Smart Media System

Software Configuration Guide

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Supported Models

SN10200/16E/UI
SN10200/32E/UI
SN10200/48E/UI
SN10200/1DS3/UI
SN10200/2DS3/UI
SN10200/STM1/UI

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About this guide

This *Smart Media Software Configuration Guide* describes how to configure components through the Web Portal of Patton's Smart Media system.

For detailed hardware or set-up information, refer to the product's *User Manual*.

Audience

This guide is intended for the following users:

- Operators
- Installers
- Maintenance technicians

Structure

This guide contains the following chapters and appendices:

- Chapter 1 on page 22 provides an overview of logging into the system and general configuration
- Chapter 2 on page 36 describes how to configure VoIP interfaces
- Chapter 3 on page 42 describess how to configure an ISDN-to-SIP gateway
- Chapter 4 on page 80 describess how to configure the SS7 signaling protocol
- Chapter 5 on page 112 describes how to configure SIGTRAN applications
- Chapter 6 on page 191 describes how to CAS R2 signaling stacks
- Chapter 7 on page 203 describes how to configure an H.248 media gateway control protocol
- Chapter 8 on page 220 describes how to configure SNMP

Chapter 1 Getting Started with the Web Portal

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Overview

This chapter explains how to access and manage the SmartNode Web Portal. Refer to the following sections for more details on:

- "Accessing and Navigating the Web Interface" on page 23
- "Managing Users" on page 25
- "Managing the Database Backup" on page 28
- "Working with Configurations" on page 30

Accessing and Navigating the Web Interface

This section describes how to login and navigate the SmartNode Web Portal.

Connecting to the web server and logging on to the Web Portal

The first step involved in initially configuring any Smart Media system involves logging on to the Web Portal. This can be divided into two distinct tasks: Connecting to the web server, and logging on to the Web Portal.

Connecting to the web server

Using a web browser, connect to the Web Portal by typing the following in your address bar:

– **http://[DEVICE HOST NAME]:12358**

or, alternately,

– **http://[DEVICE IP ADDRESS]:12358**

Logging on to the Web Portal

In order to log on to the Web Portal configuration tool, enter the root user ID and password. The default values for these parameters are:

– **User ID:** root

– **Default password:** root

Navigating the Web Portal

Effective use of the Web Portal requires a basic understanding of the physical elements of the tool, how to access its various components and knowing your current location in the Web Portal display. The following topics are covered: *Navigation and Information Panels* and *Knowing Your Location*.

Navigation and Information Panels

The Web Portal has been designed with a consistent streamlined approach for the presentation of Smart Media configuration data. Information related to the hierarchy of data is displayed in the left-hand navigation panel, while information related to a selected category is displayed in the information panel found on the right side of the window.

Selecting a category in the navigation panel causes related configuration and status information to be dynamically displayed. The navigation panel displays information in a tree-like structure enabling you to understand how configuration parameters are contained by others.

Note Figure 1 on page 24 shows the SmartNode Web Management Interface. The navigation panel is located to the left of the screen. The infomation panel is located to the right.

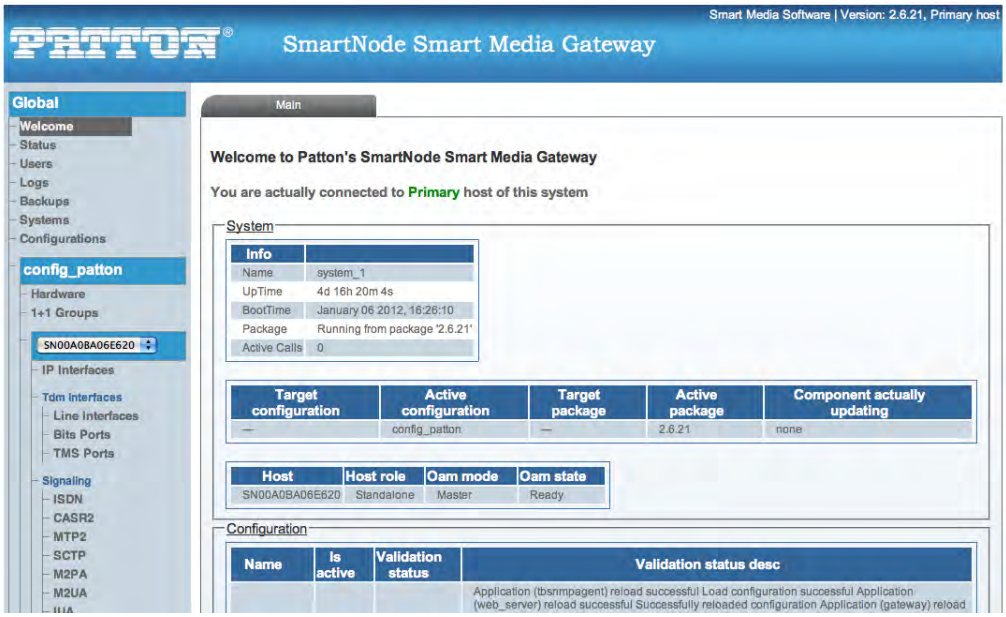

Figure 1. SmartNode Web Portal Navigation

Knowing Your Location

As you navigate the Web Portal, it is important that you understand how to determine your current location. The Web Portal has been designed to make this easy for you. When you browse through the navigation panel, your current selection is always indicated by a graphical highlight. In addition, the system configuration that you are using and the specific Smart Media unit that is being configured is always displayed, as shown in the figure below.

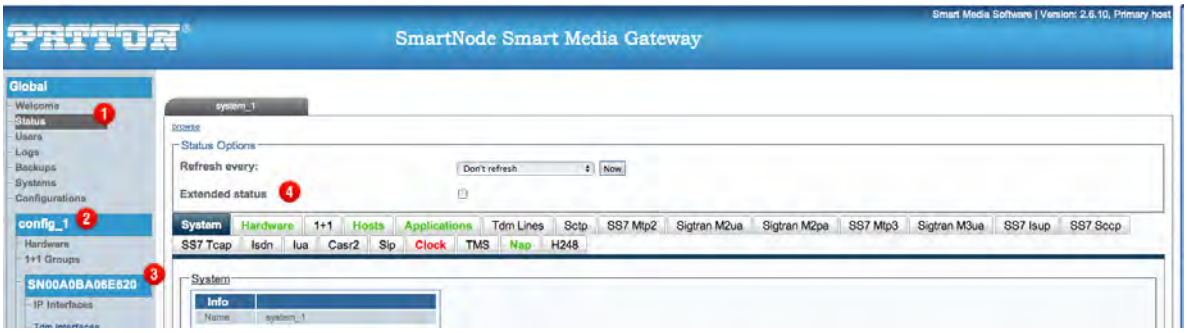

Figure 2. SmartNode Web Portal Menus

- **1:** Indicates status Global sub-menu.
- **2:** Indicates a configuration named config_patton is selected.
- **3:** Indicates a Smart Media hardware device named TB002176 is selected.
- **4:** Displays information concerning the system.

Managing Users

This section describes how to mange user access levels in the SmartNode Web Portal. (Refer to "Connecting to the web server and logging on to the Web Portal" on page 23 for information about how to login to the Web Portal).

Understanding User Access Levels

The Web Portal is designed to provide varying degrees of write and read privileges to users. By default, the root user is given full read and write access. This is required so that the root user can function as the system administrator without any restrictions imposed. Subsequent users can be created with the ability to read and write, or just to read. An integer value from 0 - 9 is assigned to each user.

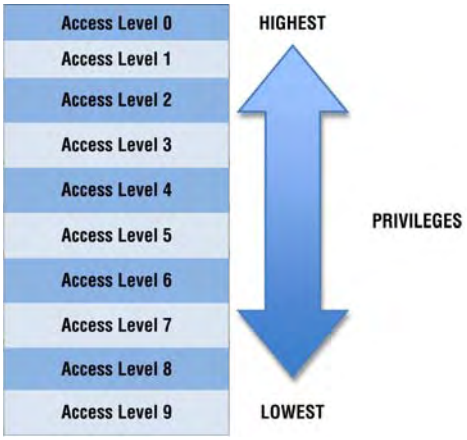

Figure 3. SmartNode User Access Levels

- A user with an access level of 0 has access to configurations created with levels 0 - 9.
- A user with an access level of 4, will have access to configurations created with user levels 4 - 9.
- Configurations created with user levels 0 -3 will be invisible to user levels 4-9.

Viewing the User List

It is possible to create an unlimited list of users, each with an assignment from 0-9. Any user can view the entire list of users, however only a root user with an access level of 0 can modify the access rights of other users.

To view the user list:

1. Select **Users** from the navigation panel.

Figure 4. Global > Users

2. The **User List** is displayed.

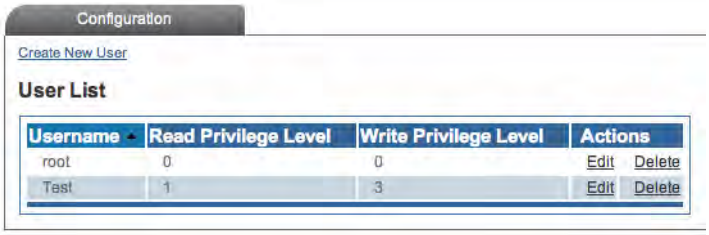

Figure 5. User List

Creating a New User

1. Select **Users** from the navigation panel.
2. Click **Create New User**.

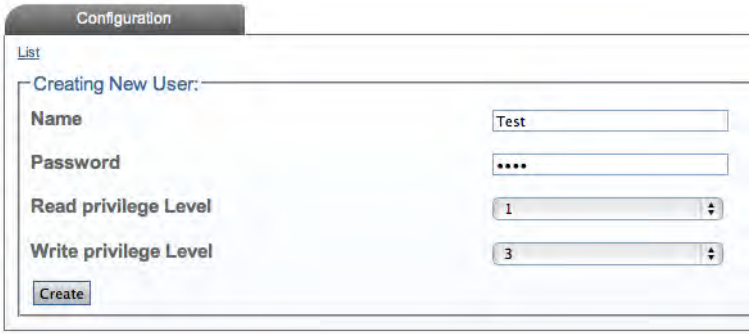

Figure 6. User List > Create New User

3. Enter a **User Name** and **Password**.
4. Select a **Read Privilege Level** (from 0-9).
5. Select a **Write Privilege Level** (from 0-9).
6. Press **Create** to save your changes. The **User List** window is displayed with the newly added user.

Deleting a User

1. Select **Users** from the navigation panel.
2. Click **Delete** in the information panel, next to the user account that you wish to delete.

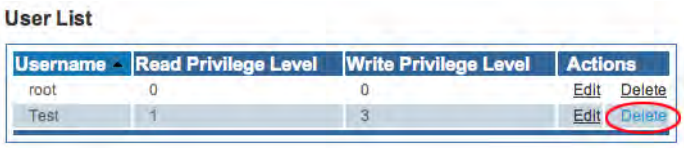

Figure 7. User List > Delete User

3. Click **OK** to confirm the deletion.
4. The modified **User List** is displayed.

Logging Off

When you are finished working in the Web Portal, it is recommended that you log out from your session. If you do not log out, the session between the Web Browser on your PC and the Web Portal remains active.

To log out from the Web Portal, select Logout from the navigation panel.

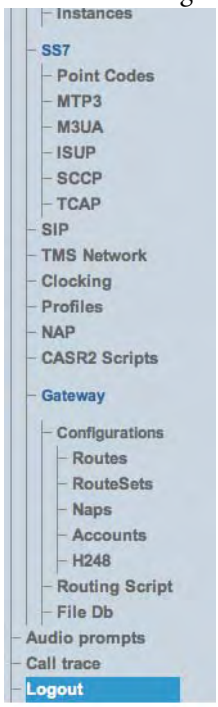

Figure 8. Navigation Menu: Logout

Managing the Database Backup

After carrying out system modifications, it is recommended that you back up the SQL database. This section describes how to back up the database for the first time, retrieve a saved backup file, upload a new backup file, and restore the database from a backup file.

Carrying out a First Database Backup

To create a backup file of the database:

1. Click **Backups** in the navigation panel.

Figure 9. Global > Backups

2. Click **Create**, under Create New Database Backup.

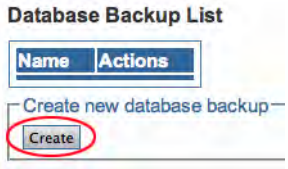

Figure 10. Backups > Create new database backup

3. Verify that the "**Database backup dump was successfully started. Refresh this page when it is done**" message appears. Then, refresh your Internet browser page.

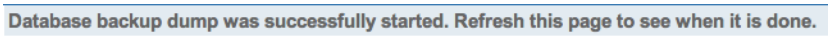

Figure 11. Database Backup Message

4. Verify that your new backup appears in the **Database Backup List**.

Figure 12. Database Backup List

Downloading a Database Backup

Once you have created a backup of your database, it is recommended that you download it to store it to an external storage device.

1. Click the **Download** link to store your backup externally.

Figure 13. Download Database Backup

2. Click **Save** in the pop-up window to store the backup.

Uploading a Database Backup

An external backup of your database can be uploaded to your SmartNode.

1. Click the **Choose File** tab, under Upload Database Backup, and select your external database backup.

Figure 14. Upload Database Backup File

2. Click the **Upload** tab, under Backup File.

Restoring a Database Backup

The configuration settings of your system can be restored from a local or remote copy of your database.

1. Click the Recover link, under Database Backup List, to overwrite the current database and restore your file backups.

Figure 15. Restore Database Backup File

2. After a few minutes, the Web Portal will come back online and the new configuration will be available.You need to activate the configuration to apply the changes.

Working with Configurations

This section explains how to manage applications and instances on the SmartNode Web Portal, how to activate a configuration, and how to configure IP interfaces. Refer to the following sections for information on:

- "Managing Applications" on page 30
- "Activating the Configuration" on page 33

Managing Applications

This section explains how to start up and verify applications and instances on the Smart Media application server.

Viewing the List of Installed Applications

The Smart Media application server is designed to run a large variety of applications. Before you can run an application, you must first be able to view it from a list of applications. To view the selection of applications:

1. Select **Instances** from the navigation panel.

Figure 16. Applications > Instances

2. The **Application Instance List** is displayed in the information panel.

Figure 17. Application Instance List

Applications are displayed in one of three states:

– Run (application is operating)

– Management (application is installed but not in operation)

– Fault (application has an operation fault)

Starting an Application

In order to be able to load and start an application, it will need to have been installed on the Smart Media application server. In addition, at least one Smart Media unit must have been configured on the Smart Media application server so that you are able to connect to it.

When you first log on to the Web Portal, your system application will have been installed on the Smart Media application server, and it will be in a management state. This means that the application is not yet operating and controlling your system. In order to start an application, its state must be changed from Management to Run. To start an application:

1. Select **Instances** from the navigation panel.
2. Select the application that you wish to run and click **Edit**.

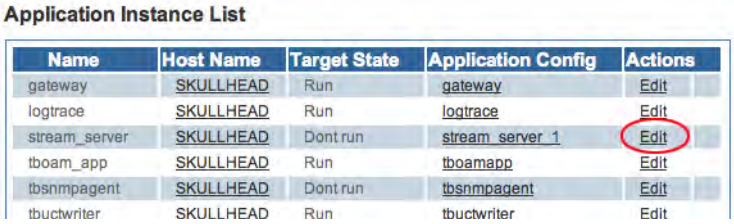

Figure 18. Application Instance List > Edit

3. Click the **Status** tab to activate the application.

Figure 19. Application Status

4. Set the **Oam target state** to **Run**.
5. Click **Apply States**.

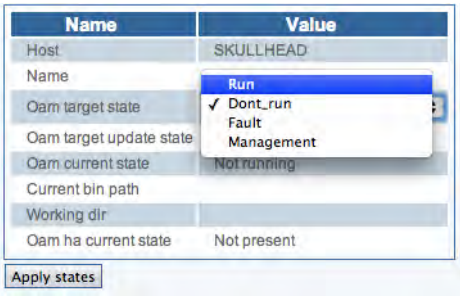

Figure 20. Apply States

Verifying that an Application is Operating

When an application's target state is set to run, there are a number of crucial verifications that you should conduct in order to know that an application is running properly. These verifications are as follows:

- **Verify the application's current path.** It is important that once the application has been set to run, a path is displayed.
- **Verify the TDM interface.** If you are running a TDM application on your Smart Media unit then you can verify the TDM interface. Although, you most likely have not yet configured the TDM interface of the Smart Media unit, certain status LEDS will indicate that your application is operational.
- **Verify the IP Interfaces.** Your Smart Media unit is furnished with two IP interfaces for access to a VoIP network. Although you have not as of yet configured the interfaces, certain LED indications will be displayed. See Figure 21 below.

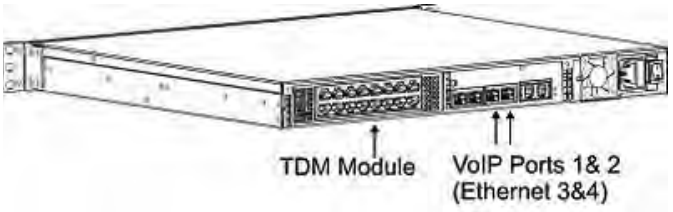

Figure 21. SmartNode Interfaces

Verifying the Application Path

One important indication of the normal operation of an application is when the application path is displayed in the hardware status window. To verify that the application path is displayed:

1. Select **Instances** from the navigation panel.
2. Click the **Status** tab, in the Application Instances window, to view the application path
3. Verify that the application path is displayed. Verify that the target state is set to **Run**, the current state displays **Ready**, and the current HA state displays **Active**.

Application Status List

Status Options

Refresh every: Don't refresh Now

Name	Host	Oam target state	Oam target update state	Oam current state	Current bin path	Oam ha current state
gateway	SKULLHEAD	Run	Run	Not running	w:/tb/pkg/2.6.10/bin/release/i586-msvc8/gateway.exe	Not present
logtrace	SKULLHEAD	Run	Run	Not running	w:/tb/pkg/2.6.10/bin/release/i586-msvc8/tblogtrace.exe	Not present
stream_server	SKULLHEAD	Dont_run	Run	Not running		Not present
tboam_app	SKULLHEAD	Run	Run	Not running		Not present
tbsnmpagent	SKULLHEAD	Dont_run	Run	Not running		Not present
tbuctwriter	SKULLHEAD	Run	Run	Not running	w:/tb/pkg/2.6.10/bin/release/i586-msvc8/tbuctwriter.exe	Not present
toolpack_engine	SKULLHEAD	Run	Run	Not running	w:/tb/pkg/2.6.10/bin/release/i586-msvc8/toolpack_engine.exe	Not present
toolpack_sys_mgr	SKULLHEAD	Run	Run	Not running	w:/tb/pkg/2.6.10/bin/release/i586-msvc8/toolpack_sys_manager.exe	Not present

Figure 22. Application Status List

Activating the Configuration

Changes made to the configuration of the Smart Media units are stored on the OAM&P Configuration and Logging database. In order for changes to be used by the system, they must first be activated. This is done at the system level and accessed from the Navigation panel.

Note To activate a configuration, you must be the Root user or have a user access level of 0.

1. Select **Systems** from the navigation panel.

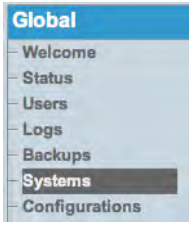

Figure 23. Global > Systems

2. Click **Edit** next to the system you wish to activate,in order to access the System Configuration screen.

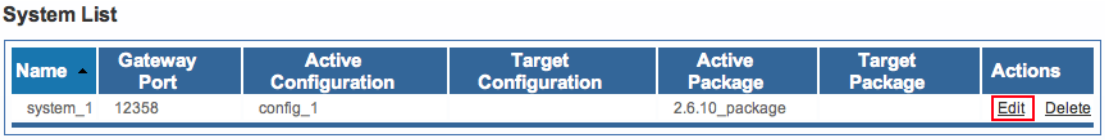

Figure 24. System List

3. Activate the configuration. Enter a name for the system. Under **Activate Configuration**: Select a Configuration on which to run the system. Click **Activate.**

Note Make certain that **Lock Active Configuration** box (located at the top of the page) is '**unchecked**.' Failure to do so will prevent the configuration from being saved.

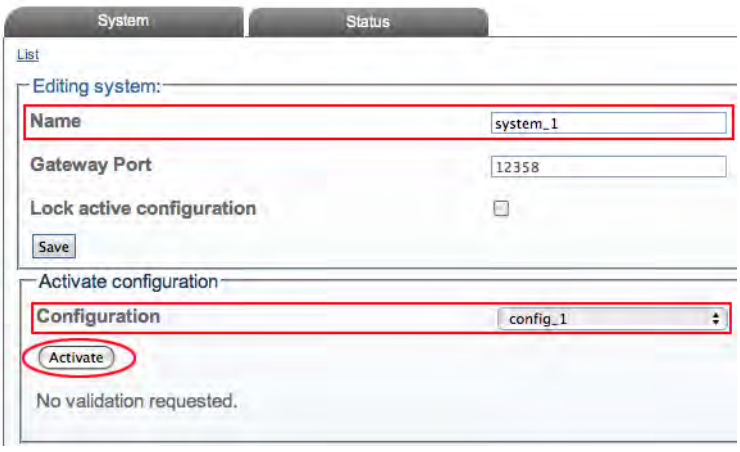

Figure 25. Name and Activate Configuration

4. Verify that an activation confirmation message is displayed. The system will remind you to back up your database when you are done configuring (at top of screen, in yellow).

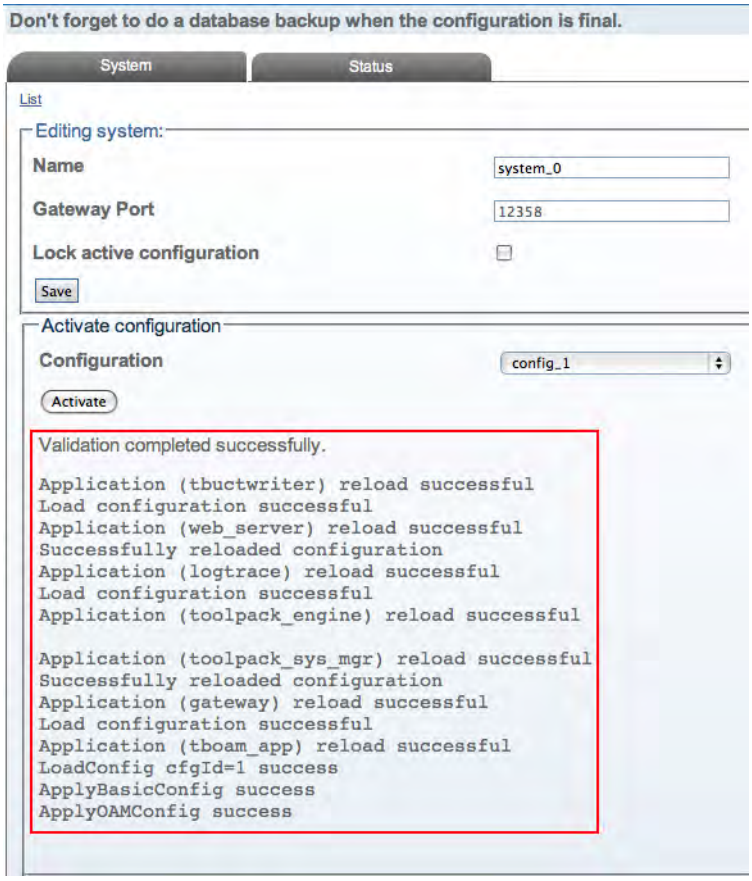

Figure 26. Successful Activation

Verifying status

General and detailed status information about the applications that are run by one or more host machine(s) is accessible from the **Applications** tab of the Global-->Status menu.

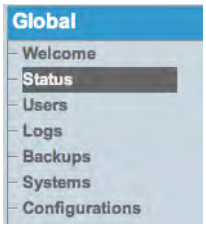

Figure 27. Global > Status

You may view the status in *General View* or *Detailed View*.

General View: The general view, shown below, lists the applications, and their current general status (ready, fault, not running. This window also provides a count of all applications with ready or fault status.

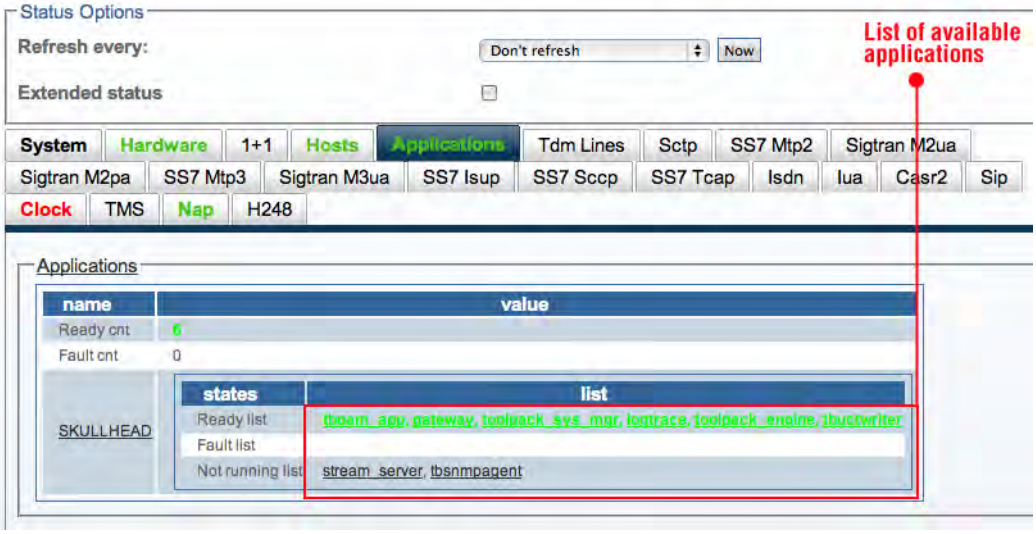

Figure 28. Status: General View

Detailed View: A more detailed description of each application can be viewed by following the appropriate link in the general window (shown above). The detailed status screen, shown below, lists the states of the application, its name, the host machine and the location of the application on the host.

From this detailed view, the **Oam target state may be changed**.

To modify the Oam target state of an application: Select a state from the **Oam target state** combo box. Click **Apply States** to change the states.

Figure 29. Status: Detailed View

Chapter 2 Configuring VoIP Interfaces

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IP Interfaces (Detailed View) 41

Overview

The IP interface of the VoIP0 and VoIP1 ports can be configured by setting the following:

- IP Address
- Netmask
- Gateway

Configuring Interfaces

To configure a VoIP0 or VoIP1 port:

1. Select **IP Interfaces** from the navigation pane:

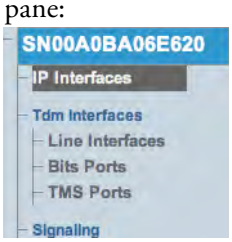


Figure 30. Menu > IP Interfaces

2. Click **Edit** from the IP Interfaces Information panel.

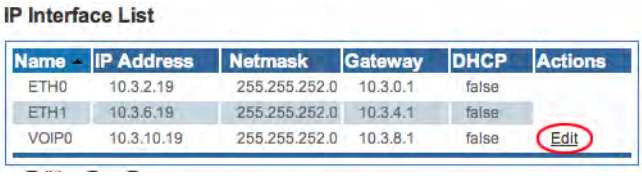


Figure 31. IP Interface List

3. Configure the IP port:
   - Indicate whether or not to use **DHCP** on this port
   - Enter an **IP address**
   - Enter a **Netmask**
   - Enter a **gateway address**
   - Click **Save**

Note The IP addresses of ETH0, ETH1, VOIP0 and VOIP1 must be on different subnets.

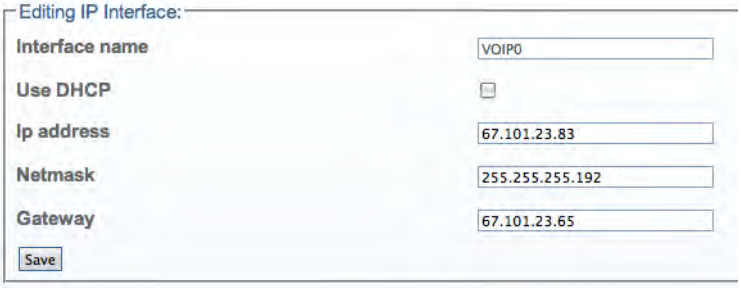


Figure 32. Editing an IP Interface

4. The changes are displayed in the IP interfaces information panel.

IMPORTANT

The system will display the following notice, describing steps to apply your new configuration:

NOTE: To apply IP configuration change, activate current configuration, then reboot the adapter.

5. Activate the configuration: Systems -> Edit -> Activate
6. Reboot the adapter (will drop active calls): Status -> Adapters -> Click on the adapter Serial Number -> Reboot adapter. It will take about 1.5 minutes to restart the unit.

Understanding Parameters for IP Interfaces

Table 1. Configuration Parameters for IP Interfaces

Parameter	Description
Use DHCP	Indicates that the DHCP autoconfiguration protocol is to be used on an IP port.
IP Address	Sets an address for accessing a new media gateway controller (MGC).
Netmask	Sets a subnetwork mask number on an IP port.
Gateway	Associates the address of a TCP/IP network gateway with an IP port.

Viewing the Status of Interfaces

General and detailed status information about the Smart Media units, also referred to as adapters, is accessible from the Adapters tab of the Global Status view.

Adapters (General View)

The general view of the Adapters status screen provides information about the Smart Media units in a system. From this view you can know the status of Smart Media units by seeing if they are up, down, or disabled. In addition, similar information can be known about the IP interfaces of the Smart Media units. Selecting a Smart Media unit link will cause its detailed view to be displayed. The same is true for the IP interface links.

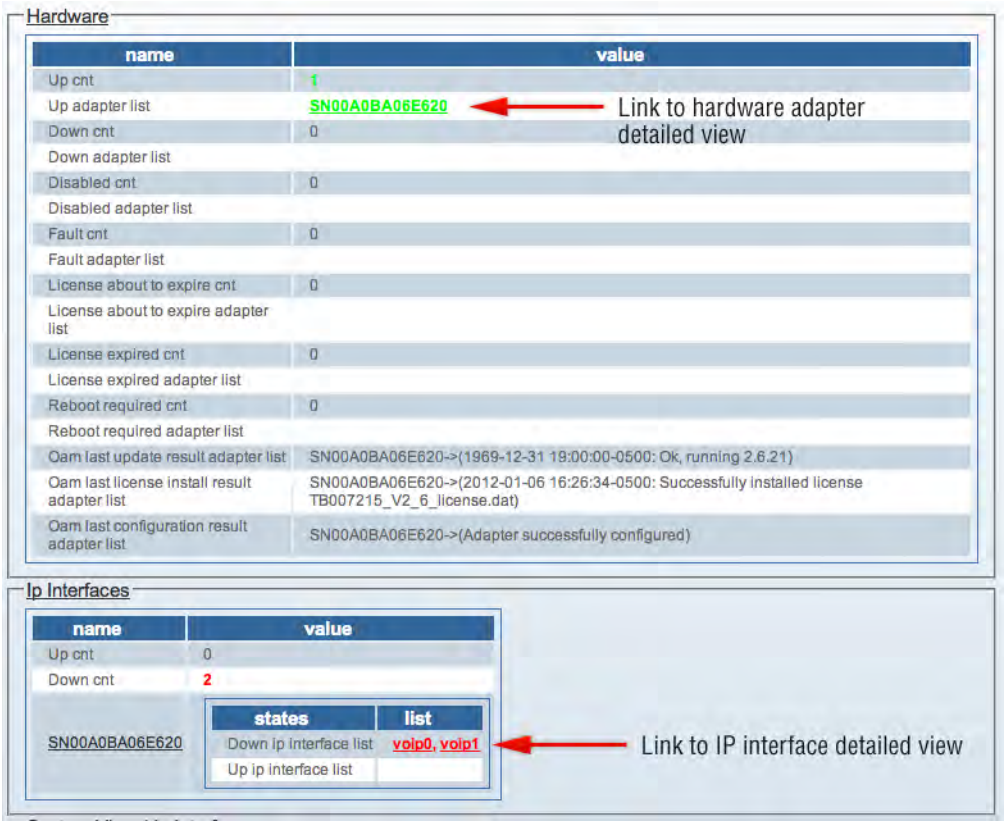


Figure 33. Adapters (General View)

Adapters (Detailed View)

The Adapters detailed view groups status information about a specific adapter under three tabs, as follows:

- "Hardware" on page 40
- "Sensors" on page 40
- "Licensed Features" on page 41

Hardware

The Hardware status screen displays detailed information about the Smart Media unit, such as the software version, the firmware version, and the configuration state. From this view, the OAM target state can be modified from enabled to disabled, and the option to reboot the adapter or not can be changed.

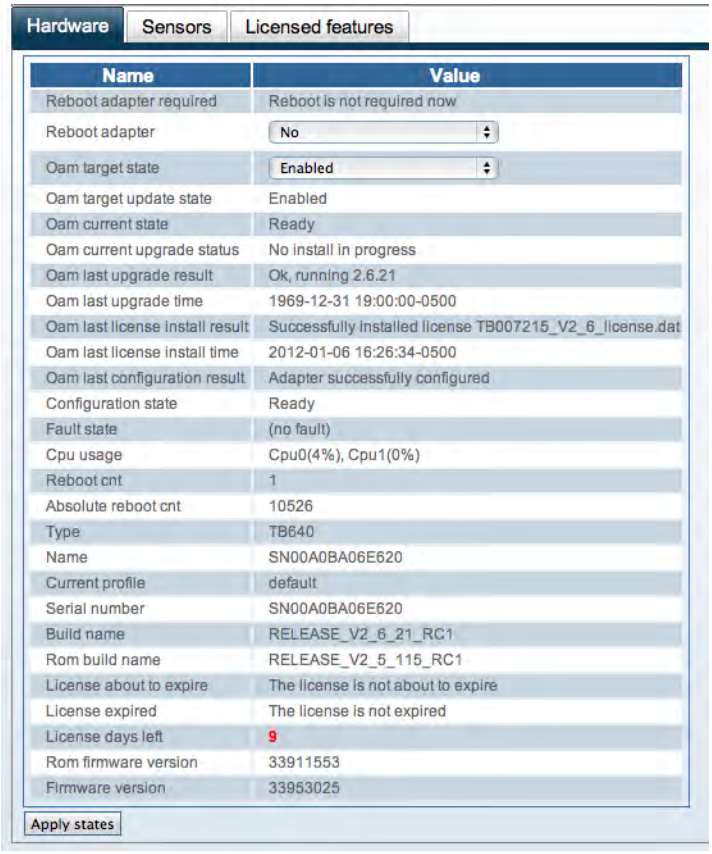


Figure 34. Adapters (Detailed View) > Hardware

Sensors

The Sensors status screen displays detailed information about the temperature and voltage recorded by various sensors located inside the Smart Media unit chassis.

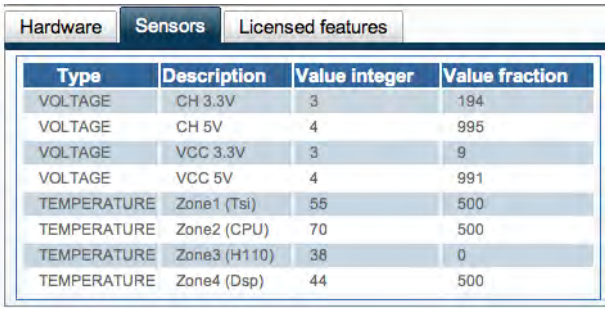
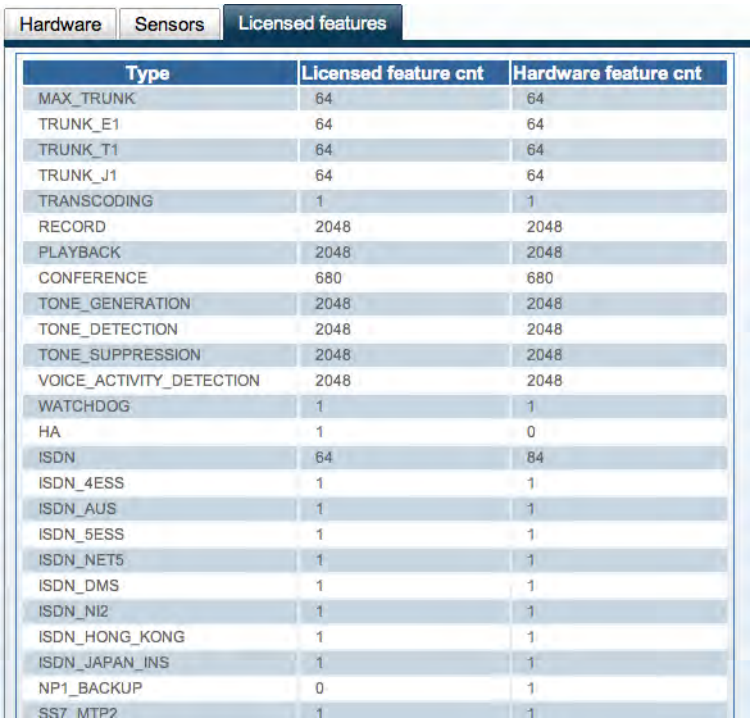


Figure 35. Adapters (Detailed View) > Sensors

Licensed Features

The Licensed Feature status screen displays detailed information about licensed features. A zero in the 'Licensed feature cnt' column means that the Smart Media unit does not have access to the feature. A value of 1 or more indicates the quantity purchased. A number in the 'Maximum feature cnt' column indicates the maximum amount of a licensed feature that can be purchased.

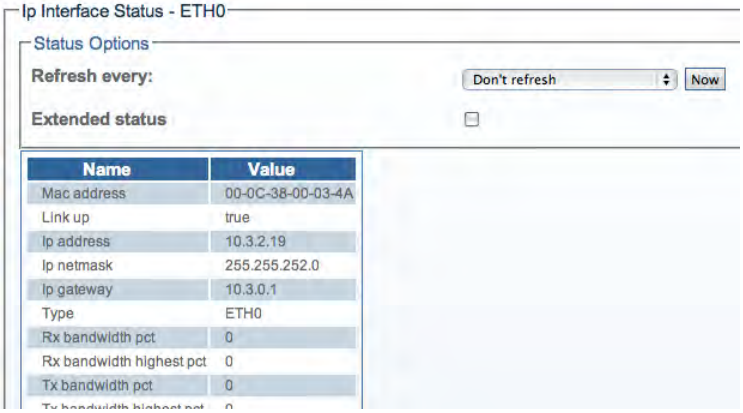


Type	Licensed feature cnt	Hardware feature cnt
MAX_TRUNK	64	64
TRUNK_E1	64	64
TRUNK_T1	64	64
TRUNK_J1	64	64
TRANSCODING	1	1
RECORD	2048	2048
PLAYBACK	2048	2048
CONFERENCE	680	680
TONE_GENERATION	2048	2048
TONE_DETECTION	2048	2048
TONE_SUPPRESSION	2048	2048
VOICE_ACTIVITY_DETECTION	2048	2048
WATCHDOG	1	1
HA	1	0
ISDN	64	84
ISDN_4ESS	1	1
ISDN_AUS	1	1
ISDN_5ESS	1	1
ISDN_NET5	1	1
ISDN_DMS	1	1
ISDN_NI2	1	1
ISDN_HONG_KONG	1	1
ISDN_JAPAN_INS	1	1
NP1_BACKUP	0	1
SS7_MTP2	1	1

Figure 36. Adapters (Detailed View) > Licensed Features

IP Interfaces (Detailed View)

The IP Interfaces status screen displays detailed information about a specific IP interface. This view displays the state of the link, its activity, and configuration settings.



Name	Value
Mac address	00-0C-38-00-03-4A
Link up	true
Ip address	10.3.2.19
Ip netmask	255.255.252.0
Ip gateway	10.3.0.1
Type	ETH0
Rx bandwidth pct	0
Rx bandwidth highest pct	0
Tx bandwidth pct	0

Figure 37. IP Interfaces (Detailed View)

Chapter 3 Configuring an ISDN-SIP Gateway

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Overview

The following sections describe a typical configuration scenario for an ISDN to SIP gateway. This type of installation allows for the transfer of information from traditional ISDN signaling to SIP protocol for VoIP applications. Please follow each step one after another as these are listed in logical order.

Refer to the following sections to configure the SmartNode for an ISDN to SIP gateway:

- "Creating a New Configuration" on page 44
- "Allocating Physical Interfaces" on page 46
- "Configuring ISDN-PRI Signaling" on page 52
- "Defining a Clocking Source" on page 54
- "Configuring SIP Signaling" on page 55
- "Configuring Codecs and Tone Detection" on page 60
- "Configuring Network Access Points (NAPs)" on page 65
- "Creating Call Routing Rules" on page 69

After completing the setup process, remember to activate the configuration. Refer to "Activating the Configuration" on page 33 for more information.

Creating a New Configuration

Once you are logged on to the Web Portal, you should make a copy of the default configuration, so as not to alter the original. Should you need to restore the default system configuration, the original file will still be available.

1. Select **Configurations** from the navigation panel:

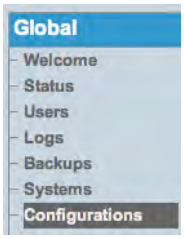

Figure 38. Global > Configurations

2. Copy the default configuration—Click **Copy** next to the configuration named "default":

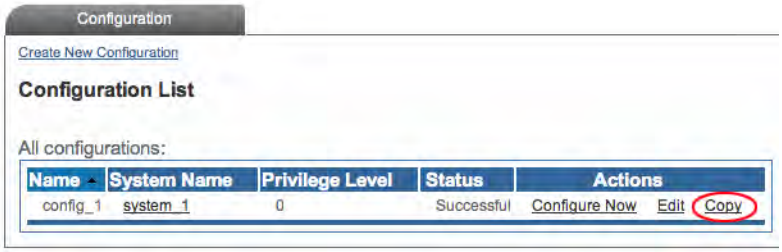

Figure 39. Configuration List

3. Enter a new name for the copy, then click "**Copy**".

Figure 40. Name and Copy a Configuration File

4. Verify that the "**Configuration was successfully copied**" message appears, and that the copied configuration appears in the list below.

