



Universal Session and Resource Manager (USRM) with VOD Session Manager Installation Guide

For Your Safety

Explanation of Warning and Caution Icons

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.

The following warning and caution icons alert you to important information about the safe operation of this product:



You may find this symbol in the document that accompanies this product. This symbol indicates important operating or maintenance instructions.



You may find this symbol affixed to the product. This symbol indicates a live terminal where a dangerous voltage may be present; the tip of the flash points to the terminal device.



You may find this symbol affixed to the product. This symbol indicates a protective ground terminal.



You may find this symbol affixed to the product. This symbol indicates a chassis terminal (normally used for equipotential bonding).



You may find this symbol affixed to the product. This symbol warns of a potentially hot surface.



You may find this symbol affixed to the product and in this document. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation or an LED that transmits intensity-modulated light.

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

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Important Safety Instructions

Read and Retain Instructions

Carefully read all safety and operating instructions before operating this equipment, and retain them for future reference.

Follow Instructions and Heed Warnings

Follow all operating and use instructions. Pay attention to all warnings and cautions in the operating instructions, as well as those that are affixed to this equipment.

Terminology

The terms defined below are used in this document. The definitions given are based on those found in safety standards.

Service Personnel - The term *service personnel* applies to trained and qualified individuals who are allowed to install, replace, or service electrical equipment. The service personnel are expected to use their experience and technical skills to avoid possible injury to themselves and others due to hazards that exist in service and restricted access areas.

User and Operator - The terms *user* and *operator* apply to persons other than service personnel.

Ground(ing) and Earth(ing) - The terms *ground(ing)* and *earth(ing)* are synonymous. This document uses *ground(ing)* for clarity, but it can be interpreted as having the same meaning as *earth(ing)*.

Electric Shock Hazard

This equipment meets applicable safety standards.



WARNING:

To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing to qualified service personnel only.

Electric shock can cause personal injury or even death. Avoid direct contact with dangerous voltages at all times. The protective ground connection, where provided, is essential to safe operation and must be verified before connecting the power supply.

Important Safety Instructions

Know the following safety warnings and guidelines:

- **Dangerous Voltages**
 - Only qualified service personnel are allowed to perform equipment installation or replacement.
 - Only qualified service personnel are allowed to remove chassis covers and access any of the components inside the chassis.
- **Grounding**
 - Do not violate the protective grounding by using an extension cable, power cable, or autotransformer without a protective ground conductor.
 - Take care to maintain the protective grounding of this equipment during service or repair and to re-establish the protective grounding before putting this equipment back into operation.

Installation Site

When selecting the installation site, comply with the following:

- **Protective Ground** - The protective ground lead of the building's electrical installation should comply with national and local requirements.
- **Environmental Condition** - The installation site should be dry, clean, and ventilated. Do not use this equipment where it could be at risk of contact with water. Ensure that this equipment is operated in an environment that meets the requirements as stated in this equipment's technical specifications, which may be found on this equipment's data sheet.

Installation Requirements



WARNING:

Allow only qualified service personnel to install this equipment. The installation must conform to all local codes and regulations.

Equipment Placement



WARNING:

Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.

To protect against equipment damage or injury to personnel, comply with the following:

- Install this equipment in a restricted access location.

- Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
- Place this equipment close enough to a mains AC outlet to accommodate the length of this equipment's power cord.
- Route all power cords so that people cannot walk on, place objects on, or lean objects against them. This may pinch or damage the power cords. Pay particular attention to power cords at plugs, outlets, and the points where the power cords exit this equipment.
- Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with this equipment.
- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.
- The mounting surface or rack should be appropriately anchored according to manufacturer's specifications. Ensure this equipment is securely fastened to the mounting surface or rack where necessary to protect against damage due to any disturbance and subsequent fall.

Ventilation

This equipment has openings for ventilation to protect it from overheating. To ensure equipment reliability and safe operation, do not block or cover any of the ventilation openings. Install the equipment in accordance with the manufacturer's instructions.

Rack Mounting Safety Precautions

Mechanical Loading

Make sure that the rack is placed on a stable surface. If the rack has stabilizing devices, install these stabilizing devices before mounting any equipment in the rack.



WARNING:

Avoid personal injury and damage to this equipment. Mounting this equipment in the rack should be such that a hazardous condition is not caused due to uneven mechanical loading.

Reduced Airflow

When mounting this equipment in the rack, do not obstruct the cooling airflow through the rack. Be sure to mount the blanking plates to cover unused rack space. Additional components such as combiners and net strips should be mounted at the back of the rack, so that the free airflow is not restricted.

Important Safety Instructions



CAUTION:

Installation of this equipment in a rack should be such that the amount of airflow required for safe operation of this equipment is not compromised.

Elevated Operating Ambient Temperature

Only install this equipment in a humidity- and temperature-controlled environment that meets the requirements given in this equipment's technical specifications.



CAUTION:

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install this equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Handling Precautions

When moving a cart that contains this equipment, check for any of the following possible hazards:



WARNING:



Avoid personal injury and damage to this equipment! Move any equipment and cart combination with care. Quick stops, excessive force, and uneven surfaces may cause this equipment and cart to overturn.

- Use caution when moving this equipment/cart combination to avoid injury from tip-over.
- If the cart does not move easily, this condition may indicate obstructions or cables that may need to be disconnected before moving this equipment to another location.
- Avoid quick stops and starts when moving the cart.
- Check for uneven floor surfaces such as cracks or cables and cords.

Grounding

This section provides instructions for verifying that the equipment is properly grounded.

Safety Plugs (USA Only)

This equipment may be equipped with either a 3-terminal (grounding-type) safety plug or a 2-terminal (polarized) safety plug. The wide blade or the third terminal is provided for safety. Do not defeat the safety purpose of the grounding-type or polarized safety plug.

To properly ground this equipment, follow these safety guidelines:

- **Grounding-Type Plug** - For a 3-terminal plug (one terminal on this plug is a protective grounding pin), insert the plug into a grounded mains, 3-terminal outlet.
Note: This plug fits only one way. If this plug cannot be fully inserted into the outlet, contact an electrician to replace the obsolete 3-terminal outlet.
- **Polarized Plug** - For a 2-terminal plug (a polarized plug with one wide blade and one narrow blade), insert the plug into a polarized mains, 2-terminal outlet in which one socket is wider than the other.
Note: If this plug cannot be fully inserted into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace the obsolete 2-terminal outlet.

Grounding Terminal

If this equipment is equipped with an external grounding terminal, attach one end of an 18-gauge wire (or larger) to the grounding terminal; then, attach the other end of the wire to a ground, such as a grounded equipment rack.

Safety Plugs (European Union)

- **Class I Mains Powered Equipment** – Provided with a 3-terminal AC inlet and requires connection to a 3-terminal mains supply outlet via a 3-terminal power cord for proper connection to the protective ground.
Note: The equipotential bonding terminal provided on some equipment is not designed to function as a protective ground connection.
- **Class II Mains Powered Equipment** – Provided with a 2-terminal AC inlet that may be connected by a 2-terminal power cord to the mains supply outlet. No connection to the protective ground is required as this class of equipment is provided with double or reinforced and/or supplementary insulation in addition to the basic insulation provided in Class I equipment.
Note: Class II equipment, which is subject to EN 50083-1, is provided with a chassis mounted equipotential bonding terminal. See the section titled **Equipotential Bonding** for connection instructions.

Equipotential Bonding

If this equipment is equipped with an external chassis terminal marked with the IEC 60417-5020 chassis icon () , the installer should refer to CENELEC standard EN 50083-1 or IEC standard IEC 60728-11 for correct equipotential bonding connection instructions.

AC Power

Important: If this equipment is a Class I equipment, it must be grounded.

- If this equipment plugs into an outlet, the outlet must be near this equipment, and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label normally located close to the power inlet connector(s).
- This equipment may have two power sources. Be sure to disconnect all power sources before working on this equipment.
- If this equipment **does not** have a main power switch, the power cord connector serves as the disconnect device.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Unplug this equipment when unused for long periods of time.

Connection to -48 V DC/-60 V DC Power Sources

If this equipment is DC-powered, refer to the specific installation instructions in this manual or in companion manuals in this series for information on connecting this equipment to nominal -48 V DC/-60 V DC power sources.

Circuit Overload

Know the effects of circuit overloading before connecting this equipment to the power supply.



CAUTION:

Consider the connection of this equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Refer to the information on the equipment-rating label when addressing this concern.

General Servicing Precautions



WARNING:

Avoid electric shock! Opening or removing this equipment's cover may expose you to dangerous voltages.



CAUTION:

These servicing precautions are for the guidance of qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Be aware of the following general precautions and guidelines:

- **Servicing** - Servicing is required when this equipment has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into this equipment, this equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **Wristwatch and Jewelry** - For personal safety and to avoid damage of this equipment during service and repair, do not wear electrically conducting objects such as a wristwatch or jewelry.
- **Lightning** - Do not work on this equipment, or connect or disconnect cables, during periods of lightning.
- **Labels** - Do not remove any warning labels. Replace damaged or illegible warning labels with new ones.
- **Covers** - Do not open the cover of this equipment and attempt service unless instructed to do so in the instructions. Refer all servicing to qualified service personnel only.
- **Moisture** - Do not allow moisture to enter this equipment.
- **Cleaning** - Use a damp cloth for cleaning.
- **Safety Checks** - After service, assemble this equipment and perform safety checks to ensure it is safe to use before putting it back into operation.

Electrostatic Discharge

Electrostatic discharge (ESD) results from the static electricity buildup on the human body and other objects. This static discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge:

- Use an anti-static bench mat and a wrist strap or ankle strap designed to safely ground ESD potentials through a resistive element.
- Keep components in their anti-static packaging until installed.
- Avoid touching electronic components when installing a module.

Fuse Replacement

To replace a fuse, comply with the following:

- Disconnect the power before changing fuses.
- Identify and clear the condition that caused the original fuse failure.
- Always use a fuse of the correct type and rating. The correct type and rating are indicated on this equipment.

Batteries

This product may contain batteries. Special instructions apply regarding the safe use and disposal of batteries:

Safety

- Insert batteries correctly. There may be a risk of explosion if the batteries are incorrectly inserted.
- Do not attempt to recharge 'disposable' or 'non-reusable' batteries.
- Please follow instructions provided for charging 'rechargeable' batteries.
- Replace batteries with the same or equivalent type recommended by manufacturer.
- Do not expose batteries to temperatures above 100°C (212°F).

Disposal

- The batteries may contain substances that could be harmful to the environment
- Recycle or dispose of batteries in accordance with the battery manufacturer's instructions and local/national disposal and recycling regulations.



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- The batteries may contain perchlorate, a known hazardous substance, so special handling and disposal of this product might be necessary. For more information about perchlorate and best management practices for perchlorate-containing substance, see www.dtsc.ca.gov/hazardouswaste/perchlorate.

Modifications

This equipment has been designed and tested to comply with applicable safety, laser safety, and EMC regulations, codes, and standards to ensure safe operation in its intended environment. Refer to this equipment's data sheet for details about regulatory compliance approvals.

Do not make modifications to this equipment. Any changes or modifications could void the user's authority to operate this equipment.

Modifications have the potential to degrade the level of protection built into this equipment, putting people and property at risk of injury or damage. Those persons making any modifications expose themselves to the penalties arising from proven non-compliance with regulatory requirements and to civil litigation for compensation in respect of consequential damages or injury.

Accessories

Use only attachments or accessories specified by the manufacturer.

Electromagnetic Compatibility Regulatory Requirements

This equipment meets applicable electromagnetic compatibility (EMC) regulatory requirements. Refer to this equipment's data sheet for details about regulatory compliance approvals. EMC performance is dependent upon the use of correctly shielded cables of good quality for all external connections, except the power source, when installing this equipment.

- Ensure compliance with cable/connector specifications and associated installation instructions where given elsewhere in this manual.

Otherwise, comply with the following good practices:

- Multi-conductor cables should be of single-braided, shielded type and have conductive connector bodies and backshells with cable clamps that are conductively bonded to the backshell and capable of making 360° connection to the cable shielding. Exceptions from this general rule will be clearly stated in the connector description for the excepted connector in question.
- Ethernet cables should be of single-shielded or double-shielded type.
- Coaxial cables should be of the double-braided shielded type.

EMC Compliance Statements

Where this equipment is subject to USA FCC and/or Industry Canada rules, the following statements apply:

FCC Statement for Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Industry Canada - Industrie Canadienne Statement

This apparatus complies with Canadian ICES-003.
Cet appareil est conforme à la norme NMB-003 du Canada.

Important Safety Instructions

CENELEC/CISPR Statement with Respect to Class A Information Technology Equipment

This is a Class A equipment. In a domestic environment this equipment may cause radio interference in which case the user may be required to take adequate measures.

1

Overview

Introduction

Before you begin installing and using your new equipment, you should review this system overview information.

Scope of This Chapter

This chapter contains a description of the Universal Session and Resource Manager (USRM) system components and a functional overview of its operation.

In This Chapter

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■ Introduction.....	3
■ Software Component Model	10
■ Operation Overview	14
■ Network Resource Management	16

Quick Start Guide

Introduction

This manual contains information and instructions on USRM hardware installation, USRM initial setup and startup, and USRM software and system configuration.

Perform the following steps, in order, to install and configure your USRM.

Step 1 - Read System Overview

Before starting any installation or configuration procedures, you should read through all of *Chapter 1 - Overview* to gain a general understanding of the operation of the USRM.

Step 2 - Install the USRM Hardware

Physically install the USRM hardware and make all necessary rear panel connections. Follow the detailed instructions in *Hardware Installation* (on page 23).

Step 3 - Perform the USRM Initial Setup Procedure

Perform the USRM initial setup by running the setup script. Follow the detailed instructions under *USRM Setup Procedure* (on page 288).

Step 4 - Perform the USRM Startup Procedure

Perform the USRM startup by following the detailed instructions under *USRM Startup Procedure* (on page 291).

Step 5 - Create and Configure Network Resources

Create a QAM, and then use the resource manager to configure the network resources, e.g., QAMs, for your product-specific application. Refer to the appropriate appendix in this manual for detailed information regarding your particular product.

Introduction

USRM Product Description

The Model D9510 Universal Session and Resource Manager (USRM) is an integral component of the Cisco Service Exchange Network. Based on a standard Intel/Linux server, the USRM supports all major Video on Demand (VOD) and Switched Digital Video (SDV) interfaces and protocols. The USRM is integrated with the Digital Broadband Delivery Systems (DBDS) and enables systems to distribute and scale the real-time session and resource management functions of the Digital Network Control System (DNCS). The USRM is also available in a directly-provisionable version for non-DBDS systems.

The USRM is designed for high service-velocity as a flexible software platform supporting plug-in applications and interfaces. The high-availability platform can be upgraded to support new functionality without interrupting existing services. New applications and interfaces inherit platform capabilities.

The USRM represents the next-generation evolution of the DBDS control system. It brings a new level of integrated control to VOD and SDV today, and is designed to quickly enable tomorrow's applications. The 1.x release of USRM supported SDV applications only. The 2.x release of software includes a Video-on-Demand session manager application (VodSm). This application can be deployed as a Session Manager interacting with multiple distributed Edge Resource Managers (ERM). The product released for such environment is known as VOD Session Manager (VSM). The VSM allows for session management control of VOD applications.

The 2.x release supports the ability to export any web page with a multi-row table to a comma-separated value (CSV) file in a new subdirectory under /opt/usrm called export. From the web user interface (WebUI), you can open or save the file in CSV format by clicking the Create CSV button at the bottom of each web page. You can then open the CSV file for further processing in Microsoft Excel or a similar program.

The USRM is available as a software upgrade to the Model D9500 SDV Server.

USRM Features

- Available as a software upgrade to existing Model D9500 SDV servers
- Supports all major SDV and VOD interfaces and protocols
- Supports all major QAM types and control interfaces
- Integrated with the Cisco DBDS
- Available for non-DBDS systems

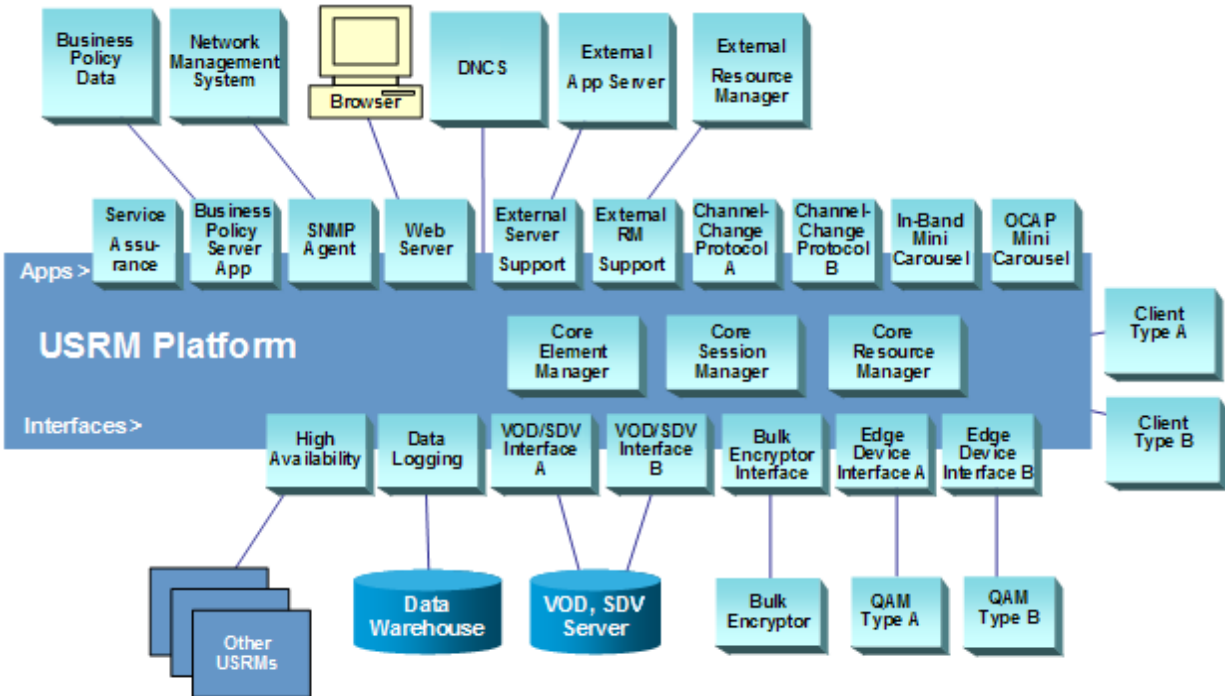
Chapter 1 Overview

- More efficient intra-carrier QAM sharing through integrated resource management
- Designed as a high service-velocity platform with plug-in applications and interfaces
- New applications inherit platform services including:
 - SNMP
 - Web interface
 - High-Availability N for M redundancy
 - Run-time upgrade without service interruption
 - Real-time graphic display of resource usage
 - Policy-based resource failover
 - Resource management, monitoring, and reporting
- "Bilingual," simultaneous support of different SDV protocols for transitional scenarios and support of legacy clients
- Flexibly configurable with standard interfaces to external servers and resource managers
- Service Assurance active service protection through monitoring and rerouting of streams
- Business-Policy control of bandwidth allocation

USRM High-Level Architecture

The USRM was designed to meet the scalability, availability, flexibility, and service velocity demands of future services. It is referred to as "universal" because it can simultaneously support all of the major headend and client interfaces, plus it can be flexibly configured to operate in different ways. For example, it can be configured to operate as an Edge Resource Manager (ERM), a SDV Session Manager (SDVSM), a Video on Demand Session Manager (VODSM), or an integrated combination of all of those.

The following diagram shows a high-level view of the USRM architecture. The top row shows the plug-in applications, while the bottom row shows the various interfaces. As shown, the USRM is configured as an integrated unit supporting VOD and SDV.



The USRM can operate in conjunction with the DNCS. In such systems, responsibilities for real-time session and resource management (SRM) may be assigned to USRMs by "relocating" the DNCS's SRM into the USRM platform. Such session and resource management may include VOD and SDV. In these systems, the USRM is provisioned by the DNCS. In non-DNCS systems, the USRM is configurable independently of the DNCS using its Web interface.

A key design goal of the modular USRM design was service velocity. The software design and modular nature of the USRM helps to achieve this. New applications and interfaces may be developed and installed, in some cases at run-time, without service interruption and often without requiring any changes on the DNCS. The new capabilities inherit the platform capabilities, such as high-availability, Web interface and the ability to interconnect to many different devices.

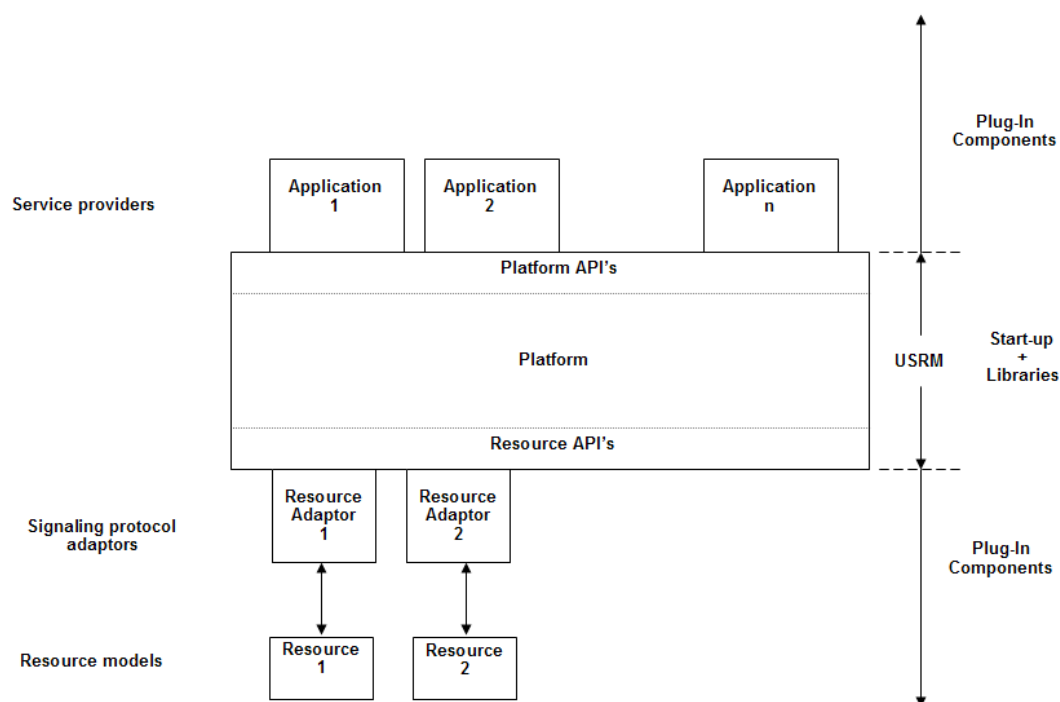
The USRM is configurable with various combinations of the applications and interfaces shown in the previous diagram to meet system needs.

USRM Block Diagram and Nomenclature

This section defines the USRM components and nomenclature. The USRM software consists of a set of modular software components. Base "platform" components provide the basic USRM functions. Applications, resource model, and resource adaptor "plug-in" components are then installed on the USRM to implement a specific application service with specific protocols and network devices.

The USRM can be envisioned as a software representation of a traditional communications equipment chassis. An application, like a front line card is installed on the USRM to provide a specific application service (e.g., SDV). Resources, like the rear I/O card, are called resource models and are installed on the USRM to support a specific device (e.g., xDQA-24). Unlike a communications chassis, the USRM must support many protocols on its midplane. The resource adaptor is installed to implement a specific communications protocol (e.g., GQI, R6, etc.).

A block diagram of the USRM is shown in the following illustration.



Note: In all USRM block diagrams, resource models and adaptors are shown on the bottom of the platform. Applications are shown on top.

USRM Plug-In Components

The USRM consists of a core platform plus a set of plug-in software components that implement a specific application. The three types of plug-in components are:

- Resource Models
- Resource Adaptors
- Applications

Resource Models

A resource model is a data representation of a network resource used by the USRM. Note that in the context of the USRM, the term resource also refers to a resource model. The resource software component is a data model that maintains a container for the data that represents the configuration and status of the network device. This model contains:

- The basic configuration (number of ports, number of sessions per port, etc.) of the device
- The state and status (frequency, TSID, etc.) of the network device
- Information used by the USRM to maintain video services on the device
 - For example, the USRM maintains a complete representation of all sessions on QAMs to allow the QAM to be refreshed in the event of a reset of the network resource.

The four types of resource models are as follows:

- Encryptor
- QAM
- CA (Conditional Access)-Managers
- Edge Resource Manager (ERM)

Note: As new resource models are implemented, the USRM will support those as well. For example, later versions will also support a streamer resource to generate switched unicast streams. Adding a new resource model type only requires adding a folder for the new type in the USRM hierarchy. The hierarchy refers to how components and devices are grouped for display on the tree control of the user Web interface.

Resource Adaptors

The term resource adaptor refers to the software component used to signal to a resource. For example there are several QAM signaling interfaces in use - Generic QAM Interface (GQI), R6, and D6. A resource model contains a standard naming convention data item that defines the resource adaptor name. When a resource is loaded, the corresponding resource adaptor is also activated to communicate with the device, effectively pulling the resource adaptor into the configuration when a resource that needs the adaptor is created. Typically, only a single instance of the adaptor is activated.

Applications

An application is a software package that provides a network service. An application typically exposes a network connection and passively waits for requests from client devices. For example, the SDV session manager application opens a User Datagram Protocol (UDP) socket that waits for channel change requests and activates the requested service upon receiving the request.

Component Interaction

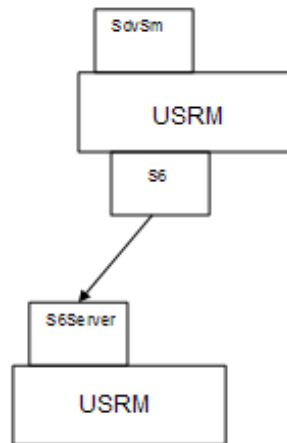
Resource models, resource adaptors, and application software components are fundamentally the same at the software construction level. The primary difference is how the components interact with client devices.

A resource model is a representation of a client device.

A resource adaptor is used to actively manage a connection to the client device. The adaptor typically creates a full-time connection to the client device used for active management to the client.

The platform software then essentially "owns" the client device. Other systems (e.g., servers) that need to use the device must request a reservation on the device from the platform. An application implements the inverse of this management connection, i.e., it waits for the connection to be created.

An example of the interaction is best illustrated by a SDV session manager (SdvSm) product interfaced to an edge resource manager product. The S6Server application component on the ERM exposes an interface. The SdvSm connects to the ERM resource model using the S6 resource adaptor. The example is illustrated in the following block diagram.



Software Component Model

Software Components

The USRM consists of a basic executable (usrm) plus a set of modular software components in the form of libraries that comprise the basic platform. The basic platform is the set of common core software used in all application-specific versions of the USRM. These basic components referred to as "platform" components are linked at run-time using standard Linux shared libraries. Application-specific components that form a specific set of application services are activated and loaded as "plug-in" components. The plug-in component is an isolated software component that uses the services of the basic components to provide a service. A plug-in component typically exposes a single API (the notification API) used by the USRM to communicate with the component.

All USRM software components are packaged as Linux shared libraries with the .so extension. The components are situated in different directories depending on the purpose of the component. The USRM depends on this positioning to locate the type of component.

The basis of a software component is the model definition file that defines that data model that represents the component. Every USRM component is based on a model file. The model definition file is a text file that defines the data/attributes for the data items that represent the component. Data items in the data model optionally reference method routines. A naming convention data item (NotifyAPI) defines the name of the method routine to receive notifications. The USRM communicates with components using this notification interface. The method routines also provide custom functionality for data.

In summary, the USRM software consists of a set of platform components and a set of plug-in components. The platform components form the base USRM platform. The plug-in components adapt the software to specific network devices and protocols and implement applications that provide services to clients.

Directory Structure

File directories are located relative to the location of the usrm main directory. The usrm directory is typically /opt/usrm but this is not mandatory. The software locates directories relative to the directory that contains the main executable (usrm), as shown in the following directory structure.

```

/usrm
  /Platform
  /PlugIns
    /Resources
    /Resource Adaptors
    /Applications

```

The following table lists the contents of the various directories.

Directory	Contents
/usrm/Platform/	Contains common base platform components. Note: All of the components in the Platform directory are required by the USRM regardless of the application.
/usrm/PlugIns/	Contains optional plug-in components that comprise a specific set of functions. Note: A specific application will use some of the plug-in components.
/usrm/PlugIns/Resources	Contains resource models that implement support for a specific network device.
/usrm/PlugIns/ResourceAdaptors	Contains resource adaptors which are protocols used for signaling with network devices.
/usrm/PlugIns/Applications	Contains applications that provide network services.

Component Hierarchy

Components are arranged in a hierarchy using a parent/child relationship. This hierarchy forms the basis for the tree control of the USRM web interface (GUI). Refer to *USRM Web Interface* (on page 34) for more information.

Note: Alarms in a child device are propagated to the respective parent.

The component hierarchy is defined by a configuration file. When the software is activated and no components are present in the persistent store, the software creates a default hierarchy based on the content of a configuration file. See the next section, *Configuration Provisioning*, for more information.

Configuration Provisioning

The USRM maintains its configuration by creating a file in the persistdata directory for each component. This file indicates that the component exists and maintains the nonvolatile state of the component. When the software is activated and there are no configuration files in the persistdata directory, the software executes a procedure to create the default configuration. The default USRM configuration is made up of base USRM platform components and plug-in components for specific applications.

The default USRM configuration hierarchy is established by a configuration file in the ConfigFiles directory. These configuration files are input on the initial activation of the software. Initial activation is indicated by lack of any files in the persistdata directory. When the software is activated the first time, or whenever the persistdata files have been deleted, the software inputs two configuration files to create the software component hierarchy, in order, as follows:

- 1 The default USRM configuration file is input first.

Note: This file defines the standard base software platform components without any plug-in application-specific components.

- 2 The license.conf file is input second.

Note: This file defines the plug-in components for the specific application.

Default Configuration File

One of two files is used to define the default configuration depending on the normal role for the server. The normal role for a server is to be either a primary server or a standby server. The following configuration files define the initial configuration for a server depending on its role.

For a primary server, the configuration file location and file name is:

```
ConfigFiles/DefaultConfigPrimary.txt
```

For a standby server, the configuration file location and file name is:

```
ConfigFiles/DefaultConfigStandby.txt
```

Important: These files should not be modified.

Application-Specific License.conf File

After inputting the default configuration file, the software next inputs the ConfigFiles/license.conf file. This file is installed by the factory based on the part number of the product. This file contains a list of the application-specific components for the configuration.

Important: The license.conf file does not contain the names of the network resources such as QAMs, encryptors, etc. The network resources must be added either through the USRM web interface or via a device configuration file. Refer to *Network Resource Management* (on page 16) for more information on creating network resources.

Persistence

The existence of a USRM software component and its nonvolatile state are maintained in the persistdata directory. When a software component is created, the USRM software creates a corresponding component in the persistdata directory. The format of the filename is:

`typename.instanceName.bin`

Typename indicates the component type. For example, the typename for a qqam is "qqam". If three qqams are created with user-assigned names qqam001, qqam002 and qqam003, then three persistdata files are created named qqam.qqam001.bin, qqam.qqam002.bin, and qqam.qqam003.bin, respectively.

The persistdata file contains a sequence of tag/length/value sequences that contain the nonvolatile state of data items. Every data item that is marked as persistent of a software component has a corresponding entry in this file that maintains the state of the element. On every change-of-state of the data element, the change is output to this file immediately. Normal caching of disk writes in the operating system inhibit immediate physical writes to the disk. The USRM design approach depends on file caching.

When the software is activated the first time after installation, the components are created and a file is created in the persistdata directory for each component. Upon termination and restart, the software uses the contents of the persistdata directory to recreate the software components and restore their states to the state prior to termination. The presence of a file indicates that the component exists and should be created. The content of the file is input to recover the exact state of the component.

Operation Overview

Introduction

The USRM is designed to be "always on" to enable mission critical applications. This feature allows the USRM to be a part of the services delivery chain by ensuring the software is always operating.

Assuring the always on status is accomplished with two distinct process environments:

- USRM Watchdog - a small application that ensures the application software is operational.
- USRM component set - the USRM base platform components plus the customer-specific components (applications, resource models, and resource adaptors) are referred to as the USRM component set or shortened to USRM.

USRM Watchdog

The watchdog provides two primary services, as follows.

- It ensures the USRM is always operational.
- It facilitates and implements the software upgrade process.

The watchdog is installed in the `/etc/init.d` directory and, as such, is automatically activated on power-up of the server. The USRM is manually activated. The USRM package sends the startup command line to the watchdog component when the software is activated. The watchdog uses this information to restart the software in the event of a reset. A reset occurs if the software crashes or the operator manually commands a reset operation.

The watchdog software monitors the state of the USRM executable. Once activated, the watchdog helps ensure the software is always operational unless the software is manually terminated by the operator. When the USRM is activated, an interface is opened to the watchdog that allows it to monitor USRM operation. The software sends a heartbeat signal at a periodic rate to indicate normal status. If the USRM executable should fail, it stops sending heartbeat messages and the watchdog restarts the software.

The watchdog monitors the operation of the operator. If the operator starts the software, the watchdog then monitors the software and activates the software if the software terminates for any reason other than a normal operator shutdown. When the operator terminates the software, the watchdog passively waits for the software to be restarted by the operator.

USRM Server Roles

The USRM operates in one of various modes depending on the designated role of the USRM in the customer configuration. A single USRM is designated to be used in one of three roles as indicated in the following table.

Server Role	Description
Primary Server	A primary server is dedicated to implementing services for a specific set of devices, geographical area, or other customer defined subsystem.
Standby Server	A standby server monitors multiple primary servers, maintains the exact database state of the primary servers and switches online to replace a primary server in the event of a primary server failure. Note: Since the standby server maintains the database of multiple primary servers, the standby server user interface provides access to multiple servers from a single web interface console.

USRM Operating Modes

The USRM operates in one of two modes depending on how it will be provisioned and configured.

Operating Mode	Description
Supervised	In supervised mode, the USRM is provisioned using the Digital Network Control System (DNCS) or another SNMP provisioner. In this mode, the software starts and requests provisioning from DNCS. Upon receiving provisioning, including the startup mode, the software starts to provide services. At boot time, the USRM issues an SNMP trap to the DNCS requesting provisioning. The DNCS then uses SNMP to download to the USRM the configuration parameters that were set for it using the DNCS. This is referred to as "solicited provisioning." In addition, "unsolicited provisioning" is pushed from the DNCS to the server any time a change in configuration is entered into the system. Note: For complete instructions on provisioning the USRM with DNCS, refer to the appropriate DNCS User's Guide.
Standalone	In standalone mode, the USRM is provisioned and configured directly using its web browser interface. No SNMP provisioner is available or used to provide provisioning and startup state. Note: Refer to <i>USRM Web Interface</i> (on page 34) for complete instructions.

Network Resource Management

Configuration Manager

The ConfigManager platform component is the configuration manager for the USRM. ConfigManager creates and restores the software configuration and also implements software upgrades. On the web interface, it is located under Platform - ConfigManager in the navigation tree.

On startup, the configuration manager restores the USRM configuration. The configuration manager first inspects the contents of the persistdata directory. If there are no files ending with ".bin", the configuration manager creates a default configuration. If there are one or more files ending with ".bin" in the persistdata directory, the configuration manager creates the component(s) with files in the persistdata directory and then restores their state using the contents of the ".bin" file(s).

Refer to *Persistence* (on page 13) for more information about the persistdata directory and persistence.

ConfigManager supports creating network resources via two different methods, as follows:

- Via web interface
- Via device configuration file

The next sections explain these methods in detail.

Creating Resources Via Web Interface

ConfigManager allows the creation of network resources directly via the web interface. The Platform - ConfigManager - Resource Create page is used for this purpose. This page contains a list of supported resource types, e.g., TableQam, netcrypt, ERM, xDQA24, gqam, and other types for your application.

To Create a Resource

To create a network resource of a specific type, enter a valid name for the resource in the **CreateName** field to the right of **TypeName** in the same row and click **Commit Changes**.

Important: The user-assigned name must be unique within the USRM. For example, once a QAM is named "qam001", no other device on the USRM can be named "qam001". Spaces are not allowed within names. The USRM uses periods to separate components of the name. This does not prevent the use of periods in a user-defined name, e.g., "Boston.Sudbury".

Note: The corresponding parent and resource adaptor are automatically created when the resource is created. The parent is created by the configuration manager. The resource manager creates the resource adaptor to communicate with the new network resource.

Creating Resources Via Device Configuration File

ConfigManager supports the mass creation of network resources via a device configuration file, which is written in the Legacy format. This is typically easier, faster, and more fool-proof than entering all of this resource data manually via the web interface.

Important: Only advanced users should employ this method of creating resources.

The device configuration file is a text file that you create manually, which contains:

- The network resource type names
- The user-assigned names for each network resource
- Optional configuration data for the resource types

Creating a Device Configuration File

The file consists of a set of entries identifying the network resources to be created. Each entry must contain the network resource type name followed by the user-defined name assigned to the network resource, with the two components separated by a space or comma. For example, the entry for a network resource having the type name TableQam could appear as follows:

```
TableQam qam001
```

or

```
TableQam, qam001
```

Important: The user-assigned name must be unique within the USRM. For example, once a QAM is named qam001, no other device on the USRM can be named qam001. Spaces are not allowed within names.

Note: The USRM uses periods to separate components of the name. However, this does not prevent the use of periods in a user-defined name, as in the example Boston.Sudbury.

The configuration file can also be used to preset data values. This feature is typically used for devices that do not support SNMP query. This feature is also used to preset the service group ID assignments for QAMs that do support SNMP. After the two mandatory components in the entry, you can append as many "name=value" fields as needed. An entry may consist of as many lines as needed, as long as each line ends with the continuation character sequence. The last line of the entry must end with a normal new line character. A line is continued using the C language convention of continuing a line with a "\" and then a new line character.

Table-based QAMs are typically supported as generic device types, and thus do not support direct SNMP query of configuration settings. For these QAMs, the configuration is typically entered in a device configuration file. Note that this is not mandatory, and that this data can also be entered directly via the web interface.

The following is a sample device configuration file that creates two table-based QAMs that do not support SNMP query. (The indents in the example are used to improve readability, and are not required.)

```
TableQam qam001 \  
  DataIpAddress=1.2.3.4\  
  PortTable.ServiceGroupId.1=300\  
  PortTable.ServiceGroupId.2=301\  
  PortTable.ServiceGroupId.3=302\  
  PortTable.ServiceGroupId.4=303\  
  ChannelTable.TSID.1.1=8000,ChannelTable.Frequency=900\  
    ChannelTable.ModulationFormat.1.1=QAM-256\  
  ChannelTable.TSID.1.2=8001,ChannelTable.Frequency=906\  
    ChannelTable.ModulationFormat.1.1=QAM-256  
TableQam qam002 \  
  DataIpAddress=1.2.3.5\  
  PortTable.ServiceGroupId.1=300\  
  PortTable.ServiceGroupId.2=301\  
  PortTable.ServiceGroupId.3=302\  
  PortTable.ServiceGroupId.4=303\  
  ChannelTable.TSID.1.1=8010,ChannelTable.Frequency=930\  
    ChannelTable.ModulationFormat.1.1=QAM-256\  
  ChannelTable.TSID.1.2=8011,ChannelTable.Frequency=936\  
    ChannelTable.ModulationFormat.1.1=QAM-256
```

Loading a Device Configuration File

The Platform - ConfigManager - Configuration page is used to load a device configuration file. A file containing device definitions (typically QAMs) can be input to define the set of devices for the application. Entering a file name into the LoadConfigFileName field and clicking **Commit Changes** causes the file to be input and the network resource information to be applied to the configuration.

Configuration Files and Formats

The USRM provides functions to input or output configuration files. A configuration file is a sequence of commands in text form used to save or set the state of USRM configuration objects. A configuration file can be generated from the USRM by extracting current state information and writing to a file. Conversely, a configuration file can also be input to the USRM applying the commands from the file to the USRM configuration.

The USRM supports two configuration file formats, as follows:

- **Legacy format** - The legacy format was inherited from the base software used to form the USRM. This format is supported, but not recommended for new applications.
- **Standard format** - The standard format is recommended for all new applications. The standard format provides the functions of the legacy format plus additional features.

Common Features

The command processors that input and apply configuration files use a common preprocessor. The result is that both file types support a preprocessor that can be used to adjust the content of the file using text directives. In most cases, the preprocessor commands begin with the # character. Unlike other commands, preprocessor commands must begin in the first column of the line.

A named argument can be defined. The "#define argName argValue" specifies an argument and the value of the argument. The example below creates a variable x with value 1. This argument can be used in two ways. First, the #ifdef operator can be used to test if the argument exists. Second, the value of the argument will be substituted in text strings when the argument name is surrounded by the \$ character. For example, 1234\$x\$5678 is translated to 123415678.

```
#define x 1
```

A section can be skipped using #ifdef or #ifndef. The directive is terminated with a #else or #endif. The preprocessor is very limited and only supports one level of conditional processing. In the following example, Command1, Command2, and Command3 are not processed.

```
#ifdef xyz
Command1
Command2
Command3
#endif
```

In the following example, Command1, Command2, and Command3 are applied if the argument xyz is defined.

```
#ifdef xyz
Command1
Command2
Command3
#else
Command4
Command5
Command6
#endif
```

Another way to skip a section is with the #skip directive. The Command1, Command2, and Command3 lines are also not processed in the following example.

```
#skip
Command1
Command2
Command3
#endif
```

The preprocessor also supports inclusion of other files. The #include directive causes a file to be inserted at the current position. In the following example, the file x.txt is processed. The file must be in the ConfigFiles directory.

```
#include x.txt
```

The special command "exit" causes the current file processing to be terminated. This is the single command that does not require the # character in the first column.

Legacy Configuration File Format

The legacy configuration file format is only used from a single place on the web GUI. On the Configuration Manager - Configuration Files page, the LoadConfigFileName entry supports the legacy file format. Entering a file name here and clicking Commit Changes causes the file to be processed.

The legacy configuration file was designed to create a set of objects, typically devices, and preset the state of those objects. Each line of the file creates an object. After the data defining the type of object and instance name, additional commands can be appended that preset the state of the device. Presetting many items requires a long command line. This is handled by supporting a continuation (\) character allowing the virtual command line to be spread over many lines in the file. The number of lines is effectively unlimited.

A command line consists of a set of arguments separated by termination characters. An argument is a text string indicating a name or a type. Termination characters are whitespace, commas, and the equal sign. The semicolon indicates a comment. Blank lines are ignored.

In general, the USRM is not case sensitive in commands. When a command or name is case sensitive, this will be indicated in the document. The first two arguments on the command line are mandatory. The first argument specifies the device type to create. This argument is case sensitive since it specifies a name used to form a linux library name. The second argument is the instance name. The instance name is the unique (within a single USRM) name used to identify the object. The name cannot be changed after creation. Changing the name requires deletion of the device and then re-creating the device. The device can already exist. This means a file can be edited and reapplied at will.

