SCTP Management

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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.

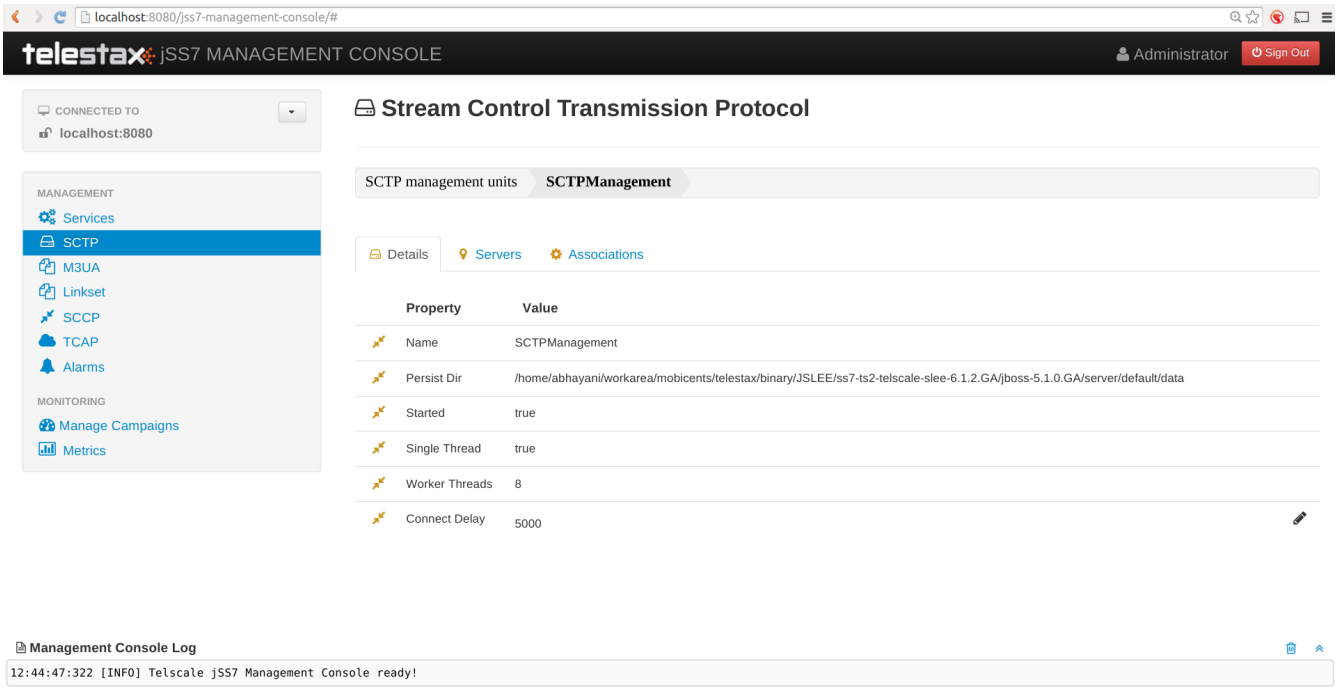

Figure 1. GUI - SCTP Management

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.
    Defalut 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 paramter '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 paramter '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.