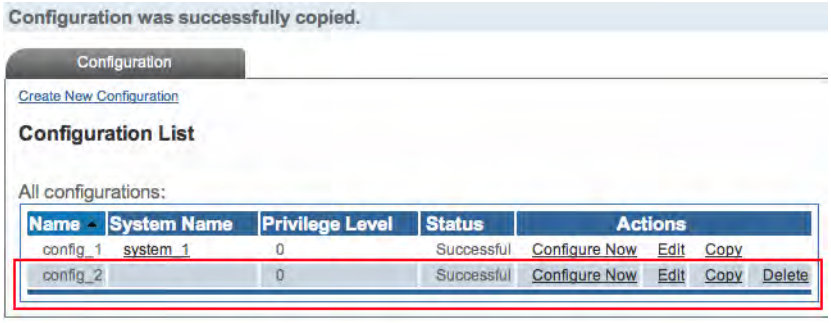

Figure 41. Successful Configuration Copy

Allocating Physical Interfaces

Allocating physical interfaces involves creating a new line interface and creating a new line service.

Creating a new line interface

Line interface is a generic term for TDM physical interfaces. The SmartNode 10200 Series supports three types of physical interfaces: T1/E1/J1 interfaces, DS3 interfaces, and Oc3/STM1 interfaces.

To create a new line interface:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

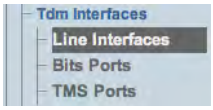

Figure 42. TDM Interfaces > Line Interfaces

2. Click **Create New Line Interface** to create a single interface, or **Create Multiple Line Interfaces** to create many interfaces at once:

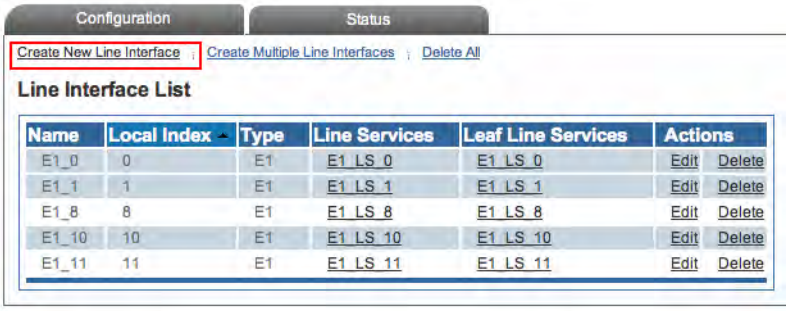

Figure 43. Line Interface List

3. Create the new line interface:
   - Enter a **name** for the interface
   - Set a **type** for the interface
   - Set a **local index** for the line
   - Select a **length** and an **encoding scheme**

– Click **Create**

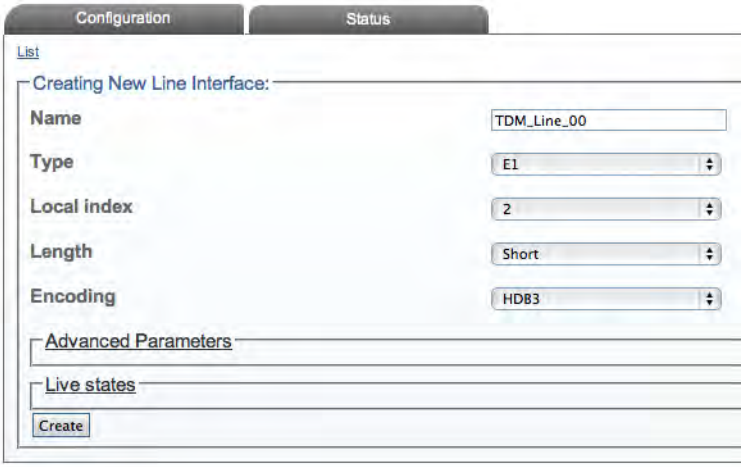

Figure 44. Create New Line Interface

4. Verify that the "**Line interface was successfully created**" message is displayed.

Figure 45. Confirmation Message for New Line Interface

Understanding Parameters for Line Interfaces

Table 2. Configuration Parameters for New Line Interfaces

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type	Defines the type of line interface: E1/DS3/T1/J1/STM1/OC3
Local Index	Assigns an integer to represent an object
Length	Indicates the physical length of a line: Short/Long/Autodetect/Monitoring
Encoding	Sets an encoding scheme for a line interface. Values depend on the interface type: **E1**: HDB3/AMI **DS3**: B3ZS **T1/J1**: B8ZS/AMI/AMI CLEAR **STM1/OC3**: (None)

Creating a new line service

You must create a new line service for your line interface. A line service defines the payload type of a line interface or another line service. The line service chain stops when it reach the E1/J1/T1 line service. The E1/J1/T1 line services are also known as trunks or spans.

To create a new line service:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

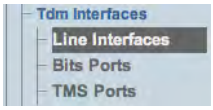

Figure 46. TDM Interfaces > Line Interfaces

2. Click **Edit** next to the line service for which you wish to create a line service:

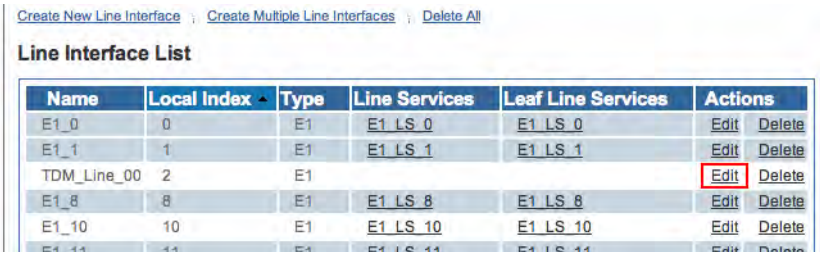

Figure 47. Line Interface List

3. In the following window, click **Create New Child Line Service** (also, a number can be created at once by selecting **Create Multiple Child Line Service**):

Figure 48. Editing a Line Interface to Create a New Service

4. Create the new line service:
   - Enter a **name** for the new line
   - Select an available **local index**, from the drop-down box
   - Select appropriate **framing** and **loopback modes**

– Click **Create**

Figure 49. Create New Line Service

5. Navigate back to the line interface page, by following link displayed in the upper-left corner of the screen. The new line service should be displayed in the **Line Services** list.

Figure 50. Line Services List

Understanding Parameters for Line Services

Table 3. Configuration Parameters for New Line Services

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Local Index	Assigns an integer to represent an object
Framing	Sets a framing type for a line service. Select from: AUTO (typical for E1)/STD/MFRAME/SF/ESF (typical for T1)/SLC96
Loopback	Used to set a loopback state for a line service. Refer to Table 4 for details.

Table 4. Loopback Types

Loopback Type	Description	Behavior	Use
NONE	Normal Operation	All traffic is received and sent on the line	Always
LINE	Analog Line Loopback	All received traffic is re-routed on the transmit line. The clock and data recovered from the line inputs are routed back to the line outputs of the analog transceiver bypassing the framer modules.	First step in testing a physical connection
PAYLOAD	Digital Line Loopback	All received traffic is re-routed on the transmit line.The clock and data recovered from the line inputs are routed back to the line outputs after the deframer/framer.	Second step in testing a physical connection. This tests the framer configuration.
GENERATE_LOS	Generate Loss of Signal	This forces the transmit line to stop sending.	This is the second-best thing to disconnecting the line interface physically.
LOCAL	Local Loopback	All received traffic is dropped. The traffic sent is re-routed internally.	Never. Used for internal testing only

Creating an IP port range

After you have properly allocated all of your system's physical interfaces, you must create a new IP port range.

1. Click **IP Interfaces** in the navigation panel:

Figure 51. Menu: IP Interfaces

2. In the **IP Interfaces** window, click **Create New Port Range**:

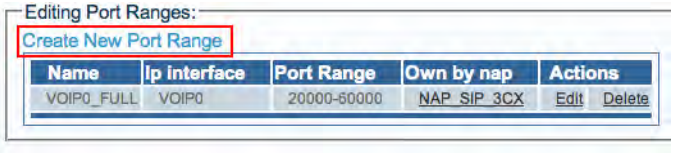

Figure 52. Editing Port Ranges

3. Create the new IP port range:
   - Enter a **name** for the port range
   - Select an **IP interface**
   - Enter a **port min value** (must be at least 1024)
   - Enter a **port max value**
   - Click **Create**

Figure 53. Creating a New Port Range

4. Verify that the "**Port Range was successfully created**" message appears:

Figure 54. Confirmation Message for Port Range

Understanding Parameters for IP Port Ranges

Table 5. Configuration Parameters for New IP Port Ranges

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
IP Interface	Identifies an IP interface that is to be associated with the structure being created
Port Min	Sets a minimum value for an IP port range. Since only even-numbered ports will be used to send RTP over, it is recommended that the Port Min value be at least 1000
Port Max	Sets a maximum value for an IP port range. Since only even-numbered ports will be used to send RTP over, it is recommended that the Port Min value be at least 1000. Ex.: 10000-20000 –> 5000 connections

Configuring ISDN-PRI Signaling

Integrated Systems Digital Network (ISDN) is a circuit-switched telephone system that integrated voice and data on the same lines. The Smart Media system can be configured to provide an ISDN signaling stack on the trunks of one or more units to meet system configuration requirements. In order to configure ISDN-PRI signaling for your system, you must create a new ISDN stack.

To create a new ISDN stack:

1. Click **ISDN** in the navigation menu, under the Signaling header:

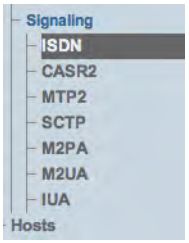

Figure 55. Signaling > ISDN

2. Click **Create New ISDN Stack**:

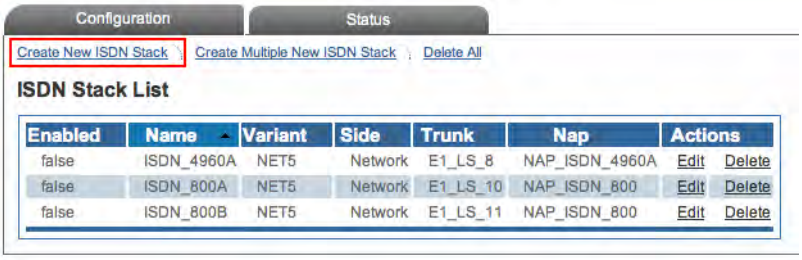

Figure 56. ISDN Stack List

3. Create the new stack:

> **Note** Patton offers several ISDN variants, four of which support Non-Facility Associated Signaling (NFAS). By clicking on 'Create', you confirm the line service and in the case of ISDN variants which support NFAS you are permitted to add additional line services.

   – Verify that the box labeled **Enabled** is checked

   – Enter a **name** for the new ISDN stack

   – Select a **variant** to associate with the stack

   – Determine whether the stack will operate on the **user side**, or the **network side**

   – Select a **primary D-channel line service**

   – Click **Create**

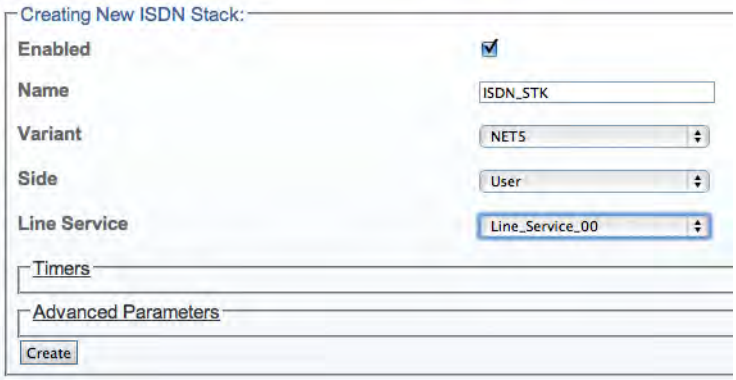

Figure 57. Create New ISDN Stack

4. Verify that the "**ISDN stack was successfully created**" message appears.

Figure 58. Confirmation Message for New ISDN Stack

Understanding Parameters for ISDN Stacks

Table 6. Configuration Parameters for New ISDN Stacks

Parameter	Description
Enabled	Indicates whether an object is currently implemented or not
Name	Used by the Web Portal to indicate a specific object or string in the system
Line Service	Indicates which TDM line service is to be associated with the object being created
Variant	Indicates the protocol variant to be used on a signaling stack. Possible values: 4ESS/AUS/5ESS/DMS/NI2/HONG-KONG/JAPAN INS
Side	Defines each side of an ISDN stack. Possible values: Network/User

Defining a Clocking Source

The clock is a necessary component of a TDM network. Synchronizing your system on the right clock, allows it to offer good sound quality. It is recommended that you configure an external clocking source for your system.

1. Click **Clocking** in the navigation panel:

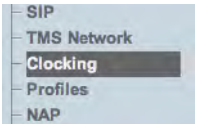

Figure 59. Menu: Clocking

2. Click **Create New External System Clock Reference**:

Figure 60. External System Clock Reference List

3. Create the new clocking source:
   - Select the appropriate hardware **adapter**
   - Select a **clock reference type** (in this example, Line Service was chosen)
   - Select a **clock reference source** (in this example "Line_Service_00")

Figure 61. Creating New External System Clock

4. Verify that the "**System Clock was successfully created**" message appears, and that the new clocking source appears in the **External System Clock Reference List**:

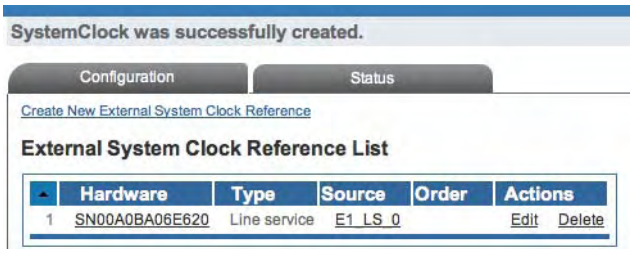

Figure 62. Confirmation Message for System Clock

Understanding Parameters for the System Clock

Table 7. Configuration Parameters for the Clocking Source

Parameter	Description
Adapter	Defines the Smart Media hardware adapter for which a new object is created
Clock Reference Type	Defines which type of object is to be used as an external clocking source. Possible values: Line Service/Bits Port/Sonet SDH
Clock Reference Source	Defines which object is to be used as an external clocking source. Possible values available depend on the selected **Clock Reference Type**.

Configuring SIP Signaling

Smart Media provides support for signaling using the Session Initiation Protocol, more commonly known as SIP, for voice over IP (VoIP) communications. SIP may be used in conjunction with various voice codecs for the media component of a call. Smart Media supports SIP signaling concurrently with SS7, ISDN and other signaling protocols. SIP signaling stacks are configured for IP applications and for each Smart Media unit requiring SIP signaling.

Based upon your system requirements, you can configure a SIP stack to carry signaling traffic over multiple transport servers, which are IP endpoints comprised of: protocol type (TCP/UDP), port number, IP interface, IP address, IP name, and SAPs.

Refer to the following sections to configure SIP signaling for your Smart Media device:

- "Creating an IP port range" on page 50
- "Creating a SIP stack" on page 55
- "Creating a SIP transport server" on page 57
- "Creating a SIP service access point (SAP)" on page 59

Creating a SIP stack

In order to configure SIP signaling for your system, you must first create a SIP stack.

1. Click **SIP** in the navigation panel:

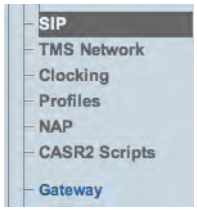

Figure 63. Menu: SIP

2. Click **Create New Sip**:

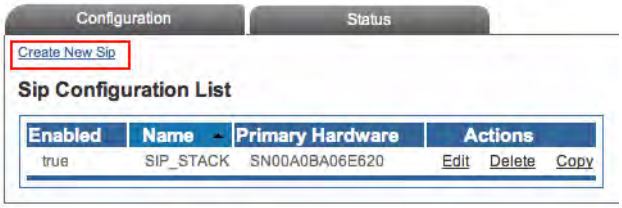

Figure 64. SIP Configuration List

3. Create the new SIP stack:
   - Verify that the box labeled **Enabled** is checked
   - Enter a **name** for the stack
   - Select a **virtual adapter**
   - Click **Create**

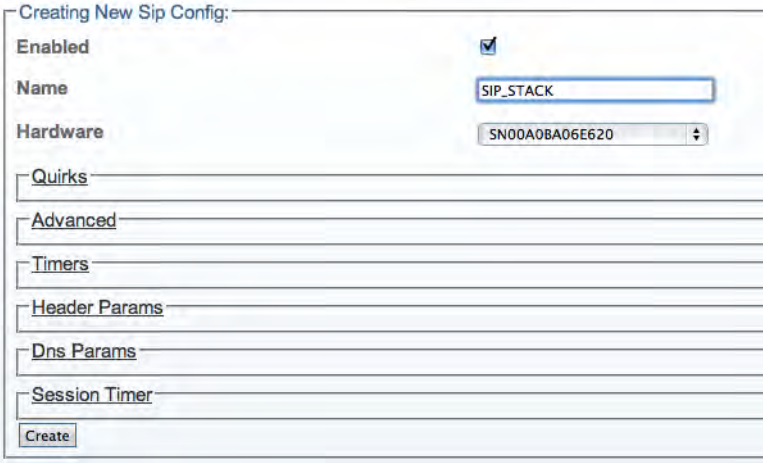

Figure 65. Creating a New SIP Stack

4. Verify that the "**Port Range was successfully created**" message appears:

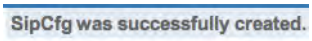

Figure 66. Confirmation Message for SIP

Understanding Parameters for SIP Stacks

Table 8. Configuration Parameters for New SIP Stacks

Parameter	Description
Enabled	Indicates whether an object is currently implemented or not
Name	Used by the Web Portal to indicate a specific object or string in the system
Virtual Adapter	Defines the Smart Media hardware adapter for which a new object is being created

Creating a SIP transport server

After you have created a SIP stack, you must create a new SIP transport server for your configuration.

Note In order to employ SIP transport servers, the protocol that they will use to transport the SIP signaling traffic must be defined.

1. Click **SIP** in the navigation panel:

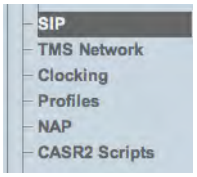

Figure 67. Menu: SIP

2. Click **Edit** next to the SIP stack for which you wish to create a transport server:

Figure 68. Edit SIP Configuration List

3. Click **Create New Transport Server** under the **Transport Servers** list:

Figure 69. Transport Servers List

4. Create the new SIP transport server:
   - Enter a **name** for the server
   - Select an appropriate **port type**
   - Select a hardware **adapter**
   - Select an appropriate **IP interface**

– Click **Create**

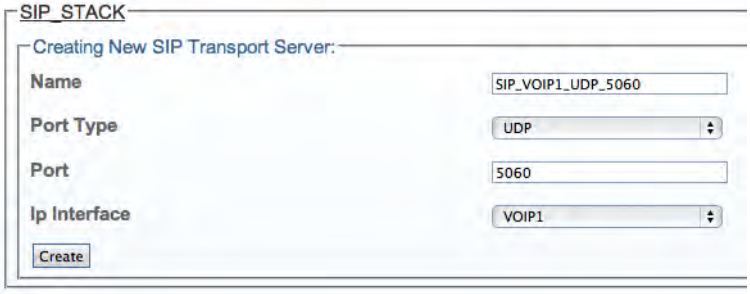

Figure 70. Creating a New SIP Transport Server

5. Verify that the "**SIP transport server was successfully created**" message appears, and that the new server is listed in the **Transport Servers** list:

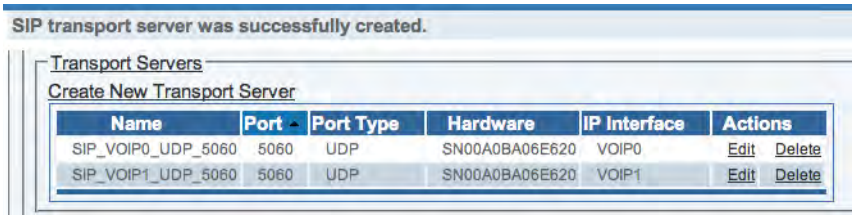

Figure 71. Confirmation Message for SIP Transport Server

Understanding Parameters for SIP Transport Servers

Table 9. Configuration Parameters for SIP Transport Servers

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Port Type	Identifies the type of IP port used by a SIP transport server. Possible values: UDP/TCP
Adapter	Defines the Smart Media hardware adapter for which a new object is being created
IP Interface	Identifies an IP interface that is to be associated with the structure being created

Creating a SIP service access point (SAP)

After you have created a SIP stack and transport server, you must create a new service access point (SAP) for your configuration. The Service Access Point is used to bind the SIP stack with a transport server. Depending on the system configuration, multiple SAPs can be configured.

To create a new SIP SAP:

1. Click **SIP** in the navigation panel:

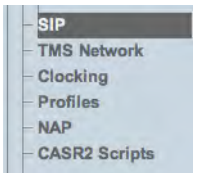

Figure 72. Menu: SIP

2. Click **Edit** next to the SIP stack for which you wish to create a SAP:

Figure 73. Edit SIP Configuration List

3. Click **Create New SAP** under the **Service Access Points** list:

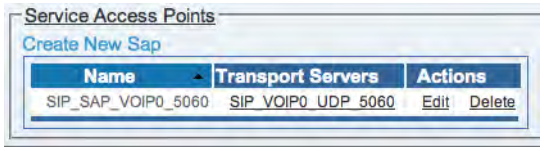

Figure 74. Service Access Points (SAP) List

4. Create the new service access point:
   - Enter a **name** for the SAP
   - Click **Create**

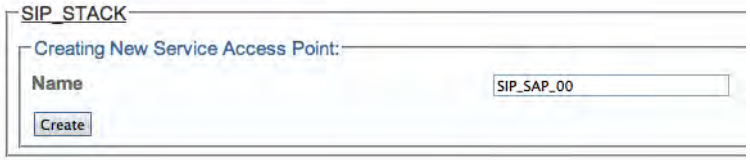

Figure 75. Creating a New SAP

5. Verify that the "**Sip Sap was successfully created**" message appears.

Figure 76. Confirmation Message for SIP SAP

6. Associate the previously created SIP transport server with your new configuration:

– Select a transport server from the list of available servers

– Associate this configuration by clicking the "<<" button

– The transport server will now appear in the list to the left:

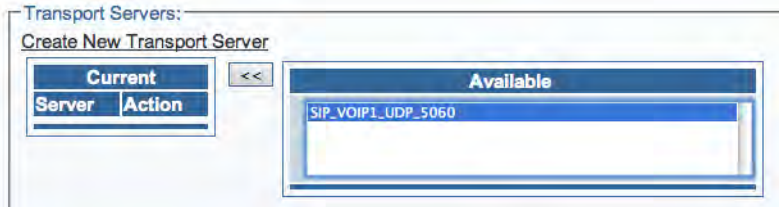

Figure 77. Associating Transport Servers

Understanding Parameters for SIP SAPs

Table 10. Configuration Parameters for SIP SAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Configuring Codecs and Tone Detection

This section describes how to access and configure tone detection profiles, and also how to write and submit the code for the Session Description Protocol (SDP).

Accessing Profiles and Validating Settings

You must access your system's default sound codec and tone detection profiles, in order to validate whether or not they are configured correctly.

1. Click **Profiles** in the navigation panel:

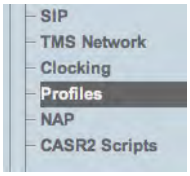

Figure 78. Menu: Profiles

2. Click **Edit** next to the default configuration (or the custom configuration you will be using):

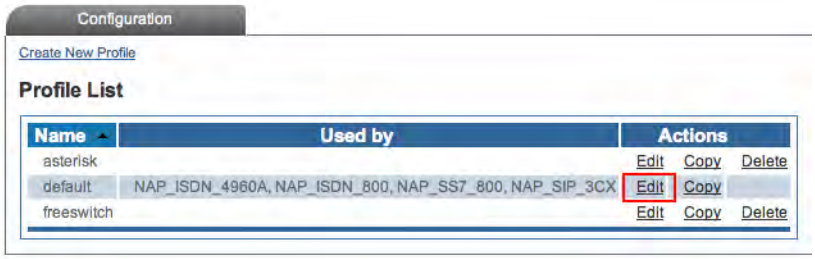

Figure 79. Edit Profile List

3. Validate the configuration:
   - Select an appropriate **DTMF relay scheme** from the list
   - Add the chosen scheme by clicking the "<<" button
   - Click **Save**

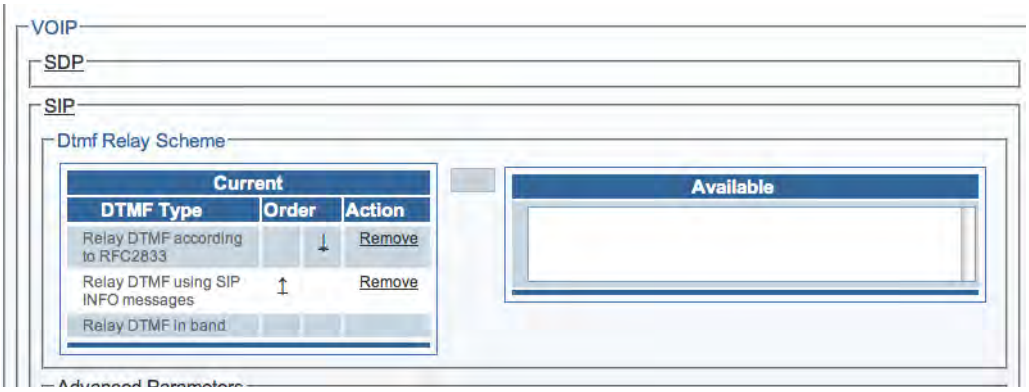

Figure 80. DTMF Relay Scheme List

IMPORTANT

The configuration will not be saved if the text box designed to contain the session definition protocol (SDP) is left empty. The SDP must be written in section "Managing the Session Description Protocol (SDP)" on page 62.

Managing the Session Description Protocol (SDP)

You can specify the Profile SDP Description to define which voice codecs are supported in the Network Access Point (NAP) using this Profile.

Here is the default Profile SDP Description:

```
m=audio 0 RTP/AVP 0 8 4 96 97 18 98 13
a=rtpmap:96 iLBC/8000
a=rtpmap:97 iLBC/8000
a=fmtp:97 mode=20
a=rtpmap:98 telephone-event/8000
```

Each line of the Profile SDP Description consists of text of the form <type>=<value>. <type> is always exactly one character and is case-significant. <value> is a structured text string whose format depends on <type>. It also will be case-significant unless a specific field defines otherwise. Whitespace is not permitted either side of the `=' sign. In general <value> is either a number of fields delimited by a single space character or a free format string.

In our Profile SDP Description, only 2 <type> are used.

Media Announcement

The format of media announcement is as follows:

```
m=<media> <port> <transport> <fmt list>
```

- The first sub-field is the media type. Currently defined media for Smart Media is "audio".
- The second sub-field is the transport port to which the media stream will be sent. In Smart Media, it is not specified in Profile SDP Description and therefore you should specify "0".
- The third sub-field is the transport protocol. For most of the application, you may specify it as "RTP/AVP" - the IETF's Realtime Transport Protocol using the Audio/Video profile carried over UDP.
- The fourth and subsequent sub-fields are media formats. For audio and video, these will normally be media payload types as defined in the RTP Audio/Video Profile. When a list of payload formats is given, this implies that all of these formats may be used in the session, but the first of these formats is the default format for the session. When the transport protocol is specified as "RTP/AVP", the payload format can be specified as either
  - the payload type number for static payload types
  - the payload type number along with additional encoding information for dynamically allocated payload types.

The payload type, which is carried in the actual RTP packet header, is used to identify the type of codec information carried in the packet. A list of payload type values for each codec is defined within RFC3551. Unfortunately, since the payload type field is only 7 bits-wide, all codecs cannot have a permanent payload type value understood universally by all VoIp systems. Therefore, some codecs have dynamic values that need to be negotiated through a call control or session control protocol such as SIP before the actual RTP session can take place.

Table 11 shows the list of codec payload type values per RFC3551:

Table 11. Codec Payload Type Values

Codec	Payload Type Value
G.711 uLaw	0
G.723.1	4
G.711 aLaw	8
Comfort Noise	13
G.728	15
G.729AB	18
G.726-40	dynamic
G.726-32	2 or dynamic (depends on network)
G.726-24	dynamic
G.726-16	dynamic
G.729EG	dynamic
AMR	dynamic
EVRC	dynamic
QCELP	dynamic

When you use dynamic payload types, you need to specify the additional encoding information using the attribute for media announcement.

Attribute for Media Announcement

A media description may have any number of attributes ("a=" fields) which are media specific. The format of attribute is as follows.

```
a=<attribute>
```

or

```
a=<attribute>:<value>
```

Here are some examples of attributes:

Dynamic payload type. You specify the additional encoding information for dynamic payload type in the following format:

```
a=rtpmap:<payload type> <encoding name>/<clock rate>[/<encoding parameters>]
```

For audio streams, <encoding parameters> may specify the number of audio channels. This parameter may be omitted if the number of channels is one provided no additional parameters are needed.

Other media specific attribute. The use of other media specific attributes depends on the specification of the RTP payload format for the specific media type. Here are some example of attributes.

```
a=fmtp:<format> <format specific parameters>
```

This attribute allows parameters that are specific to a particular format to be conveyed in a way that SDP doesn't have to understand them. The format must be one of the formats specified for the media. Format-spe-

cific parameters may be any set of parameters required to be conveyed by SDP and given unchanged to the media tool that will use this format.

```
a=ptime:<packet time>
```

This gives the length of time in milliseconds represented by the media in a packet. This is probably only meaningful for audio data. It should not be necessary to know ptime to decode RTP or vat audio, and it is intended as a recommendation for the encoding/packetisation of audio. It is a media attribute, and is not dependent on charset.

Examples. Here are some examples of the attributes found in the default profile SDP description:

```
a=rtpmap:97 iLBC/8000
a=fmtp:97 mode=20
```

The above defines iLBC codec of 8000/sec sample rate with 20ms frame size.

```
a=rtpmap:98 telephone-event/8000
```

The above defines the DTMF relay using RFC2833.

Here is another example, enabling Voice Activity Detection (VAD) for G.711 ulaw, G.711 alaw, G.723.1a and G.729b, in addition to telephony events:

```
m=audio 0 RTP/AVP 0 8 4 18 98 13
a=rtpmap:0 PCMU/8000
a=rtpmap:8 PCMA/8000
a=rtpmap:4 G723/8000
a=fmtp:4 bitrate=6300;annexa=yes
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=yes
a=rtpmap:98 telephone-event/8000
a=fmtp:98 0-15
a=rtpmap:13 CN/8000
```

This one is for a direct SIP INVITE with T.38. This can be useful if you know this route will always be with fax. It also doesn't require any IVR resources to detect the fax tones:

```
m=image 0 udptl t38
a=T38FaxVersion:0
a=T38MaxBitRate:14400
a=T38FaxFillBitRemoval:0
a=T38FaxTranscodingMMR:0
a=T38FaxTranscodingJBIG:0
a=T38FaxRateManagement:transferredTCF
a=T38FaxMaxBuffer:400
a=T38FaxMaxDatagram:400
a=T38FaxUdpEC:t38UDPRedundancy
```

Configuring Network Access Points (NAPs)

The next step in configuring an ISDN-SIP gateway is to configure the Network Access Points (NAPs).

Allocating an ISDN NAP

1. Click **NAP** in the navigation panel:

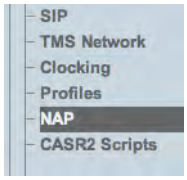

Figure 81. Menu: NAP

2. Click **Create New NAP**:

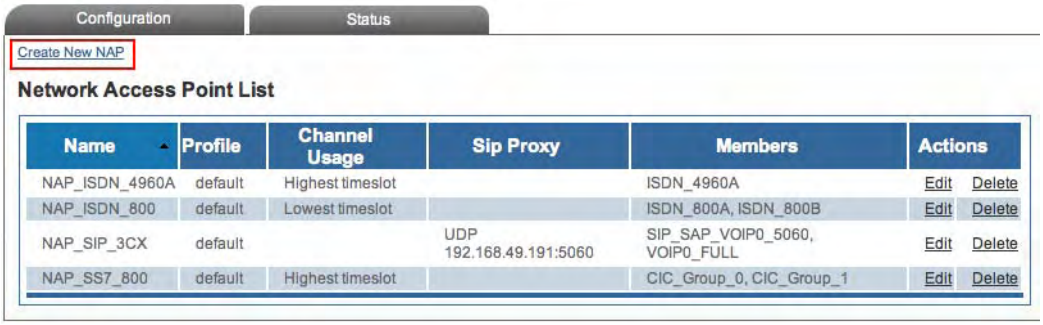

Figure 82. Edit NAP List

3. Click Create the new NAP:
   - Enter a **name** for the NAP
   - Click **Create**:

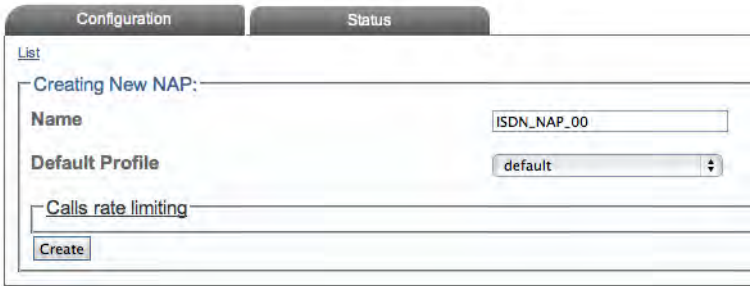

Figure 83. Creating a New ISDN NAP

4. Verify that the **NAP was successfully created** message appears:

Figure 84. Confirmation Message for New NAP

5. Associate an ISDN stack with the new NAP:
   – Select a **stack** from the ISDN stack list
   – Click the "<<" button to associate it with the NAP

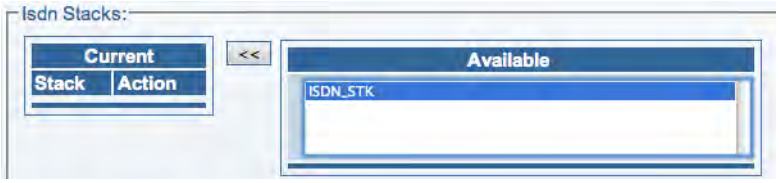

Figure 85. Associating ISDN Stacks with NAPs

Understanding Parameters for ISDN NAPs

Table 12. Configuration Parameters for NAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Allocating a SIP NAP

1. Click **NAP** in the navigation panel:

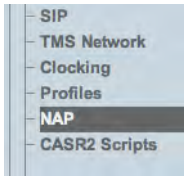

Figure 86. Menu: NAP

2. Click **Create New NAP**:

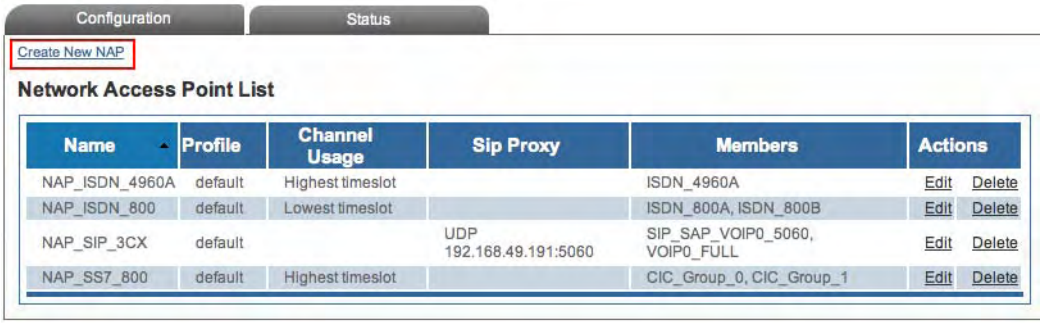

Figure 87. Edit NAP List

3. Click Create the new NAP:
   – Enter a **name** for the NAP
   – Click **Create**:

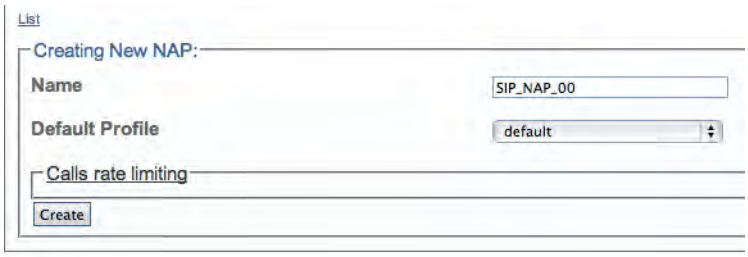

Figure 88. Creating a New SIP NAP

4. Verify that the **NAP was successfully created** message appears:

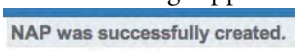

Figure 89. Confirmation Message for New NAP

5. Associate a SIP service access point with the new NAP:
   – Select a **SIP SAP** from the service access points list
   – Click the "<<" button to associate it with the NAP

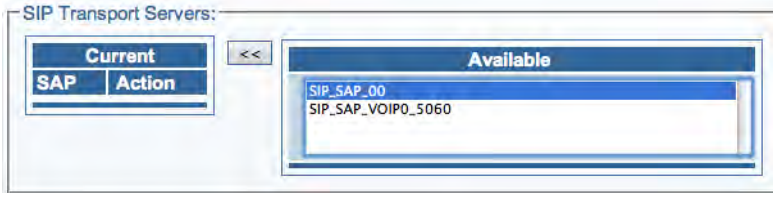

Figure 90. Associating SIP SAPs with NAPs

Understanding Parameters for SIP NAPs

Table 13. Configuration Parameters for SIP NAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Filtering Parameters	
Filter by destination address	Checked: Filters out incoming calls that do not have a proxy as their source address Unchecked: NAP may accept calls from any source IP
Filter by local port	Checked: Filters out calls that are not coming in on this local port Unchecked: NAP may accept calls on any configured local port
Local port	Indicates a port number to use when filtering by local port
Registration Parameters	
Register to proxy	Indicates that a NAP should be registered to a proxy server
Address to register	Indicates the address of a record the NAP uses when registering to a proxy server
Availability Detection Parameters	
Poll remote proxy	Enables proxy polling, in order to detect available proxies
Advanced Parameters	
Map any response to available status	Set to consider proxies as available on any response class (2xx/3xx/4xx). This is required when a peer proxy does not support being polled with the OPTIONS method.
183 triggers call process	Set to change the behavior of an inbound SIP 183 message from triggering a call alert signal to triggering a call progress signal.
Authentication Parameters	
Realm	Determines an authentication realm. This is typically a description of the computer or system being accessed, and for which user authentication will be provided.
User	Submits a user name for authentication
Password	Submits the password for a user name for authentication

Creating Call Routing Rules

You must set up call routing for your Smart Media system. Call routing refers to the ability to route calls based on criteria such as origin, destination, time of day, service provider rates, and more.

Creating a primary call route

1. Click **Routes** in the navigation panel:

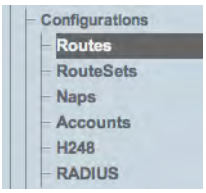

Figure 91. Configurations > Routes

2. Click **Create New Static Route**:

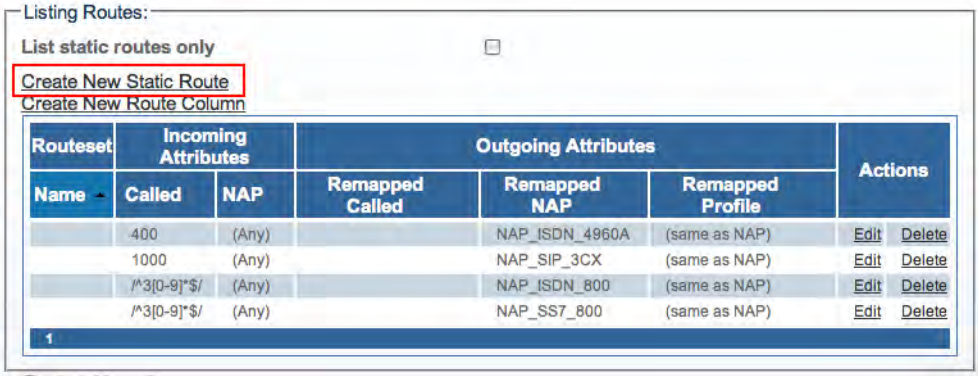

Figure 92. Static Routes List

3. Create the new route:
   - Enter a **RoutesetName** for the route
   - Select a **NAP**, or leave empty to match calls from any NAP
   - Select a **Remapped NAP**

– Click **Create**:

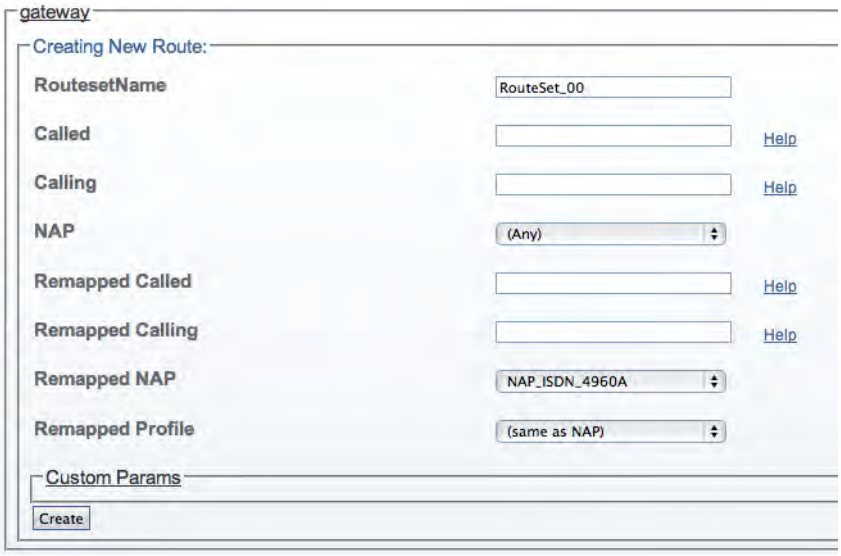

Figure 93. Creating a New Route

4. Verify that the **Route was successfully created** message appears, and that the new route is listed in the Routeset list:

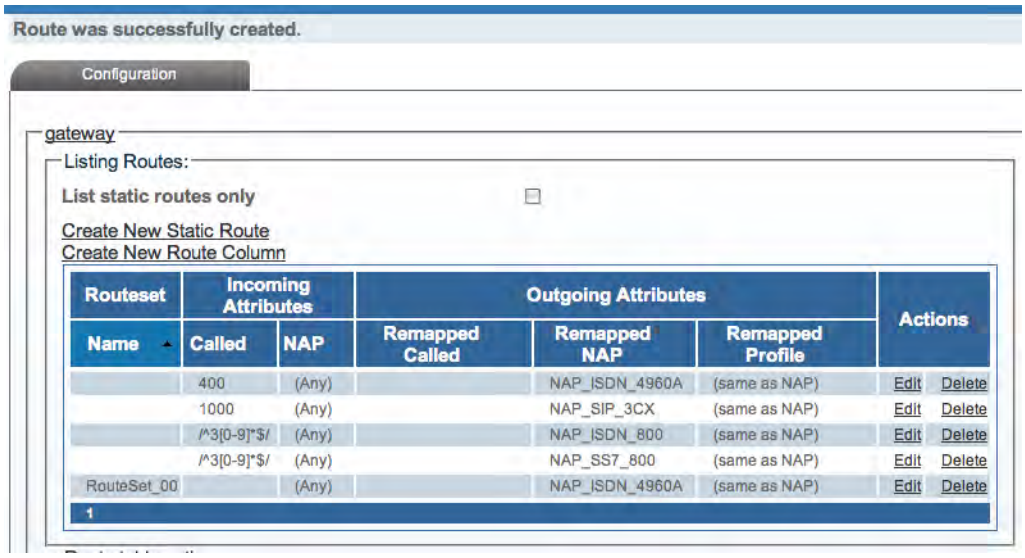

Figure 94. Confirmation Message for New Route

Understanding Parameters for Call Routing

Table 14. Configuration Parameters for Static Routes

Parameter	Description
Routeset Name	Used by the Web Portal to indicate a specific object or string in the system
Called	Sets a filter to which each called number of an incoming call will be compared to see if the call matches the route. The called number can be a fixed number but it can also be a regular expression (regex).
Calling	Sets a filter to which each calling number of an incoming call will be compared to see if the call matches the route. The called number can be a fixed number but it can also be a regular expression (regex).
NAP	Identifies a network access point (NAP) to be associated with a new object
Remapped NAP	Defines which outgoing NAP will be selected when a particular route is used

Viewing the Status of the TDM Lines

General and detailed status information about the TDM lines, also referred to as Adapters is accessible from the TDM Lines tab of the Global Status view.