The following is an example command line.

```
gqam GQAM011 CtrlIpAddress=172.16.4.61\  
  PortTable.ServiceGroupId.1 1000\  
  PortTable.ServiceGroupId.2 1001\  
  PortTable.ServiceGroupId.3 1002\  
  PortTable.ServiceGroupId.4 1003
```

This command line creates a "gqam" device named "GQAM011". The IP address of the device is preset and the service group Id for each RF port is also preset.

Standard Configuration File Format

The standard configuration file format is a more flexible format with some advantages. The primary advantage is that the object specification is not required. The file will be applied to the object where it is requested. This allows a common file to be applied to many objects. Every USRM component provides a Software page allowing application of a configuration file. The object is implicit in this case. Second, each command is on a separate line in the file. Long command lines are not required.

The standard configuration file support three basic commands. The first argument on the command line indicates the command type. The create command is used to create an object. The object command is used to specify an object. When the first argument is not create or object, then the command is interpreted as a command to apply a state. In the standard format, the example from the legacy section would be written as follows.

```
create gqam GQAM011  
  CtrlIpAddress=172.16.4.61  
  PortTable.ServiceGroupId.1 1000  
  PortTable.ServiceGroupId.2 1001  
  PortTable.ServiceGroupId.3 1002  
  PortTable.ServiceGroupId.4 1003
```

Note: In the legacy example, the white spaces on lines 2 and greater were required as terminators. In the standard format, they are not required, but are recommended for readability.

When the object already exists, then another version could be used. Note that it is acceptable that the device already exists with the create command. The difference is that the create command requires specification of the type. The object command does not since the type is already known. Remember that the instance name must be unique within a single USRM. The result is that specifying an instance name for a object that already exists implicitly specifies the type. If the gqam GQAM011 already existed, the file could also be written as follows:

```
object GQAM011
  CtrlIpAddress=172.16.4.61
  PortTable.ServiceGroupId.1 1000
  PortTable.ServiceGroupId.2 1001
  PortTable.ServiceGroupId.3 1002
  PortTable.ServiceGroupId.4 1003
```

Auto Configuration File

As mentioned, every USRM component supports input or output of a standard format configuration file. The USRM also supports an auto configuration file. This is a standard configuration file that is automatically applied when the file changes. The Configuration Manager - Configuration Files page allows configuration of the AutoConfigFileName. The USRM tests the modification time of this file every AutoConfigTestPeriod seconds (default = 60 seconds). If the modification time is different from the last time the file was applied, then the file is applied. This allows a standard configuration file to be applied to the USRM simply by pushing the file to the USRM using FTP, SSH, or some other file transfer method.

2

Hardware Installation

Introduction

The USRM is designed to work with the Digital Network Control System (DNCS) and Digital Broadband Delivery System (DBDS).

Scope of This Chapter

This chapter explains how to install the USRM hardware. The USRM is a 1 RU height rack-mounted headless device. After following the hardware installation procedures, read *Rear Panel Description* (on page 32) to learn how to make the necessary connections.

In This Chapter

■ Before You Begin.....	24
■ Rack Mounting.....	25
■ Front Panel Description	31
■ Rear Panel Description.....	32

Before You Begin

Introduction

You must take certain precautions when installing your USRM. Before beginning your installation, be sure to read the **Important Safety Instructions** at the beginning of this document. Pay particular attention to the **Rack Mounting Safety Precautions** section.

You must also make certain preparations before installing your USRM. These items are outlined in the following **Site Requirements** section.

Site Requirements

Your site must meet the following requirements before you can proceed with the installation:

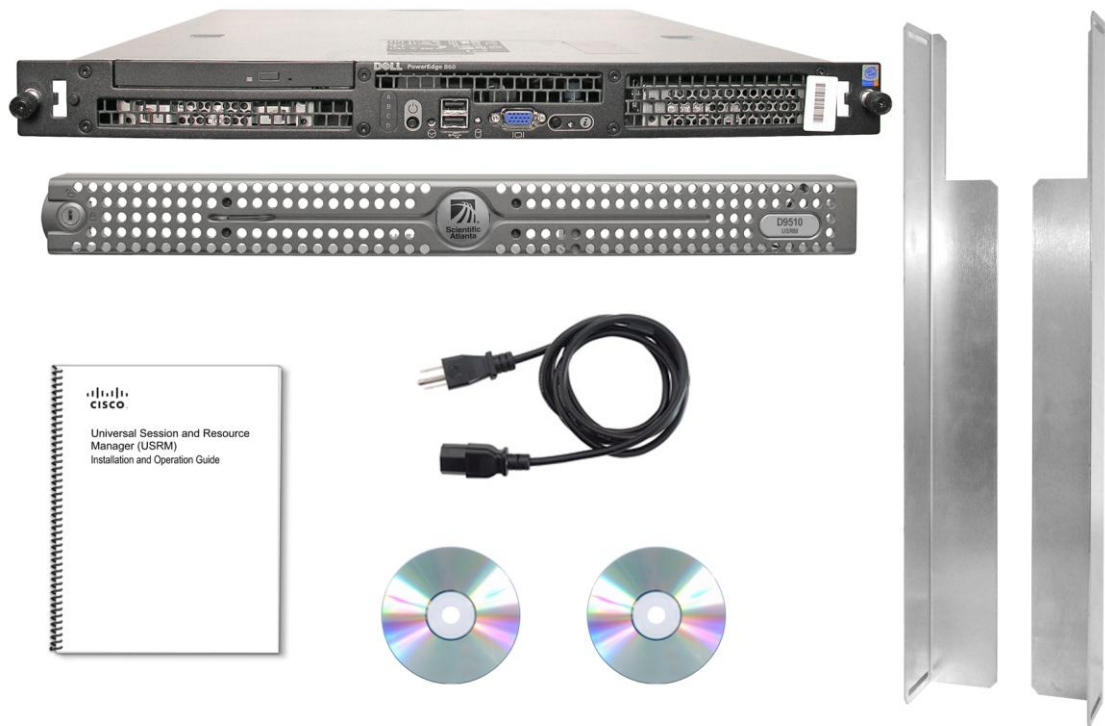
- The USRM must be installed in a standard four-post rack. See **Rack Requirements** in the next section.
- Approved power sources: 90 V AC to 120 V AC (continuous).
- Racking and environment temperature: Temperature inside rack must be maintained between 0°C and +50°C (32°F and 122°F).

Rack Mounting

Introduction

The USRM includes the following items in the factory shipping carton.

- USRM
- Front panel bezel
- Rack mounting angle support brackets
- Power cord
- OS Installation CD
- Application CD
- Installation and Operation Guide



Rack Requirements

The USRM can be installed in most industry standard four-post racks. The rack mounting rails are intended to be installed in a rack that meets the specifications of American National Standards Institute (ANSI)/Electronic Industries Association (EIA) standard ANSI/EIA-310-D-92, International Electrotechnical Commission (IEC) 297, and Deutsche Industrie Norm (DIN) 41494.

Recommended Tools and Supplies

You may need the following item to install the system in a four-post rack cabinet:

- #2 Phillips screwdriver

The following section provides information about mounting the USRM using the provided angle support brackets.

Installing the USRM in the Rack

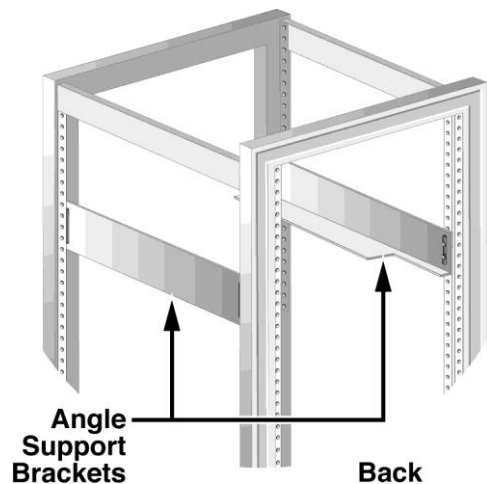
Follow these steps to install the USRM in the rack using the angle support brackets.



CAUTION:

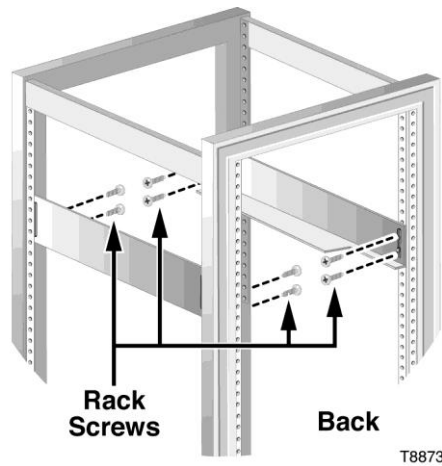
Avoid personal injury and damage to this product! Be sure to support the product from underneath until it is securely positioned in the rack. Failure to do so could result in the product falling to the floor. The product could be damaged and you could be injured as a result.

- 1 Make sure that the site requirements are met as outlined in **Before You Begin** in this chapter.
- 2 Determine the approximate position in the equipment rack where you want the bottom of the USRM to be located and position the angle support brackets in the rack with the cut-outs in the brackets facing toward the back of the rack as shown in the following illustration.

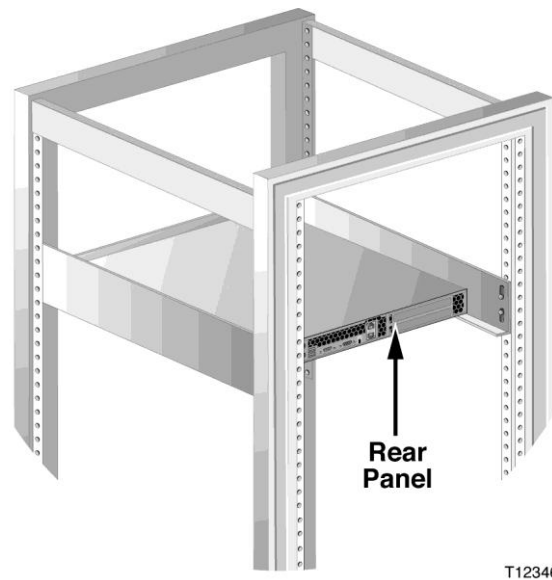


T8872

- 3 Attach the angle support brackets to the equipment rack using rack screws or other mounting hardware that came with your rack.

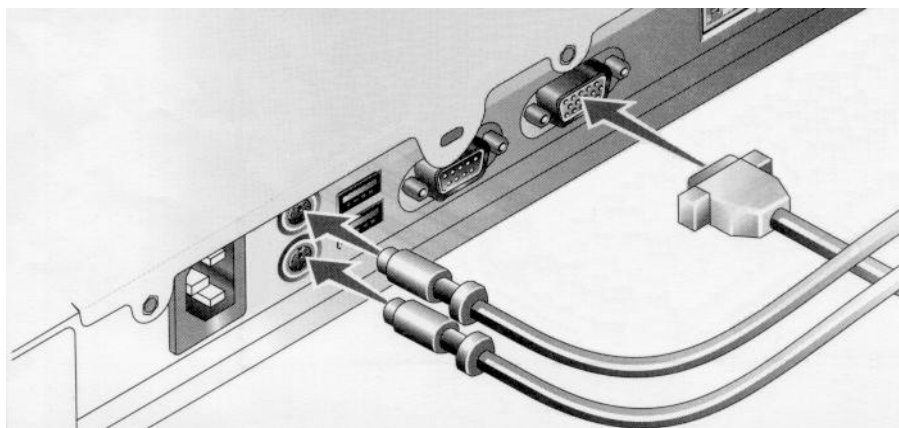


- 4 Slide the USRM into the equipment rack and on to the angle support brackets from the front of the rack until the front panel mounting flanges are flush with the front mounting rails of the rack.

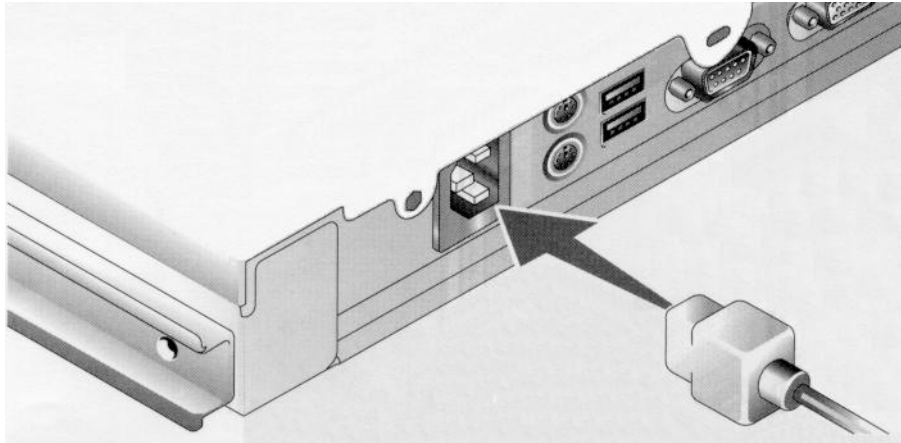


- 5 While holding the USRM in this position, make sure that the bottom of the USRM is supported by the angle support brackets on both sides along the entire depth of the USRM chassis.
- 6 Check that the USRM front panel thumbscrews on both sides align with the proper mounting holes in the equipment rack.

- | If the thumbscrews... | THEN... |
|-------------------------------------|--|
| align with holes in the rack | carefully remove the USRM from the rack and go to step 7. |
| do not align with holes in the rack | carefully remove the USRM from the rack and repeat steps 4 and 5 until the thumbscrews align correctly and the weight of the USRM is fully supported by the angle support brackets along both sides. |
- 7 Securely tighten the rack screws (or other mounting hardware) that hold the angle support brackets in the rack.
 - 8 Re-insert the USRM into the equipment rack and on to the angle support brackets from the front of the rack until the front panel mounting flanges are flush with the front mounting rails of the rack.
 - 9 Tighten the two thumbscrews to secure the USRM in the rack.
Important: Verify that the weight of the USRM is still supported by the angle support brackets on both sides. If not, go back to step 5.
 - 10 If used, attach the keyboard, mouse, and monitor to their respective rear panel connectors.



- 11 Connect the input power cord to the rear panel.



- 12 Attach the front panel bezel, if supplied/used.

Removing the USRM from the Rack

Follow these steps to remove the USRM from the rack.



CAUTION:

Avoid personal injury and damage to this product! Be sure to support the product from underneath until it is securely positioned in the rack. Failure to do so could result in the product falling to the floor. The product could be damaged and you could be injured as a result.

Note: You do not need to remove the optional front bezel to install or remove the USRM from the rack.

- 1 Turn off the system and attached peripherals, and disconnect the system from the electrical power.
- 2 Disengage both thumbscrews on the front panel of the chassis.
- 3 Carefully pull the system forward and out of the rack.

Front Panel Description

Introduction

The USRM is a 1 RU height rack mount unit. The front panel is shown below (without front bezel).



The following illustration shows the front panel with bezel installed.



Front Panel Connectors and Controls

The front panel connectors and controls are shown below.



The following table describes the front panel connectors and controls from left to right.

Component	Description
Diagnostic Indicator	System diagnostic indication.
Power Button	On-Off button.
Restart Switch	System restart.
USB 2.0 Connectors (2)	Peripheral equipment connections.
Hard Drive Activity LED	Hard drive access indication.
Video Connector	Monitor connection.
System Identification Indicator	System ID light. Push to illuminate light on both front and rear panels.

Rear Panel Description

Introduction

The USRM is a 1 RU height rack mount unit. The rear panel is shown below.



Rear Panel Connectors

The USRM rear panel connectors are shown below.



The following table describes the rear panel connectors from left to right.

Component	Description
Power Connector	AC power cord connection.
PS/2 Connectors (2)	Keyboard and mouse connections.
USB 2.0 Connectors (2)	Peripheral device connection.
Serial Port Connector	Serial I/O connection.
Video Connector	Monitor connection.
System Identification Indicator	System ID light. Push to illuminate light on both front and rear panels.
Ethernet Connectors (2)	Network connections: 1 = eth0 2 = eth1

3

USRM Web Interface

Introduction

The USRM can be accessed, monitored, and configured through a convenient web interface which is accessible via a web browser from any computer with access to the management intranet.

Scope of This Chapter

This chapter shows and explains the use of the various web interface pages and defines each of their configuration parameters.

In This Chapter

■ USRM Web Interface	34
■ USRM Web Interface - System Components	36
■ USRM Web Interface - Platform Components.....	46
■ USRM Web Interface - Resource Manager	131
■ USRM Web Interface - Application Components	241
■ USRM Web Interface - Protocol Adaptors	269

USRM Web Interface

Introduction

The USRM can be operated in non-supervised mode, which allows for configuration and provisioning via the USRM web browser interface. This section defines the status and configuration parameters for the USRM.

Configuration settings can be changed using the craft interface. Most settings take effect immediately, while others require a restart of the server. When a restart is required, the parameter description will indicate the USRM must be restarted. This restart requirement does not apply to supervised operation of the software. In supervised mode, the DNCS or other SNMP provisioner provisions the USRM on start-up. In this mode, the USRM software waits for provisioning before starting most software subsystems.

Parameters are displayed based on the privilege level of the user. The user levels are view, user, admin and service. This simplifies the display based on the user. In addition, parameters are configurable based on privilege level. For example, the admin user can set network configuration settings. The user level user can only view these settings. In addition, many internal software settings are only exposed to a service level user.

Some parameters are denoted as "status" parameters. The status term indicates that the parameter is a read-only item. Only parameters with text entry fields can be set via the web interface. All others are read-only and are set via the DNCS. Also, some parameters are referred to as "virtual". The virtual keyword indicates that data is computed upon request. Data tagged as virtual is computed from other data in the model. The purpose of the virtual operator is to eliminate data redundancy and produce display pages with relevant information.

The USRM supports m:n redundancy where "m" standby USRMs ($m \leq 4$) can replace any of "n" primary USRMs ($n \leq 16$). In the m:n redundant configuration, the standby USRM maintains an exact copy of the parameters in a primary USRM. When a standby USRM assumes control for a primary server, the standby server combines its local platform components with the application specific components of the failed primary. This approach allows (1) local network configuration of a USRM and (2) application independent backup. This means a standby server can assume control for any primary USRM independent of the configuration of the primary USRM.

Accessing the Web Interface

The USRM can be accessed, monitored, and configured through a convenient web interface.

Follow these steps to access the server web interface:

- 1 Launch Internet Explorer, or a similar Internet browser.
- 2 Type the IP address for the USRM in the browser's address field and press **Enter**.
- 3 Enter your user ID and password for accessing the USRM application.

Web Interface Home Pages

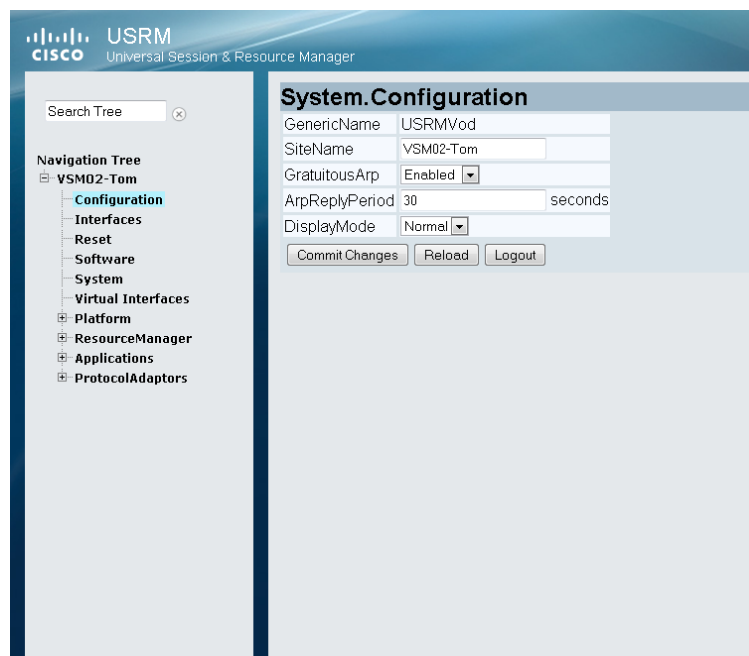
The following illustration shows the home page with the VOD session manager.

The screenshot displays the USRM (Universal Session & Resource Manager) web interface. The header includes the Cisco logo and the text "USRM Universal Session & Resource Manager". On the left, there is a "Navigation Tree" with a "Search Tree" input field and a list containing "VSM02-Tom". The main content area is titled "System.Configuration" and contains several configuration fields: "GenericName" (USRMVod), "SiteName" (VSM02-Tom), "GratuitousArp" (Enabled), "ArpReplyPeriod" (30 seconds), and "DisplayMode" (Normal). At the bottom of this section are three buttons: "Commit Changes", "Reload", and "Logout".

USRM Web Interface - System Components

Configuration Page

The following illustration shows the Configuration page.



Parameters

The following table explains the Configuration page parameters.

Parameter	Description
GenericName	Assigned by the license type for the server. Displays in the System Configuration page and, if no SiteName is defined, in the web interface navigation tree. Note: You must be service level to modify this parameter.
SiteName	User assigned site name. Displays in the web interface navigation tree, if defined, and on the system page titles. SiteName is Boulder in this sample screen.

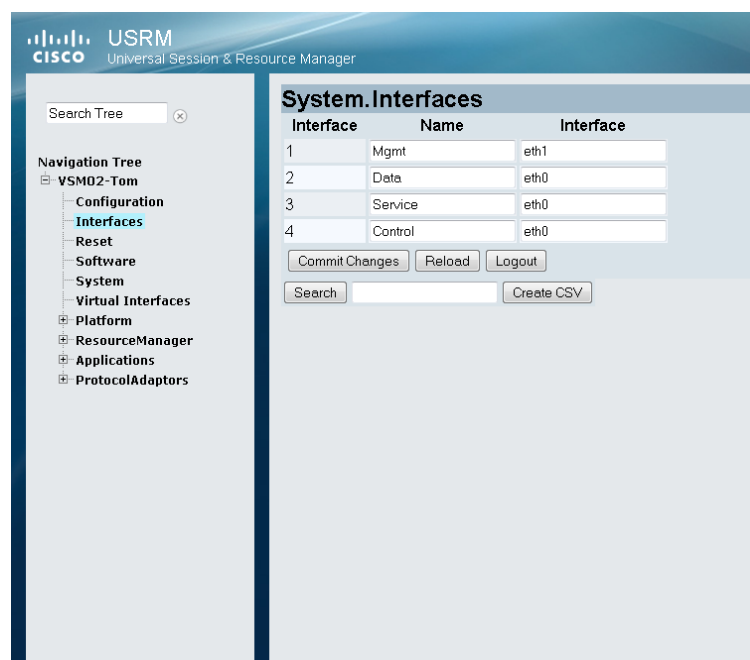
Parameter	Description
GratuitousArp	The setting for the gratuitous Address Resolution Protocol (ARP) feature. The gratuitous ARP feature is used in redundant configurations with virtual IP addresses. A virtual IP address is configured so that the primary and standby servers offer the same IP address for a server. When the primary server is online, the primary server implements the address. When the standby server assumes control, the standby server implements the IP address. The gratuitous ARP feature causes the server to send unsolicited ARP replies with a configured time period. The Enabled state turns the feature on. The Disabled state turns the feature off. Default: disabled
ArpReplyPeriod	Arp reply period in seconds. This setting governs how often the server sends an ARP replay when the gratuitous ARP feature is enabled.
Display Mode	Sets the web interface display mode, as follows: Normal - Displays only populated entries in tables. Config - Displays all rows and entries of a table, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table and to activate and display certain parameters not accessible in Normal mode.

Interfaces Page

The USRM implements logical interfaces to allow primary and standby servers to use different network configurations. The logical interfaces described here are server-specific, i.e., each server utilizes its own logical interface configuration. Recall that a standby server uses its own platform components when assuming control for a primary server. Application components then refer to these logical interfaces. The application components are application specific, i.e., the application uses the same logical interface on the primary and the standby server.

An example is as follows: A primary server uses eth1 for the Data interface. The standby server uses eth0 for the Data interface. A carousel generator application typically uses the Data logical interface. The primary server will then use eth1 for carousel generation. When the standby server assumes control, the eth0 interface will be used for carousel generation.

The following illustration shows the Interfaces page.



Parameters

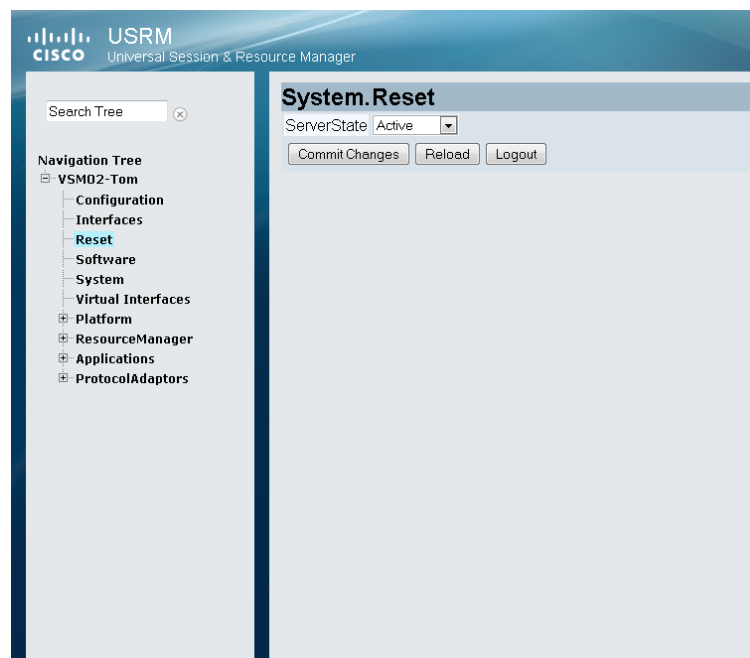
The following table explains the Interfaces page parameters.

Parameter	Description
Interface	Sequential number of the logical interface in the list.
Name	The logical interface name, as follows: Mgmt - Management interface, typically used for the web server and SNMP, etc. Data - Data interface, typically used for carousels, etc. Service - Service interface, typically used for application services, e.g., VOD, SDV, etc. Control - Control interface, typically used for control of edge resource devices.
Interface	The physical Ethernet connector on the USRM rear panel through which the interface connects to the USRM.

Reset Page

This page provides a control used to reset or terminate the application software.

The following illustration shows the Reset page.



Parameters

The following table explains the Reset page parameters.

Parameter	Description
ServerState	The current state of the server, as follows: Active - The server software is running. Reset - Select Reset and click Commit Changes to reset the server software. This causes the server to terminate and restart. The Reset command depends on the watchdog timer. The watchdog timer must be active for the reset command to function properly. If the watchdog is not running, selecting Reset causes the server software to terminate. Terminate - Select Terminate and click Commit Changes to terminate (shut down) the server software.

Software Page

This page displays software information for the USRM System and allows the operator to manage the configuration file update parameter.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. On the left is a 'Navigation Tree' with a search bar and a list of categories: Configuration, Interfaces, Reset, Software (highlighted), System, Virtual Interfaces, Platform, ResourceManager, Applications, and ProtocolAdaptors. The main content area is titled 'System.Software' and contains a table of parameters:

SoftwareVersion	2.1.3
StartSequence	1
CurrentDateTime	2011/08/24 11:31:29
ConfigFileName	
ConfigFileUpdate	Inactive
LastTransactionId	550072986
ActiveTransactions	60410447
MaxActiveTransactions	60410466
PartNumber	USRMVSM

At the bottom of the table are three buttons: 'Commit Changes', 'Reload', and 'Logout'.

Parameters

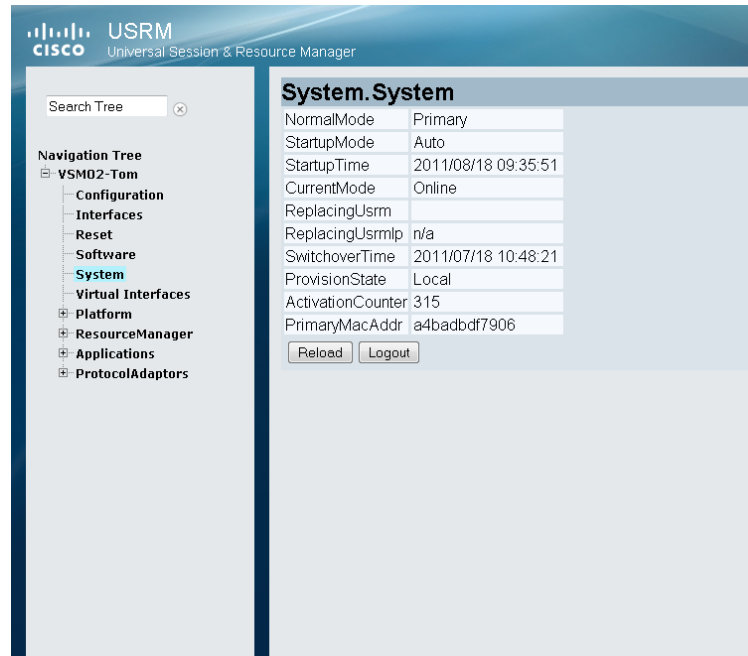
The following table explains the Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.
LastTransactionId	Displays the last transaction ID generated by the server.
ActiveTransactions	Displays the number of active transactions in progress.
MaxActiveTransactions	Displays the maximum number of simultaneous transactions.
PartNumber	Displays the part number of the product. This is obtained from the license file (ConfigFiles/license.conf) used to create this configuration.

System Page

The following illustration shows the System page.



Parameters

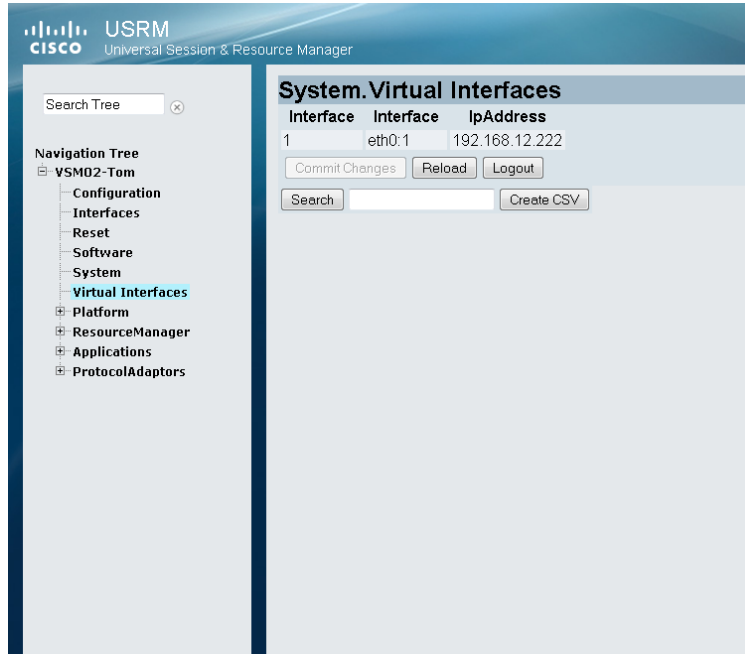
The following table explains the System page parameters.

Parameter	Description
NormalMode	The normal role of the USRM, either Primary or Standby. This mode is designated the first time the server is started during initial installation. When the software is started and no persistdata components exist, the software sets this state based on how the software was started. Refer to <i>USRM Startup Command Options</i> (on page 286).
StartupMode	The startup mode of the USRM software on startup. Possible values are Primary, Standby, Supervised, Transition, and Auto.
StartupTime	The date and time of the last USRM startup.
CurrentMode	The current operating mode of the USRM. Possible values are Online, Offline, and Transition. Online means the server is providing service. Offline means the server is a backup and is not providing service. Transition means the server is recovering from a Standby event.

Parameter	Description
ReplacingUsrm	The name of the USRM being replaced. When a backup server assumes control, this displays the SiteName of the server being replaced.
ReplacingUsrmIp	The IP address of the USRM being replaced. This displays the IP address of the server being replaced by this standby server.
SwitchoverTime	The date and time of the last transaction from Offline to Online.
ProvisionState	The provisioned state of the USRM. Possible values are Local, Primary, Standby, Transition, Timeout, and Local.
ActivationCounter	The number of activations of the server software.
PrimaryMacAddr	The MAC address of the primary server.

Virtual Interfaces Page

The following illustration shows the Virtual Interfaces page.



Parameters

The following table explains the Virtual Interfaces page parameters.

Parameter	Description
Interface	The interface table index beginning with one. When virtual interfaces are created by components, the interface is inserted into this table for management. The entries are created in order of request from components.
Interface	The name of the interface that has a virtual interface. When a virtual address is configured, the interface and the IP address are configured. The software will bind the configured virtual IP address to the configured interface.
IpAddress	The IP address of the virtual interface. The software will bind the IP address to the configured interface.

USRM Web Interface - Platform Components

Introduction

This section describes the platform components. Platform components are the components that provide the base functionality of the USRM. Every version of the USRM requires the base platform components to operate. The software configuration consists of (1) base platform components, (2) licensed application components and (3) application-specific network resources and adaptors.

Network devices and applications then provide application-specific functions. These are described in *USRM Web Interface - Application Components* (on page 241).

Note: Individual configuration parameters are exposed as a function of the user's privilege level. Many of the standard features are for troubleshooting and are only exposed at the admin level, not at the normal user level.

Common Features

All software components inherit a set of standard features with corresponding web interface controls for configuration. These common component screens are:

- Logging Config
- Software
- SNMP Config

Note: The SNMP Config screen appears only for QAMs and other resources that support SNMP.

These common screens are explained first, followed by the remaining platform component screens.

Platform Software

This page displays software information for the Platform and allows the operator to manage the configuration file update parameter.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. On the left is a 'Navigation Tree' with a search box. The tree is expanded to 'Platform', which includes sub-items like 'Software', 'ConfigManager', 'EventManager', 'LogManager', 'Server', 'StatusMonitor', 'WebServer', 'HaPrimary', 'HaStandby', 'SnmpManager', 'UserManager', 'SnmpAgent', 'ERM ERM', 'ResourceManager', 'Applications', and 'ProtocolAdaptors'. The 'Software' item is selected. The main content area, titled 'Platform Software', contains the following fields and controls:

- StartSequence**: A text input field containing the value '2'.
- CurrentDateTime**: A text input field containing the value '2011/08/24 11:36:52'.
- ConfigFileName**: An empty text input field.
- ConfigFileUpdate**: A dropdown menu currently set to 'Inactive'.
- Buttons**: Three buttons at the bottom: 'Commit Changes', 'Reload', and 'Logout'.

Parameters

The following table explains the Platform Software page parameters.

Parameter	Description
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ConfigManager - Configuration Page

ConfigManager supports the mass creation of network resources via a device configuration file. This is typically much easier, faster, and more fool-proof than entering all of this resource data manually via the ConfigManager - Resource Create and various Resource Manager pages.

The LoadConfigFileName parameter allows you to manually load a configuration file on a server if necessary. Entering a file name into the LoadConfigFileName field and clicking **Commit Changes** causes the file to be input and the network resource information to be applied to the configuration.

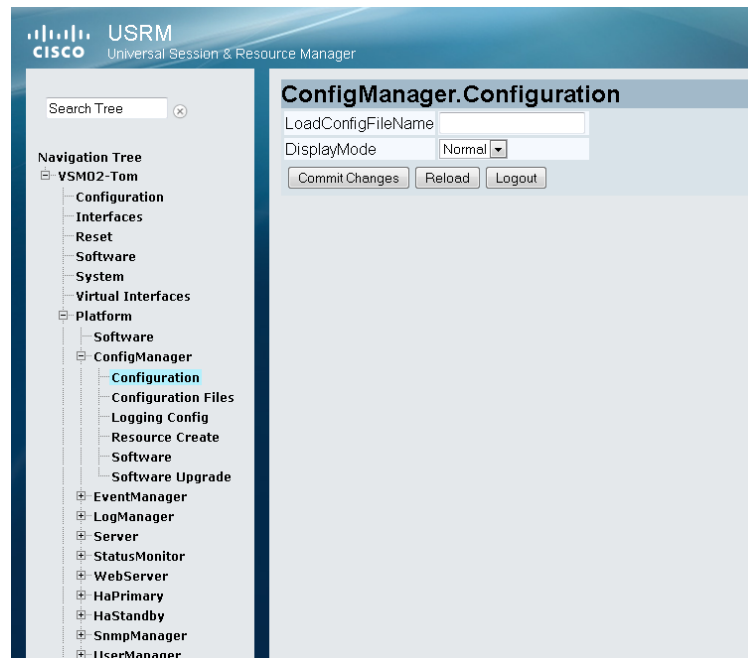
Note: Refer to *Creating Resources Via Device Configuration File* (on page 17) for more information.



CAUTION:

This format of this type of configuration file differs from that of the configuration files described in the Configuration Files section. Entering the wrong file in the wrong place will cause the USRM to fail when loading the configuration files.

The following illustration shows the ConfigManager - Configuration page.



Parameters

The following table explains the ConfigManager - Configuration page parameters.

Parameter	Description
LoadConfigFileName	Enter the name of the configuration file for the server to load manually. This is the device configuration text file that contains the network resource type names, user-assigned network resource names, and optional network resource configuration data. Note: The file must be located in the /opt/usrm/ConfigFiles directory. This parameter is typically used for a one-time manual load operation. After the file is created and placed in the directory, enter its name here. Then click Commit Changes to load the file.
Display Mode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table.

ConfigManager - Configuration Files Page

ConfigManager supports the mass creation of network resources via a device configuration file.

This configuration file can be created and stored on the DNCS and can be pushed to all SDV Servers using a simple script. The servers will monitor the file and automatically load any new version (based on file date and time stamp) within a configurable time of receiving the file.

The Configuration Files page is used to set this up by entering the name of the file in the AutoConfigFileName field on each server. This only needs to be done one time. After that, the server monitors the file and loads a new one.

Notes:

- You must set Configuration.DisplayMode to Config to edit the Configuration Files entries.
- Refer to *Creating Resources Via Device Configuration File* (on page 17) for more information.

The following illustration shows the ConfigManager - Configuration Files page.

The screenshot displays the 'ConfigManager.Configuration Files' page. The table contains the following data:

File	AutoConfigFileName	AutoConfigLastUpdate	AutoConfigModificationTime	AutoConfigTestPeriod (Seconds)
1	em-GqiQamClient.txt	2011/04/08 09:56:00	2011/03/29 19:29:35	60
2	em-GqiQamClientAdmir	2011/04/08 10:33:00	2011/03/29 19:29:35	60
3	SG_Delete.conf	2011/04/21 15:13:00	2011/04/20 11:40:41	10

Below the table, there are buttons for 'Commit Changes', 'Reload', and 'Logout'. A 'Search' input field and a 'Create CSV' button are also present.

Parameters

The following table explains the ConfigManager - Configuration Files page parameters.

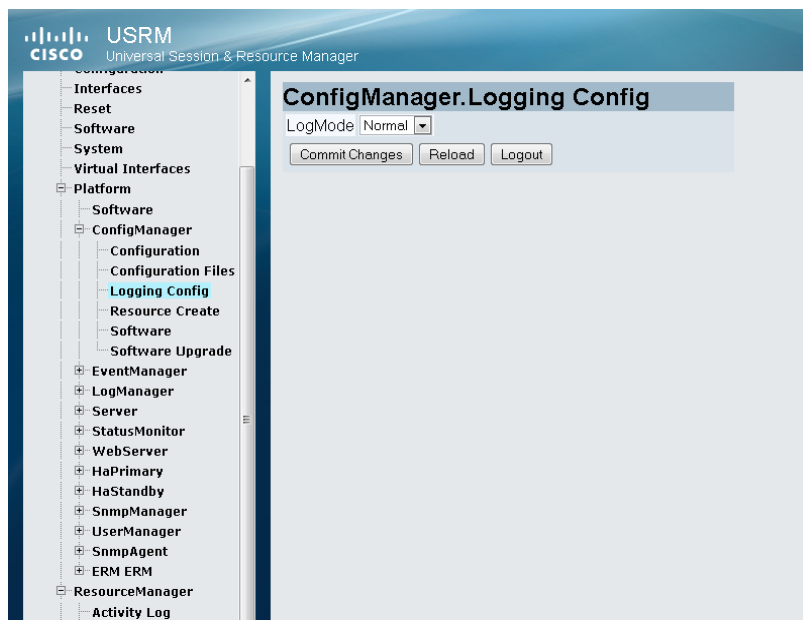
Parameter	Description
AutoConfigFileName	Enter the name of the auto configuration file. Note: The file must be located in the /opt/usrm/ConfigFiles directory. The server monitors this file and automatically loads it any time it sees a change in its date and time stamp.
AutoConfigLastUpdate	Indicates the last time that the server loaded the configuration file.
AutoConfigModificationTime	Indicates the date and time stamp of the configuration file currently being used.
AutoConfigTestPeriod	Sets how often the server checks the AutoConfigFileName file for updates. Default: 60 seconds

Logging Config Page

All software components generate text log messages. The purpose of these messages is to aid in debugging problems and maintain records of system operation. These log messages are generated by software components and then are either discarded or inserted into the daily log file. The Logging Config page for each component shows the current log level for the component and allows you to select the log level. The log level determines if the log message is to be retained or discarded.

The set of selectable levels are None, Min, Normal, Max, and Capture. The selected level designates the level of log retention for the individual component. The individual component log levels can be overridden globally using the Platform - LogManager - Configuration page.

The following illustration shows the ConfigManager - Logging Config page.



Logging Levels

The following table explains the logging levels.

Logging Level	Description
None	The None level inhibits all logging from the component. All log messages generated by the component are discarded.
Min	The Min level selects the minimum level of logging. All error messages are generated and logged with the Min level tag. This setting is used to retain only error messages. An error message always has a Min log threshold.
Normal	Normal is the default logging level. The Normal level selects the normal level of logging. The goal is that all log messages that a customer would want to retain for record-keeping purposes are tagged with the Normal level tag. Typically each signaling event causes a log message to be generated with a Normal level tag.
Max	The Max level selects the maximum level of logging. Events between subsystems result in a log message with the tag Max. Note: This level is intended for troubleshooting purposes and generates lots of data. It should not be used for extended periods unless the disk is monitored.
Capture	The Capture level selects the highest level of logging. This mode causes raw binary messages to be logged in hexadecimal form. Note: This level is intended for software debug and for diagnosing extreme troubleshooting cases.

ConfigManager - Resource Create Page

This page provides a list of resource types and allows network resources of each type to be created. The list on the page is populated by the software scanning the PlugIns/Resource directory to obtain the supported resource types.

Note: This feature cannot be used on a remote server in the current release. It will be supported on a remote server in a future release.

Refer to *Creating Resources Via Web Interface* (on page 16) for more information.

The following illustration shows the ConfigManager - Resource Create page.



