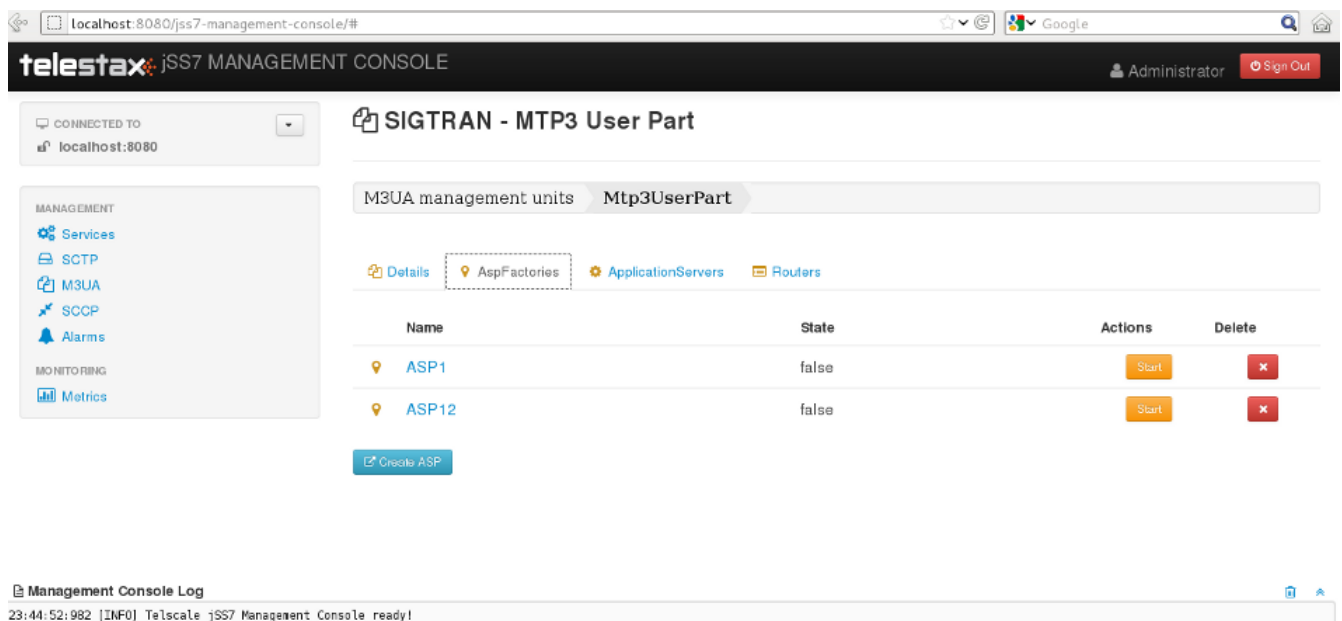


Figure 8. GUI - M3UA Management - AspFactories

In the screen above, click on the name of the ASP whose details you wish to view. This will launch the ASP Details and display all the configured properties of the selected ASP. The second tab in this view will allow you to view all connected Application Servers. You can click on the bread crumbs at

the top to return to any of the previous pages you navigated through.

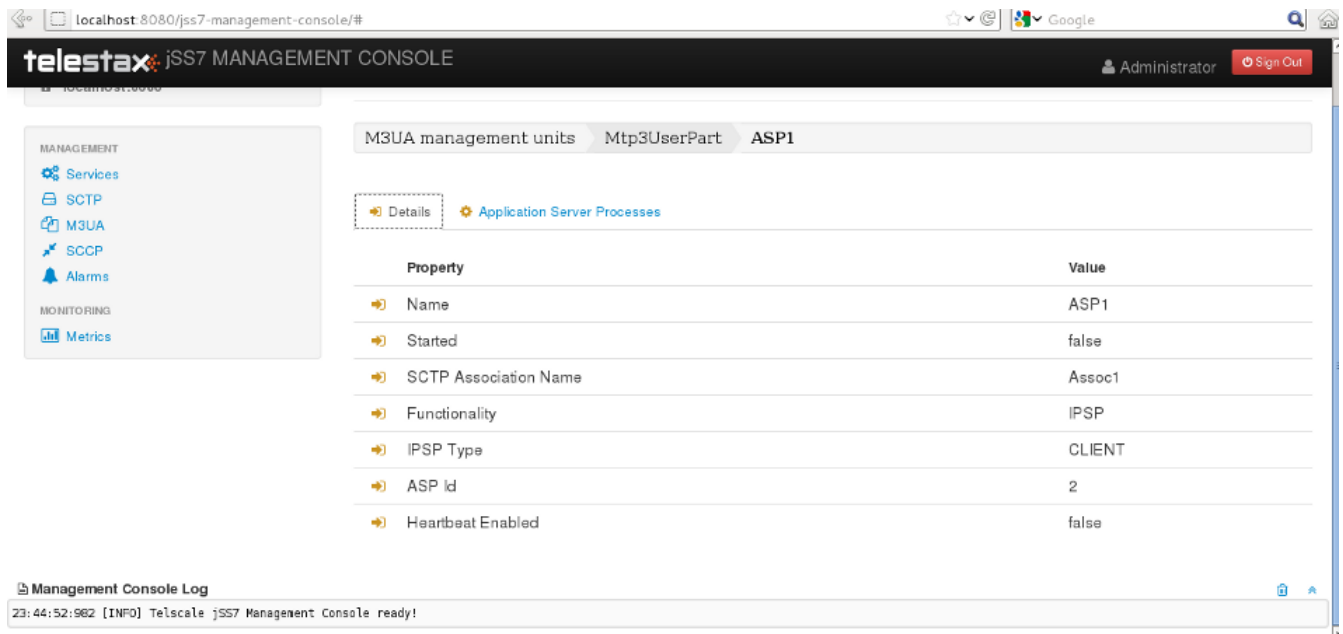


Figure 9. GUI - M3UA Management - ASP Details

Create a new M3UA Application Server Process

Using CLI

You can create a new M3UA ASP by issuing the command `m3ua asp create` with appropriate parameters as described below:

Name

```
m3ua asp create
```

SYNOPSIS

```
m3ua asp create <asp-name> <sctp-association> aspid <aspid> heartbeat <true|false>  
stackname <stack-name>
```

DESCRIPTION

This command is used to create a new Application Server Process.

PARAMETERS

Standard Parameters

`<asp-name>` - Name of the new Application Server Process created. This must be unique and takes any String value.

`<sctp-association>` - Name of the Sctp Association

Optional Parameters

`<aspid>` - Identifier for this newly created Application Server Process. If this is not passed, next available aspid will be used.

`heartbeat <true|false>` - If this parameter is enabled (value set to true), then heartbeat mechanism is enabled between M3UA peers. When this is enabled, it sends a Heartbeat message every 10 seconds. If there is no response for the third heartbeat then it assumes that the underlying network is dead. So it closes the connection and attempts to connect again. The M3UA peers are brought back to the same state as they were prior to dying.

This is an optional parameter and if unspecified, heartbeat mechanism is disabled.

`<stack-name>` - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
m3ua asp create ASP1 Assoc1 aspid 12 heartbeat true
```

The above command will create a new M3UA Application Server Process with name ASP1 and id 12. Heartbeat mechanism is enabled.

Using GUI

Procedure: Create a new Application Server Process using GUI

1. Navigate to the tab 'AspFactories' in the M3UA Management Unit window and click on the 'Create ASP' button. This will launch a pop-up 'Create AspFactory'.
2. In the 'Create ASP' page, add details of the new ASP. You must ensure that you fill in all the mandatory parameters (Name, SCTP Association Name). For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section. You must ensure that a correctly configured SCTP Association is created and available prior to creating a new ASP. When the ASP is started or stopped, this corresponding SCTP Association will start / stop automatically.
3. Verify the details entered and then click on the 'Create' button. A new ASP will be created with parameters as specified. If there is an error in creating the ASP then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Server' pop-up.

Delete an Application Server Process

Using CLI

You can delete an existing M3UA ASP by issuing the command `m3ua asp destroy` with appropriate parameters as described below:

Name

```
m3ua asp destroy
```

SYNOPSIS

```
m3ua asp destroy <asp-name> stackname <stack-name>
```

DESCRIPTION

This command is used to delete an existing M3UA Application Server Process identified by the name 'asp-name'. You must ensure that the ASP is stopped prior to issuing the command.

PARAMETERS

Standard Parameters

<asp-name> - Name of the ASP to be deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
m3ua asp destroy ASP1
```

The above command will destroy the ASP identified by the name ASP1.

Using GUI

Procedure: Delete an Application Server Process using GUI

1. Navigate to the 'ASPs' section in the M3UA Management Unit window and locate the row corresponding to the ASP you wish to delete.
2. You must ensure that the ASP is stopped and unassigned from AS prior to deletion. If the ASP is stopped, the last column for 'Delete' will display a 'x' button in red and will be enabled. If the Server is currently running, the 'x' button will be disabled.
3. Click on the red 'x' button to delete the corresponding ASP.

Start an Application Server Process

Using CLI

You can start an existing ASP by issuing the command `m3ua asp start` with appropriate parameters as described below:

Name

```
m3ua asp start
```

SYNOPSIS

```
m3ua asp start <asp-name> stackname <stack-name>
```

DESCRIPTION

This command is used to start an existing ASP. You must ensure that the ASP is assigned to at least one AS prior to starting it.

PARAMETERS

Standard Parameters

<asp-name> - Name of the ASP to be started.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
m3ua asp start ASP1
```

The above command will start the ASP identified by the name ASP1.

Using GUI

Procedure: Start an Application Server Process

1. Navigate to the 'AspFactories' tab in the M3UA Management Unit window and locate the row corresponding to the ASP you wish to start.
2. Click on the 'Start' button in the actions column to start the corresponding ASP. You must ensure that the ASP is assigned to at least one AS prior to starting it.
3. If the ASP has started successfully you will find the status indicating the ASP running as 'true' and the icon will be lit green. If there is an error and the ASP failed to start, you will find details of the error in the Management Console log below.

Stop an Application Server Process

Using CLI

You can stop a currently running ASP by issuing the command `m3ua asp stop` with appropriate parameters as described below:

Name

`m3ua asp stop`

SYNOPSIS

`m3ua asp stop <asp-name> stackname <stack-name>`

DESCRIPTION

This command is used to stop a currently running ASP.

PARAMETERS

Standard Parameters

`<asp-name>` - Name of the ASP to be stopped.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`m3ua asp stop ASP1`

The above command will stop the ASP identified by the name ASP1.

Using GUI

Procedure: Stop an Application Server Process

1. Navigate to the 'AspFactories' section in the M3UA Management Unit window and locate the row corresponding to the ASP you wish to stop.
2. Click on the 'Stop' button in the actions column to stop the corresponding ASP.
3. If the ASP has stopped successfully you will find the status indicating the ASP running as 'false' and the icon will be lit orange. If there is an error and the ASP failed to stop, you will find details of the error in the Management Console log below.

View all M3UA Application Servers

Using CLI

You can view the details of all configured M3UA Application Servers by issuing the command **m3ua as show** as described below:

Name

m3ua as show

SYNOPSIS

m3ua as show stackname <stack-name>

DESCRIPTION

This command is used to view the details of all configured Application Servers. The information displayed will include the configured functionality (AS or IPSP or SGW), mode (SE or DE), IPSP type (if applicable), routing context, traffic mode and network appearance values.

PARAMETERS

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific M3UA Management unit and switch to the 'ApplicationServers' tab. Here you can view a list of all the ASs created. Every correctly configured AS will be displayed in a row and for each AS, the first column will display the name of the AS. The icon adjacent to the name will be lit 'green' if the AS is currently running or if the AS is stopped the icon will be lit 'orange'. The second column will indicate the current state of the AS (defined / undefined), the third column will allow you to delete the AS.

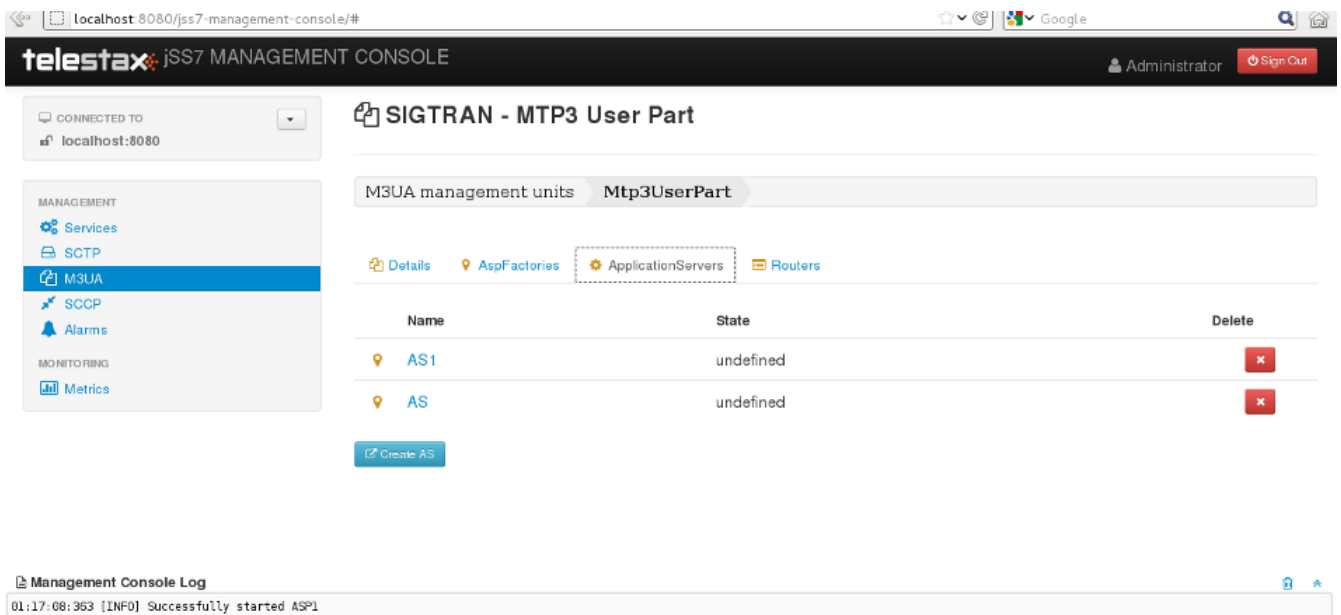


Figure 10. GUI - M3UA Management - ApplicationServers

In the screen above, click on the name of the AS whose details you wish to view. This will launch the AS Details and display all the configured properties of the selected AS. The second tab in this view will allow you to view the details of the connected ASP. You can click on the bread crumbs at the top to return to any of the previous pages you navigated through.

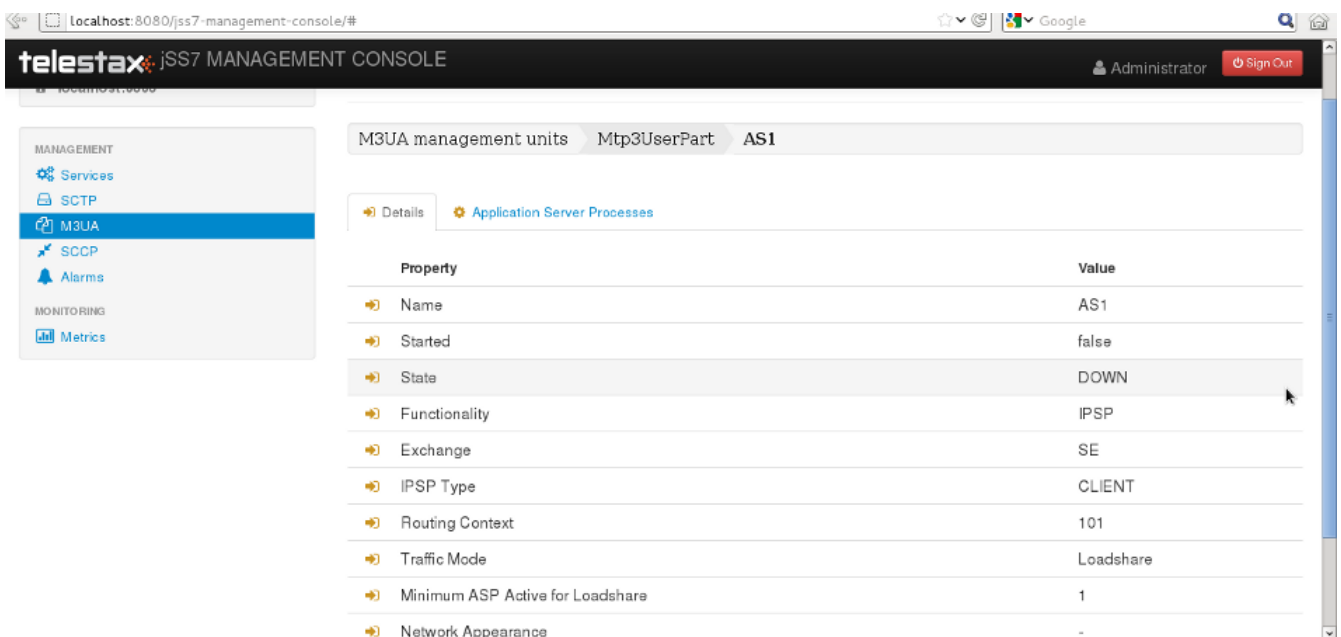


Figure 11. GUI - M3UA Management - AS Details

Create a new M3UA AS

Using CLI

You can create a new M3UA AS by issuing the command `m3ua as create` with appropriate parameters as described below:

Name

m3ua as create

SYNOPSIS