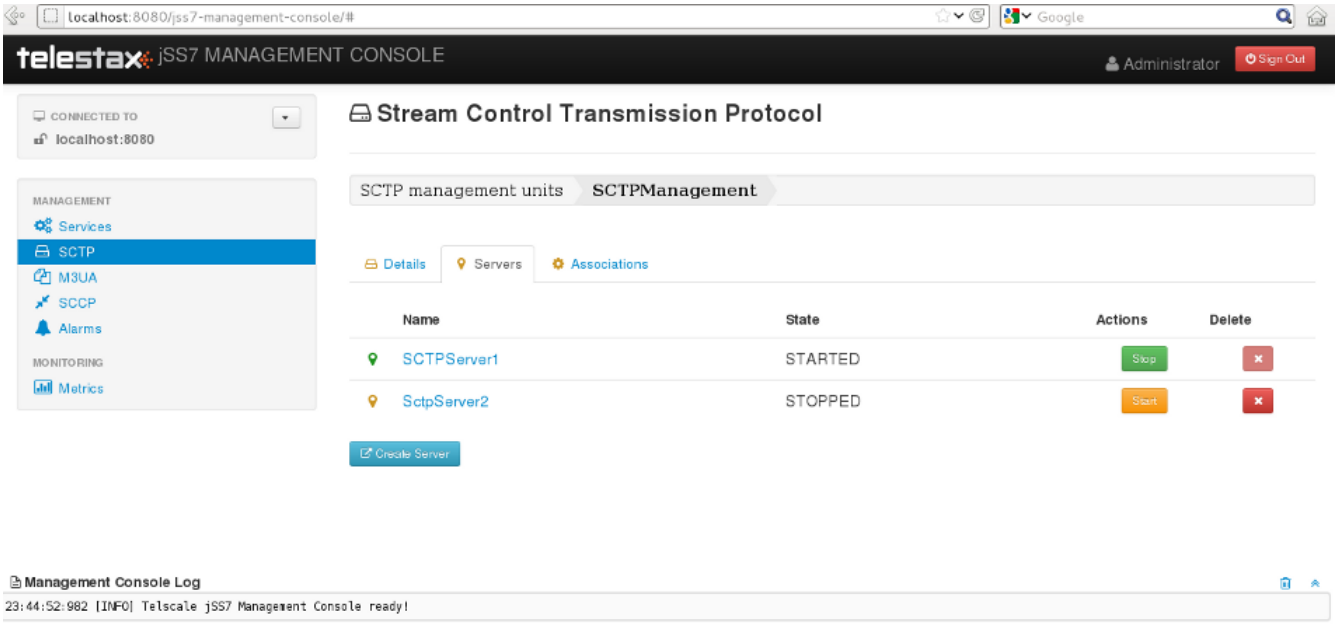

Figure 2. GUI - SCTP Management - Servers

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.

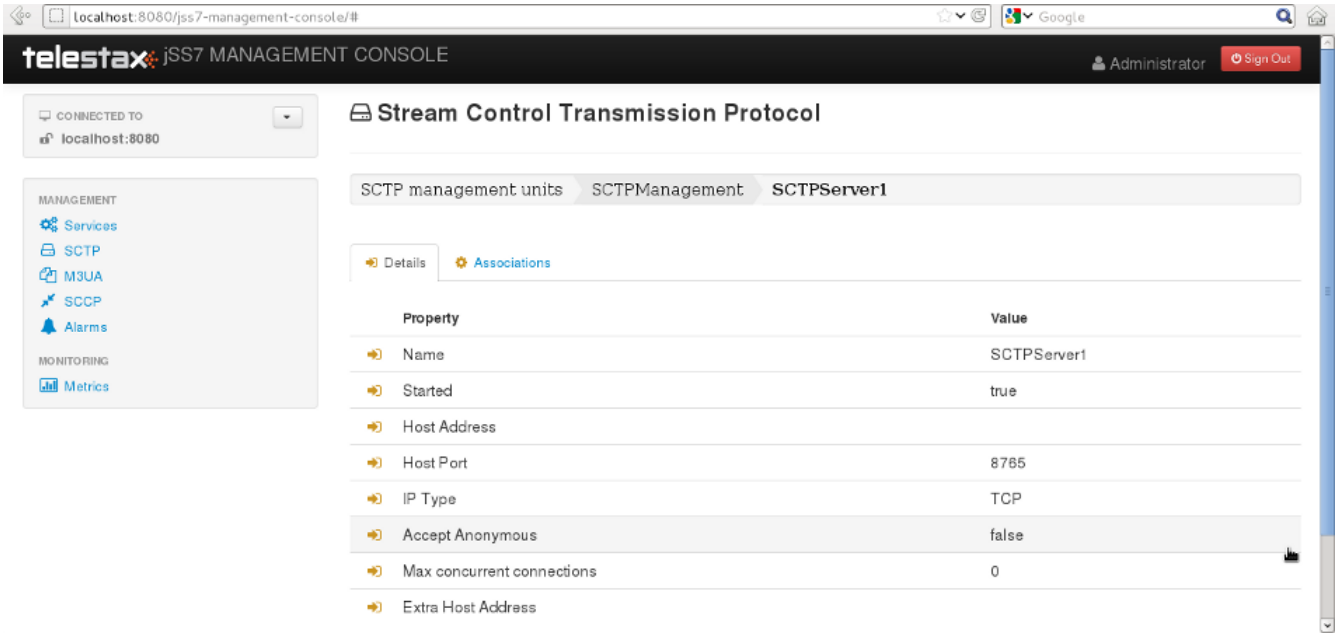

Figure 3. GUI - SCTP Management - Server Details

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 <sever-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