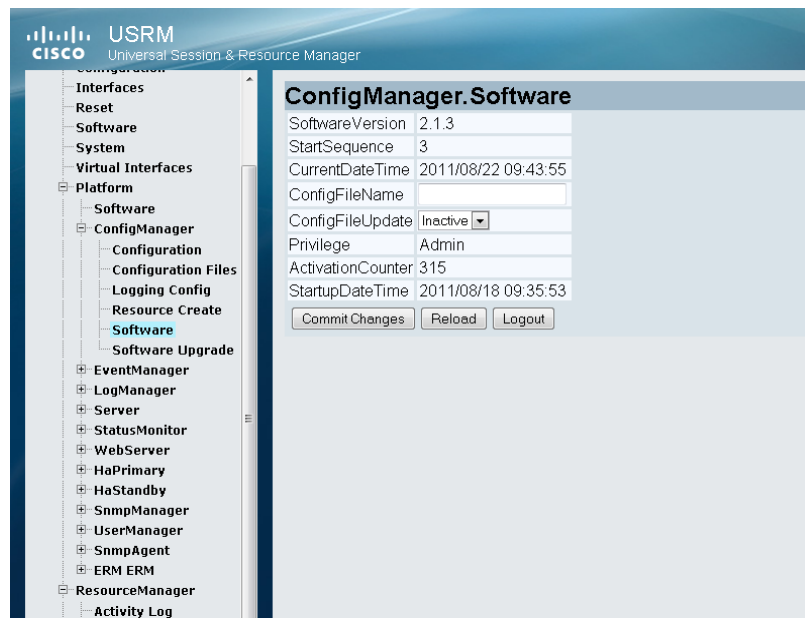
Parameters

The following table explains the ConfigManager - Resource Create page parameters.

Parameter	Description
Type	Sequential number of the resource type.
TypeName	The system-assigned resource type name.
CreateName	The user-assigned name for the resource to be created.
Note: Enter a name in this field and click Commit Changes to create the resource. Important: The user-assigned name must be unique within the USRM. For example, once a QAM is named "qam001", no other device on the USRM can be named "qam001". Commas, periods, and spaces are not allowed within names.	

ConfigManager - Software Page

This page displays software information for ConfigManager and allows the operator to manage the configuration file update parameter.



Parameters

The following table describes the ConfigManager - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
Current Date Time	Displays the date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

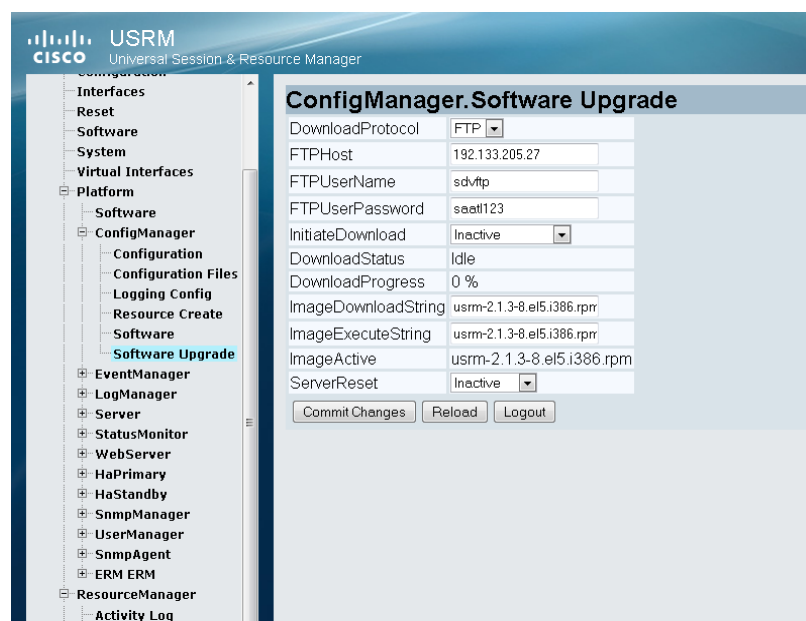
Parameter	Description
Privilege	Displays the user privilege level. Admin - Can view and perform admin level functions. User - Can view and perform standard user level functions.
ActivationCounter	The number of activations of the server software.
StartupDateTime	The date and time of the last ConfigManager startup.

ConfigManager - Software Upgrade Page

The Software Upgrade page provides controls to upgrade the software. A new version of the software can be obtained as an rpm file. The rpm file contains all of the components that are to be upgraded in the new release. Other file types can be downloaded but upgrade of the software is only supported using an rpm file.

To initiate a software upgrade, set all necessary parameters on the Software Upgrade page and click **Commit Changes**.

The following illustration shows the ConfigManager - Software Upgrade page.



Parameters

The following table explains the ConfigManager - Software Upgrade page parameters.

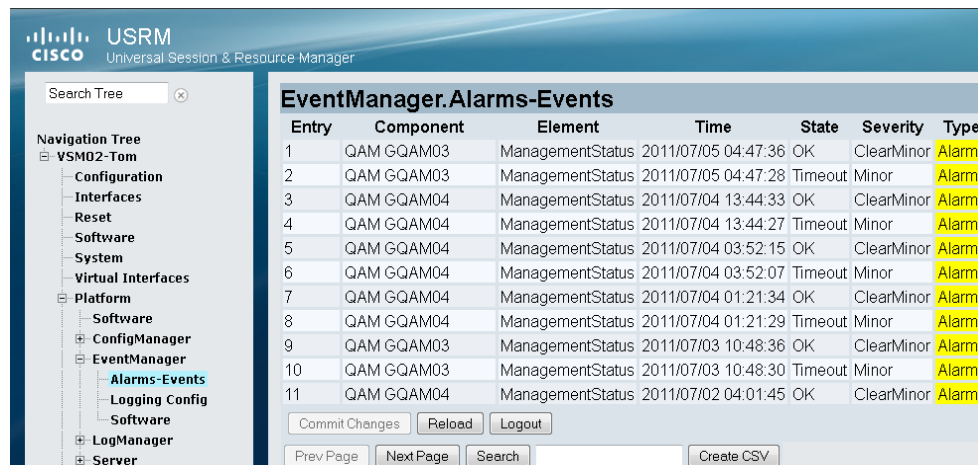
Parameter	Description
DownloadProtocol	Sets the protocol for downloading the new release of the software. Two protocols are supported, FTP and SSH. SSH is the default and is used when receiving an upgrade from DNCS. Note: Must have service level access to change to FTP in versions prior to 1.6.0.
FTPHost	Specifies the IP address of the FTP server that contains the software upgrade file.
FTPUserName	Specifies the user name for the account on the FTP server.

Parameter	Description
FTPUserPassword	Specifies the password that corresponds to the user account on the FTP server.
InitiateDownload	Initiates the FTP or SSH download of the software upgrade. The three states for this parameter are: Inactive - Inhibits the software download. Download - Causes the software to be downloaded from the download server. The server must be reset in a separate operation for the software to be upgraded using this mode. DownloadInstall - Causes the software to be downloaded from the FTP server and then automatically installed. Note: The Watchdog service (tnoswdog) must be running in order for the DownloadInstall to work properly.
DownloadStatus	Shows the state of the download operation. The states are InProgress, ConnectionFailed, LoginFailed, FileNotFound, and Idle. The state names are self-explanatory. After a download is completed, the state reverts to Idle.
DownloadProgress	Shows the progress of the download in percentage complete.
ImageDownloadString	Specifies the name of the file to be downloaded from the FTP server.
ImageExecuteString	Specifies the name of the file to be activated upon the next activation of the software.
ImageActive	Displays the name of the software file that is active.
ServerReset	Provides a control to reset or terminate the software. The states for this parameter are: Inactive - Inhibits the reset operation. Reset - Causes the software to be terminated and then restarted. (The watchdog initiates the restart and thus the watchdog must be active.) Terminate - Causes the software to be terminated.

EventManager - Alarms-Events Page

The EventManager page maintains a list of events. Events are typically alarm transitions. An alarm transition event occurs when a data item transitions to or from an alarm state. The list is maintained in chronological order.

The following illustration shows the EventManager - Alarms/Events page.



Parameters

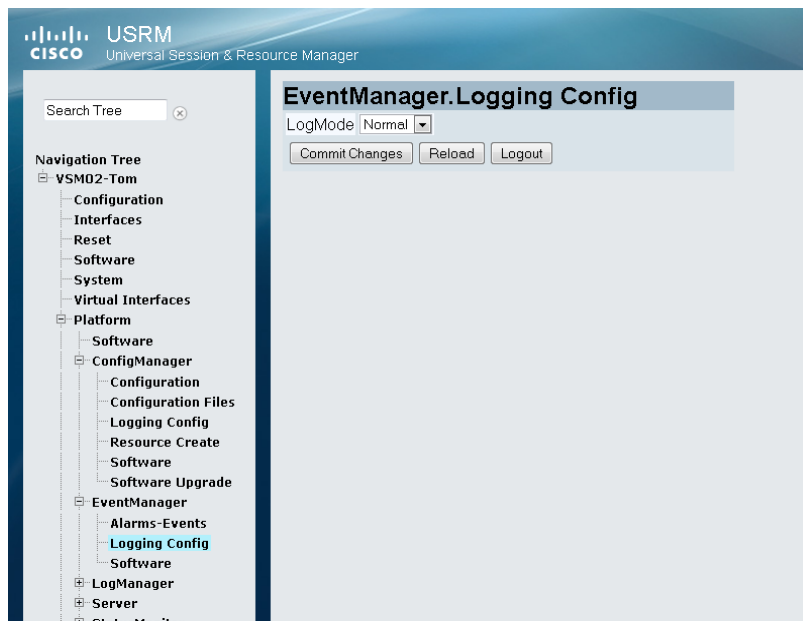
The following table explains the EventManager - Alarms/Events page parameters.

Parameter	Description
Entry	The chronological entry number for the event.
Component	Identifies the name of the component that originated the event.
Element	Identifies the data item that transitioned to or from an alarm state.
Time	Identifies the date and time of the occurrence.
State	Specifies the new state of the parameter, i.e., the state after the transition.
Severity	Indicates the severity of the event. The possible severity states are Minor, Major, Critical, ClearMinor, ClearMajor, ClearCritical, and n/a. The Minor, Major, and Critical states indicate the element transitioned to the corresponding alarm state. Conversely, the ClearMinor, ClearMajor, and ClearCritical states indicate the element transitioned from the corresponding alarm state. The n/a state indicates an event that is not an alarm transition.

Parameter	Description
Type	The event type. For an alarm transition, the Type is Alarm. For a change-of-state of a non-alarm parameter, the Type is Change.

EventManager - Logging Config Page

This page allows the operator to configure the logging level for EventManager logging.



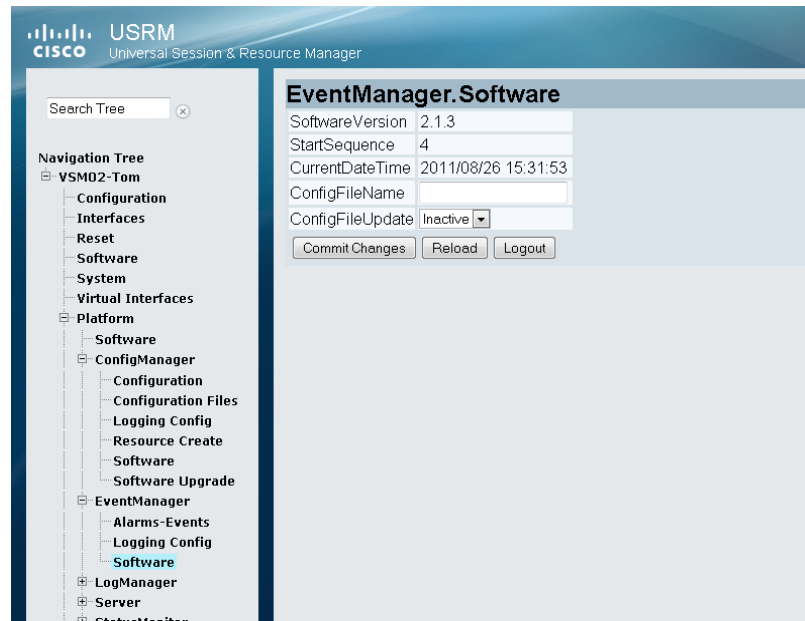
Parameters

The following table explains the EventManager - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for more information.

EventManager - Software Page

This page displays software information for EventManager and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the Server - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

LogManager - Component Summary Page

The LogManager - Component Summary page allows you to set the logging level for various server web interface components.

The following illustration shows the LogManager - Component Summary page.



Parameters

The following table explains the LogManager - Component Summary page parameters.

Parameter	Description
Object	The sequential object number in the table.
Name	The server web interface component (page) name.
LogMode	Sets the logging level or each object. Log levels are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

Logging Levels

The following table explains the logging levels.

Logging Level	Description
None	The None level inhibits all logging from the component. All log messages generated by the component are discarded.
Min	The Min level selects the minimum level of logging. All error messages are generated and logged with the Min level tag. This setting is used to retain only error messages. An error message always has a Min log threshold.
Normal	Normal is the default logging level. The Normal level selects the normal level of logging. The goal is that all log messages that a customer would want to retain for record-keeping purposes are tagged with the Normal level tag. Typically each signaling event causes a log message to be generated with a Normal level tag.
Max	The Max level selects the maximum level of logging. Events between subsystems result in a log message with the tag Max. Note: This level is intended for troubleshooting purposes and generates lots of data. It should not be used for extended periods unless the disk is monitored.
Capture	The Capture level selects the highest level of logging. This mode causes raw binary messages to be logged in hexadecimal form. Note: This level is intended for software debug and for diagnosing extreme troubleshooting cases.

LogManager - Configuration Page

The LogManager - Configuration page allows the global override of the log levels set for individual software components via their individual Logging Config pages.

The log manager either discards the messages from the software components or inserts them into the daily log file depending on a classifier assigned to the message by the component that creates it. Refer to LogManager - Log Page for more information.

The following illustration shows the LogManager - Configuration page.



Parameters

The following table explains the LogManager - Configuration page parameters.

Parameter	Description
LogStatus	Indicates log status.
LogPath	Allows explicit configuration of the directory to be used to contain the log files.
TimestampBase	A date and time stamp is prepended to each log message. This parameter allows configuration of the time-stamp resolution for the message to Secs, milliSecs, or microSecs.

Parameter	Description
LogGlobalMin	Sets the minimum logging level by allowing the incoming log level to be decreased. For example, when set to Max every incoming log message classifier is increased to Max. See <i>Logging Levels</i> (on page 53) for logging level descriptions.
LogGlobalMax	Sets the maximum logging level by allowing the incoming log level to be increased. For example, if set to Normal every incoming log message classifier is decreased to Normal. See <i>Logging Levels</i> (on page 53) for logging level descriptions.
LogConsole	Provides a means to output all log messages to the console. This is used by software developers using the CLI and should be Off in normal use since it will slow channel change processing.
LogAll	Causes all log messages to be placed in the log file.
LogDeleteThreshold	Sets the number of days after which the daily log files are deleted.
LogCompression	Enables or disables compression of the log file.
LogServerAddress	When configured, log messages are transmitted to an external server with this address.
LogServerPort	When configured, log messages are transmitted to an external server with this UDP port number.
MaxFileSize	Sets the maximum size of the log file. This setting works in conjunction with the MaxOverflowFiles parameter to keep log file size manageable without losing log data.
Current File	Displays the name of the current log file.
MaxOverflowFiles	Sets the maximum number of revolving daily log files. Log file names are in the format DDMMYYYYY_XXXXXX.txt, where XXXXXX is a numeric value from 000000 to MaxOverFiles; for example, 23Mar2010_000000.txt. When a daily log value reaches MaxFileSize, the file is closed and a new file is opened having the same name as the previous file, but with the suffix number incremented; for example, 23Mar2010_000001.txt would be the second daily log file after 23Mar2010_000000.txt.

LogManager - Log Page

The log manager component maintains logs for record keeping and troubleshooting purposes. The log manager creates a log file for each day. The name of the file is `dataname_XXXXXX.txt`, where `XXXXXX` is a numeric value from 000000 to `MaxOverflowFiles`. An example `dataname` is `09Oct2009_000000.txt`. The log files are compressed after three days, and are deleted after a user-defined number of days as specified by the `LogDeleteThreshold` parameter on the `Platform.LogManager.Configuration` page.

Each software component generates log messages and sends them to the log manager. The log level is set for each component via the Logging Config page under the specific component or on the Component Summary page. The level can be set to None, Min, Normal, Max, or Capture. Refer to *Server - Logging Config Page* (on page 75) for more information.

The log manager either discards the messages or inserts them into the daily log file. A classifier supplied with the log message determines if the log message should be discarded or inserted into the daily log file. Each log message is assigned a classifier by the component that creates the log message. The classifications in order of precedence are Min, Normal, Max, and Capture. When the global logging level is configured to Normal, then only those log messages with classification of normal or greater (Normal, Max, Capture) are logged to the log file.

The following illustration shows the LogManager - Log page.

LogManager.Log	
Entry	Entry
1	2011/07/12 17:02:57.939 DiscSvcRxRelConf,status=success(0),errmp=10.16.3.114,SesId=001bd763d85f/1310504569
2	2011/07/12 17:02:57.939 SspTcpServerTxServerReleaseIndication,Server=192.168.12.140,TID=113991431,SesId=001bd763d85f/1310504569,reason=0,PrivateData.Length=92
3	2011/07/12 17:02:57.939 VodSmServerReleaseIndication,Server=192.168.12.140,TID=113991431,Reason=0,SesId=001bd763d85f/1310504569
4	2011/07/12 17:02:57.939 SspUdpServerTxClientReleaseConfirm,TID=113991431,Resp=0,Client=192.168.12.140,SesId=001bd763d85f/1310504569
5	2011/07/12 17:02:57.939 VodSmClientReleaseConfirm,Client=192.168.12.140,TID=113991431,Resp=0,SesId=001bd763d85f/1310504569
6	2011/07/12 17:02:57.939 DiscSvcTxRelReq,TID=520228696,SesId=001bd763d85f/1310504569,retryCount=0,errmp=10.16.4.114
7	2011/07/12 17:02:57.939 VodSmReleaseSession,SesId=001bd763d85f/1310504569,sessionIndex=78880,nActiveSessions=10
8	2011/07/12 17:02:57.938 VodSmClientReleaseRequest,Client=192.168.12.140,TID=113991431,Reason=0,SesId=001bd763d85f/1310504569
9	2011/07/12 17:02:57.938 SspUdpServerRxClientReleaseRequest,Client=192.168.12.140,TID=113991431,SesId=001bd763d85f/1310504569,PrivateData.Len=92
10	2011/07/12 17:02:57.837 DiscSvcRxRelConf,status=success(0),errmp=10.16.3.114,SesId=001bd763fde1/1310504569
11	2011/07/12 17:02:57.837 SspTcpServerTxServerReleaseIndication,Server=192.168.12.140,TID=113991430,SesId=001bd763fde1/1310504569,reason=0,PrivateData.Length=92
12	2011/07/12 17:02:57.837 VodSmServerReleaseIndication,Server=192.168.12.140,TID=113991430,Reason=0,SesId=001bd763fde1/1310504569
13	2011/07/12 17:02:57.837 SspUdpServerTxClientReleaseConfirm,TID=113991430,Resp=0,Client=192.168.12.140,SesId=001bd763fde1/1310504569
14	2011/07/12 17:02:57.837 VodSmClientReleaseConfirm,Client=192.168.12.140,TID=113991430,Resp=0,SesId=001bd763fde1/1310504569
15	2011/07/12 17:02:57.837 DiscSvcTxRelReq,TID=520228695,SesId=001bd763fde1/1310504569,retryCount=0,errmp=10.16.4.114
16	2011/07/12 17:02:57.837 VodSmReleaseSession,SesId=001bd763fde1/1310504569,sessionIndex=95200,nActiveSessions=11
17	2011/07/12 17:02:57.836 VodSmClientReleaseRequest,Client=192.168.12.140,TID=113991430,Reason=0,SesId=001bd763fde1/1310504569
18	2011/07/12 17:02:57.836 SspUdpServerRxClientReleaseRequest,Client=192.168.12.140,TID=113991430,SesId=001bd763fde1/1310504569,PrivateData.Len=92
19	2011/07/12 17:02:57.735 DiscSvcRxRelConf,status=success(0),errmp=10.16.3.114,SesId=001bd7659a65/1310504569
20	2011/07/12 17:02:57.735 SspTcpServerTxServerReleaseIndication,Server=192.168.12.140,TID=113991429,SesId=001bd7659a65/1310504569,reason=0,PrivateData.Length=92
21	2011/07/12 17:02:57.735 VodSmServerReleaseIndication,Server=192.168.12.140,TID=113991429,Reason=0,SesId=001bd7659a65/1310504569
22	2011/07/12 17:02:57.735 SspUdpServerTxClientReleaseConfirm,TID=113991429,Resp=0,Client=192.168.12.140,SesId=001bd7659a65/1310504569
23	2011/07/12 17:02:57.735 VodSmClientReleaseConfirm,Client=192.168.12.140,TID=113991429,Resp=0,SesId=001bd7659a65/1310504569
24	2011/07/12 17:02:57.735 DiscSvcTxRelReq,TID=520228694,SesId=001bd7659a65/1310504569,retryCount=0,errmp=10.16.4.114
25	2011/07/12 17:02:57.735 VodSmReleaseSession,SesId=001bd7659a65/1310504569,sessionIndex=77690,nActiveSessions=12

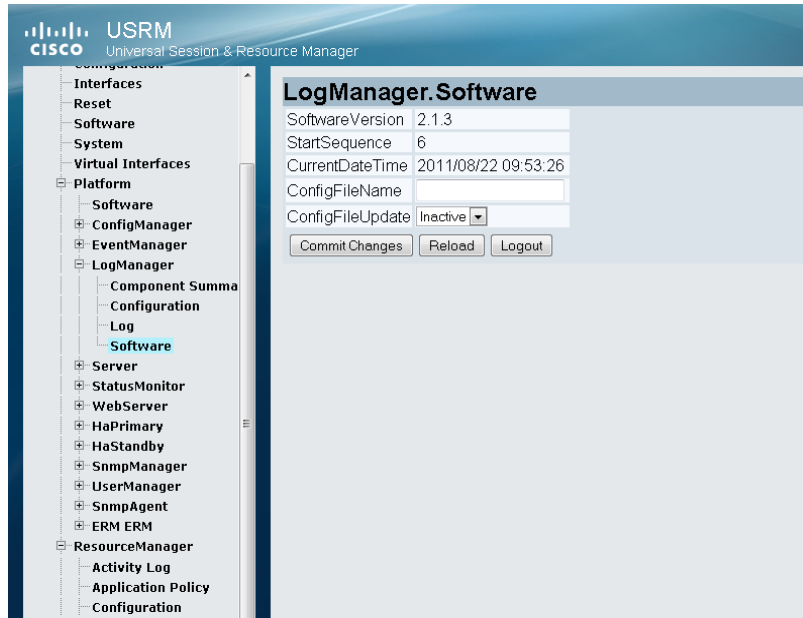
Parameters

The following table explains the LogManager - Log page parameters.

Parameter	Description
Entry	Sequential log entry number.
Entry	Log entry text.

LogManager - Software Page

This page displays software information for LogManager and allows the operator to manage the configuration file update parameter.



Parameters

The following table describes the LogManager - Software page parameters.

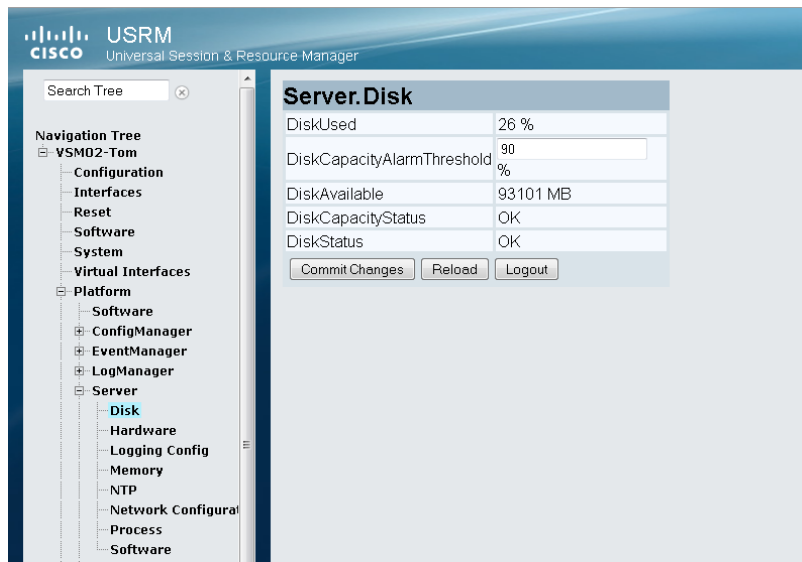
Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

Server - Disk Page

The Server - Disk page displays basic status information for the server hard disk.

The following illustration shows the Server - Disk page.



Parameters

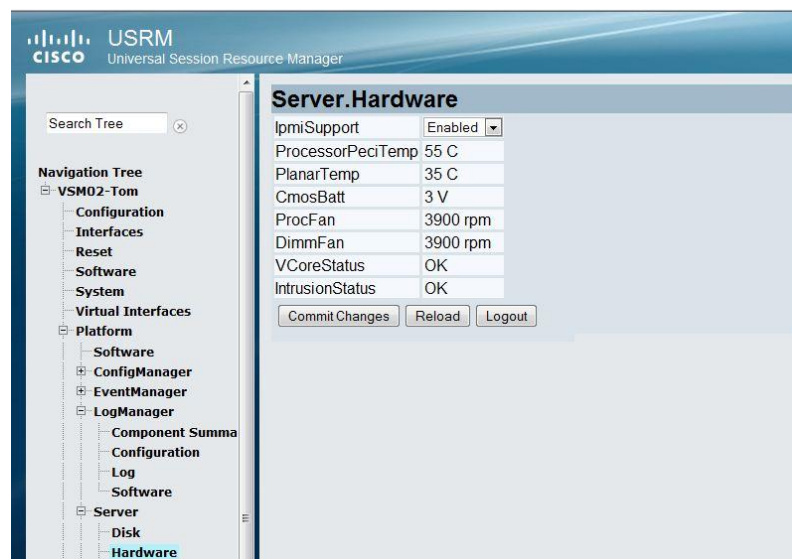
The following table explains the Server - Disk page parameters.

Parameter	Description
DiskUsed	The amount of total disk space used.
DiskCapacityAlarmThreshold	Sets the threshold for reporting a disk capacity alarm.
DiskAvailable	The amount of remaining disk space available.
DiskCapacityStatus	The status of the available disk space, as follows: OK - Disk capacity is OK. Alarm - Indicates the available disk space is less than the DiskCapacityAlarmThreshold.
DiskStatus	Indicates if the disk is full.

Server - Hardware Page

The Server - Hardware page displays basic status information about the server hardware.

The following illustration shows the Server - Hardware page.



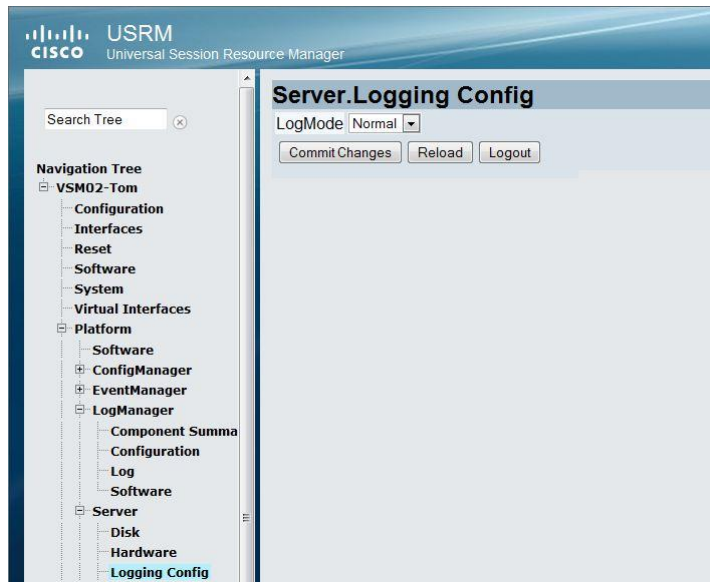
Parameters

The following table explains the Server - Hardware page parameters.

Parameter	Description
IpmiSupport	Set to enable or disable IPMI support. If the hardware does not support IPMI, this parameter must be set to Disabled.
ProcessorPeciTemp	Processor operating temperature.
PlanarTemp	Planar operating temperature.
CmosBatt	CMOS battery voltage.
ProcFan	Displays the processor cooling fan speed.
DimmFan	Displays the memory module cooling fan speed.
VCoreStatus	IPMI reported status for the CPU core voltages.
IntrusionStatus	IPMI reported status for chassis intrusion.

Server - Logging Config Page

This page allows the operator to configure the logging level for Platform Server logging.



Parameters

The following table explains the Server - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for more information.

Server - Memory Page

The Server - Memory page displays basic status information for the server disk.

The following illustration shows the Server - Memory page.



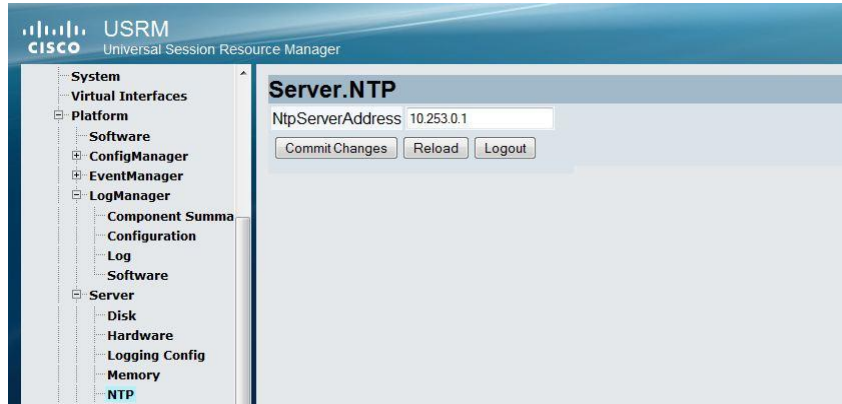
Parameters

The following table explains the Server.Memory page parameters.

Parameter	Description
MemoryAvailable	The amount of remaining memory available.
MemoryUsed	The amount of total system memory used, expressed as a percentage.
MemoryCapacityStatus	The status of the available memory, as follows: OK - Memory capacity is OK. Alarm - Indicates the available memory is getting too low for optimal server operation.

Server - NTP Page

The following illustration shows the Server - NTP page.



Parameters

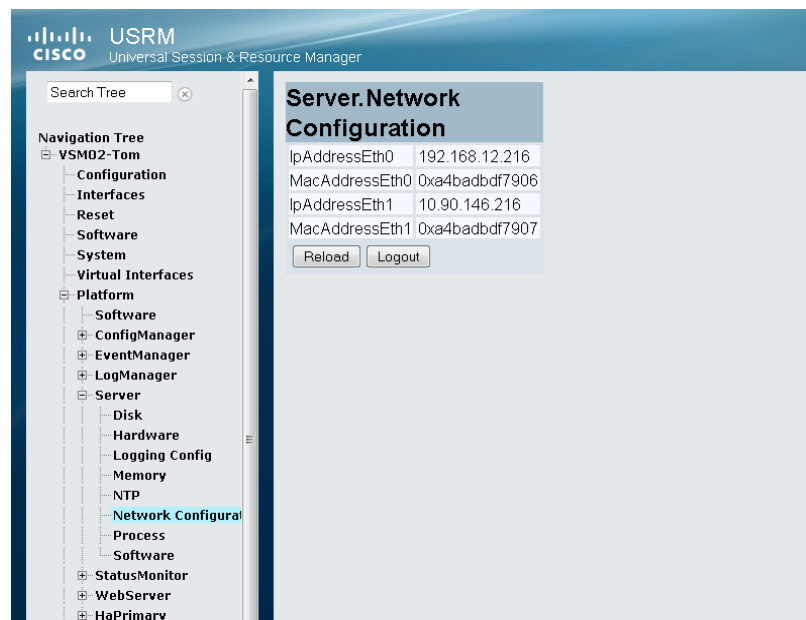
The following table explains the Server.NTP page parameters.

Parameter	Description
NtpServerAddress	Sets the IP address of the Network Time Protocol (NTP) server. The NTP server provides time synchronization services to the USRM to ensure that all USRMs and ancillary equipment are using the same time base. This ensures that all time-stamped logs are correlated. The USRM synchronizes its time with the NTP server once per hour. Note: Time is synchronized in UTC time. The timezone must be set correctly on the USRM server.

Server - Network Configuration Page

The Server - Network Configuration page displays the IP and MAC addresses of the eth0 and eth1 interfaces on the USRM.

The following illustration shows the Server - Network Configuration page.



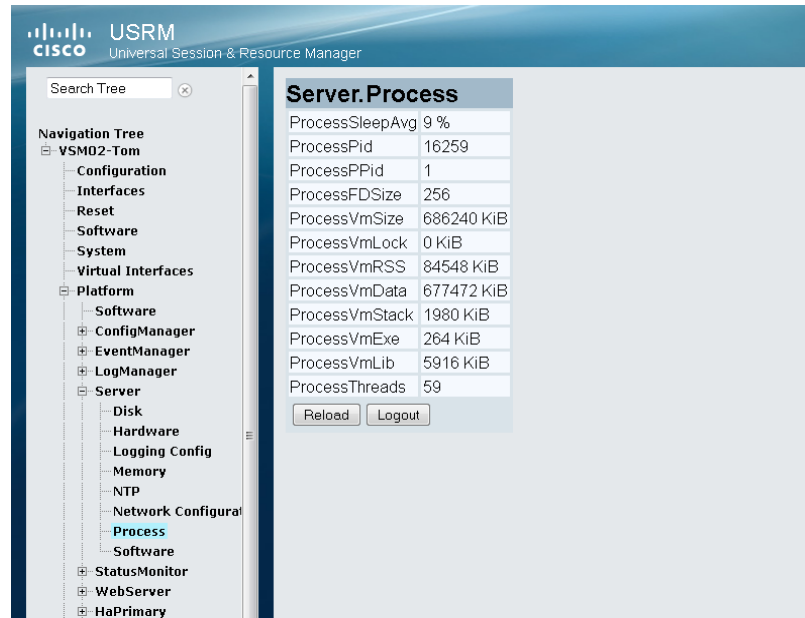
Parameters

The following table explains the Server.Network Configuration page parameters.

Parameter	Description
IpAddressEth0	The IP address of the "eth0" network interface on the server. The values "0.0.0.0" or "n/a" indicate that the interface is disabled.
MacAddressEth0	The MAC address of the "eth0" interface on the server. The value 0 indicates that the interface is disabled.
IpAddressEth1	The IP address of the "eth1" network interface on the server. The values "0.0.0.0" or "n/a" indicate that the interface is disabled.
MacAddressEth1	The MAC address of the "eth1" interface on the server. The value 0 indicates that the interface is disabled.

Server - Process Page

The following illustration shows the Server - Process page.



Parameters

The following table explains the Server.Process page parameters.

Parameter	Description
ProcessSleepAvg	The "average" sleep time of the process.
ProcessPid	Process Identifier "PID" used by the OS for scheduling and book keeping.
ProcessPPid	Parent process PID.
ProcessFDSize	Number of file descriptor slots currently allocated for the running process.
ProcessVmSize	Virtual Memory Size. The current memory that the application may need to address (counting loaded shared libraries as part of the program).
ProcessVmLock	Locked Memory Size. (Refer to the Linux man pages for mmap and mlockall).
ProcessVMRSS	Resident Set Size. How much of the total virtual memory is resident in RAM.
ProcessVmData	Data Size. How much of the virtual memory is data.
ProcessVmStack	Stack Size. How much of the virtual memory is stack.

Parameter	Description
ProcessVmExe	Executable Code Size. How much of the virtual memory is executable, i.e., text.
ProcessVmLib	Shared Library Code Size. How much of the virtual memory is shared library code, i.e., dynamically loaded.
ProcessThreads	Number of threads, for the USRM application, currently running.

Server - Software Page

This page displays software information for Platform Server and allows the operator to manage the configuration file update parameter.



Parameters

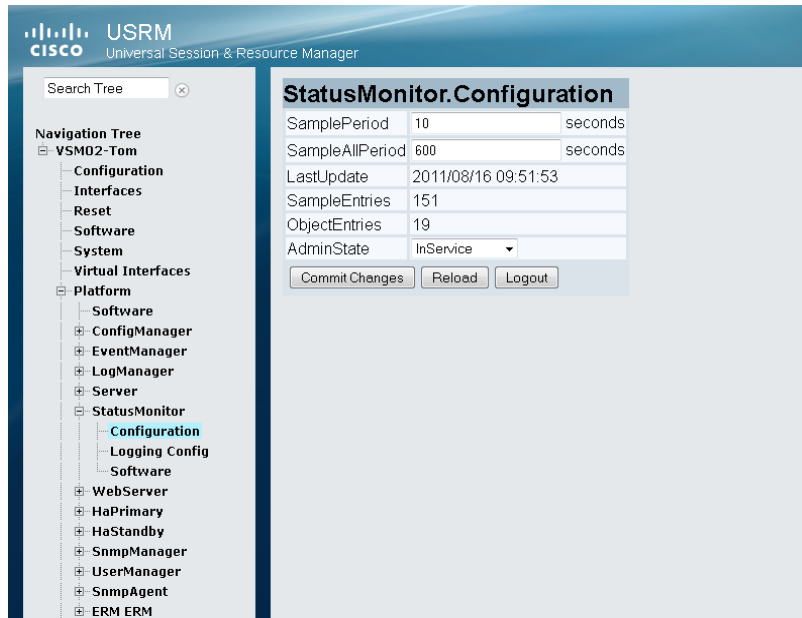
The following table explains the Server - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

StatusMonitor - Configuration Page

The following illustration shows the StatusMonitor - Configuration page.



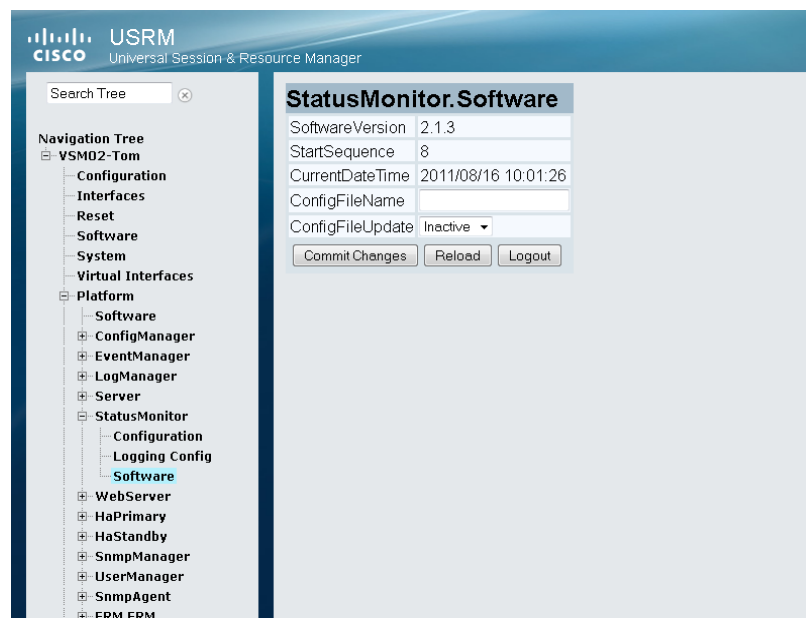
Parameters

The following table explains the StatusMonitor - Configuration page parameters.

Parameter	Description
SamplePeriod	Interval at which the USRM queries the common parameters from SNMP devices.
SampleAllPeriod	Interval at which the USRM queries all of the parameters from SNMP devices.
LastUpdate	The last time that the USRM polled SNMP devices.
SampleEntries	The number of entries that are sampled at the SamplePeriod.
ObjectEntries	The total number of objects that the USRM samples. These consist of resources, such as QAMs, and other objects, such as the Platform.Server object.
AdminState	Sets the StatusMonitor component InService or OutOfService.

StatusMonitor - Software Page

This page displays software information for StatusMonitor and allows the operator to manage the configuration file update parameter.



Parameters

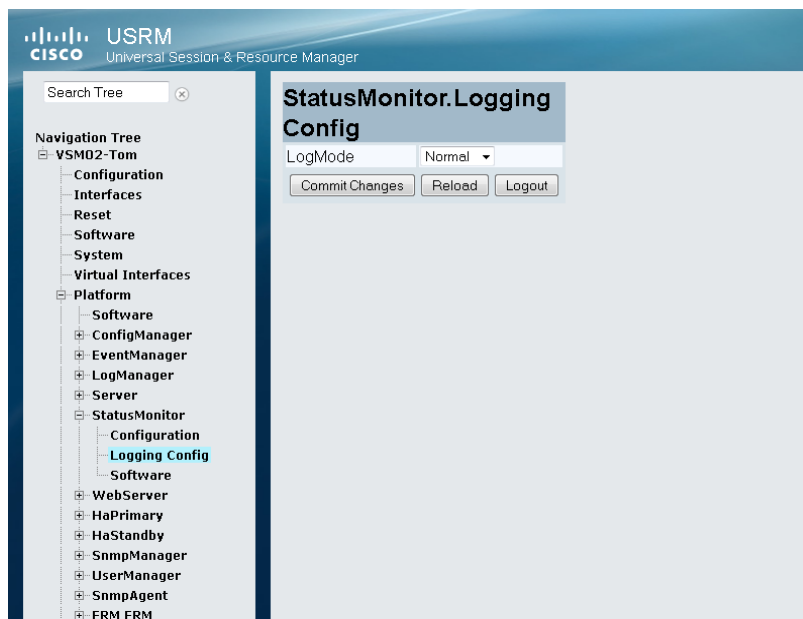
The following table explains the StatusMonitor - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

Parameter	Description
Commit Changes	Commits changes made on this page to the USRM.
Reload	Loads and refreshes the information on this page.
Logout	Logs out of the USRM web interface.

StatusMonitor - Logging Config Page

This page displays the mode configuration for StatusMonitor logging.



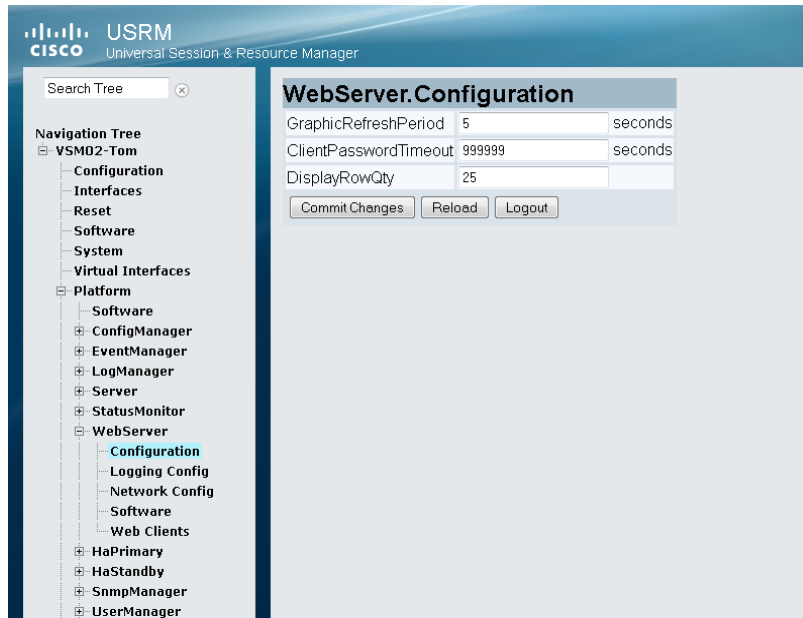
Parameters

The following table explains the StatusMonitor - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for more information.