```
m3ua as create <as-name> <AS | SGW | IPSP> mode <SE | DE>
ipsType <client | server> rc <routing- context> traffic-mode <traffic mode>
min-asp <minimum asp active for TrafficModeType.Loadshare>
network-appearance <network appearance value> stackname <stack-name>
```

DESCRIPTION

This command is used to create a new Application Server.

PARAMETERS

Standard Parameters

- <as-name> - Name of the new Server created. This must be unique and takes any String value.
- <AS | SGW | IPSP> - The type of the new Server is specified using this parameter. The three possible values are AS (Application Server), SGW (Signaling Gateway) and IPSP.
- <SE | DE> - You must specify if Single Exchange or Double Exchange of ASPSM (ASP State Maintenance) and ASPTM (ASP Traffic Maintenance) messages should be performed.
- <client | server> - This is required if the newly created AS is of type IPSP. You must specify is if it is of type Client or Server.

Optional Parameters

- <routing-context> - This refers to the Routing Context configured for M3UA Stack on SGW. This parameter is optional.

However for an ASP (Application Server Process) assigned to this AS to be configured to process signaling traffic related to more than one AS over a single SCTP Association, it is mandatory to specify a routing-context for the AS. If an ASP is configured to always process signaling traffic from one AS, irrespective of whether the received messages have routing context set or not, it will always be delivered to AS for further processing.

However if an ASP is configured to process signaling traffic related to more than one AS over a single SCTP Association and if a signaling message is received without RC, then the ASP will

drop the message and send back an Error message.
A respective log4j error will also be logged.

<traffic-mode> - You may choose to specify the traffic mode for ASPs. At the moment jSS7 M3UA supports only 2 modes: loadshare and override. Broadcast mode is not supported.

This is an optional parameter and if not specified the default mode is 'loadshare'.

<min-asp> - You may choose to specify the minimum asp active for traffic mode 'loadshare' before the payload starts flowing.

This is an optional parameter and if not specified the default value is 1. Also if traffic-mode is not 'loadshare' setting this value has no effect.

<network-appearance> - This is a M3UA local reference (typically an integer) shared by SG and AS. This value together with a Signaling Point Code, uniquely identifies a SS7 node by indicating the specific SS7 network to which it belongs. It can be used to distinguish between signalling traffic, associated with different networks, being sent between the SG and the ASP over a common SCTP association.

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
m3ua as create AS1 IPSP mode DE ipspType server rc 1 traffic-mode loadshare
```

The above command will create a new M3UA Application Server identified as AS1, of type IPSP (Server), Double Exchange mode. The Routing Context is 1 and traffic-mode is 'loadshare'.

```
m3ua as create AS2 AS mode SE rc 100 traffic-mode loadshare 2 network-appearance 12
```

The above command will create a new M3UA Application Server identified as AS2, of type AS, Single Exchange mode. The Routing Context is 100, traffic-mode is 'loadshare' and minimum asp to be active for payload transfer is 2.

The network-appearance value is 12.

Using GUI

Procedure: Create a new M3UA Application Server using GUI

1. Navigate to the tab 'ApplicationServers' in the M3UA Management Unit window and click on the 'Create AS' button. This will launch a pop-up 'Create AS'.
2. In the 'Create Application Server' pop-up, add details of the new AS. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new AS will be created with parameters as specified. If there is an error in creating the AS then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Application Server' pop-up.

Delete a M3UA AS

Using CLI

You can create a new M3UA AS by issuing the command `m3ua as create` with appropriate parameters as described below:

Name

```
m3ua as destroy
```

SYNOPSIS

```
m3ua as destroy <as-name> stackname <stack-name>
```

DESCRIPTION

This command is used to delete an existing M3UA Application Server instance identified by the name 'as-name'. You must ensure that all ASPs are unassigned and the AS state is 'INACTIVE' prior to destroying the AS.

PARAMETERS

Standard Parameters

<as-name> - Name of the AS instance to be deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
m3ua as destroy AS1
```

The above command will destroy the AS identified by the name AS1.

Using GUI

Procedure: Delete a M3UA Application Server using GUI

1. Navigate to the 'ApplicationServers' tab in the M3UA Management Unit window and locate the row corresponding to the AS you wish to delete.
2. You must ensure that all ASPs are unassigned from this AS and the current state of the AS is 'INACTIVE' (displayed as 'undefined') prior to destroying the AS. If the AS is inactive, the last column for 'Delete' will display a 'x' button in red and will be enabled. You can only delete the AS if it is inactive.
3. Click on the red 'x' button to delete the corresponding AS.

Assign an ASP to an AS

Using CLI

You can assign an ASP to an AS by issuing the command `m3ua as add` with appropriate parameters as described below:

Name

m3ua as add

SYNOPSIS

m3ua as add <as-name> <asp-name> stackname <stack-name>

DESCRIPTION

This command is used to assign an Application Server Process to an Application Server. The AS and ASP must both be created prior to executing this command.

You can configure an ASP to process signaling traffic related to more than one AS, over a single SCTP Association. However you must ensure that all the Application Servers that share the ASP are configured with a valid Routing Context value.

PARAMETERS

Standard Parameters

<as-name> - Name of the AS to which this ASP is being assigned.

<asp-name> - Name of the ASP that is being assigned to the AS.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
 If not passed, the first stack configured in ShellExecutor
 will be used.

EXAMPLES

m3ua as add AS1 ASP1

- The above command will assign ASP1 to AS1.

Using GUI

Procedure: Assign an ASP to an AS using GUI

1. Navigate to the 'ApplicationServers' tab in the M3UA Management Unit window, locate the row corresponding to the AS you wish to assign an ASP and click on the name of the AS.
2. This will launch the AS details page where all the properties of the AS will be displayed. Switch to the second tab in this view called "Application Server Processes". As shown in the figure below, you will find a list of all currently assigned ASPs to this selected AS.

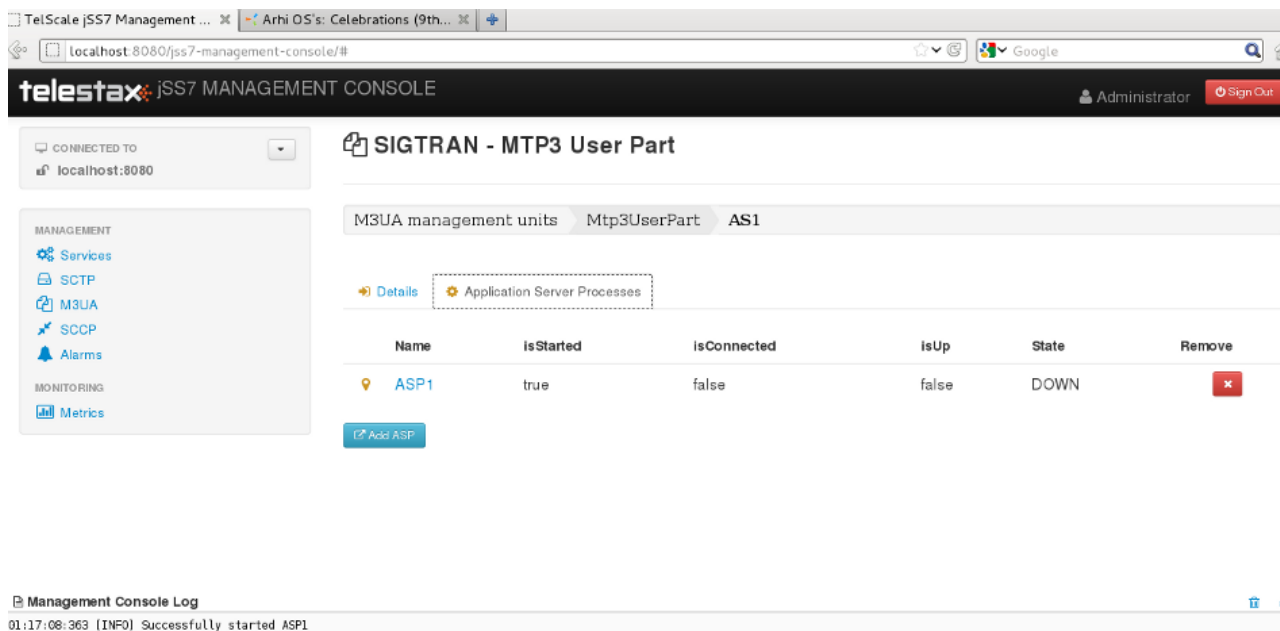


Figure 12. GUI - M3UA Management - Assign ASP to an AS

3. Click on the 'Add ASP' button at the bottom. This will launch a pop-up named 'Add ASP' where all available ASPs will be listed in a drop down box.
4. Click on the 'Create' button to add the selected ASP to this AS. The ASP will be assigned to this AS and will be displayed in the ASP list for this AS.
5. You can configure an ASP to process signaling traffic related to more than one AS, over a single SCTP Association. However you must ensure that all the Application Servers that share the ASP are configured with a valid Routing Context value.

Unassign an ASP from an AS

Using CLI

You can unassign an ASP from an AS by issuing the command `m3ua as remove` with appropriate parameters as described below:

Name

m3ua as remove

SYNOPSIS

m3ua as remove <as-name> <asp-name> stackname <stack-name>

DESCRIPTION

This command is used to un-assign an Application Server Process from an Application Server that it was previously assigned to.

PARAMETERS

Standard Parameters

<as-name> - Name of the AS from which this ASP is being un-assigned.

<asp-name> - Name of the ASP to be un-assigned.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

m3ua as remove AS1 ASP1

The above command will remove ASP1 from AS1.

Using GUI

Procedure: Unassign an ASP from an AS using GUI

1. Navigate to the 'ApplicationServers' tab in the M3UA Management Unit window, locate the row corresponding to the AS you wish to unassign an ASP from and click on the name of the AS.
2. This will launch the AS details page where all the properties of the AS will be displayed. Switch to the second tab in this view called "Application Server Processes". As shown in the figure above, you will find a list of all currently assigned ASPs to this selected AS.
3. Locate the row corresponding to the ASP you wish to unassign from this AS.
4. Click on the red coloured 'x' remove button in the row corresponding to the ASP you wish to remove. This action will unassign the ASP from this AS.

View all M3UA Routes

Using CLI

You can view the details of all configured M3UA Routes by issuing the command `m3ua route show` as described below:

Name

`m3ua route show`

SYNOPSIS

`m3ua route show stackname <stack-name>`

DESCRIPTION

This command is used to display all configured routes.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific M3UA Management unit and switch to the 'Routers' tab. Here you can view a list of all the Routes created as shown in the figure below. Every correctly configured Route will be displayed in a row and for each Route, the first column will display DPC:OPC:SI values. The icon adjacent to the name will be lit 'green' if the Route is currently active or if the Route is inactive the icon will be 'orange'. The second column will indicate the current state of the Route (Active / Inactive) and the third column will display the name of the AS assigned to route messages for this DPC.

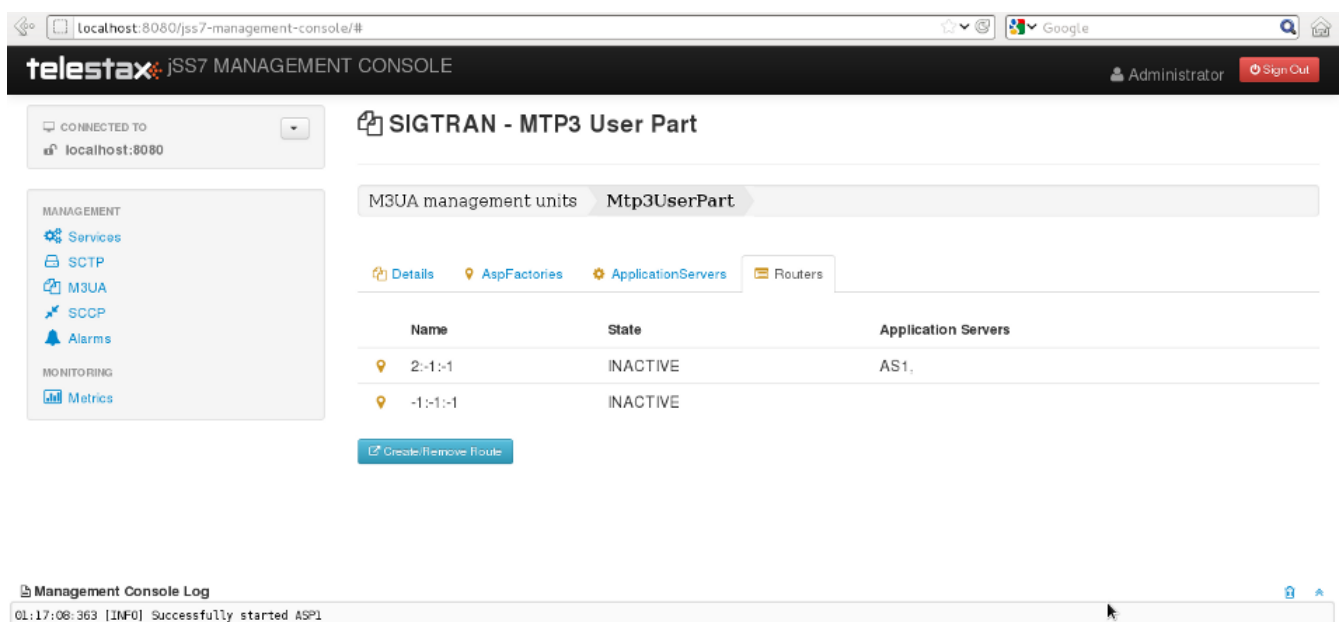


Figure 13. GUI - M3UA Management - Route

Create a new M3UA Route

Using CLI

You can create a new M3UA Route by issuing the command `m3ua route add` with appropriate parameters as described below:

Name

```
m3ua route add
```

SYNOPSIS

```
m3ua route add <as-name> <dpc> <opc> <si> trafficmode <traffic-mode> stackname  
<stack-name>
```

DESCRIPTION

This command is used to configure an AS to route message, i.e. configure the destination point code that the message will be routed to. You must ensure that the AS is created prior to executing this command.

PARAMETERS

Standard Parameters

- <as-name> - Name of the AS assigned to route message for this dpc.
- <dpc> - Destination Point Code.
- <opc> - Originating Point Code.
- <si> - Service Indicator.

Optional Parameters

- <traffic-mode> - There can be two or more AS defined for each route. The M3UA Stack will do load-balancing between these AS depending on the traffic-mode set for this m3ua route. Possible values are:
 1. Override
 2. Loadshare
 3. Broadcast (Broadcast is not yet supported by M3UA)
- <stack-name> - Name of the stack on which this command is executed. If this is not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
m3ua route add AS1 2 -1 -1
```

Using GUI

Procedure: Create a new M3UA Route using GUI

1. Navigate to the 'Routers' tab in the M3UA Management Unit window and click on the 'Create/Remove' button.
2. This will launch the pop-up 'Create/Remove Route', where you can add values for DPC, OPC, SI, traffic-mode and Application Server Name. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new Route will be configured with parameters as specified. If there is an error in creating the Route then you will find the details of the error in the Management Console Log section below.