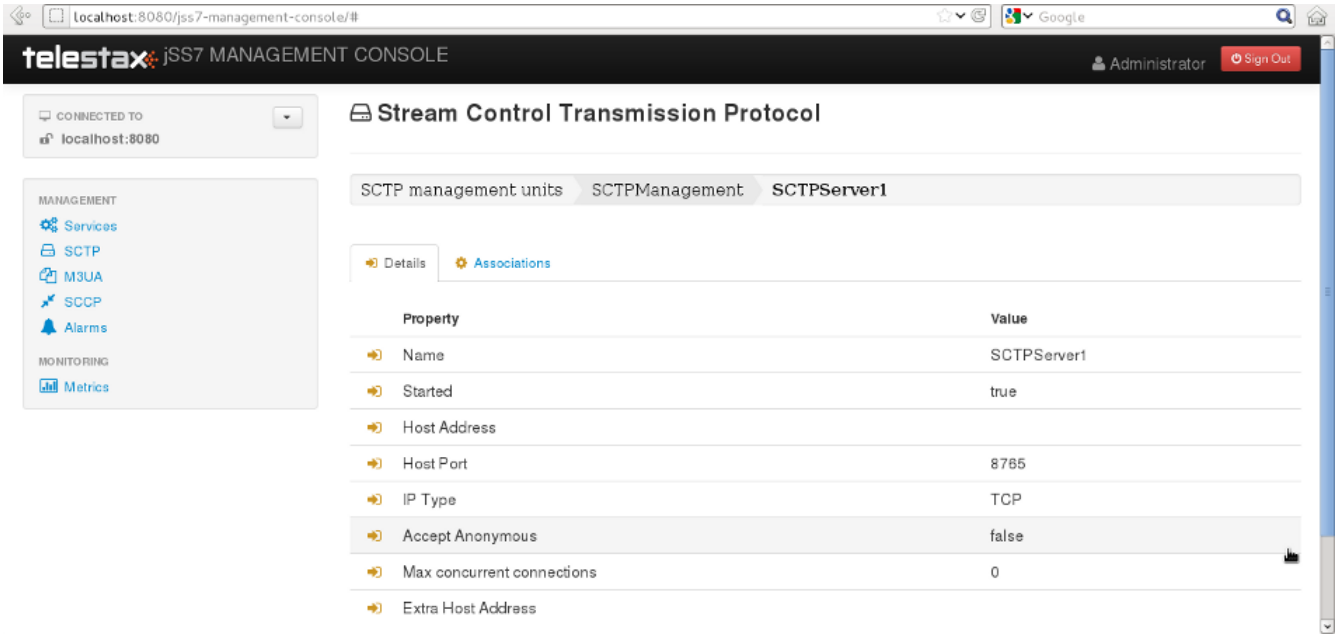

Figure 4. GUI - SCTP Management - Server Create

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 <sever-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 <sever-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 <sever-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 [_managing_m3ua].

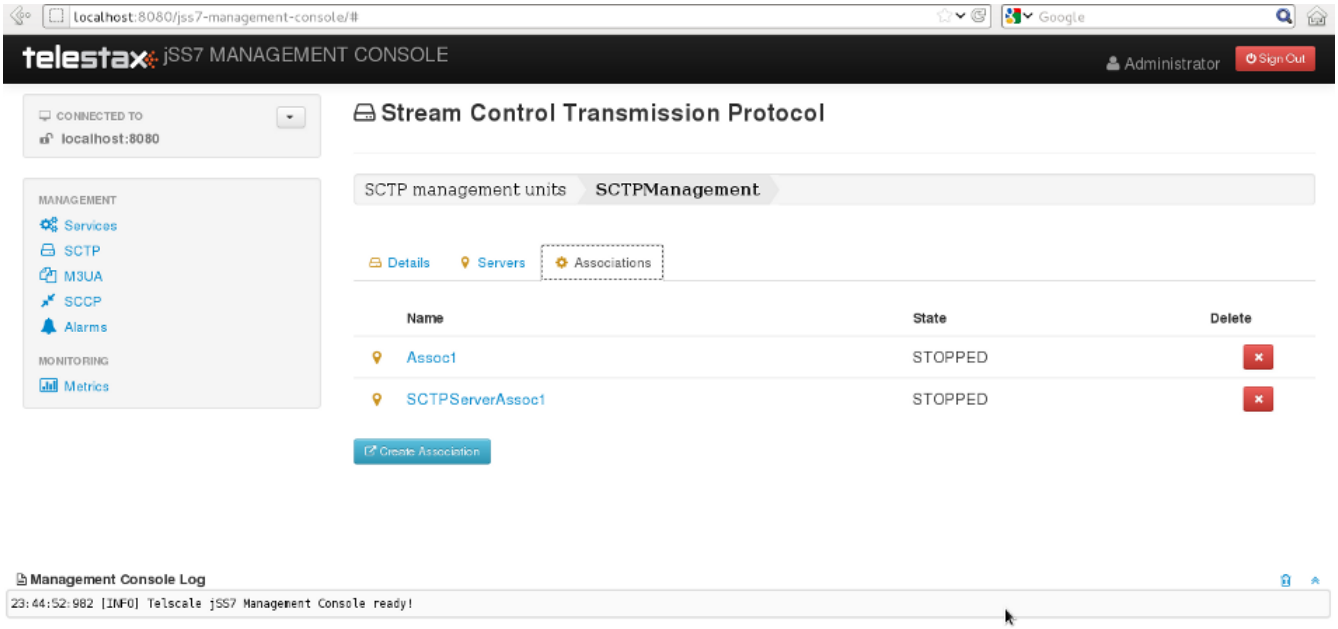

Figure 5. GUI - SCTP Management - Associations

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 Assocation 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.