WebServer - Configuration Page

The following illustration shows the WebServer - Configuration page.



Parameters

The following table explains the WebServer - Configuration page parameters.

Parameter	Description
GraphicRefreshPeriod	Sets the refresh rate for graphic displays, such as the Service Group graphic display in the ResourceManager.
ClientPasswordTimeout	Selects the timeout period in seconds for the Web Server interface. The Web Server implements an HTTP craft interface that requires users to log on and supply a password. After the specified period of inactivity, users are required to log on again to continue.
DisplayRowQty	Sets the number of table rows to display per page.

WebServer - Logging Configuration

This page displays the mode configuration for WebServer logging.



Parameters

The following table explains the WebServer - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for more information.

WebServer - Network Config Page

The following illustration shows the WebServer - Network Config page.



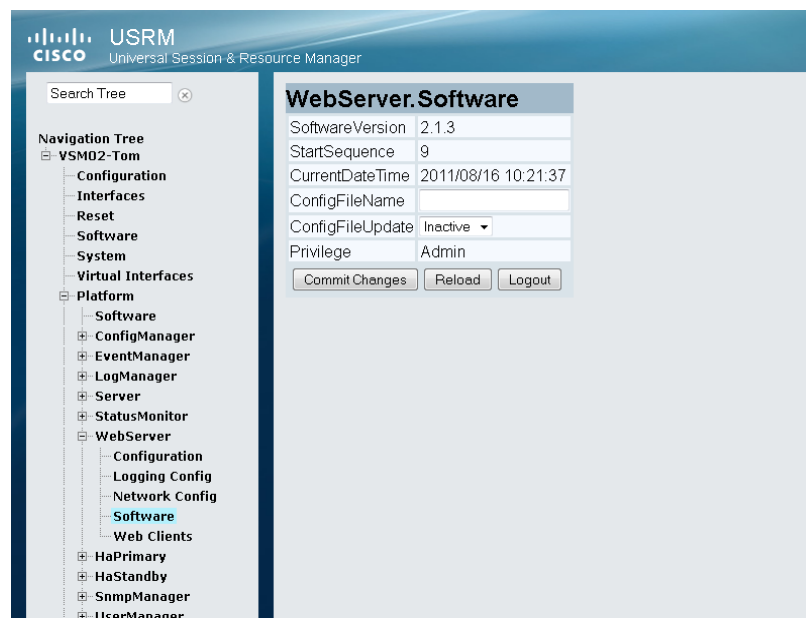
Parameters

The following table explains the WebServer - Network Config page parameters.

Parameter	Description
httpPort	The TCP port number used for the http-based craft interface to accept web server requests. The default value 80 is also the default value for standard web browsers. Default: 80
httpInterface	The name of the logical interface on the USRM used to receive Web Server sessions. The Web-server software subsystem binds the socket used to send/receive http traffic to this interface name. The result is that http requests are accepted on only this interface. The name must be the name of an enabled logical interface on the server. Names are "mgmt," "data," and "service." Default: Mgmt Note: The server must be restarted after a change to this parameter. You must be service level to modify this parameter.

WebServer - Software Page

This page displays the software information for the WebServer and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the WebServer Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

Parameter	Description
Privilege	Displays the user privilege level. Admin - Can view and perform admin level functions. User - Can view and perform standard user level functions.

WebServer Web Clients Page

The following illustration shows the WebServer - Web Clients page. The USRM supports up to 4 simultaneous Client connections.

Client	ClientIP	UserName	Privilege	LUATime	AttemptCounter	AuthenticationMethod
1	10.90.146.10	admin	Admin	2011/08/16 08:39:16	1	Local
2	64.100.68.178	admin	Admin	2011/08/10 14:10:39	1	Local
3	10.90.146.249	admin	Admin	2011/08/15 16:45:03	1	Local
4	64.100.70.162	admin	Admin	2011/08/16 10:23:24	1	Local

Parameters

The following table explains the WebServer - Web Clients page parameters.

Parameter	Description
Client	Displays the sequential client number in the list.
ClientIP	Displays the IP address of the client, i.e. the web browser connected to the USRM.
UserName	Displays the name of the user.
Privilege	Displays the user privilege level. Admin - Can view and perform admin level functions. User - Can view and perform standard user level functions. Service - Can view and perform server level functions.
LUATime	Displays the time of the last user activity. This column is used to age the user and require the user to log in after a long period of inactivity.
AttemptCounter	Displays the number of log-in attempts. After a compile-time constant number of attempts, further requests are not accepted.

Parameter	Description
AuthenticationMethod	Displays the authentication method. Local - authentication is performed locally. Radius - authentication is performed remotely using a Radius server.

HaPrimary - Configuration Page

The HaPrimary - Configuration Page displays the parameters associated with Primary to Standby server communications.

Under normal conditions, there are enough change-of-state messages between the Primary and Standby servers to maintain a valid link. However, there can be times of low activity where it is not certain the link is valid. Beginning in version 1.6.1, the USRM uses heartbeat messages between the Primary and Standby servers to ensure that the connection is valid during these times of low activity.

The following illustration shows the HaPrimary - Configuration page.



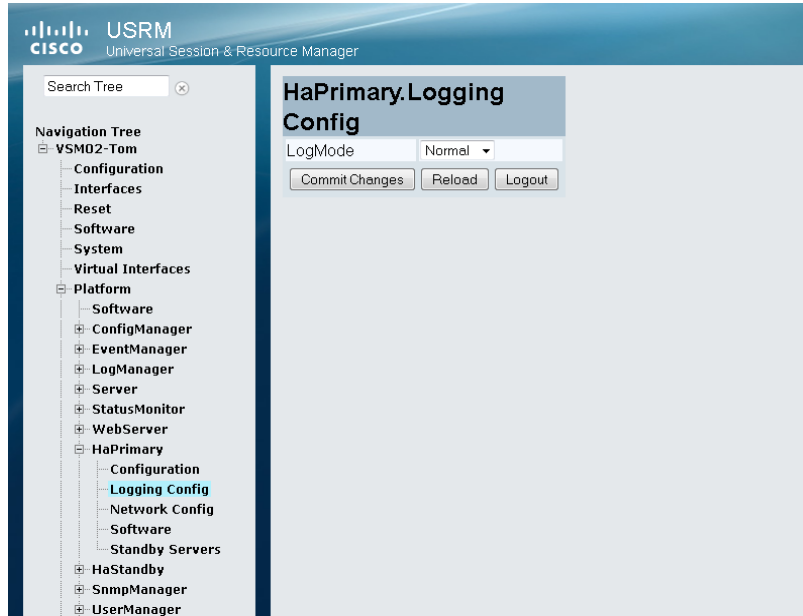
Parameters

The following table explains the HaPrimary - Configuration page parameters.

Parameter	Description
LinkAlarmThreshold	Amount of time, in seconds, before the USRM asserts an alarm due to a lack of communications with a Standby server. Note: You must be service level to modify this parameter.
LinkDropThreshold	Amount of time, in seconds, before the USRM will drop the link to the Standby server. Note: You must be service level to modify this parameter.

HaPrimary - Logging Config Page

This page displays the mode configuration for HaPrimary logging.



Parameters

The following table explains the HaPrimary.Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for more information.

HaPrimary - Network Config Page

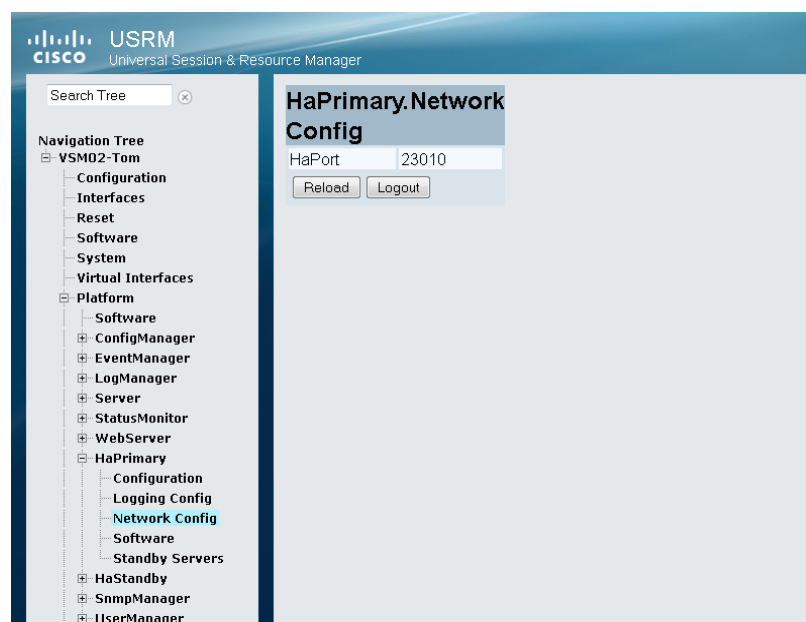
The HaPrimary and HaStandby software components work together to implement the m:n redundancy. The HaPrimary component implements the primary side of the high-availability support. The standby side connects to the primary side to get the primary server database and maintain the state of the primary database. The primary and standby servers communicate using the database synchronization protocol. This protocol is a proprietary protocol implemented on TCP. The primary acts as a server and passively waits for connection from the standby. The standby acts as a client and initiates the connection to the primary server.

Note: m:n redundancy will be available in a future release, and will only be available in non-supervised mode. In supervised mode, it is 1:n where n = 8 or fewer primary servers.

Upon connection to the primary server, the HaStandby component requests database synchronization. The primary server responds by sending a compressed version of the entire database. The components in the primary are transmitted one at a time until all components have been transferred. Any changes-of-state that occur during the transfer are inserted into a change-of-state queue. When the last component has been transferred, the change-of-state queue is transmitted. Upon completion of transfer of the change-of-state queue, the standby is synchronized with the primary. The primary sends a transfer-complete message causing the standby to mark its state as ready to assume control for the primary.

The HaPrimary - Network Config page allows specification of the network configuration for the HaPrimary component.

The following illustration shows the HaPrimary - Network Config page.



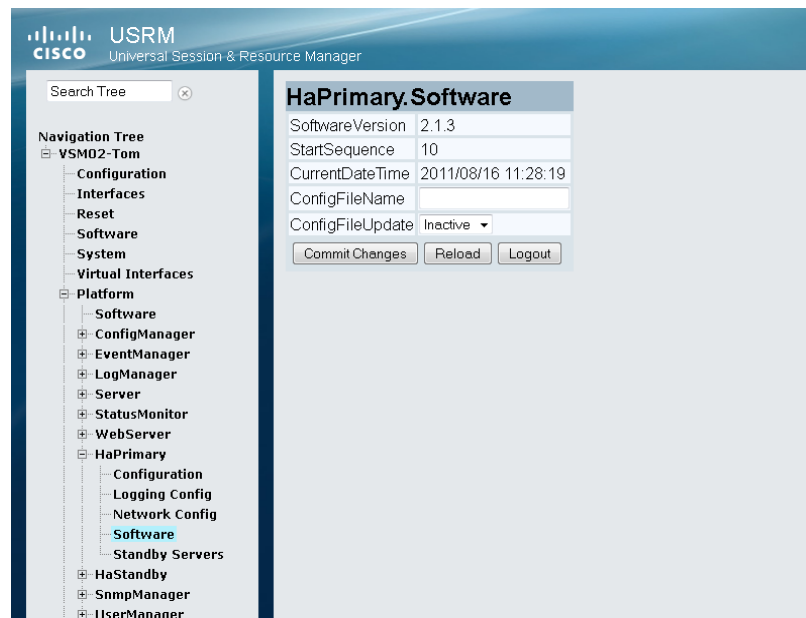
Parameters

The following table explains the HaPrimary - Network Config page parameters.

Parameter	Description
HaPort	Specifies the port used for the database synchronization protocol. The value must agree with that used by the HaStandby component in the standby server. Important: The USRM must be restarted after changing the value. You must be logged in at service level to modify this parameter.

HaPrimary - Software Page

This page displays the software information for HaPrimary and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the HaPrimary - Software page parameters.

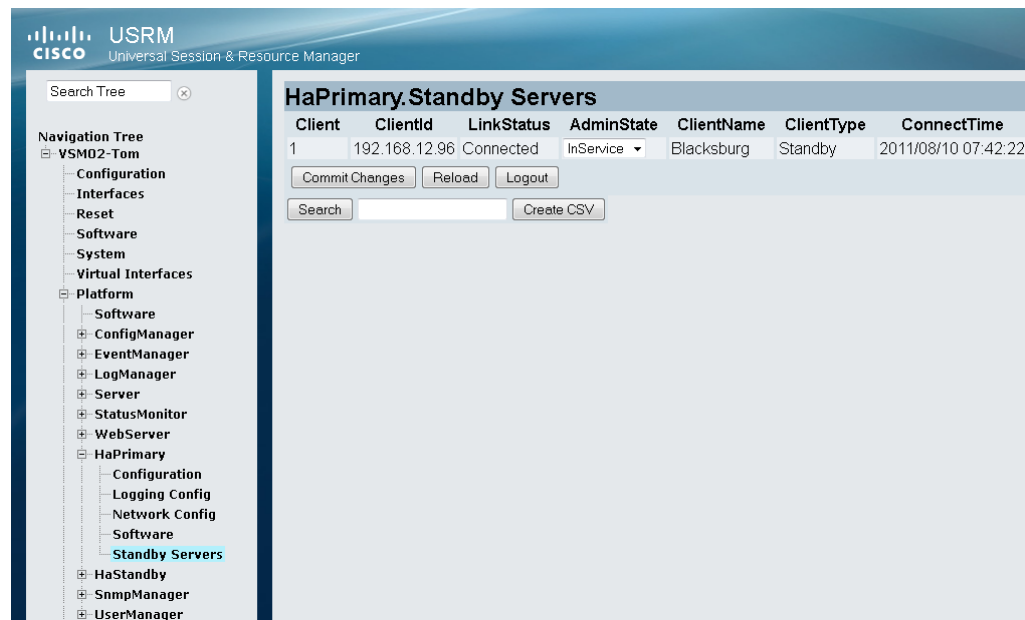
Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

HaPrimary - Standby Servers Page

Refer to HaPrimary - Network Config Page for an explanation of the high-availability function.

The HaPrimary - Standby Servers page displays the status of the connected standby servers. An entry is displayed for each connected standby server.

The following illustration shows the HaPrimary - Standby Servers page.



Parameters

The following table explains the HaPrimary - Standby Servers page parameters.

Parameter	Description
Client	Displays the sequential client number in the list.
ClientId	The IP address of the standby server.
LinkStatus (not in version 1.6.x)	The status of the link between the primary and secondary servers at the time of the last screen refresh.
AdminState (not in version 1.6.x)	Use to delete a standby server from a primary server. If the USRM is being supervised by a DNCS, this field will be updated to match the setting in the DNCS each time the DNCS provisions the USRM.
ClientName	The name of the standby server.

Parameter	Description
ClientType	The type of client. The possible types are Admin and Standby. Standby - Indicates that a standby server is connected. Admin - Indicates that an Admin terminal is connected. (An Admin terminal is used solely for administration purposes.)
ConnectTime	Indicates the date and time the standby connected to the primary.

HaStandby - Configuration Page

The HaStandby - Configuration page allows configuration of the standby server's operation.

Refer to HaPrimary - Network Config Page for an explanation of the high-availability function.

The following illustration shows the HaStandby - Configuration page.



Parameters

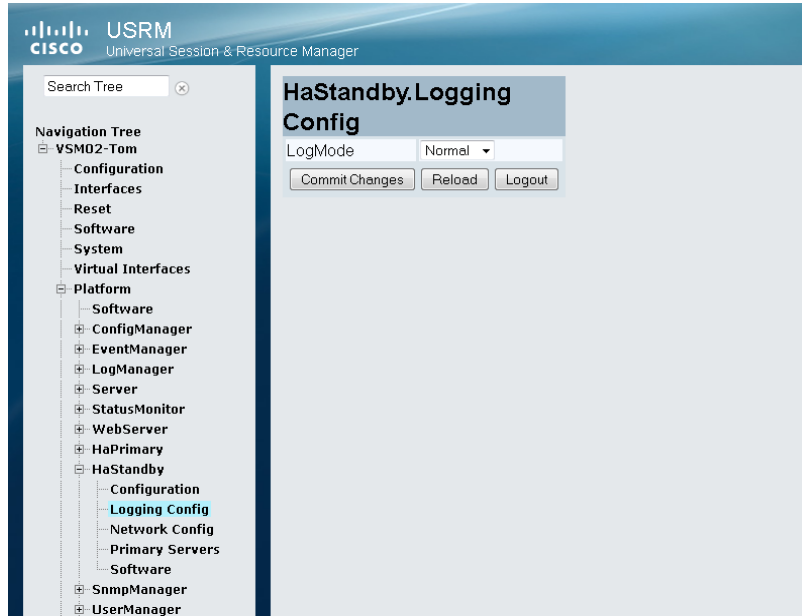
The following table explains the HaStandby - Configuration page parameters.

Parameter	Description
CommFailThreshold	This setting configures the alarm detection mechanism. The servers send heartbeat messages when connected. If a data message has not been transmitted for a configured time period, a heartbeat message is transmitted to indicate normal operation. The CommFailThreshold parameter configures the number of consecutive missed messages before asserting a primary server failure.

Parameter	Description
CommTimeout	Configures the minimum time between messages. Normally, messages are transmitted regularly because of normal operation. Every change-of-state on a primary causes a message to be transmitted to a standby server. This setting configures the minimum time between message transmissions. If a message has not been transmitted for this time period, a heartbeat message is generated. Note: You must be service level to modify this parameter.
ProtectDelay	Specifies an additional time delay before the switchover. Upon detecting a failure, the standby will wait this amount of time to ensure that the primary server has actually failed.
ProtectDelayStep	In a m:n configuration, one of the m standby servers will assume control for a failed primary server. The first standby server connected to the primary typically acts first. The other standby servers in the list will act if the servers ahead of it in the list don't act. The ProtectDelayStep sets the time delay. Each server in the list delays its action by this amount. The first server in the list will act first. If it does not, the next server will act within one ProtectDelayStep. The next server in the list will act in two ProtectDelayStep periods and so on. Note: m:n redundancy will be available in a later release. Currently, 1:n is supported in supervised mode.
DisplayMode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table.

HaStandby - Logging Config Page

This page allows the operator to configure the logging level for HaStandby logging.



Parameters

The following table explains the HaStandby - Logging Config page parameters.

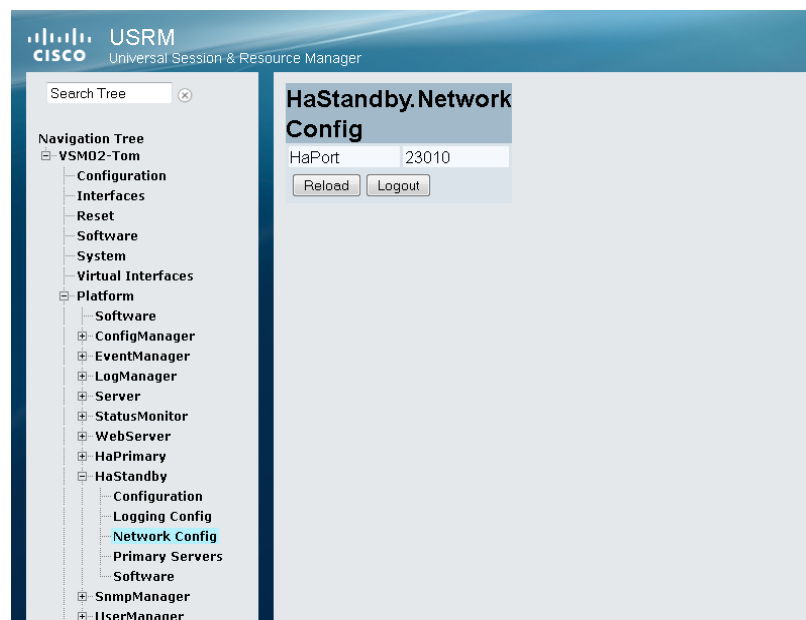
Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

HaStandby - Network Config Page

Refer to HaPrimary - Network Config Page for an explanation of the high-availability function.

The HaStandby - Network Config page allows specification of the network configuration for the HaPrimary component.

The following illustration shows the HaStandby - Network Config page.



Parameters

The following table explains the HaStandby - Network Config page parameters.

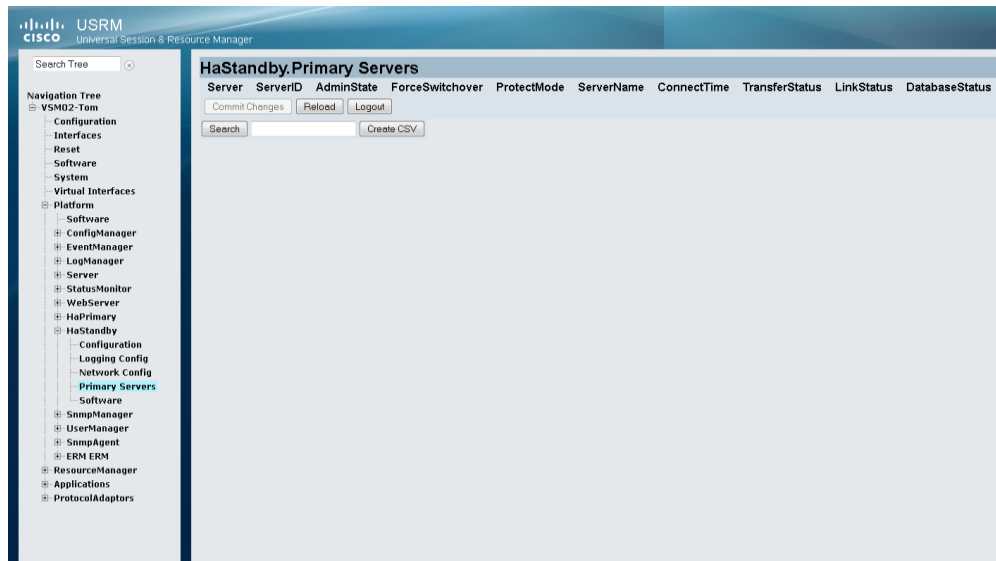
Parameter	Description
HaPort	Specifies the port used for the database synchronization protocol. The value must agree with that used by the HaPrimary component in the primary server. Important: The USRM must be restarted after changing the value. You must be service level to modify this parameter.

HaStandby - Primary Servers Page

The HaStandby - Primary Servers page configures the set of primary servers to be supported by the standby.

Refer to HaPrimary - Network Config Page for an explanation of the high-availability function.

The following illustration shows the HaStandby - Primary Servers page.



Parameters

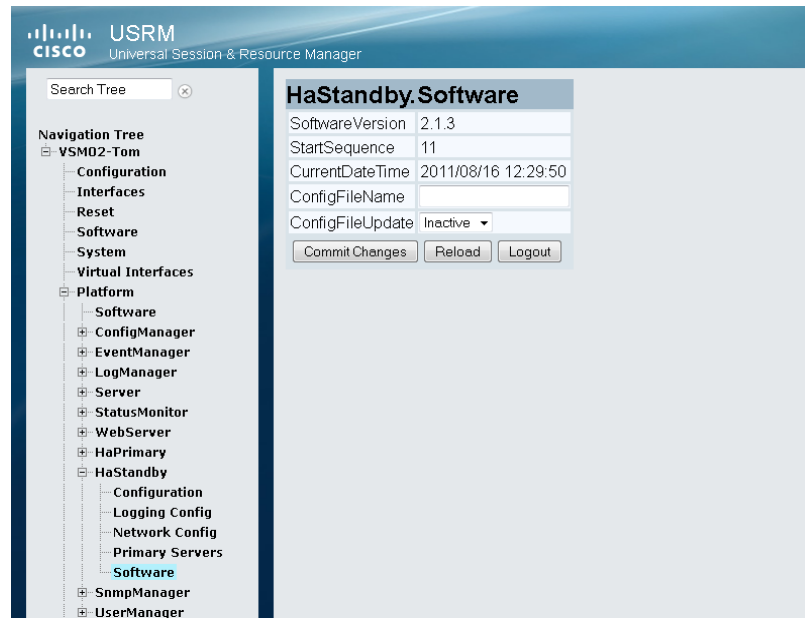
The following table explains the HaStandby - Primary Servers page parameters.

Parameter	Description
Server	Displays the sequential server number in the list.
ServerID	The IP address of the primary server.
AdminState	Sets the administrative state of the primary server, as follows: InService - Indicates the standby is connected to the primary server. OutOfService - Indicates the primary is out of service and the standby should not assume control for the primary if it fails. NotReady - Indicates that provisioning is not yet complete.

Parameter	Description
ForceSwitchover	Allows you to force a switchover. Selecting the On state causes the standby server to transition to online, forcing the primary offline if the standby is ready to take over for the primary server. Note: Control is returned when the primary server comes back online.
ProtectMode	Indicates if automatic switching is to be performed. When set to the Auto state, the standby will protect the primary in the event of a failure. When set to Manual mode, the standby will not automatically protect the primary in the event of a failure.
ServerName	The name of the primary server.
ConnectTime	The date and time that the standby connected to the primary.
TransferStatus	Indicates the state of the connection, as follows: WaitConnect - Indicates the standby is attempting to connect to the primary server. Transfer - Indicates the database transfer is in progress. Sync - Indicates the database has been completely transferred, the standby and primary are synchronized, and the standby is ready to assume control for the primary in the event of primary failure or forced switchover.
LinkStatus	The status of the connection. The OK state indicates communication is valid. The Alarm state indicates the connection has failed. This parameter transitioning to the Alarm state is the trigger for the switchover.
DatabaseStatus	Indicates whether the entire database has been obtained. The Ready state indicates the entire database was received and that the standby can replace the primary if required.

HaStandby - Software Page

This page displays the software information for HaStandby and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the HaStandby.Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

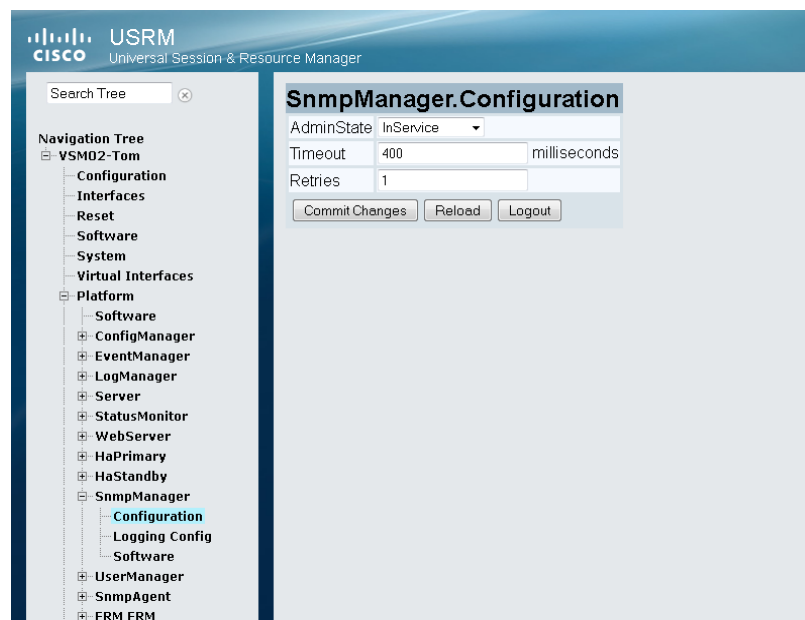
SnmpManager - Configuration Page

The SNMP Manager provides SNMP management services allowing software components to issue SNMP Get and Set commands.

Most managed resources are implemented with device-specific software components. The software model for these components contains SNMP object identifier (OID) references that allow the USRM to query the device to obtain its configuration. Configuration information consists of frequency, TSID, modulation format, the presence of plug-in cards for devices with plug-in line cards, and other information. The effect is that provisioning of configuration information in the USRM is not required. Instead, the USRM queries the device and learns the device configuration.

A managed device can be configured to the unmanaged state. Most devices allow the management state to be configured to unmanaged on the Snmp Config page for the device. This state inhibits the SNMP manager and allows you to configure the settings directly into the USRM.

The following illustration shows the SnmpManager - Configuration page.



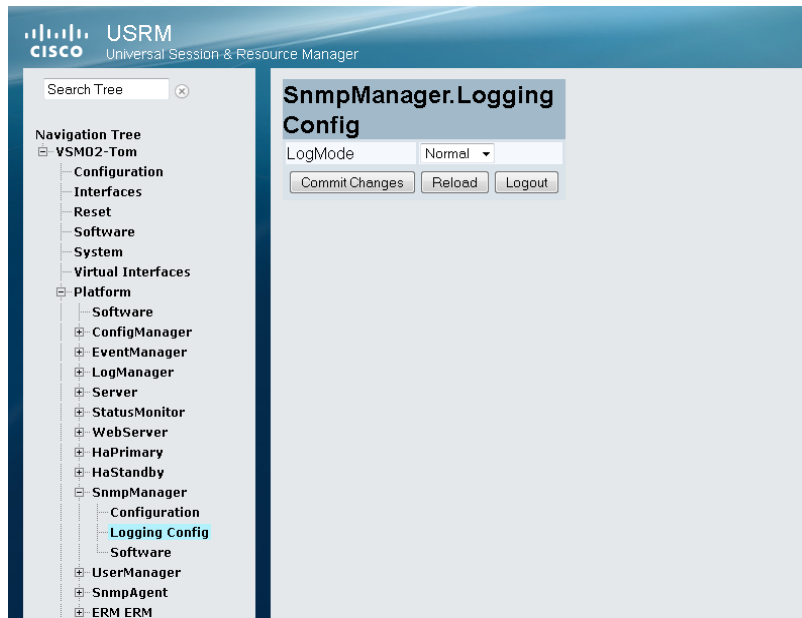
Parameters

The following table explains the SnmpManager - Configuration page parameters.

Parameter	Description
AdminState	Sets the current SNMP manager state. InService - SNMP management services available. OutOfService - SNMP management services not available.
Timeout	Sets the timeout value in milliseconds.
Retries	Sets the number of retries.

SnmpManager - Logging Configuration Page

This page allows the operator to configure the logging level for SnmpManager logging.



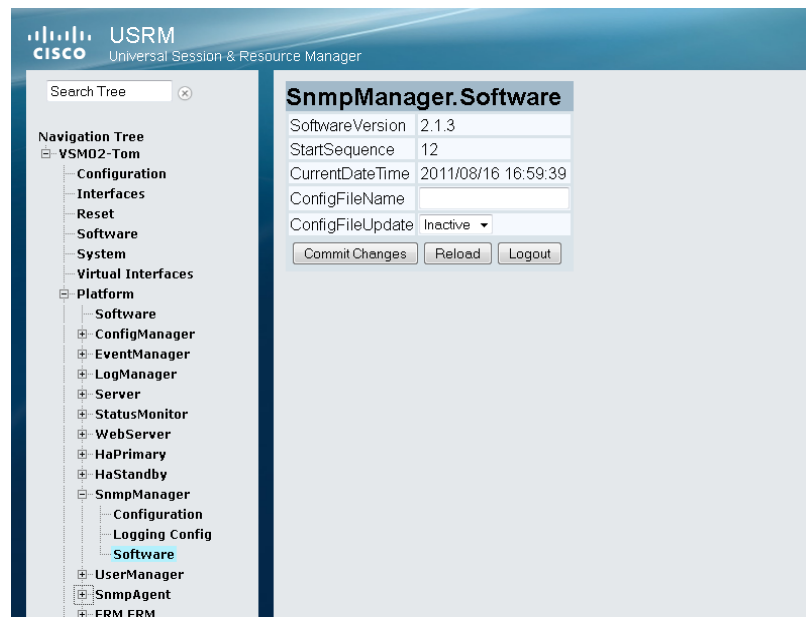
Parameters

The following table explains the SnmpManager - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

SnmpManager - Software Page

This page displays the software information for SnmpManager and allows the operator to manage the configuration file update parameter.



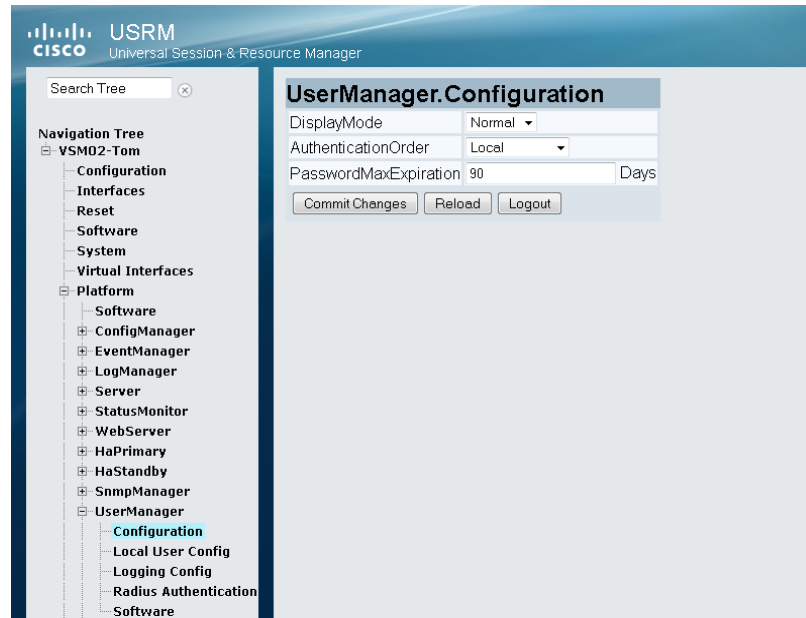
Parameters

The following table explains the SnmpManager.Software page parameters.

Parameter	Description
SoftwareVersionv	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

UserManager - Configuration Page

The following illustration shows the UserManager - Configuration page.



Parameters

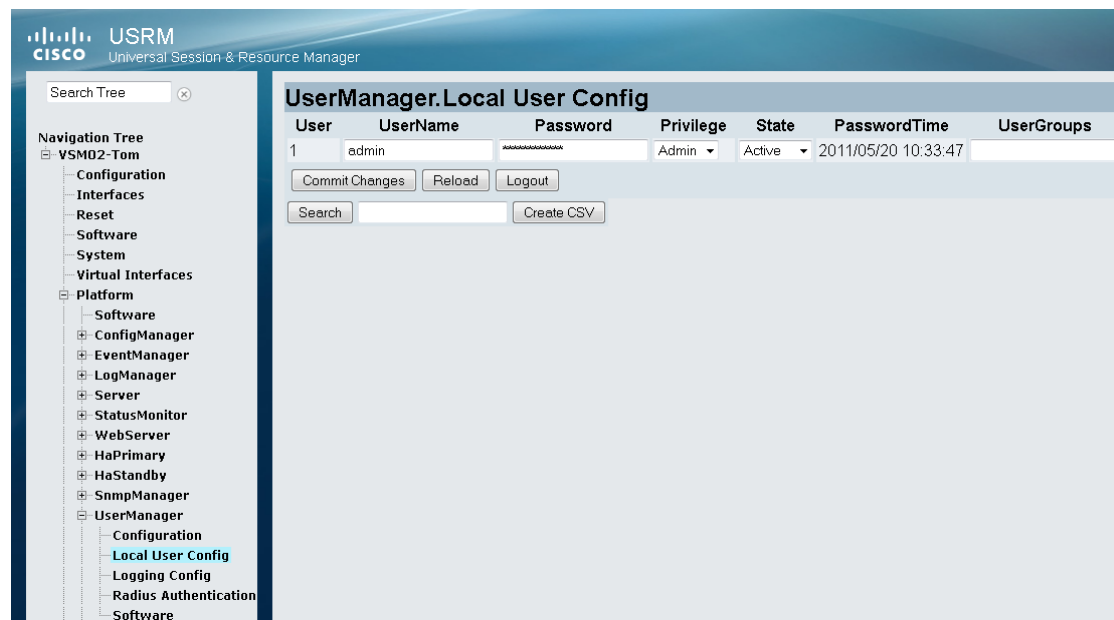
The following table explains the UserManager - Configuration page parameters.

Parameter	Description
DisplayMode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table.
AuthenticationOrder	Options for order of authentication are Local, Local/Radius (Local then Radius), and Radius/Local (Radius then Local)
PasswordMaxExpiration	Sets the number of days after which the password expires.

UserManager - Local User Config Page

The UserManager - Users page allows you to set up user accounts for the USRM web interface and configure their access and privileges on the system.

The following illustration shows the UserManager - Users page.



Parameters

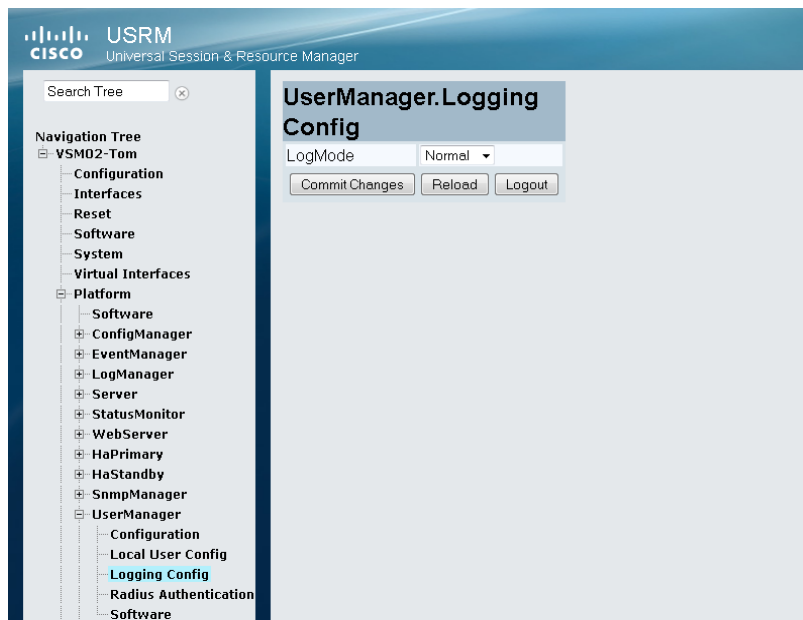
The following table explains the UserManager - Local User Config page parameters.

Parameter	Description
User	Displays the sequential user number on the list.
UserName	Displays the user name assigned to the user.
Password	Displays the password for the user.
Privilege	Displays the user privilege level. Admin - Can view and perform admin level functions. User - Can view and perform standard user level functions.

Parameter	Description
State	The state of the user's account, as follows: Active - Activates the user's account. Inactive - Deactivates the user's account. The user's entry remains in the table, but their access is denied. Delete - Deletes the user's account. Removes the user's entry from the table. Reset - Resets the user's account. Note: Set the state to the desired level, and then click Commit Changes to put the change into effect.
PasswordTime	The date and time of the last user activity.
UserGroups	The name of the user group to which the user belongs, if any.

UserManager - Logging Config Page

This page allows the operator to configure the logging level for UserManager logging.



Parameters

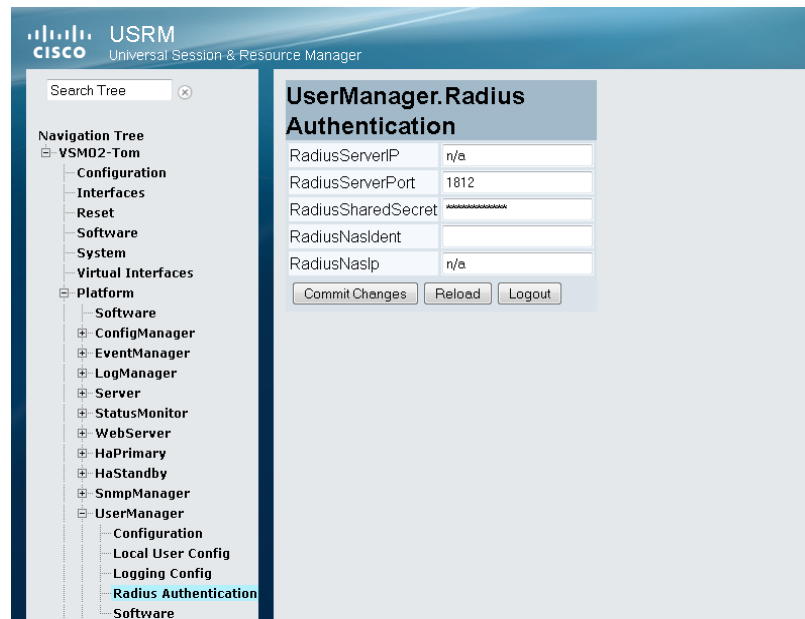
The following table explains the UserManager - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

UserManager - Radius Authentication Page

The UserManager - Radius page allows you to set up a Radius server for user authentication.

The following illustration shows the UserManager - Radius page.



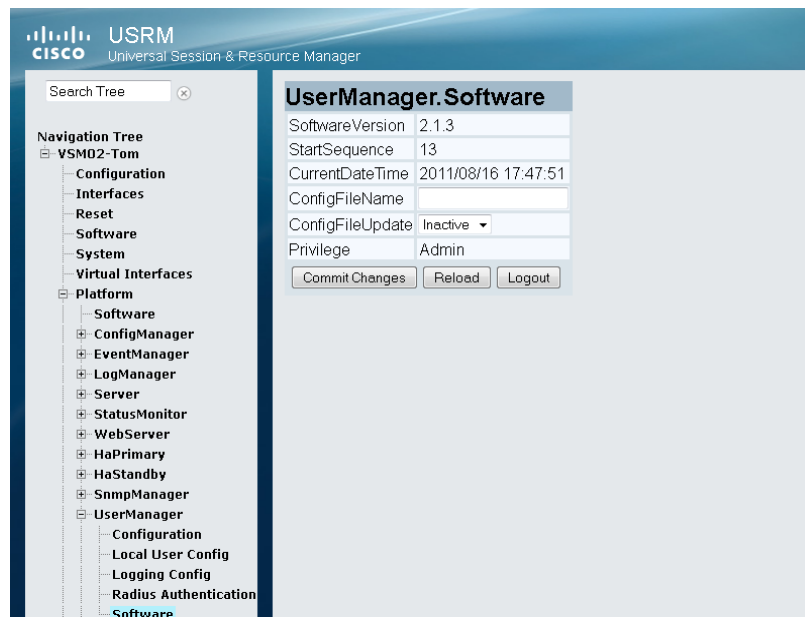
Parameters

The following table explains the UserManager.Logging Config page parameters.

Parameter	Description
RadiusServerIP	IP Address of the Radius server.
RadiusServerPort	Port of the Radius server.
RadiusSharedSecret	Shared secret configured on the Radius server for the USRM.
RadiusNasIdent	NAS Identifier configured on the Radius server for the USRM.
RadiusNasIp	NAS IP Address configured on the Radius server for the USRM.