Delete a M3UA Route

Using CLI

You can delete a M3UA Route by issuing the command `m3ua route remove` with appropriate parameters as described below:

Name

m3ua route remove

SYNOPSIS

m3ua route remove <as-name> <dpc> <opc> <si> stackname <stack-name>

DESCRIPTION

This command is used to remove a previously configured route.

PARAMETERS

Standard Parameters

<as-name> - Name of the AS assigned to route message for this dpc.

<dpc> - Destination Point Code.

<opc> - Originating Point Code.

<si> - Service Indicator.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

m3ua route remove AS1 2 -1 -1

Using GUI

Procedure: Delete a M3UA Route using GUI

1. Navigate to the 'Routers' tab in the M3UA Management Unit window and click on the 'Create/Remove' button.
2. This will launch the pop-up 'Create/Remove Route'. Enter the values for DPC, OPC, SI and Application Server Name that you wish to remove from the list of Routes. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Click on the 'Remove' button to delete the Route corresponding to the parameters specified.

SCCP Management

SCCP provides connectionless and connection-oriented network services. This includes address(GTT) translation and routing, flow control, segmentation and reassembly. A global title is an address (e.g., a dialed 800 number, calling card number, or mobile subscriber identification

number) which is translated by SCCP into a destination point code and subsystem number. A subsystem number uniquely identifies an application at the destination signaling point. is used as the transport layer for -based services.

The first step in configuring SCCP is defining service access points (sap). This step is mandatory. Each SCCP stack can use one or more Mtp3UserPart (Refer [\[configuring_sccp\]](#) about Mtp3UserPart settings). A sap is a logical definition of the Mtp3UserPart [corresponding local SPC, network indicator (NI) and a set of destinations (remote SPC list)].

The second step is the definition of a list of available remote signaling pointcodes (SPC - rsp) and a list of available remote Sub-Systems (SNN - rss). This step is also mandatory. If routing only by GlobalTitle is used then it is not required to configure remote Sub-Systems.

Since acts as a message router, it is required to configure routing information. Rules (rule), primary and backup (address) (if backup addresses are available) addresses should be configured. If XUDT and LUDT messages are available in the SS7 network, you should configure a set of long message rules (lmr) that will allow long messages. This step is not mandatory. If no long message rules are configured only UDT messages will be used.

The last step is optional. You can configure a set of concerned signaling point codes (csp). Each point code will be announced when local SCCP user becomes unavailable.

Using CLI

You can manage all SCCP related configurations through the Command Line Interface by using the `sccp` command with appropriate parameters. You can create, modify, delete and view SCCP Service Access Points (sap) and Destinations (dest), Remote Signaling Point Codes (rsp), Remote Sub Systems (rss), Concerned Signaling Point Codes (csp), Routing information (rules, primary and backup addresses) and Long Message Rules (lmr). You can also set and get values for general parameters using this command.

Using GUI

The GUI will allow you to manage your SCCP configurations efficiently using a user-friendly interface. Open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'SCCP' link in the left panel. The main panel will display the names of all configured SCCP Management units. To configure or view the settings of a particular SCCP Management Unit you must click on the name of that unit. The GUI will look similar to the figure below and is divided into tabs.

The first tab will display the properties of the SCCP Management unit. These details displayed here are fetched from the XML descriptor file *jboss-beans.xml*, which is located at *\$JBoss_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF*, where `profile_name` is the server profile name. These properties can be modified here in the GUI. To modify them you must click on pencil, make changes and save. The GUI will then display the modified values.

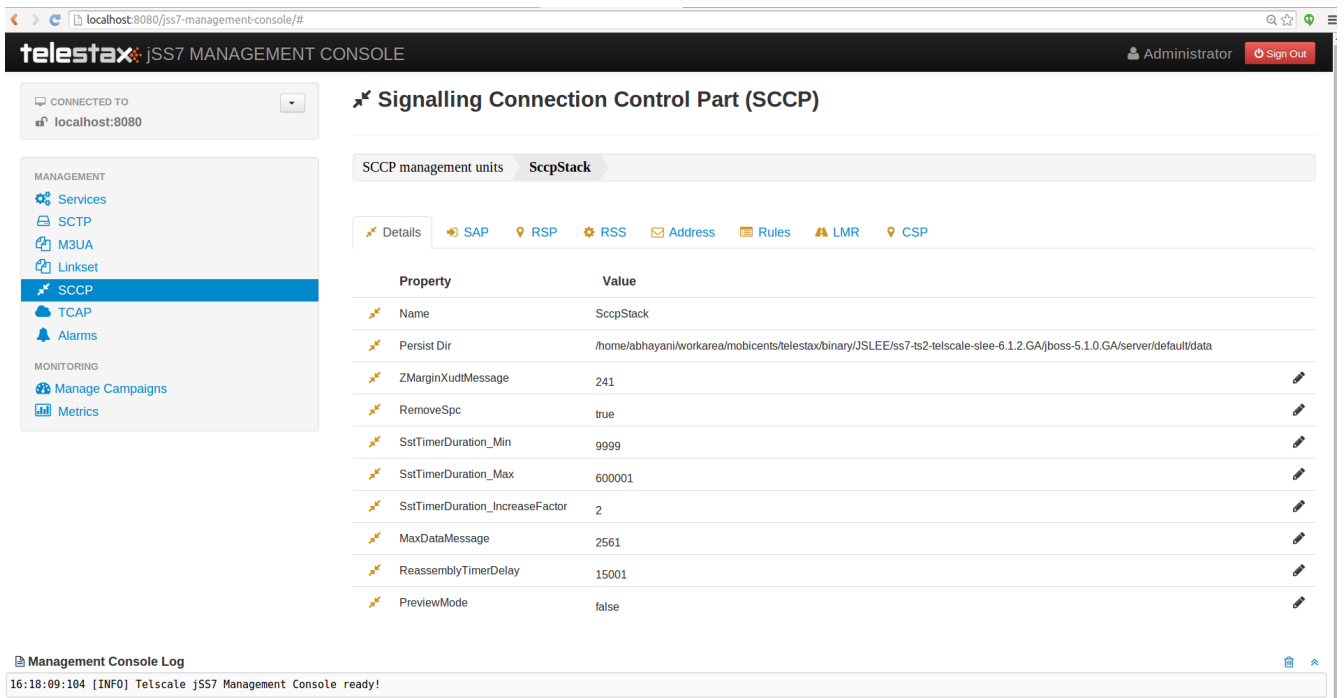


Figure 14. GUI - SCCP Management

The other seven tabs will allow you to manage all SCCP configurations within this SCCP Management unit.

SCCP stack properties

SCCP protocol version

Using CLI

We can specify which protocol specification will use SCCP stack (ITU-T or ANSI).

You can set the 'sccpprotocolversion' by issuing the command `sccp set sccpprotocolversion` with appropriate parameters as described below. You can verify this by issuing the command `sccp get sccpprotocolversion` which will display the value set for this property.

Name

sccp set sccpprotocolversion

SYNOPSIS

sccp set sccpprotocolversion <ITU | ANSI> stackname <stack-name>

DESCRIPTION

Sets the value for sccpprotocolversion property ITU or ANSI.
Default value is ITU.

PARAMETERS

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
 If not passed, the first stack configured in ShellExecutor
 will be used.

EXAMPLES

sccp set sccpprotocolversion ITU

Using GUI

On SCCP management page, click on pencil against the 'ReservedForNationalUseValue of AddressIndicator' property and text box becomes editable. Change value and save.

Maximum Data Message

Using CLI

You can set the 'maxdatamessage' by issuing the command **sccp set maxdatamessage** with appropriate parameters as described below. You can verify this by issuing the command **sccp get maxdatamessage** which will display the value set for this property.

Name

sccp set maxdatamessage

SYNOPSIS

sccp set maxdatamessage <maxdatamessage> stackname <stack-name>

DESCRIPTION

Sets Max available SCCP message data for all message types. Range is 2560 to 3952. If passed value is less than 2560, it sets to 2560 and if passed value is greater than 3952, it sets to 3952.

PARAMETERS

Standard Parameters

<maxdatamessage> - Maximum data message size.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sccp set maxdatamessage 30000

Using GUI

On SCCP management page, click on pencil against the 'PreviewMode' property and text box becomes editable. Change value and save.

Preview Mode

Using CLI

You can set the 'previewmode' by issuing the command `sccp set previewmode` with appropriate parameters as described below. You can verify this by issuing the command `sccp get previewmode` which will display the value set for this property.

Name

`sccp set previewmode`

SYNOPSIS

`sccp set previewmode <true | false> stackname <stack-name>`

DESCRIPTION

If set to true, stack only listens for incoming messages and does not send anything out of stack. Messages are silently dropped.

PARAMETERS

Standard Parameters

`<previewmode>` - Set preview mode to true or false.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp set previewmode false`

Using GUI

On SCCP management page, click on pencil against the 'PreviewMode' property and text box becomes editable. Change value and save.

Reassembly Timer Delay

Using CLI

You can set the 'reassemblytimerdelay' by issuing the command `sccp set reassemblytimerdelay` with appropriate parameters as described below. You can verify this by issuing the command `sccp get reassemblytimerdelay` which will display the value set for this property.

Name

`sccp set reassemblytimerdelay`

SYNOPSIS

`sccp set reassemblytimerdelay <reassemblytimerdelay> stackname <stack-name>`

DESCRIPTION

Sets SCCP segmented message reassembling timeout (in milliseconds).

Range is 10000 to 20000. If passed value is less than 10000, it sets to 10000 and if passed value is greater than 20000, it sets to 20000

PARAMETERS

Standard Parameters

`<reassemblytimerdelay>` - Re-assembly time delay in milliseconds

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp set reassemblytimerdelay 20000`

Using GUI

On SCCP management page, click on pencil against the 'ReassemblyTimerDelay' property and text box becomes editable. Change value and save.

Remove Signaling Point Code

Using CLI

You can set the 'removespc' by issuing the command `sccp set removespc` with appropriate parameters as described below. You can verify this by issuing the command `sccp get removespc` which will display the value set for this property.

Name

`sccp get removespc`

SYNOPSIS

`sccp get removespc stackname <stack-name>`

DESCRIPTION

Gets the value for removespc property.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp get removespc`

Using GUI

On SCCP management page, click on pencil against the 'RemoveSpc' property and text box becomes editable. Change value and save.

SST Timer Duration Increase Factor

Using CLI

You can set the 'ssttimerduration_increasefactor' by issuing the command `sccp set ssttimerduration_increasefactor` with appropriate parameters as described below. You can verify this by issuing the command `sccp get ssttimerduration_increasefactor` which will display the value set for this property.

Name

`sccp get sstimerduration_increasefactor`

SYNOPSIS

`sccp get sstimerduration_increasefactor stackname <stack-name>`

DESCRIPTION

Gets the value for `sstimerduration_increasefactor` property.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp get sstimerduration_increasefactor`

Using GUI

On SCCP management page, click on pencil against the 'SstTimerDuration_IncreaseFactor' property and text box becomes editable. Change value and save.

SST Timer Duration Max

Using CLI

You can set the 'sstimerduration_max' by issuing the command `sccp set sstimerduration_max` with appropriate parameters as described below. You can verify this by issuing the command `sccp get sstimerduration_max` which will display the value set for this property.

Name

`sccp get ssttimerduration_max`

SYNOPSIS

`sccp get ssttimerduration_max stackname <stack-name>`

DESCRIPTION

Gets the value for `ssttimerduration_max` property.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp get ssttimerduration_max`

Using GUI

On SCCP management page, click on pencil against the 'SstTimerDuration_Max' property and text box becomes editable. Change value and save.

SST Timer Duration Min

Using CLI

You can set the 'ssttimerduration_min' by issuing the command `sccp set ssttimerduration_min` with appropriate parameters as described below. You can verify this by issuing the command `sccp get ssttimerduration_min` which will display the value set for this property.

Name

`sccp get ssttimerduration_min`

SYNOPSIS

`sccp get ssttimerduration_min stackname <stack-name>`

DESCRIPTION

Gets the value for `ssttimerduration_min` property.

PARAMETERS

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp get ssttimerduration_min`

Using GUI

On SCCP management page, click on pencil against the 'SstTimerDuration_Max' property and text box becomes editable. Change value and save.

ZMargin XUDT Message

Using CLI

You can set the 'zmarginxudtmessage' by issuing the command `sccp set zmarginxudtmessage` with appropriate parameters as described below. You can verify this by issuing the command `sccp get zmarginxudtmessage` which will display the value set for this property.

Name

```
sccp get ssttimerduration_min
```

SYNOPSIS

```
sccp get ssttimerduration_min stackname <stack-name>
```

DESCRIPTION

Gets the value for ssttimerduration_min property.