General View

The TDM Lines general view, shown below, provides information about the physical line interfaces of a TDM module and the line services that they carry. From this view you can know the status of line interfaces and line services by seeing if they are up, down, defective, or in an alarmed state. Selecting an active link will display the detailed view for line interfaces and line services.

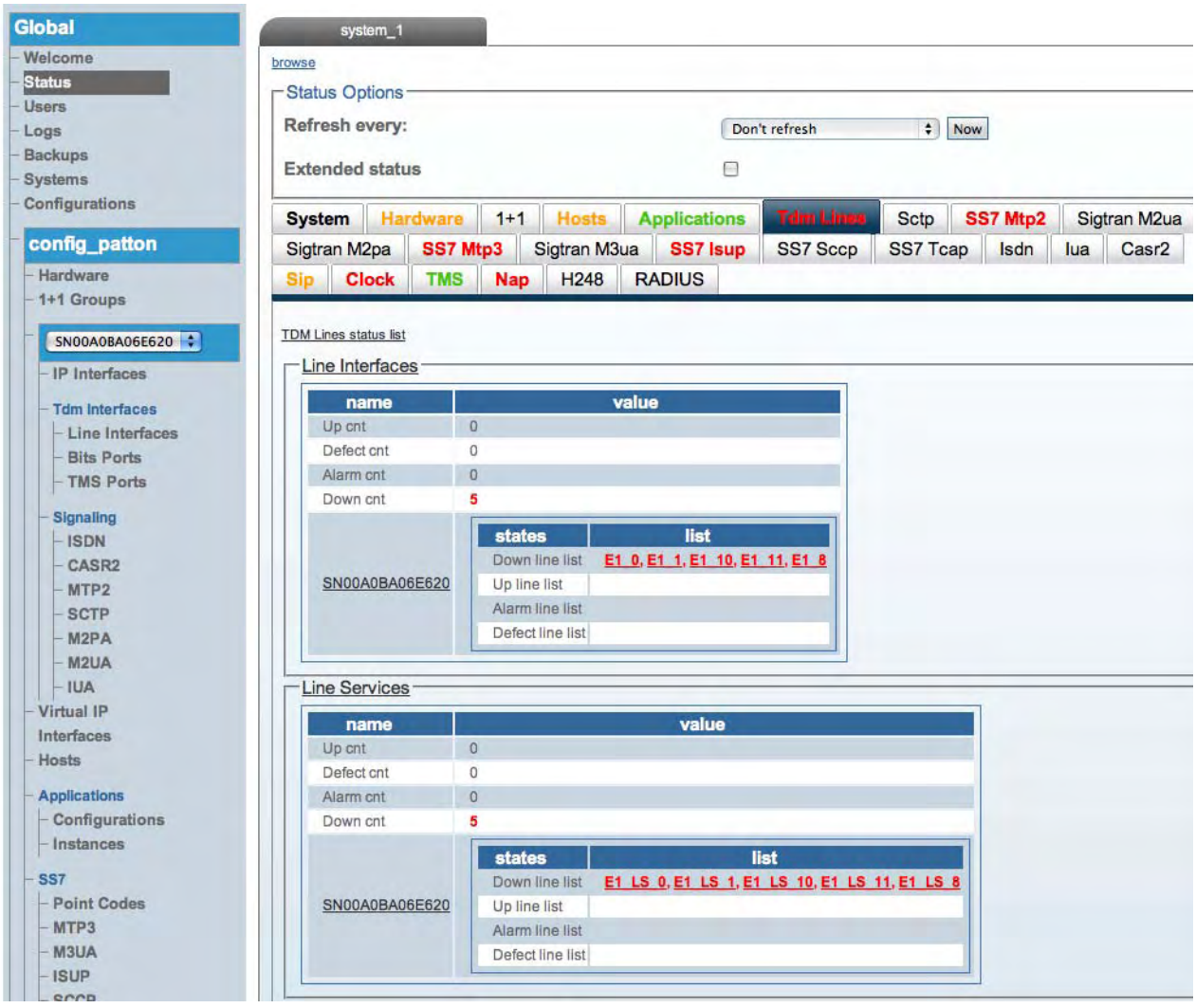

Figure 95. General View: Line Interfaces and Services

Detailed View

Line Interface

The detailed status view for each line interface allows you to reset status, or view extended status.

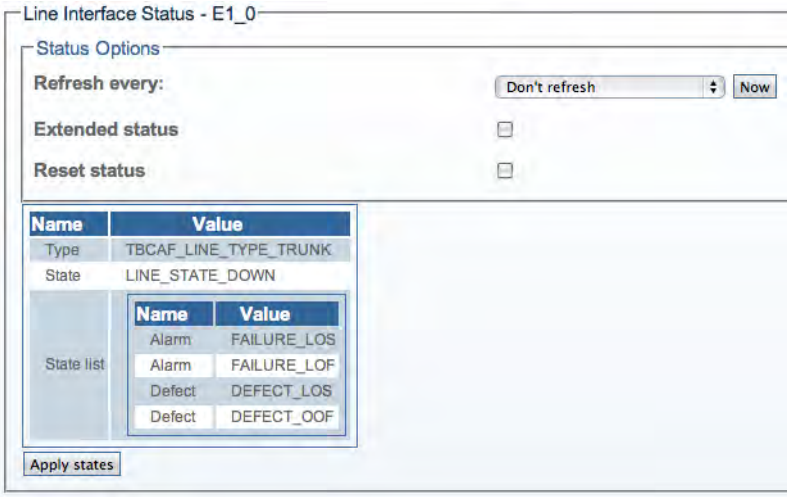

Figure 96. Detailed View: Line Interface

Line Service

The detailed status view for each line service allows you to reset the service's status, or to set the **loopback mode** in the **loopback** drop-down box.

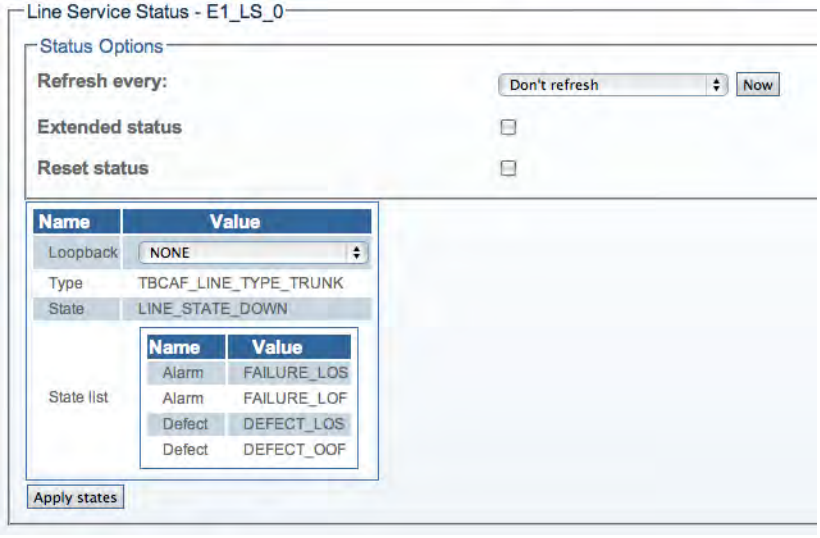

Figure 97. Detailed View: Line Service

Viewing the Status of the ISDN Stack

General and detailed status information about the ISDN stack is accessible from the ISDN tab of the Global Status view.

General View

The ISDN general view, shown below, lists the ISDN stacks and indicates which are up (online) or down (offline). This general view provides links to a detailed status view for the ISDN stacks on a specific Smart Media device.

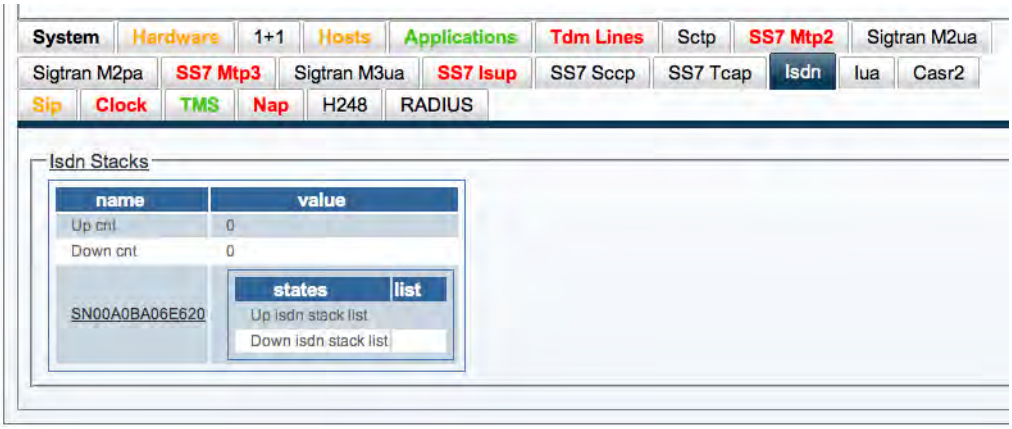

Figure 98. General View: ISDN Stack List

Timeslot States Diagram

This diagram indicates the timeslot slates for every line service associated with the NFAS stack.The legend below indicates whether the timeslot is:

- idle
- incoming
- incoming answered
- outgoing
- outgoing answered
- terminating
- reseting
- D-channel down
- B-channel down
- trunk alarm
- adapter disabled

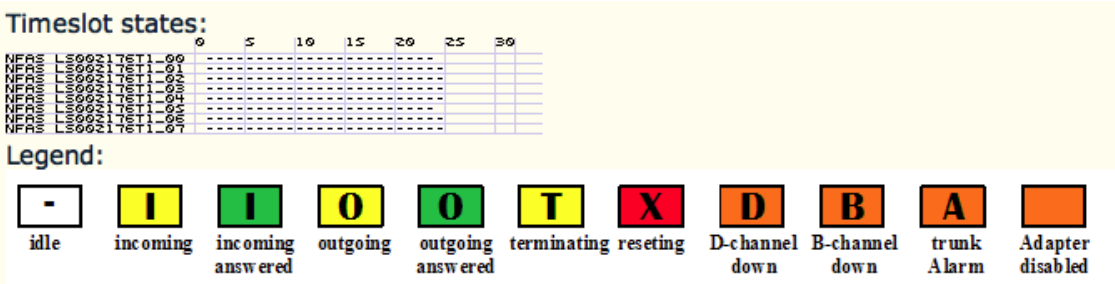

Figure 99. Timeslot States Diagram

Viewing the Status of the SIP Stack

General and detailed status information about the SIP stack is accessible from the SIP tab of the Global Status view.

General View

The SIP general view, shown below, provides a listing of the SIP stacks and the Smart Media devices on which they reside as well as SIP decode/encode failure counters. Selecting a SIP stack link from this view displays its detailed information.

Figure 100. General View: SIP Status

Detailed View

SIP Stack Configuration Status

The Stack tab of the SIP Configuration status screen, shown below, displays the detailed status counters of one SIP stack. Furthermore, the counters may be reset from this screen. To reset the counters of this screen:

1. Select the 'Reset status' check box.
2. Click 'Now'.

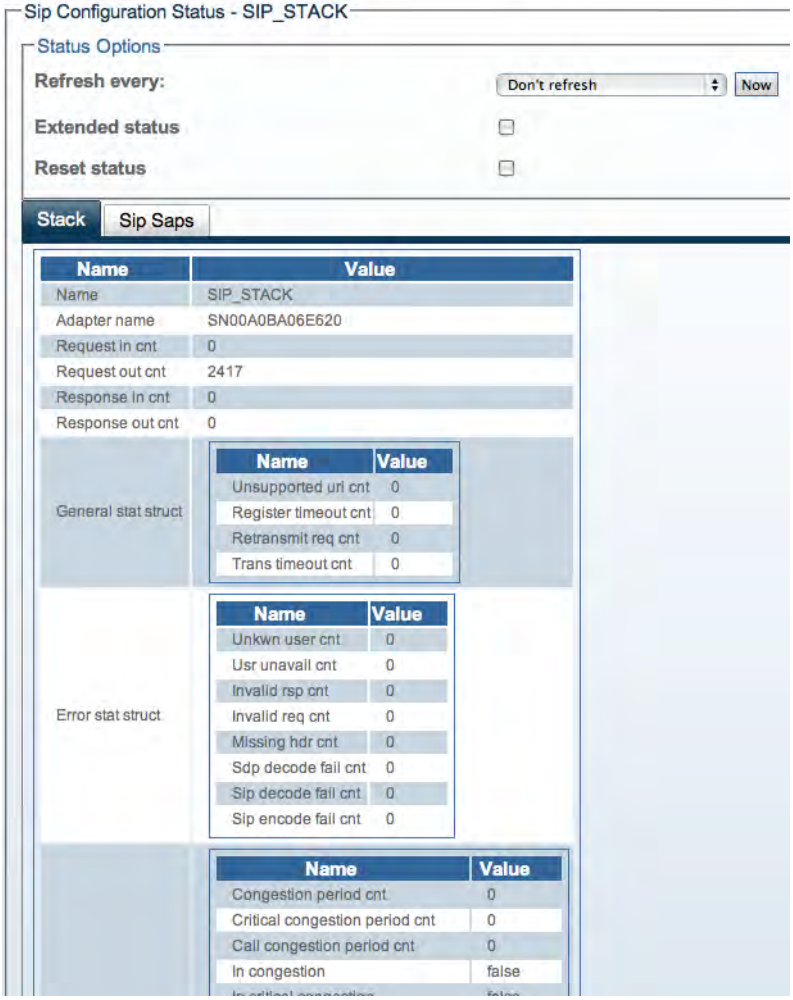

Figure 101. Detailed View: SIP Stack Configuration Status

The SIP SAPs tab of the SIP Configuration status screen, shown below, lists the configured SAPs of one SIP stack, as well as call transmit and receive counters. Selecting a SAP link from this screen displays its detailed view. Furthermore, the counters may be reset from this screen:

1. Select the 'Reset status' check box.

2. Click 'Now'.

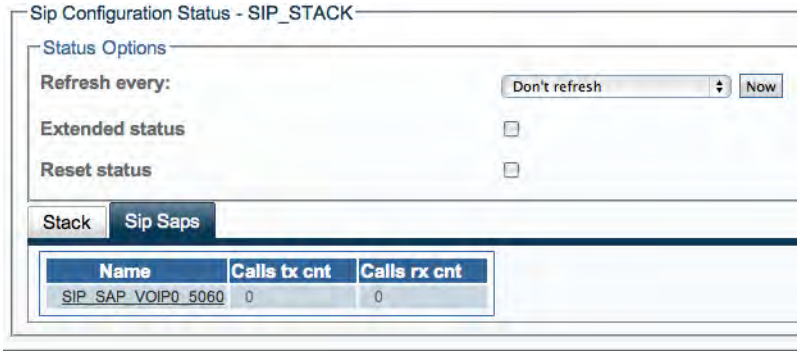

Figure 102. Detailed View: SIP SAPs Configuration Status

SIP SAP Detailed Status

The SIP SAP status screen, shown below, displays the call transmit and receive counters. The counters may be reset from this screen.To reset the counters of this screen

1. Select the 'Reset status' check box.
2. Click 'Now'.

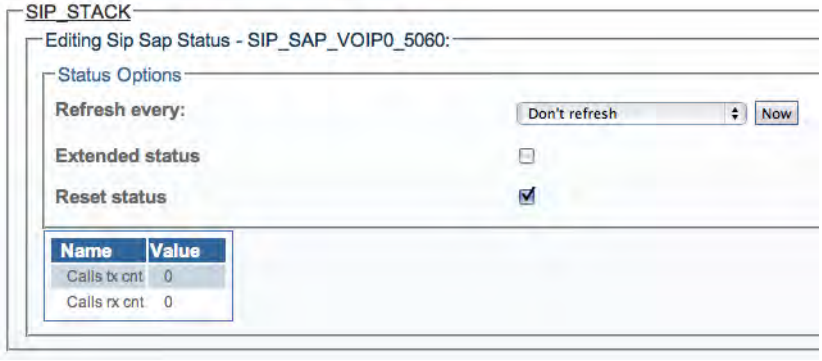

Figure 103. Detailed View: SIP SAP Status

Viewing the Status of the NAPs

General and detailed status information about the Network Access Points (NAPs) are accessible from the NAP tab of the Global Status view.

General View

The NAP general view, shown below, provides a listing of the configured NAPs. In addition, the number of assigned circuits, idle circuits, and the incoming/outgoing call counters are indicated for each NAP.

Figure 104. NAP Status

Chapter 4 Configuring SS7 Signaling

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Overview

The following sections explain how to configure the SS7 signaling protocol. Refer to the following sections to configure the SmartNode for SS7:

- "Configuring the MTP2 Layer" on page 82
- "Configuring the MTP3 Layer" on page 86
- "Configuring the ISUP Layer" on page 95

Configuring the MTP2 Layer

The Message Transfer Part Level 2 (MTP2) provides the data link layer functionality within the OSI model and is a service provider to the MTP3 link layer. The steps to configuring the MTP2 layer include creating a configuration and creating a MTP2 link.

Creating an MTP2 Configuration

1. Select **MTP2** from the navigation panel:

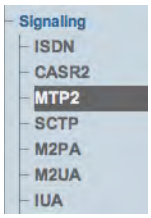

Figure 105. Signaling > MTP2

2. Create the new MTP2 configuration:
   - Enter a **name** for the configuration
   - Click **Save**

Figure 106. Creating the New MTP2 Configuration

3. Verify that the "**Mtp2Cfg was successfully updated**" message appears, and that the Enabled box is checked.

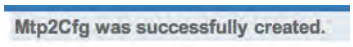

Figure 107. Successful Configuration Message

Understanding Parameters for MTP2 Configurations

Table 15. Configuration Parameters for New MTP2 Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Creating MTP2 Links

Now that you have created an MTP2 configuration, you must create the necessary MTP2 links. An MTP2 link is used to connect the MTP2 physical layer to a line service carrying SS7 signaling.

To create an MTP2 link:

1. Click **Create New Mtp2 Link** in the MTP2 configuration window:

Figure 108. MTP2 Link in MTP2 Configuration Window

2. Configure the new MTP2 link:
   - Enter a **name** for the new link
   - Select a **connection mode**
   - Select a **line service**
   - Assign **timeslots** to the link
   - Select a **protocol type**
   - Select a **DPC length**
   - Select a **timeslot rate**

– Click **Create**

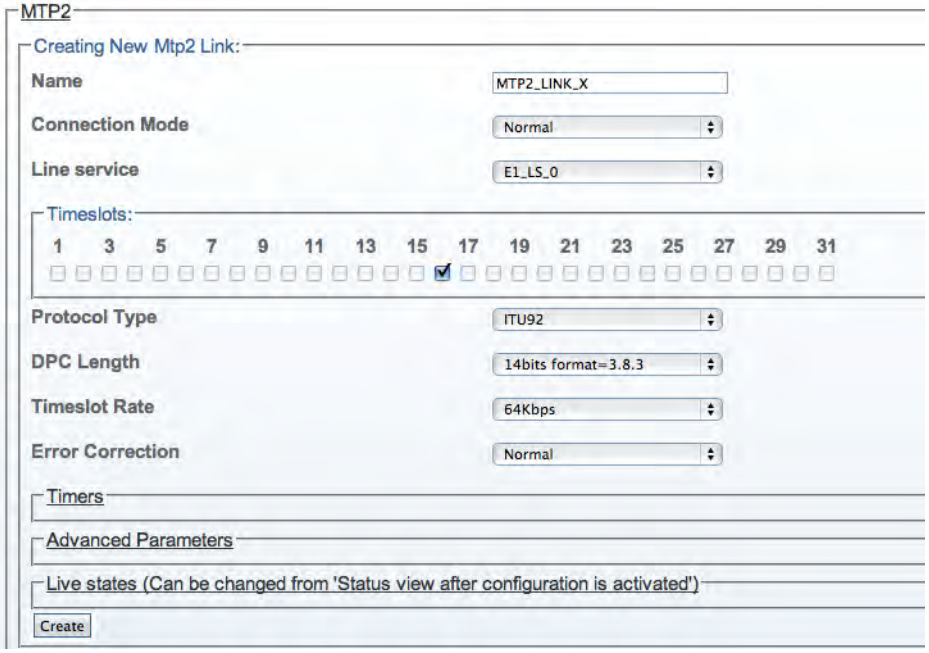

Figure 109. Creating a New MTP2 Link

3. Verify that the "**MTP2 link was successfully created**" message displays:

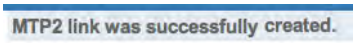

Figure 110. Successful Link Message

Understanding Parameters for MTP2 Links

Table 16. Configuration Parameters for New MTP2 Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Connection Mode	Defines the type of connection used in an SS7 system. Possible values: Normal/Hsl (High-speed link)
Line Service	Indicates which TDM line service is to be associated with the object being created
Timeslots	Allows the selection of individual voice or data channels of a line. Values for this parameter are listed as check boxes (ranging from 1-24). Individual timeslots can be selected by checking the boxes. Occasionally, all timeslots can be selected at once by clicking the Select All link.
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
DPC Length	Sets a format for the Destination Point Code (DPC) used by an object. Possible values: 14bits format=3.8.3/16bits format=7.4.5/24bits format=8.8.8
Timeslot Rate	Indicates the data rate for timeslots on a line. Possible values: 64 Kbps/56 Kbps/48 Kbps

Configuring the MTP3 Layer

The Message Transfer Part Level 3 (MTP3) provides message routing between signaling points in an SS7 network. Refer to the following sections for the steps to configuring the MTP3 layer:

- "Creating an MTP3 Configuration" on page 86
- "Creating an MTP3 Network" on page 87
- "Creating an MTP3 Point Code" on page 88
- "Creating an MTP3 Linkset" on page 90
- "Creating MTP3 Links" on page 91
- "Creating an MTP3 Route" on page 93

Creating an MTP3 Configuration

1. Select **MTP3** from the navigation panel:

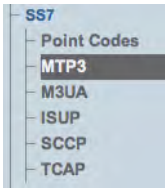

Figure 111. SS7 > MTP3

2. Configure the new MTP3 service:
   - Enter a **name** for the MTP3 configuration
   - Make sure the **Enabled** and **SSf Validation** boxes are checked
   - Select **SP** as the **signaling point type**
   - Select a **restart procedure**
   - Click **Create**

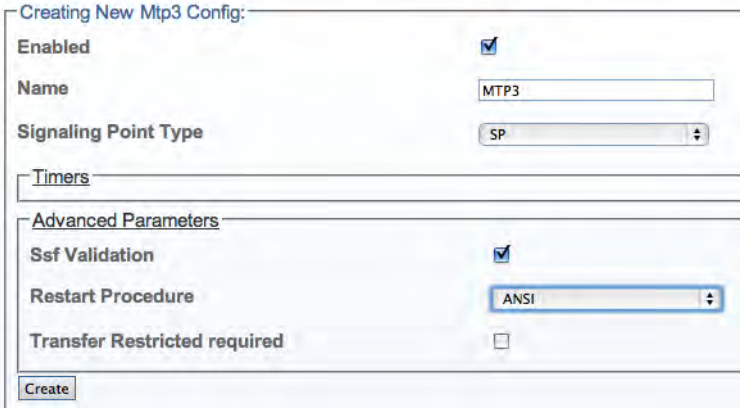

Figure 112. Creating the New MTP3 Configuration

3. Verify that the "**Mtp3Cfg was successfully created**" message appears, and that the Enabled box is checked.

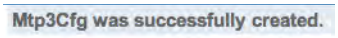

Figure 113. Successful Configuration Message

Understanding Parameters for MTP3 Configurations

Table 17. Configuration Parameters for New MTP3 Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Enabled	Indicates whether or not an object is to be implemented or not
Ssf Validation	Allows the activation of sub-service field validation for an MTP3 configuration
Signaling Point Type	Indicates the intended purpose of an SS7 MTP3 layer object. Possible values: SP (Signaling Point)/STP (Signal Transfer Point)
Restart Procedure	Indicates the standard by which a configuration will carry out a restart process. Possible values: None/ITU88/ITU92/ANSI

Creating an MTP3 Network

After you have created your system's MTP3 configuration, you must create a new MTP3 network. An MTP3 network is created to define its point codes, link sets and routes. This can be done from the MTP3 configuration information panel

To create an MTP3 network:

1. Click **Create New MTP3 Network** in the MTP3 configuration information panel:

Figure 114. MTP3 Networks in MTP3 Configuration Window

2. Configure the settings for the new network:
   - Enter a **name** for the network
   - Select a **sub service field**
   - Select a **link type**
   - Select the **SS7 DPC length**
   - Click **Create**

Figure 115. Creating a New MTP3 Network

3. Verify that the "**MTP3 network was successfully created**" message displays:

Figure 116. Successful Network Message

Understanding Parameters for MTP3 Networks

Table 18. Configuration Parameters for New MTP3 Networks

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Sub Service Field	Differentiates between national and international signals in MTP3 networks. Possible values: International/National/Nat. Reserved/Inter. Reserved
Link Type	Sets a protocol type for signaling links. Possible values: ANSI/ITU/CHINA/ANSI96
SS7 DPC Length	Sets a format for the Destination Point Code (DPC) used by an object. Possible values: 14bits format=3.8.3/16bits format=7.4.5/24bits format=8.8.8

Creating an MTP3 Point Code

After you have configured your MTP3 network, you must create point codes for your system. Point codes are used to define the Smart Media system network, the adjacent network and the target network so that calls are properly routed from one network to the next.

To create SS7 originating (OPC) and destination (DPC) point codes:

1. Select **Point Codes** from the navigation panel:

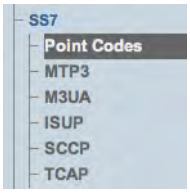

Figure 117. SS7 > Point Codes

2. Click **Create New Point Code**:

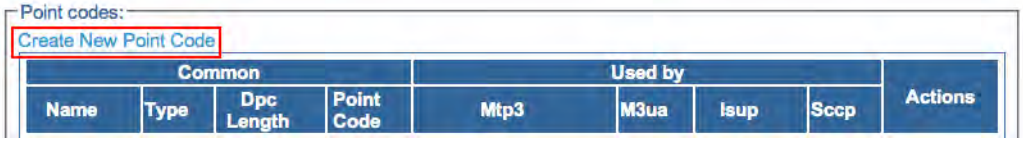

Figure 118. Point Codes

3. Configure the new point code:
   - Enter a **name** for the point code
   - Select a point code **type** (select type-specific parameters)
   - Select a point code **length** (14, 16, 24 bits)
   - Enter a **point code**
   - Click **Create**

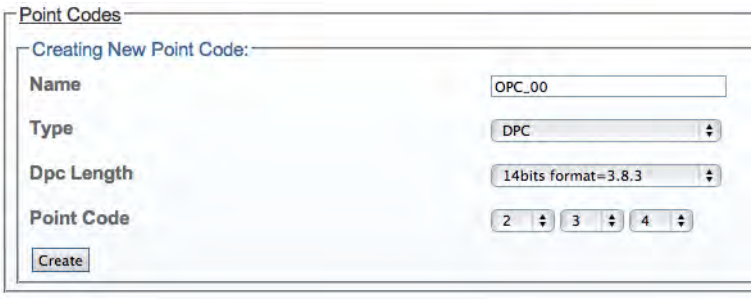

Figure 119. Creating the New MTP3 Point Code

4. Verify that the "**Mtp3PointCode was successfully created**" message displays, and the new point code appears in the **Point Codes** list:

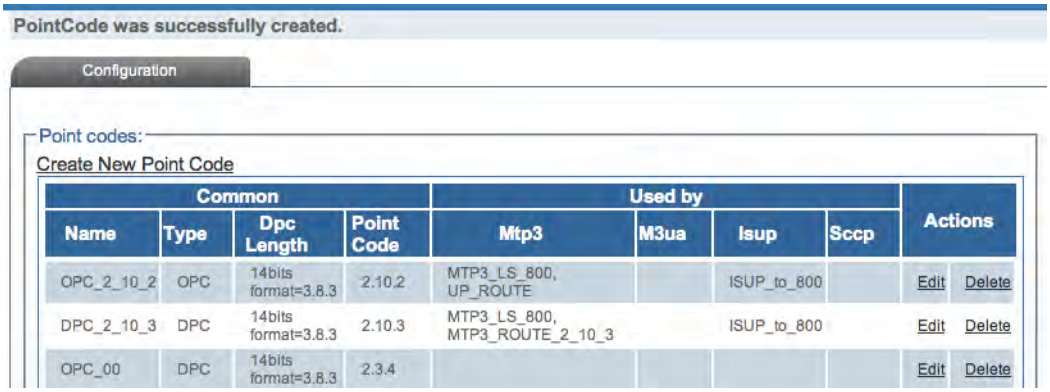

Figure 120. Successful Point Code Message

Understanding Parameters for SS7 Point Codes

Table 19. Configuration Parameters for New Point Codes

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type	Defines the type of point code being created. Possible values: OPC/DPC/Mask
DPC Length	Sets a format for the Destination Point Code (DPC) used by an object. Possible values: 14bits format=3.8.3/16bits format=7.4.5/24bits format=8.8.8
Point Code	Defines a point code by assigning it numerical values.

Creating an MTP3 Linkset

After you have created an MTP3 network, you are ready to create an MTP3 linkset. This can be done through the MTP3 network configuration window. A linkset is used to logically combine multiple MTP3 links going to the same DPC into a single entity. One linkset could be the links between a point code identifying the Smart Media SS7 node and a point code identifying the adjacent SS7 equipment.

To create an MTP3 linkset:

1. Click **Create New Mtp3 Linkset** in the MTP3 Network configuration panel:

Figure 121. MTP3 Linksets

2. Configure the new linkset:
   - Enter a **name** for the linkset
   - Select an **origin point code (OPC)**
   - Select an **adjacent point code**
   - Make sure the desired state is set to **Active**
   - Click **Create**

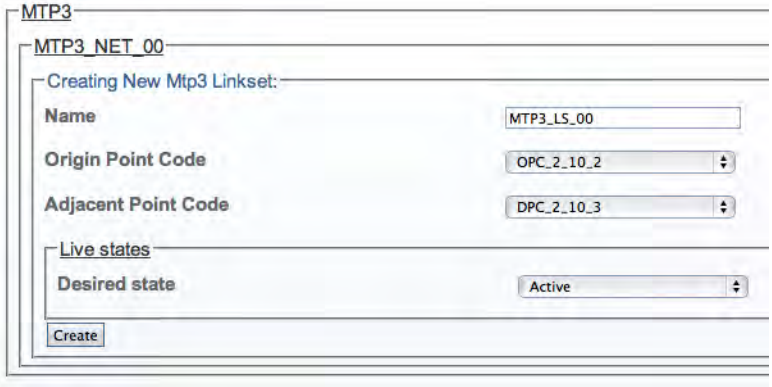

Figure 122. Creating the New MTP3 Linkset

3. Verify that the "**Mtp3Linkset was successfully created**" message displays:

Figure 123. Successful Linkset Message

Understanding Parameters for MTP3 Linksets

Table 20. Configuration Parameters for New MTP3 Linksets

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Origin Point Code	Associates an object with an originating point code (OPC)
Adjacent Point Code	Associates an object with an adjacent point code
Desired State	Indicates whether an object is to be active or inactive upon creation Possible values: Active/Inactive

Creating MTP3 Links

After you have created an MTP3 linkset, you must create MTP3 links for your system. An MTP3 link is used to connect with an MTP2 link; they are connected in a one-to-one fashion. To create an MTP3 link:

1. Click **Create New Mtp3 Link** in the MTP3 linkset configuration window:

Figure 124. MTP3 Links

2. Configure the new MTP3 link:
   - Enter a **name** for the link
   - Under **Type of link to bind**, select **MTP2**
   - Select an **MTP2 link**

– Click **Create**

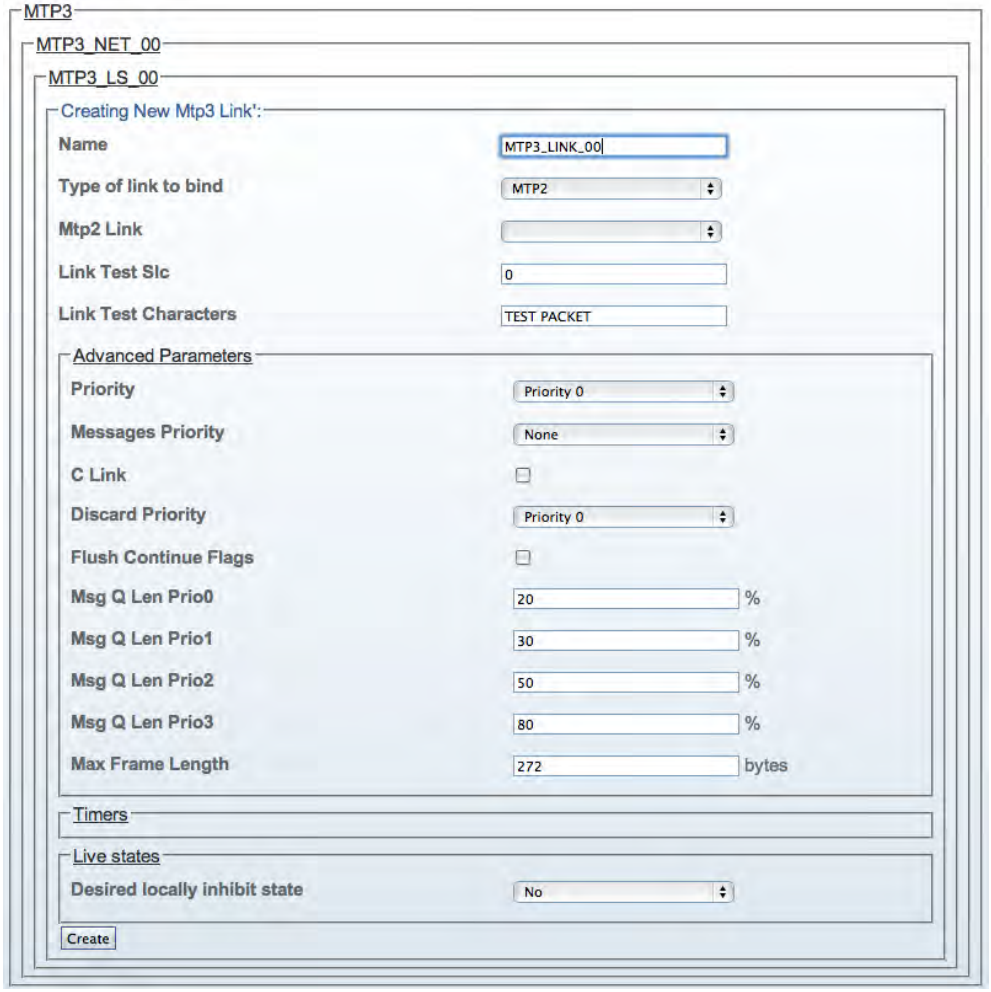

Figure 125. Creating the New MTP3 Link

3. Verify that the "**Mtp3Link was successfully created**" message displays:

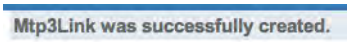

Figure 126. Successful MTP3 Link Message

Understanding Parameters for MTP3 Links

Table 21. Configuration Parameters for New MTP3 Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Link to Bind	Indicates the type of link to bind when creating an MTP3 link Possible values: MTP2/M2PA/M2UA
Links	
MTP2	Selects an MTP2 link to bind to an object
M2PA	Selects an M2PA (MTP2 Peer-to-Peer Adaptation Layer) link to bind to an object
M2UA	Selects an M2UA (MTP2 User Adaptation Layer) link to bind to an object

Creating an MTP3 Route

MTP3 routes are built to route traffic from previously created point codes using linksets. One route is created for each previously defined point code.

To create an MTP3 route:

1. Click **Create New Mtp3 Route** in the MTP3 network configuration window::

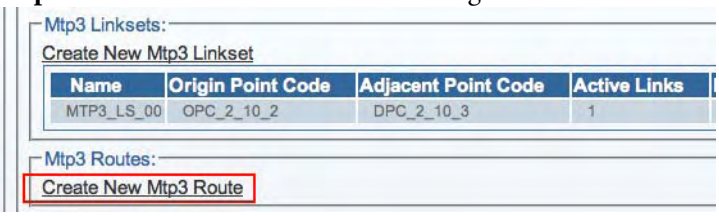

Figure 127. MTP3 Routes

2. Configure the new MTP3 route:
   - Enter a **name** for the route
   - Select a **point code** for the route
   - Select a **restart procedure**
   - Select a **point type**
   - Check the **Route to Adjacent** box, if this route is directed to an adjacent network

– Click **Create**

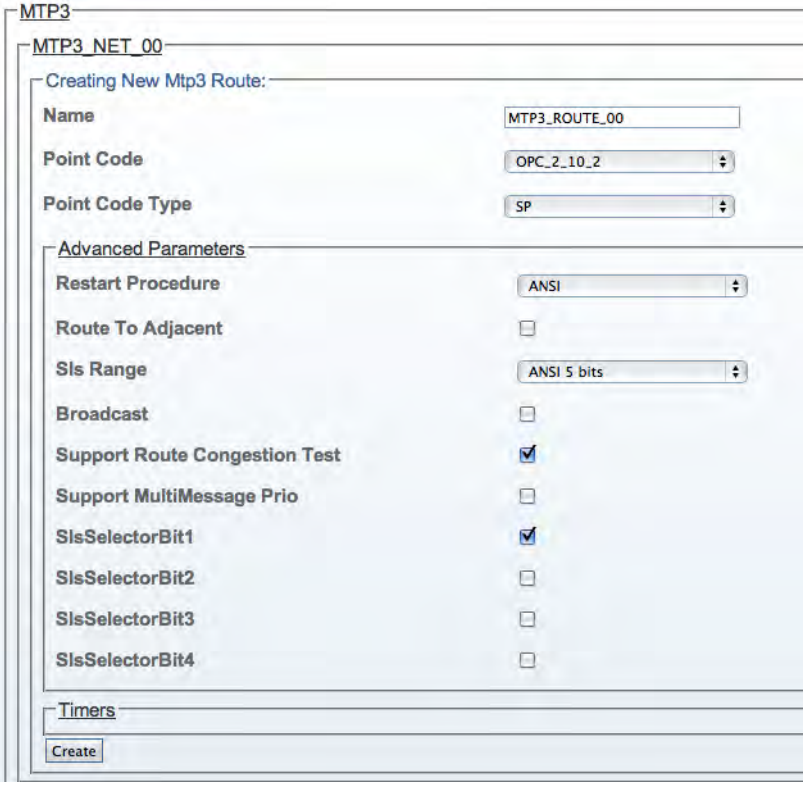

Figure 128. Creating the New MTP3 Route

3. Verify that the "**Mtp3Route was successfully created**" message displays:

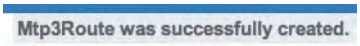

Figure 129. Successful MTP3 Route Message

4. Associate the newly created route with a linkset:

– Select a linkset from the list provided at the bottom of the route configuration window

– Click the "<<" button to associate the linkset with the newly created route

Figure 130. Associating Routes with Linksets

Understanding Parameters for MTP3 Routes

Table 22. Configuration Parameters for New MTP3 Routes

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Point Code	Associates a point code with the MTP3 route
Restart Procedure	Indicates the standard by which a configuration will carry out a restart process. Possible values: None/ITU88/ITU92/ANSI
Point Type	Indicates the intended purpose of an SS7 MTP3 layer object. Possible values: SP (signaling Point)/STP (Signal Transfer Point)
Route to Adjacent	Used when an MTP3 route is directed toward an adjacent network

Configuring the ISUP Layer

The ISDN User Part (ISUP) is the highest layer in the SS7 signaling stack and is responsible for the handling of calls.. Refer to the following sections for the steps to configuring the ISUP layer:

- "Creating an ISUP Stack" on page 95
- "Creating an ISUP Network" on page 97
- "Creating an ISUP User Part" on page 98
- "Creating an ISUP Interface" on page 100

Creating an ISUP Stack

After you have configured the MTP3 layer of your SS7 system, you must create an ISDN user part stack. To create an ISUP stack:

1. Select **ISUP** from the navigation panel:

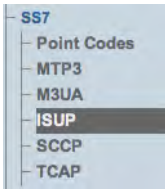

Figure 131. SS7 > ISUP

2. Click **Create New Stack**:

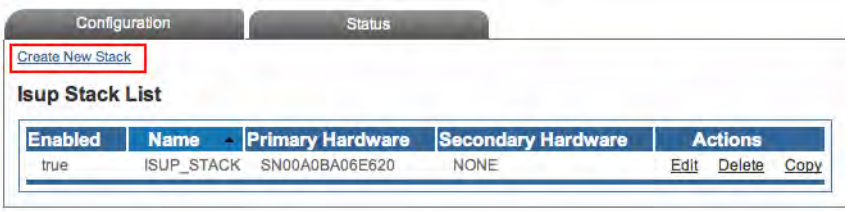

Figure 132. ISUP Stack List

3. Configure the new MTP3 service:
   - Make sure the box labeled **Enabled** is checked
   - Enter a **name** for the stack
   - Select a **primary hardware adapter**
   - Select a **secondary hardware adapter**
   - Click **Create**

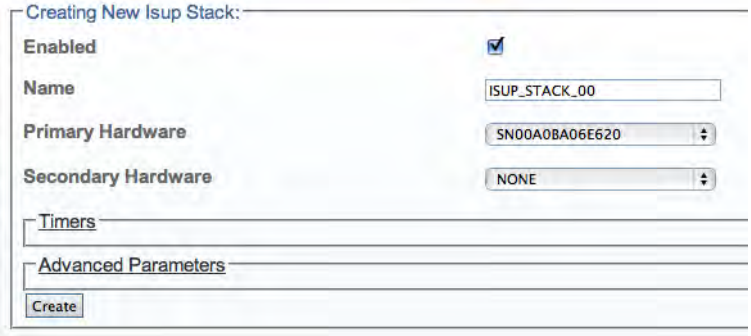

Figure 133. Creating the New ISUP Stack

4. Verify that the "**IsupStack was successfully created**" message displays.

Figure 134. Successful ISUP Stack Message

Understanding Parameters for ISUP Stacks

Table 23. Configuration Parameters for New ISUP Stack

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Primary Hardware Adapter	Identifies a main Smart Media hardware device to run an ISUP stack
Secondary Hardware Adapter	Identifies a secondary (backup) Smart Media hardware device to run an ISUP stack

Creating an ISUP Network

After you have created an initial ISUP stack, you must create a new ISUP network. The ISUP network tells the ISUP protocol layer about a collection of SS7 nodes that are accessible through MTP3 or M3UA. Based upon your system configuration, one or more ISUP networks are created. Repeat this section for as many networks as you require.