UserManager - Software Page

This page displays the software information for UserManager and allows the operator to manage the configuration file update parameter.



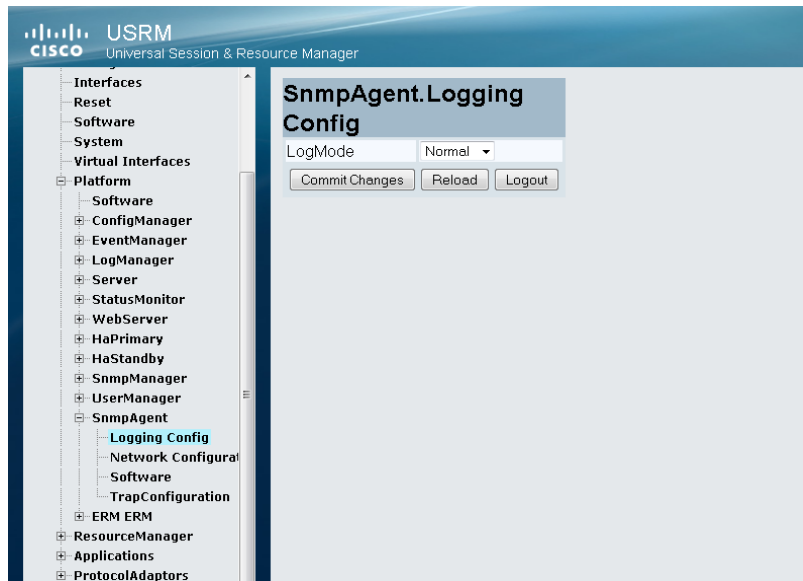
Parameters

The following table describes the UserManager.Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

SnmpAgent - Logging Configuration Page

This page allows the operator to configure the logging level for the SnmpAgent logging.



Parameters

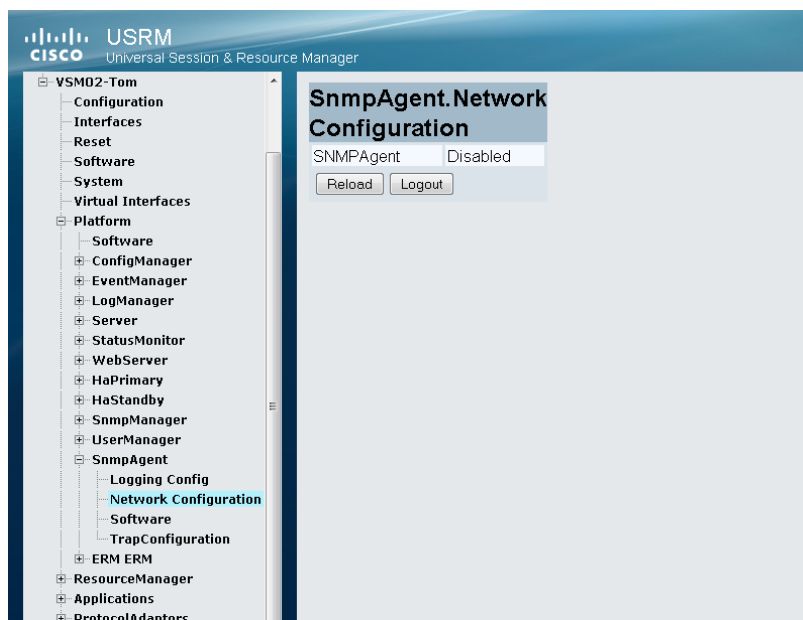
The following table explains the SnmpAgent - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

SnmpAgent - Network Configuration Page

The SNMP agent provides SNMP agent services to other components.

The following illustration shows the SnmpAgent - Network Configuration page.



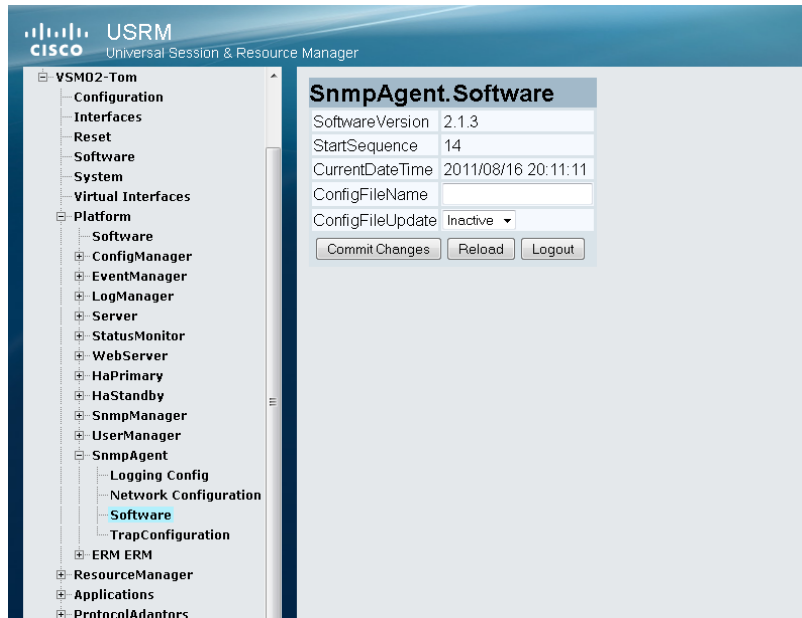
Parameters

The following table explains the SnmpAgent - Network Configuration page parameters.

Parameter	Description
SNMPAgent	Sets the SNMP agent to Enabled or Disabled.
	Note: You must be service level to modify this parameter.

SnmpAgent - Software Page

This page displays the software information for SnmpAgent and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the SnmpAgent.Software page parameters.

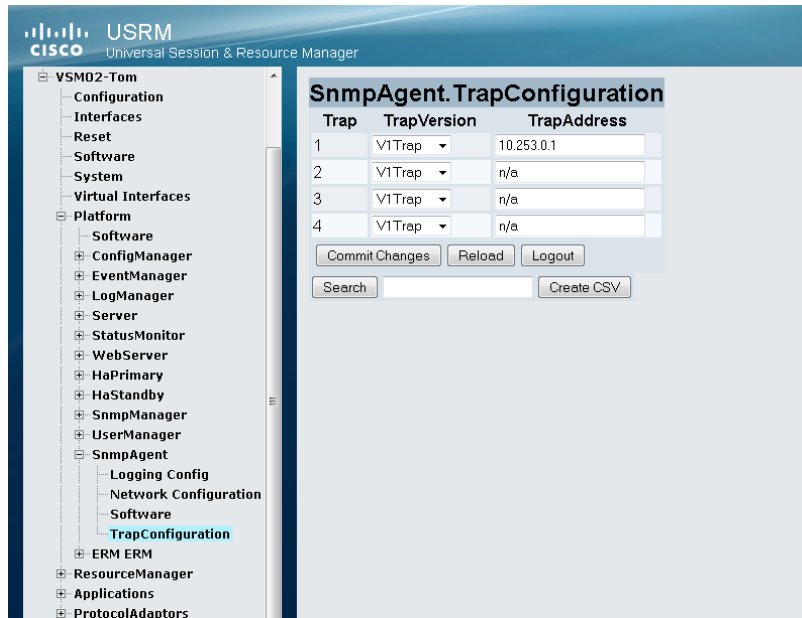
Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

SnmpAgent - TrapConfiguration Page

The SNMP agent provides SNMP agent services for other components. This page allows you to set the trap configuration.

The following illustration shows the SnmpAgent - TrapConfiguration page.



Parameters

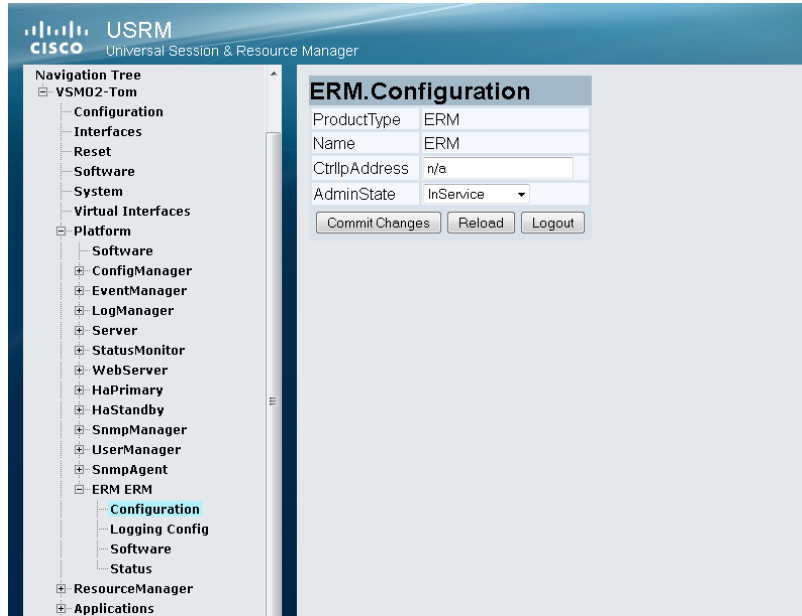
The following table explains the SnmpAgent - TrapConfiguration page parameters.

Parameter	Description
Trap	The sequential number of the trap in the list.
TrapVersion	The Trap version, which can be set to V1, V2c, or V3. The USRM supports SNMP V1, V2c and V3. The USRM will reply to Get requests using the same protocol as the request. Traps are unsolicited. This setting configures the SNMP version of the trap.

Parameter	Description
TrapAddress	The SNMP manager IP address to receive the trap. Note: In a supervised (DNCS) system, all trap address parameters are provisioned by the DNCS. Locally entered addresses are overwritten with the value n/a during the next provisioning from the DNCS. In a supervised system, trap addresses should be set from DNCS on the Sys Config.SDV Parameters GUI. This GUI does not set the trap type. If V2c traps are desired, complete the following steps to change the trap type for an existing address: 1 Note the current address. 2 Delete the current address, and then click Commit Changes. 3 Set the trap type to the desired value. 4 Re-enter the original address. To remove a trap address, delete the address.

ERM - Configuration Page

This page allows the operator to configure operational parameters for ERM.



Parameters

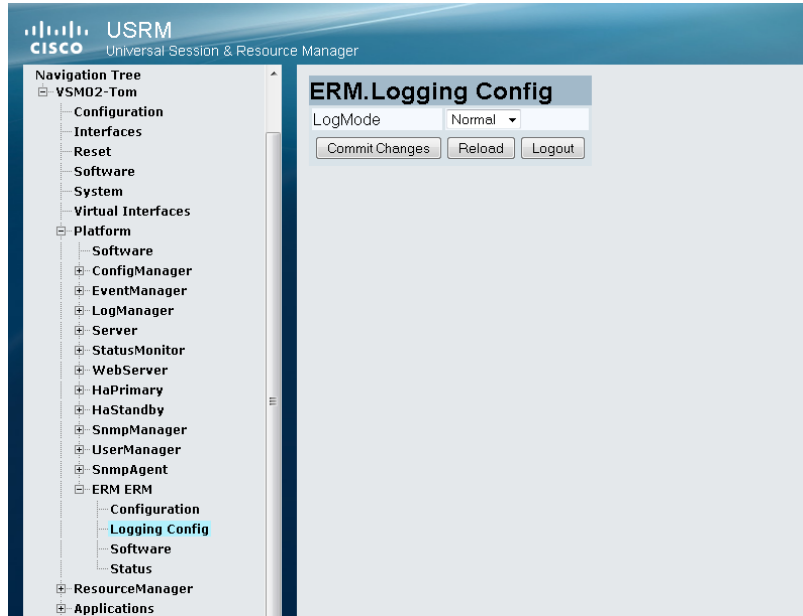
The following table explains the ERM - Configuration page parameters.

Parameter	Description
ProductType	The type of edge device. An edge device is supported through the use of a resource model and resource adaptor.
Name	The server web interface component (page) name.
CtrlIpAddress	Configures/displays the IP address of the management port of the ERM chassis.

Parameter	Description
AdminState	The administrative state of the ERM application. The supported states are InService, OutOfService, Maintenance, Release, and Delete. Maintenance - The device is undergoing maintenance. InService - The normal and default state. OutOfService - Causes the application to suspend operation. Release - Causes the application to release all sessions created by the application and then transition to the OutOfService state. Delete - Selected to delete the device from the USRM resource inventory.

ERM - Logging Configuration Page

This page allows the operator to configure the logging level for the ERM logging.



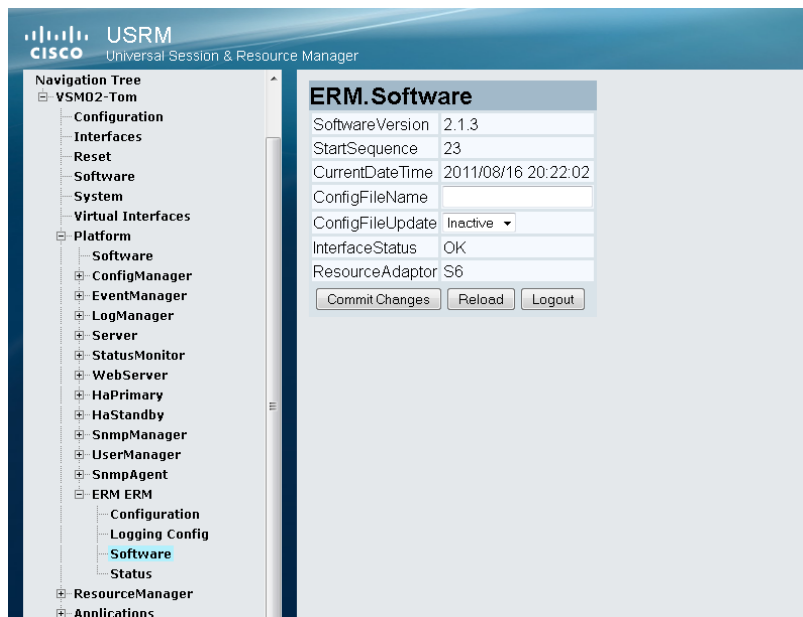
Parameters

The following table explains the ERM - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ERM - Software Page

This page displays the software information for ERM and allows the operator to manage the configuration file update parameter.



Parameters

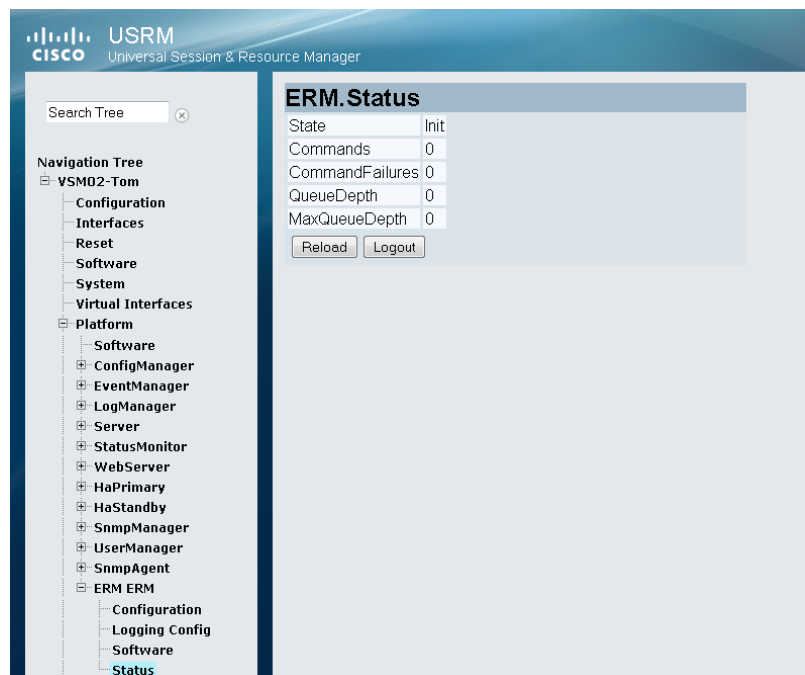
The following table explains the ERM.Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

Parameter	Description
InterfaceStatus	Indicates the status of the interface. Fail - indicates the interface has failed and the device is not available for service. OK - indicates the interface is working properly.
ResourceAdaptor	Only S6 protocol is currently supported for this adaptor.

ERM - Status Page

This page displays status parameters for the ERM.



Parameters

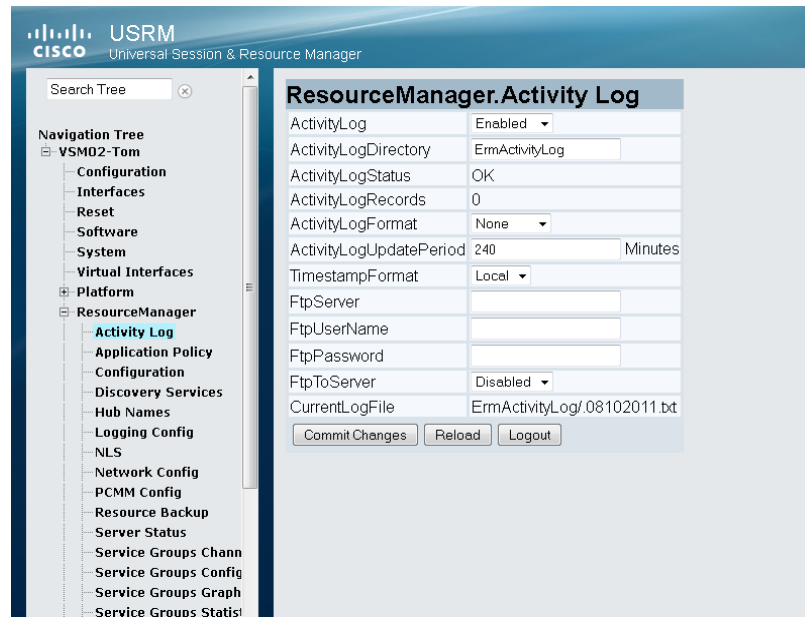
The following table explains the ERM-Status page parameters.

Parameter	Description
State	Indicates the state of the ERM. Init - Not yet started. Startup - In startup mode. OK - Connected and running. Fail - Not communicating with the network.
Commands	Quantity of commands sent.
CommandFailures	Quantity of commands that failed.
QueueDepth	Current quantity of commands in the queue.
MaxQueueDepth	Largest quantity of commands that were queued at one time.

USRM Web Interface - Resource Manager

ResourceManager - Activity Log Page

The following illustration shows the ResourceManager - Activity Log page.



Parameters

The following table explains the ResourceManager - Activity Log page parameters.

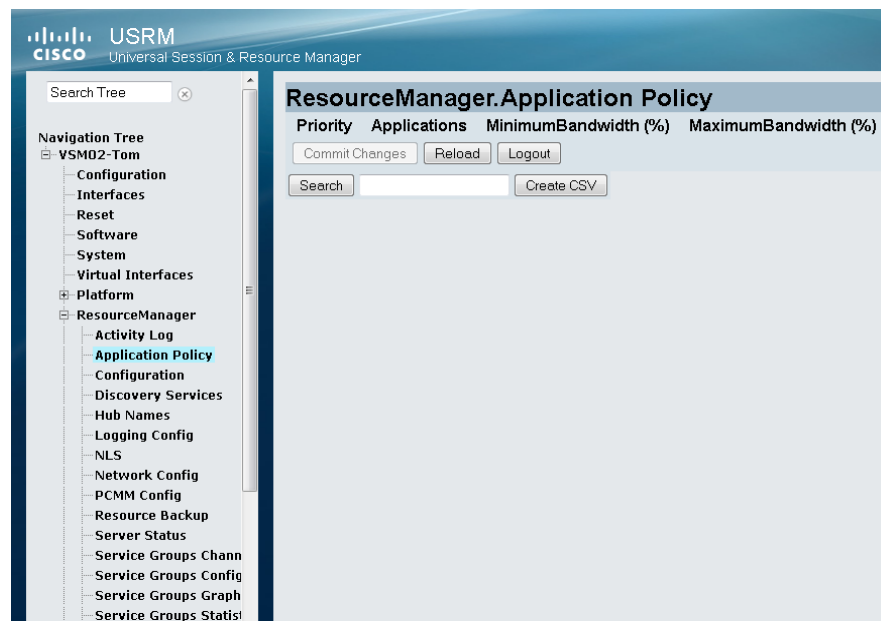
Parameter	Description
ActivityLog	Enables or disables creation of the activity log. The activity log is a log of QAM session create and delete events.
ActivityLogDirectory	Specifies the file directory to hold the activity log. The default value is ErmActivityLog.
ActivityLogStatus	Displays the status of activity log. A value of Full indicates that the log cannot be written. This occurs when the configured directory does not exist.
ActivitylogRecords	Number of records in the activity log. This field will only have a value if ActivityLogFormat is set to a value other than None.

Parameter	Description
ActivityLogFormat	Displays the activity log format. Options here are None (no logging), Comcast (logging will be according to Comcast specifications), and Generic. Note: If Comcast format is selected, you must also set the following parameters on the ResourceManager.Configuration page: StreamingZone, ServerName, HeadendName, HubName.
ActivityLogUpdatePeriod	Specifies how often the activity log is updated.
TimeStampFormat	Time stamp for each record, either logged as local time or referenced to UTC.
FtpServer	IP address of the FTP server to which the activity log is sent.
FtpUserName	User name to be used for logging in to the FTP server.
FtpPassword	Password to be used for logging in to the FTP server.
FtpToServer	Determines whether the log is pushed (if Enabled) or not pushed (if Disabled) to the FTP server.
CurrentLogFile	File location and name of the current activity log.

Resource Manager - Application Policy Page

This page allows the operator to define Application policy. The Resource Manager attempts to provide the minimum bandwidth specified for each of the applications defined here. When it cannot (if the aggregate value of all minimum bandwidth percentage is greater than 100%), it attempts to provide minimum bandwidth for applications of higher priority. Maximum bandwidth defines the highest amount of bandwidth that an application can use.

The following illustration shows the ResourceManager - Application Policy page.



Parameters

The following table explains the ResourceManager - Application Policy page parameters.

Parameter	Description
Priority	The priority value of the application (allowed values 1-16).
Applications	Name or a prefix string of a set of applications.
MinimumBandwidth (%)	Minimum bandwidth guaranteed for this application.
MaximumBandwidth (%)	Maximum bandwidth allowed for this application.

ResourceManager - Configuration Page

The following illustration shows the ResourceManager - Configuration page.

ResourceManager.Configuration	
AdminState	InService
StreamingZone	
ResourceAllocationMode	nMLT
MostLoadedThreshold	15.000000
ResourceProtection	Automatic
PingPeriod	2 Seconds
ResourceDeviceCapacity	1000
OverrideMacAddr	000000000000
MaxServiceGroups	2500
DisplayMode	Normal
MaxQamChannels	1000
MaxSupportedSessions	100000
ConfigHashWidth	16
SessionUdpPortMin	10000
SessionUdpPortMult	1
SessionUdpPortMax	65535
ServerName	
HeadendName	
HubName	
SessionUserDataFormat	UUID
MinimumTransactionTimeout	2000 milliseconds
PolicyMode	GuaranteeAll
GbePortProtection	Automatic
ResourceDeviceSelectMode	PriorityEncrypt

Commit Changes Reload Logout

Parameters

The following table explains the ResourceManager - Configuration page parameters.

Parameter	Description
AdminState	The global AdminState for the Resource Manager. The normal state is InService. Configuring the state to OutOfService causes the Resource Manager to stop servicing resource management requests.
StreamingZone	The name of the NGOD streaming zone. This string must exactly match the string configured on the NGOD QAM devices managed by the USRM. QAM devices that implement NGOD protocols are configured for a serving area by the streaming zone. When a NGOD QAM device advertises its QAM channels to the ERM, the streaming zone is specified. The ERM streaming zone is configured to match the QAM device. This parameter is also used in the ActivityLog if Comcast format is selected.

Parameter	Description
ResourceAllocationMode	Sets the resource allocation mode, as follows: nMLT - this mode attempts to maximize capacity for MostLoadedThreshold bandwidth programs. The software assigns requests using the bandwidth above n times the MostLoadedThreshold. MLT - this mode is referred to as Tetris. The server load balances and selects the least loaded QAM channel until a threshold is reached. When one QAM channel can no longer accommodate the MostLoadedThreshold, then the software switches to the most loaded mode and assigns using the most loaded QAM channel. FirstAvailable - this mode selects the first available QAM channel in the USRM configuration. The order is in the order of resource creation. The web tree control is presented in this order.
MostLoadedThreshold	The resource allocation threshold in Mbps. The USRM allocates programs on QAM carriers. At first, the server selects the least-loaded carrier. This spreads the programs evenly over all available carriers. As the carriers begin to fill, the software must maintain sufficient contiguous bandwidth available for HD programs. This configuration parameter sets the threshold for this change in selection criteria of the algorithm. When one carrier has less than this configured threshold, the server switches to the mode of allocating programs on the most loaded carrier. Default: 15 Mbps
ResourceProtection	Sets protection of QAM resources to Manual or Automatic. When set to Automatic, a failed QAM will be protected by an active QAM in the same service group that has bandwidth available. Note: This is a global ResourceManager setting: it enables or disables ResourceProtection. Each resource has a parameter that controls whether or not it will participate in ResourceProtection events.
PingPeriod	The time between pings in seconds. When a device does not support a session creation protocol like GQI or R6, or if the device stops responding to these protocols, the server will ping the resource to monitor its status.
ResourceDeviceCapacity	The maximum number of devices supported by the software.

Parameter	Description
OverrideMacAddr	A MAC address used instead of the actual hardware MAC address. Used when server hardware fails and is replaced by a new unit. Note: You must be service level to modify this parameter.
STBCapacityAlarmThreshold	Displays the alarm threshold for the total number of active STBs.
MaxServiceGroups	Displays the maximum number of service groups supported by the software.
ServiceGroupSTBCapacity	Displays the maximum number of STBs in a single service group supported by the software.
DisplayMode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table.
MaxQAMChannels	Displays the maximum number of QAM channels supported by the software.
MaxSupportedSessions	Displays the maximum number of sessions supported by the software.
ConfigHashWidth	The software uses a hash table to quickly locate sessions. This setting shows the compile-time hash table width.
SessionUdpPortMin	Minimum value for the assignment of UDP port numbers on Gigabit input ports.
SessionUdpPortMult	Multiplier used for the calculation of UDP port numbers.
SessionUdpPortMax	Minimum value for the assignment of UDP port numbers on Gigabit input ports.
ServerName	The name of the server. This name is used to form the name of log files. Note: This parameter must be populated if the Applications.SdvSM.Activity log.ActivityLogFormat is set to Comcast.

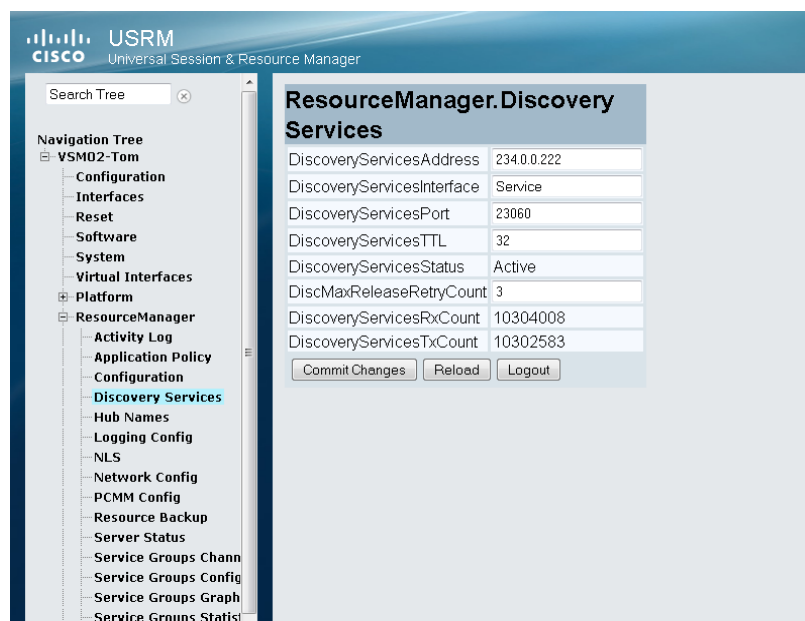
Parameter	Description
HeadendName	The name of the headend. The name is limited to a maximum of four characters. The Comcast activity log specification requires that service group names are hierarchical. The format is servicegroup.hub.headend. Note: This parameter must be populated if the Applications.SdvSM.Activity log.ActivityLogFormat is set to Comcast.
HubName	The global hub name used to form the hierarchical service group name for logs. The name is limited to five characters maximum. The hub name can also be configured in a hub name table for cases where the USRM spans more than one hub site. Note: This parameter must be populated if the Applications.SdvSM.Activity log.ActivityLogFormat is set to Comcast.
SessionUserDataFormat	The configured format for the user data field of a session. The USRM manages all sessions with a 10-byte sessionId. RTSP protocols require tagging sessions with other forms of a sessionId that cannot be contained in a 10-byte sessionId. These identifiers are referred to as the non-native sessionId. This information is maintained in the UserData field for a session. Devices that use the NGOD R6 or S6 protocols require an OnDemandSessionId that is formed as a 128-bit IETF universal identifier. The "UUID" state causes the UserData to be presented on the web interface as a universal identifier. Other RTSP protocols (VERM, CableLabs) require an OnDemandSessionId formed as a character string. The "String" state causes the UserData to be displayed as a character string.
MinimumTransactionTimeout	The minimum value to be used for all edge device transaction timeouts. The TransactionTimeout is the maximum time to wait for a reply from an edge device. This value is configured for each edge device. The MinimumTransactionTimeout provides a way to globally increase the TransactionTimeout. When communicating with an edge device, the software will use the lower of the MinimumTransactionTimeout or the TransactionTimeout configured for the device. Note: This field is editable in version 1.6.x.

Parameter	Description
Policy Mode	Sets the Application Policy mode for the Resource Manager as follows: GuaranteeAll - Guarantee minimum bandwidth for all applications. GuaranteeHighPri - Guarantee minimum bandwidth for applications with high priority. ChannelBased - In this mode, each channel is allowed to be assigned entirely to an application. The minimum and maximum values for bandwidth defined in the Application Policy page are not used. See also <i>Resource Manager - Application Policy Page</i> (on page 133).
GbePortProtection	USRM 1.7.1 supports Gbe port protection on the RFGW1. This setting provides a global setting to enable or disable Gbe port protection. Each RFGW1 also has a setting to enable or disable Gbe port protection per device.

Resource Manager - Discovery Services Page

The following illustration shows the ResourceManager - Discovery Services page.

Note: This page is for NGOD operation.



Parameters

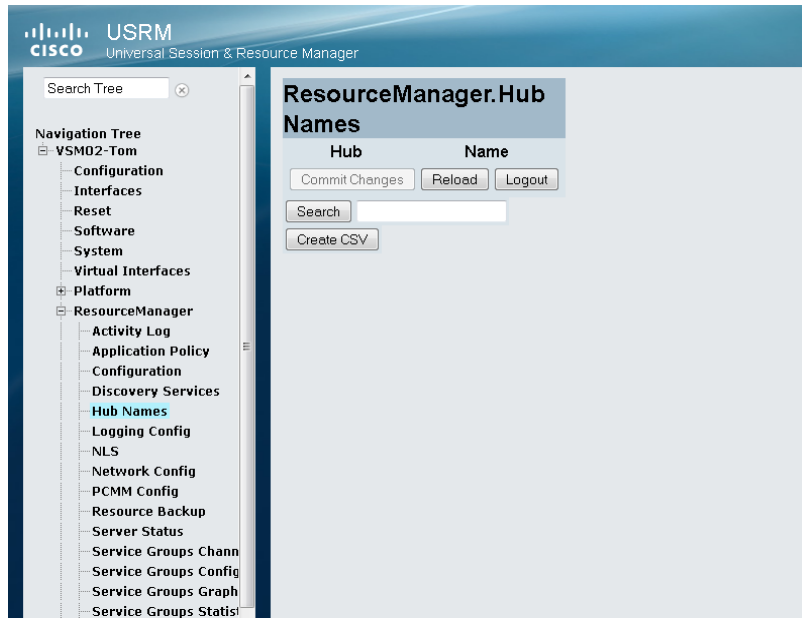
The following table explains the ResourceManager - Discovery Services page parameters.

Parameter	Description
DiscoveryServicesAddress	The multicast address used by Discovery Services.
DiscoveryServicesInterface	The interface used by Discovery Services to multicast the requests.
DiscoveryServicesPort	The UDP port number used for Discovery Services requests.
DiscoveryServicesTTL	The Time-To-Live value for the multicast requests.
DiscoveryServicesStatus	The status of the Discovery Services service. Active indicates the service is active and can be used. Inactive indicates the service is not active. If there is a DiscoveryServicesAddress configured, this service will normally be Active. Note: After configuring the DiscoveryServicesAddress, the USRM must be restarted to start the service.
DiscMaxReleaseRetryCount	Maximum number of retries attempted on Release Session messages.

Parameter	Description
DiscoveryServicesRxCount	The number of discovery services requests received since the software was last activated.
DiscoveryServicesTxCount	The number of discovery services requests transmitted since the software was last activated.

ResourceManager - Hub Names Page

The following illustration shows the ResourceManager - Hub Names page.



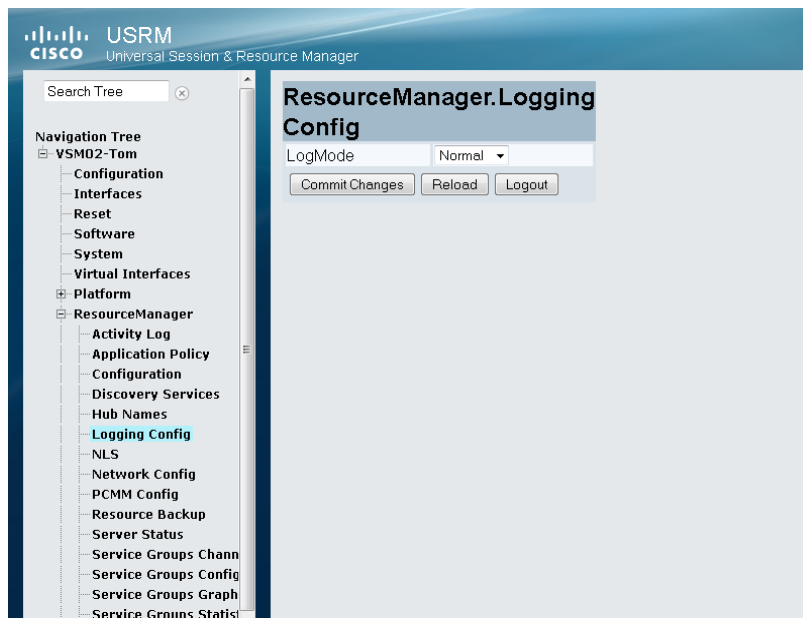
Parameters

The following table explains the ResourceManager - Hub Names page parameters.

Parameter	Description
Hub	The hub number, beginning with one.
Name	The name of the hub site for this entry.
	Note: You are limited to 5 characters.

ResourceManager - Logging Config Page

This page allows the operator to configure the logging level for ResourceManager logging.



Parameters

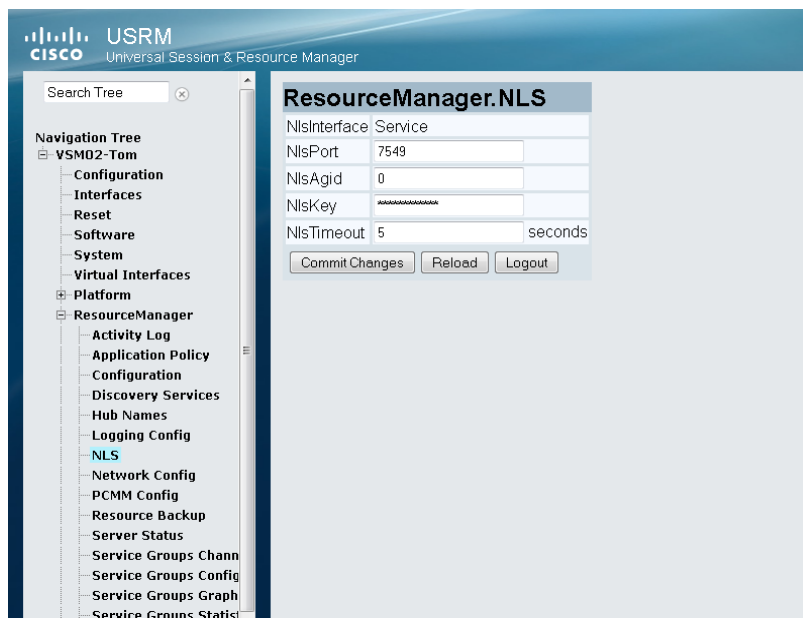
The following table explains the ResourceManager - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

Resource Manager - NLS Page

This page allows you to configure NLS parameters that are used as part of Control Point Discovery (CPD) for querying the CMTS responsible for a given IP address.

The following illustration shows the ResourceManager - NLS page.



Parameters

The following table explains the ResourceManager - NLS page parameters.

Parameter	Description
NlsInterface	The interface used for NLS protocol messages.
NlsPort	The UDP port number used for Discovery Services requests.
NlsAgid	The NLS Authentication Group ID.
NlsKey	The NLS key is the shared secret known to the USRM and the CMTS for the configured NLS AGID.
NlsTimeout	Timeout for NLS queries.

ResourceManager - Network Config Page

In certain network configurations, it is required or at least desirable that the primary and standby servers use the same service IP address. The USRM supports this requirement through the use of virtual interfaces.

Configuring a service address on the ResourceManager.Network Config page and resetting the USRM software will cause the software to create a virtual interface that it will use as the service address. This setting will then be synchronized to the standby server for use in case of a failover event. When a virtual interface is in use, it will be displayed on the Virtual Interfaces page.

The following illustration shows the ResourceManager - Network Config page.



Parameters

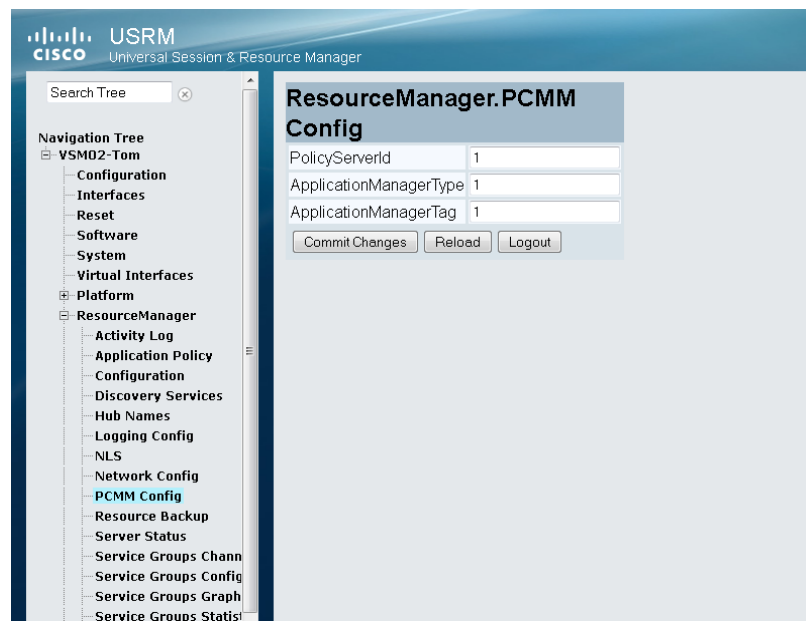
The following table explains the ResourceManager - Network Config page parameters.

Parameter	Description
ServiceAddress	The IP address of the resource manager virtual interface. The software must be restarted after changing this value. Note: This service address must be valid and available in the address space.
ServiceInterface	The interface used for the virtual interface. The software must be restarted after changing this value.
ControlAddress	The IP address of the resource manager virtual interface for interacting with the resources. The software must be restarted after changing this value.

Parameter	Description
ControlInterface	The interface used for the virtual interface used for interacting with the resources. The software must be restarted after changing this value.

ResourceManager - PCMM Config Page

This page allows you to configure PCMM parameters.



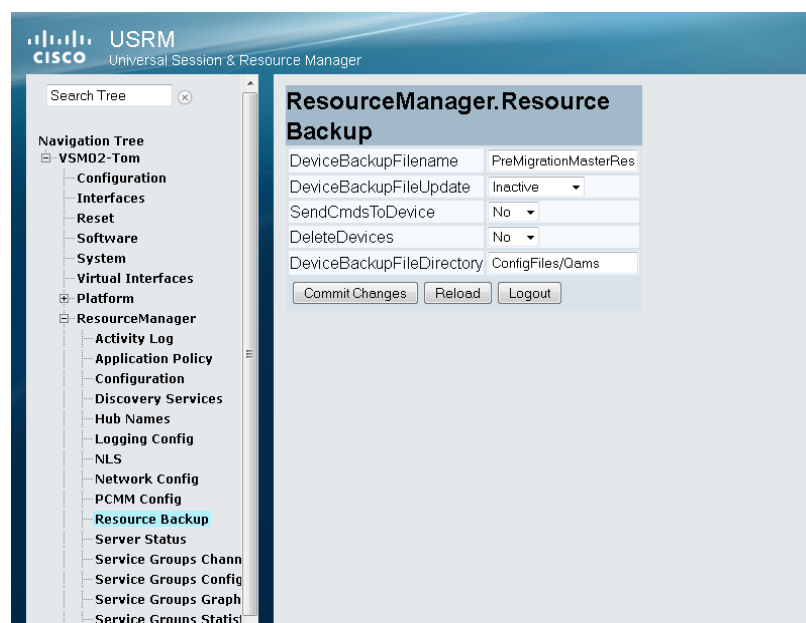
Parameters

The following table explains the ResourceManager - PCMM Config page parameters.

Parameter	Description
PolicyServerId	Default is set to numeric value 1 and should not be changed unless more than one USRM is setting up gates on one CMTS. If there are multiple USRMs using one CMTS, this should be a unique value for each USRM.
ApplicationManagerType	Default is set to numeric value 1 and should not be changed. This field is used to distinguish between applications requesting gates. Currently there is only one application that uses PCMM.
ApplicationManagerTag	Default is set to numeric value 1 and should not be changed unless more than one USRM is setting up gates on one CMTS. If there are multiple USRMs using one CMTS, this should be a unique value for each USRM.

ResourceManager - Resource Backup Page

This page allows you to configure the Resource Backup parameters for ResourceManager.