PARAMETERS

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp get ssttimerduration_min
```

Using GUI

On SCCP management page, click on pencil against the 'ZMarginXudtMessage' property and text box becomes editable. Change value and save.

View all Service Access Points (SAP)

Using CLI

You can view the details of all configured Service Access Points by issuing the command `sccp sap show` as described below:

Name

`sccp sap show`

SYNOPSIS

`sccp sap show <id> stackname <stack-name>`

DESCRIPTION

This command is used to view the details of all Service Access Points. If an <id> is specified, the command will only display the details of the SAP identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

- <id> - The id of the SAP whose details are to be displayed. If this parameter is not specified, the details of all defined SAPs will be displayed.
- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'SAP' tab. Here you can view a list of all the Service Access Points created. Every correctly configured Service Access Point will be displayed in a row with their defined values. The last column 'Action' will allow you to delete the Service Access Point.

Create a new Service Access Point

Using CLI

You can create a new Service Access Point by issuing the command `sccp sap create` with appropriate parameters as described below:

Name

sccp sap create

SYNOPSIS

```
sccp sap create <id> <mtp3-id> <opc> <ni> stackname <stack-name> networkid  
<networkId>
```

DESCRIPTION

This command is used to define a new Service Access Point.

PARAMETERS

Standard Parameters

- <id> - The newly defined SAP will be identified using this 'id'. This must be a unique number.
- <mtp3-id> - Mtp3UserPart index - used as an index of 'mtp3UserPart' property of the SccpStack Bean. For each Mtp3UserPart, a sap must be configured.
- <opc> - MTP Point code of the local signaling point. Takes an Integer Value.
- <ni> - Network indicator that forms part of the Service Information Octet (SIO).

Optional Parameters

- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.
- <networkId> - A digital parameter that means to which virtual SS7 network belongs Service Access Point (SAP). If this parameter is skipped - networkId will be set to "0" when SAP creation. Refer [<xref linkend="design_multitenancy"/>](#).

EXAMPLES

```
sccp sap create 1 1 101 2
```

The above command will create a new Service Access Point identified by the number '1'. The values for 'mtp3-id', 'opc' and 'ni' are 1, 101 and 2 respectively.

Using GUI

Procedure: Create a new Service Access Point using GUI

1. Navigate to the 'SAP' tab in the SCCP Management window and click on the 'Create SAP' button. This will launch a pop-up 'Create SAP'.
2. In the 'Create SAP' pop-up, add details of the new Service Access Point. You must ensure that you fill in all the mandatory parameters (Id, MTP3 Id, OPC, NI). For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new SAP will be created with parameters as specified. If there is an error in creating the SAP then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create SAP' pop-up.

Modify a Service Access Point

Using CLI

You can modify the values of a Service Access Point by issuing the command `sccp sap modify` with appropriate parameters as described below:

Name

sccp sap modify

SYNOPSIS

```
sccp sap modify <id> <mtp3-id> <opc> <ni> stackname <stack-name> networkid <networkId>
```

DESCRIPTION

This command is used to modify a previously defined Service Access Point.

PARAMETERS

Standard Parameters

- <id> - The id of the SAP whose values are being modified.
- <mtp3-id> - Mtp3UserPart index - used as an index of 'mtp3UserPart' property of the SccpStack Bean. For each Mtp3UserPart, a sap must be configured.
- <opc> - MTP Point code of the local signaling point. Takes an Integer Value.
- <ni> - Network indicator that forms part of the Service Information Octet (SIO).

Optional Parameters

- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.
- <networkId> - A digital parameter that means to which virtual SS7 network belongs Service Access Point (SAP). If this parameter is skipped - networkId will be set to "0" when SAP creation. Refer [<xref linkend="design_multitenancy"/>](#).

EXAMPLES

```
sccp sap modify 1 2 102 2
```

The above command will modify the values of the Service Access Point identified by the number '1'. The new values for 'mtp3-id', 'opc' and 'ni' are 2, 102 and 2 respectively.

Delete a Service Access Point

Using CLI

You can delete a SAP by issuing the command `sccp sap delete` with appropriate parameters as described below:

Name

`sccp sap delete`

SYNOPSIS

`sccp sap delete <id> stackname <stack-name>`

DESCRIPTION

This command is used to delete a previously defined Service Access Point.

PARAMETERS

Standard Parameters

`<id>` - The id of the SAP that is being deleted.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp sap delete 1`

The above command will delete the SAP identified by the number '1'.

Using GUI

Procedure: Delete a SAP using GUI

1. Navigate to the 'SAP' tab in the SCCP Management Unit window and locate the row corresponding to the SAP you wish to delete.
2. The last column for 'Delete' action will display a 'x' button in red and will be enabled.
3. Click on the red 'x' button to delete the corresponding SAP.

View all Destinations specified for a SAP

Using CLI

You can view the details of all Destinations specified for a Service Access Point by issuing the command `sccp dest show` as described below:

Name

sccp dest show

SYNOPSIS

sccp dest show <sap-id> <id> stackname <stack-name>

DESCRIPTION

This command is used to view the details of all Destinations specified for a Service Access Point. If an <id> is specified in the command, it will only display the details of the Destination identified by the value of the 'id' specified.

PARAMETERS

Standard Parameters

<sap-id> - The id of the SAP whose Destination details are to be displayed.

Optional Parameters

<id> - The id of the Destination whose details are to be displayed. If this parameter is not specified, the details of all Destinations defined within the SAP 'sap-id' will be displayed.

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'SAP' tab. Here you can view a list of all the Service Access Points created. Every correctly configured Service Access Point will be displayed in a row with their defined values. To view the Destination details of a specific SAP, click on the row corresponding to the SAP. The row will expand below to display the details of all configured Destinations.

Define a new Destination for a SAP

Using CLI

You can define a new Destination for a Service Access Point by issuing the command **sccp dest create** with appropriate parameters as described below:

Name

sccp dest create

SYNOPSIS

```
sccp dest create <sap-id> <id> <first-dpc> <last-dpc> <first-sls> <last-sls>  
<sls-mask> stackname <stack-name>
```

DESCRIPTION

This command is used to define a new Destination for a Service Access Point. For every SAP in the system, you should configure one or more Destinations.

PARAMETERS

Standard Parameters

- <sap-id> - The identifier of the SAP for which this new Destination is being defined. You must ensure that the SAP has been created prior to issuing this command.
- <id> - An identifier for this newly created Destination. The number must be unique within each SAP.
- <first-dpc> - The first value of the remote signaling point codes range.
- <last-dpc> - The last value of the remote signaling point codes range. If the Destination specifies only a single Signaling Point Code, this value must be equal to the value specified for 'first-dpc'.
- <first-sls> - The first value of the SLS range. SLS value range is from 0 to 255.
- <last-sls> - The last value of the SLS range.
- <sls-mask> - The mask value. SLS of a message will be exposed by performing a bitwise AND operation with this mask prior to comparing it with first-sls and last-sls values.

Optional Parameters

- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp dest create 1 1 201 201 0 7 7
```

The above command will create a new Destination (identified by number '1') for a Service Access Point identified by the number '1'. The values for 'first-dpc', 'last-dpc', 'first-sls', 'last-sls' and 'sls-mask' are 201, 201, 0, 7 and 7 respectively.

```
sccp dest create 2 1 300 399 0 255 255
```

The above command will create a new Destination (identified by number '2') for a Service Access Point identified by the number '1'. The values for 'first-dpc', 'last-dpc', 'first-sls', 'last-sls' and 'sls-mask' are 300, 399, 0, 255 and 255 respectively. This Destination will cover all possible SLS values. Therefore the value for first-sls =0, last-sls=255 and sls-mask=255

Using GUI

Procedure: Define a new Destination for a Service Access Point using GUI

1. Navigate to the 'SAP' tab in the SCCP Management window and click on the row corresponding to the SAP for which you would like to define a new Destination.
2. The SAP row will expand below to display the details of all configured Destinations. In this section for Destinations, click on the 'Create Destination' button. This will launch a new pop-up 'Create MTP3 Destination'.
3. In the 'Create MTP3 Destination' pop-up, add details of the new Destination being defined for the Service Access Point. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
4. Verify the details entered and then click on the 'Create' button. A new Destination will be created with parameters as specified. If there is an error in creating the SAP then you will find the details of the error in the Management Console Log section below.
5. Click on the 'Close' button to close the 'Create MTP3 Destination' pop-up.

Modify a Destination defined for a SAP

Using CLI

You can modify the values of a Destination defined for a Service Access Point by issuing the command **sccp dest modify** with appropriate parameters as described below:

Name

sccp dest modify

SYNOPSIS

sccp dest modify <sap-id> <id> <first-dpc> <last-dpc> <first-sls> <last-sls>
<sls-mask> stackname <stack-name>

DESCRIPTION

This command is used to modify the values of a Destination previously defined for a Service Access Point.

PARAMETERS

Standard Parameters

- `<sap-id>` - The identifier of the SAP whose Destination is being modified.
- `<id>` - The identifier of the Destination that is being modified.
- `<first-dpc>` - The first value of the remote signaling point codes range.
- `<last-dpc>` - The last value of the remote signaling point codes range.
If the Destination specifies only a single Signaling Point Code, this value must be equal to the value specified for 'first-dpc'.
- `<first-sls>` - The first value of the SLS range.
SLS value range is from 0 to 255.
- `<last-sls>` - The last value of the SLS range.
- `<sls-mask>` - The mask value. SLS of a message will be exposed by performing a bitwise AND operation with this mask prior to comparing it with first-sls and last-sls values.

Optional Parameters

- `<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp dest modify 1 1 201 299 0 255 255
```

The above command will modify the values of the Destination identified by the number '1' within the Service Access Point identified by the number '1'.

The new values for 'first-dpc', 'last-dpc', 'first-sls', 'last-sls' and 'sls-mask' are 201, 299, 0, 255 and 255 respectively.

Delete a Destination defined for a SAP

Using CLI

You can delete a Destination defined for a SAP by issuing the command `sccp dest delete` with appropriate parameters as described below:

Name

sccp dest delete

SYNOPSIS

sccp dest delete <sap-id> <id> stackname <stack-name>

DESCRIPTION

This command is used to remove a previously defined Destination from a Service Access Point.

PARAMETERS

Standard Parameters

<sap-id> - The identifier of the SAP whose Destination is being deleted.

<id> - The identifier of the Destination that is being deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sccp dest delete 1 1

The above command will delete the Destination identified by the number '1' from the SAP identified by the number '1'.

Using GUI

Procedure: Delete a Destination defined for a SAP using GUI

1. Navigate to the 'SAP' tab in the SCCP Management Unit window and click on the row corresponding to the SAP from which you wish to delete a Destination.
2. The SAP row will expand below to display the details of all configured Destinations. In this section for Destinations, locate the specific Destination you wish to remove from the list.
3. In the row corresponding to the identified Destination, click on the red 'x' button in the actions column to delete that Destination.

View all configured SCCP Addresses

Using CLI

You can view the details of all configured SCCP Addresses by issuing the command `sccp address`

show as described below:

Name

sccp address show

SYNOPSIS

sccp address show <id> stackname <stack-name>

DESCRIPTION

This command is used to view the details of all configured addresses.
If an <id> is specified in the command, it will only display the details of the Address identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

<id> - The id of the Address whose details are to be displayed.
 If this parameter is not specified, the details of all
 configured Addresses will be displayed.

<stack-name> - Name of the stack on which this command is executed.
 If not passed, the first stack configured in ShellExecutor
 will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'Address' tab. Here you can view a list of all the configured Addresses. Every correctly configured Address will be displayed in a row along with the defined values.

Create a new Primary/Backup address

Using CLI

You can create a new primary address or backup address of translation by issuing the command **sccp address create** with appropriate parameters as described below:

Name

sccp address create

SYNOPSIS

sccp address create <id> <address-indicator> <point-code> <subsystem-number>
<translation-type> <numbering-plan> <nature-of-address-indicator> <digits>
stackname <stack-name>

DESCRIPTION

This command is used to create a new primary address or backup address of

translation. You can create a new newCallingParty address as well using this command. The global title address information of this command is combined with the global title being translated by examining the mask provided in the 'sccp rule create' command.

PARAMETERS

Standard Parameters

- <id> - A unique number to identify this address.
- <address-indicator> - The address indicator is the first field in a SCCP Party Address (called/calling) and is one octet in length. Its function is to indicate which information elements are present so that the address can be interpreted. In other words, it indicates the type of addressing information that is to be found in the address field. The addressing information from the original global title is then compared with the passed address information to match the rule.

SCCP ADDRESS INDICATOR

```
-----
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
-----
```

Bit '1' : PC Indicator
(1 = included)

Bit '2' : SSN Indicator
(1 = included)

Bit '3 - 6' : GT Indicator
(0000 = GT not included)
(0001 = GT includes
Nature of Address)
(0010 = GT includes
Translation Type)
(0011 = GT includes
Translation Type,
Numbering Plan and
Encoding Scheme)
(0100 = GT includes
Translation Type,
Numbering Plan and
Encoding Scheme and
Nature of Address)

Bit '7' : Routing Indicator

(0 = Route on GT,
1 = Route on PC + SSN)

Bit '8' : Reserved for National use.

Only two fields of Address Indicator is used now for GTT:

- GT Indicator (this is used for GlobalTitle type that will be created)
- Routing Indicator bit (0 = Route on GT, 1 = Route on PC + SSN)

GT Indicator for ITU-T network that is mostly used is - 0100 (GT includes Translation Type, Numbering Plan and Encoding Scheme and Nature of Address). Digital value for it is - 16.

For 0100 GT Indicator we will use two possible values:

16 - 0100 GT Indicator and Route on GT

80 - 0100 GT Indicator and Route on PC + SSN

Even when SCCP stack works in ANSI mode Address Indicator value for CLI and GUI must have values that we use for ITU-T mode.

<point-code> - MTP Signaling Point Code.

This parameter contains a point code to which message will be routed after GTT (DPC field).

This parameter is mandatory.

<subsystem-number> - This parameter contains SSN which will be placed into CalledPartyAddress. If you set this parameter to "0", SSN from CalledPartyAddress of an original message will be put into CalledPartyAddress.

<translation-type> - This is ignored if GT Indicator is 0000 or 0001.

TRANSLATION TYPE VALUES

Value	Description

0	Unknown
1 - 63	International Service
64 - 127	Spare
128 - 254	National Network Specific
255	Reserved for Expansion

Value of this parameter will be placed into CalledPartyAddress. This parameter is mandatory if GT Indicator suppose this parameter is included into GT.
Most used value: 0 - translation-type - Unknown

<numbering-plan> - The Number Plan (NP) field specifies the numbering plan which the address information follows. This is ignored if GT Indicator is 0000, 0001 or 0010.

Value of this parameter will be placed into CalledPartyAddress. This parameter is mandatory if GT Indicator suppose this parameter is included into GT.
Most used value: 1 - numbering-plan - ISDN/telephony

<nature-of-address> - The Nature of Address Indicator (NAI) field defines the address range for a specific numbering plan. This is only used if GT Indicator is 0100.

Value of this parameter will be placed into CalledPartyAddress. This parameter is mandatory if GT Indicator suppose this parameter is included into GT.
Most used value: 4 - nature-of-address - International

<digits> - The global title address information to translate to. Specified as string of digits divided into subsections using separator '/' depending on if the mask contains separator or not.
The digits string can contain:

DIGIT PATTERN

Value	Description

-	padding - ignored
/	separator used to split the digit pattern into sections. Each section is processed differently as specified by the mask parameter in the 'sccp rule create' command.

We need this parameter if at least one section of Rule mask contains "R" (replace) value. Else set this field to "0". If this field is needed it should contain the same subsections as the rule mask has.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp address create 1 71 2 8 0 0 3 123456789
```


Using GUI

Procedure: Create a new Primary/Backup Address using GUI

1. Navigate to the 'Address' tab in the SCCP Management window and click on the 'Create Address' button. This will launch a new pop-up 'Create SCCP Address'.
2. In the 'Create SCCP Address' pop-up, add details of the new SCCP Address being defined. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new Address will be created with parameters as specified. If there is an error in creating the Address then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create SCCP Address' pop-up.

Modify a Primary/Backup Address

Using CLI

You can modify the values of a primary address or backup address of translation by issuing the command `sccp address modify` with appropriate parameters as described below:

Name

`sccp address modify`

SYNOPSIS

```
sccp address modify <id> <address-indicator> <point-code> <subsystem-number>
<translation-type> <numbering-plan> <nature-of-address-indicator> <digits>
stackname <stack-name>
```

DESCRIPTION

This command is used to modify the values of an address previously defined.