Note An ISUP network can be used by multiple ISUP interfaces even if they are members of different ISUP userpart (e.g., to support multiple switch variants for a single SS7 network).

To create an ISUP network:

1. Click "**Create New ISUP Network**" in the ISUP stack configuration window:

Figure 135. Editing ISUP Networks

2. Configure the new ISUP network:
   - Enter a **name** for the network
   - Select **MTP3** or **M3UA** as the **type of network to bind**
   - Select a **MTP3 network** or a **M3UA network**
   - Click **Create**

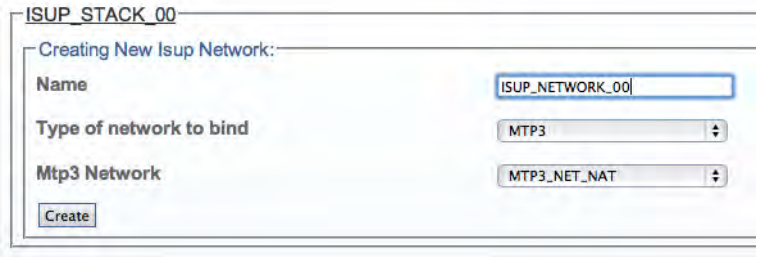

Figure 136. Creating the New ISUP Network

3. Verify that the "**IsupNetwork was successfully created**" message displays.

Figure 137. Successful ISUP Network Message

Understanding Parameters for ISUP Networks

Table 24. Configuration Parameters for New ISUP Network

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Network to Bind	Indicates the type of network to associate with an ISUP Network Possible values: MTP3/M3UA
Networks	
MTP3 Network	Associates an MTP3 network with a higher level network in an SS7 system
M3UA Network	Associates an MTP3 network with a higher level network in an SS7 system

Creating an ISUP User Part

After you have created your ISUP network, you must create a new ISUP user part. The user part is the container for the multiple ISUP interfaces. One user part is required for each protocol variant.

Multiple ISUP user parts can be instantiated within a single ISUP protocol layer. This allows a user application to interface with multiple SS7 ISUP protocol variants at the same time. Only one ISUP user part is required for a specific variant as it can be assigned to multiple ISUP networks.

A user part can easily be seen as a protocol variant that a host application wants to use on the SS7 network.

To create an ISUP user part:

1. Click **Create New Isup Userpart** in the ISUP stack configuration window:

Figure 138. Editing Userparts

2. Configure the new ISUP user part:
   - Enter a **name** for the user part
   - Select a **protocol variant** (depending on location)
   - Select an **MTP3 sub service field** (the same that was previously set for MTP3)
   - Select an **address indicator type**
   - Select a **Numbering Plan**

– Click **Create**

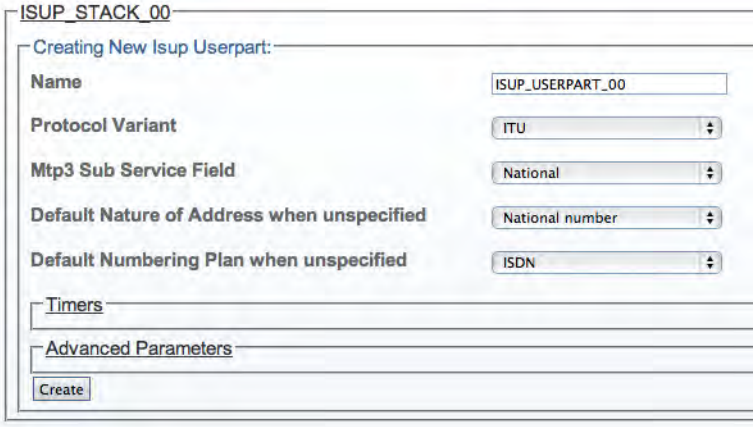

Figure 139. Creating the New ISUP User Part

3. Verify that the "**IsupUserpart was successfully created**" message appears, and that the Enabled box is checked.

Figure 140. Successful ISUP User Part Message

Understanding Parameters for ISUP User Parts

Table 25. Configuration Parameters for New ISUP User Part

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
Sub Service Field	Differentiates between national and international signals in MTP3 networks. Possible values: International/National/Nat. Reserved/Inter. Reserved
Address Indicator Type	Assigns a default address value in ISUP user parts, when unspecified. Possible values: Not Present/Subscriber Number/National Number/International Number
Numbering Plan	Assigns a default numbering plan in ISUP user parts, when unspecified. Possible values: Unknown ISDN Telephony Data Telex National Private Reserved

Creating an ISUP Interface

After you have created an ISUP user part to contain them, you must create new ISUP interfaces.

The ISUP interface creates a binding within the ISUP layer of a particular variant, a specific network, and an OPC/DPC pair to which circuits can be assigned. The ISUP interface contains the circuit identifier codes (CICs) within the ISUP user part. One interface is created for each similar grouping of CICs within one user part protocol variant.

To create an ISUP interface:

1. Click **Create New Isup Interface** in the ISUP stack configuration window:

Figure 141. Editing ISUP Interfaces

2. Configure the new ISUP interface:
   - Enter a **name** for the interface
   - Select an **ISUP user part**
   - Select an **ISUP network**
   - Select a **trunk type**
   - Select an **originating point code (OPC)**
   - Select a **destination point code (DPC)**
   - Click **Create**

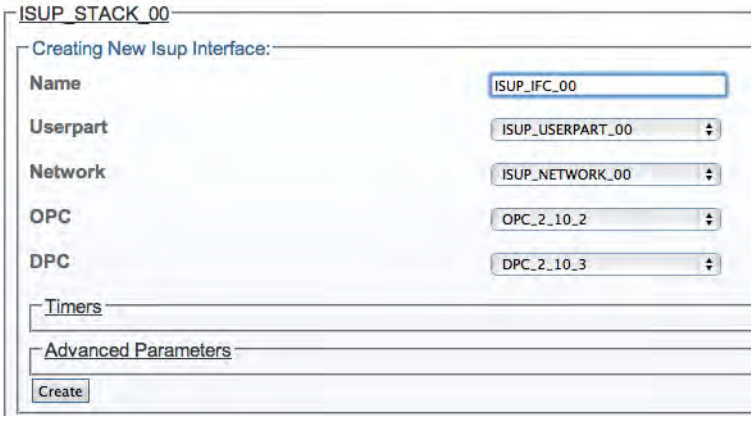

Figure 142. Creating the New ISUP Interface

3. Verify that the "**IsupInterface was successfully created**" message displays.

Figure 143. Successful ISUP Interface Message

Understanding Parameters for ISUP Interfaces

Table 26. Configuration Parameters for New ISUP Interface

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
ISUP User Part	Associates an ISUP user part with an ISUP interface
ISUP Network	Associates an ISUP network with an ISUP interface
OPC	Associates an object with an originating point code (OPC)
DPC	Associates an object with a destination point code (DPC)

Viewing the Status of SS7 MTP2 Links

General and detailed status information about the SS7 MTP2 stack is accessible from the SS7 MTP2 tab of the Global Status view.

General View

The SS7 MTP2 general view provides information about the health of the MTP2 links. From this view you can know the status of MTP2 links by seeing if they are up or down. Selecting an active link will display the detailed view for that line.

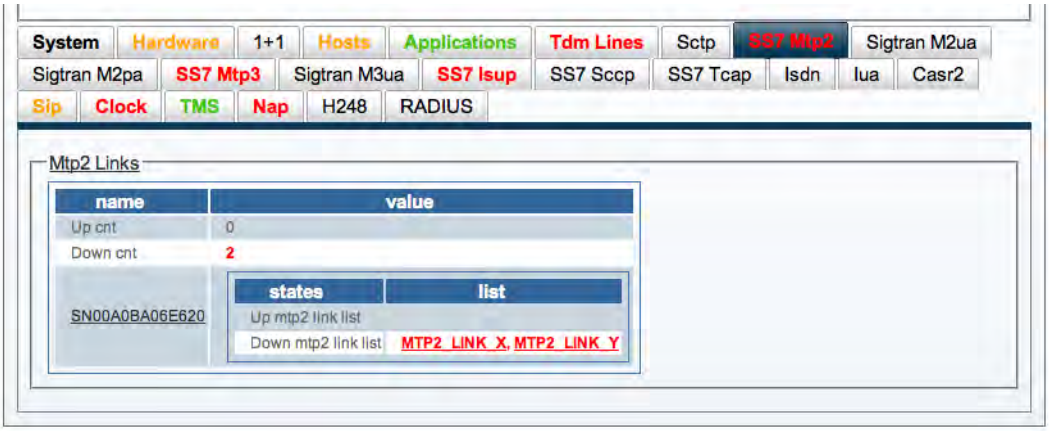

Figure 144. General View: SS7 MTP2

Detailed View

MTP2 Link Detailed Status

The MTP2 Link detailed status screen enables you to view the state of an MTP2 link and to modify the datalink state value for testing purposes.

To modify the datalink state of an MTP2 link:

1. Select a value from the Datalink state combo box.
2. Click 'Apply States' to change the state.

To reset the counters of this screen, do the following:

1. Select the 'Reset' status check box.
2. Click 'Now'.

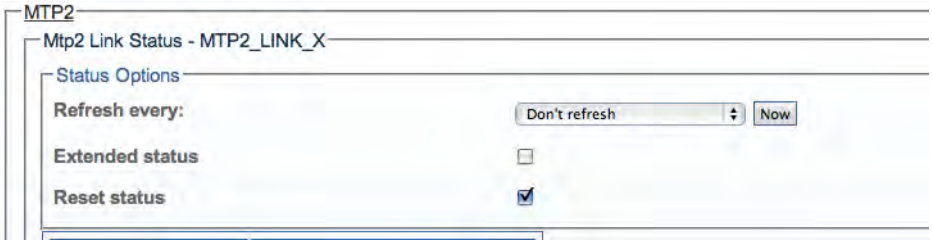

Figure 145. Detailed View: MTP2 Link Status

MTP2 Link Listing

The MTP2 Link listing, shown below, displays an expanded listing of each MTP2 link. In addition to indicating whether a link is up or down, this listing provides supplemental information. Selecting an MTP2 link from this listing displays its detailed information. For a full listing of all MTP2 Links, select MTP2 from the navigation panel, and choose the Status tab in the control panel.

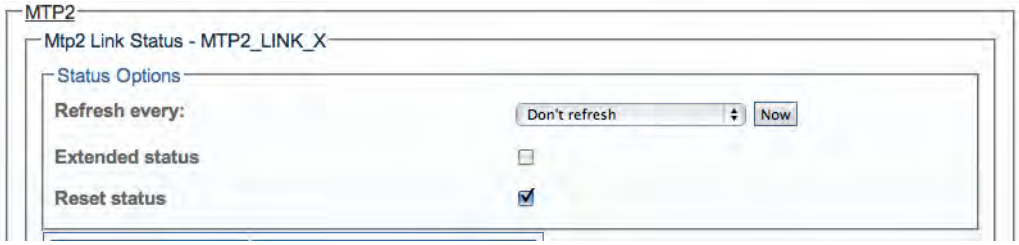

Figure 146. Detailed View: MTP2 Link Listing

Viewing the Status of SS7 MTP3 Links

General and detailed status information about the SS7 MTP3 stack is accessible from the SS7 MTP3 tab of the Global Status view.

General View

The SS7 MTP3 general view, shown below, provides information about the health of the MTP3 links. From this view you can know the status of MTP3 links by seeing if they are up or down. This general view provides links to other detailed status screens for the MTP3 configuration, its links, linksets, and routes.

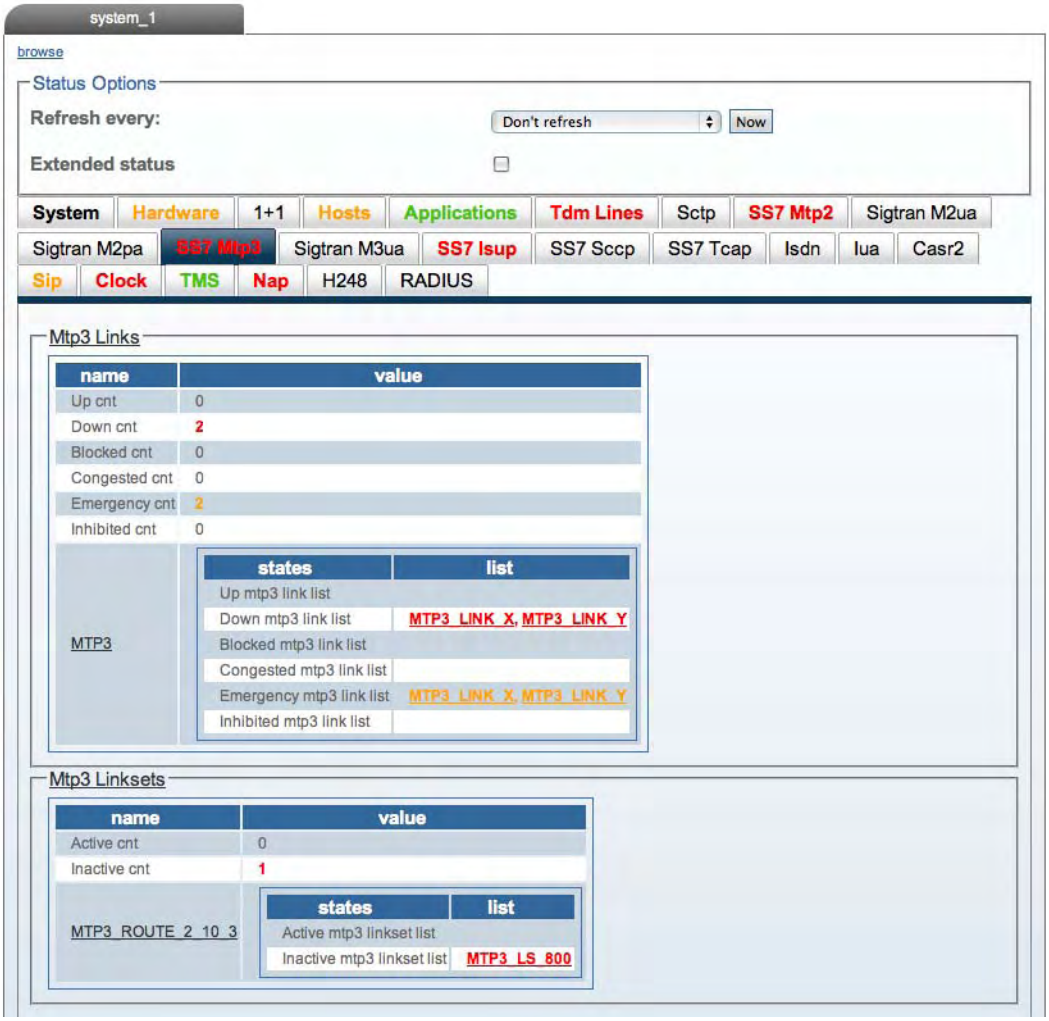

Figure 147. General View: SS7 MTP3

Detailed View

The SS7 MTP3 detailed view groups status information into four screens, as follows:

- "MTP3 Stack Status" on page 105
- "MTP3 Linkset" on page 105
- "MTP3 Link" on page 107

MTP3 Stack Status

The MTP3 Stack Status, shown below, displays counters for a variety of status messages that in turn are used to indicate the current health of the MTP3 stack. This status screen is accessed from the MTP3 CFG 0 link of the General view, shown in the figure above. Counters may be reset from this screen to determine if a problem persists.

To reset the counters of this screen:

1. Select the 'Reset status' check box.
2. Click 'Now'.

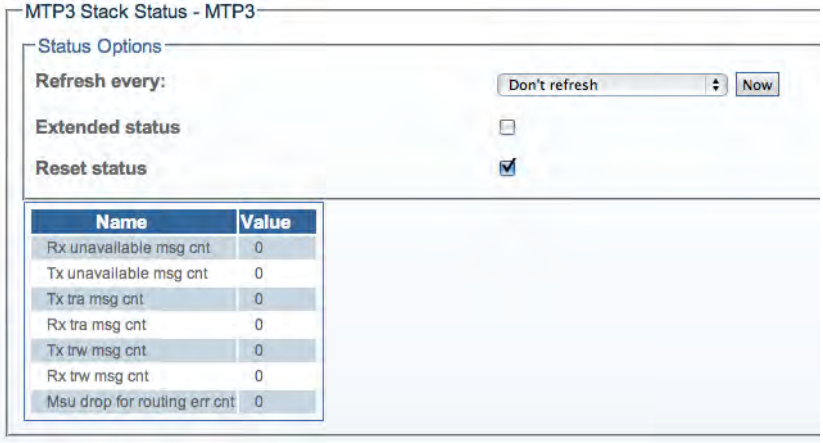

Figure 148. Detailed View: MTP3 Stack Status

MTP3 Linkset

The Linksets status screen, accessible from a linkset link shown in MTP3 Network Status: Linksets Tab, groups status information under two tabs as follows:

- Linksets
- Links

MTP3 Linkset Status: Linksets Tab. The Linkset tab of the MTP3 Network status screen, shown below, displays the detailed information of one MTP3 linkset, such as linkset state, configured values, and counters. From this screen the desired linkset state may be set to Active or Inactive, and counters may be reset.

To reset the counters of this screen:

1. Select the 'Reset status' check box.
2. Click 'Now'.

To modify the Desired Linkset state:

1. Select a linkset state.
2. Click Apply States.

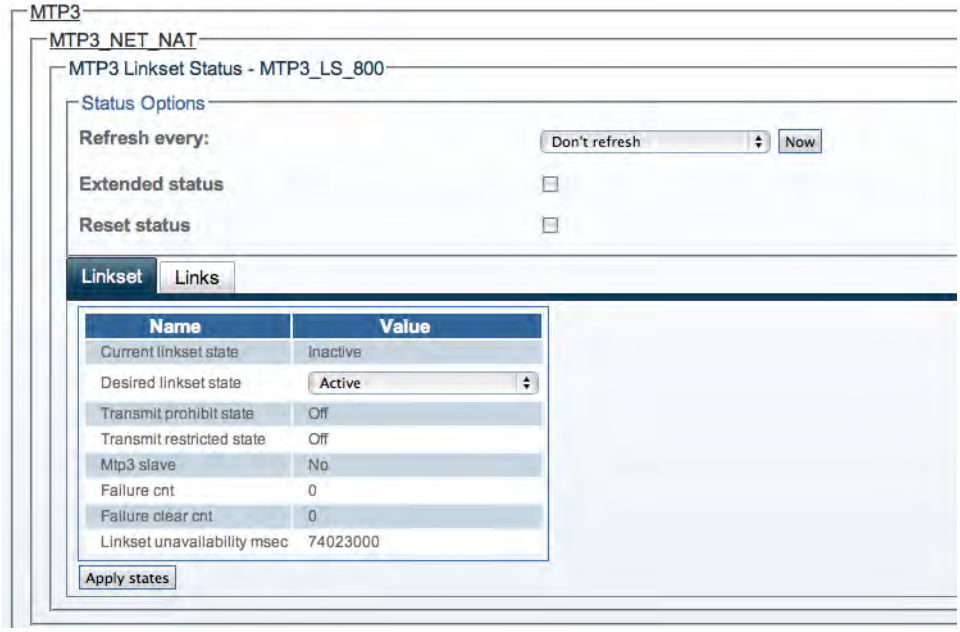

Figure 149. Detailed View: MTP3 Linkset Status-Linkset Tab

MTP3 Linkset Status: Links Tab. The Links tab of the MTP3 Network status screen, shown below, displays a listing of the MTP3 links that are used by a specific MTP3 Linkset. In the listing, the status of each link is displayed as well as a link congestion timer. Accessing a particular MTP3 Link displays its detailed information.

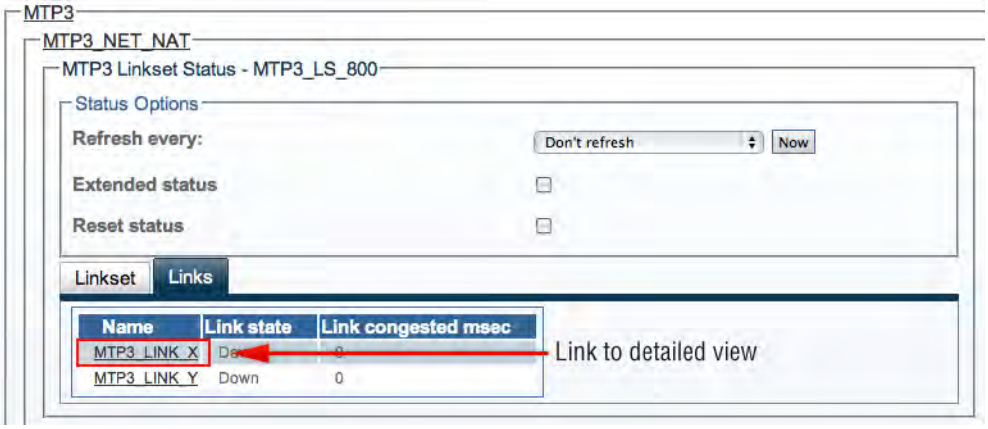

Figure 150. Detailed View: MTP3 Linkset Status-Links Tab

MTP3 Link

The MTP3 Link status screen, shown below, displays the detailed information about one MTP3 link, such as the link state, configured values, and counters. Hovering over fields causes help bubbles to display. For example, in the figure below, an information bubble is displayed for a counter of the number of invalid Protocol Data Units (PDUs) received.

To reset the counters of this screen:

1. Select the 'Reset status' check box.
2. Click 'Now'

To modify the Desired Locally Inhibited state:

1. Select a value.
2. Click 'Apply States'.

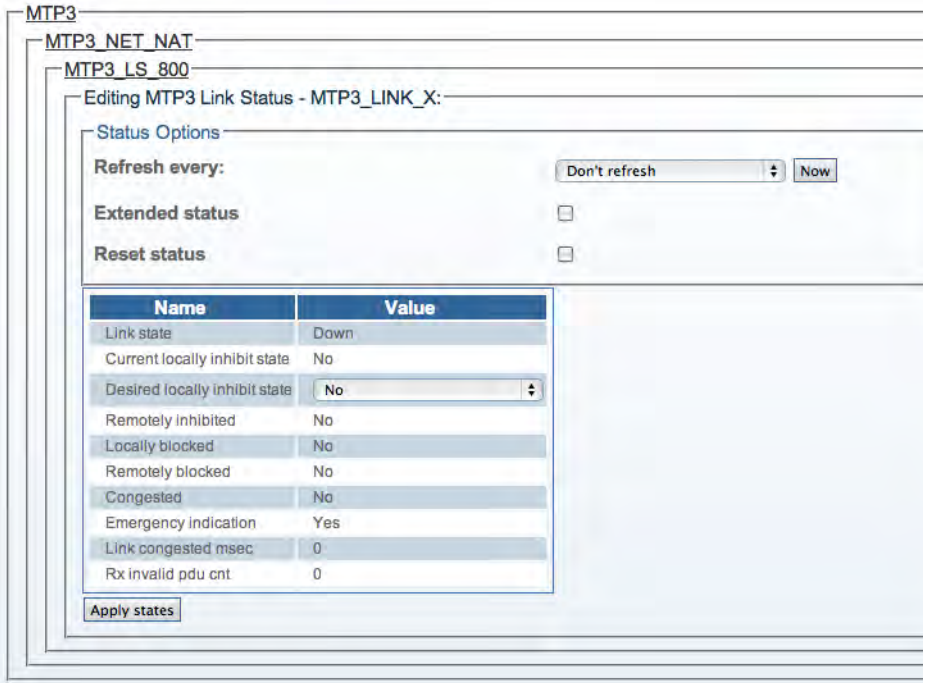

Figure 151. Detailed View: MTP3 Link Status

Viewing the Status of SS7 ISUP Stacks

General and detailed status information about the SS7 ISUP stack is accessible from the SS7 ISUP tab of the Global Status view.

General View

The SS7 ISUP general view, shown below, lists ISUP stacks and indicates which are active, in standby, or out of service (Oos). In addition, the SS7 ISUP general view lists ISUP interfaces and indicates which are available, congested, or unavailable. This general view provides links to detailed status views of the ISUP stacks and networks.

Figure 152. General View: SS7 ISUP

Detailed View

The SS7 ISUP detailed view groups status information into these main screens:

- "ISUP Stack Status" on page 109
- "ISUP Interface Status" on page 110
- "Circuit Group Status" on page 111

ISUP Stack Status

The ISUP Stack status screen groups status information about the ISUP Stack under two tabs, as follows:

- Stack Tab
- Interfaces Tab

ISUP Stack Status: Stack tab. The Stack tab of the ISUP Stack status screen provides the name of the primary and optionally secondary Smart Media unit that hosts the ISUP stack and the status.

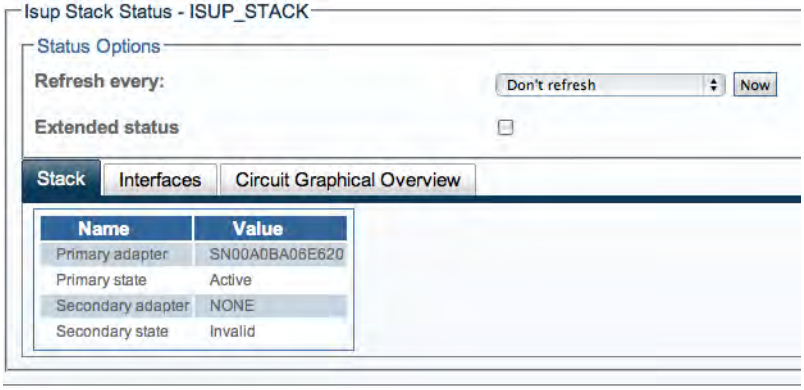

Figure 153. Detailed View: ISUP Stack Status-Stack Tab

ISUP Stack Status: Interfaces tab. The Interfaces tab of the ISUP Stack status screen lists the configured ISUP interfaces of the ISUP stack and provides the states of each network as well as their transmit and receive message counters. Selecting an ISUP Interface link displays its detailed information.

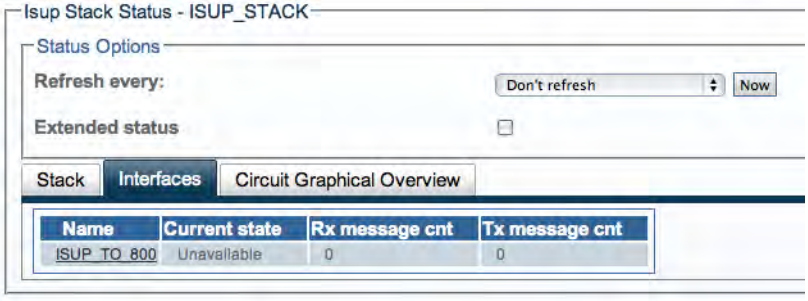

Figure 154. Detailed View: ISUP Stack Status-Interfaces Tab

ISUP Interface Status

The ISUP Interface status screen groups status information about the interface under two tabs, as follows:

- Interface Tab
- Circuit Groups Tab

ISUP Interface Status: Interface Tab. The Interface tab of the MTP3 Network status screen, shown below, provides transmit and receive message counters for a specific ISUP interface.

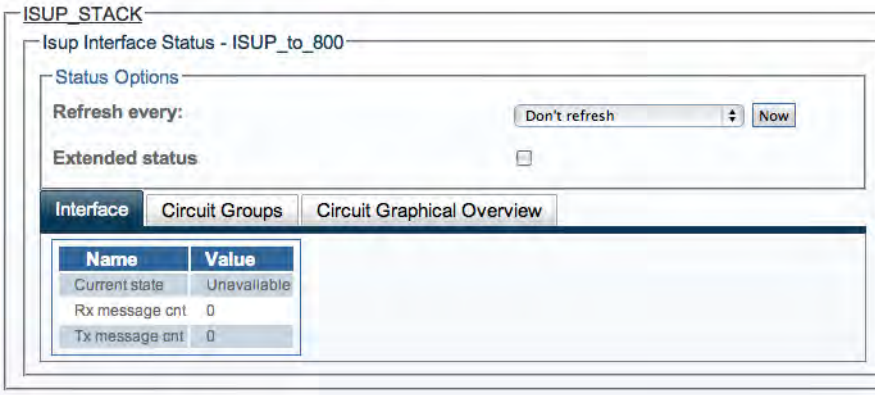

Figure 155. Detailed View: ISUP Interface Status-Interface Tab

ISUP Interface Status: Circuit Groups Tab. The Circuit Groups tab of the ISUP Stack status screen, shown below, lists the configured circuits groups for a specific ISUP interface. In addition, this screen provides status and counters for each circuit group. Selecting a circuit group link displays its detailed information.

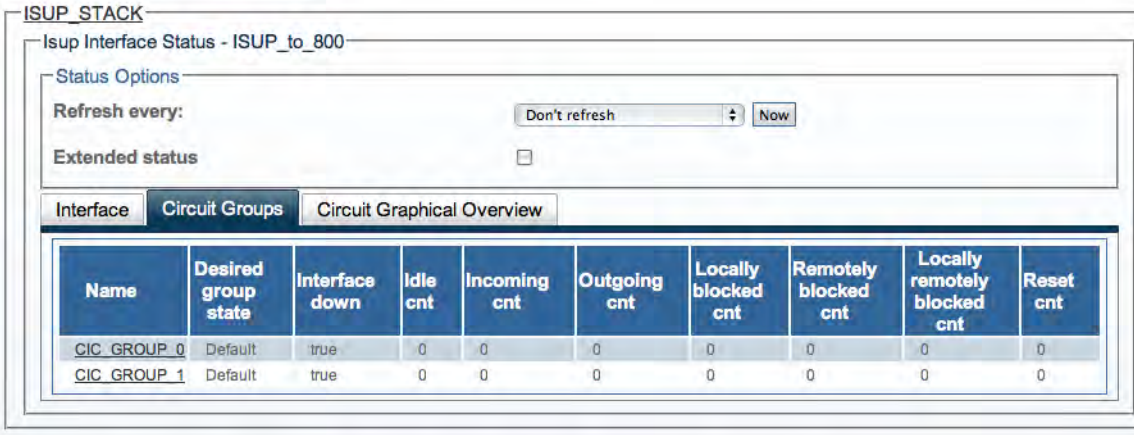

Figure 156. Detailed View: ISUP Interface Status-Circuit Groups Tab

Circuit Group Status

The Circuit Group status screen displays detailed information for one circuit group, such as status counters and configured values. From this screen, the desired group state may be set to Unblocked, Blocked, or Default.

Table 27. Circuit Group Status Settings

Circuit Group State	Description
Default	Lets the system decide the state of the circuit or circuit group. For example, a trunk down will block the circuits.
Blocked	Forces a local block condition. No calls can be made on these circuits even if the trunks are up. This function is useful for forcing calls on specific circuits by blocking other circuits in the system.
Unblocked	Forces a local unblock condition. This will force the circuits to be unblocked, even if the trunks are down. To be used for testing only.

To modify the desired group state:

1. Select a value.
2. Click 'Apply States'.

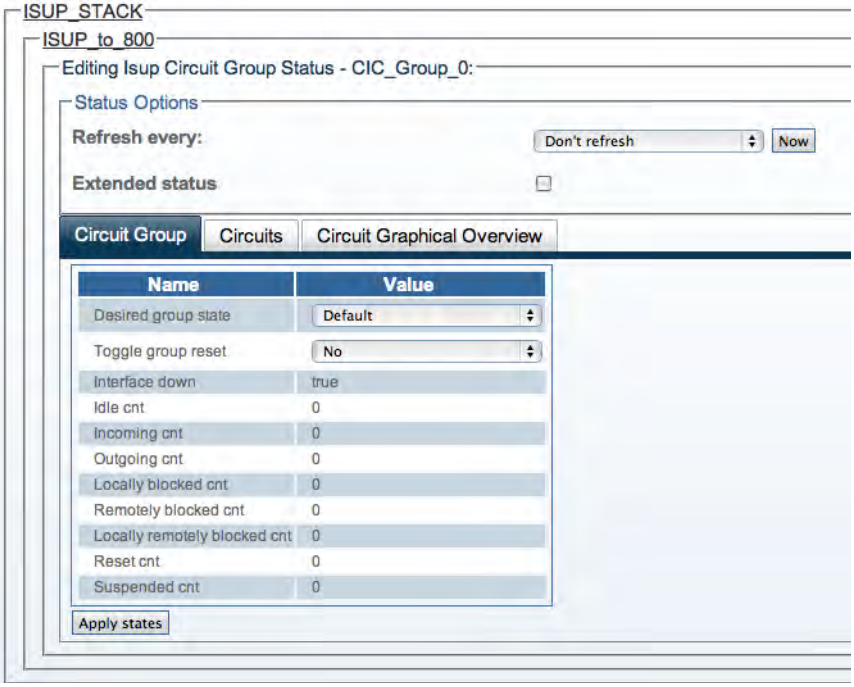

Figure 157. Detailed View: Circuit Group Status

Chapter 5 Configuring SIGTRAN Applications

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Overview

The Smart Media system enables you to configure SIGTRAN and extend SS7 signaling functionality to the IP network. Smart Media enables you to configure a number of SIGTRAN applications based upon your requirements. Refer to the following sections for configuring SIGTRAN applications:

- **M2PA System**: See "Configuring an M2PA System" on page 116.
  In this configuration, the SS7 MTP2 layer is replaced by the SIGTRAN M2PA layer which extends MTP2 signalling functionality into the IP network. This application is typically used between a Signalling Gateway and an IP Signalling Point, or between two IP Signalling Points.
- **M2UA System:** See "Configuring an M2UA System on a Signaling Gateway" on page 148, and "Configuring an M2UA System on a Media Gateway Controller" on page 158.
  An M2UA system on a Signalling Gateway Controller interfaces with an M2UA system on a Media Gateway Controller. In this configuration, M2UA bridges the SS7 MTP2 layer of a Signalling Gateway, across an IP network, with the SS7 MTP3 layer of a Media Gateway Controller.
- **IUA System**: See "Configuring an IUA System on a Signaling Gateway" on page 160.
  An IUA system on a Signalling Gateway Controller interfaces with an IUA system on a Media Gateway Controller. In this configuration, IUA bridges the SS7 MTP2 layer of a Signalling Gateway, across an IP network, with the SS7 MTP3 layer of a Media Gateway Controller.
- **M3UA System on two IP signaling points**: See "Configuring an M3UA System on IP Signaling Points" on page 166.
  In this configuration, the SS7 MTP2 and MTP3 layers are replaced entirely by the SIGTRAN M3UA layer. This application is typically used between two IP Signalling Points.
- **M3UA System:** See "Configuring an M3UA System on a Signaling Gateway" on page 177, and "Configuring an M3UA System on an Application Server" on page 185.
  An M3UA system on a Signalling Gateway Process interfaces with an M3UA system on an Application Server Process. In this configuration, the MTP3 links are extended across the IP network.

Configuring an M2PA System

In this configuration, the SS7 MTP2 layer is replaced by the SIGTRAN M2PA layer which extends MTP2 signalling functionality into the IP network. This application is typically used between a Signaling Gateway and an IP Signaling Point, or between two IP Signaling Points. Refer to the following sections to configure an M2PA system:

1. "Adding an Adapter" on page 117
2. "Creating Line Interfaces" on page 119
3. "Creating Line Services" on page 121
4. "Creating the SCTP Configuration" on page 124
5. "Creating an M2PA Configuration" on page 125
   - "Creating an M2PA SAP" on page 126
   - "Creating M2PA Links" on page 127
6. "Creating SS7 Point Codes" on page 129
7. "Creating an MTP3 Configuration" on page 131
   - "Creating an MTP3 Network" on page 132
   - "Creating an MTP3 Linkset" on page 133
   - "Creating MTP3 Links (M2PA)" on page 134
   - "Creating an MTP3 Route" on page 136
8. "Creating an ISUP Stack" on page 138
   - "Creating an ISUP Network" on page 139
   - "Creating an ISUP User Part" on page 141
   - "Creating an ISUP Interface" on page 142
   - "Creating ISUP CIC Groups" on page 144
   - "Creating a NAP (SIGTRAN)" on page 145

Adding an Adapter

When you receive a new system, at least one hardware configuration will have been set in the Smart Media application server, by default. To add other hardware devices, you must use the Smart Media Web Portal. To add one or more additional hardware devices to the Smart Media system configuration, their serial numbers must be registered with the Smart Media application server.

To add a hardware device:

1. Select **Hardware** from the navigation panel:

Figure 158. config_patton > Hardware

2. Click **Create New Hardware** to add a new hardware device:

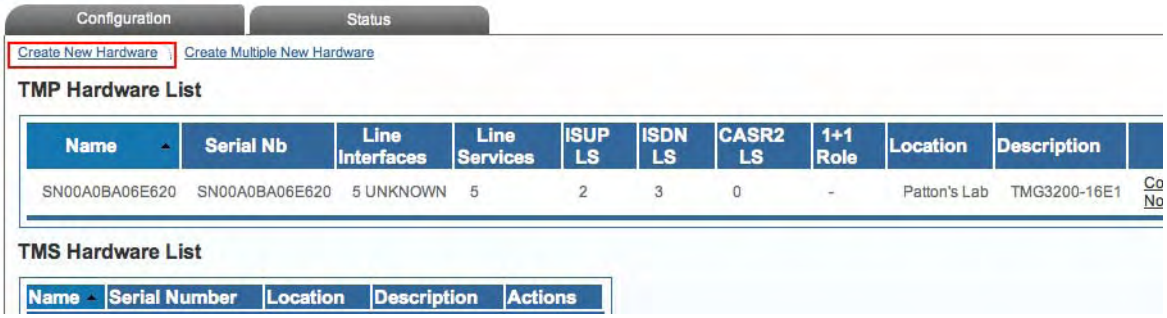

Figure 159. Hardware List

3. Configure the new adapter:
   - Enter a **name** for the hardware device
   - Enter the **serial number** of the new hardware device (filling in the Serial Number field will cause auto-completion of the field to occur).
   - Select the appropriate **hardware device** from the Adapter Type field.
   - Select **Enabled** from the Target State field.

– Click **Create**

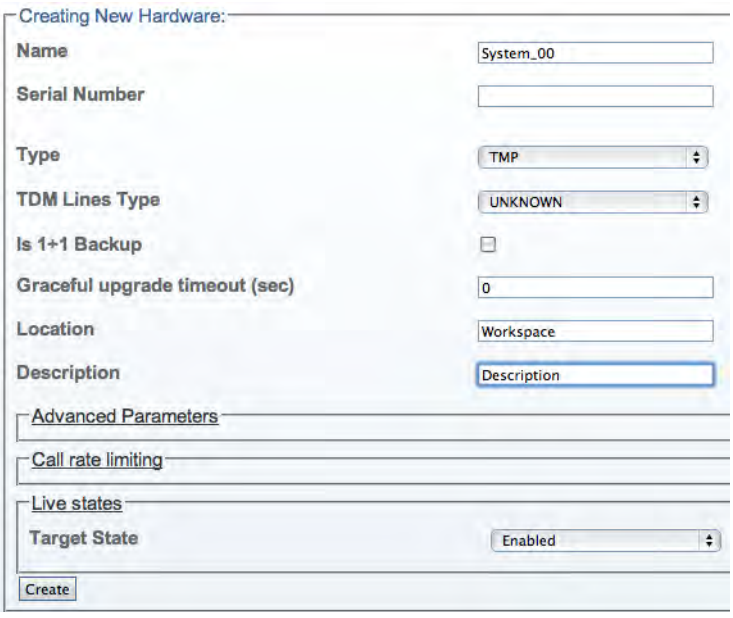

Figure 160. Creating the New Hardware Device

4. Verify that the "**Adapter was successfully created**" message displays, and that the newly added hardware device appears in the **Hardware List** below.

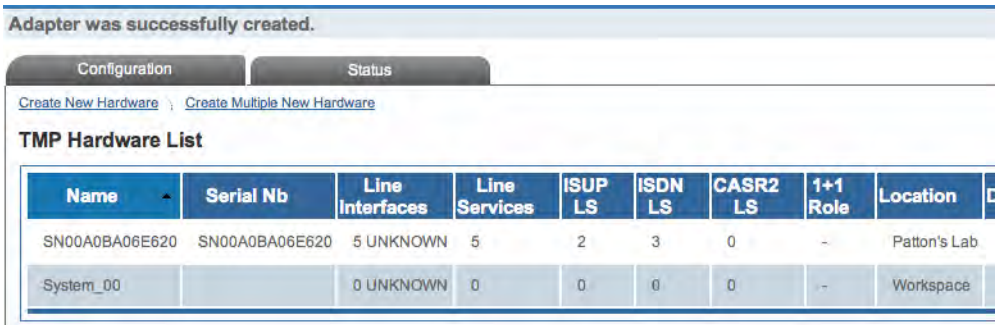

Figure 161. Successful Device Message

Understanding Parameters for Hardware Adapters

Table 28. Configuration Parameters for New Hardware Adapters

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Serial	Defines a product serial number, when creating a new hardware device. Entering characters into the Serial field will cause the number to auto-complete.
Adapter Type	Specifies the type of hardware device being created, when adding a new adapter. Possible values: TMP/TMS
Graceful Upgrade Timeout	Sets a maximal delay for calls to terminate normally before an adapter is upgraded
Location	Identifies the physical location of a hardware adapter
Description	Describes the purpose of a particular hardware adapter
Target State	Sets the live state of a hardware adapter. Possible values: Disabled/Probation/Enabled

Creating Line Interfaces

Line interface is a generic term for TDM physical interfaces. The SmartNode 10200 Series supports three types of physical interfaces: T1/E1/J1 interfaces, DS3 interfaces, and Oc3/STM1 interfaces.