Parameters

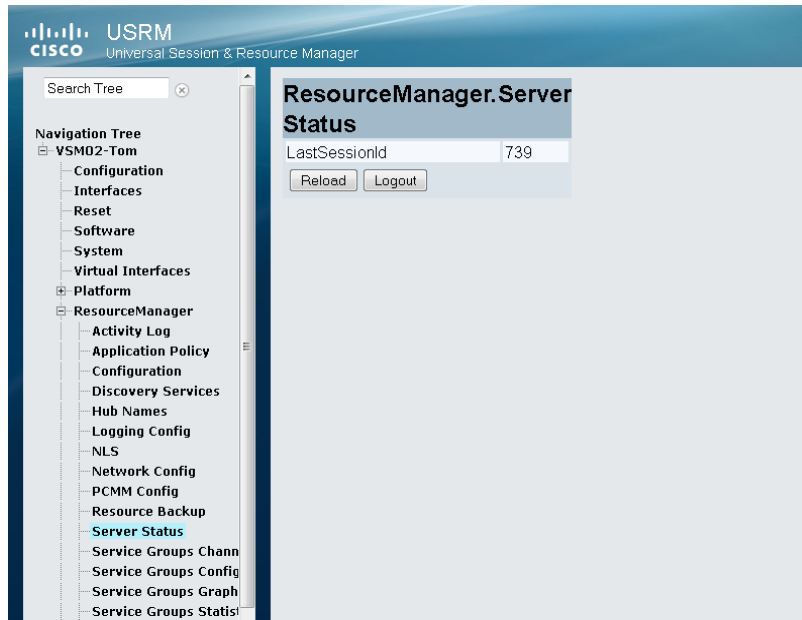
The following table explains the ResourceManager - Resource Backup page parameters.

Parameter	Description
DeviceBackupFilename	Name of the backup file used for backing up the resources.
DeviceBackupFileUpdate	Set this parameter to control the DeviceBackup operation for ResourceManager software, as follows: Inactive - Default setting. Idle. Read - Read the DeviceBackupFilename and apply the settings to the relevant resources or devices. Write - Take current settings of all resources or devices and write to the DeviceBackupFilename, thus saving the settings.

Parameter	Description
SendCmdsToDevice	Set this parameter to control the behavior of Resource Manager upon restoring the DeviceBackFile, as follows: Yes - This is default. Resource Manager attempts to update the device actively as it updates its internal database. No - Just update the database. Do not actively attempt to set the values on the devices.
DeleteDevices	Set this parameter to control the behavior of Resource Manager upon restoring the DeviceBackFile, as follows: Yes - If a device is missing from the restored database backup file, delete an existing device and all its data. No - Do not delete any of the existing devices for which no entry is found in the restored backup file specified.
DeviceBackupFileDirectory	Allows explicit configuration of the directory to be used to contain the resource backup files.

ResourceManager - Server Status Page

The following illustration shows the ResourceManager - Server Status page.



Parameters

The following table explains the ResourceManager - Server Status page parameters.

Parameter	Description
LastSessionId	The last session ID generated by the server. Sessions Ids consist of a 6-byte local MAC address followed by a 4-byte sequence number. This parameter maintains the 4-byte sequence number.

ResourceManager - Service Groups Channels Page

The page provides Service Group Channel status for ResourceManager.

SgIndex.ChanIndex	Tsid	ServiceStatus	Frequency (MHz)	ServiceGroup	QamDeviceName	QamDeviceAddress	TotalBandwidth (Mbps)	AllocBandwidth (Mbps)
1.1	10608	InService	525.000000	16	GQAM03	172.16.6.4	38.814000	0.000000
1.2	10609	InService	531.000000	16	GQAM03	172.16.6.4	38.814000	0.000000
1.3	10610	InService	537.000000	16	GQAM03	172.16.6.4	38.814000	0.000000
1.4	10611	InService	543.000000	16	GQAM03	172.16.6.4	38.814000	0.000000
1.5	1017	InService	651.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.6	1018	InService	657.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.7	1019	InService	663.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.8	1020	InService	669.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.9	1065	InService	675.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.10	1066	InService	681.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.11	1067	InService	687.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.12	1068	InService	693.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.13	1021	InService	405.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.14	1022	InService	411.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.15	1023	InService	417.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.16	1024	InService	423.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.17	1069	InService	309.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.18	1070	InService	315.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.19	1071	InService	321.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
1.20	1072	InService	327.000000	16	RFGW1-1	172.16.4.8	38.814000	0.000000
2.1	10604	InService	333.000000	43	GQAM03	172.16.6.4	38.814000	0.000000
2.2	10605	InService	339.000000	43	GQAM03	172.16.6.4	38.814000	0.000000
2.3	10606	InService	345.000000	43	GQAM03	172.16.6.4	38.814000	0.000000
2.4	10607	InService	351.000000	43	GQAM03	172.16.6.4	38.814000	0.000000
3.1	1025	OutOfService	603.000000	10225	RFGW1-1	172.16.4.8	38.814000	0.000000

Parameters

The following table explains the ResourceManager - Service Groups Channels page parameters.

Parameter	Description
SgIndex.ChanIndex	The sequential service group.channel number in the list. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page.
Tsid	The transport stream identifier.
ServiceStatus	The current status of each TSID in all service groups on this USRM. Valid states are InService and OutofService.
Frequency (MHz)	The frequency on which the channel is broadcast.
ServiceGroupId	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group ID as part of the request. The server organizes STBs by service group.
QamDeviceName	The name of the QAM device broadcasting the channel.
QamDeviceAddress	The IP address of the QAM device.
TotalBandwidth (Mbps)	The total pool bandwidth for the carrier.

Parameter	Description
AllocBandwidth (Mbps)	The allocated bandwidth on the carrier.

ResourceManager - Service Groups Config Page

This page allows operators to configure Service Groups Config parameters for ResourceManager.

SgIndex	ServiceGroupId	Name	Hub	AdminState
1	16		0	InService
2	43		0	InService
3	10225		0	InService
4	10226		0	InService
5	10227		0	InService
6	10228		0	InService
7	10000		0	InService
8	10001		0	InService
9	10002		0	InService
10	10003		0	InService
11	10004		0	InService
12	10005		0	InService
13	10006		0	InService
14	10007		0	InService
15	10008		0	InService
16	10009		0	InService
17	10010		0	InService
18	10011		0	InService
19	10012		0	InService
20	10013		0	InService
21	10014		0	InService
22	10015		0	InService
23	10016		0	InService
24	10017		0	InService
25	10018		0	InService

Parameters

The following table explains the ResourceManager - Service Groups Config page parameters.

Parameter	Description
SgIndex	The sequential service group number in the list. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page.
ServiceGroupId	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group Id as part of the request. The server organizes STBs by service group.
Name	A user-selected name for the service group. If you assign a name, the assigned name then displays as the ServiceGroupId in all screens.

Parameter	Description
Hub	The hub number. If the USRM supports one hub, the hub name is configured globally. For the case where the USRM supports more than one hub site, this field allows configuration of the hub number. The hub names are configured in the Hub Name table. Zero means not applicable. One to n refers to the entry number in the Hub Name table.
AdminState	The availability state of the service group, as follows: InService - The service group is in service. The normal state. OutOfService - When out of service, requests from a client are denied with response code rspInvalidSG (0x8001). Release - Causes the server to move all users in the service group to a non-switched service and then set the state to OutOfService. Delete - Deletes the service group. NotReady - Indicates the USRM is provisioning the service group and the group is not yet ready for use.

ResourceManager - Service Groups Graphics Page

The following illustration shows the ResourceManager - Service Groups Graphics page.

SgIndex	ServiceGroup	QamComposition	BandwidthPlot	RequestDenyPlot
1	16	Display	Display	Display
2	43	Display	Display	Display
3	10225	Display	Display	Display
4	10226	Display	Display	Display
5	10227	Display	Display	Display
6	10228	Display	Display	Display
7	10000	Display	Display	Display
8	10001	Display	Display	Display
9	10002	Display	Display	Display
10	10003	Display	Display	Display
11	10004	Display	Display	Display
12	10005	Display	Display	Display
13	10006	Display	Display	Display
14	10007	Display	Display	Display
15	10008	Display	Display	Display
16	10009	Display	Display	Display
17	10010	Display	Display	Display
18	10011	Display	Display	Display
19	10012	Display	Display	Display
20	10013	Display	Display	Display
21	10014	Display	Display	Display
22	10015	Display	Display	Display
23	10016	Display	Display	Display
24	10017	Display	Display	Display
25	10018	Display	Display	Display

Parameters

The following table explains the ResourceManager - Service Groups Graphics page parameters.

Parameter	Description
SgIndex (ServiceGroup in version 1.6.x)	The sequential service group number in the list. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page.
ServiceGroupId	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group Id as part of the request. The server organizes STBs by service group.

Parameter	Description
QamComposition	Click Display to view the current QAM composition chart. The display is updated at the interval specified by the Platform.WebServer.Configuration.GraphicRefreshPeriod parameter.
BandwidthPlot	Click Display to view the current bandwidth chart. The chart displays from Sunday to Saturday of the current week. This display is updated at the interval specified by the Platform.WebServer.Configuration.GraphicRefreshPeriod parameter.
RequestDenyPlot	Click Display to view a request vs. deny chart. The chart displays from Sunday to Saturday of the current week. This display is updated at the interval specified by the Platform.WebServer.Configuration.GraphicRefreshPeriod parameter.

ResourceManager - Service Groups Statistics Page

The following illustration shows the ResourceManager - Service Groups - Statistics page.

SgIndex	ServiceGroup	TotalBandwidth (Mbps)	AllocatedBandwidth (Mbps)	ActiveSessions	Requests	Failures	DenysNoBw	Denys
1	16	776.280000	0.000000	0	31246277	4263	465834	0
2	43	155.256000	0.000000	0	14901	0	9	0
3	10225	0.000000	0.000000	0	12	0	12	0
4	10226	0.000000	0.000000	0	0	0	0	0
5	10227	0.000000	0.000000	0	0	0	0	0
6	10228	0.000000	0.000000	0	0	0	0	0
7	10000	0.000000	0.000000	0	0	0	0	0
8	10001	0.000000	0.000000	0	0	0	0	0
9	10002	0.000000	0.000000	0	0	0	0	0
10	10003	0.000000	0.000000	0	0	0	0	0
11	10004	0.000000	0.000000	0	0	0	0	0
12	10005	0.000000	0.000000	0	0	0	0	0
13	10006	0.000000	0.000000	0	0	0	0	0
14	10007	0.000000	0.000000	0	0	0	0	0
15	10008	0.000000	0.000000	0	0	0	0	0
16	10009	0.000000	0.000000	0	0	0	0	0
17	10010	0.000000	0.000000	0	0	0	0	0
18	10011	0.000000	0.000000	0	0	0	0	0
19	10012	0.000000	0.000000	0	0	0	0	0
20	10013	0.000000	0.000000	0	0	0	0	0
21	10014	0.000000	0.000000	0	0	0	0	0
22	10015	0.000000	0.000000	0	0	0	0	0
23	10016	0.000000	0.000000	0	0	0	0	0
24	10017	0.000000	0.000000	0	0	0	0	0
25	10018	0.000000	0.000000	0	0	0	0	0

Parameters

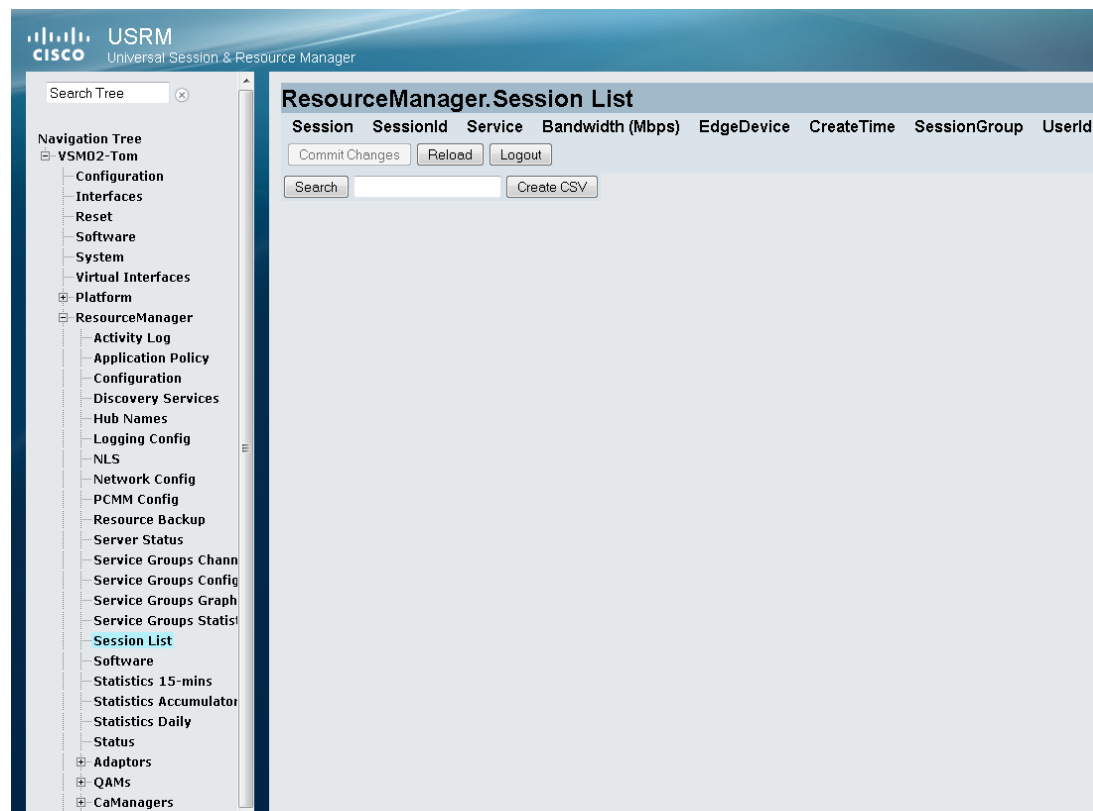
The following table explains the ResourceManager - Service Groups Statistics page parameters.

Parameter	Description
SgIndex (ServiceGroup in version 1.6.x)	The sequential service group number in the list. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page.
ServiceGroup	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group Id as part of the request. The server organizes STBs by service group.
TotalBandwidth (Mbps)	The total pool bandwidth for the service group.
AllocatedBandwidth (Mbps)	The allocated bandwidth on the service group.
ActiveSessions	Displays the current number of active sessions.
Requests	The comprehensive number of requests.
Failures	The comprehensive number of failures.

Parameter	Description
DenysNoBw	The comprehensive number of denys due to no bandwidth available.
Denys	The comprehensive total number of denys.

ResourceManager - Session List Page

The following illustration shows the ResourceManager - Session List page.



Parameters

The following table explains the ResourceManager - Session List page parameters.

Parameter	Description
Session	The sequential session number in the list.
SessionId	The session ID label assigned to this session.
Service	The type of service - SDV or VOD.
Bandwidth	The session bandwidth in Mbps.
EdgeDevice	The edge device serving the session.
CreateTime	The date and time the session was created.
SessionGroup	The SessionGroup name assigned to the session. In NGOD architectures, the request assigns a SessionGroup name to a session to identify the owner of the session. In a non-NGOD system, this parameter identifies the Application/Server Name that created the session.

Parameter	Description
UserId	The IP address of the client that requested the session. This parameter is only valid for VOD sessions. All SDV sessions will display n/a.

ResourceManager - Software Page

This page displays the software information for ResourceManager and allows the operator to manage the configuration file update parameter.



Parameters

The following table describes the ResourceManager.Softwre page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	Set this parameter to control the ConfigFileUpdate for ResourceManager software, as follows: Inactive - Default setting. Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ResourceManager - Statistics 15-mins Page

The following illustration shows the ResourceManager - Statistics - 15-mins page.

SgIndex	ServiceGroup	PeakBandwidth	Requests	DenysNoBw	Failures
1	16	0.000000	0	0	0
2	43	0.000000	0	0	0
3	10225	0.000000	0	0	0
4	10226	0.000000	0	0	0
5	10227	0.000000	0	0	0
6	10228	0.000000	0	0	0
7	10000	0.000000	0	0	0
8	10001	0.000000	0	0	0
9	10002	0.000000	0	0	0
10	10003	0.000000	0	0	0
11	10004	0.000000	0	0	0
12	10005	0.000000	0	0	0
13	10006	0.000000	0	0	0
14	10007	0.000000	0	0	0
15	10008	0.000000	0	0	0
16	10009	0.000000	0	0	0
17	10010	0.000000	0	0	0
18	10011	0.000000	0	0	0
19	10012	0.000000	0	0	0
20	10013	0.000000	0	0	0
21	10014	0.000000	0	0	0
22	10015	0.000000	0	0	0
23	10016	0.000000	0	0	0
24	10017	0.000000	0	0	0
25	10018	0.000000	0	0	0

Parameters

The following table explains the ResourceManager - Statistics 15-mins page parameters.

Parameter	Description
SgIndex (ServiceGroup in version 1.6.x)	The sequential service group number in the list. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page.
ServiceGroup	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group Id as part of the request. The server organizes STBs by service group.
PeakBandwidth	The peak bandwidth used by the service group in Mbps.
Requests	The number of requests.
DenysNoBw	The number of denys due to no bandwidth available.
Failures	The number of failures.

ResourceManager - Statistics Accumulators Page

The following illustration shows the ResourceManager - Statistics Accumulators page.

SgIndex.Period	TimePeriod	PeakBandwidth (Mbps)	Requests	DenysNoBw	Failures
1.1	Sun 00:00..	0.000000	0	0	0
1.2	Sun 00:15..	0.000000	0	0	0
1.3	Sun 00:30..	0.000000	0	0	0
1.4	Sun 00:45..	0.000000	0	0	0
1.5	Sun 01:00..	0.000000	0	0	0
1.6	Sun 01:15..	0.000000	0	0	0
1.7	Sun 01:30..	0.000000	0	0	0
1.8	Sun 01:45..	0.000000	0	0	0
1.9	Sun 02:00..	0.000000	0	0	0
1.10	Sun 02:15..	0.000000	0	0	0
1.11	Sun 02:30..	0.000000	0	0	0
1.12	Sun 02:45..	0.000000	0	0	0
1.13	Sun 03:00..	0.000000	0	0	0
1.14	Sun 03:15..	0.000000	0	0	0
1.15	Sun 03:30..	0.000000	0	0	0
1.16	Sun 03:45..	0.000000	0	0	0
1.17	Sun 04:00..	0.000000	0	0	0
1.18	Sun 04:15..	0.000000	0	0	0
1.19	Sun 04:30..	0.000000	0	0	0
1.20	Sun 04:45..	0.000000	0	0	0
1.21	Sun 05:00..	0.000000	0	0	0
1.22	Sun 05:15..	0.000000	0	0	0
1.23	Sun 05:30..	0.000000	0	0	0
1.24	Sun 05:45..	0.000000	0	0	0
1.25	Sun 06:00..	0.000000	0	0	0

Parameters

The following table explains the ResourceManager - Statistics Accumulators page parameters.

Parameter	Description
SgIndex.Period (ServiceGroup.Period in version 1.6.x)	A sequential number representing the service group and the time period. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page. The time period is sequential 15-minute segments starting Sunday at midnight and ending Saturday at midnight. There are 672 15-minute segments in this range. For example, the first service group and the first 15-minute segment is SgIndex.Period 1.1, and the last 15-minute segment for the service group is 1.672.
TmePeriod	The time period day and time.

Parameter	Description
PeakBandwidth (Mbps)	The peak bandwidth used by the service group.
Requests	The number of requests.
DenysNoBw	The number of denys due to no bandwidth available.
Failures	The number of failures.

ResourceManager - Statistics Daily Page

The Daily Statistics accumulates the statistics from midnight to the current time of day. The counts are reset at midnight.

The following illustration shows the ResourceManager - Statistics Daily page.

SgIndex	ServiceGroup	PeakBandwidth	Requests	DenysNoBw	Failures
1	16	0.000000	0	0	0
2	43	0.000000	0	0	0
3	10225	0.000000	0	0	0
4	10226	0.000000	0	0	0
5	10227	0.000000	0	0	0
6	10228	0.000000	0	0	0
7	10000	0.000000	0	0	0
8	10001	0.000000	0	0	0
9	10002	0.000000	0	0	0
10	10003	0.000000	0	0	0
11	10004	0.000000	0	0	0
12	10005	0.000000	0	0	0
13	10006	0.000000	0	0	0
14	10007	0.000000	0	0	0
15	10008	0.000000	0	0	0
16	10009	0.000000	0	0	0
17	10010	0.000000	0	0	0
18	10011	0.000000	0	0	0
19	10012	0.000000	0	0	0
20	10013	0.000000	0	0	0
21	10014	0.000000	0	0	0
22	10015	0.000000	0	0	0
23	10016	0.000000	0	0	0
24	10017	0.000000	0	0	0
25	10018	0.000000	0	0	0

Parameters

The following table explains the ResourceManager - Statistics Daily page parameters.

Parameter	Description
SgIndex (ServiceGroup in version 1.6.x)	The sequential service group number in the list. Note: The order of this sequence is indexed to the ResourceManager.Service Groups Config page.
ServiceGroup	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group Id as part of the request. The server organizes STBs by service group.
PeakBandwidth	The peak bandwidth used by the service group in Mbps.
Requests	The number of requests.

Parameter	Description
DenysNoBw	The number of denys due to no bandwidth available.
Failures	The number of failures.

ResourceManager - Status Page

The following illustration shows the ResourceManager - Status page.



Parameters

The following table explains the ResourceManager - Status page parameters.

Parameter	Description
PrimaryMacAddr	The MAC address of the primary server.
MaxActiveSessions	The maximum or peak number of active sessions.
ActiveSessions	Displays the current number of active sessions.
HashTableWidth	Identifies the width of the session Id hash table.
MaxHashWidth	This status displays the maximum width of the hash table in operation. If the MaxHashWidth reaches the HashTableWidth, the software may exhibit slightly slower operation. This setting is provided for software developers to monitor the effectiveness of the hash algorithm.

ResourceManager - Adaptors - Software Page

This page displays the software information for ResourceManager Adaptors and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the ResourceManager - Adaptors.Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ResourceManager - Adaptors - ResourceAdaptor D6 - Configuration Page

The following illustration shows the ResourceManager - Adaptors - Resource AdaptorD6 - Configuration page.



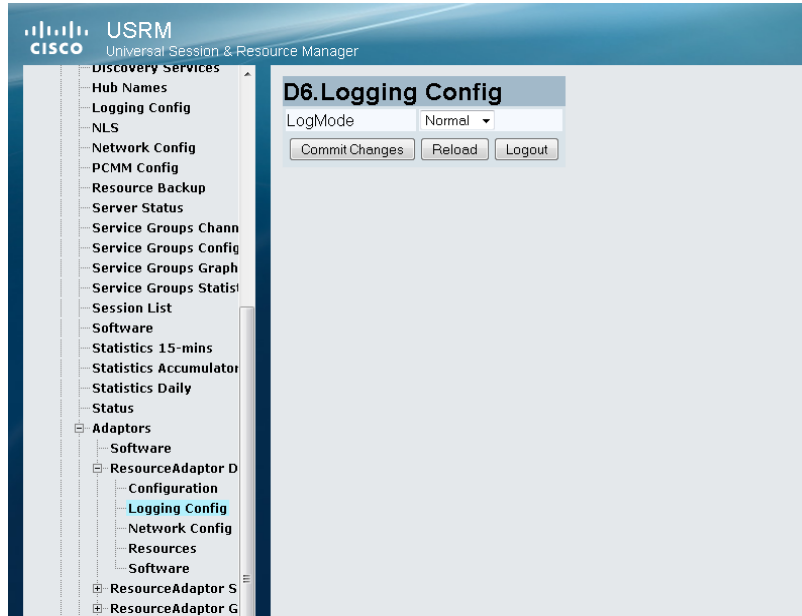
Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor D6 - Configuration page parameters.

Parameter	Description
VrepIdentifier	Must be uniquely set within its Streaming Zone. Typically set to the IPv4 address of the interface that is communicating to the D6 QAMs.
ComponentName	Describes the device in the open message, typically set to USRM. Must match the setting on the D6 QAM devices.
VendorSepcificString	Optional text string used in the Open message. Default: Cisco
HoldTime	If no communication is received after this timeout expires, the connection to the other D6 device will be closed.
VrepVersion	The current VREP version is two. Only if the QAMs that are to be connected to require it should this be set to one.

ResourceManager - Adaptors - ResourceAdaptor D6 - Logging Config Page

This page allows the operator to configure the logging level for D6 logging.



Parameters

The following table explains the ResourceManager.Adaptors - ResourceAdaptor D6.Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Adaptors - ResourceAdaptor D6 Network Configuration Page

The following illustration shows the ResourceManager - Adaptors - ResourceAdaptor D6 - Network Config page.



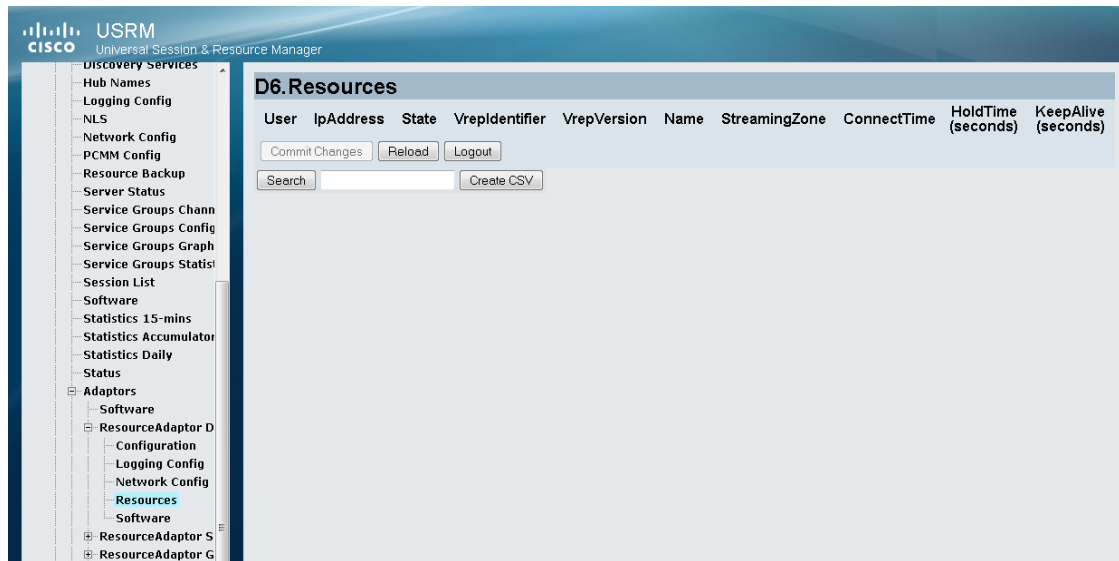
Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor D6 - Network Config page parameters.

Parameter	Description
D6Port	The port number used for D6 protocol messages.
D6Interface	The interface used for D6 protocol messages. This is the physical interface, and not the named interface in the Interfaces table.

ResourceManager - Adaptors - ResourceAdaptor - D6 Resources Page

The following illustration shows the ResourceManager - Adaptors - Resource AdaptorD6 - Resources page.



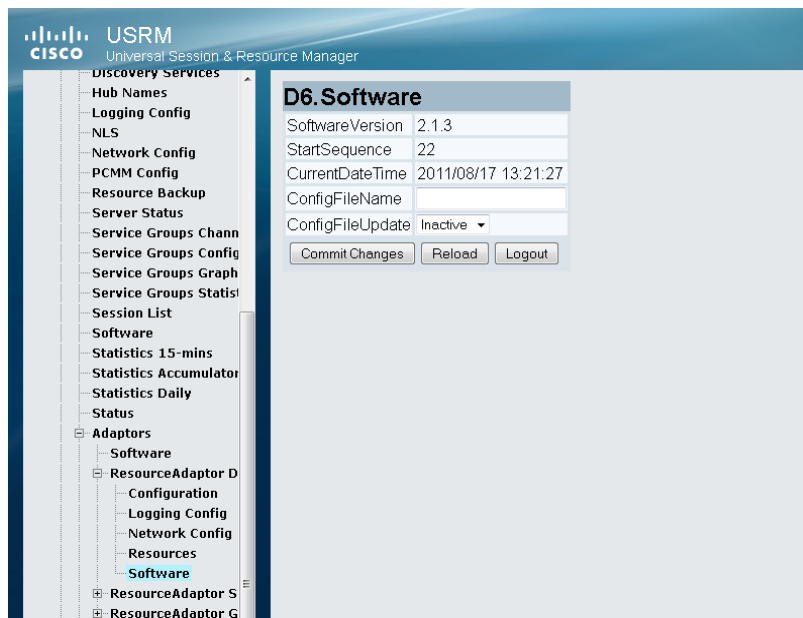
Parameters

The following table explains the ResourceManager - Adaptors - Resource Adaptor D6.Resources page parameters.

Parameter	Description
User	The entry number in the table.
IpAddress	The IP address for the connected D6 device.
State	The current state for the D6 device.
VrepIdentifier	The Vrep identifier of the D6 device. Usually the IPv4 IP address of the D6 device.
VrepVersion	The Vrep version of the D6 device.
Name	The name of the D6 device.
StreamingZone	The streaming zone of the D6 device.
ConnectTime	The time the D6 connection was established.
HoldTime (seconds)	The current hold time for the D6 device.
KeepAlive (seconds)	The keep-alive message transmission interval.

ResourceManager - Adaptors - ResourceAdaptor D6 - Software Page

This page displays the software information for and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor D6 - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ResourceManager - Adaptors - ResourceAdaptor S6 - Logging Config Page

This page allows the operator to configure the logging level for S6 logging.



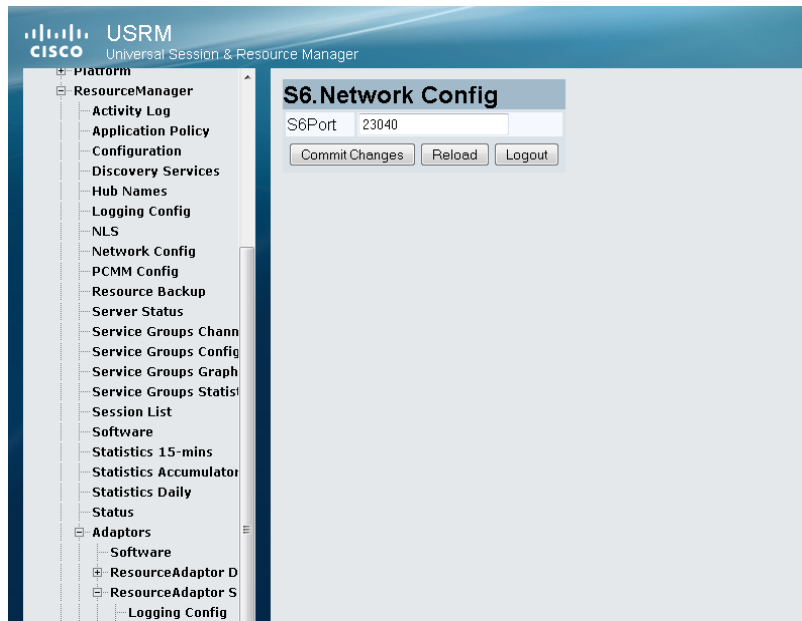
Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor S6 - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Adaptors - ResourceAdaptor S6 - Network Config Page

The following illustration shows the ResourceManager - Adaptors - Resource Adaptor S6 - Network Config page.



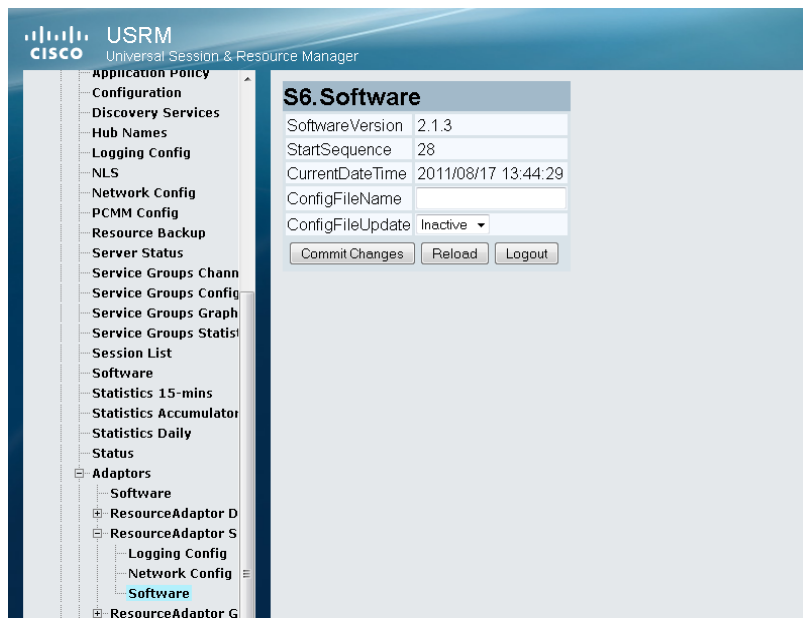
Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor S6 - Network Config page parameters.

Parameter	Description
S6Port	The port number used for S6 protocol messages.

ResourceManager - Adaptors - ResourceAdaptor S6 - Software Page

This page displays the software information for S6 and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor S6 - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ResourceManager - Adaptors - ResourceAdaptor GenericQamSrm - Logging Config Page

This page allows the operator to configure the logging level for GenericQamSrm logging.



Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor GenericQamSrm - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Adaptors - ResourceAdaptor GenericQamSrm - Software Page

This page displays the software information for GenericQamSrm and allows the operator to manage the configuration file update parameter.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. On the left is a navigation tree under the 'Platform' section, with 'Adaptors' > 'Software' selected. The main panel is titled 'GenericQamSrm.Software' and contains the following fields and controls:

- SoftwareVersion: 2.1.3
- StartSequence: 31
- CurrentDateTime: 2011/08/17 13:55:44
- ConfigFileName: (empty text box)
- ConfigFileUpdate: Inactive (dropdown menu)
- Name: GenericQamSrm
- Buttons: Commit Changes, Reload, Logout

Parameters

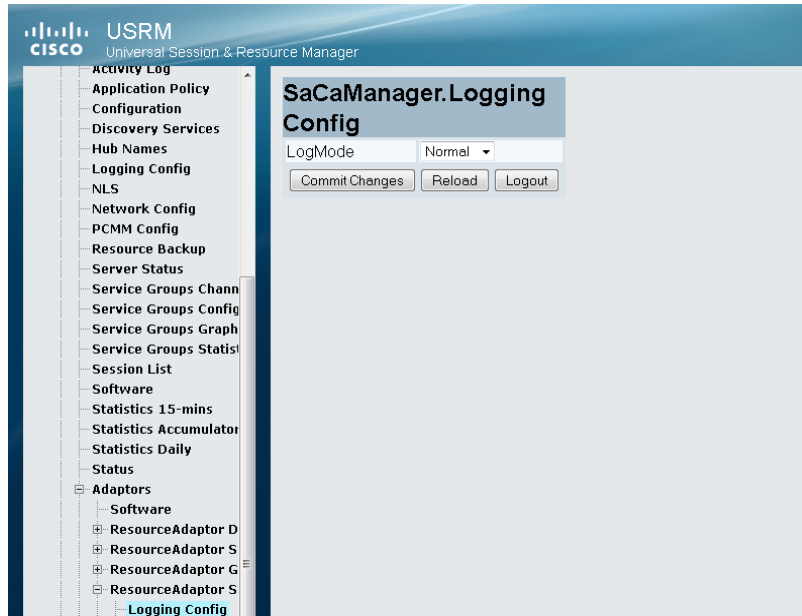
The following table explains the ResourceManager - Adaptor - ResourceAdaptor GenericQamSrm - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.
Name	The name of the component.

ResourceManager - Adaptors - ResourceAdaptor SaCaManager - Logging Config Page

This page allows the operator to configure the logging level for SaCaManager logging.



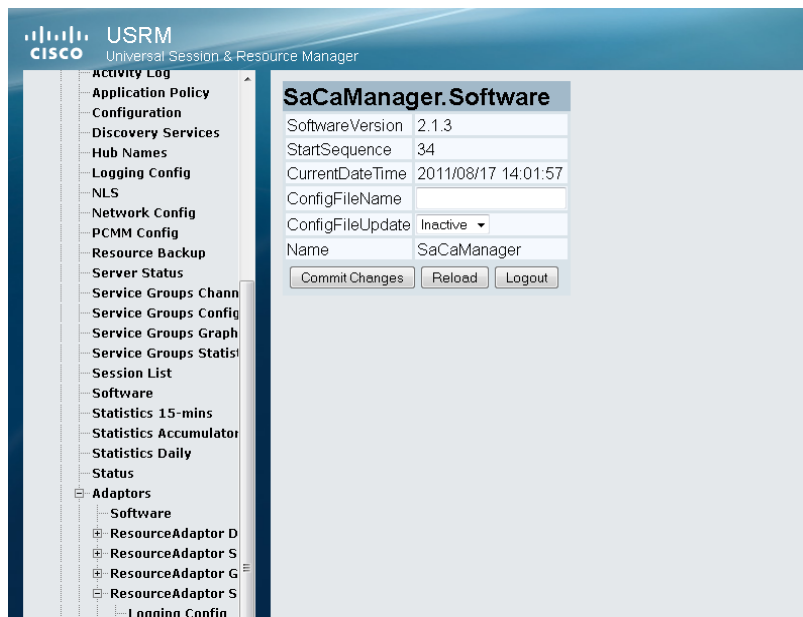
Parameters

The following table explains the ResourceManager.Adaptors - ResourceAdaptor - SaCaManager.Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Adaptors - ResourceManager SaCaManager - Software

This page displays the software information for SaCaManager and allows the operator to manage the configuration file update parameter.



Parameters

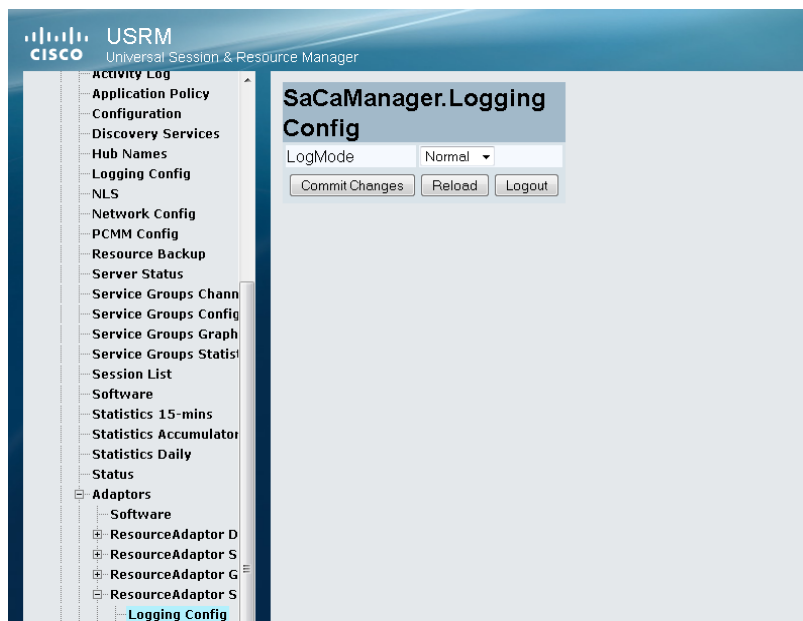
The following table explains the ResourceManager - Adaptors - ResourceAdaptor SaCaManager.Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

Parameter	Description
Name	The name of the component.

ResourceManager - Adaptors - ResourceAdaptor SaGqam - Logging Config Page

This page allows the operator to configure the logging level for SaCaManager logging.



Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor SaCaManager - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Adaptors - ResourceAdaptor SaGqam - Software Page

This page displays the software information for SaGqam and allows the operator to manage the configuration file update parameter.

Parameters

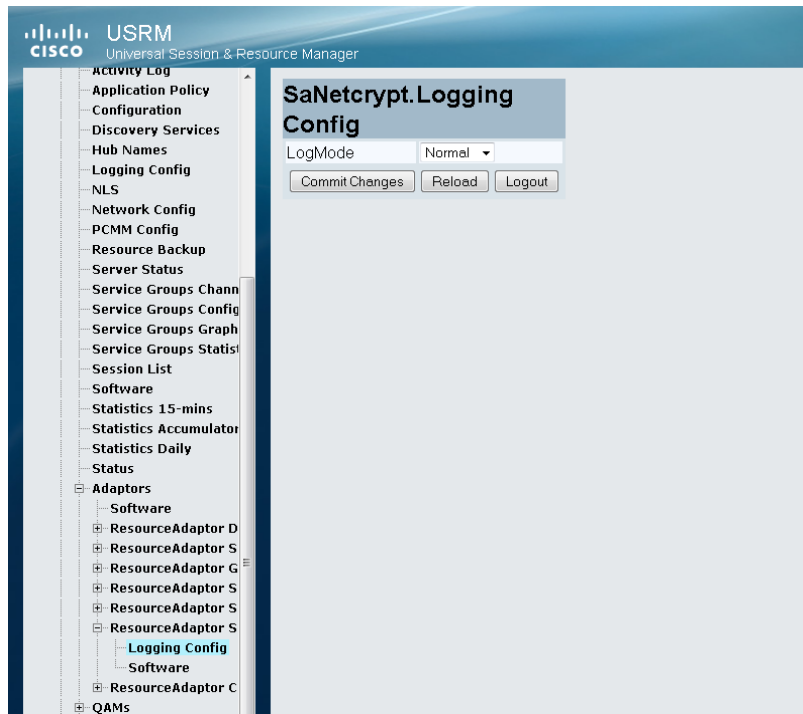
The following table explains the ResourceManager - Adaptors - ResourceAdaptor SaCaManager - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.
Name	The name of the component.

ResourceManager - Adaptors - ResourceAdaptor SaNetcrypt - Logging Configuration Page

This page allows the operator to configure the logging level for SaNetcrypt logging.



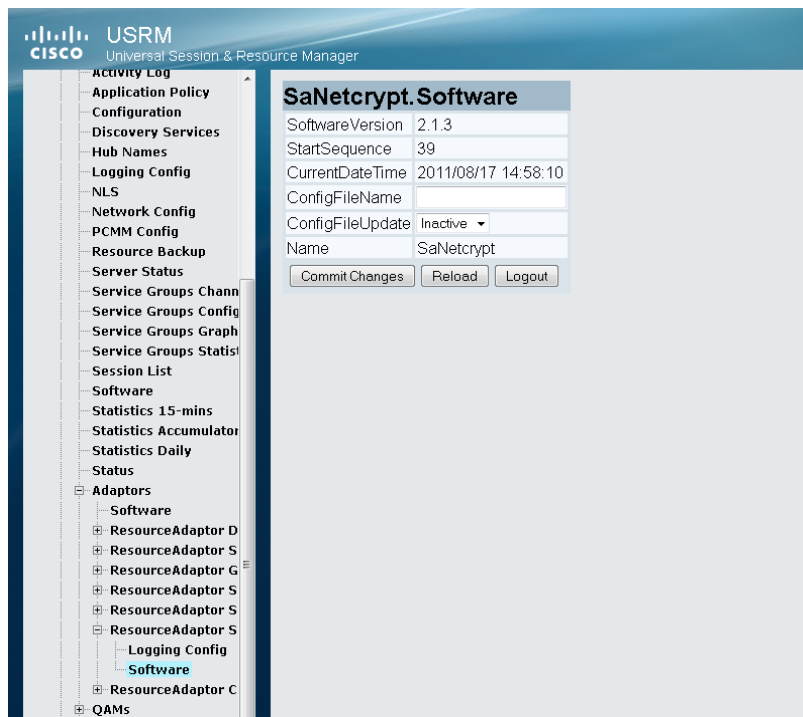
Parameters

The following table explains the ResourceManager - Adaptors - ResourceAdaptor SaNetcrypt.Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Adaptors - ResourceAdaptor SaNetcrypt - Software Page

This page displays the software information for SaNetcrypt and allows the operator to manage the configuration file update parameter.