PARAMETERS

Standard Parameters

`<id>` - Identifier of the address to be modified.

`<address-indicator>` - The address indicator is the first field in a SCCP Party Address (called/calling) and is one octet in length. Its function is to indicate which information elements are present so that the address can be interpreted. In other words, it indicates the type of addressing information that is to be found in the address field. The addressing information from the original global title is then compared with the passed address

information to match the rule.

SCCP ADDRESS INDICATOR

```
-----  
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  
-----
```

Bit '1' : PC Indicator
(1 = included)

Bit '2' : SSN Indicator
(1 = included)

Bit '3 - 6' : GT Indicator
(0000 = GT not included)
(0001 = GT includes
Nature of Address)
(0010 = GT includes
Translation Type)
(0011 = GT includes
Translation Type,
Numbering Plan and
Encoding Scheme)
(0100 = GT includes
Translation Type,
Numbering Plan and
Encoding Scheme and
Nature of Address)

Bit '7' : Routing Indicator
(0 = Route on GT,
1 = Route on PC + SSN)

Bit '8' : Reserved for National use.

Only two fields of Address Indicator is used now for GTT:

- GT Indicator (this is used for GlobalTitle type that will be created)
- Routing Indicator bit (0 = Route on GT, 1 = Route on PC + SSN)

GT Indicator for ITU-T network that is mostly used is - 0100 (GT includes Translation Type, Numbering Plan and Encoding Scheme and Nature of Address). Digital value for it is - 16.

For 0100 GT Indicator we will use two possible values:

16 - 0100 GT Indicator and Route on GT

80 - 0100 GT Indicator and Route on PC + SSN

Even when SCCP stack works in ANSI mode Address Indicator value for CLI and GUI must have values that we use for ITU-T mode.

<point-code> - MTP Signaling Point Code.
This parameter contains a point code to which message will be routed after GTT (DPC field).
This parameter is mandatory.

<subsystem-number> - This parameter contains SSN which will be placed into CalledPartyAddress. If you set this parameter to "0", SSN from CalledPartyAddress of an original message will be put into CalledPartyAddress.

<translation-type> - This is ignored if GT Indicator is 0000 or 0001.

TRANSLATION TYPE VALUES

Value	Description
-------	-------------

0	Unknown
1 - 63	International Service
64 - 127	Spare
128 - 254	National Network Specific
255	Reserved for Expansion

Value of this parameter will be placed into CalledPartyAddress. This parameter is mandatory if GT Indicator suppose this parameter is included into GT.
Most used value: 0 - translation-type - Unknown

<numbering-plan> - The Number Plan (NP) field specifies the numbering plan which the address information follows. This is ignored if GT Indicator is 0000, 0001 or 0010.

Value of this parameter will be placed into CalledPartyAddress. This parameter is mandatory if GT Indicator suppose this parameter is included into GT.
Most used value: 1 - numbering-plan - ISDN/telephony

<nature-of-address> - The Nature of Address Indicator (NAI) field defines the address range for a specific numbering plan. This is only used if GT Indicator is 0100.

Value of this parameter will be placed into CalledPartyAddress. This parameter is mandatory if GT Indicator suppose this parameter is included into GT.
Most used value: 4 - nature-of-address - International

<digits> - The global title address information to translate to. Specified as string of digits divided into

subsections using separator '/' depending on if the mask contains separator or not. The digits string can contain:

DIGIT PATTERN

Value	Description

-	padding - ignored
/	separator used to split the digit pattern into sections. Each section is processed differently as specified by the mask parameter in the 'sccp rule create' command.

We need this parameter if at least one section of Rule mask contains "R" (replace) value. Else set this field to "0". If this field is needed it should contain the same subsections as the rule mask has.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Delete a Primary/Backup Address

Using CLI

You can delete a Primary or Backup Address by issuing the command `sccp address delete` with appropriate parameters as described below:

Name

sccp address delete

SYNOPSIS

sccp address delete <id> stackname <stack-name>

DESCRIPTION

This command is used to remove previously defined addresses.

PARAMETERS

Standard Parameters

<id> - The identifier of the address that is being deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sccp address delete 1

The above command will delete the address identified by the number '1'.

Using GUI

Procedure: Delete a Primary/Backup Address using GUI

1. Navigate to the 'Address' tab in the SCCP Management Unit window and locate the row corresponding to the Address you wish to delete.
2. In the row corresponding to the identified Address, click on the red 'x' button in the actions column to delete that Address.

View all configured SCCP Rules

Using CLI

You can view the details of all configured SCCP Rules by issuing the command `sccp rule show` as described below:

Name

sccp rule show

SYNOPSIS

sccp rule show <id> stackname <stack-name>

DESCRIPTION

This command is used to view the details of all Rules configured. If an <id> is specified in the command, it will only display the details of the Rule identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

<id> - The id of the Rule whose details are to be displayed.
If this parameter is not specified, the details of all configured Rules will be displayed.

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'Rules' tab. Here you can view a list of all the configured Rules. Every correctly configured Rule will be displayed in a row along with the defined values.

Create a new SCCP Rule

Sorting Algorithm

When you define Rules, a comparison function imposes ordering the collection of SCCP Rules using a sorting algorithm that is based on the GT digits. The algorithm is defined below:

1. Rules defined with OriginationType==localOriginated or OriginationType==remoteOriginated, are always at the top of the list. Rules defined with OriginationType==All are always at the bottom of the list.

Among rules with the same values for OriginationType (All or localOriginated/remoteOriginated), the sorting is done using the below rules.

2. Rules with GT digits having no wildcard (* or ?) are always at the top of the list. Between two Rules with GT digits, both having no wildcards, the one with the shortest length is at the top of the list. For example, Digit1 "123456" will be above Digit2 "1234567890" and this will be above Digit3 "999/*"
3. Rules with GT digits having the wildcard "?" are always above digits having the wildcard "*". For

example, Digit1 "800/????/9" will be above Digit2 "999/*

4. Between Rules with two GT digits both having wildcard "?", the one with the least number of wildcard "?" is at the top of the list. For example, Digit1 "800/????/9" will be above Digit2 "800/?????/9"
5. Between Rules with two GT digits both having an equal number of wildcard "?", the digit whose first appearance of "?" is after other, is at the top of the list. For example between Digit1 "80/??/0/???/9" and Digit 2 "800/?????/9", Digit2 is above Digit1.

When a Rule is compared during Translation, comparison always starts from the top of the list.

Using CLI

You can create a new Rule by issuing the command **sccp rule create** with appropriate parameters as described below:

Name

sccp rule create

SYNOPSIS

```
sccp rule create <id> <mask> <address-indicator> <point-code> <subsystem-number>
<translation-type> <numbering-plan> <nature-of-address-indicator> <digits>
<ruleType> <primary-address-id> backup-addressid <backup-address-id>
loadsharing-algo <loadsharing-algorithm> newcgparty-addressid
<new-callingPartyAddress-id> origination-type <originationType>
stackname <stack-name> networkid <networkId>
```

DESCRIPTION

This command is used to create a new SCCP Routing Rule. You must ensure that primary and backup addresses are configured properly prior to executing this command.

PARAMETERS

Standard Parameters

<id> - A unique number to identify this Rule.

<mask> - A mask defines which part of the originally dialed digits remains in the translated digits and which part is replaced by the digits from primary or backup address. A mask is divided into sections by separator '/'. The number of sections in a mask should be equal to the sections in digits passed in this command and the sections in primary or backup address. This parameter is mandatory.

MASK DEFINITIONS

Mnemonic	Function
----------	----------

- Ignore
- / Separator used to split the mask into sections.
- K Retain the original dialed digits of this section in the translated digits.
- R Replace the original dialed digits of this section with the same section from primary or backup address in the translated digits.

<address-indicator> - The address indicator is the first field in a SCCP Party Address (called/calling) and is one octet in length. Its function is to indicate which information elements are present so that the address can be interpreted. In other words, it indicates the type of addressing information that is to be found in the address field. The addressing information from the original global title is then compared with the passed address information to match the rule.

SCCP ADDRESS INDICATOR

```
-----
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
-----
```

Bit '1' : PC Indicator
(1 = included)

Bit '2' : SSN Indicator
(1 = included)

Bit '3 - 6' : GT Indicator
(0000 = GT not included)
(0001 = GT includes
Nature of Address)
(0010 = GT includes
Translation Type)
(0011 = GT includes
Translation Type,
Numbering Plan and
Encoding Scheme)
(0100 = GT includes
Translation Type,
Numbering Plan and
Encoding Scheme and

Nature of Address)

Bit '7' : Routing Indicator
(0 = Route on GT,
1 = Route on PC + SSN)

Bit '8' : Reserved for National use.

Only GT Indicator is used in the current implementation. A Rule matches to an original address only if GT Indicator from address-indicator is the same in a rule and in an original address. GT Indicator for ITU-T network that is mostly used is - 0100 (GT includes Translation Type, Numbering Plan and Encoding Scheme and Nature of Address). If you also use 0100 - use digital value for it - 16. Even when SCCP stack works in ANSI mode Address Indicator value for CLI and GUI must have values that we use for ITU-T mode.

<point-code> - MTP Signaling Point Code. This is ignored if Bit '0' of address-indicator is not set. This parameter is not used in current implementation and can be set to "0".

<subsystem-number> - This is ignored if Bit '1' of address-indicator is not set. This parameter is not used in current implementation and can be set to "0".

<translation-type> - This is ignored if GT Indicator is 0000 or 0001.

TRANSLATION TYPE VALUES

Value	Description

0	Unknown
1 - 63	International Service
64 - 127	Spare
128 - 254	National Network Specific
255	Reserved for Expansion

This parameter is mandatory. A Rule matches to an original address only if a value of this parameter is the same in a rule and in an original address. Values are compared only if GT type contains this parameter (see GT Indicator description in <address-indicator> parameter).

Most used values:

0 - translation-type - Unknown

<numbering-plan> - The Number Plan (NP) field specifies the numbering plan which the address information follows. This is ignored if GT Indicator is 0000, 0001 or 0010.

NUMBER PLAN VALUES

Value	Description

0	Unknown
1	ISDN/Telephony Number Plan (Recommendations E.163 and E.164)
2	Generic Numbering Plan
3	Data Numbering Plan (Recommendations X.121)
4	Telex Numbering Plan (Recommendations F.69)
5	Maritime Mobile Numbering Plan (Recommendations E.210, E.211)
6	Land Mobile Numbering Plan (Recommendations E.212)
7	ISDN/Mobile Numbering Plan (Recommendations E.214)
8 to 13	Spare
14	Private Network or Network-Specific Numbering Plan
15	Reserved

This paramter is mandatory.

A Rule matches to an original address only if a value of this parameter is the same in a rule and in an original address. Values are compared only if GT type contains this parameter (see GT Indicator description in <address-indicator> parameter).

Most used values:

1 - numbering-plan - ISDN/telephony

<nature-of-address> - The Nature of Address Indicator (NAI) field defines the address range for a specific numbering

plan. This is only used if GT Indicator is 0100.

NAI VALUES

Value	Description

0	Unknown
1	Subscriber Number
2	Reserved for National use
3	National Significant Number
4	International Number
5 to 127	Spare

This parameter is mandatory.

A Rule matches to an original address only if a value of this parameter is the same in a rule and in an original address. Values are compared only if GT type contains this parameter (see GT Indicator description in <address-indicator> parameter).

Most used values:

4 - nature-of-address - International

- <digits>
- Specifies the string of digits divided into subsections using separator '/' depending on if the mask contains separator or not. The dialed digits should match with these digits as per the rule specified below:

DIGIT PATTERN

Value	Description

-	padding - ignored
*	wildcard - matches any number of digits
?	wildcard - matches exactly one digit
/	separator used to split the digit pattern into sections. Each section can be processed differently as specified by the mask parameter.

This parameter is mandatory. It should contain the same subsections count as the rule mask has.

`<ruleType>` - Takes one of the following values defined below.

RULE TYPE VALUES

Value	Description

solitary	Only one (primary) address is used for routing. (<code><backup-address-id></code> may be missed in this case).
dominant	Both primary and backup addresses are used and mandatory. If both the addresses are available, the primary address is used for routing.
loadshared	Both primary and backup addresses are used and mandatory. If both the addresses are available, either primary or backup address is used for routing. The <code><loadsharing-algorithm></code> should be configured in this case.
broadcast	Both primary and backup addresses are used and are mandatory. All messages are routed to both addresses.

`<primary-address-id>` - Identifies the SCCP Address used as the primary translation.

Optional Parameters

`<backup-address-id>` - Identifies the SCCP Address used as the backup translation in case the pointcode specified by the primary address is not available. Backup address is used if `<ruleType>` is not "solitary".

`<loadsharing-algorithm>` - This parameter is mandatory if `<ruleType>` is "loadshared". The Loadsharing algorithm is configured here. Possible values of the parameter are:

LOAD SHARING ALGORITHM VALUES

Value	Description

bit4	if((SLS & 0x10) == 0) <route to primary> else <route to backup> This algorithm is the best if all traffic is local (mobicents stack) originated
bit3	if((SLS & 0x08) == 0) <route to primary> else <route to backup> This algorithm can be used if not all traffic is local (mobicents stack) originated. But only 8 links are acceptable in both linksets.
bit2	if((SLS & 0x04) == 0) <route to primary> else <route to backup> This algorithm can be used if not all traffic is local (mobicents stack) originated. But only 8 links are acceptable in both linksets.
bit1	if((SLS & 0x02) == 0) <route to primary> else <route to backup> This algorithm can be used if not all traffic is local (mobicents stack) originated. But only 8 links are acceptable in both linksets.
bit0	if((SLS & 0x01) == 0) <route to primary> else <route to backup> This algorithm can be used if not all traffic is local (mobicents stack) originated. But only 8 links are acceptable in both linksets.

<new-callingPartyAddress-id>

- This address will replace the
callingPartyAddresses of messages that fit a Rule.

<originationType> - Takes one of the following values defined below.
If the parameter is not defined, rule applies to all messages regardless of their origination.

ORIGINATION TYPE VALUES

Value	Description
localOriginated	If this parameter is "localOriginated", then a rule applies only for messages originating from local SCCP users (for example a local TCAP stack).
remoteOriginated	If this parameter is "remoteOriginated", then a rule applies only for messages originating from SS7 network and not for messages originating from local SCCP users.

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

<networkId> - A digital parameter that means to which virtual SS7 network belongs a Rule. If this parameter is skipped - networkId will be set to "0" when a Rule creation.
Refer <xref linkend="design_multitenancy"/>.

EXAMPLES

```
sccp rule create 1 R 71 2 8 0 0 3 123456789 solitary 1
```

```
sccp rule create 2 R 71 2 8 0 0 3 123456789 dominant 1 1
```

```
sccp rule create 2 R 71 2 8 0 0 3 123456789 loadshared 1 1 bit4
```

Using GUI

Procedure: Create a new Rule using GUI

1. Navigate to the 'Rules' tab in the SCCP Management window and click on the 'Create Rule' button. This will launch a new pop-up 'Create Rule'.
2. In the 'Create Rule' pop-up, add details of the new SCCP Rule being defined. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new Rule will be created with

parameters as specified. If there is an error in creating the Rule then you will find the details of the error in the Management Console Log section below.