To create a new line interface:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

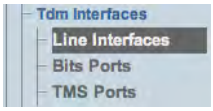

Figure 162. TDM Interfaces > Line Interfaces

2. Click **Create New Line Interface** to create a single interface, or **Create Multiple Line Interfaces** to create many interfaces at once:

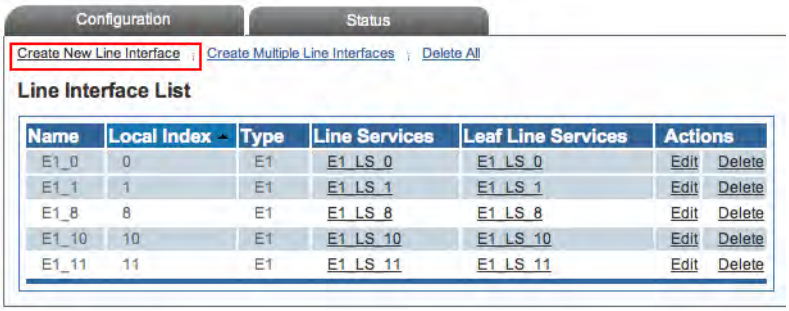

Figure 163. Line Interface List

3. Create the new line interface:
   - Enter a **name** for the interface
   - Set a **type** for the interface

– Set a **local index** for the line

– Select a **length** and an **encoding scheme**

– Click **Create**

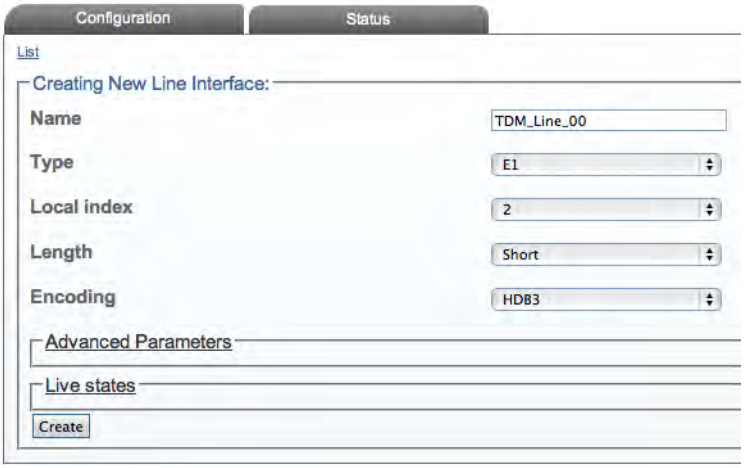

Figure 164. Create New Line Interface

4. Verify that the "**Line interface was successfully created**" message is displayed.

Figure 165. Confirmation Message for New Line Interface

Understanding Parameters for Line Interfaces

Table 29. Configuration Parameters for New Line Interfaces

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type	Defines the type of line interface: E1/DS3/T1/J1/STM1/OC3
Local Index	Assigns an integer to represent an object
Length	Indicates the physical length of a line: Short/Long/Autodetect/Monitoring
Encoding	Sets an encoding scheme for a line interface. Values depend on the interface type: **E1**: HDB3/AMI **DS3**: B3ZS **T1/J1**: B8ZS/AMI/AMI CLEAR **STM1/OC3**: (None)

Creating Line Services

You must create a new line service for your line interface. A line service defines the payload type of a line interface or another line service. The line service chain stops when it reach the E1/J1/T1 line service. The E1/J1/T1 line services are also known as trunks or spans.

To create a new line service:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

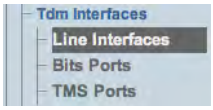

Figure 166. TDM Interfaces > Line Interfaces

2. Click **Edit** next to the line service for which you wish to create a line service:

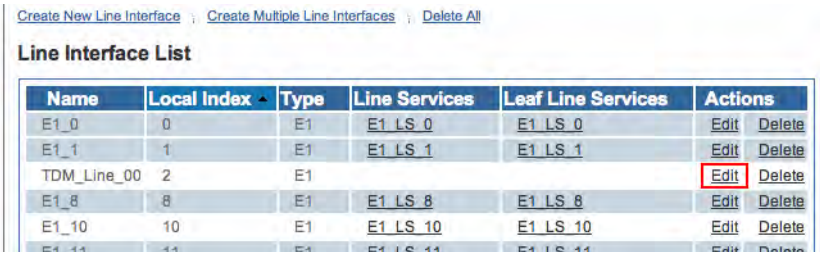

Figure 167. Line Interface List

3. In the following window, click **Create New Child Line Service** (also, a number can be created at once by selecting **Create Multiple Child Line Service**):

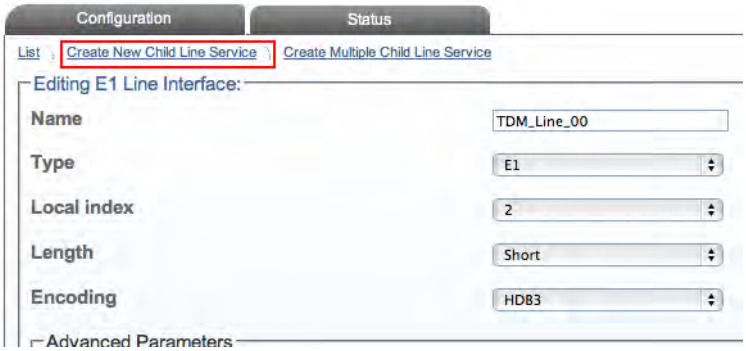

Figure 168. Editing a Line Interface to Create a New Service

4. Create the new line service:
   - Enter a **name** for the new line
   - Select an available **local index**, from the drop-down box
   - Select appropriate **framing** and **loopback modes**

– Click **Create**

Figure 169. Create New Line Service

5. Navigate back to the line interface page, by following link displayed in the upper-left corner of the screen. The new line service should be displayed in the **Line Services** list.

Figure 170. Line Services List

Understanding Parameters for Line Services

Table 30. Configuration Parameters for New Line Services

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Local Index	Assigns an integer to represent an object
Framing	Sets a framing type for a line service. Select from: AUTO (typical for E1)/STD/MFRAME/SF/ESF (typical for T1)/SLC96
Loopback	Used to set a loopback state for a line service. Refer to Table 31 for details.

Table 31. Loopback Types

Loopback Type	Description	Behavior	Use
NONE	Normal Operation	All traffic is received and sent on the line	Always
LINE	Analog Line Loopback	All received traffic is re-routed on the transmit line. The clock and data recovered from the line inputs are routed back to the line outputs of the analog transceiver bypassing the framer modules.	First step in testing a physical connection
PAYLOAD	Digital Line Loopback	All received traffic is re-routed on the transmit line.The clock and data recovered from the line inputs are routed back to the line outputs after the deframer/framer.	Second step in testing a physical connection. This tests the framer configuration.
GENERATE_LOS	Generate Loss of Signal	This forces the transmit line to stop sending.	This is the second-best thing to disconnecting the line interface physically.
LOCAL	Local Loopback	All received traffic is dropped. The traffic sent is re-routed internally.	Never. Used for internal testing only

Creating the SCTP Configuration

Stream Control Transmission Protocol (SCTP), a Transport Layer protocol, ensures reliable, in-sequence transport of messages. To edit your system's SCTP configuration:

1. Select **SCTP** from the navigation panel:

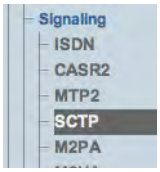

Figure 171. Signaling > SCTP

2. Configure the new SCTP service:
   - Make sure the box labeled **Enabled** is checked
   - Enter a **name** for the SCTP service
   - Select an appropriate **service type**: RAW_IP or UDP
   - Click **Create**

Figure 172. Creating a New MTP2 Link

3. Verify that the "**Sctp Cfg was successfully created**" message displays:

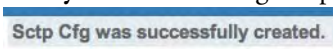

Figure 173. Successful SCTP Configuration Message

Understanding Parameters for SCTP Configurations

Table 32. Configuration Parameters for New SCTP Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Service Type	Defines the purpose of an SCTP configuration. Possible values: RAW IP: Enables the direct transmission and reception of network packets by applications, bypassing all encapsulation in the networking software of the operating system. UDP: Provides a direct way to send and receive datagrams over IP networks.

Creating an M2PA Configuration

For the configuration of your SIGTRAN M2PA system, you will need to create a new M2PA configuration. In this system, the SS7 MTP2 layer is replaced by the SIGTRAN M2PA layer which extends MTP2 signaling functionality into the IP network.

Note M2PA replaces the MTP2 layer entirely; however, it still requires the MTP3 layer.

To create an M2PA configuration:

1. Select **M2PA** from the navigation panel:

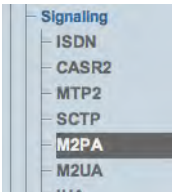

Figure 174. Signaling > M2PA

2. Configure the new M2PA service:
   - Verify that the **Enabled** box is checked
   - Enter a **name** for the M2PA configuration
   - Click **Create**

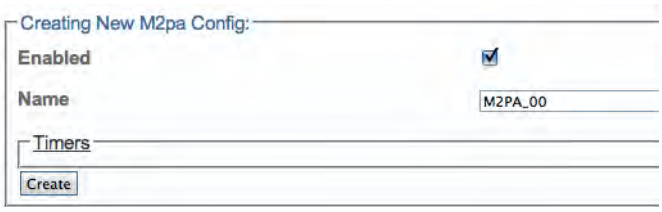

Figure 175. Creating the New M2PA Configuration

3. Verify that the "**M2pa Cfg was successfully created**" message displays.

Figure 176. Successful M2PA Configuration Message

Understanding Parameters for M2PA Configurations

Table 33. Configuration Parameters for New M2PA Configurations

Parameter	Description
Enabled	Indicates whether or not an object is to be implemented or not
Name	Used by the Web Portal to indicate a specific object or string in the system

Creating an M2PA SAP

After you have created an M2PA configuration, you must create a new M2PA service access point (SAP) for your system. The SAP is an identifying label for endpoints in your network.

To create a new M2PA SAP:

1. Select **M2PA** from the navigation panel (Figure 174 on page 125).
2. Click **Create new M2pa Sap**:

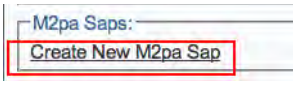

Figure 177. M2PA SAPs

3. Configure the new M2PA SAP:
   - Enter a **name** for the SAP
   - Enter an **SCTP source port** for the SAP
   - Click **Create**

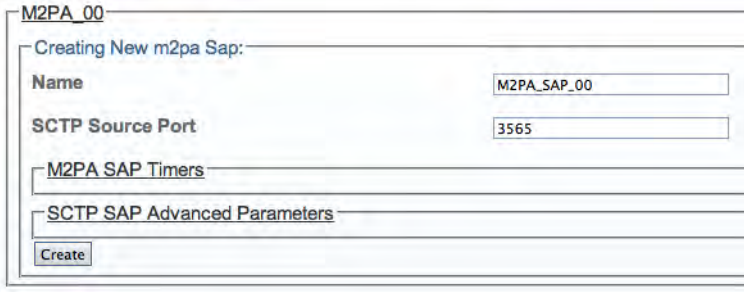

Figure 178. Creating the New M2PA SAP

4. Verify that the "**M2pa Cfg was successfully created**" message displays.

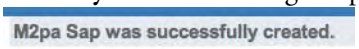

Figure 179. Successful M2PA Configuration Message

5. Associate IP interfaces:
   - Select an **IP interface** from the list in the information panel
   - Click the "<<" button to add the selected IP interface. This is the outgoing route from the hardware adapter.

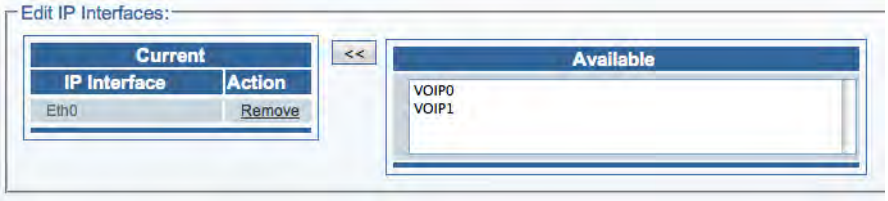

Figure 180. Associating IP Interfaces

Understanding Parameters for M2PA SAPs

Table 34. Configuration Parameters for New M2PA SAP

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
SCTP Source Port	Defines a source port for a service access point (SAP) in a system using SIGTRAN protocols

Creating M2PA Links

After you have created an M2PA service access point (SAP), you must create a new M2PA link. This can be done from the M2PA SAP configuration window.

To create an M2PA link:

1. Click **Create new M2pa link** in the M2PA SAP configuration window:

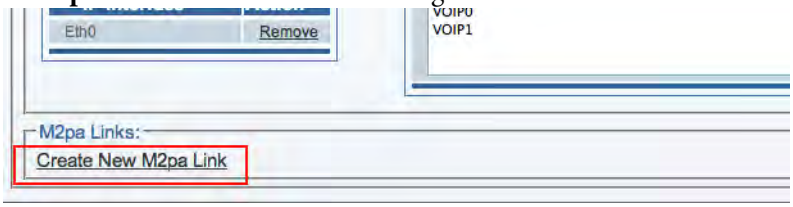

Figure 181. M2PA Links

2. Configure the new M2PA link:
   - Enter a **name** for the new link
   - Select a **protocol type**: ITU / ANSI / TTC
   - Set other features, as needed: Number of **SCTP Streams** / **IP Header TOS** / **Destination port** (same value as the one configured on the destination side)
   - Click **Create**

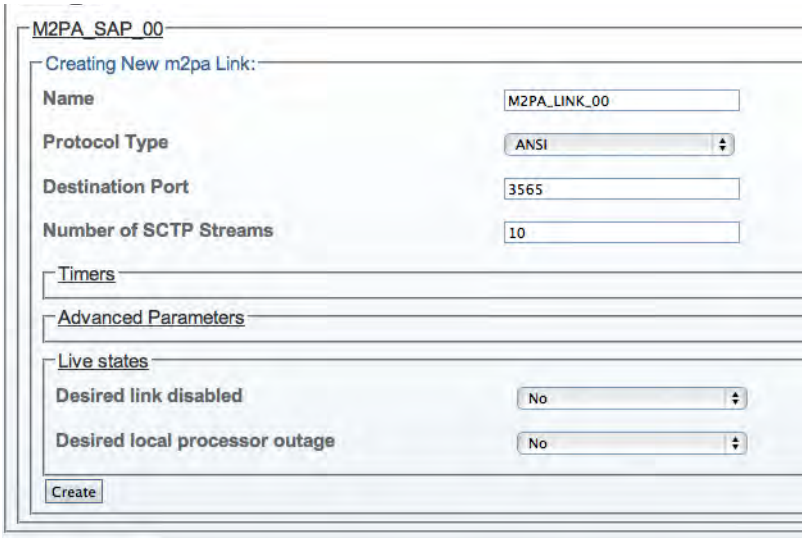

Figure 182. Creating a New M2PA Link

3. Enter a **destination address** in the appropriate box in the information panel:

   – Click the "<<" button to add the destination address to the address list

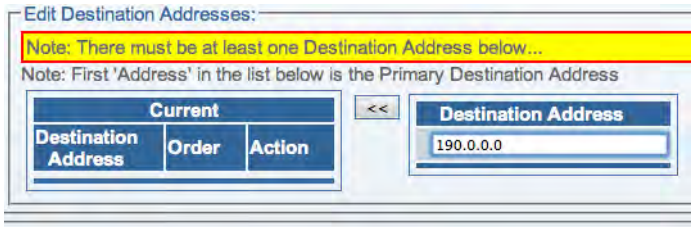

Figure 183. Designating a Destination Address

4. Verify that the address has been added to the list, and that the "**(your address) was successfully added**" message displays (ex.: here the address is 190.0.0.0):

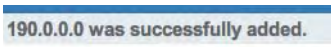

Figure 184. Successful M2PA Link Message

Understanding Parameters for M2PA Links

Table 35. Configuration Parameters for New M2PA Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
Number of SCTP Streams	Sets the number of streams on a link in a system using the SCTP protocol
IP Header TOS	Assigns a Type of Service (TOS) value to a line
Destination Port	Sets a destination for a line in a system using SIGTRAN protocols

Creating SS7 Point Codes

Point codes are used to define the Smart Media system network, the adjacent network and the target network so that calls are properly routed from one network to the next.

To create SS7 originating (OPC) and destination (DPC) point codes:

1. Select **Point Codes** from the navigation panel:

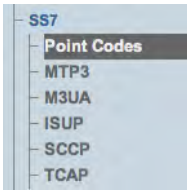

Figure 185. SS7 > Point Codes

2. Click **Create New Point Code**:

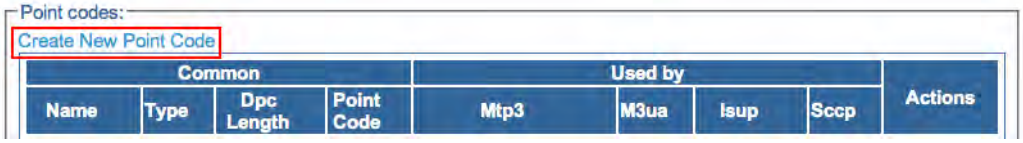

Figure 186. Point Codes

3. Configure the new point code:
   - Enter a **name** for the point code
   - Select a point code **type** (select type-specific parameters)
   - Select a point code **length** (14, 16, 24 bits)
   - Enter a **point code**
   - Click **Create**

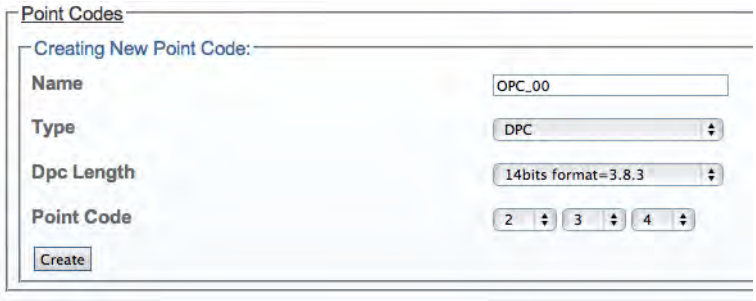

Figure 187. Creating the New MTP3 Point Code

4. Verify that the "**Mtp3PointCode was successfully created**" message displays, and the new point code appears in the **Point Codes** list:

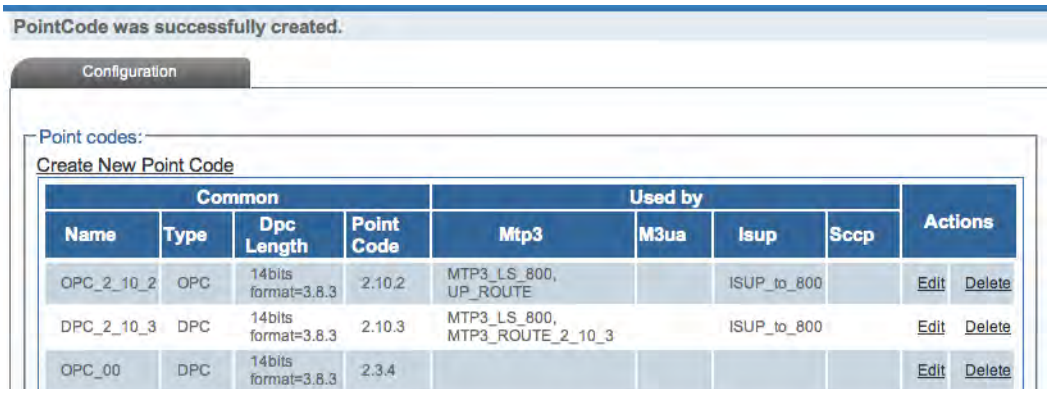

Figure 188. Successful Point Code Message

Understanding Parameters for SS7 Point Codes

Table 36. Configuration Parameters for New Point Codes

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type	Defines the type of point code being created. Possible values: OPC/DPC/Mask
DPC Length	Sets a format for the Destination Point Code (DPC) used by an object. Possible values: 14bits format=3.8.3/16bits format=7.4.5/24bits format=8.8.8
Point Code	Defines a point code by assigning it numerical values.

Creating an MTP3 Configuration

MTP3 provides message routing between signaling points in an SS7 network.

To create an MTP3 configuration:

1. Select **MTP3** from the navigation panel:

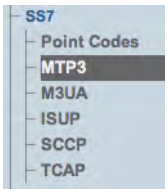

Figure 189. SS7 > MTP3

2. Configure the new MTP3 service:
   - Enter a **name** for the MTP3 configuration
   - Make sure the **Enabled** and **SSf Validation** boxes are checked
   - Select **SP** as the **signaling point type**
   - Select a **restart procedure**
   - Click **Create**

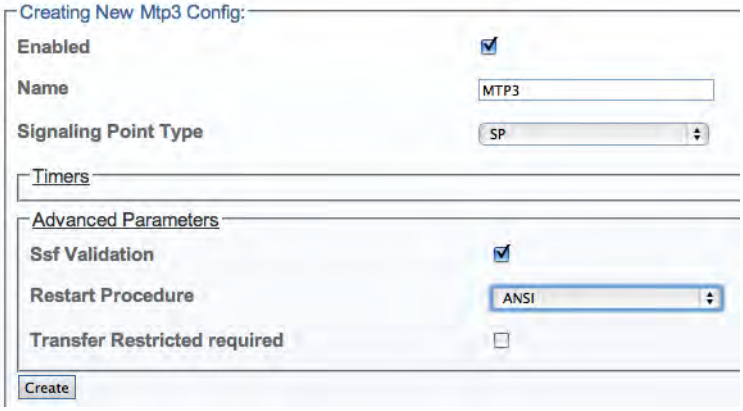

Figure 190. Creating the New MTP3 Configuration

3. Verify that the "**Mtp3Cfg was successfully created**" message appears, and that the Enabled box is checked.

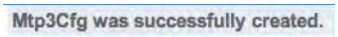

Figure 191. Successful Configuration Message

Understanding Parameters for MTP3 Configurations

Table 37. Configuration Parameters for New MTP3 Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Enabled	Indicates whether or not an object is to be implemented or not
Ssf Validation	Allows the activation of sub-service field validation for an MTP3 configuration
Signaling Point Type	Indicates the intended purpose of an SS7 MTP3 layer object. Possible values: SP (Signaling Point)/STP (Signal Transfer Point)
Restart Procedure	Indicates the standard by which a configuration will carry out a restart process. Possible values: None/ITU88/ITU92/ANSI

Creating an MTP3 Network

After you have created your system's MTP3 configuration, you must create a new MTP3 network. An MTP3 network is created to define its point codes, link sets and routes. This can be done from the MTP3 configuration information panel.

To create an MTP3 network:

1. Click **Create New MTP3 Network** in the MTP3 configuration information panel:

Figure 192. MTP3 Networks in MTP3 Configuration Window

2. Configure the settings for the new network:
   - Enter a **name** for the network
   - Select a **sub service field**
   - Select a **link type**
   - Select the **SS7 DPC length**
   - Click **Create**

Figure 193. Creating a New MTP3 Network

3. Verify that the "**MTP3 network was successfully created**" message displays:

Figure 194. Successful Network Message

Understanding Parameters for MTP3 Networks

Table 38. Configuration Parameters for New MTP3 Networks

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Sub Service Field	Differentiates between national and international signals in MTP3 networks. Possible values: International/National/Nat. Reserved/Inter. Reserved
Link Type	Sets a protocol type for signaling links. Possible values: ANSI/ITU/CHINA/ANSI96
SS7 DPC Length	Sets a format for the Destination Point Code (DPC) used by an object. Possible values: 14bits format=3.8.3/16bits format=7.4.5/24bits format=8.8.8

Creating an MTP3 Linkset

After you have created an MTP3 network, you are ready to create an MTP3 linkset. This can be done through the MTP3 network configuration window. A linkset is used to logically combine multiple MTP3 links going to the same DPC into a single entity. One linkset could be the links between a point code identifying the Smart Media SS7 node and a point code identifying the adjacent SS7 equipment.

To create an MTP3 linkset:

1. Click **Create New Mtp3 Linkset** in the MTP3 Network configuration panel:

Figure 195. MTP3 Linksets

2. Configure the new linkset:
   - Enter a **name** for the linkset
   - Select an **origin point code (OPC)**
   - Select an **adjacent point code**
   - Make sure the desired state is set to **Active**

– Click **Create**

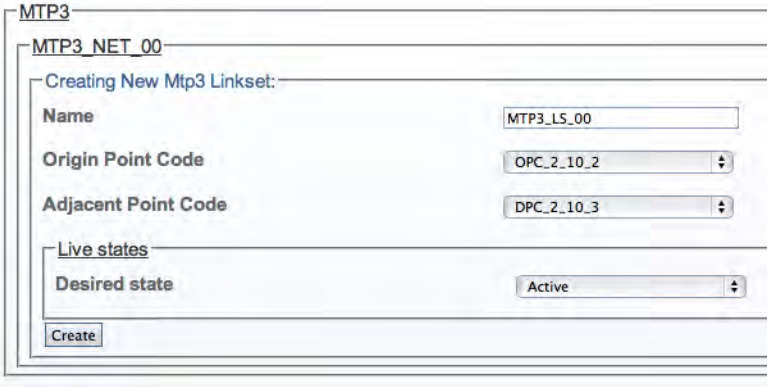

Figure 196. Creating the New MTP3 Linkset

3. Verify that the "**Mtp3Linkset was successfully created**" message displays:

Figure 197. Successful Linkset Message

Understanding Parameters for MTP3 Linksets

Table 39. Configuration Parameters for New MTP3 Linksets

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Origin Point Code	Associates an object with an originating point code (OPC)
Adjacent Point Code	Associates an object with an adjacent point code
Desired State	Indicates whether an object is to be active or inactive upon creation Possible values: Active/Inactive

Creating MTP3 Links (M2PA)

This can be done from the MTP3 linkset configuration window. A linkset is used to logically combine multiple MTP3 links going to the same DPC into a single entity. One linkset could be comprised of the links between a point code identifying the Smart Media SS7 node and a point code identifying the adjacent SS7 equipment.

To create an MTP3 link:

1. Click **Create New Mtp3 Link** in the MTP3 linkset configuration window:

Figure 198. M2PA Links

2. Configure the new MTP3 link:

   – Enter a **name** for the link

– Under **Type of link to bind**, select **M2PA**
– Select an **MTP2 link**
– Select a **priority level** (from 0 to 3)
– Select a **message priority** (from "none" to 3)
– Set the **C Link** value
– Enter a **Link Test Slc** (this value is unique in the link list)
– Enter **Link Test Characters**
– Click **Create**

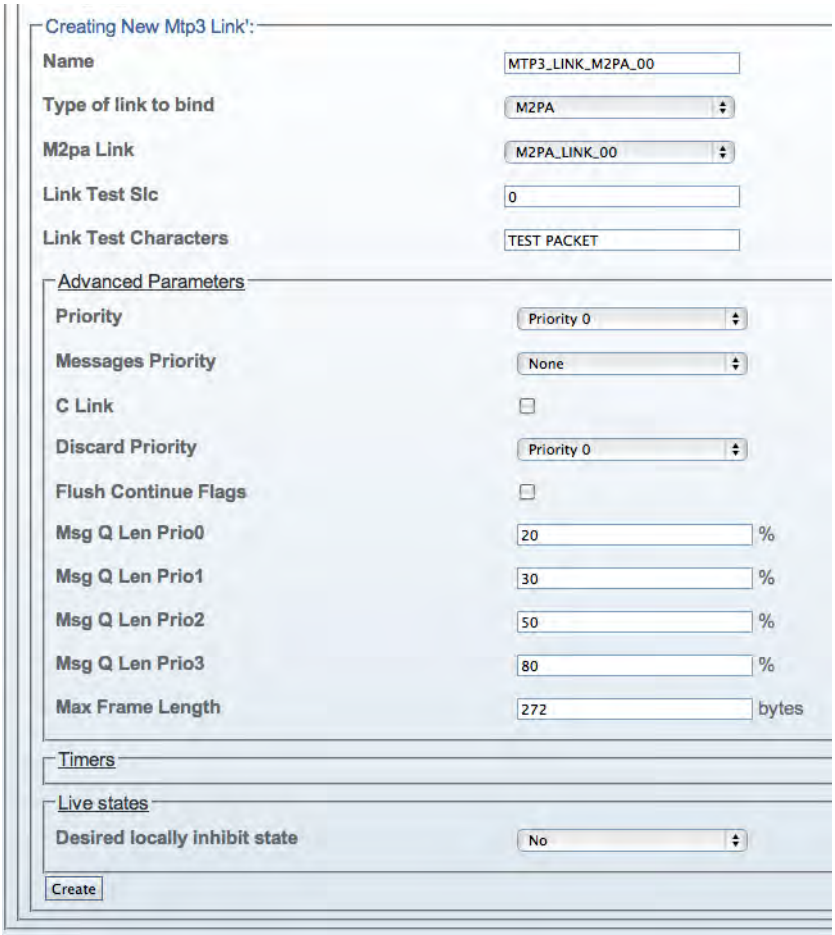

Figure 199. Creating the New MTP3 (M2PA) Link

3. Verify that the "**Mtp3Link was successfully created**" message displays:

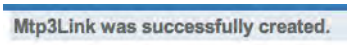

Figure 200. Successful MTP3 Link Message

Understanding Parameters for MTP3 (M2PA) Links

Table 40. Configuration Parameters for New MTP3 (M2PA) Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Link to Bind	Indicates the type of link to bind when creating an MTP3 link Possible values: MTP2/M2PA/M2UA
MTP2 Link	Selects an MTP2 link to bind to an object
Priority Level	Sets a priority for MTP3 links. Possible values: Priority 0/Priority 1/Priority 2/Priority 3
Message Priority	Sets a priority for messages on an MTP3 link. Possible values: None/Priority 0/Priority 1/Priority 2/Priority 3
C Link	Used only when two identical signal transfer points (STPs) are interconnected
Link Test Slc	Used in SLTM/SLTA messages on MTP3 links. Possible values: 0-15 ***NOTE:** Both ends of the line must use the same value, or the line will fail.
Link Test Characters	Creates a test packet for MTP3 lines

Creating an MTP3 Route

MTP3 routes are built to route traffic from previously created point codes using linksets. One route is created for each previously defined point code.

To create an MTP3 route:

1. Click **Create New Mtp3 Route** in the MTP3 network configuration window::

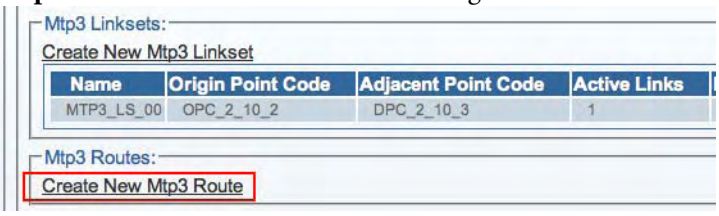

Figure 201. MTP3 Routes

2. Configure the new MTP3 route:
   - Enter a **name** for the route
   - Select a **point code** for the route
   - Select a **restart procedure**
   - Select a **point type**
   - Check the **Route to Adjacent** box, if this route is directed to an adjacent network

– **Create**

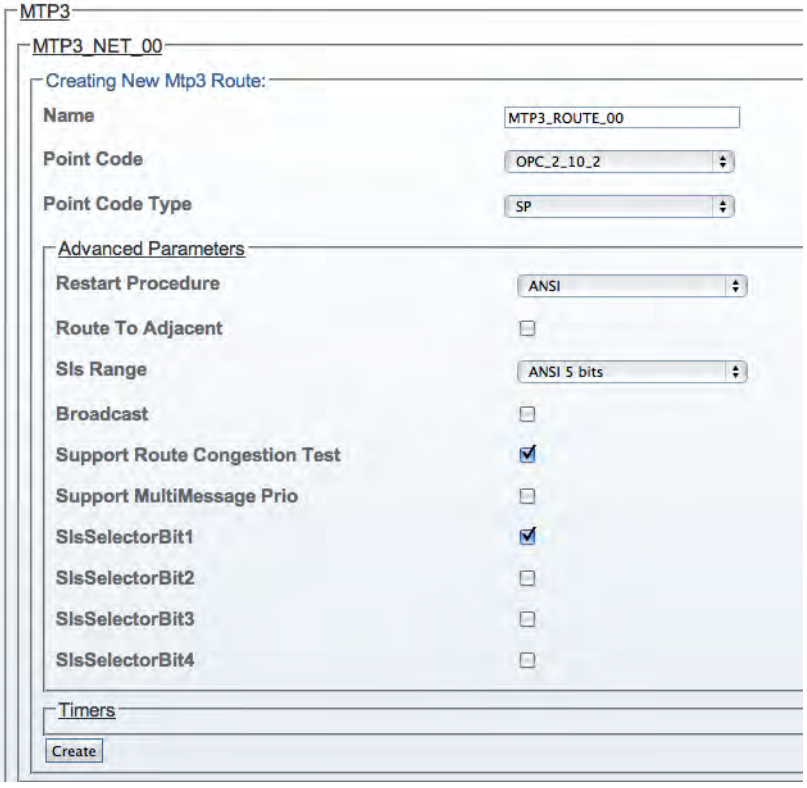

Figure 202. Creating the New MTP3 Route

3. Verify that the "**Mtp3Route was successfully created**" message displays:

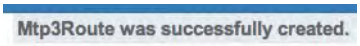

Figure 203. Successful MTP3 Route Message

4. Associate the newly created route with a linkset:
   – Select a linkset from the list provided at the bottom of the route configuration window
   – Click the "<<" button to associate the linkset with the newly created route

Figure 204. Associating Routes with Linksets

Understanding Parameters for MTP3 Routes

Table 41. Configuration Parameters for New MTP3 Routes

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Point Code	Associates a point code with the MTP3 route
Restart Procedure	Indicates the standard by which a configuration will carry out a restart process. Possible values: None/ITU88/ITU92/ANSI
Point Type	Indicates the intended purpose of an SS7 MTP3 layer object. Possible values: SP (signaling Point)/STP (Signal Transfer Point)
Route to Adjacent	Used when an MTP3 route is directed toward an adjacent network

Creating an ISUP Stack

After you have configured the MTP3 layer of your SS7 system, you must create an ISDN user part stack. To create an ISUP stack:

1. Select **ISUP** from the navigation panel:

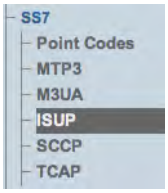

Figure 205. SS7 > ISUP

2. Click **Create New Stack**:

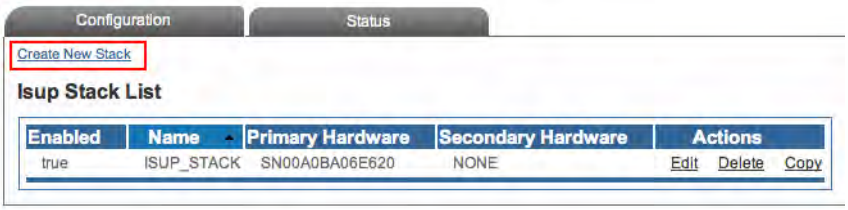

Figure 206. ISUP Stack List

3. Configure the new MTP3 service:
   - Make sure the box labeled **Enabled** is checked
   - Enter a **name** for the stack
   - Select a **primary hardware adapter**
   - Select a **secondary hardware adapter**

– Click **Create**

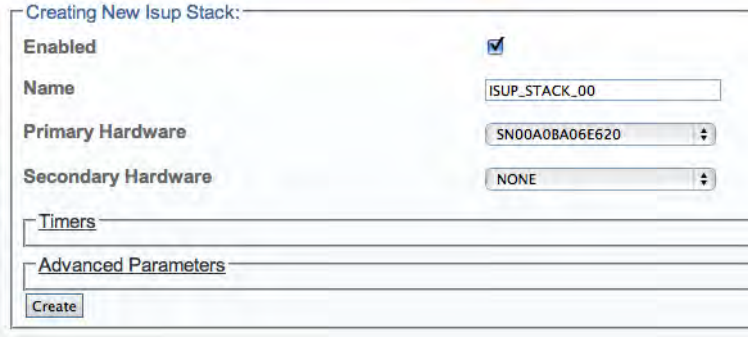

Figure 207. Creating the New ISUP Stack

4. Verify that the "**IsupStack was successfully created**" message displays.

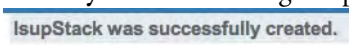

Figure 208. Successful ISUP Stack Message

Understanding Parameters for ISUP Stacks

Table 42. Configuration Parameters for New ISUP Stack

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Primary Hardware Adapter	Identifies a main Smart Media hardware device to run an ISUP stack
Secondary Hardware Adapter	Identifies a secondary (backup) Smart Media hardware device to run an ISUP stack

Creating an ISUP Network

After you have created an initial ISUP stack, you must create a new ISUP network. The ISUP network tells the ISUP protocol layer about a collection of SS7 nodes that are accessible through MTP3 or M3UA. Based upon your system configuration, one or more ISUP networks are created. Repeat this section for as many networks as you require.

Note An ISUP network can be used by multiple ISUP interfaces even if they are members of different ISUP userpart (e.g., to support multiple switch variants for a single SS7 network).

To create an ISUP network:

1. Click "**Create New ISUP Network**" in the ISUP stack configuration window:

Figure 209. Editing ISUP Networks

2. Configure the new ISUP network:
   - Enter a **name** for the network
   - Select **MTP3** or **M3UA** as the **type of network to bind**
   - Select a **MTP3 network** or a **M3UA network**
   - Click **Create**

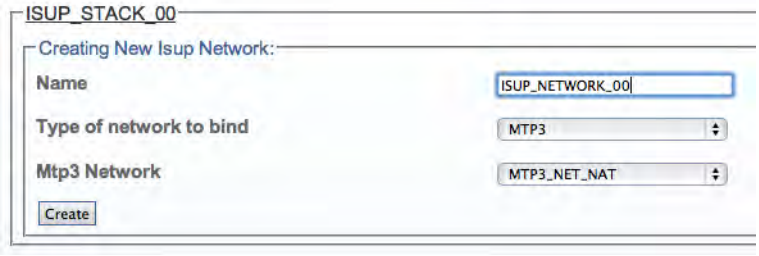

Figure 210. Creating the New ISUP Network

3. Verify that the "**IsupNetwork was successfully created**" message displays.

Figure 211. Successful ISUP Network Message

Understanding Parameters for ISUP Networks

Table 43. Configuration Parameters for New ISUP Network

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Network to Bind	Indicates the type of network to associate with an ISUP Network Possible values: MTP3/M3UA
Networks	
MTP3 Network	Associates an MTP3 network with a higher level network in an SS7 system
M3UA Network	Associates an MTP3 network with a higher level network in an SS7 system

Creating an ISUP User Part

After you have created your ISUP network, you must create a new ISUP user part. The user part is the container for the multiple ISUP interfaces. One user part is required for each protocol variant.

Multiple ISUP user parts can be instantiated within a single ISUP protocol layer. This allows a user application to interface with multiple SS7 ISUP protocol variants at the same time. Only one ISUP user part is required for a specific variant as it can be assigned to multiple ISUP networks.

A user part can easily be seen as a protocol variant that a host application wants to use on the SS7 network.

To create an ISUP user part:

1. Click **Create New Isup Userpart** in the ISUP stack configuration window:

Figure 212. Editing Userparts

2. Configure the new ISUP user part:
   - Enter a **name** for the user part
   - Select a **protocol variant** (depending on location)
   - Select an **MTP3 sub service field** (the same that was previously set for MTP3)
   - Select an **address indicator type**
   - Select a **Numbering Plan**
   - Click **Create**

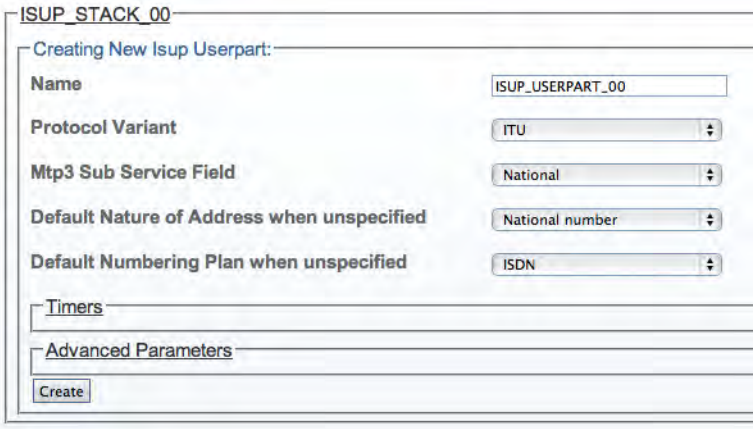

Figure 213. Creating the New ISUP User Part

3. Verify that the "**IsupUserpart was successfully created**" message appears, and that the Enabled box is checked.

Figure 214. Successful ISUP User Part Message

Understanding Parameters for ISUP User Parts

Table 44. Configuration Parameters for New ISUP User Part

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
Sub Service Field	Differentiates between national and international signals in MTP3 networks. Possible values: International/National/Nat. Reserved/Inter. Reserved
Address Indicator Type	Assigns a default address value in ISUP user parts, when unspecified. Possible values: Not Present/Subscriber Number/National Number/International Number
Numbering Plan	Assigns a default numbering plan in ISUP user parts, when unspecified. Possible values: Unknown ISDN Telephony Data Telex National Private Reserved

Creating an ISUP Interface

After you have created an ISUP user part to contain them, you must create new ISUP interfaces.

The ISUP interface creates a binding within the ISUP layer of a particular variant, a specific network, and an OPC/DPC pair to which circuits can be assigned. The ISUP interface contains the circuit identifier codes (CICs) within the ISUP user part. One interface is created for each similar grouping of CICs within one user part protocol variant.