Parameters

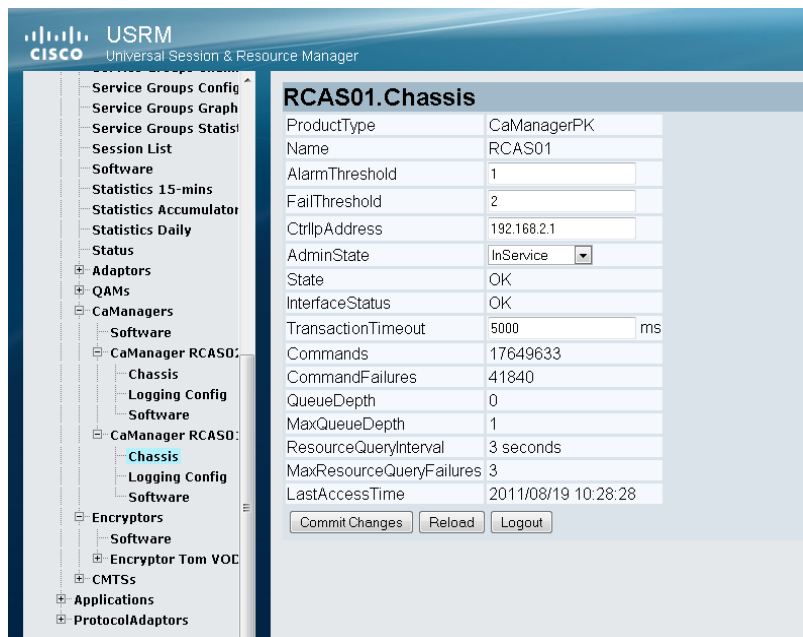
The following table explains the ResourceManager - Adaptors ResourceAdaptor SaNetcrypt - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	Set this parameter to control the ConfigFileUpdates as follows: Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.
Name	The name of the component.

ResourceManager - CaManagers - CaManager - Chassis Page

The following illustration shows the ResourceManager - CaManagers - CaManager - Chassis page.



Parameters

The following table explains the ResourceManager - CAManager RCAS01 - Chassis page parameters.

Parameter	Description
ProductType	CA Managers are currently allowed to be of only one type: CaManagerPk (CA Manager for PowerKEY).
Name	The name of the component.
AlarmThreshold	The alarm threshold for the CAManager. When a CA Manager fails for this many consecutive attempts, the status is set to Alarm.
FailThreshhold	The failure threshold for a device. When a device fails for this many consecutive attempts, the state is set to the Failure state. Note: You must be service level to modify this parameter.
CtrlIpAddress	Configures/ displays the IP address of the management port of the chassis.
AdminState	The AdminState for the device.

Parameter	Description
State	The current state of the edge device. Upon startup, the state is set to Init. In this state, the resource manager attempts to establish communication with the edge device.
InterfaceStatus	Indicates the status of the interface. Fail - indicates the interface has failed and the device is not available for service. OK - indicates the interface is working properly.
TransactionTimeout	The amount of time the server will wait for the device to respond to a command.
Commands	The number of commands (binds and unbinds) to the edge device.
CommandFailures	The number of commands that failed.
QueueDepth	The depth of the queue for this edge device.
MaxQueueDepth	The max queue depth for the edge device. This parameter typically is large on startup in Max mode. In Max mode, the server fills the bandwidth with programs. The requests to activate the programs are placed in the queue.
LastAccessTime	Time when this CA Manager was last accessed for a Conditional Access operation.

ResourceManager - CaManagers - CaManager - Logging Config Page

This page allows the operator to configure the logging level for RCAS01 logging.



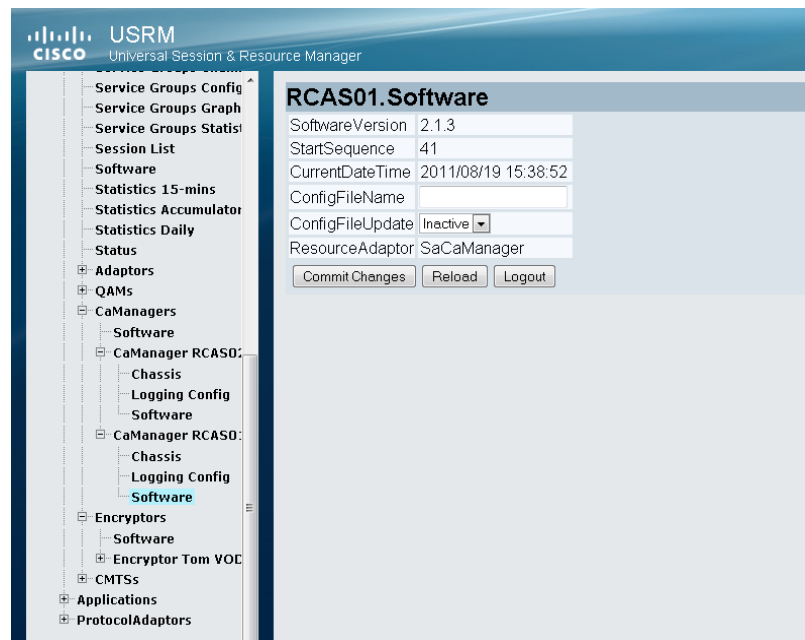
Parameters

The following table explains the ResourceManager - CaManagers - CaManager RCAS01 - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - CaManagers - CaManager - Software Page

This page displays the software information for ResourceAdaptor RCAS01 and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the ResourceManager- CaManagers - CaManager RCAS01 - Software page parameters.

Parameter	Description
Software Version	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	Set this parameter to control the ConfigFileUpdates as follows: Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ResourceManager - Encryptors - Software Page

This page displays the software information for Encryptors and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the ResourceManager- Encryptors - Software page parameters.

Parameter	Description
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	Set this parameter to control the ConfigFileUpdates as follows: Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

ResourceManager - Encryptors - Encryptor - Chassis Page

This page allows you to configure Encryptor Chassis parameters.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. On the left is a navigation tree with categories like Software, System, Virtual Interfaces, Platform, and Resource Manager. Under Resource Manager, 'Encryptor Tom VOD1 Chassis' is selected. The main content area is titled 'Tom VOD1 netcrypt.Chassis' and contains a configuration form with the following parameters:

ProductType	Netcrypt
Name	Tom VOD1 netcrypt
NumPorts	4
AlarmThreshold	1
FailThreshold	2
Protection	Manual
CtrlIpAddress	172.16.4.61
CtrlMacAddress	001ac3d0652f
AdminState	Maintenance
State	Init
InterfaceStatus	
TransactionTimeout	5000 ms
Commands	9816001
CommandFailures	4194
QueueDepth	0
MaxQueueDepth	424
AllocatedBandwidth	0.000000

At the bottom of the form are three buttons: 'Commit Changes', 'Reload', and 'Logout'.

Parameters

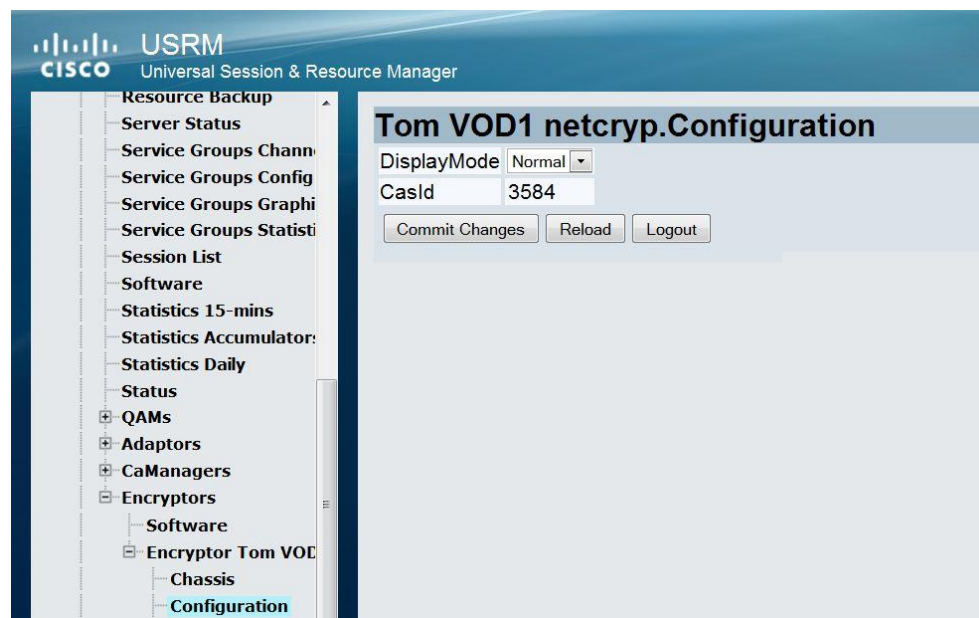
The following table explains the ResourceManager - Encryptor page parameters.

Parameter	Description
ProductType	Currently, the encryptors can be of only one type: Netcrypt.
Name	The name of the component.
NumPorts	This field displays the number of I/O ports on the encryptor.
AlarmThreshold	The alarm threshold for an edge device. When an edge device fails for this many consecutive attempts, the edge device status is set to Alarm.
FailThreshhold	The failure threshold for a device. When a device fails for this many consecutive attempts, the state is set to the Failure state. Note: You must be service level to modify this parameter.

Parameter	Description
CtrlIpAddress	Configures/ displays the IP address of the management port of the chassis.
CtrlMacAddress	Configures/ displays the MAC address of the management port of the chassis.
AdminState	The AdminState for the device.
State	The current state of the edge device. Upon startup, the state is set to Init. In this state, the resource manager attempts to establish communication with the edge device.
InterfaceStatus	Indicates the status of the interface. Fail - indicates the interface has failed and the device is not available for service. OK - indicates the interface is working properly.
Commands	The number of commands (binds and unbinds) to the edge device.
CommandFailures	The number of commands that failed.
QueueDepth	The depth of the queue for this edge device.
MaxQueueDepth	The max queue depth for the edge device. This parameter typically is large on startup in Max mode. In Max mode, the server fills the bandwidth with programs. The requests to active the programs are placed in the queue.
AllocatedBandwidth	The bandwidth allocated to each port/channel.

ResourceManager - Encryptors - Encryptor - Configuration Page

This page allows the operator to configure the DisplayMode and Casid parameters for Encryptors - Encryptor.



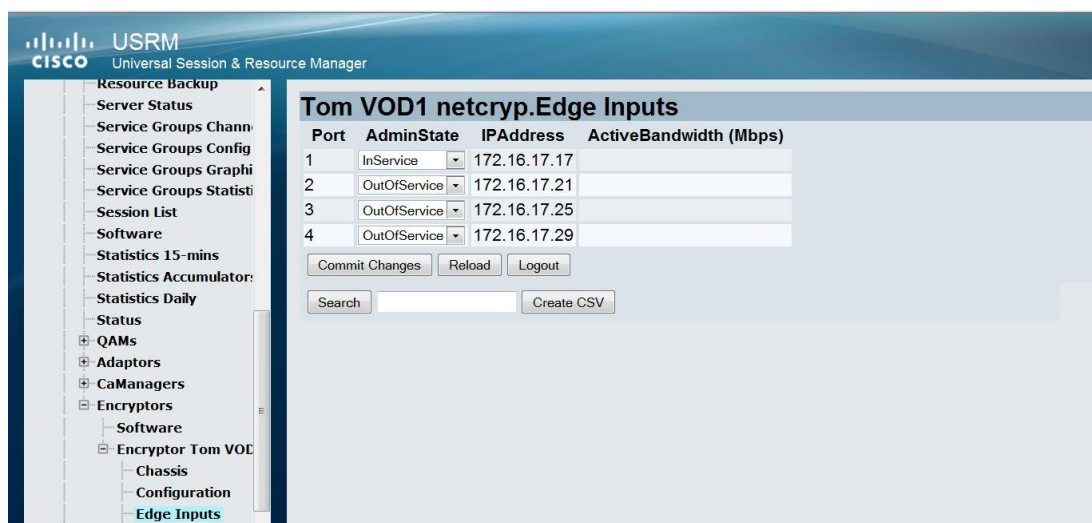
Parameters

The following table explains the ResourceManager - Encryptor - Configuration page parameters.

Parameter	Description
DisplayMode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table.
Casid	The Conditional Access ID. For Netcrypts, it is always PowerKEY (3584).

ResourceManager - Encryptors - Encryptor - Edge Inputs Page

The following illustration shows the ResourceManager - Edge Inputs page.



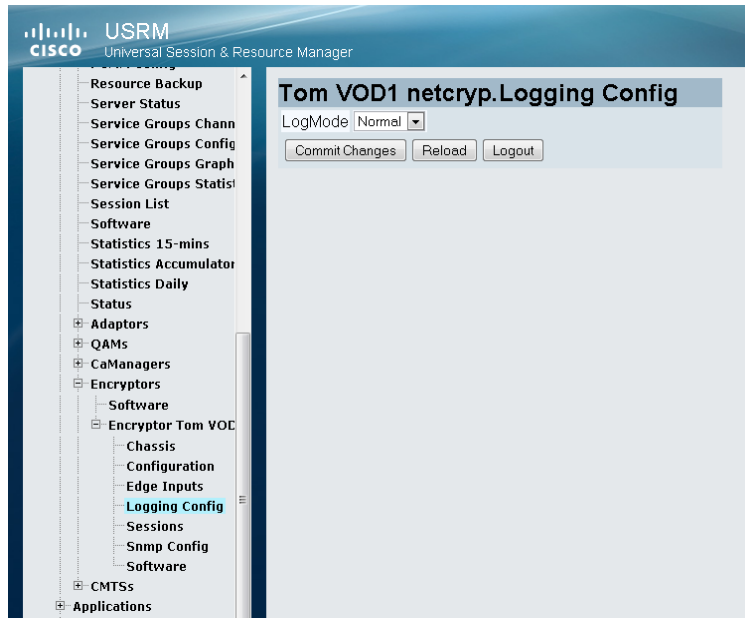
Parameters

The following table explains the ResourceManager - Encryptor - Edge Inputs page parameters.

Parameter	Description
Port	This is the Netcrypt I/O port number.
AdminState	The administrative state of the port, as follows: InService - The port is in service. The normal state. OutOfService - The port is out of service. Release - Selected to release all sessions on the port.
IPAddress	This is the IP address for the Netcrypt Gigabit port.
ActiveBandwidth (Mbps)	The active bandwidth is the bandwidth currently allocated.

ResourceManager - Encryptors - Encryptor - Logging Config Page

This page allows the operator to configure the logging level Encryptor logging.



Parameters

The following table explains the ResourceManager - Encryptor - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

ResourceManager - Encryptors - Encryptor - Sessions Page

This page displays session status for Encryptor - Sessions.

Port.Session	SessionId	State	Bandwidth (Mbps)	Create Time	AdminState
1.1	0002de0d2448/1297354198	Active	3.750000	2011/02/10 11:09:58	Allocated
1.2	0002de0d227a/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.3	0002de0d2288/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.4	0002de0d2292/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.5	0002de0d22f0/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.6	0002de0d2318/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.7	0002de0d231c/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.8	0002de0d2334/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.9	0002de0d2336/1297354099	Active	3.750000	2011/02/10 11:08:19	Allocated
1.10	0002de0d233e/1297354100	Active	3.750000	2011/02/10 11:08:20	Allocated
1.11	0002de0d2348/1297354100	Active	3.750000	2011/02/10 11:08:20	Allocated
1.12	0002de0d234a/1297354121	Active	3.750000	2011/02/10 11:08:41	Allocated

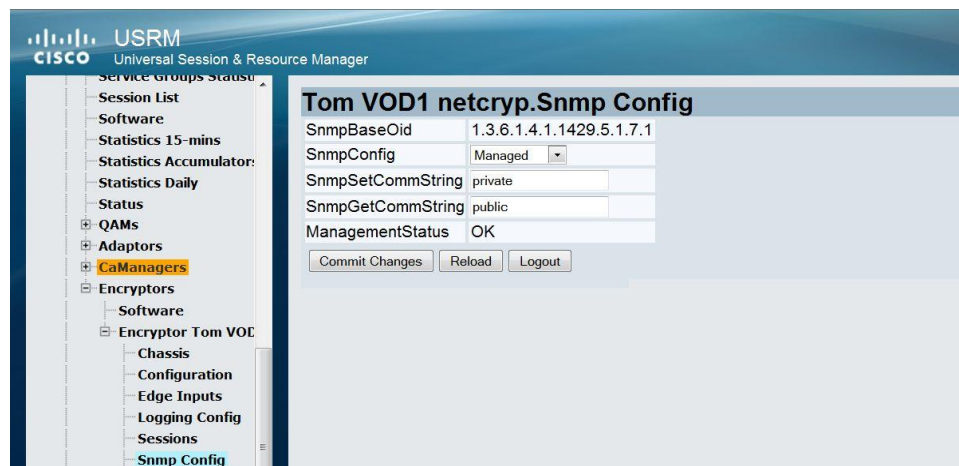
Parameters

The following table explains the ResourceManager - Encryptor - Sessions page parameters.

Parameter	Description
PortSession	A sequential number representing the port, channel, and session numbers.
SessionId	The session ID label assigned to this session.
State	Session state: active, inactive.
Bandwidth (Mbps)	The session bandwidth in Mbps.
CreateTime	The time that the session was created.
AdminState	The administrative state of the session, as follows: Allocated - The normal state of a session. Release - Selected to cause the USRM to release the session.

ResourceManager - Encryptors - Encryptor - SNMP Config Page

This page allows operators to configure SNMP parameters for Encryptor.



Parameters

The following table explains the ResourceManager - Encryptor - SNMP Config page parameters.

Parameter	Description
SnmpBaseOld	SNMP base object identifier (OID) value.
SnmpConfig	Sets the management state for the device, as follows: Managed - The device is configured via SNMP. Unmanaged - The SNMP manager is inhibited, allowing you to configure the settings directly on the USRM.
SnmpSetCommString	The SNMP SET community string. Default: private
SnmpGetCommString	The SNMP GET community string. Default: public
ManagementStatus	Indicates the status of the SNMP connection.

ResourceManager - QAM - Chassis Page

The following illustrations show the ResourceManager - QAM - Chassis pages for various QAM types.

There are some common parameters on every QAM type, and some parameters are unique for each type. Both the common and the unique parameters will be described in the Parameters table at the end of this section of illustrations.

GQAM

The screenshot shows the Cisco USRM (Universal Session & Resource Manager) web interface. The left sidebar contains a navigation tree with the following items: Configuration, Discovery Services, Hub Names, Logging Config, NLS, Network Config, PCMM Config, Resource Backup, Server Status, Service Groups Chann, Service Groups Config, Service Groups Graph, Service Groups Statist, Session List, Software, Statistics 15-mins, Statistics Accumulator, Statistics Daily, Status, Adaptors, QAMs, QAM GQAM03, Chassis, Configuration, Data GbE Ports, Logging Config, Output Ports, QAM Channels, Sessions, Snmp Config, and Software. The 'QAMs' section is expanded, and 'QAM GQAM03' is selected. The main content area displays the configuration for 'GQAM03.Chassis'.

GQAM03.Chassis	
ProductType	GQAM
Name	GQAM03
NumOutputPorts	4
NumChansPerPort	4
AlarmThreshold	1
FailThreshold	1
Protection	Automatic
CtrlIpAddress	172.16.6.4
CtrlMacAddress	0002de828890
SubnetMask	255.255.255.0
GatewayIPAddr	n/a
ConfigFile	
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000 ms
Commands	4266427
CommandFailures	38
QueueDepth	0
MaxQueueDepth	67
AllocatedBandwidth	0.000000
ActiveSessions	0
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps

At the bottom of the configuration area, there are three buttons: 'Commit Changes', 'Reload', and 'Logout'.

XDQA24

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. The left sidebar contains a navigation tree with categories like Reset, Software, System, Virtual Interfaces, Platform, and ResourceManager. The 'ResourceManager' category is expanded, showing sub-items like Activity Log, Application Policy, Configuration, Discovery Services, Hub Names, Logging Config, NLS, Network Config, PCMM Config, Resource Backup, Server Status, Service Groups Chann, Service Groups Config, Service Groups Graph, Service Groups Statist, Session List, Software, Statistics 15-mins, Statistics Accumulator, Statistics Daily, Status, Adaptors, and QAMs. The 'QAMs' category is expanded, showing 'QAM RGW-15-d' and 'QAM xDQA_Scott'. The 'QAM xDQA_Scott' is selected, and the 'Chassis' tab is active.

The main content area displays the configuration for 'xDQA_Scott.Chassis'. The configuration includes the following fields:

ProductType	xDQA-24
Name	xDQA_Scott
NumOutputPorts	12
NumChansPerPort	2
AlarmThreshold	1
FailThreshold	1
Protection	Automatic
CtrlIpAddress	172.16.4.40
DatIpAddress	172.18.40.1
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000 ms
Commands	61
CommandFailures	0
QueueDepth	0
MaxQueueDepth	3
AllocatedBandwidth	15,400,000
ActiveSessions	6
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps
EmbeddedSoftwareVersion	V04.01.39 (20/05/08)
SwitchingMode	Session

At the bottom of the configuration area, there are three buttons: 'Commit Changes', 'Reload', and 'Logout'.

GQIQAM

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. The left sidebar contains a navigation tree with categories like Reset, Software, System, Virtual Interfaces, Platform, and ResourceManager. The 'ResourceManager' category is expanded, showing sub-items like Activity Log, Application Policy, Configuration, Discovery Services, Hub Names, Logging Config, NLS, Network Config, PCMM Config, Resource Backup, Server Status, Service Groups Chann, Service Groups Config, Service Groups Graph, Service Groups Statist, Session List, Software, Statistics 15-mins, Statistics Accumulator, Statistics Daily, Status, Adaptors, and QAMs. The 'QAMs' category is expanded, showing 'QAM rfgw1-424', 'QAM D5-415', and 'QAM xDQ_425'. The 'QAM xDQ_425' is selected, and the 'Chassis' tab is active.

The main content area displays the configuration for 'xDQ_425.Chassis'. The configuration includes the following fields:

ProductType	GqiQam
Name	xDQ_425
ProductName	
AlarmThreshold	1
FailThreshold	1
Protection	Manual
CtrlIpAddress	172.16.4.25
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000 ms
Commands	5059383
CommandFailures	1
QueueDepth	1
MaxQueueDepth	9
AllocatedBandwidth	27,050,000
ActiveSessions	11
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps

At the bottom of the configuration area, there are three buttons: 'Commit Changes', 'Reload', and 'Logout'.

D6QAM

USRM
Universal Session & Resource Manager

D5-415.Chassis

ProductType	D6Qam
Name	D5-415
NumOutputPorts	192
NumChansPerPort	1
AlarmThreshold	1
FailThreshold	2
Protection	Manual
CtrlIp Address	172.16.4.15
Cost	1
ServiceState	Operational
AdminState	OutOfService
State	OK
InterfaceStatus	OK
Commands	78926
CommandFailures	0
QueueDepth	0
MaxQueueDepth	22
AllocatedBandwidth	0.000000
ActiveSessions	0
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps
VrepVersion	2
SessionTimeout	3600 Seconds
ConnectionTimeout	300 Seconds

Commit Changes Reload Logout

RFGW1

USRM
Universal Session & Resource Manager

RFGW1-1.Chassis

ProductType	RFGW1
Name	RFGW1-1
CtrlMacAddress	0023be5fc795
DeviceName	RFGW1-1
ChannelsPerPort	8
CtrlIp Address	172.16.4.8
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000 ms
Commands	16306858
CommandFailures	25
QueueDepth	0
MaxQueueDepth	135
AllocatedBandwidth	0.000000
ActiveSessions	0
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps
ActiveReleaseVersion	06.00.j2
InactiveReleaseVersion	06.00.je

Commit Changes Reload Logout

Parameters

The following table explains the ResourceManager - QAM - Chassis page parameters.

Parameter	Description
ProductType	The type of edge device. An edge device is supported through the use of a resource model and resource adaptor. This column contains the name of the resource model for this edge device, e.g., GQAM, xDQA24, TableQam, NSG8108, SEM, D6Qam, RFGW1, Netcrypt, CaMgrDncs.
Name	The user-assigned name for the resource.
NumOutputPorts	Number of output ports on the device. This is a service level parameter in the RFGW1 model, and is located on the Configuration page in the GQI model.
NumChansPerPort	Number of channels per port on the device. This parameter is located on the Configuration page in the GQI model.
AlarmThreshold	The alarm threshold for an edge device. When an edge device fails for this many consecutive attempts, the edge device status is set to Alarm. Not applicable in the RFGW1 model.
FailThreshold	The failure threshold for an edge device. When an edge device fails for this many consecutive attempts, the resource state is set to the Failure state. Not applicable in the RFGW1 model. Note: You must be service level to modify this parameter.
Protection	Sets protection of the device to Manual or Automatic. When set to Automatic, a failed QAM will be protected by a normal QAM in the same service group. This parameter is dependent on the ResourceManager.Configuration.ResourceProtection setting, and is located on the Configuration page in the RFGW1 model.
CtrlIpAddress	Configures/displays the IP address of the management port of the QAM chassis.
Cost (D6QAM only)	The cost field reported from D6.

Parameter	Description
DataIpAddress	Configures the IP address of the data port of the QAM chassis. This parameter is located on the Data GbE Ports page on the GQAM, and on the GbE Ports page on the RFGW1 models. On the GQI and D5 models, it is located on the Edge Inputs page.
CtrlMacAddress (GQAM and RFGW1)	The MAC address for the device.
SubnetMask (GQAM only)	The subnet mask value for this device.
GatewayIPAddr (GQAM only)	The gateway IP address for this device.
ConfigFile (GQAM only)	The name of the device configuration file.
ServiceState (D6QAM only)	The service state for a D6 device.
AminState	The administrative state of the device, as follows: InService - The device is in service. The normal state. OutOfService - The device is out of service. Maintenance - The device is undergoing maintenance. Release - Selected to release all sessions on the device. Delete - Selected to delete the device from the USRM resource inventory. Note: Any sessions should be released prior to deleting the device.

Parameter	Description
State	The current state of the edge device. Upon startup, the state is set to Init. In this state, the resource manager attempts to establish communication with the edge device. Upon success, the state is set to Startup. In the Startup state, the resource manager queries the edge device to determine that all required session-Ids are created. Upon success, the resource manager refreshes all bindings and transitions to the OK state, the normal state of the edge device. If the USRM has not used an edge device for the transaction timeout (typically 2000 ms), the resource manager tests that the edge device is OK using a status query. When the edge device does not perform the operation with success (command or status query), a counter is incremented. If the edge device does not succeed for n successive operations, the device is set to the Fail state. The value of n is configured as FailThreshold on this page. After failure of the resource, the resource manager then uses the startup procedure to recover the device. Note: FailThreshold is not applicable to the RFGW1.
InterfaceStatus	Indicates the status of the interface. This only applies for session-based device. Fail - indicates the interface has failed and the device is not available for service. OK - indicates the interface is working properly.
TransactionTimeout	The amount of time the server will wait for the device to respond to a command. Not applicable to the D6 QAM.
Commands	The number of commands (binds and unbinds) to the edge device.
CommandFailures	The number of commands that failed.
QueueDepth	The depth of the queue for this edge device.
MaxQueueDepth	The max queue depth for the edge device. This parameter typically is large on startup in Max mode. In Max mode, the server fills the bandwidth with programs. The requests to activate the programs are placed in the queue.
Allocated Bandwidth	The bandwidth allocated to this device.
Active Sessions	The number of active sessions.

Parameter	Description
QamGraphic	Click Display to view a bandwidth chart.
OverheadBandwidth	Configures the overhead bandwidth to be applied to all QAM channels on the device. The server software will reserve this much bandwidth on all QAM channels.
EmbeddedSoftwareVersion (XDQA24 only)	The version of the software on the unit.
SwitchingMode (XDQA24 only)	Sets the switching mode for the device, as follows: UdpPort - This mode indicates a table-based QAM device. Session - This mode indicates a session-based QAM device.
VrepVersion (D6QAM only)	The version of the VREP protocol as reported on the D6 interface.
SessionTimeout (D6QAM only)	The session timeout for this device. The session timeout is the minimum time between session keep-alive messages for the session. The session is released if a keep-alive message is not received within the minimum time period.
ConnectionTimeout (D6QAM only)	The connection timeout for this device. The connection timeout is the minimum time between connection keep-alive messages for the connection. The connection is released if a keep-alive message is not received within the minimum time period.
ProductName (GQIQAM Only)	User-supplied data typically used to identify the type of device.
DeviceName (RFGW1 Only)	Sets/displays the name given to the device. The name can be set from the USRM WebUI or RFGW1 WebUI.
ActiveReleaseVersion (RFGW1 Only)	The release version currently running on the device.
InactiveReleaseVersion (RFGW1 Only)	Another version in the memory of the RFGW1, which can be activated from the RFGW1 WebUI.

ResourceManager - QAM - Configuration Page

The following illustrations show the ResourceManager - QAM - Configuration pages for various QAM types.

There are some common parameters on every QAM type, and some parameters are unique for each type. Both the common and unique parameters will be described in the Parameters table at the end of this section of illustrations.

GQAM



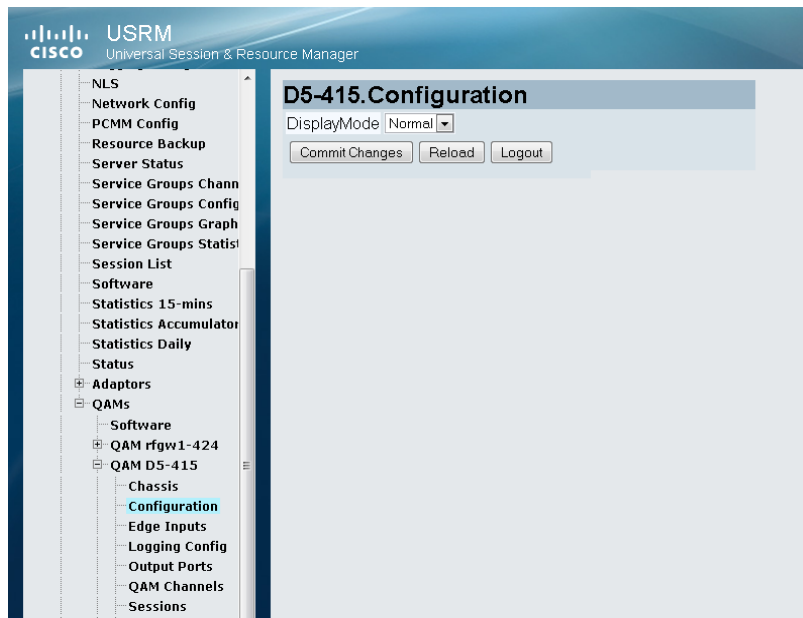
XDQA24

The screenshot shows the Cisco USRM (Universal Session & Resource Manager) web interface. The left sidebar contains a navigation tree with the following items: Network Config, PCMM Config, Resource Backup, Server Status, Service Groups Chann, Service Groups Config, Service Groups Graph, Service Groups Statist, Session List, Software, Statistics 15-mins, Statistics Accumulator, Statistics Daily, Status, Adaptors, QAMs, Software, QAM RGW-15-d, QAM xDQA_Scott, Chassis, Configuration (highlighted), Gbe Link Status, Logging Config, Output Ports, Power Supplies, QAM Cards, and QAM Channels. The main content area is titled "xDQA_Scott.Configuration" and contains the following fields: DisplayMode (Normal), ProgramNumberMin (2), ProgramNumberMax (255), and ProgramNumberMult (2). At the bottom of the configuration area are three buttons: Commit Changes, Reload, and Logout.

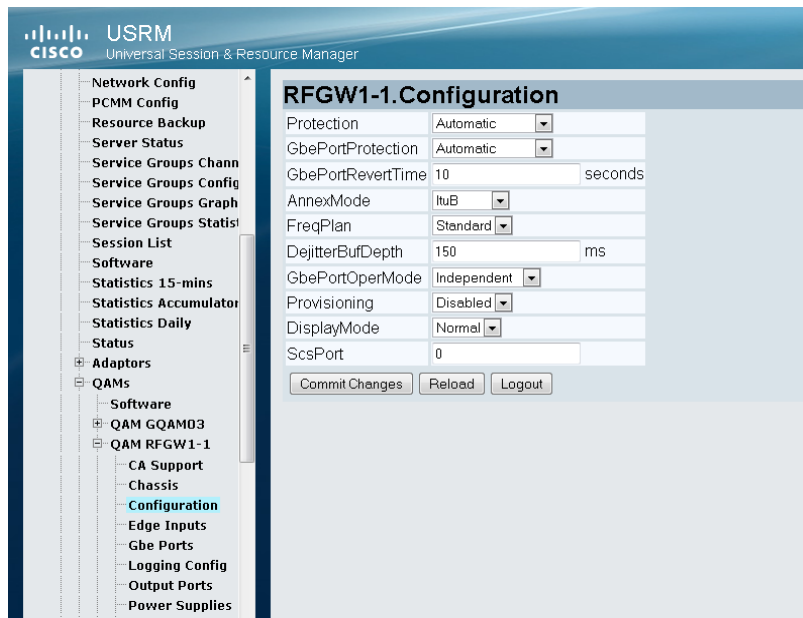
GQIQAM

The screenshot shows the Cisco USRM (Universal Session & Resource Manager) web interface. The left sidebar contains a navigation tree with the following items: NLS, Network Config, PCMM Config, Resource Backup, Server Status, Service Groups Chann, Service Groups Config, Service Groups Graph, Service Groups Statist, Session List, Software, Statistics 15-mins, Statistics Accumulator, Statistics Daily, Status, Adaptors, QAMs, Software, QAM rfgw1-424, QAM D5-415, QAM xDQ_425, Chassis, Configuration (highlighted), Edge Inputs, Logging Config, Output Ports, and QAM Channels. The main content area is titled "xDQ_425.Configuration" and contains the following fields: DisplayMode (Normal), OutputPortBase (1), NumberOfOutputPorts (18), ChannelsPerPort (8), InputPortBase (0), Encryption (None), CasId (0), and ScsPort (1500). At the bottom of the configuration area are three buttons: Commit Changes, Reload, and Logout.

D6QAM



RFGW1



Parameters

The following table explains the ResourceManager - QAM - Configuration page parameters.

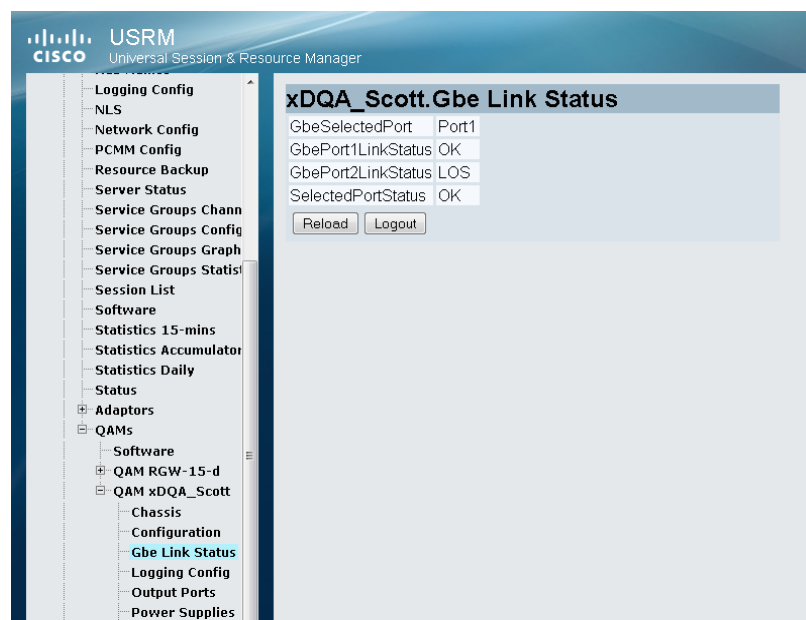
Parameter	Description
DisplayMode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table. Other parameters not in a table may also be displayed.
ProgramNumberMin (XDQA24 only)	The first program number used on the QAM channel.
ProgramNumberMax (XDQA24 only)	The last program number used on the QAM channel.
ProgramNumberMult (XDQA24 only)	The program number multiplier. The UDP port is computed as the (program-number minus ProgramNumberMid) times the ProgramNumberMult.
OutputPortBase (GQIQAM only)	The number used to refer to the first output port. The supported values are zero and one. The protocol specification does not explicitly state the beginning value. Some devices use zero. Other devices use one.
NumberOfOutputPorts (GQIQAM only)	The number of physical output ports on the QAM device.
ChannelsPerPort (GQIQAM only)	The number of QAM channels per physical output port on the QAM device.
InputPortBase (GQIQAM only)	The number used to refer to the first input port. The supported values are zero and one. The protocol specification does not explicitly state the beginning value. Some devices use zero. Other devices use one.
Encryption (GQAM and GQIQAM Only)	Displays the type of encryption supported by the QAM device.
CasId (GQAM Only)	The Conditional Access ID.
CaSystemId	ID for the Conditional Access System.

Parameter	Description
Protection (RFGW1 Only)	Sets protection of the device to Manual or Automatic. When set to Automatic, a failed QAM will be protected by a normal QAM in the same service group. This is dependent on the ResourceManager.Configuration.ResourceProtection setting. On all other QAM types, this parameter is on the Chassis page.
GbePortProtection (RFGW1 Only, USRM 1.7.1 and above)	The USRM will provide Gbe Port Protection for the RFGW1. When a GbE Port reports a LOS Link state, the USRM will move sessions to other GbE ports on the same device, as bandwidth allows.
GbePortRevertTime (RFGW1 Only, USRM 1.7.1 and above)	The amount of time the USRM waits before using a GbE port that has recovered from the LOS link state. This ensures that adequate time has elapsed for a complete restoration of the link.
AnnexMode (RFGW1 Only)	The ITU annex in use.
FequPlan (RFGW1 Only)	Type frequency plan standard in use.
DejitterBufDepth (RFGW1 Only)	The amount of buffer used to dejitter the incoming signal.
GbePortOperMode (RFGW1 Only)	Sets/displays the Gbe Port configuration of the RFGW1. Independent or Dual Port Pair.
Provisioning (RFGW1 Only)	Not used in this version of USRM software.

ResourceManager - QAM - Gbe Link Status Page (xDQA24 Only)

The following illustration shows the ResourceManager - QAM - Gbe Link Status page.

Note: This page is for xDQA24s only.



Parameters

The following table explains the ResourceManager - QAM - Gbe Link Status page parameters.

Parameter	Description
GbeSelectedPort	Indicates which of two GbE ports is active.
GbePort1LinkStatus	Indicates the status of the first GbE port.
GbePort2LinkStatus	Indicates the status of the second GbE port.
SelectedPortStatus	Indicates the status of the active GbE port.

ResourceManager - QAM - Data Gbe Ports Page (GQAM Only)

The following illustration shows the ResourceManager - GQAM - Data Gbe Ports page.

Note: This page is for GQAMs only.



Parameters

The following table explains the ResourceManager - GQAM - Data Gbe Ports page parameters.

Note:

- You must be service level to set parameters on a GQAM device.
- Not all versions of GQAM software support all parameters.

Parameter	Description
DataIpAddress	Sets/displays the IP address of the data port of the QAM chassis.

Parameter	Description
RedundancyMode	Sets/displays the redundancy mode as follows: Legacy/ASIEabled - This mode emulates the original GQAM functionality with a single GbE port and enabled ASI ports. DualWithVIP - This mode enables both GbE ports using a virtual IP address. A single GbE port is active. If the active port fails, the alternate GbE port is enabled. The active GbE port is bound to the virtual IP address. The effect is that the IP address is constant independent of which port is enabled. DualWithoutVIP - This mode enables both GbE ports. A virtual IP address is not configured. Each GbE port has its own IP address.
DataIpAddress2	Sets/displays the IP address of the second data port of the QAM chassis.
VirtualIPAddr	Sets/displays a virtual address for the dual GigE ports.
ActiveGigEPort	Reports which GigE port is active.
ActiveIPAddress	Reports the active IP address.
GbeSubnetMask	The subnet mask for the GbE port.

ResourceManager - QAM - Edge Inputs Page

The following illustrations show the ResourceManager - QAM - Edge Inputs page for various QAM types.

GQIQAM

xDQ_425.Edge Inputs

Port	IPAddress	AdminState	ActiveBandwidth (Mbps)
1	172.18.25.4	InService	22.700000

Buttons: Commit Changes, Reload, Logout, Search, Create CSV

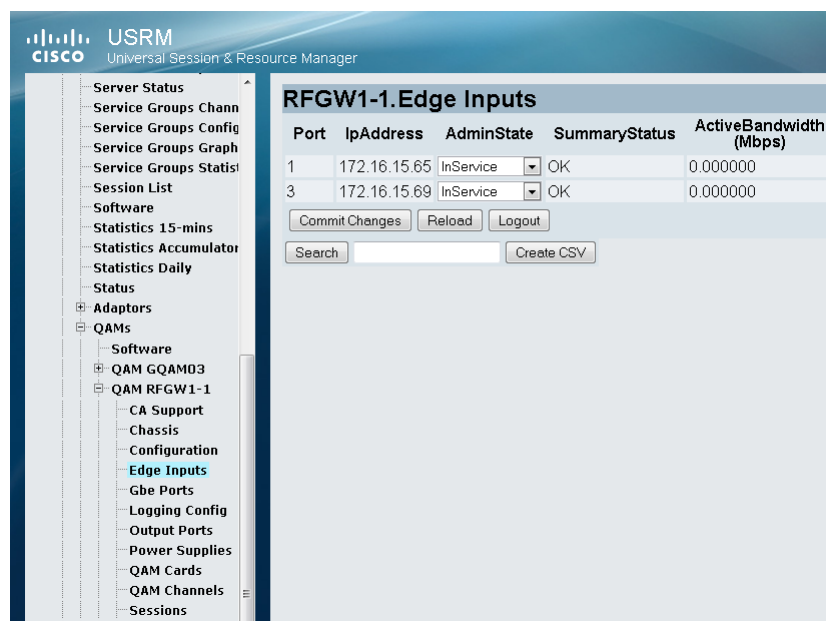
D6QAM

D5-415.Edge Inputs

Port	PortId	IPAddress	AdminState	SubnetMask	Bandwidth (Mbps)	ActiveBandwidth (Mbps)	GroupName
1	257	172.18.58.1	InService	255.255.255.252	1000.000	0.000000	G1
2	513	172.18.59.1	InService	255.255.255.252	1000.000	0.000000	John3

Buttons: Commit Changes, Reload, Logout, Search, Create CSV

RFGW1



Parameters

The following table explains the ResourceManager - QAM - Edge Inputs page parameters.