4. Click on the 'Close' button to close the 'Create Rule' pop-up.

Modify a SCCP Rule

Using CLI

You can modify the values of a Rule by issuing the command `sccp rule modify` with appropriate parameters as described below:

Name

`sccp rule modify`

SYNOPSIS

```
sccp rule modify <id> <mask> <address-indicator> <point-code> <subsystem-number>
<translation-type> <numbering-plan> <nature-of-address-indicator> <digits>
<ruleType> <primary-address-id> backup-addressid <backup-address-id>
loadsharing-algo <loadsharing-algorithm> newcgparty-addressid
<new-callingPartyAddress-id> origination-type <originationType>
stackname <stack-name> networkid <networkId>
```

DESCRIPTION

This command is used to modify the values of a SCCP Route previously defined.

PARAMETERS

Standard Parameters

`<id>` - A unique number to identify this Rule.

`<mask>` - A mask defines which part of the originally dialed digits remains in the translated digits and which part is replaced by the digits from primary or backup address. A mask is divided into sections by separator '/'. The number of sections in a mask should be equal to the sections in digits passed in this command and the sections in primary or backup address. This parameter is mandatory.

MASK DEFINITIONS

Mnemonic	Function
----------	----------

-	Ignore
---	--------

/	Separator used to split the mask into sections.
---	---

- K Retain the original dialed digits of this section in the translated digits.
- R Replace the original dialed digits of this section with the same section from primary or backup address in the translated digits.

<address-indicator> - The address indicator is the first field in a SCCP Party Address (called/calling) and is one octet in length. Its function is to indicate which information elements are present so that the address can be interpreted. In other words, it indicates the type of addressing information that is to be found in the address field. The addressing information from the original global title is then compared with the passed address information to match the rule.

SCCP ADDRESS INDICATOR

```
-----
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
-----
```

Bit '1' : PC Indicator
(1 = included)

Bit '2' : SSN Indicator
(1 = included)

Bit '3 - 6' : GT Indicator
(0000 = GT not included)
(0001 = GT includes
 Nature of Address)
(0010 = GT includes
 Translation Type)
(0011 = GT includes
 Translation Type,
 Numbering Plan and
 Encoding Scheme)
(0100 = GT includes
 Translation Type,
 Numbering Plan and
 Encoding Scheme and
 Nature of Address)

Bit '7' : Routing Indicator
(0 = Route on GT,
1 = Route on PC + SSN)

Bit '8' : Reserved for National use.

Only GT Indicator is used in the current implementation. A Rule matches to an original address only if GT Indicator from address-indicator is the same in a rule and in an original address. GT Indicator for ITU-T network that is mostly used is - 0100 (GT includes Translation Type, Numbering Plan and Encoding Scheme and Nature of Address). If you also use 0100 - use digital value for it - 16. Even when SCCP stack works in ANSI mode Address Indicator value for CLI and GUI must have values that we use for ITU-T mode.

<point-code> - MTP Signaling Point Code. This is ignored if Bit '0' of address-indicator is not set. This parameter is not used in current implementation and can be set to "0".

<subsystem-number> - This is ignored if Bit '1' of address-indicator is not set. This parameter is not used in current implementation and can be set to "0".

<translation-type> - This is ignored if GT Indicator is 0000 or 0001.

TRANSLATION TYPE VALUES

Value	Description

0	Unknown
1 - 63	International Service
64 - 127	Spare
128 - 254	National Network Specific
255	Reserved for Expansion

This parameter is mandatory. A Rule matches to an original address only if a value of this parameter is the same in a rule and in an original address. Values are compared only if GT type contains this parameter (see GT Indicator description in <address-indicator> parameter). Most used values:
0 - translation-type - Unknown

<numbering-plan> - The Number Plan (NP) field specifies the numbering plan which the address information follows. This is ignored if GT Indicator is 0000, 0001 or 0010.

NUMBER PLAN VALUES

Value	Description

0	Unknown
1	ISDN/Telephony Number Plan (Recommendations E.163 and E.164)
2	Generic Numbering Plan
3	Data Numbering Plan (Recommendations X.121)
4	Telex Numbering Plan (Recommendations F.69)
5	Maritime Mobile Numbering Plan (Recommendations E.210, E.211)
6	Land Mobile Numbering Plan (Recommendations E.212)
7	ISDN/Mobile Numbering Plan (Recommendations E.214)
8 to 13	Spare
14	Private Network or Network-Specific Numbering Plan
15	Reserved

This parameter is mandatory.

A Rule matches to an original address only if a value of this parameter is the same in a rule and in an original address. Values are compared only if GT type contains this parameter (see GT Indicator description in <address-indicator> parameter).

Most used values:

1 - numbering-plan - ISDN/telephony

<nature-of-address> - The Nature of Address Indicator (NAI) field defines the address range for a specific numbering plan. This is only used if GT Indicator is 0100.

NAI VALUES

Value	Description

0	Unknown
1	Subscriber Number
2	Reserved for National use
3	National Significant Number
4	International Number
5 to 127	Spare

This parameter is mandatory.

A Rule matches to an original address only if a value of this parameter is the same in a rule and in an original address. Values are compared only if GT type contains this parameter (see GT Indicator description in <address-indicator> parameter).

Most used values:

4 - nature-of-address - International

- <digits>
- Specifies the string of digits divided into subsections using separator '/' depending on if the mask contains separator or not. The dialed digits should match with these digits as per the rule specified below:

DIGIT PATTERN

Value	Description

-	padding - ignored
*	wildcard - matches any number of digits
?	wildcard - matches exactly one digit
/	separator used to split the digit pattern into sections. Each section can be processed differently as specified by the mask parameter.

This parameter is mandatory. It should contain the same subsections count as the rule mask has.

- <ruleType>
- Takes one of the following values defined below.

RULE TYPE VALUES

Value	Description

solitary	Only one (primary) address is used for routing. (<backup-address-id> may be missed in this case).
dominant	Both primary and backup addresses are used and mandatory. If both the addresses are available, the primary address is used for routing.
loadshared	Both primary and backup addresses are used and mandatory. If both the addresses are available, either primary or backup address is used for routing. The <loadsharing-algorithm> should be configured in this case.
broadcast	Both primary and backup addresses are used and are mandatory. All messages are routed to both addresses.

<primary-address-id> - Identifies the SCCP Address used as the primary translation.

Optional Parameters

<backup-address-id> - Identifies the SCCP Address used as the backup translation in case the pointcode specified by the primary address is not available. Backup address is used if <ruleType> is not "solitary".

<loadsharing-algorithm> - This parameter is mandatory if <ruleType> is "loadshared". The Loadsharing algorithm is configured here. Possible values of the parameter are:

LOAD SHARING ALGORITHM VALUES

Value	Description

bit4	if((SLS & 0x10) == 0) <route to primary> else <route to backup>

This algorithm is the best if all traffic is local (mobicents stack) originated

```
bit3      if( (SLS & 0x08) == 0 )
           <route to primary> else
           <route to backup>
This algorithm can be used if not
all traffic is local
(mobicents stack) originated.
But only 8 links are acceptable in
both linksets.
```

<new-callingPartyAddress-id>

- This address will replace the callingPartyAddresses of messages that fit a Rule.

<originationType> - Takes one of the following values defined below.
If the parameter is not defined, rule applies to all messages regardless of their origination.

ORIGINATION TYPE VALUES

Value	Description

localOriginated	If this parameter is "localOriginated", then a rule applies only for messages originating from local SCCP users (for example a local TCAP stack).
remoteOriginated	If this parameter is "remoteOriginated", then a rule applies only for messages originating from SS7 network and not for messages originating from local SCCP users.

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

<networkId> - A digital parameter that means to which virtual SS7 network belongs a Rule. If this parameter is skipped - networkId will be set to "0" when a Rule creation.
Refer <xref linkend="design_multitenancy"/>.

Delete a Rule

Using CLI

You can delete a Rule by issuing the command `sccp rule delete` with appropriate parameters as described below:

Name

`sccp rule delete`

SYNOPSIS

`sccp rule delete <id> stackname <stack-name>`

DESCRIPTION

This command is used to remove a previously defined Rule.

PARAMETERS

Standard Parameters

`<id>` - The identifier of the Rule that is being deleted.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`sccp rule delete 1`

The above command will delete the Rule identified by the number '1'.

Using GUI

Procedure: Delete a Rule using GUI

1. Navigate to the 'Rules' tab in the SCCP Management Unit window and locate the row corresponding to the Rule you wish to delete.
2. In the row corresponding to the identified Rule, click on the red 'x' button in the actions column to delete that Rule.

View all configured Remote Signaling Points (RSP)

Using CLI

You can view the details of all configured Remote Signaling Points by issuing the command `sccp rsp show` as described below:

Name

`sccp rsp show`

SYNOPSIS

`sccp rsp show <id> stackname <stack-name>`

DESCRIPTION

This command is used to view the details of all configured Remote Signaling Points.

If an <id> is specified in the command, it will only display the details of the Remote Signaling Point identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

<id> - The id of the Remote Signaling Point whose details are to be displayed. If this parameter is not specified, the details of all configured Remote Signaling Points will be displayed.

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'RSP' tab. Here you can view a list of all the configured Remote Signaling Pointcodes. Every correctly configured RSP will be displayed in a row along with the defined values.

Create a new Remote Signaling Pointcode

Using CLI

You can create a new RSP by issuing the command `sccp rsp create` with appropriate parameters as described below:

Name

sccp rsp create

SYNOPSIS

```
sccp rsp create <id> <remote-spc> <rspc-flag> <mask>  
stackname <stack-name>
```

DESCRIPTION

This command is used to define a new Remote Signaling Point. Each remote signaling point that SCCP can communicate with must be configured using this command.

PARAMETERS

Standard Parameters

- <id> - A unique number to identify this Remote Signaling Point.
- <remote-spc> - The Remote Signaling Point
- <rspc-flag> - 32 bit value. Not used for now. Reserved for future
- <mask> - 32 bit value. Not used for now. Reserved for future

Optional Parameters

- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp rsp create 1 6477 0 0
```

Using GUI

Procedure: Create a new RSP using GUI

1. Navigate to the 'RSP' tab in the SCCP Management window and click on the 'Create RSP' button. This will launch a new pop-up 'Create Remote Signaling Pointcode'.
2. In the 'Create Remote Signaling Pointcode' pop-up, add details of the new RSP being defined. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new RSP will be created with parameters as specified. If there is an error in creating the RSP then you will find the details of the error in the Management Console Log section below.

4. Click on the 'Close' button to close the 'Create Remote Signaling Pointcode' pop-up.

Modify a Remote Signaling Pointcode

Using CLI

You can modify the values of a RSP by issuing the command `sccp rsp modify` with appropriate parameters as described below:

Name

`sccp rsp modify`

SYNOPSIS

`sccp rsp modify <id> <remote-spc> <rspc-flag> <mask> stackname <stack-name>`

DESCRIPTION

This command is used to modify the values of a Remote Signaling Point previously defined.

PARAMETERS

Standard Parameters

`<id>` - Identifier of the Remote Signaling Point to be modified.

`<remote-spc>` - The Remote Signaling Point

`<rspc-flag>` - 32 bit value. Not used for now.
Reserved for future

`<mask>` - 32 bit value. Not used for now.
Reserved for future

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Delete a Remote Signaling Pointcode

Using CLI

You can delete a RSP by issuing the command `sccp rsp delete` with appropriate parameters as described below:

Name

sccp rsp delete

SYNOPSIS

sccp rsp delete <id> stackname <stack-name>

DESCRIPTION

This command is used to delete a Remote Signaling Point.

PARAMETERS

Standard Parameters

<id> - The identifier of the Remote Signaling Point that is being deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sccp rsp delete 1

The above command will delete the Remote Signaling Point identified by the number '1'.

Using GUI

Procedure: Delete a RSP using GUI

1. Navigate to the 'RSP' tab in the SCCP Management Unit window and locate the row corresponding to the RSP you wish to delete.
2. In the row corresponding to the identified RSP, click on the red 'x' button in the actions column to delete that RSP.

View all configured Remote Sub-Systems (RSS)

Using CLI

You can view the details of all configured Remote Sub-Systems by issuing the command `sccp rss show` as described below:

Name

`sccp rss show`

SYNOPSIS

`sccp rss show <id> stackname <stack-name>`

DESCRIPTION

This command is used to view the details of all configured Remote Sub-Systems. If an <id> is specified in the command, it will only display the details of the Remote Sub-System identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

<id> - The id of the Remote Sub-System whose details are to be displayed. If this parameter is not specified, the details of all configured Remote Sub-Systems will be displayed.

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'RSS' tab. Here you can view a list of all the configured Remote Sub-Systems. Every correctly configured RSS will be displayed in a row along with the defined values.

Create a new Remote Sub-System

Using CLI

You can create a new RSS by issuing the command `sccp rss create` with appropriate parameters as described below:

Name

sccp rss create

SYNOPSIS

```
sccp rss create <id> <remote-spc> <remote-ssn> <rss-flag>  
<mark-prohibited-when-spc-resuming> stackname <stack-name>
```

DESCRIPTION

This command is used to define a new Remote Sub-System. Each Remote Sub-System that SCCP can communicate with must be configured using this command. You must ensure that the Remote Signaling Point is configured prior to issuing this command.

PARAMETERS

Standard Parameters

- <id> - A unique number to identify this Remote Sub-System.
- <remote-spc> - The Remote Signaling Point where this Remote Sub-System is being deployed.
- <remote-ssn> - The Remote Sub-System number.
- <rss-flag> - 32 bit value. Not used for now. Reserved for future.

Optional Parameters

- <mark-prohibited-when-spc-resuming>
 - Possible value: prohibitedWhenSpcResuming. When this parameter is specified, the configured subsystem is marked as prohibited when its corresponding signaling point code has been resumed.
- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp rss create 1 6477 8 0 prohibitedWhenSpcResuming
```

Using GUI

Procedure: Create a new RSS using GUI

1. Navigate to the 'RSS' tab in the SCCP Management window and click on the 'Create RSS' button. This will launch a new pop-up 'Create Remote Sub-System'.

2. In the 'Create Remote Sub-System' pop-up, add details of the new RSS being defined. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new RSS will be created with parameters as specified. If there is an error in creating the RSS then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Remote Sub-System' pop-up.

Modify a Remote Signaling Sub-System

Using CLI

You can modify the values of a RSS by issuing the command `scgp rss modify` with appropriate parameters as described below:

Name

sccp rss modify

SYNOPSIS

```
sccp rss modify <id> <remote-spc> <remote-ssn> <rss-flag>  
<mark-prohibited-when-spc-resuming> stackname <stack-name>
```

DESCRIPTION

This command is used to modify the values of a Remote Sub-System previously defined.

PARAMETERS

Standard Parameters

- <id> - Identifier of the Remote Sub-System to be modified.
- <remote-spc> - The Remote Signaling Point where this Remote Sub-System is deployed.
- <remote-ssn> - The Remote Sub-System number.
- <rss-flag> - 32 bit value. Not used for now. Reserved for future.

Optional Parameters

- <mark-prohibited-when-spc-resuming>
 - Possible value: prohibitedWhenSpcResuming. When this parameter is specified, the configured subsystem is marked as prohibited when its corresponding signaling point code has been resumed.

Optional Parameters

- <mark-prohibited-when-spc-resuming>
 - Possible value: prohibitedWhenSpcResuming. When this parameter is specified, the configured subsystem is marked as prohibited when its corresponding signaling point code has been resumed.
- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Delete a Remote Signaling Sub-System

Using CLI

You can delete a RSS by issuing the command `sccp rss delete` with appropriate parameters as described below:

Name

```
sccp rss delete
```

SYNOPSIS

```
sccp rss delete <id> stackname <stack-name>
```

DESCRIPTION

This command is used to delete a Remote Sub-System.