To create an ISUP interface:

1. Click **Create New Isup Interface** in the ISUP stack configuration window:

Figure 215. Editing ISUP Interfaces

2. Configure the new ISUP interface:
   - Enter a **name** for the interface
   - Select an **ISUP user part**
   - Select an **ISUP network**
   - Select a **trunk type**
   - Select an **originating point code (OPC)**
   - Select a **destination point code (DPC)**
   - Click **Create**

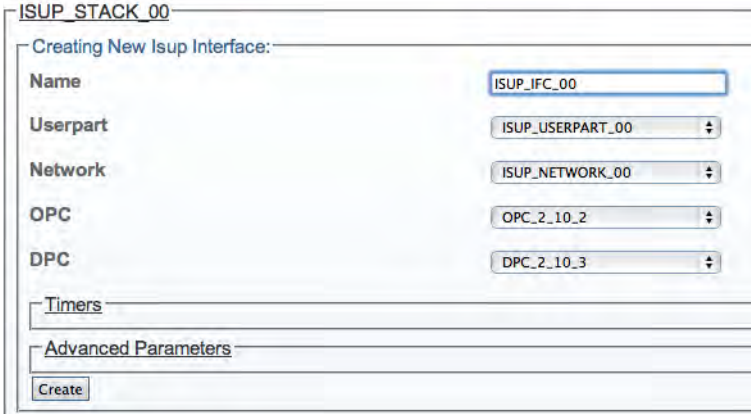

Figure 216. Creating the New ISUP Interface

3. Verify that the "**IsupInterface was successfully created**" message displays.

Figure 217. Successful ISUP Interface Message

Understanding Parameters for ISUP Interfaces

Table 45. Configuration Parameters for New ISUP Interface

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
ISUP User Part	Associates an ISUP user part with an ISUP interface
ISUP Network	Associates an ISUP network with an ISUP interface
OPC	Associates an object with an originating point code (OPC)
DPC	Associates an object with a destination point code (DPC)

Creating ISUP CIC Groups

After you have created an ISUP interface, you must create a new ISUP Cicuit Identification Code (CIC) group for your system.A CIC represents a physical timeslot between two SS7 nodes. Both of those nodes must commonly agree upon a CIC numbering scheme.

To create an ISUP CIC group:

1. Click **Create New Isup Cic Group** in the ISUP interface configuration window (a number of groups can be created at once by clicking **Create Multiple New Isup Cic Group**):

Figure 218. Editing CIC Groups

2. Configure the new ISUP CIC group:
   - Enter a **name** for the group
   - Enter a number for the **first CIC** in the group (this value must follow other CIC group values, and not overlap)
   - Select a **line service**
   - Check the appropriate **timeslots** (click "Select all" to check all timeslots)
   - Select a **call control method**
   - Click **Create**

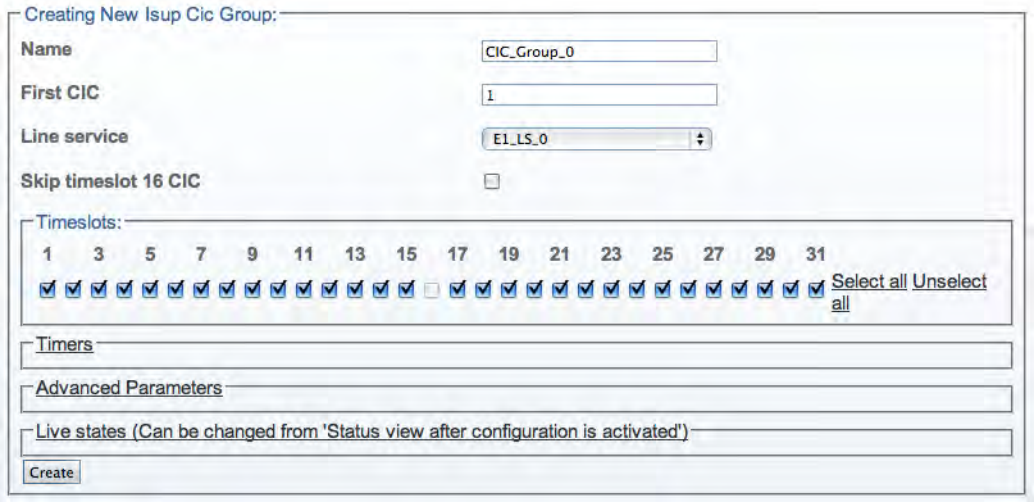

Figure 219. Creating the New ISUP CIC Group

3. Verify that the "**IsupCicGroup was successfully created**" message displays.

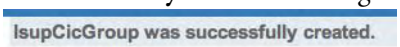

Figure 220. Successful ISUP CIC Group Message

Understanding Parameters for ISUP CIC Groups

Table 46. Configuration Parameters for New ISUP CIC Group

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
First CIC	Sets a value for the first circuit identification code in an ISUP CIC group
Line Service	Indicates which TDM line service is to be associated with the object being created
Timeslots	Allows the selection of individual voice or data channels of a line. Values for this parameter are listed as check boxes (ranging from 1-24). Individual timeslots can be selected by checking the boxes. Occasionally, all timeslots can be selected at once by clicking the Select All link.
Call Control	Sets a call control method for ISUP CIC groups. Possible values: Incoming/Outgoing/Bothway/Controlled/Controlling

Creating a NAP (SIGTRAN)

After you have created an ISUP CIC group, you must create a network access point, in order to finish configuring your system. A Network Access Point (NAP) represents the entry point to another network or destination peer.

To create a network access point (NAP):

1. Click **NAP** in the navigation panel:

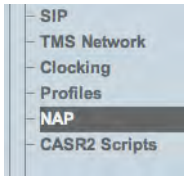

Figure 221. Menu: NAP

2. Click **Create New NAP**:

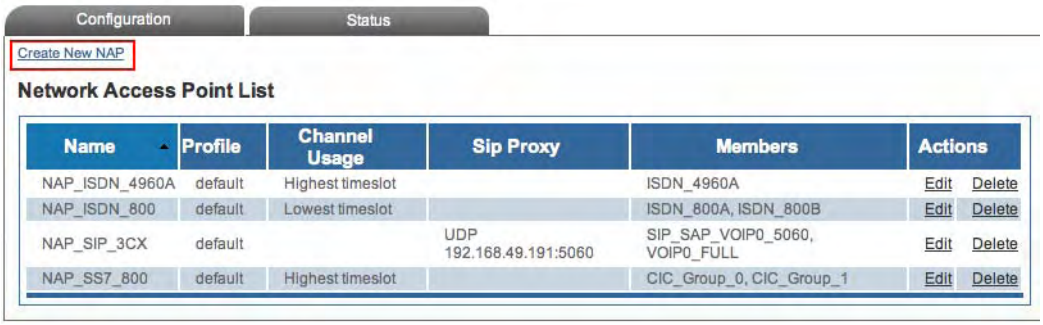

Figure 222. Edit NAP List

3. Configure the new NAP:
   - Enter a **name** for the NAP
   - Select a **user-created profile**, if not, select **default**

– Click **Create**:

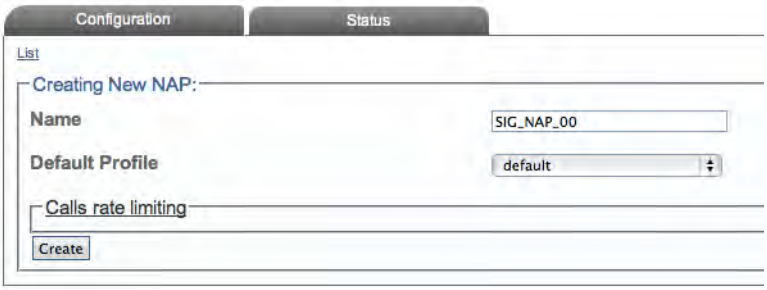

Figure 223. Creating a New NAP (SIGTRAN)

4. Verify that the **NAP was successfully created** message appears:

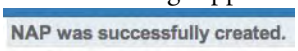

Figure 224. Confirmation Message for New NAP

5. Associate an ISUP interface with the new NAP:
   – Select an **interface** (the newly-created **ISUP CIC group**)
   – Click the "<<" button to associate it with the NAP

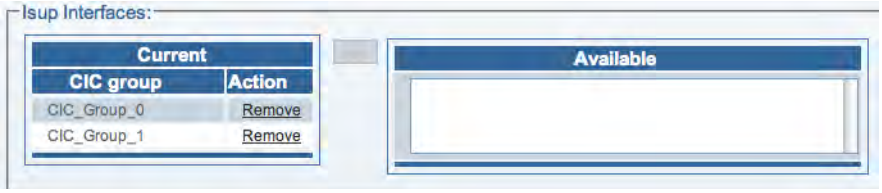

Figure 225. Associating ISUP CIC Groups with NAPs

The following screen displays:

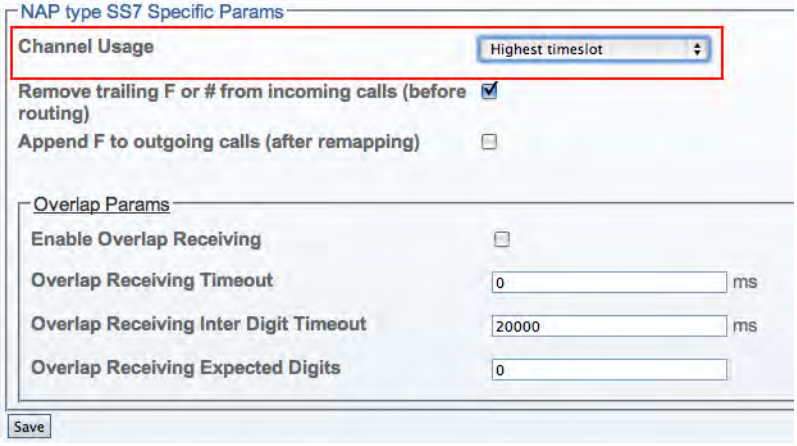

Figure 226. Saving the New NAP SS7 Parameters

   – Select a value for **Channel Usage** to avoid call collision.
   – Click **Save**

6. Verify that the **NAP was successfully updated** message displays:

Figure 227. Confirmation Message for Updated NAP

Understanding Parameters for NAPs (SIGTRAN)

Table 47. Configuration Parameters for NAPs (SIGTRAN)

Parameter	Description	
Name	Used by the Web Portal to indicate a specific object or string in the system	
Default Profile	Sets a profile for a NAP. The default value is simply labeled "Default", but can be changed if alternate profiles have been created.	
Channel Usage	Sets a channel usage scheme for Network Access Points (NAPs), also called trunk groups, in order to avoid call collision. Possible values:	
	Round-Robin:	Traverse, in order, all timeslots of the NAP from first timeslot of first trunk to last timeslot of last trunk, before starting to use first timeslot of first trunk again.
	Lowest Timeslot:	Start from lowest timeslot of every trunk and will reuse them if they are idle.
	Highest Timeslot:	Start from highest timeslot of every trunk and will reuse them if they are idle.
	Lowest Mapping ID:	Start from lowest timeslot of first trunk, second lowest of first trunk, etc. Once the first trunk is full, will start using second trunk. Will reuse the channels if they are idle.
	Highest Mapping ID:	Start from highest timeslot of last trunk, second highest of last trunk, etc. Once the last trunk is full, will start using second-to-last trun. Will reuse the channels if they are idle.
	Lowest CIC:	Start from lowest CIC value of the NAP and will reuse them if they are idle.
	Highest CIC:	Start from highest CIC value of the NAP and will reuse them if they are idle.
	Odd Lowest CIC:	Start from lowest CIC, odd value, and will reuse them if they are idle. Will only use even CICs when all odd CICs are used.
	Odd Highest CIC:	Start from highest CIC, odd value, and will reuse them if they are idle. Will only use even CICs when all odd CICs are used.
	Even Lowest CIC:	Start from lowest CIC, even value, and will reuse them if they are idle. Will only use even CICs when all even CICs are used.
	Even Highest CIC:	Start from highest CIC, even value, and will reuse them if they are idle. Will only use even CICs when all odd CICs are used.

Configuring an M2UA System on a Signaling Gateway

In this configuration, M2UA bridges the SS7 MTP2 layer of a Signaling Gateway across an IP network . Refer to the following sections to configure an M2UA system:

1. "Adding an Adapter" on page 117
2. "Creating Line Interfaces" on page 119
3. "Creating Line Services" on page 121
4. "Creating an MTP2 Configuration" on page 148
   - "Creating MTP2 Links" on page 149
5. "Creating the SCTP Configuration" on page 124
6. "Creating an M2UA Configuration" on page 151
   - "Creating an M2UA SAP" on page 152
   - "Creating an M2UA Cluster" on page 153
   - "Creating M2UA Links" on page 154
   - "Creating M2UA Peers" on page 156

Creating an MTP2 Configuration

1. Select **MTP2** from the navigation panel:

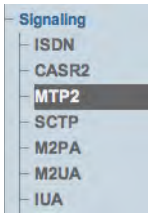

Figure 228. Signaling > MTP2

2. Create the new MTP2 configuration:
   - Enter a **name** for the configuration
   - Click **Save**

Figure 229. Creating the New MTP2 Configuration

3. Verify that the "**Mtp2Cfg was successfully updated**" message appears, and that the Enabled box is checked.

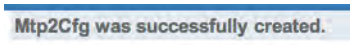

Figure 230. Successful Configuration Message

Understanding Parameters for MTP2 Configurations

Table 48. Configuration Parameters for New MTP2 Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Creating MTP2 Links

Now that you have created an MTP2 configuration, you must create the necessary MTP2 links. An MTP2 link is used to connect the MTP2 physical layer to a line service carrying SS7 signaling.

To create an MTP2 link:

1. Click **Create New Mtp2 Link** in the MTP2 configuration window:

Figure 231. MTP2 Link in MTP2 Configuration Window

2. Configure the new MTP2 link:
   - Enter a **name** for the new link
   - Select a **connection mode**
   - Select a **line service**
   - Assign **timeslots** to the link
   - Select a **protocol type**
   - Select a **DPC length**
   - Select a **timeslot rate**

– Click **Create**

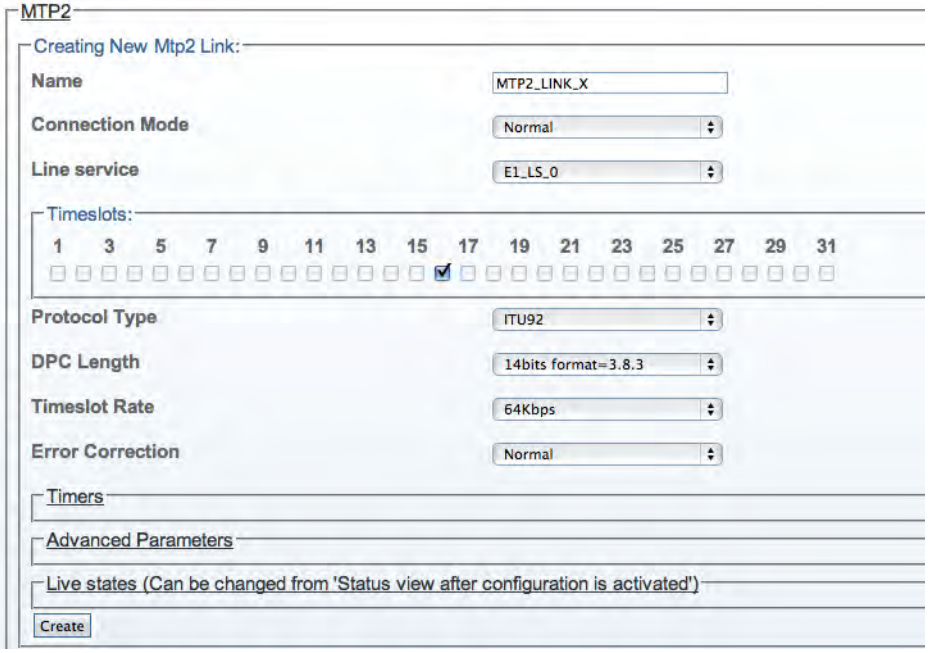

Figure 232. Creating a New MTP2 Link

3. Verify that the "**MTP2 link was successfully created**" message displays:

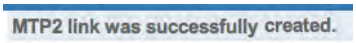

Figure 233. Successful Link Message

Understanding Parameters for MTP2 Links

Table 49. Configuration Parameters for New MTP2 Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Connection Mode	Defines the type of connection used in an SS7 system. Possible values: Normal/Hsl (High-speed link)
Line Service	Indicates which TDM line service is to be associated with the object being created
Timeslots	Allows the selection of individual voice or data channels of a line. Values for this parameter are listed as check boxes (ranging from 1-24). Individual timeslots can be selected by checking the boxes. Occasionally, all timeslots can be selected at once by clicking the Select All link.
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
DPC Length	Sets a format for the Destination Point Code (DPC) used by an object. Possible values: 14bits format=3.8.3/16bits format=7.4.5/24bits format=8.8.8
Timeslot Rate	Indicates the data rate for timeslots on a line. Possible values: 64 Kbps/56 Kbps/48 Kbps

Creating an M2UA Configuration

To create your M2UA system, you must create a new M2UA configuration.

M2UA (Message Transfer Part 2 User Adaptation Layer) is used to interface the MTP2 Layer of a signaling gateway to the MTP3 Layer of a media gateway controller (MGC). M2UA can also be seen as a way to extend an MTP2 link. An M2UA link is always bound to an MTP2 link.

To create an M2UA configuration:

1. Select **M2UA** from the navigation panel:

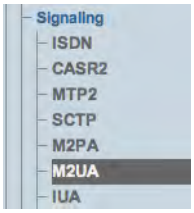

Figure 234. Signaling > M2UA

2. Configure the new M2UA configuration:
   – Enter a **name** for the M2UA service

– Click **Create**

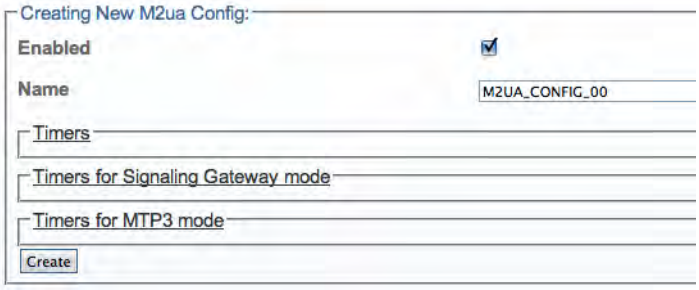

Figure 235. Creating the New M2UA Configuration

3. Verify that the "**M2ua Cfg was successfully created**" message displays.

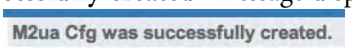

Figure 236. Successful M2UA Configuration Message

Understanding Parameters for M2UA Configurations

Table 50. Configuration Parameters for New M2UA Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Creating an M2UA SAP

After you have created an M2UA configuration, you must create a new M2UA service access point (SAP) for your system. The SAP is an identifying label for endpoints in your network.

To create an M2UA SAP:

1. Click **Create New M2ua Sap** in the M2UA configuration window:

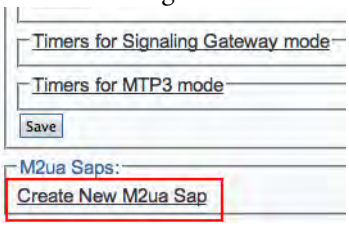

Figure 237. M2UA SAPs

2. Configure the new M2UA SAP:
   – Enter a **name** for the SAP
   – Enter an **SCTP source port** for the SAP

– Click **Create**

Figure 238. Creating the New M2UA SAP

3. Verify that the "**M2ua Sap was successfully created**" message displays.

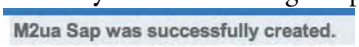

Figure 239. Successful M2UA Configuration Message

4. Associate an IP interface with the new SAP:
   – Select an **IP interface** from the Edit IP Interfaces list
   – Associate the interface with the SAP, using the "<<" button.

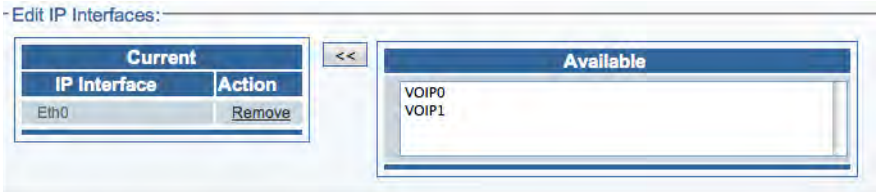

Figure 240. Associating IP Interfaces

Understanding Parameters for M2UA SAPs

Table 51. Configuration Parameters for New M2UA SAP

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
SCTP Source Port	Defines a source port for a service access point (SAP) in a system using SIGTRAN protocols

Creating an M2UA Cluster

After you have created an M2UA SAP, you must create an M2UA cluster for your system.

To create an M2UA cluster:

1. Click **Create New M2ua Cluster** in the M2UA SAP configuration window:

Figure 241. M2UA Clusters

2. Configure the new M2UA cluster:
   – Enter a **name** for the cluster
   – Select a **traffic mode**
   – Select a **load share mode**
   – Click **Create**

Figure 242. Creating the New M2UA Cluster

3. Verify that the "**M2ua Cluster was successfully created**" message displays.

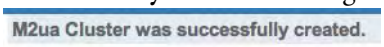

Figure 243. Successful M2UA Cluster Message

Understanding Parameters for M2UA Clusters

Table 52. Configuration Parameters for New M2UA Cluster

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Traffic Mode	Sets the scheme for managing traffic on an M2UA cluster. Possible values: ACTIVE_STANDBY/LOADSHARE
Load Share Mode	Sets a scheme for sharing traffic loads on M2UA clusters. Possible values: ROUND_ROBIN/PER_LINK

Creating M2UA Links

After you have created an M2UA cluster, you must create M2UA links for your system. An M2UA link is always bound to an MTP2 link, and can be seen a way of extending MTP2 functionality.

To create an M2UA link:

1. Click **Create New M2ua Link** in the M2UA cluster configuration window:

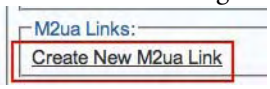

Figure 244. M2UA Links

2. Configure the new M2UA link:
   – Enter a name for the link
   – **IMPORTANT!**

–**For a system on a signaling gateway:** Select an **MTP2 link**

–**For a system on a media gateway controller:** Select **NONE**

– Select a **protocol type** (same as MTP2)

– Select an **interface ID type**

– Enter an appropriate **interface ID** (must be unique to each link)

– Click **Create**

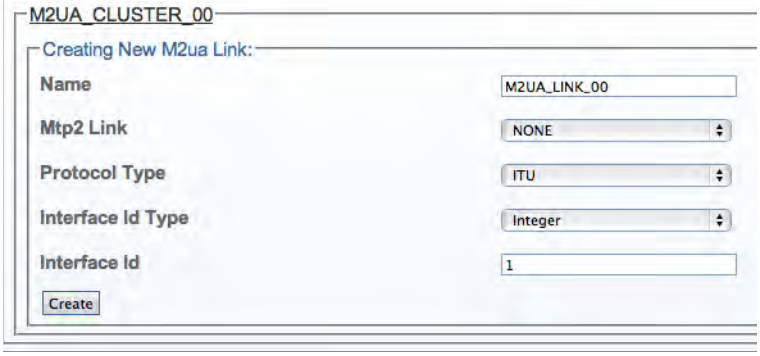

Figure 245. Creating a New M2UA Link

3. Verify that the "**M2ua Link was successfully created**" message displays:

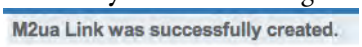

Figure 246. Successful M2UA Link Message

Understanding Parameters for M2UA Links

Table 53. Configuration Parameters for New M2UA Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
MTP2 Link	Selects an MTP2 link to bind to an object
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
Interface ID Type	Defines the data type of an M2UA Link's interface ID. Possible values: Integer/String
Interface ID	Identifies the interface of an M2UA link

Creating M2UA Peers

After you have created the M2UA links, you must define M2UA peers for your system.

To create an M2UA peer:

1. Click **Create New M2ua Peer** in the M2UA cluster configuration window:

Figure 247. M2UA Peers

2. Configure the new M2UA peer:
   - Enter a **name** for the peer
   - Enter a **destination port** (as configured in the destination element)
   - Click **Create**

Figure 248. Creating the New M2UA Peer

3. Verify that the "**M2ua Peer was successfully created**" message displays.

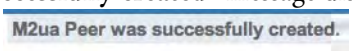

Figure 249. Successful M2UA Peer Message

4. Enter a destination address for the peer:
   - Enter a **destination address**
   - Click the "<<" button to add it to the list of destination addresses
   - Verify that the "**(your address) was successfully added**" message displays

Figure 250. Editing Destination Addresses

Understanding Parameters for M2UA Peers

Table 54. Configuration Parameters for New M2UA Peers

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Destination Port	Sets a destination for a line in a system using SIGTRAN protocols
Destination Address	Indicates the destination for a line in a system using SIGTRAN protocols

Configuring an M2UA System on a Media Gateway Controller

In this configuration, M2UA bridges the SS7 MTP2 layer of a Signaling Gateway across an IP network with the SS7 MTP3 layer of a Media Gateway Controller. Refer to the following sections to configure an M2UA system:

1. "Adding an Adapter" on page 117
2. "Creating the SCTP Configuration" on page 124
3. "Creating an M2UA Configuration" on page 151
   - "Creating an M2UA SAP" on page 152
   - "Creating an M2UA Cluster" on page 153
   - "Creating M2UA Links" on page 154
   - "Creating M2UA Peers" on page 156
4. "Creating SS7 Point Codes" on page 129
5. "Creating an MTP3 Configuration" on page 131
   - "Creating an MTP3 Network" on page 132
   - "Creating an MTP3 Linkset" on page 133
   - "Creating MTP3 Links (M2UA)" on page 159
   - "Creating an MTP3 Route" on page 136
6. "Creating an ISUP Stack" on page 138
   - "Creating an ISUP Network" on page 139
   - "Creating an ISUP User Part" on page 141
   - "Creating an ISUP Interface" on page 142
   - "Creating ISUP CIC Groups" on page 144
   - "Creating a NAP (SIGTRAN)" on page 145

Creating MTP3 Links (M2UA)

After you have created an MTP3 linkset, you must create MTP3 links for your system. An MTP3 link is used to connect with a M2UA link; they are connected in a one-to-one fashion.

To create an MTP3 link on your M2UA system:

1. Click **Create New Mtp3 Link** in the MTP3 linkset configuration window:

Figure 251. MTP3 Links

2. Configure the new MTP3 link:
   - Enter a **name** for the link
   - Under **Type of link to bind**, select **M2UA**
   - Select an **M2UA link**
   - Click **Create**

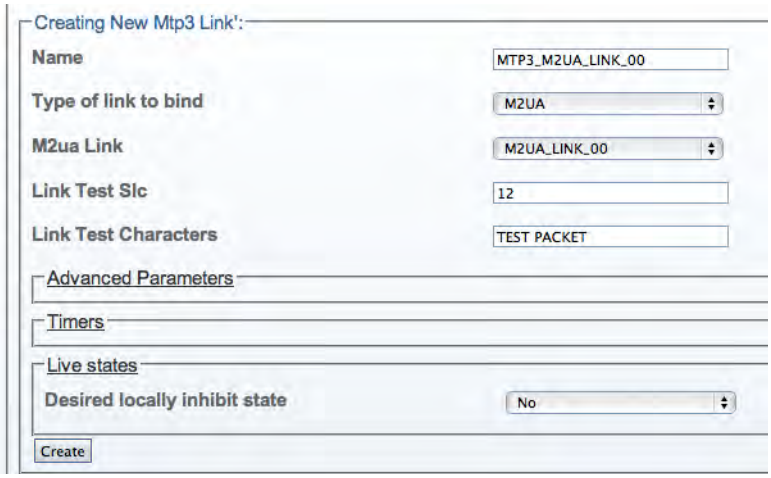

Figure 252. Creating the New MTP3 (M2UA) Link

3. Verify that the "**Mtp3Link was successfully created**" message displays:

Figure 253. Successful MTP3 Link Message

Understanding Parameters for MTP3 (M2UA) Links

Table 55. Configuration Parameters for New MTP3 (M2UA) Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Link to Bind	Indicates the type of link to bind when creating an MTP3 link Possible values: MTP2/M2PA/M2UA
M2UA Link	Selects an M2UA link to bind to an object

Configuring an IUA System on a Signaling Gateway

In this configuration, IUA bridges the SS7 MTP2 layer of a Signaling Gateway across an IP network with the SS7 MTP3 layer of a Media Gateway Controller. Refer to the following sections to configure an IA system:

1. "Adding an Adapter" on page 117
2. "Creating Line Interfaces" on page 119
3. "Creating Line Services" on page 121
4. "Creating the SCTP Configuration" on page 124
5. "Creating an IUA Configuration" on page 160
   - "Creating an IUA SAP" on page 161
   - "Creating an IUA Cluster" on page 162
   - "Creating IUA Links" on page 163
   - "Creating IUA Peers" on page 164

Creating an IUA Configuration

An IUA system on a Signaling Gateway Controller interfaces with an IUA system on a Media Gateway Controller. To create your IUA system, you must create a new IUA configuration.

To create an IUA configuration:

1. Select **IUA** from the navigation panel:

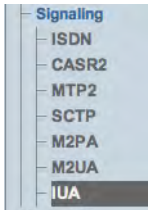

Figure 254. Signaling > IUA

2. Create the IUA configuration:
   - Enter a **name** for the IUA service
   - Click **Save**

Figure 255. Creating the New IUA Configuration

3. Verify that the "**Iua Cfg was successfully created**" message displays.

Understanding Parameters for IUA Configurations

Table 56. Configuration Parameters for New IUA Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Creating an IUA SAP

After you have created an IUA configuration, you must create a new IUA service access point (SAP) for your system. The SAP is an identifying label for endpoints in your network.

To create an IUA SAP:

1. Click **Create New Iua Sap** in the IUA configuration window:

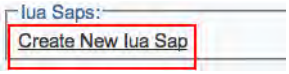

Figure 256. IUA SAPs

2. Configure the new IUA SAP:
   - Enter a **name** for the SAP
   - Enter a number for the **SCTP source port**
   - Click **Create**

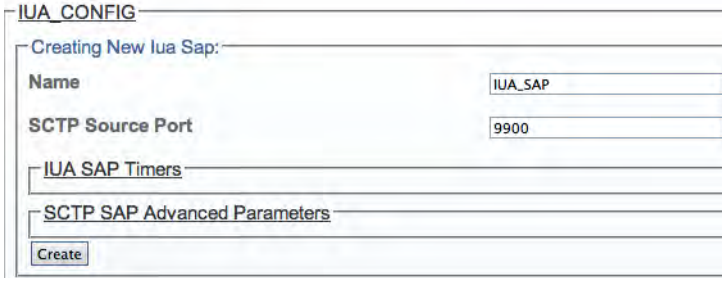

Figure 257. Creating the New IUA SAP

3. Verify that the "**Iua Sap was successfully created**" message displays.

Figure 258. Successful IUA Configuration Message

4. Associate an IP interface with the new SAP:
   - Select an **IP interface** from the **Edit IP Interfaces** list
   - Associate the interface with the SAP, using the "<<" button.

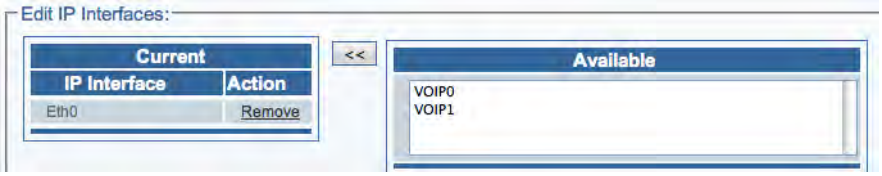

Figure 259. Associating IP Interfaces with the IUA SAP

Understanding Parameters for IUA SAPs

Table 57. Configuration Parameters for New IUA SAP

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
SCTP Source Port	Defines a source port for a service access point (SAP) in a system using SIGTRAN protocols

Creating an IUA Cluster

After you have created an IUA SAP, you must create an IUA cluster for your system.

To create an IUA cluster:

1. Click **Create New Iua Cluster** in the IUA SAP configuration window:

Figure 260. IUA Clusters

2. Configure the new IUA cluster:
   - Enter a **name** for the cluster
   - Select a **traffic mode**
   - Select a **load share mode**
   - Click **Create**

Figure 261. Creating the New IUA Cluster

3. Verify that the "**Iua Cluster was successfully created**" message displays.

Figure 262. Successful IUA Cluster Message

Understanding Parameters for IUA Clusters

Table 58. Configuration Parameters for New IUA Cluster

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Traffic Mode	Sets the scheme for managing traffic on an IUA cluster. Possible values: ACTIVE_STANDBY/LOADSHARE
Load Share Mode	Sets a scheme for sharing traffic loads on IUA clusters. Possible values: ROUND_ROBIN/PER_LINK

Creating IUA Links

After you have created an IUA cluster, you must create IUA links for your system. To create an IUA link:

1. Click **Create New Iua Link** in the IUA cluster configuration window:

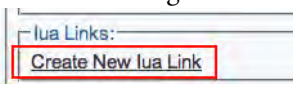

Figure 263. IUA Links

2. Configure the new IUA link:
   - Enter a **name** for the link
   - Enter an appropriate **interface ID** (must be unique to each link)
   - Select a **line service**
   - Select a **variant**
   - Select a **side**
   - Click **Create**

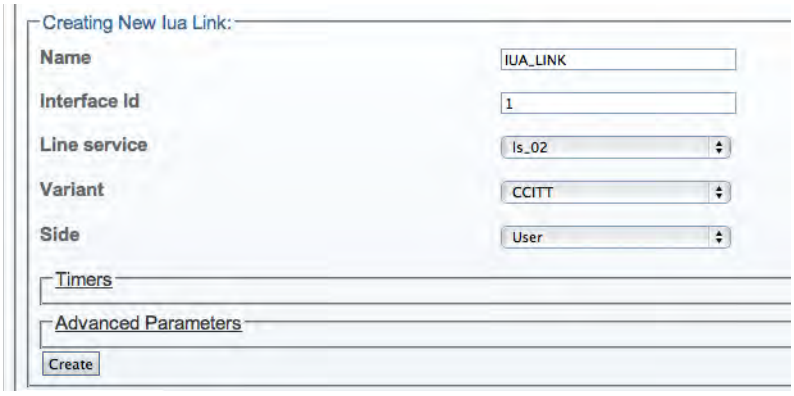

Figure 264. Creating a New IUA Link

3. Verify that the "**Iua Link was successfully created**" message displays:

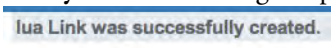

Figure 265. Successful IUA Link Message

Understanding Parameters for IUA Links

Table 59. Configuration Parameters for New IUA Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Interface ID	Identifies the interface of an IUA link
Variant	Indicates the protocol variant to be used on a signaling stack. Possible values: 4ESS AUS 5ESS DMS NI2 HONG-KONG JAPAN INS
Side	Defines each side of an ISDN stack. Possible values: Network/User

Creating IUA Peers

After you have created the IUA links, you must define IUA peers for your system.To create an IUA peer:

1. Click **Create New Iua Peer** in the IUA cluster configuration window:

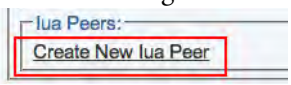

Figure 266. IUA Peers

2. Configure the new IUA peer:
   - Enter a **name** for the peer
   - Enter a **destination port** (as configured in the destination element)
   - Click **Create**

Figure 267. Creating the New IUA Peer

3. Verify that the "**Iua Peer was successfully created**" message displays.

Figure 268. Successful IUA Peer Message

4. Enter a destination address for the peer:
   - Enter a **destination address**
   - Click the "<<" button to add it to the list of destination addresses

– Verify that the "**(your address) was successfully added**" message displays

Figure 269. Editing Destination Addresses

Understanding Parameters for IUA Peers

Table 60. Configuration Parameters for New IUA Peers

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Destination Port	Sets a destination for a line in a system using SIGTRAN protocols
Destination Address	Indicates the destination for a line in a system using SIGTRAN protocols

Configuring an M3UA System on IP Signaling Points

In this configuration, the SS7 MTP2 and MTP3 layers are replaced entirely by the SIGTRAN M3UA layer. This application is typically used between two IP Signaling Points. Refer to the following sections to configure an M3UA system:

1. "Adding an Adapter" on page 117
2. "Creating the SCTP Configuration" on page 124
3. "Creating SS7 Point Codes" on page 129
4. "Creating an M3UA Configuration (IPSP)" on page 167
   - "Creating an M3UA SAP" on page 168
   - "Creating an M3UA Network" on page 169
   - "Creating an M3UA User Part" on page 170
   - "Creating an M3UA Peer Signaling Process (IPSP)" on page 171
   - "Creating an M3UA Peer Server" on page 173
   - "Creating an M3UA Route" on page 175
5. "Creating an ISUP Stack" on page 138
   - "Creating an ISUP Network" on page 139
   - "Creating an ISUP User Part" on page 141
   - "Creating an ISUP Interface" on page 142
   - "Creating ISUP CIC Groups" on page 144
   - "Creating a NAP (SIGTRAN)" on page 145

Creating an M3UA Configuration (IPSP)

To set up your M3UA system on an IP server process (IPSP), you must first create a new M3UA configuration. In this configuration the SS7 MTP2 and MTP3 layers are replaced entirely by the SIGTRAN M3UA layer. This system is typically set up on two IP signaling points. To create an M3UA configuration on IPSP:

1. Select **M3UA** from the navigation panel:

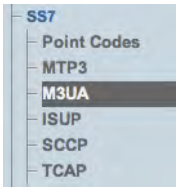

Figure 270. SS7 > M3UA

2. Configure the M3UA service for IPSP:
   - Enter a **name** for the configuration
   - Select **IP Server Process (IPSP)** as the node type
   - Click **Create**

Figure 271. Creating the New M3UA Configuration

3. Verify that the "**M3uaCfg was successfully created**" message displays.

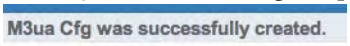

Figure 272. Successful Configuration Message

Understanding Parameters for M3UA Configurations

Table 61. Configuration Parameters for New M3UA Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Node Type	Assigns a configuration to an M3UA network. Possible values: Signaling Gateway Process (SGP) Application Server Process (ASP) IP Server Process (IPSP)

Creating an M3UA SAP

After you have created an M3UA configuration, you must create a new M3UA service access point (SAP) for your system. The SAP is an identifying label for endpoints in your network. To create an M3UA SAP:

1. Click **Create New M3ua Sap** in the M3UA configuration panel:

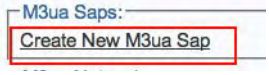

Figure 273. M3UA SAPs

2. Configure the new SAP:
   - Enter a **name** for the SAP
   - Select an **SCTP adapter** to use
   - Select an **SCTP source port**
   - Click **Create**

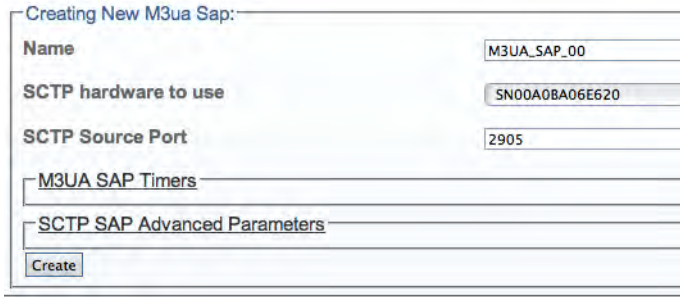

Figure 274. Creating a New M3UA SAP

3. Verify that the "**M3ua Sap was successfully created**" message displays:

Figure 275. Successful Link Message

4. Associate an IP interface with the new SAP:
   - Select an **IP interface** from the **Edit IP Interfaces** list
   - Associate the interface with the SAP, using the "<<" button.

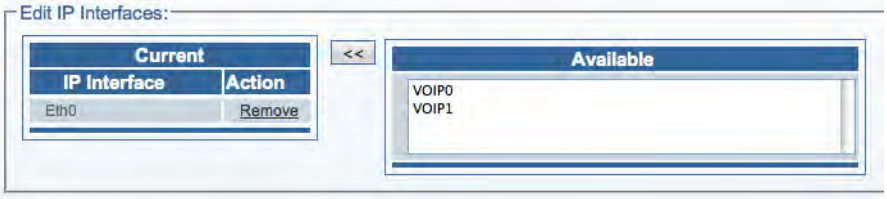

Figure 276. Associating IP Interfaces with the M3UA SAP

Understanding Parameters for M3UA SAPs

Table 62. Configuration Parameters for New M3UA SAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
SCTP Adapter	Defines a virtual adapter for a service access point (SAP) in a system using SIGTRAN protocols
SCTP Source Port	Defines a source port for a service access point (SAP) in a system using SIGTRAN protocols

Creating an M3UA Network

After you have created M3UA SAPs, you must create a new M3UA network to be used with them. To create an M3UA network:

1. Click **Create New M3ua Network** in the M3UA configuration panel:

Figure 277. M3UA Networks List

2. Configure the new M3UA network:
   - Enter a **name** for the network
   - Select a **protocol type**
   - Select a **sub-service field**
   - Select a **Destination Point Code (DPC)length**
   - Select an **Signaling Link Selection (SLS) range**
   - Click **Create**

Figure 278. Creating the New M3UA Network

3. Verify that the "**M3ua Network was successfully created**" message displays.

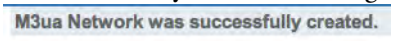

Figure 279. Successful M3UA Network Message

Understanding Parameters for M3UA Networks

Table 63. Configuration Parameters for New M3UA Networks

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Protocol Type	Identifies the SS7 protocol variant that will be used with a particular object. The appropriate protocol variant depends on the user's geographical location. Values are chosen from a drop-down list. The Protocol Type parameter can take on the following values, depending on the object being configured: ITU TELCORDIA SINGAPORE CHINA ITU88 ANSI88 Q767 ETSI ITU92 ANSI92 TTC ETSIV3 ITU97 ANSI95 NTT UK
Sub Service Field	Differentiates between national and international signals in MTP3 networks. Possible values: International/National/Nat. Reserved/Inter. Reserved
DPC Length	Sets a format for the destination point code (DPC) used by an object. Possible values: 14bits format=3.8.3 / 16bits format=7.4.5 / 24bits format=8.8.8
SLS Range	Used to route MPT3 links in the SS7 network

Creating an M3UA User Part

After you have created an M3UA network, you must create a new M3UA user part. To create an M3UA user part:

1. Click **Create New M3ua Userpart** in the M3UA network configuration window:

Figure 280. M3UA Network Configuration Window: Create M3UA User Part

2. Configure the new M3UA user part:
   - Enter a **name** for the user part
   - **IMPORTANT:**
     - For a system set up on a **Signaling Gateway**: Select an **MTP3 network**
     - For a system set up on **IPSP** or **ASP**, the MTP3 network field is not visible.
   - Click **Create**

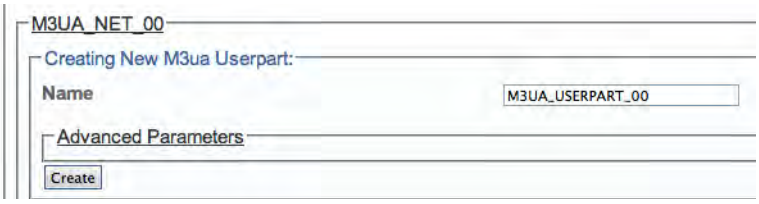

Figure 281. Creating the New M3UA User Part

3. Verify that the "**M3ua Userpart was successfully created**" message displays.

Figure 282. Successful M3UA User Part Message

Understanding Parameters for M3UA User Parts

Table 64. Configuration Parameters for New M3UA User Part

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
MTP3 Network	(Only displays for **Signaling Gateway**) Associates an MTP3 network with a higher level network in an SS7 system

Creating an M3UA Peer Signaling Process (IPSP)

After you have created M3UA user part, you must create a new M3UA peer signaling process (PSP). A PSP is used to describe a remote IPSP that is accessible through the M3UA system.