PARAMETERS

Standard Parameters

`<id>` - The identifier of the Remote Sub-System that is being deleted.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp rss delete 1
```

The above command will delete the Remote Sub-System identified by the number '1'.

Using GUI

Procedure: Delete a RSS using GUI

1. Navigate to the 'RSS' tab in the SCCP Management Unit window and locate the row corresponding to the RSS you wish to delete.
2. In the row corresponding to the identified RSS, click on the red 'x' button in the actions column to delete that RSS.

View all configured Long Message Rules (LMR)

Using CLI

You can view the details of all configured Long Message Rules by issuing the command `sccp lmr`

show as described below:

Name

```
sccp lmr show
```

SYNOPSIS

```
sccp lmr show <id> stackname <stack-name>
```

DESCRIPTION

This command is used to view the details of all configured Long Message Rules. If an <id> is specified in the command, it will only display the details of the Long Message Rule identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

- | | |
|--------------|--|
| <id> | - The id of the Long Message Rule whose details are to be displayed. If this parameter is not specified, the details of all configured Long Message Rules will be displayed. |
| <stack-name> | - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used. |

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'LMR' tab. Here you can view a list of all the configured Long Message Rules. Every correctly configured LMR will be displayed in a row along with the defined values.

Create a new Long Message Rule

Using CLI

You can create a new LMR by issuing the command **sccp lmr create** with appropriate parameters as described below:

Name

sccp lmr create

SYNOPSIS

```
sccp lmr create <id> <first-spc> <last-spc> <long-message-rule-type>  
stackname <stack-name>
```

DESCRIPTION

This command is used to define a new Long Message Rule. Long message rules specify which message types (UDT/XUDT/LUDT) will be used for outgoing message encoding depends on dpc. If long message rules are not configured only UDT messages will be used.

PARAMETERS

Standard Parameters

- <id> - A unique number to identify this Long Message Rule.
- <first-spc> - The first value of the remote signaling point code range, for which this Long message Rule will apply.
- <last-spc> - The last value of the remote signaling point code range. If Long message rule specifies a single signaling point code, this value must be equal to first-spc.
- <long-message-rule-type>- Message types used for the remote signaling point codes range.
Possible values : udt, xudt and ludt.

Optional Parameters

- <stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp lmr create 1 201 201 xudt
```

```
sccp lmr create 2 230 239 udt
```

Using GUI

Procedure: Create a new LMR using GUI

1. Navigate to the 'LMR' tab in the SCCP Management window and click on the 'Create LMR' button. This will launch a new pop-up 'Create Long Message Rule'.

2. In the 'Create Long Message Rule' pop-up, add details of the new LMR being defined. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new LMR will be created with parameters as specified. If there is an error in creating the LMR then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Long Message Rule' pop-up.

Modify a Long Message Rule

Using CLI

You can modify the values of a LMR by issuing the command `sccp lmr modify` with appropriate parameters as described below:

Name

sccp lmr modify

SYNOPSIS

```
sccp lmr modify <id> <first-spc> <last-spc> <long-message-rule-type>  
stackname <stack-name>
```

DESCRIPTION

This command is used to modify the values of a Long Message Rule previously defined.

PARAMETERS

Standard Parameters

- <id> - Identifier of the Long Message Rule to be modified.
- <first-spc> - The first value of the remote signaling point code range, for which this Long message Rule will apply.
- <last-spc> - The last value of the remote signaling point code range. If Long message rule specifies a single signaling point code, this value must be equal to first-spc.
- <long-message-rule-type>- Message types used for the remote signaling point codes range.
Possible values : udt, xudt and ludt.

Optional Parameters

- <stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

Delete a Long Message Rule

Using CLI

You can delete a LMR by issuing the command **sccp lmr delete** with appropriate parameters as described below:

Name

sccp lmr delete

SYNOPSIS

sccp lmr delete <id> stackname <stack-name>

DESCRIPTION

This command is used to delete a Long Message Rule.

PARAMETERS

Standard Parameters

<id> - The identifier of the Long Message Rule that is being deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sccp lmr delete 1

The above command will delete the Long Message Rule identified by the number '1'.

Using GUI

Procedure: Delete a Long Message Rule using GUI

1. Navigate to the 'LMR' tab in the SCCP Management Unit window and locate the row corresponding to the LMR you wish to delete.
2. In the row corresponding to the identified LMR, click on the red 'x' button in the actions column to delete that LMR.

View all configured Concerned Signaling Point Codes (CSP)

Using CLI

You can view the details of all configured Concerned Signaling Point Codes by issuing the command **sccp csp show** as described below:

Name

`sccp csp show`

SYNOPSIS

`sccp csp show <id> stackname <stack-name>`

DESCRIPTION

This command is used to view the details of all configured Concerned Signaling Point Codes. If an <id> is specified in the command, it will only display the details of the Concerned Signaling Point Code identified by the value of the 'id' specified.

PARAMETERS

Optional Parameters

- <id> - The id of the Concerned Signaling Point Code whose details are to be displayed. If this parameter is not specified, the details of all configured Concerned Signaling Point Codes will be displayed.
- <stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Using GUI

Navigate to the specific SCCP Management unit and switch to the 'CSP' tab. Here you can view a list of all the configured Concerned Signaling Point Code. Every correctly configured CSP will be displayed in a row along with the defined values.

Create a new Concerned Signaling Point Code

Using CLI

You can create a new CSP by issuing the command `sccp csp create` with appropriate parameters as described below:

Name

sccp csp create

SYNOPSIS

sccp csp create <id> <spc> stackname <stack-name>

DESCRIPTION

This command is used to define a new Concerned Signaling Point Code. Concerned signaling point codes define a DPC list that will be notified when local SSN is registered (SSA messages) or unregistered (SSP messages).

PARAMETERS

Standard Parameters

<id> - A unique number to identify this Concerned Signaling Point Code.

<spc> - The Remote Signaling Point Code, which will be notified.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

```
sccp csp create 1 201
```

```
sccp csp create 2 202
```

Using GUI

Procedure: Create a new CSP using GUI

1. Navigate to the 'CSP' tab in the SCCP Management window and click on the 'Create CSP' button. This will launch a new pop-up 'Create Concerned Signaling Point Code'.
2. In the 'Create Concerned Signaling Point Code' pop-up, add details of the new CSP being defined. You must ensure that you fill in all the mandatory parameters. For definition of these parameters, please refer to the description of the CLI command for the same in the preceding section.
3. Verify the details entered and then click on the 'Create' button. A new CSP will be created with parameters as specified. If there is an error in creating the CSP then you will find the details of the error in the Management Console Log section below.
4. Click on the 'Close' button to close the 'Create Concerned Signaling Point Code' pop-up.

Modify a Concerned Signaling Point Code

Using CLI

You can modify the values of a CSP by issuing the command `sccp csp modify` with appropriate parameters as described below:

Name

`sccp csp modify`

SYNOPSIS

`sccp csp modify <id> <spc> stackname <stack-name>`

DESCRIPTION

This command is used to modify the values of a Concerned Signaling Point Code previously defined.

PARAMETERS

Standard Parameters

- `<id>` - Identifier of the Concerned Signaling Point Code to be modified.
- `<spc>` - The Remote Signaling Point Code, which will be notified.

Optional Parameters

- `<stack-name>` - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

Delete a Concerned Signaling Point Code

Using CLI

You can delete a CSP by issuing the command `sccp csp delete` with appropriate parameters as described below:

Name

sccp csp delete

SYNOPSIS

sccp csp delete <id> stackname <stack-name>

DESCRIPTION

This command is used to delete a Concerned Signaling Point Code.

PARAMETERS

Standard Parameters

<id> - The identifier of the Concerned Signaling Point Code that is being deleted.

Optional Parameters

<stack-name> - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

sccp csp delete 1

The above command will delete the Concerned Signaling Point Code identified by the number '1'.

Using GUI

Procedure: Delete a Concerned Signaling Point Code using GUI

1. Navigate to the 'CSP' tab in the SCCP Management Unit window and locate the row corresponding to the CSP you wish to delete.
2. In the row corresponding to the identified CSP, click on the red 'x' button in the actions column to delete that CSP.

TCAP Management

Transaction Capabilities Application Part , from ITU-T recommendations Q.771-Q.775 or ANSI T1.114 is a protocol for Signalling System 7 networks. Its primary purpose is to facilitate multiple concurrent dialogs between the same sub-systems on the same machines, using Transaction IDs to differentiate these, similar to the way TCP ports facilitate multiplexing connections between the same IP addresses on the Internet.

Using CLI

You can manage all TCAP stack properties through the Command Line Interface by using the `tcap` command.

Using GUI

The GUI will allow you to manage your TCAP configurations efficiently using a user-friendly interface. Open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'TCAP' link in the left panel. The main panel will display the names of all configured TCAP Management units. To configure or view the settings of a particular TCAP Management Unit you must click on the name of that unit. The GUI will look similar to the figure below.

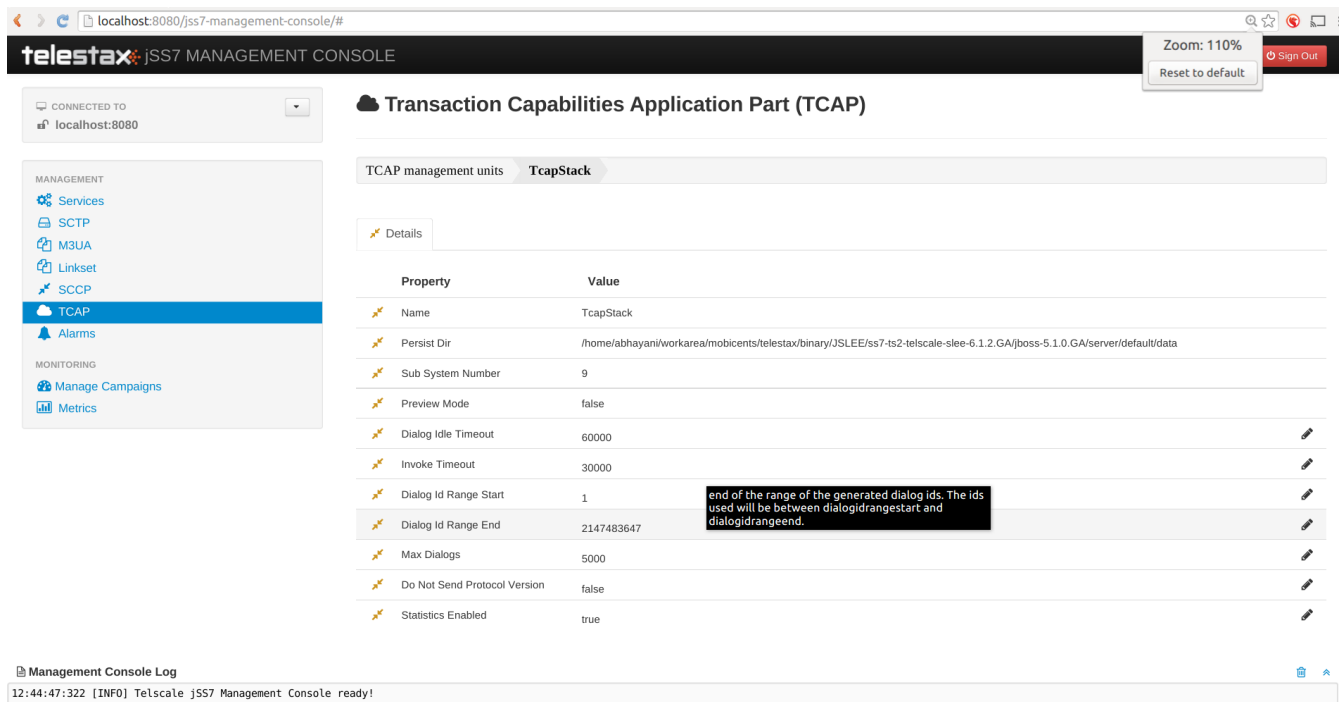


Figure 15. GUI - TCAP Management

The first tab will display the properties of the TCAP Management unit. These details displayed here are fetched from the XML descriptor file `jboss-beans.xml`, which is located at `$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF`, where `profile_name` is the server profile name. These properties can be modified here in the GUI. To modify them you must click the pencil, change value and save. The GUI will then display the modified values.

TCAP stack properties

Dialog Idle Timeout

Using CLI

You can set the 'dialogidletimeout' by issuing the command `tcap set dialogidletimeout` with appropriate parameters as described below. You can verify this by issuing the command `tcap get dialogidletimeout` which will display the value set for this property.

Name

`tcap set dialogidletimeout`

SYNOPSIS

`tcap set dialogidletimeout <dialogidletimeout> stackname <stack-name>`

DESCRIPTION

Sets millisecond value for dialog timeout. It specifies how long dialog can be idle - not receive/send any messages

PARAMETERS

Standard Parameters

`<dialogidletimeout>` - Timeout in milliseconds.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`tcap set dialogidletimeout 30000`

Using GUI

On TCAP management page, click on pencil against the 'Dialog Idle Timeout' property and text box becomes editable. Change value and save.

Dialog Id Rang End

Using CLI

You can set the 'dialogidrangeend' by issuing the command `tcap set dialogidrangeend` with appropriate parameters as described below. You can verify this by issuing the command `tcap get dialogidrangeend` which will display the value set for this property.

Name

`tcap set dialogidrangeend`

SYNOPSIS

`tcap set dialogidrangeend <dialogidrangeend> stackname <stack-name>`

DESCRIPTION

End of the range of the generated dialog ids. The id's used will be between `dialogidrangestart` and `dialogidrangeend`.

PARAMETERS

Standard Parameters

`<dialogidrangeend>` - Dialog id range end.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`tcap set dialogidrangeend 30000000`

Using GUI

On TCAP management page, click on pencil against the 'Dialog Id Range End' property and text box becomes editable. Change value and save.

Dialog Id Range Start

Using CLI

You can set the 'dialogidrangestart' by issuing the command `tcap set dialogidrangestart` with appropriate parameters as described below. You can verify this by issuing the command `tcap get dialogidrangestart` which will display the value set for this property.

Name

`tcap set dialogidrangestart`

SYNOPSIS

`tcap set dialogidrangestart <dialogidrangestart> stackname <stack-name>`

DESCRIPTION

Start of the range of the generated dialog ids. The id's used will be between dialogidrangestart and dialogidrangeend.

PARAMETERS

Standard Parameters

`<dialogidrangestart>` - Dialog id range start.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`tcap set dialogidrangestart 1`

Using GUI

On TCAP management page, click on pencil against the 'Dialog Id Range Start' property and text box becomes editable. Change value and save.

Do Not Send Protocol Version

Using CLI

You can set the 'donotsendprotocolversion' by issuing the command `tcap set donotsendprotocolversion` with appropriate parameters as described below. You can verify this by issuing the command `tcap get donotsendprotocolversion` which will display the value set for this property.

Name

`tcap set donotsendprotocolversion`

SYNOPSIS

`tcap set donotsendprotocolversion <true | false> stackname <stack-name>`

DESCRIPTION

If set to true Protocol Version is not send in User Data part of Dialog

PARAMETERS

Standard Parameters

`<donotsendprotocolversion>` - If true doesn't send the protocol version

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`tcap set donotsendprotocolversion false`

Using GUI

On TCAP management page, click on pencil against the 'Do Not Send Protocol Version' property and text box becomes editable. Change value and save.

Invoke Timeout

Using CLI

You can set the 'invoketimeout' by issuing the command `tcap set invoketimeout` with appropriate parameters as described below. You can verify this by issuing the command `tcap get invoketimeout` which will display the value set for this property.

Name

`tcap set invoketimeout`

SYNOPSIS

`tcap set invoketimeout <invoketimeout> stackname <stack-name>`

DESCRIPTION

Sets the Invoke timeout for this invoke. Peer should respond back within invoke timeout, else stack will callback TListener for application to take corrective. invoketimeout should always be less than dialogidletimeout

PARAMETERS

Standard Parameters

`<invoketimeout>` - Sets the Invoke timeout in milliseconds

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
 If not passed, the first stack configured in ShellExecutor
 will be used.

EXAMPLES

`tcap set invoketimeout 30000`

Using GUI

On TCAP management page, click on pencil against the 'Invoke Timeout' property and text box becomes editable. Change value and save.

Max Dialogs

Using CLI

You can set the 'maxdialogs' by issuing the command `tcap set maxdialogs` with appropriate parameters as described below. You can verify this by issuing the command `tcap get maxdialogs` which will display the value set for this property.

Name

`tcap set maxdialogs`

SYNOPSIS

`tcap set maxdialogs <maxdialogs> stackname <stack-name>`

DESCRIPTION

Sets the maximum number of dialogs allowed to be alive at a given time. If not set, a default value of 5000 dialogs will be used. If stack ranges provided, maximum number dialogs naturally cannot be greater than the provided range, thus, it will be normalized to range delta (end - start).

PARAMETERS

Standard Parameters

`<maxdialogs>` - Sets the maximum concurrent dialogs alive at any given point in time.

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed. If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`tcap set maxdialogs 30000000`

Using GUI

On TCAP management page, click on pencil against the 'Max Dialogs' property and text box becomes editable. Change value and save.

Preview Mode

You can modify the settings for the parameter 'previewmode' only when the TCAP Stack is not running. In addition, this parameter cannot be modified through the CLI or GUI. You will have to invoke the setter function directly from the source code.

If you are using the JBoss Application Server, then you can set this parameter by adding a property (as shown below) to the XML descriptor file *jboss-beans.xml*, which is located at `$JBOSS_HOME/server/profile_name/deploy/mobicents-ss7-service/META-INF`, where `profile_name` is the server profile name.

```
/*Add property for the parameter 'previewmode' to jboss-beans.xml file and specify true or false*/  
<property name="previewMode">true</property>
```

The current settings of the parameter can be viewed in the GUI or by invoking the appropriate CLI command as described below.

Using CLI

You can retrieve the current settings of the parameter 'previewmode' by issuing the command `scdp get previewmode`. However as explained above, you cannot modify the settings through the CLI.

Name

`tcap get previewmode`

SYNOPSIS

`tcap get previewmode`

DESCRIPTION

This command is used to retrieve the current settings of the parameter 'previewMode'. The 'previewMode' parameter is used for special processing mode.

When Preview Mode is set to true:

- In TCAP level the stack only listens for incoming messages and sends nothing.
- Methods like `send()`, `close()`, `sendComponent()` and other such methods do nothing.
- A TCAP Dialog is temporary. The TCAP Dialog is discarded after any incoming message like TC-BEGIN or TC-CONTINUE has been processed.
- For any incoming messages (including TC-CONTINUE, TC-END, TC-ABORT) a new TCAP Dialog is created (and then deleted).
- There are no timers and timeouts.

The settings of this parameter can be modified only when the TCAP Stack is not running. To modify this parameter you must invoke the setter function directly from the code or if you are using the JBoss AS, you can add a property to the XML descriptor file `jboss-beans.xml`. You cannot change the settings through the CLI.

Using GUI

In the TCAP management page, you can view the current settings of the 'Preview Mode' property. But as explained above, you cannot change the settings in the GUI. For more details about this parameter, refer to the detailed description about the parameter in the above section for CLI.

Statistics Enabled

Using CLI

You can set the 'statisticsenabled' by issuing the command `tcap set statisticsenabled` with appropriate parameters as described below. You can verify this by issuing the command `tcap get statisticsenabled` which will display the value set for this property.

Name

`tcap set statisticsenabled`

SYNOPSIS

`tcap set statisticsenabled <true | false> stackname <stack-name>`

DESCRIPTION

If set to true, statistics is enabled. Its recommended to keep this off for better performance and enabled statistics only when needed.

PARAMETERS

Standard Parameters

`<statisticsenabled>` - If true, statistics is enabled

Optional Parameters

`<stack-name>` - Name of the stack on which this command is executed.
If not passed, the first stack configured in ShellExecutor will be used.

EXAMPLES

`tcap set statisticsenabled false`

Using GUI

On TCAP management page, click on pencil against the 'Statistics Enabled' property and text box becomes editable. Change value and save.

Statistics

The GUI will allow you to create campaigns of fixed duration for gathering statistics data. Campaign allows to select time period over which these statistics have been gathered (in hours, minutes and seconds). Once Campaign is defined, the statistics can be observed by clicking newly created campaign name or you can also navigate to Metrics (click Metrics on left panel) to get graph of statistics.

Create Campaign

To create new campaign open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'Manage Campaigns' link in the left panel. The main panel will display the names of all existing campaigns and also button to create new campaign. The GUI will look similar to the figure below.

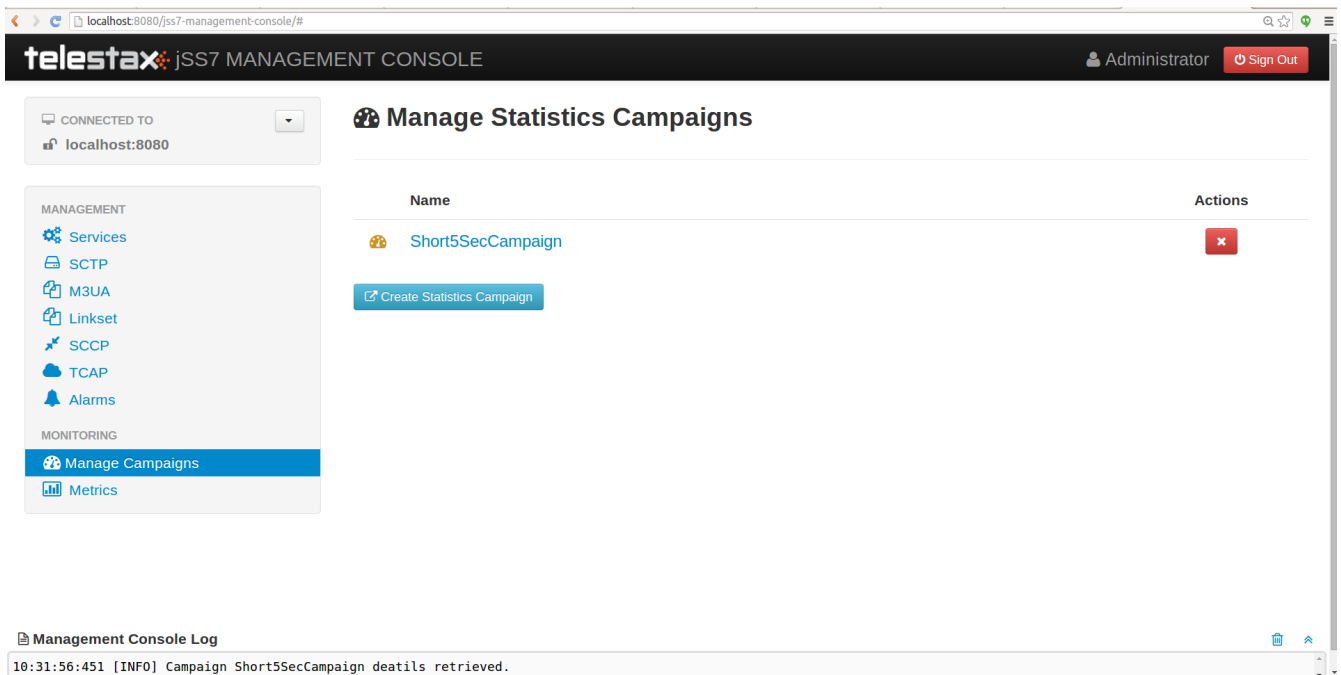


Figure 16. GUI - Campaigns

Click on 'Create Statistics Campaign' button to create new campaign. Select the stack from 'Counter Definition Set Name' drop down on which you want to define new campaign. Next select the time period from 'Duration' drop down and enter unique 'Campaign Name'.

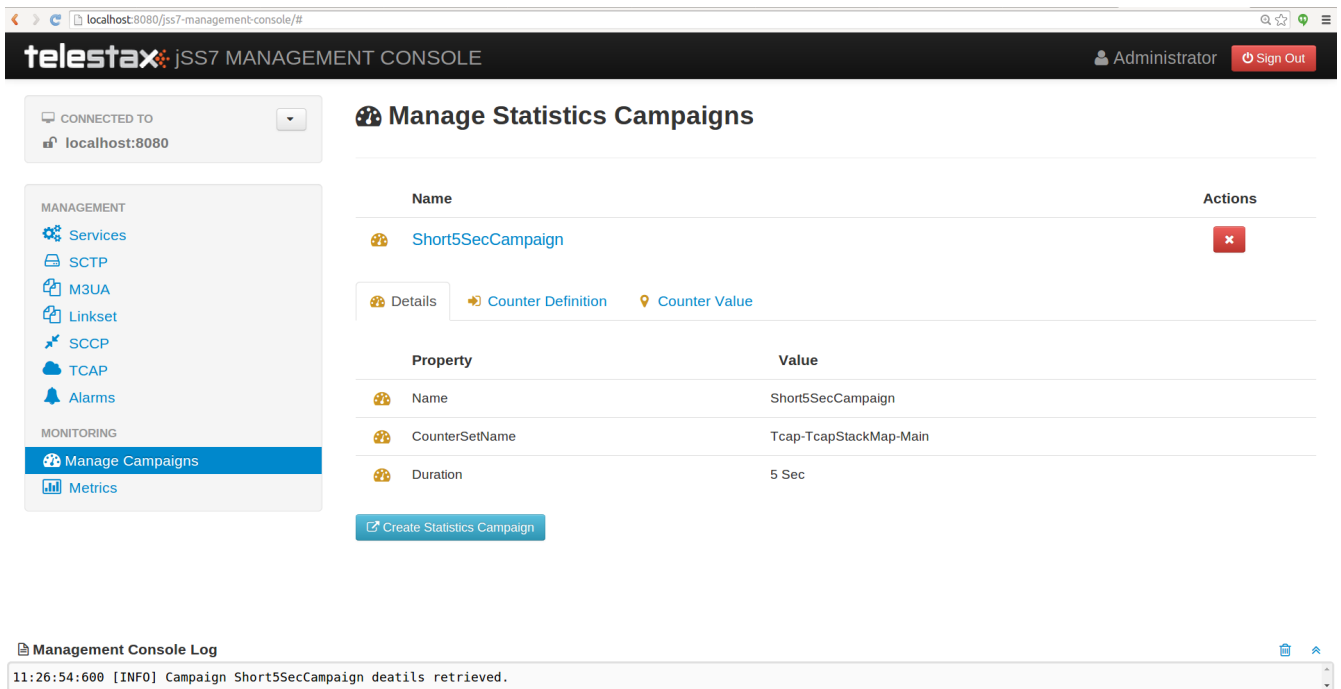


The stack on which new campaign is defined must have set 'Statistics Enabled' property to true

View Campaigns

The GUI will allow you to view existing campaigns. On the main panel click campaign name. The GUI will look similar to the figure below and is divided into tabs.

The first tab will display the properties of the campaign. Second tab explains all the counters in this campaigns and their definition. Last tab provides the values for each of these counters. Last tab also displays the 'Start Time' and 'End Time' representing time duration for which sample was collected.



CONNECTED TO
localhost:8080

telestax jSS7 MANAGEMENT CONSOLE Administrator Sign Out

MANAGEMENT
Services
Sctp
M3UA
Linkset
SCCP
TCAP
Alarms

MONITORING
Manage Campaigns
Metrics

Manage Statistics Campaigns

Name	Actions
Short5SecCampaign	

Details Counter Definition Counter Value

Property	Value
Name	Short5SecCampaign
CounterSetName	Tcap-TcapStackMap-Main
Duration	5 Sec

Create Statistics Campaign

Management Console Log
11:26:54:600 [INFO] Campaign Short5SecCampaign details retrieved.

Figure 17. GUI - Campaigns View



Restcomm jSS7 doesn't persist the statistics, hence the data collected for campaign period refresh's every defined 'Duration'. User must refresh the page every 'Duration' period to gather statistics data for previous time period.

Nevertheless you can also click on 'Metrics' link on left panel, select the Campaign and observe the statistics graph. The metrics page gathers data from time page was loaded till user navigates away. Hence graph will show historic data from point page was loaded.

Logging Stats

The GUI will allow you to view stats in real time. But the stats are not stored in the Database for you to analyse at a later point of time. However Restcomm jSS7 gives you an option to have the stats logged every refresh period for all the existing campaigns. You can look at the log files at any point of time for analysing or understanding the performance.

If you wish to have stats logged, you must configure the settings in the file *jboss-5.1.0.GA/server/default/conf/jboss-log4j.xml*. If you are running the platform as standalone, then you should configure in *log4j.xml*.

Logging stats to main server log file

If you wish to have the stats logged in the main server log file located at *jboss-5.1.0.GA/server/default/log/server.log*, then you must add a new category to the *jboss-log4j.xml* as shown below and set priority value to "DEBUG".

```
<category name="org.mobicens.protocols.ss7.oam.common.statistics.StatsPrinter"
additivity="false">
    <priority value="DEBUG" />
</category>
```

Logging stats to a separate stats log file

If you wish to have the stats logged to a separate log file located at *jboss-5.1.0.GA/server/default/log/stats.log*, then you must add a new appender to the *jboss-log4j.xml* and change category as shown below. You must set the priority value to "DEBUG".

```
<appender name="STATS" class="org.jboss.logging.appender.DailyRollingFileAppender">
<errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
<param name="File" value="$
{jboss.server.home.dir}
/log/stats.log"/>
<param name="Append" value="true"/>
<param name="MaxFileSize" value="500KB" />
<param name="MaxBackupIndex" value="1" />
<param name="Threshold" value="DEBUG"/>
<param name="DatePattern" value="'. 'yyyy-MM-dd"/>
<layout class="org.apache.log4j.PatternLayout">
<param name="ConversionPattern" value="%d %-5p [%c] %m%n"/>
</layout>
</appender>
<category name="org.mobicens.protocols.ss7.oam.common.statistics.StatsPrinter"
additivity="false">
<priority value="DEBUG" />
<appender-ref ref="STATS"/>
</category>
```

As of today Restcomm jSS7 exposes statistics only for TCAP. Future releases will allow statistics for M3UA, SCCP, MAP and CAP also.

Alarms

The GUI will allow you to view the Alarms (Critical, Major, Minor, Warning) in the system and filter them based on the severity. Open a Web Browser and navigate to <http://localhost:8080/jss7-management-console/>. Click on the 'Alarms' link in the left panel. The main panel will display all the currently raised alarms. You can filter the view by using the checkboxes at the top to select/deselect the severity options and accordingly filter the display.

You will notice that as soon as the problem is resolved, the corresponding alarm will disappear from the view. In future releases, there will be an option to persist this alarms data and hence you will be able to view a history of alarms raised and resolved. But as of now, only currently active alarms will be displayed in this window.