To create an M3UA Peer Signalling Process (PSP) on IPSP:

1. Click **Create New M3ua Peer Signaling Process** in the M3UA network configuration window:

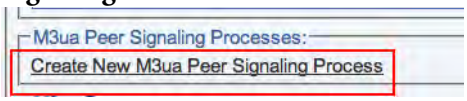

Figure 283. M3UA Network Configuration Window: Create M3UA PSP

2. Configure the new M3UA PSP:
   - Enter a **name** for the PSP
   - Select **IP Server Process (IPSP)** as the PSP type
   - Enter a **destination port** (as configured in the destination element)
   - Click **Create**

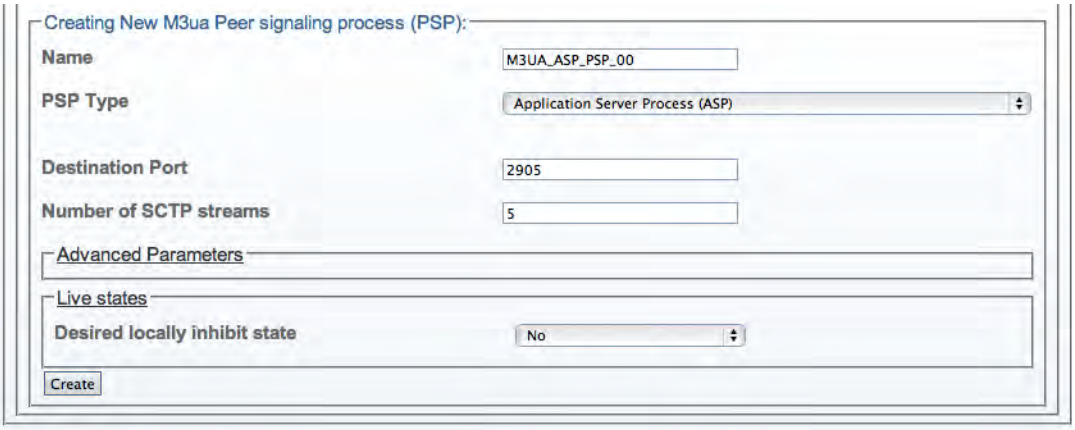

Figure 284. Creating the New M3UA PSP

3. Verify that the "**M3ua PSP was successfully created**" message displays.

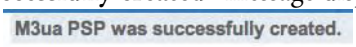

Figure 285. Successful M3UA PSP Message

4. Associate a SAP with the new PSP:
   - Select a **SAP** from the list of available SAPs
   - Click the "<<" button to associate it with the PSP.

Figure 286. Associating SAPs with the M3UA PSP

5. Enter a destination address for the PSP:
   - Enter a **destination address**
   - Click the "<<" button to add the destination address to the PSP
   - Verify that the "**(your address) was successfully added**" message appears.

Figure 287. Editing Destination Address for the PSP

Understanding Parameters for M3UA PSPs

Table 65. Configuration Parameters for New M3UA PSPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
PSP Type	Assigns a configuration to an M3UA peer signaling process. Possible values: Signaling Gateway Process (SGP) Application Server Process (ASP) IP Server Process (IPSP)
Destination Port	Sets a destination for a line in a system using SIGTRAN protocols

Creating an M3UA Peer Server

After you have created an M3UA peer signaling process (PSP), you must create a new Peer server. A peer server is a logical entity on the IP network that is served by one or more PSPs. To create an M3UA peer server:

1. Click **Create New M3ua Peer Server** in the M3UA network configuration window:

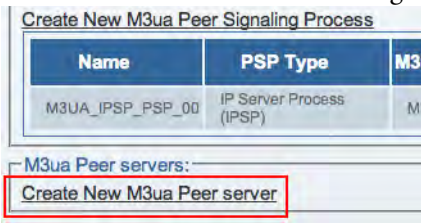

Figure 288. M3UA Network Configuration Window: Create M3UA Peer Server

2. Configure the new M3UA peer server:
   - Enter a **name** for the peer server
   - Check the **Local** box for **local peer server (OPC)**.
     For **remote peer server (DPC)**, do not check this box.

     Note For **Signaling Gateway (SG)**, this option does not appear, SG uses only remote peer servers.

   - Enter a value for the **routing context** (must be unique within a local or non-local server list. However, this value does not need to be unique across lists).
   - Click **Create**

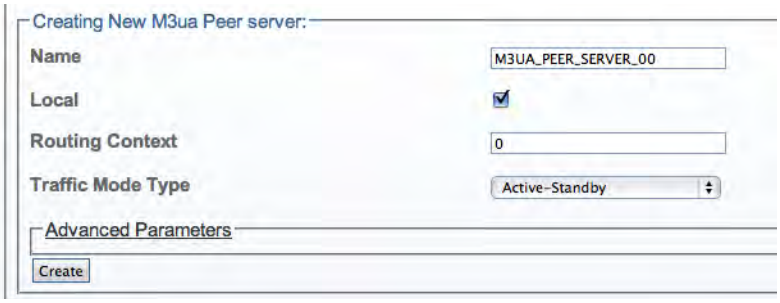

Figure 289. Creating the New M3UA Peer Server

3. Verify that the "**M3ua Peer server was successfully created**" message displays.

Figure 290. Successful M3UA Peer Server Message

4. Associate the newly created peer server with a peer signaling process (PSP):
   - Select a **PSP** from the list of available PSPs

– Click the "<<" button to associate the PSP with the peer server.

Figure 291. Associating PSPs with the New Peer Server

Understanding Parameters for M3UA Peer Servers

Table 66. Configuration Parameters for New M3UA Peer Servers

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Local	Defines an M3UA peer server as a local server
Routing Context	Sets an integer value for an M3UA peer server, to identify information sent. Values for this parameter are entered into a field, and must be unique within a single server list.

Creating an M3UA Route

After you have configured M3UA user parts, PSPs, and peer servers, you must create an M3UA route for your system. To create an M3UA route:

1. Click **Create New M3ua Route** in the M3UA network configuration window:

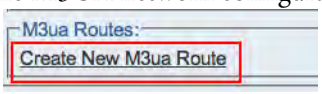

Figure 292. M3UA Network Configuration Window: Create M3UA Route

2. Configure the new M3UA route:
   - Enter a **name** for the route
   - Select a **route type**
   - Select an **M3UA peer server** (choose Local Peer server, if associated with an OPC, select Remote Peer server, if using DPC)
   - Select an **M3UA user part** (select NONE, if associated with a DPC)
   - Select a **point code**
   - Select a **point code mask** (Recommended value: Exact-match)
   - Select a **sub-service field type**
   - Click **Create**

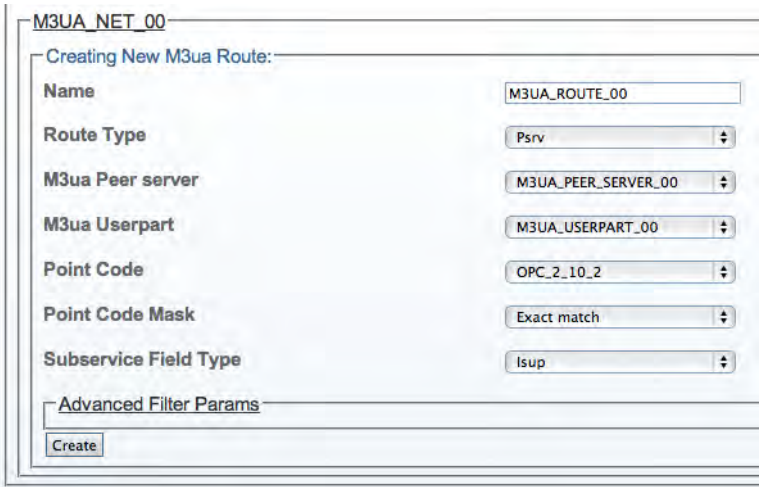

Figure 293. Creating the New M3UA Route

3. Verify that the "**M3ua route was successfully created**" message displays.

Figure 294. Successful M3UA Route Message

Understanding Parameters for M3UA Routes

Table 67. Configuration Parameters for New M3UA Routes

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Route Type	Assigns a type to an M3UA Route. Possible values: Local / Psvr
M3UA Peer Server	(Only available if **Psrv** was chosen as the route type) Associates a peer server with an M3UA route
M3UA User Part	Associates a userpart with an M3UA route
Point Code	Associates a point code with the M3UA route
Point Code Mask	Sets a scheme for accepting point codes in an M3UA route. By default, the only available value is “Exact match”.
Sub-Service Field Type	Sets a type for the sub-service field (SSF) of an M3UA route. Possible values: None / SCCP / ISUP

Configuring an M3UA System on a Signaling Gateway

An M3UA system on a Signaling Gateway Process interfaces with an M3UA system on an Application Server Process. In this configuration, the MTP3 links are extended across the IP network. Refer to the following sections to configure an M3UA system:

1. "Adding an Adapter" on page 117
2. "Creating Line Interfaces" on page 119
3. "Creating an MTP2 Configuration" on page 148
4. "Creating MTP2 Links" on page 149
5. "Creating the SCTP Configuration" on page 124
6. "Creating SS7 Point Codes" on page 129
7. "Creating an MTP3 Configuration" on page 131
   - "Creating an MTP3 Network" on page 132
   - "Creating an MTP3 Linkset" on page 133
   - "Creating MTP3 Links (M3UA)" on page 178
   - "Creating an MTP3 Route" on page 136
8. "Creating an M3UA Configuration (SGP)" on page 180
   - "Creating an M3UA SAP" on page 168
   - "Creating an M3UA Network" on page 169
   - "Creating an M3UA User Part" on page 170
   - "Creating an M3UA Peer Signaling Process (SGP)" on page 181
   - "Creating an M3UA Peer Server" on page 173
   - "Creating an M3UA Route (SGP)" on page 183

Creating MTP3 Links (M3UA)

After you have created an MTP3 linkset, you must create MTP3 links for your system. An MTP3 link is used to connect with a MTP2 link; they are connected in a one-to-one fashion.

To create an MTP3 link on your M3UA system:

1. Click **Create New Mtp3 Link** in the MTP3 linkset configuration window:

Figure 295. MTP3 Links

2. Configure the new MTP3 link:
   - Enter a **name** for the link
   - Select **MTP2** as the type of link to bind
   - Select an **MTP2 link**
   - Select a **priority level**
   - Select a **Messages priority**
   - Set the **C Link value**
   - Enter a **Link Test Slc** (this value is unique in the link list)
   - Enter **Link Test Characters**
   - Click **Create**

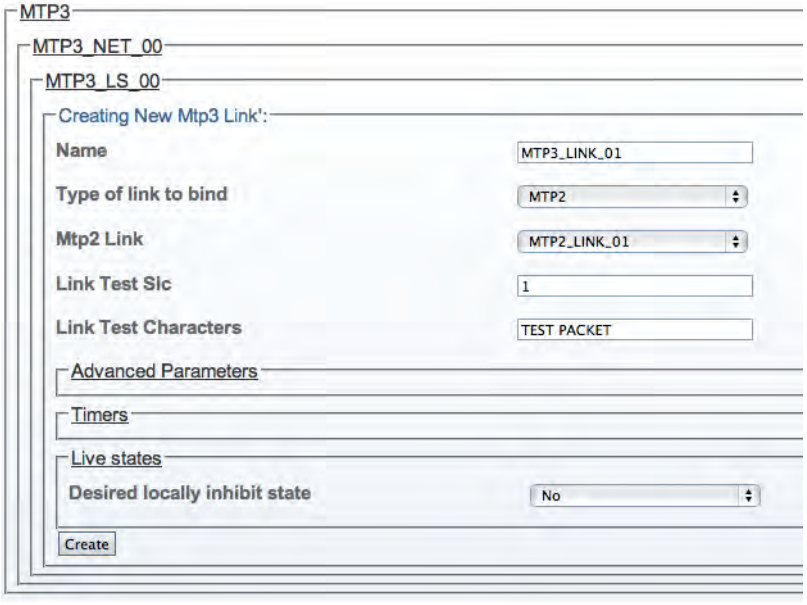

Figure 296. Creating the New MTP3 (M3UA) Link

3. Verify that the "**Mtp3Link was successfully created**" message displays:

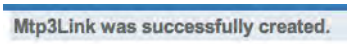

Figure 297. Successful MTP3 Link Message

Understanding Parameters for MTP3 (M3UA) Links

Table 68. Configuration Parameters for New MTP3 (M3UA) Links

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Link to Bind	Indicates the type of link to bind when creating an MTP3 link Possible values: MTP2/M2PA/M2UA
MTP2 Link	Selects an MTP2 link to bind to an object
Priority Level	Sets a priority for MTP3 links. Possible values: Priority 0/Priority 1/Priority 2/Priority 3
Message Priority	Sets a priority for messages on an MTP3 link. Possible values: None/Priority 0/Priority 1/Priority 2/Priority 3
C Link	Used only when two identical signal transfer points (STPs) are interconnected
Link Test Slc	Used in SLTM/SLTA messages on MTP3 links. Possible values: 0-15 ***NOTE:** Both ends of the line must use the same value, or the line will fail.
Link Test Characters	Creates a test packet for MTP3 lines

Creating an M3UA Configuration (SGP)

To set up your M3UA system on a signaling gateway process (SGP), you must first create a new M3UA configuration. In this configuration the SS7 MTP2 layer is replaced entirely by the SIGTRAN M3UA layer, and the MTP3 layer is extended over the IP network. To create an M3UA configuration on an SGP:

1. Select **M3UA** from the navigation panel:

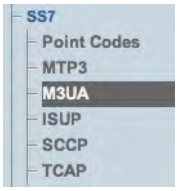

Figure 298. SS7 > M3UA

2. Configure the M3UA service for SGP:
   - Enter a **name** for the configuration
   - Select **Signaling Gateway Process (SGP)** as the node type
   - Click **Create**

Figure 299. Creating the New M3UA (SGP) Configuration

3. Verify that the "**M3uaCfg was successfully updated**" message displays.

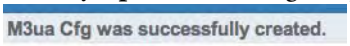

Figure 300. Successful Configuration Message

Understanding Parameters for M3UA Configurations

Table 69. Configuration Parameters for New M3UA Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Node Type	Assigns a configuration to an M3UA network. Possible values: Signaling Gateway Process (SGP) Application Server Process (ASP) IP Server Process (IPSP)

Creating an M3UA Peer Signaling Process (SGP)

After you have created M3UA user part, you must create a new M3UA peer signaling process (PSP). A PSP is used to describe a remote ASP that is accessible through the M3UA system.

To create an M3UA Peer Signaling Process (PSP) on an SGP system:

1. Click **Create New M3ua Peer Signaling Process** in the M3UA network configuration window:

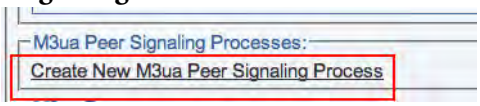

Figure 301. M3UA Network Configuration Window: Create M3UA PSP

2. Configure the new M3UA PSP:
   - Enter a **name** for the PSP
   - Select **Signaling Gateway Process (SGP)** as the PSP type
   - Enter a **destination port** (as configured in the destination element)
   - Click **Create**

Figure 302. Creating the New M3UA PSP (ASP)

3. Verify that the "**M3ua PSP was successfully created**" message displays.

Figure 303. Successful M3UA PSP Message

4. Associate a SAP with the new PSP:
   - Select a **SAP** from the list of available SAPs

– Click the "<<" button to associate it with the PSP.

Figure 304. Associating SAPs with the M3UA PSP

5. Enter a destination address for the PSP:

– Enter a **destination address**

– Click the "<<" button to add the destination address to the PSP

– Verify that the "**(your address) was successfully added**" message appears.

Figure 305. Editing Destination Address for the PSP

Understanding Parameters for M3UA PSPs

Table 70. Configuration Parameters for New M3UA PSPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
PSP Type	Assigns a configuration to an M3UA peer signaling process. Possible values: Signaling Gateway Process (SGP) Application Server Process (ASP) IP Server Process (IPSP)
Destination Port	Sets a destination for a line in a system using SIGTRAN protocols

Creating an M3UA Route (SGP)

After you have configured M3UA user parts, PSPs, and peer servers, you must create an M3UA route for your system. To create an M3UA route on an SGP:

1. Click **Create New M3ua Route** in the M3UA network configuration window:

Figure 306. M3UA Network Configuration Window: Create M3UA Route

2. Configure the new M3UA route:
   - Enter a **name** for the route
   - Select a **route type**
   - Select an **M3UA peer server** (choose Remote Peer server, if associated with an OPC, select NONE, if using DPC)
   - Select an **M3UA user part** (if associated with a DPC, select NONE for OPC)
   - Select a **point code**
   - Select a **point code mask** (Recommended value: Exact-match)
   - Select a **sub-service field type**
   - Click **Create**

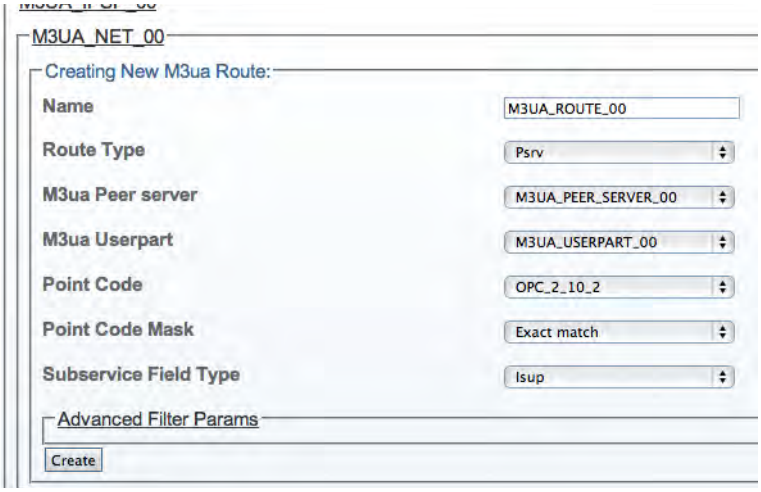

Figure 307. Creating the New M3UA Route

3. Verify that the "**M3ua route was successfully created**" message displays.

Figure 308. Successful M3UA Route Message

Understanding Parameters for M3UA Routes

Table 71. Configuration Parameters for New M3UA Routes

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Route Type	Assigns a type to an M3UA Route. Possible values: Local / Psvr
M3UA Peer Server	(Only available if **Psrv** was chosen as the route type) Associates a peer server with an M3UA route
M3UA User Part	Associates a userpart with an M3UA route
Point Code	Associates a point code with the M3UA route
Point Code Mask	Sets a scheme for accepting point codes in an M3UA route. By default, the only available value is “Exact match”.
Sub-Service Field Type	Sets a type for the sub-service field (SSF) of an M3UA route. Possible values: None / SCCP / ISUP

Configuring an M3UA System on an Application Server

An M3UA system on a Signaling Gateway Process interfaces with an M3UA system on an Application Server Process. In this configuration, the MTP3 links are extended across the IP network. Refer to the following sections to configure an M3UA system:

1. "Adding an Adapter" on page 117
2. "Creating the SCTP Configuration" on page 124
3. "Creating SS7 Point Codes" on page 129
4. "Creating an M3UA Configuration (ASP)" on page 186
   - "Creating an M3UA SAP" on page 168
   - "Creating an M3UA Network" on page 169
   - "Creating an M3UA User Part" on page 170
   - "Creating an M3UA Peer Signaling Process (ASP)" on page 187
   - "Creating an M3UA Peer Server" on page 173
   - "Creating an M3UA Route (SGP)" on page 183
5. "Creating an ISUP Stack" on page 138
   - "Creating an M3UA ISUP Network" on page 189
   - "Creating an ISUP User Part" on page 141
   - "Creating an ISUP Interface" on page 142
   - "Creating ISUP CIC Groups" on page 144
   - "Creating a NAP (SIGTRAN)" on page 145

Creating an M3UA Configuration (ASP)

To set up your M3UA system on an application server process (ASP), you must first create a new M3UA configuration. In this configuration the SS7 MTP2 layer is replaced entirely by the SIGTRAN M3UA layer, and the MTP3 layer is extended over the IP network. To create an M3UA configuration on an ASP:

1. Select **M3UA** from the navigation panel:

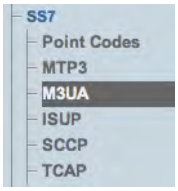

Figure 309. SS7 > M3UA

2. Configure the M3UA service for SGP:
   - Enter a **name** for the configuration
   - Select **Application Server Process (ASP)** as the node type
   - Click **Create**

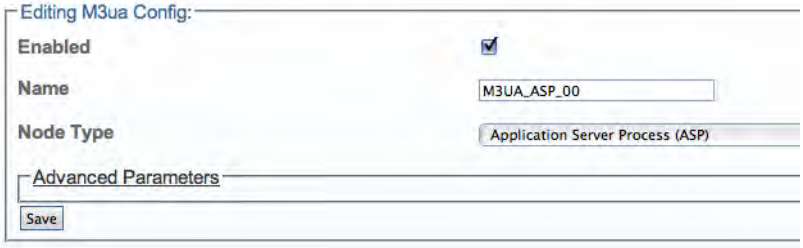

Figure 310. Creating the New M3UA (ASP) Configuration

3. Verify that the "**M3uaCfg was successfully updated**" message displays.

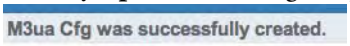

Figure 311. Successful Configuration Message

Understanding Parameters for M3UA Configurations

Table 72. Configuration Parameters for New M3UA Configurations

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Node Type	Assigns a configuration to an M3UA network. Possible values: Signaling Gateway Process (SGP) Application Server Process (ASP) IP Server Process (IPSP)

Creating an M3UA Peer Signaling Process (ASP)

After you have created M3UA user part, you must create a new M3UA peer signaling process (PSP). A PSP is used to describe a remote SGP that is accessible through the M3UA system. To create an M3UA Peer Signaling Process (PSP) on an ASP system:

1. Click **Create New M3ua Peer Signaling Process** in the M3UA network configuration window:

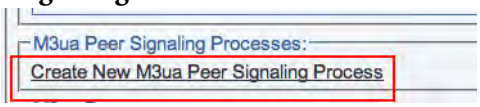

Figure 312. M3UA Network Configuration Window: Create M3UA PSP

2. Configure the new M3UA PSP:
   - Enter a **name** for the PSP
   - Select **Application Server Process (SGP)** as the PSP type
   - Enter a **destination port** (as configured in the destination element)
   - Click **Create**

Figure 313. Creating the New M3UA PSP (ASP)

3. Verify that the "**M3ua PSP was successfully created**" message displays.

Figure 314. Successful M3UA PSP Message

4. Associate a SAP with the new PSP:
   - Select a **SAP** from the list of available SAPs
   - Click the "<<" button to associate it with the PSP.

Figure 315. Associating SAPs with the M3UA PSP

5. Enter a destination address for the PSP:
   - Enter a **destination address**
   - Click the "<<" button to add the destination address to the PSP
   - Verify that the "**(your address) was successfully added**" message appears.

Figure 316. Editing Destination Address for the PSP

Understanding Parameters for M3UA PSPs

Table 73. Configuration Parameters for New M3UA PSPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
PSP Type	Assigns a configuration to an M3UA peer signaling process. Possible values: Signaling Gateway Process (SGP) Application Server Process (ASP) IP Server Process (IPSP)
Destination Port	Sets a destination for a line in a system using SIGTRAN protocols

Creating an M3UA ISUP Network

After you have created an initial ISUP stack, you must create a new ISUP network. The ISUP network tells the ISUP protocol layer about a collection of SS7 nodes that are accessible through MTP3 or M3UA. Based upon your system configuration, one or more ISUP networks are created. Repeat this section for as many networks as you require.

Note An ISUP network can be used by multiple ISUP interfaces even if they are members of different ISUP userpart (e.g., to support multiple switch variants for a single SS7 network).

To create an M3UA ISUP network:

1. Click "**Create New ISUP Network**" in the ISUP stack configuration window:

Figure 317. Editing ISUP Networks

2. Configure the new ISUP network:
   - Enter a **name** for the network
   - Select **M3UA** as the **type of network to bind**
   - Select an **M3UA Userpart**
   - Click **Create**

Figure 318. Creating the New M3UA ISUP Network

3. Verify that the "**IsupNetwork was successfully created**" message displays.

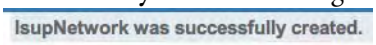

Figure 319. Successful ISUP Network Message

Understanding Parameters for M3UA ISUP Networks

Table 74. Configuration Parameters for New M3UA ISUP Network

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type of Network to Bind	Indicates the type of network to associate with an ISUP Network Possible values: MTP3/M3UA
M3UA Userpart	Associates a userpart with an M3UA route

Figure 320. General View: SS7 M3UA Stack

Chapter 6 Configuring CAS R2

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Overview

The Smart Media Software allows you to configure CAS R2 signaling stacks. Refer to the following sections to configure CAS R2:

1. "Adding an Adapter" on page 192
2. "Creating Line Interfaces" on page 194
3. "Creating Line Services" on page 196
4. "Copying a Variant Script (optional)" on page 199
5. "Creating a CAS R2 Stack" on page 200
6. "Creating a CAS R2 NAP" on page 201

Adding an Adapter

When you receive a new system, at least one hardware configuration will have been set in the Smart Media application server, by default. To add other hardware devices, you must use the Smart Media Web Portal. To add one or more additional hardware devices to the Smart Media system configuration, their serial numbers must be registered with the Smart Media application server.

To add a hardware device:

1. Select **Hardware** from the navigation panel:

Figure 321. config_patton > Hardware

2. Click **Create New Hardware** to add a new hardware device:

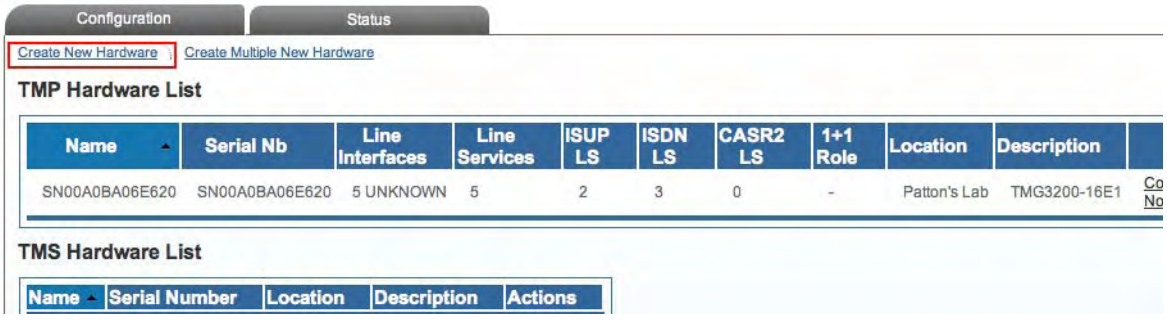

Figure 322. Hardware List

3. Configure the new adapter:
   - Enter a **name** for the hardware device
   - Enter the **serial number** of the new hardware device (filling in the Serial Number field will cause auto-completion of the field to occur).

– Select the appropriate **hardware device** from the Adapter Type field.

– Select **Enabled** from the Target State field.

– Click **Create**

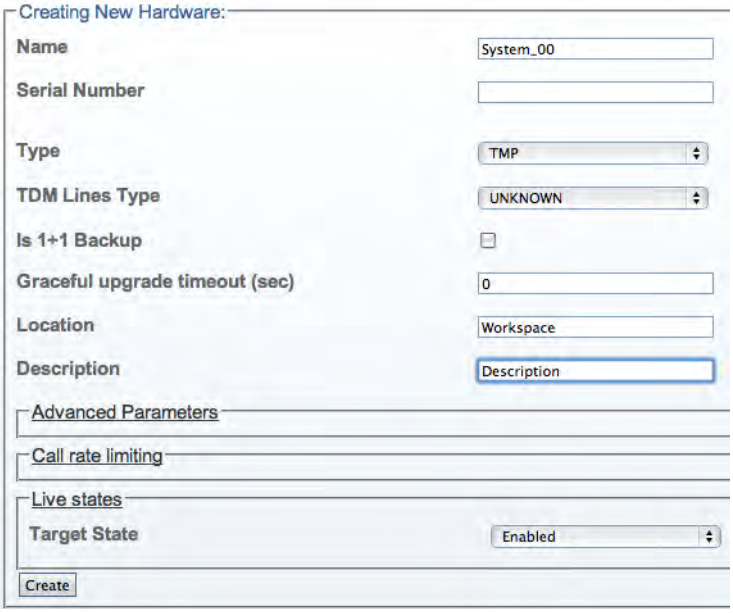

Figure 323. Creating the New Hardware Device

4. Verify that the "**Adapter was successfully created**" message displays, and that the newly added hardware device appears in the **Hardware List** below.

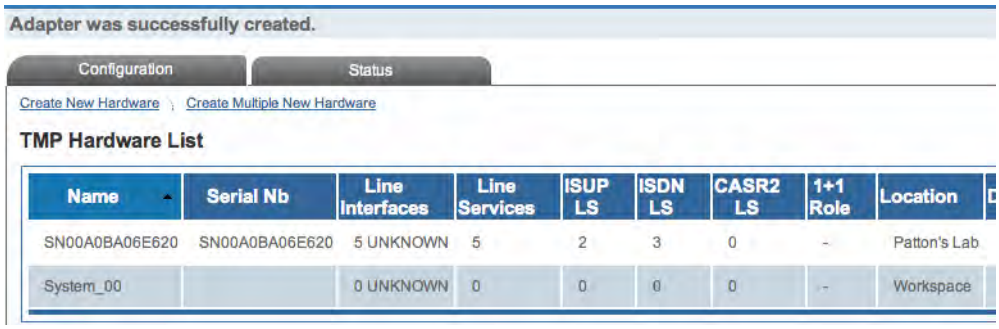

Figure 324. Successful Device Message

Understanding Parameters for Hardware Adapters

Table 75. Configuration Parameters for New Hardware Adapters

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Serial	Defines a product serial number, when creating a new hardware device. Entering characters into the Serial field will cause the number to auto-complete.
Adapter Type	Specifies the type of hardware device being created, when adding a new adapter. Possible values: TMP/TMS
Graceful Upgrade Timeout	Sets a maximal delay for calls to terminate normally before an adapter is upgraded
Location	Identifies the physical location of a hardware adapter
Description	Describes the purpose of a particular hardware adapter
Target State	Sets the live state of a hardware adapter. Possible values: Disabled/Probation/Enabled

Creating Line Interfaces

Line interface is a generic term for TDM physical interfaces. The SmartNode 10200 Series supports three types of physical interfaces: T1/E1/J1 interfaces, DS3 interfaces, and Oc3/STM1 interfaces.

To create a new line interface:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

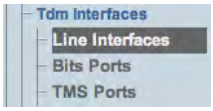

Figure 325. TDM Interfaces > Line Interfaces

2. Click **Create New Line Interface** to create a single interface, or **Create Multiple Line Interfaces** to create many interfaces at once:

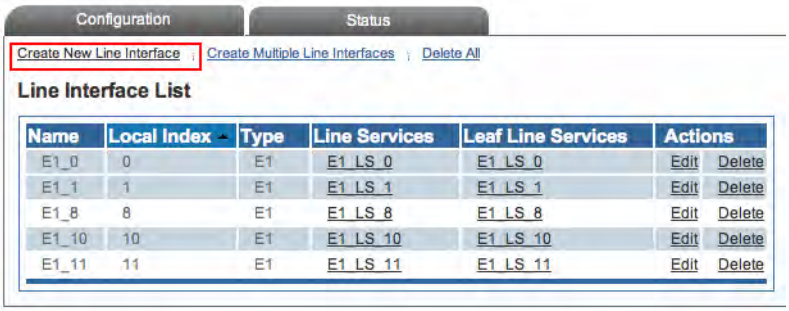

Figure 326. Line Interface List

3. Create the new line interface:
   - Enter a **name** for the interface
   - Set a **type** for the interface

– Set a **local index** for the line

– Select a **length** and an **encoding scheme**

– Click **Create**

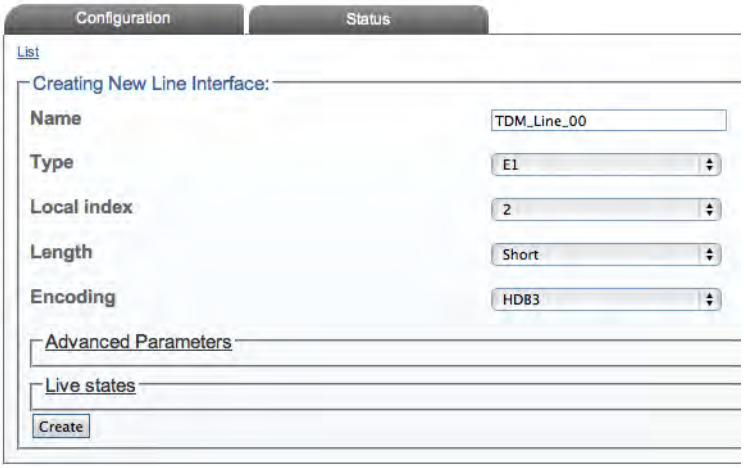

Figure 327. Create New Line Interface

4. Verify that the "**Line interface was successfully created**" message is displayed.

Figure 328. Confirmation Message for New Line Interface

Understanding Parameters for Line Interfaces

Table 76. Configuration Parameters for New Line Interfaces

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type	Defines the type of line interface: E1/DS3/T1/J1/STM1/OC3
Local Index	Assigns an integer to represent an object
Length	Indicates the physical length of a line: Short/Long/Autodetect/Monitoring
Encoding	Sets an encoding scheme for a line interface. Values depend on the interface type: **E1**: HDB3/AMI **DS3**: B3ZS **T1/J1**: B8ZS/AMI/AMI CLEAR **STM1/OC3**: (None)

Creating Line Services

You must create a new line service for your line interface. A line service defines the payload type of a line interface or another line service. The line service chain stops when it reach the E1/J1/T1 line service. The E1/J1/T1 line services are also known as trunks or spans.

To create a new line service:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

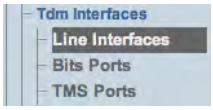

Figure 329. TDM Interfaces > Line Interfaces

2. Click **Edit** next to the line service for which you wish to create a line service:

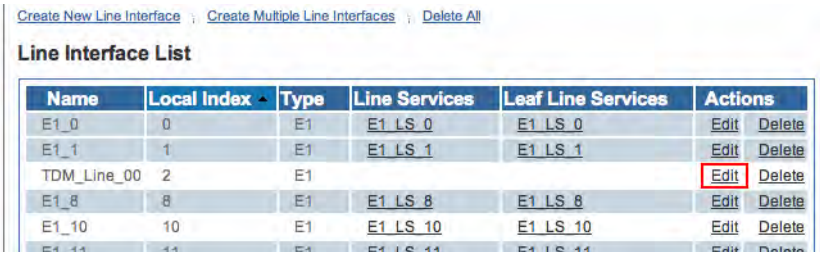

Figure 330. Line Interface List

3. In the following window, click **Create New Child Line Service** (also, a number can be created at once by selecting **Create Multiple Child Line Service**):

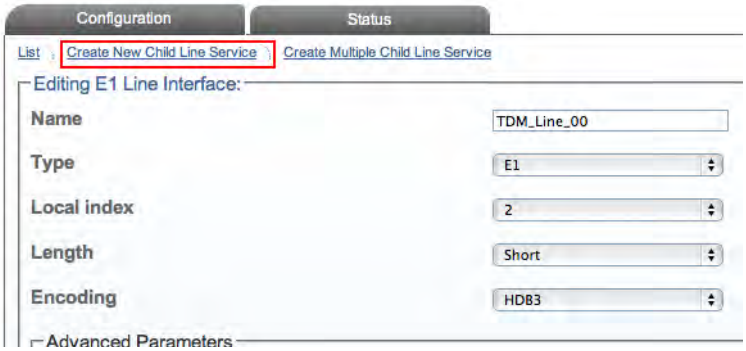

Figure 331. Editing a Line Interface to Create a New Service

4. Create the new line service:
   - Enter a **name** for the new line
   - Select an available **local index**, from the drop-down box
   - Select appropriate **framing** and **loopback modes**

– Click **Create**

Figure 332. Create New Line Service

5. Navigate back to the line interface page, by following link displayed in the upper-left corner of the screen. The new line service should be displayed in the **Line Services** list.

Figure 333. Line Services List

Understanding Parameters for Line Services

Table 77. Configuration Parameters for New Line Services

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Local Index	Assigns an integer to represent an object
Framing	Sets a framing type for a line service. Select from: AUTO (typical for E1)/STD/MFRAME/SF/ESF (typical for T1)/SLC96
Loopback	Used to set a loopback state for a line service. Refer to table 78 for details.

Table 78. Loopback Types

Loopback Type	Description	Behavior	Use
NONE	Normal Operation	All traffic is received and sent on the line	Always
LINE	Analog Line Loopback	All received traffic is re-routed on the transmit line. The clock and data recovered from the line inputs are routed back to the line outputs of the analog transceiver bypassing the framer modules.	First step in testing a physical connection
PAYLOAD	Digital Line Loopback	All received traffic is re-routed on the transmit line.The clock and data recovered from the line inputs are routed back to the line outputs after the deframer/framer.	Second step in testing a physical connection. This tests the framer configuration.
GENERATE_LOS	Generate Loss of Signal	This forces the transmit line to stop sending.	This is the second-best thing to disconnecting the line interface physically.
LOCAL	Local Loopback	All received traffic is dropped. The traffic sent is re-routed internally.	Never. Used for internal testing only

Copying a Variant Script (optional)

If you plan to modify an existing CASR2 script, you may optionally create a copy of that script first.

1. Select **CASR2 Scripts** from the navigation pane:

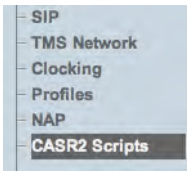

Figure 334. Menu > CASR2 Scripts

2. Click **Copy** next to the desired configuration.

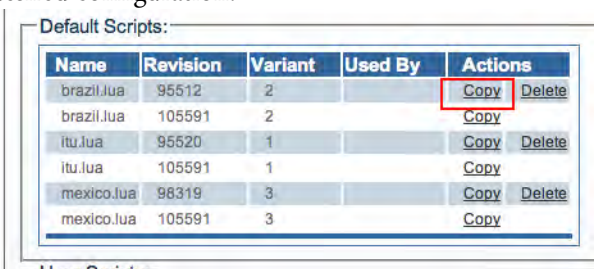

Figure 335. Copy from Scripts List

3. Copy the CAS R2 Script:
   - Enter a new **name** for the script
   - Click **Create**

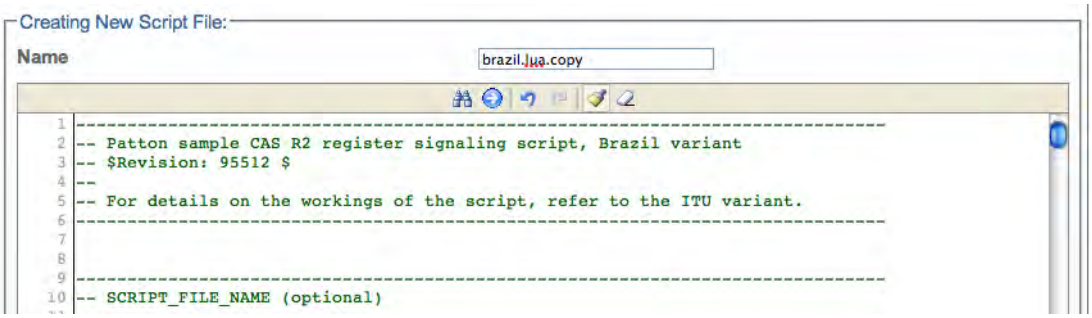

Figure 336. Creating a New Script File

4. Verify that the "**Script file was successfully created**" message displays.

Figure 337. Successful Script File Message

5. The copied script now appears in the **User Scripts** list.

Figure 338. User Scripts List

Creating a CAS R2 Stack

Now that the necessary underlying structures have been configured, you must create a new CAS R2 stack.

The Smart Media CAS R2 stack features a scriptable register signaling engine that, in practice, allows the complete customization of communication processes using tones. More specifically, it is possible to modify the timing(s) of the tone exchanges, change the meaning(s) of each tone and dynamically specify the sequence in which the tones are played. The CAS R2 stack also provides integrated interoperability between variants and between other signaling types. For instance, the calling party category can be converted between variants and propagated to a SS7 call leg. To create a CAS R2 stack:

1. Select **CAS R2** from the navigation pane:

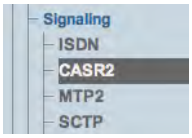

Figure 339. Signaling > CASR2

2. Click **Create New CASR2 Stack**.

Figure 340. CASR2 Stack List

3. Configure the new CAS R2 stack:
   - Make sure the **Enabled** box is checked
   - Enter a **name** for the stack
   - Select a **line service**
   - Select a **variant script**
   - Click **Create**

Figure 341. Creating the New CAS R2 Stack

Understanding Parameters for CAS R2 Stacks

Table 79. Configuration Parameters for CAS R2 Stacks

Parameter	Description
Enabled	Indicates whether or not an object is to be implemented or not
Name	Used by the Web Portal to indicate a specific object or string in the system
Line Service	Indicates which TDM line service is to be associated with the object being created
Variant Script	Sets a regional script for a CAS R2 signaling. Possible values: brazil.lua / itu.lua

Creating a CAS R2 NAP

After you have created a CAS R2 stack, you must create a network access point, in order to finish configuring your system. A Network Access Point (NAP) represents the entry point to another network or destination peer.

To create a network access point (NAP):

1. Select **NAP** from the navigation pane:

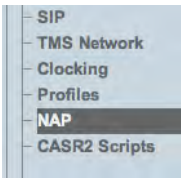

Figure 342. Menu > NAP

2. Click **Create New NAP**.

Figure 343. Network Access Point List

3. Configure the new NAP:
   - Enter a **name** for the NAP
   - Select a **user-created profile**. If none, select **default**.

– Click **Create**

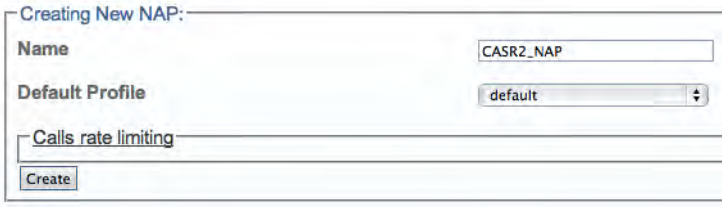

Figure 344. Creating New CAS R2 NAP

4. Verify that the "**NAP was successfully created**" message displays.

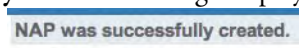

Figure 345. Successful NAP Message

5. Associate a CASR2 stack with the NAP:
   – Select an **interface** (the **newly-created CASR2 stack**)
   – Click the "<<" button to add the interface to the list
   – Click **Save**

Figure 346. Associating a CAS R2 Stack with the NAP

6. Verify that the "**NAP was successfully updated**" message displays.

Figure 347. Successful NAP Update Message

Understanding Parameters for NAPs

Table 80. Configuration Parameters for NAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Default Profile	Sets a profile for a NAP. The default value is simply labeled "Default", but can be changed if alternate profiles have been created.

Chapter 7 Configuring H.248

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Overview

Refer to the following sections to configure the H.248 media gateway control protocol:

1. "Adding an Adapter" on page 204
2. "Creating Line Interfaces" on page 206
3. "Creating Line Services" on page 208
4. "Creating an IP Port Range" on page 210
5. "Configuring Network Access Points (NAPs)" on page 212
   - "Allocating a VoIP network access point (NAP)" on page 212
   - "Allocating a TDM Network Access Point (NAP)" on page 213
6. "Configuring the Media Gateway for H.248 Mode" on page 215
7. "Creating an H.248 Configuration" on page 216
8. "Adding a New Media Gateway Controller (MGC)" on page 217
9. "Associating NAPs with the H.248 Configuration" on page 218
10. "Selecting Timeslots for TDM Interfaces" on page 219

Adding an Adapter

When you receive a new system, at least one hardware configuration will have been set in the Smart Media application server, by default. To add other hardware devices, you must use the Smart Media Web Portal. To To add a hardware device:

1. Select **Hardware** from the navigation panel:

Figure 348. config_patton > Hardware

2. Click **Create New Hardware** to add a new hardware device:

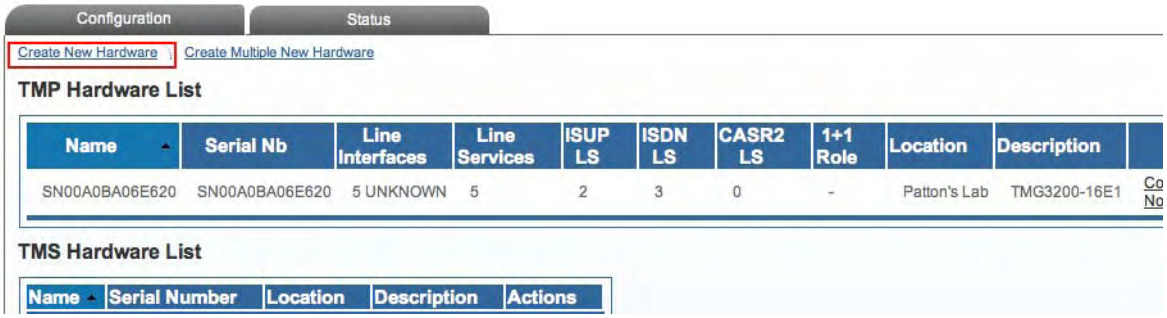

Figure 349. Hardware List

3. Configure the new adapter:

– Enter a **name** for the hardware device

– Enter the **serial number** of the new hardware device (filling in the Serial Number field will cause auto-completion of the field to occur).

– Select the appropriate **hardware device** from the Adapter Type field.

– Select **Enabled** from the Target State field.

– Click **Create**

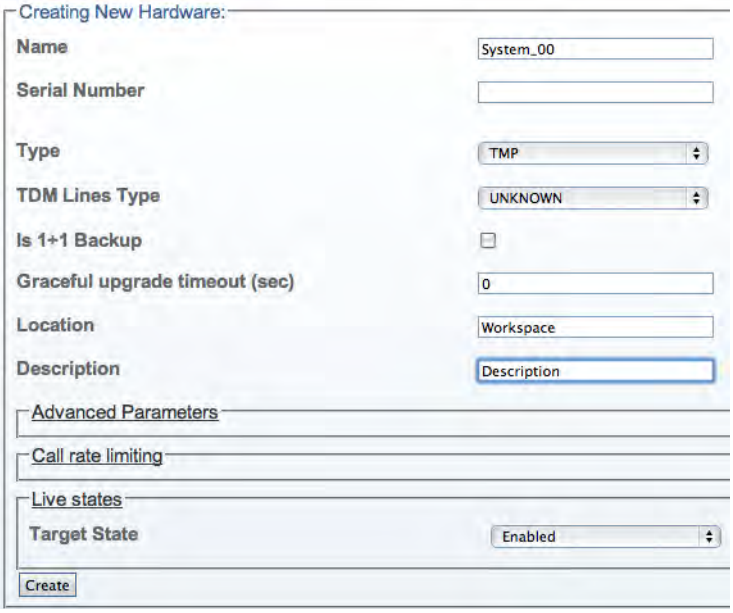

Figure 350. Creating the New Hardware Device

4. Verify that the "**Adapter was successfully created**" message displays, and that the newly added hardware device appears in the **Hardware List** below.

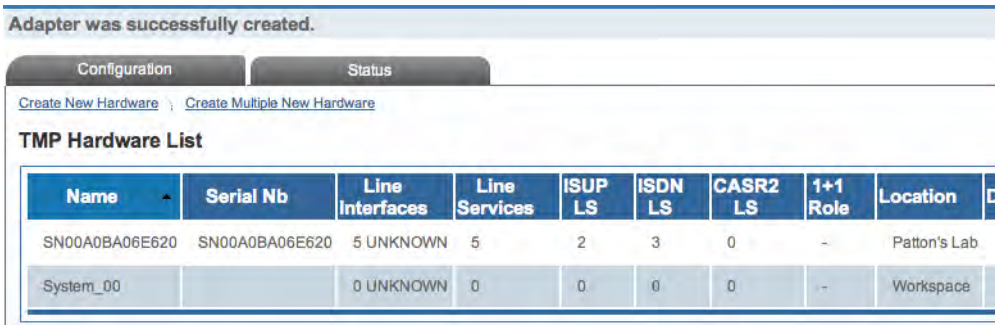

Figure 351. Successful Device Message

Understanding Parameters for Hardware Adapters

Table 81. Configuration Parameters for New Hardware Adapters

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Serial	Defines a product serial number, when creating a new hardware device. Entering characters into the Serial field will cause the number to auto-complete.
Adapter Type	Specifies the type of hardware device being created, when adding a new adapter. Possible values: TMP/TMS
Graceful Upgrade Timeout	Sets a maximal delay for calls to terminate normally before an adapter is upgraded
Location	Identifies the physical location of a hardware adapter
Description	Describes the purpose of a particular hardware adapter
Target State	Sets the live state of a hardware adapter. Possible values: Disabled/Probation/Enabled

Creating Line Interfaces

Line interface is a generic term for TDM physical interfaces. The SmartNode 10200 Series supports three types of physical interfaces: T1/E1/J1 interfaces, DS3 interfaces, and Oc3/STM1 interfaces.

To create a new line interface:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

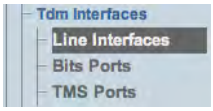

Figure 352. TDM Interfaces > Line Interfaces

2. Click **Create New Line Interface** to create a single interface, or **Create Multiple Line Interfaces** to create many interfaces at once:

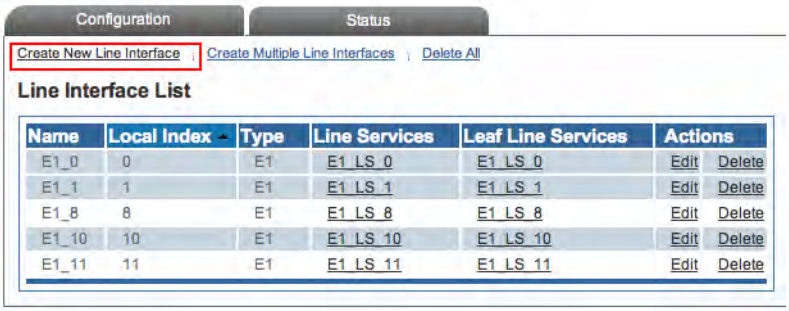

Figure 353. Line Interface List

3. Create the new line interface:
   - Enter a **name** for the interface
   - Set a **type** for the interface

– Set a **local index** for the line

– Select a **length** and an **encoding scheme**

– Click **Create**

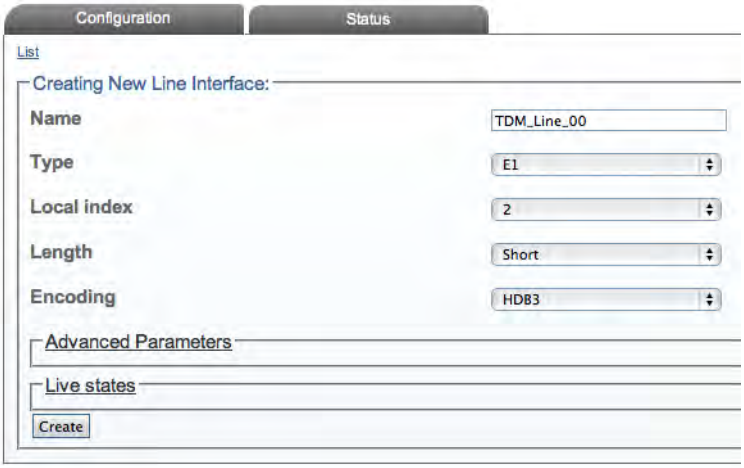

Figure 354. Create New Line Interface

4. Verify that the "**Line interface was successfully created**" message is displayed.

Figure 355. Confirmation Message for New Line Interface

Understanding Parameters for Line Interfaces

Table 82. Configuration Parameters for New Line Interfaces

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Type	Defines the type of line interface: E1/DS3/T1/J1/STM1/OC3
Local Index	Assigns an integer to represent an object
Length	Indicates the physical length of a line: Short/Long/Autodetect/Monitoring
Encoding	Sets an encoding scheme for a line interface. Values depend on the interface type: **E1**: HDB3/AMI **DS3**: B3ZS **T1/J1**: B8ZS/AMI/AMI CLEAR **STM1/OC3**: (None)

Creating Line Services

You must create a new line service for your line interface. A line service defines the payload type of a line interface or another line service. The line service chain stops when it reach the E1/J1/T1 line service. The E1/J1/T1 line services are also known as trunks or spans.

To create a new line service:

1. Select **Tdm Interfaces-->Line Interfaces** from the navigation panel:

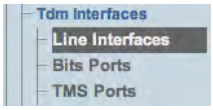

Figure 356. TDM Interfaces > Line Interfaces

2. Click **Edit** next to the line service for which you wish to create a line service:

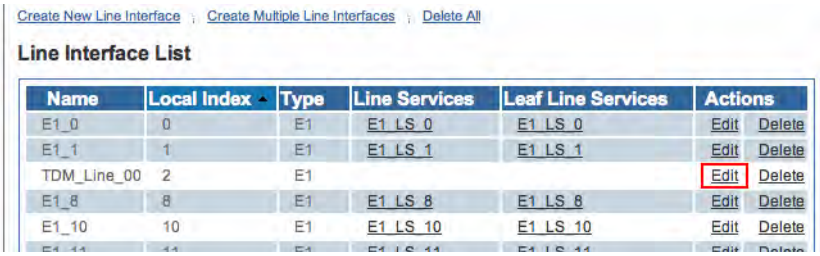

Figure 357. Line Interface List

3. In the following window, click **Create New Child Line Service** (also, a number can be created at once by selecting **Create Multiple Child Line Service**):

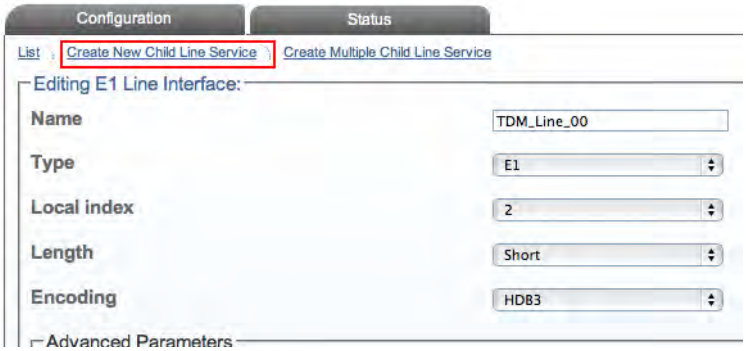

Figure 358. Editing a Line Interface to Create a New Service

4. Create the new line service:
   - Enter a **name** for the new line
   - Select an available **local index**, from the drop-down box
   - Select appropriate **framing** and **loopback modes**

– Click **Create**

Figure 359. Create New Line Service

5. Navigate back to the line interface page, by following link displayed in the upper-left corner of the screen. The new line service should be displayed in the **Line Services** list.

Figure 360. Line Services List

Understanding Parameters for Line Services

Table 83. Configuration Parameters for New Line Services

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
Local Index	Assigns an integer to represent an object
Framing	Sets a framing type for a line service. Select from: AUTO (typical for E1)/STD/MFRAME/SF/ESF (typical for T1)/SLC96
Loopback	Used to set a loopback state for a line service. Refer to table 84 for details.

Table 84. Loopback Types

Loopback Type	Description	Behavior	Use
NONE	Normal Operation	All traffic is received and sent on the line	Always
LINE	Analog Line Loopback	All received traffic is re-routed on the transmit line. The clock and data recovered from the line inputs are routed back to the line outputs of the analog transceiver bypassing the framer modules.	First step in testing a physical connection
PAYLOAD	Digital Line Loopback	All received traffic is re-routed on the transmit line.The clock and data recovered from the line inputs are routed back to the line outputs after the deframer/framer.	Second step in testing a physical connection. This tests the framer configuration.

Table 84. Loopback Types

Loopback Type	Description	Behavior	Use
GENERATE_LOS	Generate Loss of Signal	This forces the transmit line to stop sending.	This is the second-best thing to disconnecting the line interface physically.
LOCAL	Local Loopback	All received traffic is dropped. The traffic sent is re-routed internally.	Never. Used for internal testing only

Creating an IP Port Range

Creating an IP port range

After you have properly allocated all of your system's physical interfaces, you must create a new IP port range.

1. Click **IP Interfaces** in the navigation panel:

Figure 361. Menu: IP Interfaces

2. In the **IP Interfaces** window, click **Create New Port Range**:

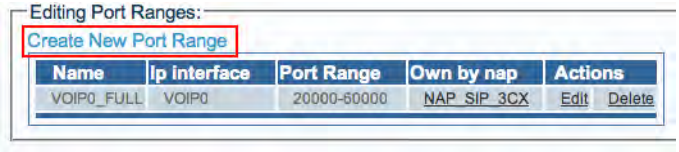

Figure 362. Editing Port Ranges

3. Create the new IP port range:
   - Enter a **name** for the port range
   - Select an **IP interface**
   - Enter a **port min value** (must be at least 1024)
   - Enter a **port max value**

– Click **Create**

Figure 363. Creating a New Port Range

4. Verify that the "**Port Range was successfully created**" message appears:

Figure 364. Confirmation Message for Port Range

Understanding Parameters for IP Port Ranges

Table 85. Configuration Parameters for New IP Port Ranges

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
IP Interface	Identifies an IP interface that is to be associated with the structure being created
Port Min	Sets a minimum value for an IP port range. Since only even-numbered ports will be used to send RTP over, it is recommended that the Port Min value be at least 1000
Port Max	Sets a maximum value for an IP port range. Since only even-numbered ports will be used to send RTP over, it is recommended that the Port Min value be at least 1000. Ex.: 10000-20000 –> 5000 connections

Configuring Network Access Points (NAPs)

A network access point or NAP represents the entry point to another network or destination peer (e.g. SIP proxy, ISUP interface peer, etc).

Allocating a VoIP network access point (NAP)

Now that you have created the necessary IP port ranges, you must allocate a VoIP network access point for your system.

1. Click **NAP** in the navigation panel:

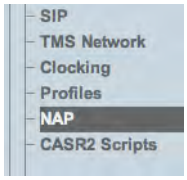

Figure 365. Menu: NAP

2. Click **Create New NAP**:

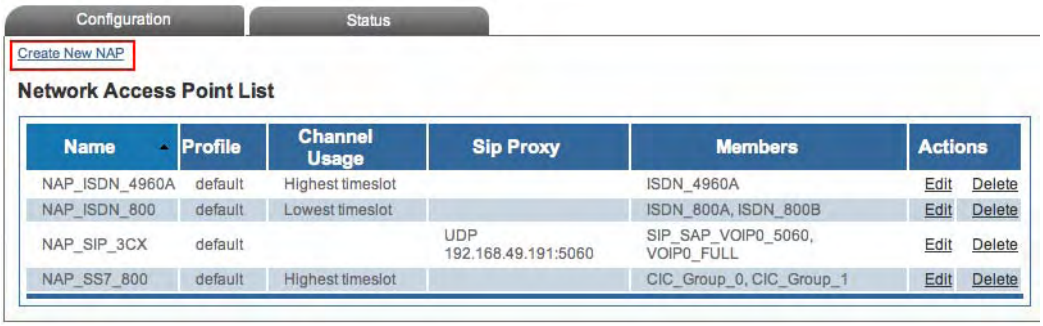

Figure 366. Edit NAP List

3. Create the new NAP:
   - Enter a **name** for the NAP
   - Click **Create**

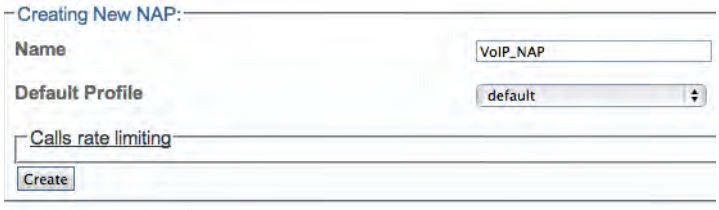

Figure 367. Creating the New VoIP NAP

4. Verify that the **NAP was successfully created** message appears:

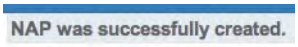

Figure 368. Confirmation Message for New NAP

5. Associate VoIP media with the new NAP:
   – Select **VoIP media** from the VoIP Media Only menu (this is the port range that was created earlier)
   – Click the "<<" button to associate it with the NAP

Figure 369. Associating VoIP Media with the New NAP

Understanding Parameters for VoIP NAPs

Table 86. Configuration Parameters for VoIP NAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Allocating a TDM Network Access Point (NAP)

You must now allocate a TDM network access point for your system. A network access point or NAP represents the entry point to another network or destination peer (e.g. SIP proxy, ISUP interface peer, etc).

1. Click **NAP** in the navigation panel:

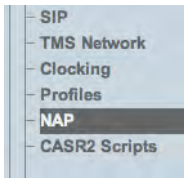

Figure 370. Menu: NAP

2. Click **Create New NAP**:

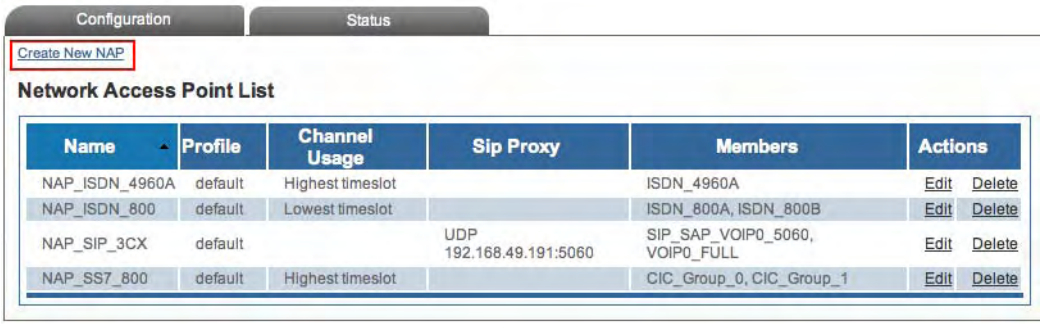

Figure 371. Edit NAP List

3. Create the new NAP:
   – Enter a **name** for the NAP

– Click **Create**

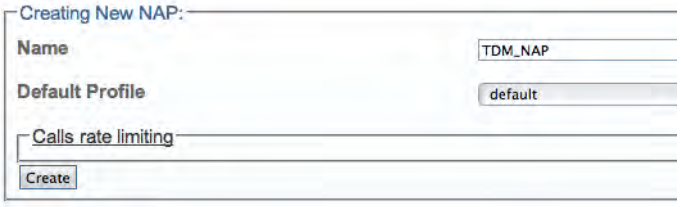

Figure 372. Creating the New TDM NAP

4. Verify that the **NAP was successfully created** message appears:

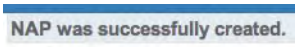

Figure 373. Confirmation Message for New NAP

5. Associate TDM media with the new NAP:
   – Select a **line service** from the LS Media Only menu (this is the line service that was created earlier)
   – Click the "<<" button to associate it with the NAP

Figure 374. Associating VoIP Media with the New NAP

Understanding Parameters for TDM NAPs

Table 87. Configuration Parameters for TDM NAPs

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system

Configuring the Media Gateway for H.248 Mode

To configure the media gateway for H.248:

1. Select **Configurations** from the navigation pane:

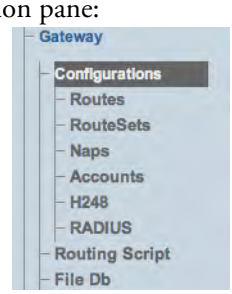

Figure 375. Menu > Configurations

2. Configure the Application Mode:
   - Select **H248**
   - Click **Save**

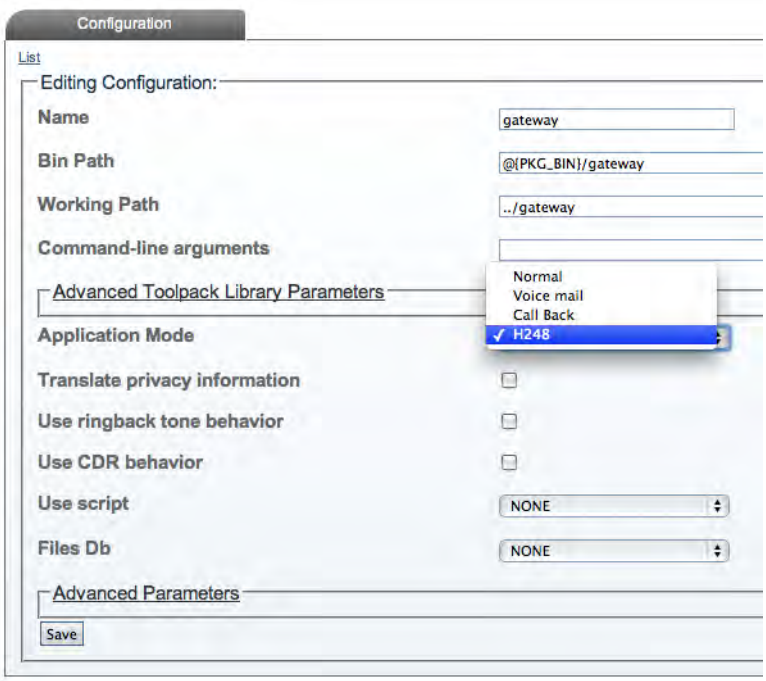

Figure 376. Setting the Application Mode to H.248

Creating an H.248 Configuration

After you have created the necessary VoIP and TDM NAPs, you are ready to create a new H.248 configuration.

1. Select **H248** from the navigation panel:

Figure 377. Gateway > H248

2. Create the new configuration:
   - Select a **transport protocol type**
   - Enter a **public IP address**
   - Enter a **private IP address**
   - Click **Create**

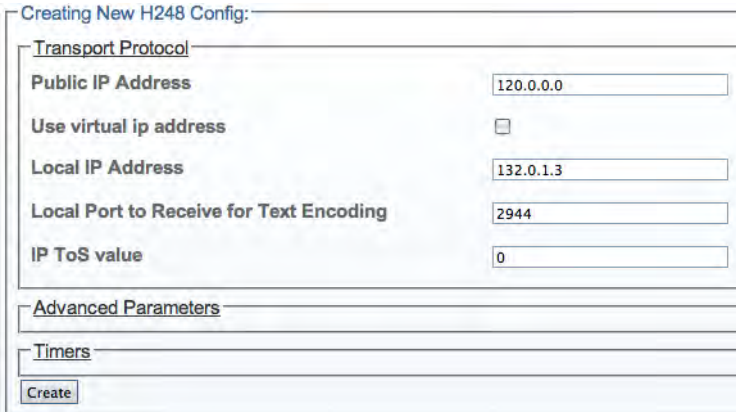

Figure 378. Creating the New H.248 Configuration

3. Verify that the "**TbgwH248Cfg was successfully created**" message displays.

Figure 379. Successful Configuration Message

Understanding Parameters for H.248 Configuration

Table 88. Configuration Parameters for H.248 Configuration

Parameter	Description
Transport Protocol Type	Sets the kind of protocol handled by an H.248 configuration. Possible values: UDP / SCTP
Public IP Address	Sets an address for externally accessing an H.248 configuration
Private IP Address	Sets an address for privately accessing an H.248 configuration

Adding a New Media Gateway Controller (MGC)

After you have created the H.248 configuration, you must create a new media gateway controller (MGC).

A Media Gateway Controller (MGC) is a system used in VoIP architectures to control a number of Media Gateway terminals.:

1. Click **Create New H248 MGC i**n the H.248 configuration window.

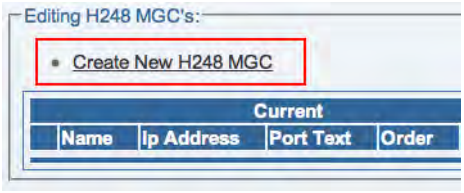

Figure 380. H.248 MGCs

2. Configure the new MGC:
   - Enter a **name** for the MGC
   - Enter an **IP address**
   - Click **Create**

Figure 381. Creating a New H.248 MGC

3. Verify that the "**h248_mgc_cfg was successfully created**" message displays.

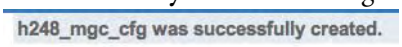

Figure 382. Successful MGC Message

Understanding Parameters for Media Gateway Controller

Table 89. Configuration Parameters for Media Gateway Controller

Parameter	Description
Name	Used by the Web Portal to indicate a specific object or string in the system
IP Address	Sets an address for accessing a new media gateway controller (MGC)

Associating NAPs with the H.248 Configuration

You must now associate the TDM and VoIP network access points (NAPs) you previously created with the H.248 configuration:

1. Select **H248** from the navigation pane:

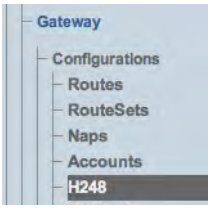

Figure 383. Gateway > H248

2. Associate a TDM NAP with the configuration:
   - Select a **NAP** from the TDM Media list
   - Click the "<<" button to associate the NAP with your H.248 configuration.

Figure 384. Associating a TDM NAP

3. Associate a VoIP NAP with the configuration:
   - Select a **NAP** from the TDM Media list
   - Click the "<<" button to associate the NAP with your H.248 configuration

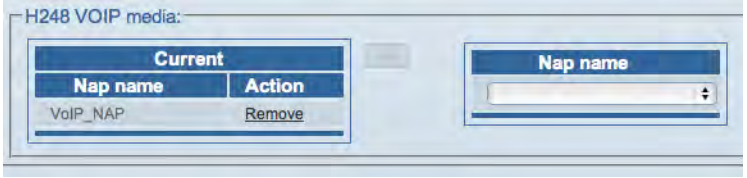

Figure 385. Associating a VoIP NAP

Selecting Timeslots for TDM Interfaces

Finally, you must assign timeslots to the TDM interfaces that have been associated with the H.248 configuration:

1. Click **Edit** next to the line service you wish to configure, in the H.248 configuration window.

Note A timeslot mask can be applied to all line services at once by selecting **Timeslot mask for all line services** instead.

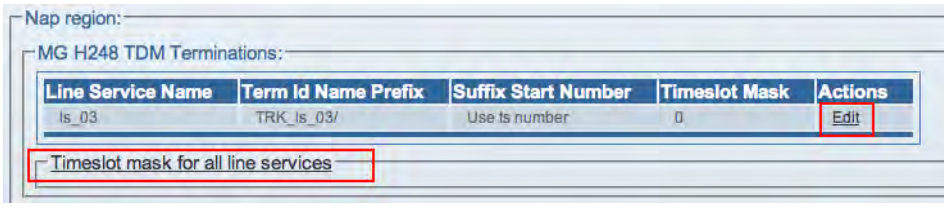

Figure 386. MG H.248 TDM Terminations Window

2. Select timeslots:
   - Add the desired timeslots by **checking individual boxes**, or simply select all times by clicking **Select all**
   - Click **Save**

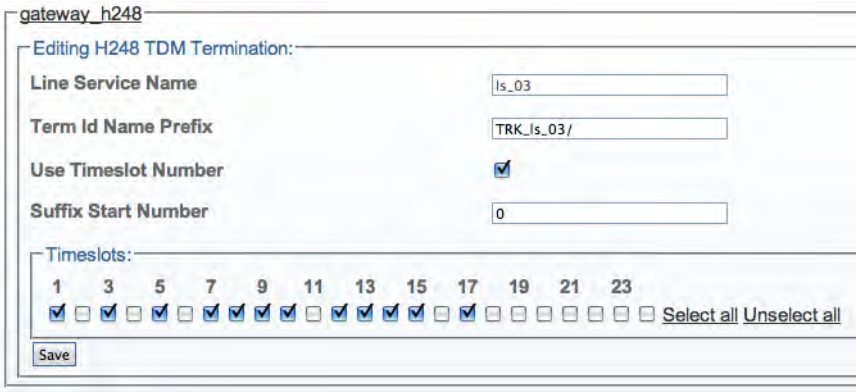

Figure 387. Enabling Timeslots

3. Verify that the "**h248_fix_term_cfg was successfully updated**" message displays.

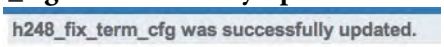

Figure 388. Successful Update Message

Chapter 8 Configuring SNMP

Chapter contents

Overview 221
Activating the tbSnmpAgent 221
Disabling the SELinux Service 221
Activating the tbSnmpAgent application 222
Configuring the tbSnmpAgent 223
Configuring SNMP system parameters 223
Configuring SNMPv1, SNMPv2c 225
Configuring SNMPv3 225
Configuring traps 225

Overview

To use the Simple Network Management Protocol (SNMP)on your machine, you must first configure the tbSnmpAgent. The tbSnmpAgent is a software application that interfaces between the Smart Media system hardware and the NetSnmp implementation of the SNMP that is supported by Patton. By default, tbSnmpAgent is disabled. In order to use the SNMP protocol to monitor and manage your hardware, complete the following tasks:

- "Activating the tbSnmpAgent" on page 221
- "Configuring the tbSnmpAgent" on page 223

Once these tasks are completed, your Smart Media platform is ready to expose system variables for polling with the Simple Network Management Protocol (SNMP).

Activating the tbSnmpAgent

Before starting, make sure that the SELinux service is disabled, or else it will prevent the SNMP service from starting. Then, you may activate SNMP through the Web Portal.

Disabling the SELinux Service

To disable the SELinux service (so that it does not interfere with the SNMP agent):

1. Connect to the **Console Management** port on the front of the unit and log into the system.
2. To view the current status of SELinux, enter the following command:

```
sestatus
```

3. To change the status of SeLinux, enter the following command to edit the file:

```
vi /etc/selinux/config
```

4. Set the line to **SELINUX=disabled**:

```
# This file controls the state of SELinux on the system.
 # SELINUX= can take one of these three values:
 #       enforcing - SELinux security policy is enforced.
 #       permissive - SELinux prints warnings instead of enforcing.
 #       disabled - SELinux is fully disabled.
 SELINUX=disabled
 # SELINUXTYPE= type of policy in use. Possible values are:
 #       targeted - Only targeted network daemons are protected.
 #       strict - Full SELinux protection.
 SELINUXTYPE=targeted
```

5. **Reboot** or use the **setenforce** command:

```
shutdown –r now
or
setenforce 0
```

Activating the tbSnmpAgent application

After you have disabled the SELinux service, log into the Web Portal and follow the steps below to activate SNMP:

1. Click on **Status** in the navigation panel:

Figure 389. Global > Status

2. In the **Status** information window, click on the **Applications** tab:

Figure 390. Status > Applications tab

3. In the **Applications** information window, **tbsnmpagent** should appear in the **Not running list**. Click **tbsnmpagent**.

Figure 391. Applications > Not running list

4. In the **Application instance status** window for tbSnmpAgent, click the **Oam target state** dropdown box and select **Run**. Click **Apply states**.

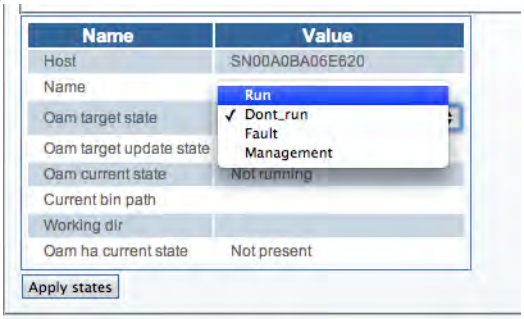

Figure 392. Application Instance Status Window

5. Return to the **Applications** information window. The **tbsnmpagent** should now appear in the **Ready list**.

Figure 393. Applications > Ready list

The tbSnmpAgent application has now been activated.

Configuring the tbSnmpAgent

Once you are logged into the Web Portal and have successfully activated the tbSnmpAgent application, follow these steps to configure the application to suit your needs:

1. "Configuring SNMP system parameters" on page 223
2. "Configuring SNMPv1, SNMPv2c" on page 225
3. "Configuring SNMPv3" on page 225
4. "Configuring traps" on page 225

Configuring SNMP system parameters

1. Under the **Applications** heading, in the Web Portal navigation panel, click the **Configurations** tab.

Figure 394. Applications > Configurations

2. In the **Application Configuration List**, find the entry for **tbsnmpagent** and click the link labeled **edit**, next to that entry.

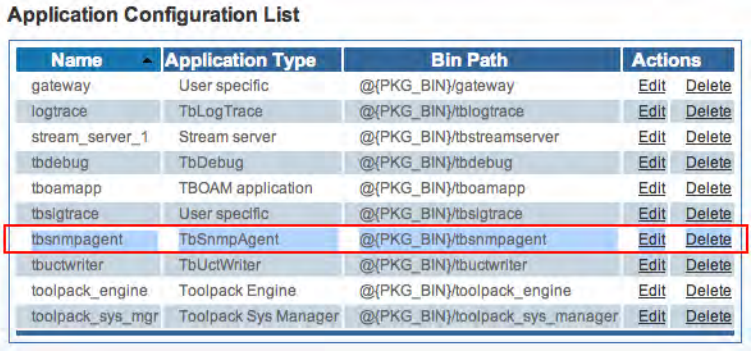

Figure 395. Application Configuration List

3. The tbSnmpAgent Application Configuration window is divided into several sections. Under the Application Params heading, the following general application parameters can be configured:
   - **SNMP IP Port:** the IP port to use for making SNMP requests (standard default value is 161)
   - **SNMP System Description:** the textual description that will appear when polling the sysDescr variable of the SNMPv2-MIB
   - **SNMP System Object ID:** the value appended to Patton' value (.1.3.6.1.4.1.21776.3) for the SNMPv2-MIB variable sysObjectId
   - **SNMP System Name:** the textual description that will appear when polling the sysName variable of the SNMPv2-MIB
   - **SNMP System Location:** the textual description that will appear when polling the sysLocation variable of the SNMPv2-MIB
   - **SNMP System Contact:** the textual description that will appear when polling the sysContact variable of the SNMPv2-MIB

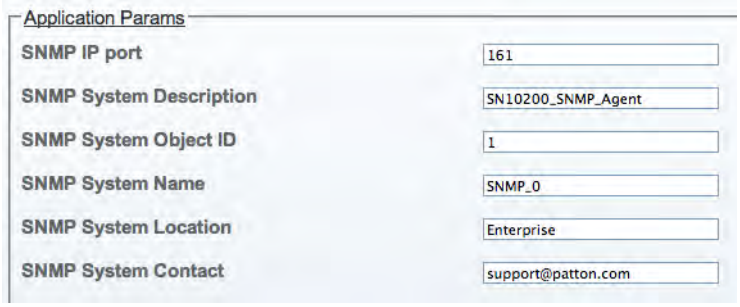

Figure 396. Application Params section

4. Under the **Advanced Params** heading, the following general application parameter can be configured:
   - **Polling delay to generate traps:** this sets the length for the time intervals at which the SNMP agent polls for newly generated traps. The value entered is in seconds.

Figure 397. Application Params > Polling Delay

Configuring SNMPv1, SNMPv2c

1. Under the **SNMPv1 SNMPv2c Communities** heading, new communities can be created for SNMP:
   - By default, there are standard communities: **public** (read-only access), and **private** (read-write access).
   - Click **Create new community** to create a new community for SNMPv1 or SNMPv2.

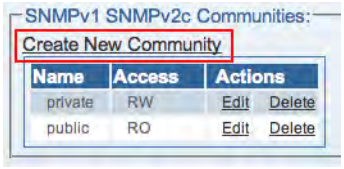

Figure 398. Create New SNMP Community window

Configuring SNMPv3

1. Under the **SNMPv3 Users** heading, new users can be created for SNMP version 3:
   - By default, no SNMPv3 users are created
   - Click **Create new SNMPv3 user** to create a new user definition for SNMPv3

Figure 399. Create New SNMP User window

Configuring traps

1. Under the **SNMP Trap Destinations** heading, destination addresses for SNMP traps can be defined:
   - By default, no SNMP trap destinations are defined
   - Click **Create New SNMP Trap Destination** to create a new destination to send SNMP traps

Figure 400. Create New SNMP Trap Destination window

2. Under the **Log Params** heading, logging parameters for the application can be set. The directory and format that logs are stored in can be selected.
3. Under the **Advance Params** heading, operational time delays can be modified.

Chapter 9 Contacting Patton

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Introduction

This chapter contains the following information:

- "Contact information"—describes how to contact Patton technical support for assistance.
- "Warranty Service and Returned Merchandise Authorizations (RMAs)"—contains information about the RAS warranty and obtaining a return merchandise authorization (RMA).

Contact information

Patton Electronics offers a wide array of free technical services. If you have questions about any of our other products we recommend you begin your search for answers by using our technical knowledge base. Here, we have gathered together many of the more commonly asked questions and compiled them into a searchable database to help you quickly solve your problems.

Patton support headquarters in the USA

- Online support: available at **www.patton.com**
- E-mail support: e-mail sent to **support@patton.com** will be answered within 1 business day
- Telephone support: standard telephone support is available five days a week—from **8:00 am** to **5:00 pm EST** (**1300** to **2200 UTC/GMT**)—by calling **+1 (301) 975-1007**
- Fax: **+1 (253) 663-5693**

Alternate Patton support for Europe, Middle East, and Africa (EMEA)

- Online support: available at **www.patton.com**
- E-mail support: e-mail sent to **support@patton.com** will be answered within 1 business day
- Telephone support: standard telephone support is available five days a week—from **9:00 am** to **5:30 pm CET** (**0800** to **1630 UTC/GMT**)—by calling **+41 (0)31 985 25 55**
- Fax: **+41 (0)31 985 25 26**

Warranty Service and Returned Merchandise Authorizations (RMAs)

Patton Electronics is an ISO-9001 certified manufacturer and our products are carefully tested before shipment. All of our products are backed by a comprehensive warranty program.

> **Note** If you purchased your equipment from a Patton Electronics reseller, ask your reseller how you should proceed with warranty service. It is often more convenient for you to work with your local reseller to obtain a replacement. Patton services our products no matter how you acquired them.

Warranty coverage

Our products are under warranty to be free from defects, and we will, at our option, repair or replace the product should it fail within one year from the first date of shipment. Our warranty is limited to defects in workmanship or materials, and does not cover customer damage, lightning or power surge damage, abuse, or unauthorized modification.

Out-of-warranty service

Patton services what we sell, no matter how you acquired it, including malfunctioning products that are no longer under warranty. Our products have a flat fee for repairs. Units damaged by lightning or other catastrophes may require replacement.

Returns for credit

Customer satisfaction is important to us, therefore any product may be returned with authorization within 30 days from the shipment date for a full credit of the purchase price. If you have ordered the wrong equipment or you are dissatisfied in any way, please contact us to request an RMA number to accept your return. Patton is not responsible for equipment returned without a Return Authorization.

Return for credit policy

- Less than 30 days: No Charge. Your credit will be issued upon receipt and inspection of the equipment.
- 30 to 60 days: We will add a 20% restocking charge (crediting your account with 80% of the purchase price).
- Over 60 days: Products will be accepted for repairs only.

RMA numbers

RMA numbers are required for all product returns. You can obtain an RMA by doing one of the following:

- Completing a request on the RMA Request page in the *Support* section at **www.patton.com**
- By calling **+1 (301) 975-1007** and speaking to a Technical Support Engineer
- By sending an e-mail to **returns@patton.com**

All returned units must have the RMA number clearly visible on the outside of the shipping container. Please use the original packing material that the device came in or pack the unit securely to avoid damage during shipping.

Shipping instructions

The RMA number should be clearly visible on the address label. Our shipping address is as follows:

Patton Electronics Company
RMA#: xxxx
7622 Rickenbacker Dr.
Gaithersburg, MD 20879-4773 USA

Patton will ship the equipment back to you in the same manner you ship it to us. Patton will pay the return shipping costs.