Parameter	Description
Port	The table entry number beginning with one.
PortID (D6QAM only)	The reported PortId for a D6 QAM.
IPAddress	The IP address of the port.
AdminState	The AdminState for the port.
Summary Status (RFGW1 only)	The calculated Summary Status for the port.
SubnetMask (D6QAM only)	The reported subnet mask for the port.
Bandwidth (D6QAM only)	The reported bandwidth for the port for D6 QAM devices.
ActiveBandwidth (Mbps)	The computed active bandwidth for the port.
GroupName (D6QAM only)	The reported group name for the port.

ResourceManager - RFGW1 QAM - RFGW1 GbePorts Page

The following illustration shows the ResourceManager - QAM - Gbe Ports page for the RFGW1 QAM.

RFGW1-1.Gbe Ports

Port	IpAddress	InterfaceState	PortMask	PortMacAddress	LinkStatus	LinkRecoveryTime
1	172.16.15.65	Connected	255.255.255.252	0023be5fc797	OK	n/a
2	172.16.15.73	NotConnected	255.255.255.0	0023be5fc798	n/a	2011/04/19 15:24:26
3	172.16.15.69	Connected	255.255.255.252	0023be5fc799	OK	n/a
4	172.16.15.77	NotConnected	255.255.255.0	0023be5fc79a	n/a	2011/06/17 15:12:03

Buttons: Commit Changes, Reload, Logout, Search, Create CSV

Parameters

The following table explains the ResourceManager - RFGW1 QAM - Gbe Ports page parameters.

Parameter	Description
Port	The table entry number, beginning with 1.
IPAddress	The IP address of the port.
InterfaceStatus	Set by the user to indicate if this Gbe interface is physically connected. Possible values are Connected and NotConnected. When set to Connected, the USRM asserts alarms based on LinkStatus and performs Gbe Port Protection if so configured. When set to NotConnected, the USRM will not assert alarms or perform Gbe Port Protection.
PortMask	The Subnet Mask for the Gbe port.
PortMacAddress	The MAC Address for the Gbe port.
LinkStatus	Indicates the status of the Gbe port connection. Possible values are OK and LOS. A LOS will cause a Gbe Port Protection event if so configured.

Parameter	Description
LinkRecoveryTime	The time the Gbe Port LinkStatus recovered from a LOS event. In the case of a Gbe Port Protection event, the LinkrecoveryTime and GbePortRevertTime settings are used to determine when the USRM will begin using the Gbe port again.

ResourceManager - QAM - Output Ports Page

The following illustration shows the ResourceManager - QAM - Output Ports page.

Note: This example shows the page for a GQAM. The GQIQAM and D6 types are similar.

USRM
Universal Session & Resource Manager

Service Groups Graph

- Service Groups Statist
- Session List
- Software
- Statistics 15-mins
- Statistics Accumulator
- Statistics Daily
- Status
- Adaptors
 - Software
 - ResourceAdaptor D
 - ResourceAdaptor S
 - ResourceAdaptor G
 - ResourceAdaptor S
 - ResourceAdaptor S
 - ResourceAdaptor S
 - ResourceAdaptor C
- QAMs
 - Software
 - QAM GQAM03
 - Chassis
 - Configuration
 - Data GbE Ports
 - Logging Config
 - Output Ports
 - QAM Channels
 - Sessions
 - Session Config

GQAM03.Output Ports

Port	ServiceGroupId	AdminState	AllocatedBandwidth (Mbps)
1	0	InService	0.000000
2	43	InService	0.000000
3	16	InService	0.000000
4	0	InService	0.000000

Commit Changes Reload Logout

Search Create CSV

Note: This example shows the page for an xDQA.

USRM
Universal Session & Resource Manager

Logging Config

- NLS
- Network Config
- PCMM Config
- Resource Backup
- Server Status
- Service Groups Chann
- Service Groups Config
- Service Groups Graph
- Service Groups Statist
- Session List
- Software
- Statistics 15-mins
- Statistics Accumulator
- Statistics Daily
- Status
- Adaptors
 - Software
 - QAM RGW-15-d
 - QAM xDQA_Scott
 - Chassis
 - Configuration
 - Gbe Link Status
 - Logging Config
 - Output Ports
 - Power Supplies

xDQA_Scott.Output Ports

Port	ServiceGroupId	ModulationFormat	AdminState	AllocatedBandwidth (Mbps)
1	11	QAM-256	InService	15.400000
2	0	QAM-256	InService	0.000000
3	0	QAM-256	InService	0.000000
4	0	QAM-256	InService	0.000000

Commit Changes Reload Logout

Search Create CSV

Note: This example shows the page for an RFGW1.

Port	ServiceGroupId	ModulationFormat	AdminState	OutputLevel (dBmV)	ChannelMode	ChannelMode2	PortControl	AllocatedBandwidth (Mbps)
1	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
2	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
3	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
4	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
5	16	QAM-256	InService	50.0	Quad	Quad	On	0.000000
6	16	QAM-256	InService	50.0	Quad	Quad	On	0.000000
7	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
8	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
9	0	QAM-256	InService	50.0	Quad	None	On	0.000000
10	0	QAM-256	InService	50.0	Quad	None	On	0.000000
11	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
12	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000

Parameters

The following table explains the ResourceManager - QAM - Output Ports page parameters.

Parameter	Description
Port	The output port on the edge device.
ServiceGroupId	The identifier for the service group. When a client registers with the server or requests a service, the client provides the service group Id as part of the request. The server organizes STBs by service group.
ModulationFormat (XDQA24 and RFGW1 only)	The modulation format, QAM-64 or QAM-256 for the xDQA. The RFGW1 adds Unknown and Other.
AdminState	The administrative state of the port, as follows: InService - The port is in service. The normal state. OutOfService - The port is out of service. Release - Selected to release all sessions on the port.
OutputLevel (RFGW1 only)	Sets/ displays the output level of the carriers on the port. Note: The valid range is dependent on the ChannelMode setting.
ChannelMode (RFGW1 only)	Sets/ displays the number of RF carriers per output port: None, Single, Dual, Triple, or Quad.
ChannelMode2 (RFGW1 only)	When the RFGW1 is licensed for 96 channels, this parameter sets/ displays the number of RF carriers per output port: None, Single, Dual, Triple, or Quad.
PortControl (RFGW1 only)	Sets/ displays the RF output status for the port. This parameter is used in the SummaryStatus parameter on the QAM Cards page.

Parameter	Description
AllocatedBandwidth (Mbps)	The allocated bandwidth in Mbps.

ResourceManager - QAM - Power Supplies Page

The following illustration shows the ResourceManager - QAM - Power Supplies page.

Note: This page is for xDQA24s and RFGW1s only.

RFGW1



xDQA24

Parameters

The following table explains the ResourceManager - QAM - Power Supplies page parameters.

Parameter	Description
MainPowerSupplyStatus	The status of the main power supply, as follows: OK - The power supply is good. The RFGW1 will display Present. Fail - The power supply has failed or is not present. The RFGW1 will display Absent if not installed.
BackupPowerSupplyStatus	The status of the main power supply, as follows: OK - The power supply is good. The RFGW1 will display Present. Fail - The power supply has failed or is not present. The RFGW1 will display Absent if not installed.

ResourceManager - QAM - QAM Cards Page

The following illustration shows the ResourceManager - QAM - QAM Cards page.

Note: This page is for xDQA24s and RFGW1s only.

xDQA24

USRM Universal Session & Resource Manager

xDQA_Scott.QAM Cards

Card	EquipStatus
1	Installed
2	Installed
3	NotInstalled
4	NotInstalled
5	NotInstalled
6	NotInstalled

Commit Changes Reload Logout

Search Create CSV

RFGW1

USRM Universal Session & Resource Manager

RFGW1-1.QAM Cards

Card	EquipStatus	SummaryStatus
1	Installed	OK
2	Installed	OK
3	Installed	OK
4	Installed	OK
5	Installed	OK
6	Installed	OK

Commit Changes Reload Logout

Search Create CSV

Parameters

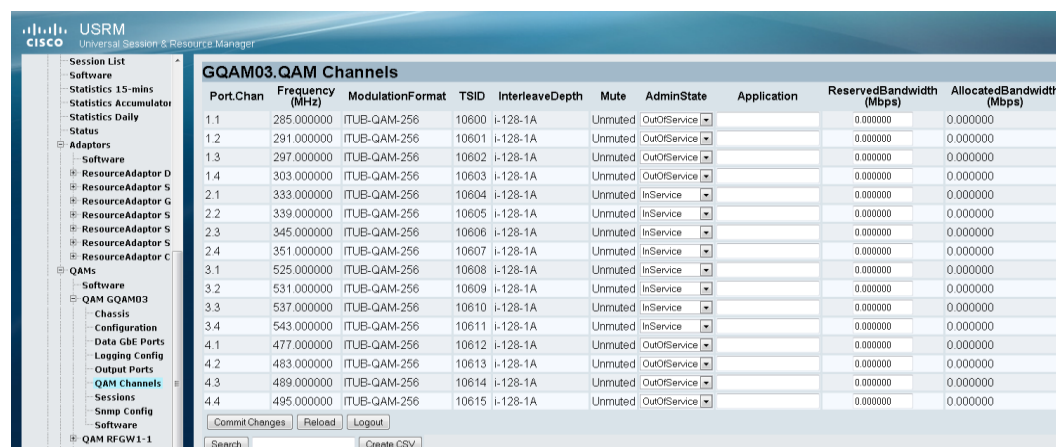
The following table explains the ResourceManager - QAM - QAM Cards page parameters.

Parameter	Description
Card	The sequential QAM card number in the list.
EquipStatus	The card status, either Installed or NotInstalled .
SummaryStatus (RFGW1 only)	Summary status for the card.

ResourceManager - QAM - QAM Channels Page

The following illustrations show the ResourceManager - QAM -QAM Channels pages for various QAM types.

GQAM

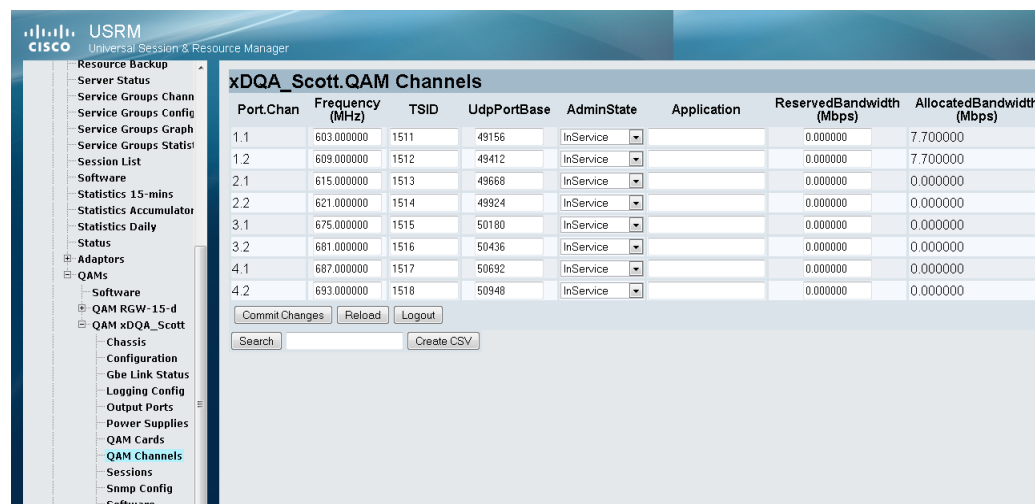


GQAM03.QAM Channels

Port.Chan	Frequency (MHz)	ModulationFormat	TSID	InterleaveDepth	Mute	AdminState	Application	ReservedBandwidth (Mbps)	AllocatedBandwidth (Mbps)
1.1	285.000000	ITUB-QAM-256	10600	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
1.2	291.000000	ITUB-QAM-256	10601	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
1.3	297.000000	ITUB-QAM-256	10602	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
1.4	303.000000	ITUB-QAM-256	10603	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
2.1	333.000000	ITUB-QAM-256	10604	i-128-1A	Unmuted	InService		0.000000	0.000000
2.2	339.000000	ITUB-QAM-256	10605	i-128-1A	Unmuted	InService		0.000000	0.000000
2.3	345.000000	ITUB-QAM-256	10606	i-128-1A	Unmuted	InService		0.000000	0.000000
2.4	351.000000	ITUB-QAM-256	10607	i-128-1A	Unmuted	InService		0.000000	0.000000
3.1	525.000000	ITUB-QAM-256	10608	i-128-1A	Unmuted	InService		0.000000	0.000000
3.2	531.000000	ITUB-QAM-256	10609	i-128-1A	Unmuted	InService		0.000000	0.000000
3.3	537.000000	ITUB-QAM-256	10610	i-128-1A	Unmuted	InService		0.000000	0.000000
3.4	543.000000	ITUB-QAM-256	10611	i-128-1A	Unmuted	InService		0.000000	0.000000
4.1	477.000000	ITUB-QAM-256	10612	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
4.2	483.000000	ITUB-QAM-256	10613	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
4.3	489.000000	ITUB-QAM-256	10614	i-128-1A	Unmuted	OutOfService		0.000000	0.000000
4.4	495.000000	ITUB-QAM-256	10615	i-128-1A	Unmuted	OutOfService		0.000000	0.000000

Buttons: Commit Changes, Reload, Logout, Search, Create CSV

XDQA24



xDQA_Scott.QAM Channels

Port.Chan	Frequency (MHz)	TSID	UdpPortBase	AdminState	Application	ReservedBandwidth (Mbps)	AllocatedBandwidth (Mbps)
1.1	603.000000	1511	49156	InService		0.000000	7.700000
1.2	609.000000	1512	49412	InService		0.000000	7.700000
2.1	615.000000	1513	49668	InService		0.000000	0.000000
2.2	621.000000	1514	49924	InService		0.000000	0.000000
3.1	675.000000	1515	50180	InService		0.000000	0.000000
3.2	681.000000	1516	50436	InService		0.000000	0.000000
4.1	687.000000	1517	50692	InService		0.000000	0.000000
4.2	693.000000	1518	50948	InService		0.000000	0.000000

Buttons: Commit Changes, Reload, Logout, Search, Create CSV

GQIQAM

USRM Universal Session & Resource Manager

xDQ_425.QAM Channels

Port.Chan	TSID	Frequency (MHz)	ModulationFormat	AdminState	Application	ReservedBandwidth (Mbps)	AllocatedBandwidth (Mbps)
1.1	1	651.000000	QAM-256	InService		0.000000	7.700000
1.2	2	657.000000	QAM-256	InService		0.000000	7.700000
1.3	3	663.000000	QAM-256	InService		0.000000	7.700000
1.4	4	669.000000	QAM-256	InService		0.000000	0.200000
1.5	5	675.000000	QAM-256	OutOfService		0.000000	0.000000
1.6	6	681.000000	QAM-256	OutOfService		0.000000	0.000000
1.7	7	687.000000	QAM-256	OutOfService		0.000000	0.000000
1.8	8	693.000000	QAM-256	OutOfService		0.000000	0.000000

Commit Changes Reload Logout

Search Create CSV

D6QAM

USRM Universal Session & Resource Manager

D5-415.QAM Channels

Chan	TSID	Frequency (MHz)	ModulationFormat	Service	AdminState	Application	ReservedBandwidth (Mbps)	ReservedSessions	AllocatedBandwidth (Mbps)	UdpPortBase
1	14011	261.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
2	14021	267.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
3	14031	273.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
4	14041	279.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
5	14051	285.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
6	14061	291.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
7	14191	369.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
8	14201	375.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
9	14211	381.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
10	14221	387.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
11	14251	411.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
12	14261	417.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
13	14271	423.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
14	14281	429.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
15	14311	447.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
16	14321	453.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
17	14331	459.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
18	14341	465.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
19	14371	477.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
20	14381	483.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
21	14391	489.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
22	14401	495.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
23	14431	519.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
24	14441	525.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
25	14451	531.000000	QAM-256	Any	InService		0.000000	0	0.000000	0
26	14461	537.000000	QAM-256	Any	InService		0.000000	0	0.000000	0

Commit Changes Reload Logout

Prev Page Next Page Search Create CSV

RFGW1

Port.Chan	SummaryStatus	Frequency (MHz)	TSID	RfOutput	RfEnable	AdminState	Application	MapMode	ReservedBandwidth (Mbps)	AllocatedBandwidth (Mbps)
1.1	OK	285.000000	1001	On	On	OutOfService		Sdv	0.000000	0.000000
1.2	OK	291.000000	1002	On	On	OutOfService		Sdv	0.000000	0.000000
1.3	OK	297.000000	1003	On	On	OutOfService		Sdv	0.000000	0.000000
1.4	OK	303.000000	1004	On	On	OutOfService		Sdv	0.000000	0.000000
1.5	OK	405.000000	1049	On	On	OutOfService		Sdv	0.000000	0.000000
1.6	OK	411.000000	1050	On	On	OutOfService		Sdv	0.000000	0.000000
1.7	OK	417.000000	1051	On	On	OutOfService		Sdv	0.000000	0.000000
1.8	OK	423.000000	1052	On	On	OutOfService		Sdv	0.000000	0.000000
2.1	OK	309.000000	1005	On	On	OutOfService		Sdv	0.000000	0.000000
2.2	OK	315.000000	1006	On	On	OutOfService		Sdv	0.000000	0.000000
2.3	OK	321.000000	1007	On	On	OutOfService		Sdv	0.000000	0.000000
2.4	OK	327.000000	1008	On	On	OutOfService		Sdv	0.000000	0.000000
2.5	OK	405.000000	1053	On	On	OutOfService		Sdv	0.000000	0.000000
2.6	OK	411.000000	1054	On	On	OutOfService		Sdv	0.000000	0.000000
2.7	OK	417.000000	1055	On	On	OutOfService		Sdv	0.000000	0.000000
2.8	OK	423.000000	1056	On	On	OutOfService		Sdv	0.000000	0.000000
3.1	OK	651.000000	20017	On	On	OutOfService		Sdv	0.000000	0.000000
3.2	OK	657.000000	20018	On	On	OutOfService		Sdv	0.000000	0.000000
3.3	OK	663.000000	20019	On	On	OutOfService		Sdv	0.000000	0.000000
3.4	OK	669.000000	20020	On	On	OutOfService		Sdv	0.000000	0.000000
3.5	OK	675.000000	20021	On	On	OutOfService		Sdv	0.000000	0.000000
3.6	OK	681.000000	20022	On	On	OutOfService		Sdv	0.000000	0.000000
3.7	OK	687.000000	20023	On	On	OutOfService		Sdv	0.000000	0.000000
3.8	OK	693.000000	20024	On	On	OutOfService		Sdv	0.000000	0.000000
4.1	OK	357.000000	1013	On	On	OutOfService		Sdv	0.000000	0.000000

Parameters

The following table explains the ResourceManager - QAM -QAM Channels page parameters.

Parameter	Description
Port.Chan	A sequential number representing the port and channel. Note: On the D6 QAM, each port is an individual RF carrier (channel).
Frequency (MHz)	The frequency on which the channel is broadcast.
ModulationFormat (GQAM, GQIQAM, and D6 only)	The modulation format; QAM-64, QAM-128, QAM-256.
TSID	The transport stream identifier.
InterleaveDepth (GQAM only)	The interleaver configured depth setting. This parameter is only used when the USRM provides provisioning services for the GQAM.
Mute (GQAM only)	The state of the output mute control. This parameter is only used when the USRM provides provisioning services for the GQAM.
Service	The type of service provided on the port-channel, as follows: Any - Any available service. Vod - Video On Demand. Sdv - Switched Digital Video

Parameter	Description
UdpPortBase (XDQA24 and D6QAM only)	The User Datagram Protocol (UDP) communication protocol port number.
AdminState	The administrative state of the port/channel, as follows: InService - The device is in service. The normal state. OutOfService - The device is out of service. Release - Selected to release all sessions on the device.
ReservedBandwidth (Mbps)	The bandwidth to be reserved for the port/channel.
AllocatedBandwidth (Mbps)	The bandwidth allocated to the port/channel.
ReservedSessions (D6 only)	
RfOutput (RFGW1 only)	A calculated value incorporating the RfEnable state and Output Ports.PortControl state.
RfEnable (RFGW1 only)	Enable or disable the individual RF channel.
MapMode (RFGW1 only)	The setting on the RFGW1 that determines its mode of operation: Video, SDV, Data, or NGOD.

ResourceManager - QAM - Sessions Page

The following illustrations show the ResourceManager - QAM - Sessions page.

Note: This example shows the page for an RFGW1-1 QAM. Other QAM types are similar.

The screenshot displays the Cisco USRM (Universal Session & Resource Manager) web interface. The left sidebar shows a navigation tree with categories like Statistics, Adapters, QAMs, and Software. Under QAMs, 'QAM RFGW1-1' is selected, and 'Sessions' is highlighted. The main content area is titled 'RFGW1-1.Sessions' and contains a table with the following columns: Port, Chan, Session, SessionId, Bandwidth (Mbps), CreateTime, State, Status, UserId, VaspId, AdminState, and CasId. Below the table header, there are buttons for 'Commit Changes', 'Reload', and 'Logout', along with a 'Search' input field and a 'Create CSV' button. The table body is currently empty.

Port	Chan	Session	SessionId	Bandwidth (Mbps)	CreateTime	State	Status	UserId	VaspId	AdminState	CasId
------	------	---------	-----------	------------------	------------	-------	--------	--------	--------	------------	-------

Parameters

The following table explains the ResourceManager - QAM - Sessions page parameters.

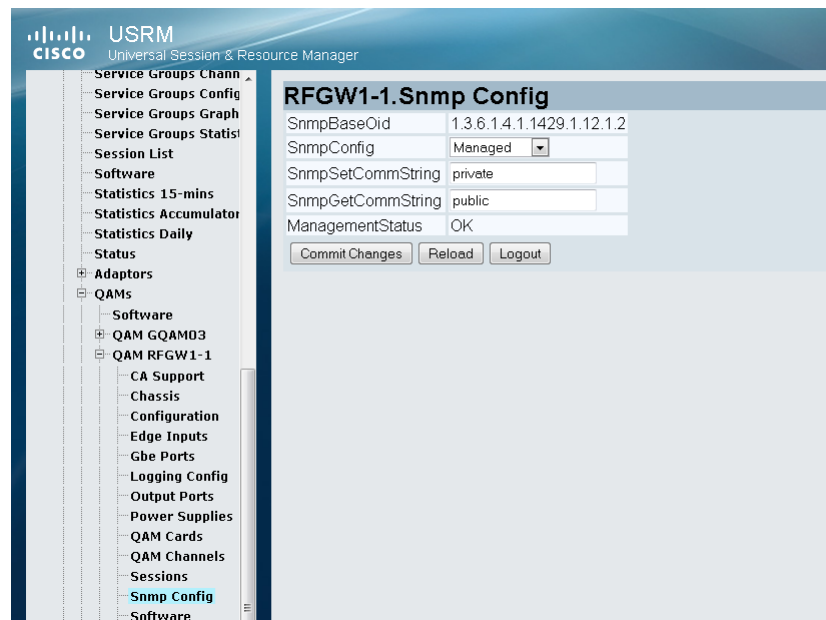
Parameter	Description
Port.Chan.Session	A sequential number representing the port, channel, and session numbers.
SessionId	The session ID label assigned to this session.
Service	The type of service, SDV or VOD.
Bandwidth (Mbps)	The session bandwidth in Mbps.
CreateTime	The date and time when the session was created.
State	Session state; active, inactive.
Status (NGOD QAMs only)	The status of a session on the QAM, as follows: Source# - identifies one of three possible sources from which the QAM is receiving the multicast. NetworkFail - indicates that the QAM reported a failure to acquire video or a problem with the multicast session into the QAM.
UserId	The IP address of the client that requested the session.
VaspId	The VASP ID of the server that requested the session. This only applies in DSMCC architectures.
AdminState	The administrative state of the session, as follows: Allocated - the normal state of a session. Release - selected to cause the USRM to release the session.
Casid	The Conditional Access ID.
PidRemap	A flag that indicates if PIDs are to be remapped. Normally, the QAM remuxes multiple incoming streams and assigns PID values. Some carousels, however, require that the PID values not be changed. OK - indicates the normal operation. Inhibit - indicates that PID values are not to be changed for this stream.
EdgeInputAddr	The address of the input port on the QAM.
MulticastAddr	The multicast destination address.
SrcAddr1	The first of three source addresses. At least one address must be assigned for IGMP operation. These three addresses are used in IGMPv3 architectures.

Parameter	Description
SrcAddr2	The second of three source addresses.
SrcAddr3	The third of three source addresses.
Encryptor	The Conditional Access ID.
InProgNum	The program number of the incoming stream for this session.
OutProgNum	The program number to be assigned for the outgoing stream.
InUdpPort	The UDP port number of the incoming stream.
SessionGroup	The SessionGroup name assigned to the session. In NGOD architectures, the request assigns a SessionGroup name to a session to identify the owner of the session.
Timeout (seconds)	The session timeout. The session is released if a keep-alive is not received for this time period.

ResourceManager - QAM - Snmp Config Page

The USRM manages devices (QAMs, encryptors, etc.) used to deliver services. An integral SNMP manager provides SNMP management services allowing software components to issue SNMP Get and Set commands. Each device has its own SNMP Config page for use in configuring the device.

The following illustration shows an example ResourceManager - QAM - Snmp Config page.



Parameters

The following table explains the ResourceManager - QAM - Snmp Config page parameters.

Parameter	Description
SnmpBaseOid	The device SNMP base object identifier (OID), which allows the USRM to query the device to obtain its configuration.
SnmpConfig	Sets the management state for the device, as follows: Managed - the device is configured via SNMP. Unmanaged - the SNMP manager is inhibited, allowing you to configure the settings directly on the USRM.
SnmpSetCommString	The SNMP SET community string. Default: private

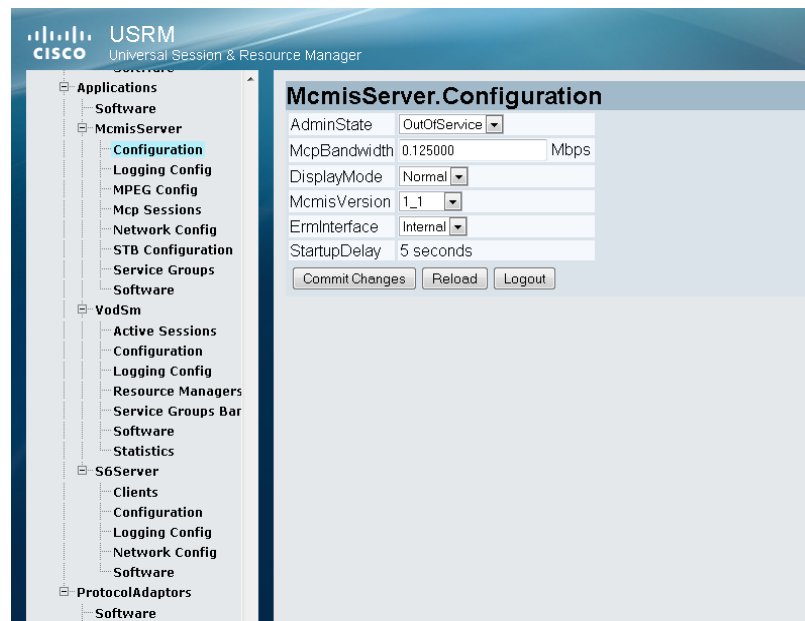
Parameter	Description
SnmppGetCommString	The SNMP GET community string. Default: public
ManagementStatus	Indicates the status of the SNMP connection.

USRM Web Interface - Application Components

Note: Not all USRM configurations have all the components described below.

McmisServer - Configuration Page

This page allows operators to configure the basic operation for the Mini-carousel Multicast Stream Server (McmisServer).



Parameters

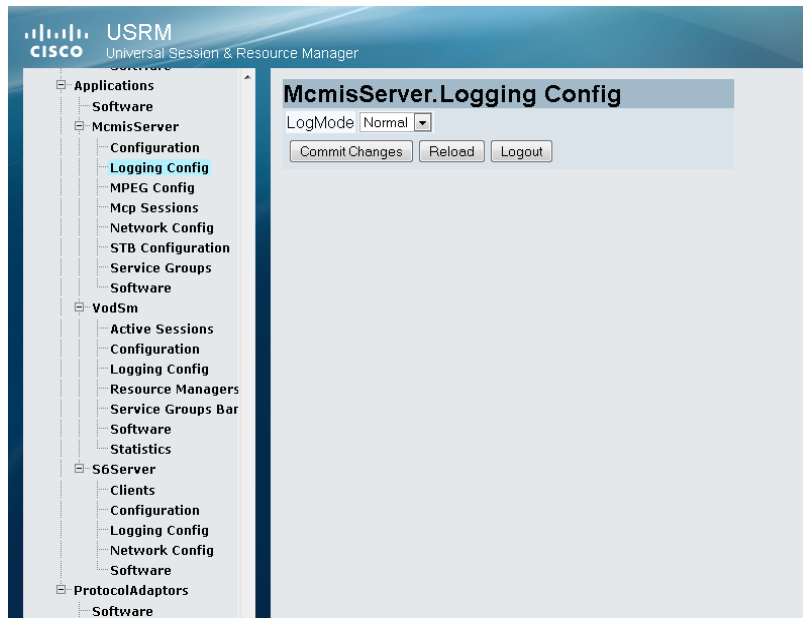
The following table explains the McmisServer - Configuration page parameters.

Parameter	Description
AdminState	The administrative state of the McmisServer application. The supported states are InService, OutOfService, and Release. InService - The normal and default state. OutOfService - Causes the application to suspend operation. Release - Causes the application to release all sessions created by the application and then transition to the OutOfService state.

Parameter	Description
McpBandwidth	The bandwidth used for the mini-carousel sessions created by this application. This parameter must be large enough to contain the channel list. This number is based on the following calculation: Approximate mini-carousel size in bits $\approx 8 * \{288 + [(0.2 * N + 1) * 188]\}$ where N is the number of active SDV channels. To get the bandwidth required in bps, multiply the above MC size by 4. Note: The USRM will send the MC out at a rate of 4 Hz unless the size of the MC sent at 4 Hz exceeds the bandwidth allotted for the MC. The USRM will then decrease the rate to match the bandwidth setting.
DisplayMode	Sets the web interface display mode, as follows: Normal - Only populated entries in tables are displayed. Config - All rows/entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist if configured. The Config mode exposes all rows of a table allowing manual data entry into the table. This technique is used to create an entry in a table.
McmisVersion	The version of the protocol generated by the application. The supported states are 1_1 and 3_0 corresponding to TWC versions of the MCMIS protocol.
ErmInterface	The type of interface to the edge resource manager. The supported states are Internal and S6. Note: Only the "Internal" state is supported in the current release.

McmisServer - Logging Config Page

This page allows the operator to configure the logging level for McmisServer logging.



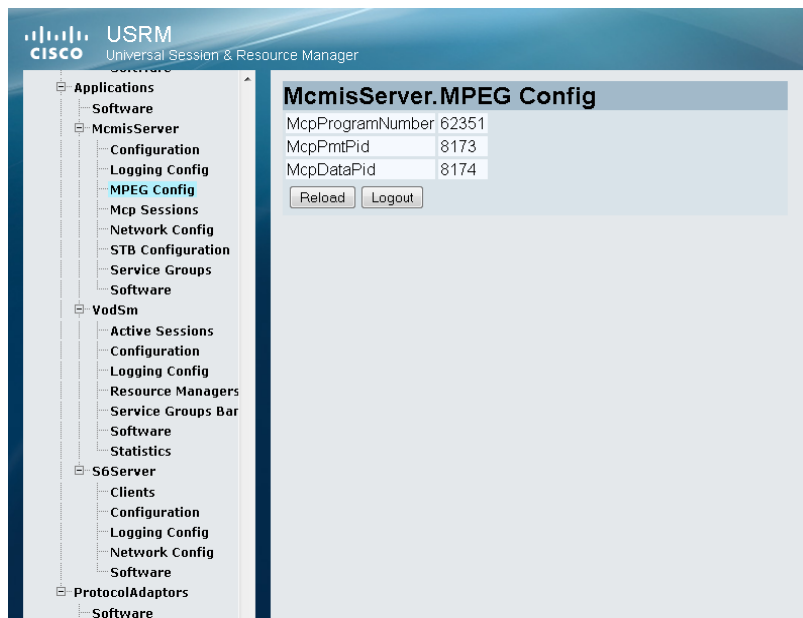
Parameters

The following table explains the McmisServer - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

McmisServer - MPEG Config Page

This page allows the operator to configure McmisServer MPEG parameters.



Parameters

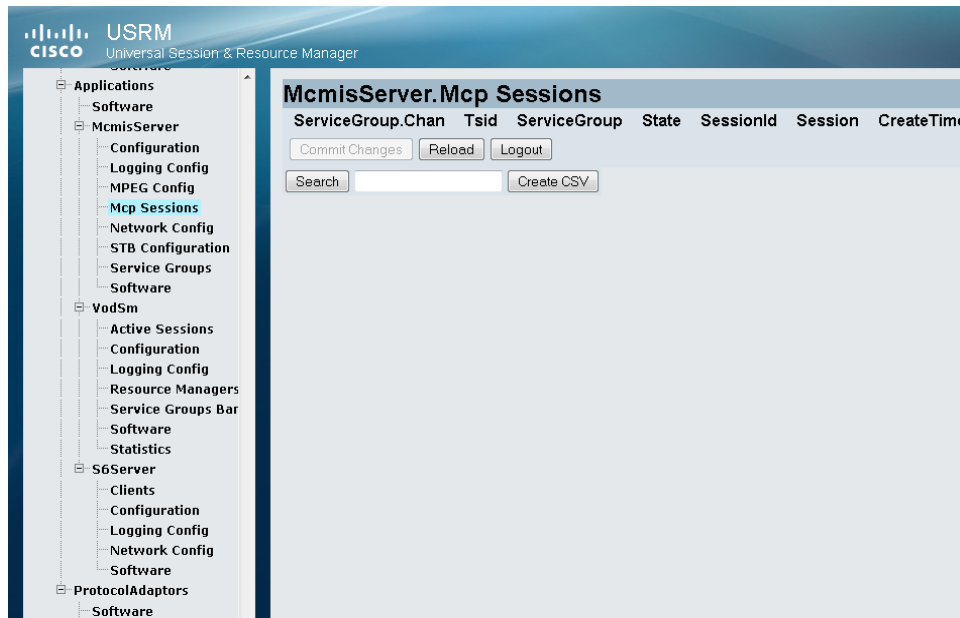
The following table explains the McmisServer - MPEG Config page parameters.

Note: You must be service level to modify these parameters.

Parameter	Description
McpProgramNumber	The program number to be assigned to mini-carousel streams packaged as an MPEG program.
McpPmtPid	The PID number used for the PMT for the mini-carousel program.
McpDataPid	The PID number used for the data section of the mini-carousel program.

McmisServer - Mcp Sessions Page

This page allows the operator to view the session status for McmisServer Mcp sessions.



Parameters

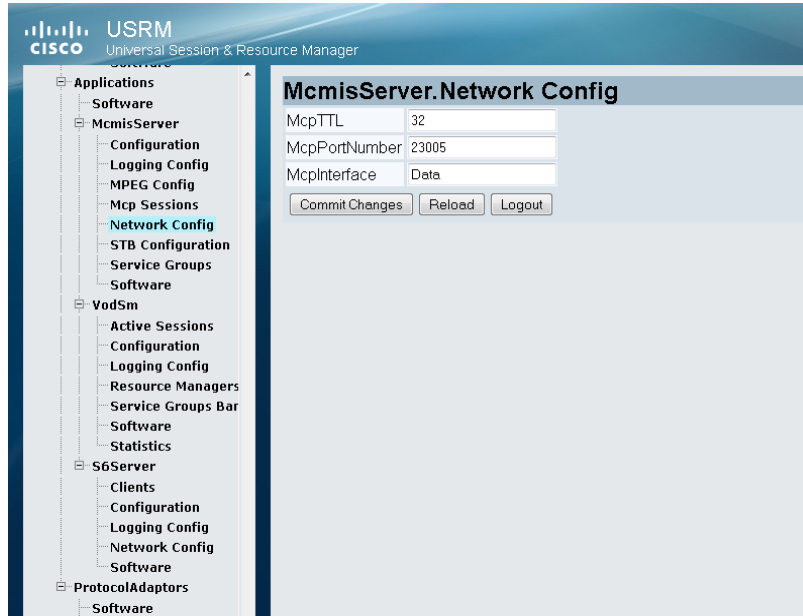
The following table explains the McmisServer - Mcp Sessions page parameters.

Parameter	Description
ServiceGroup.Chan	The service group and channel for the row.
Tsid	The TSID value for the row.
ServiceGroup	The service group for the row.
State	The current state of the session. The supported states are Inactive, Request, Active, Delete, Refresh and Fail. Inactive - Indicates that a session is not created for the corresponding TSID. Request - Is a transition state that occurs between the session request and the grant by the resource manager. Delete - Is a transition state that occurs during a delete operation. Refresh - Is a transition state that occurs on software switchover to a backup server. Fail - Is a transition state that occurs when a session request to the edge resource manager fails.

Parameter	Description
SessionId	The sessionId assigned to the mini-carousel session for this entry.
Session	The session value obtained from the edge resource manager when a session is created using an RTSP session setup protocol. When a session is created using RTSP, the server includes a session value in the setup response. This session value is then used for all subsequent operations on this session. This parameter does not apply for an internal edge resource manager.
CreateTime	The time that the session was created.

McmisServer - Network Config Page

This page allows the operator to configure the basic network setup for McmisServer.



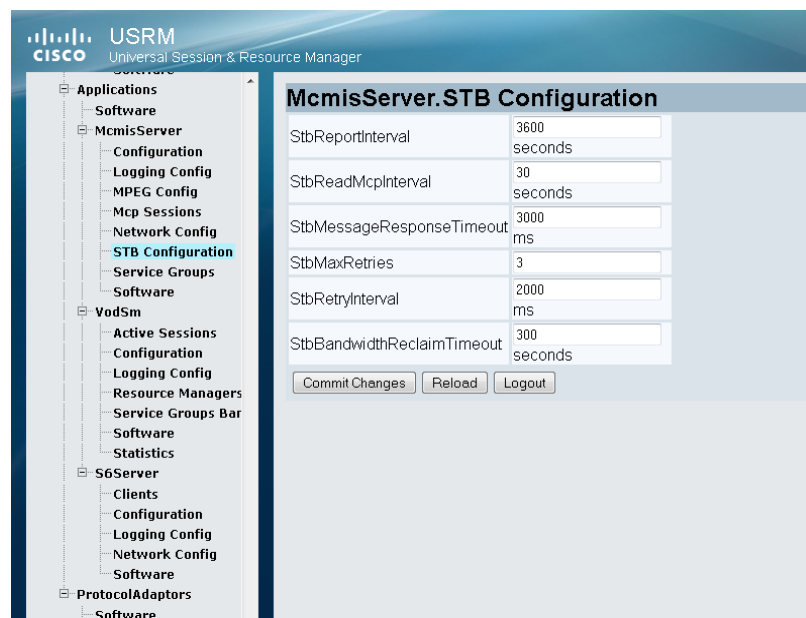
Parameters

The following table explains the McmisServer - Network Config page parameters.

Parameter	Description
McpTTL	The time-to-live value (TTL) for the multicast stream generated for the mini-carousel. The carousel is generated by the McmisServer application as a UDP stream with a multicast destination address. For multicast streams, the TTL must be explicitly defined.
McpPortNumber	The UDP port number of the multicast stream generated by the server.
McpInterface	The interface on the USRM that generates the multicast stream.

McmisServer - STB Configuration Page

This page allows the operator to configure the set-top box configuration. This configuration is generated to the set-top box in the mini-carousel stream.



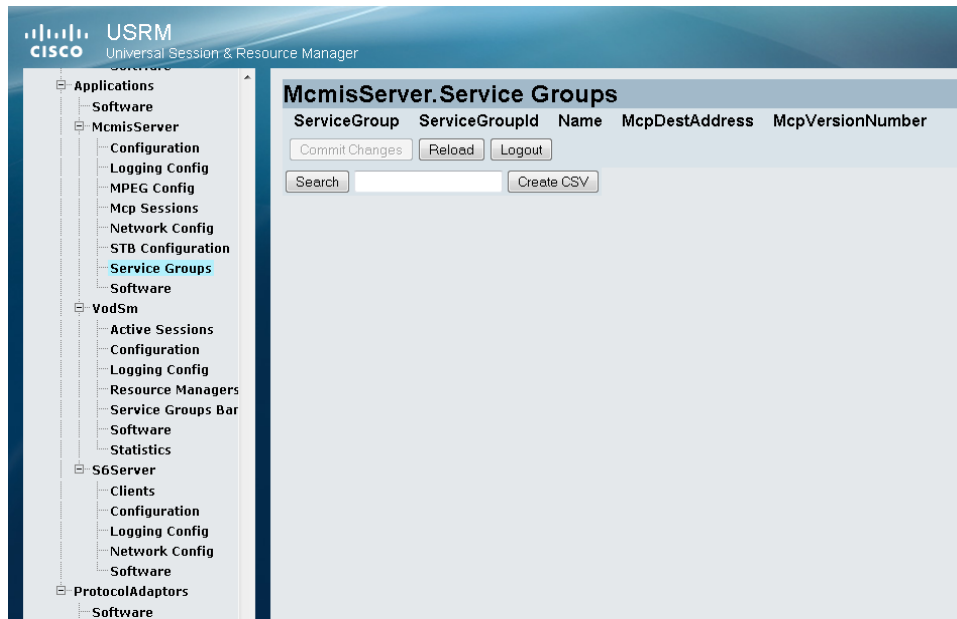
Parameters

The following table explains the McmisServer - STB Configuration page parameters.

Parameter	Description
StbReportInterval	The required interval for reporting set-top box last user activity.
StbReadMCPInterval	The required interval for reading the mini-carousel. If set to zero, the set-top box only reads the carousel upon channel changes to, away from, and between SDV programs.
StbMessageResponse Timeout	The SDV CCMIS response message timeout in milliseconds.
StbMaxRetries	The maximum retry count for re-sending SDV CCMIS request messages.
StbRetryInterval	The interval that specifies the length of time in milliseconds that the set-top box waits before re-sending SDV CCMIS request messages.
StbBandwidthReclaim Timeout	The length of time in seconds that the bandwidth reclaim barker message is displayed by the set-top box.

McmisServer - Service Groups Page

This page allows the operator to view and configure the multicast destination address for each service group. When an address is configured for a service group, McmisServer will generate a multicast stream for the service group using the configured address.



Parameters

The following table explains the McmisServer - Service Groups page parameters.

Parameter	Description
ServiceGroup	The service group name for this entry.
ServiceGroupId	The service group number for this entry.
Name	This field is populated by the Session Manager and is the user generated name for the service group.
McpDestAddress	The multicast address of the mini-carousel session generated by the server for the corresponding service group.
McpVersionNumber	The version number of the carousel for this service group. The version number is incremented on every update of the carousel contents.

McmisServer - Software Page

This page displays the software information for McmisServer and allows the operator to manage the configuration file update parameter.



Parameters

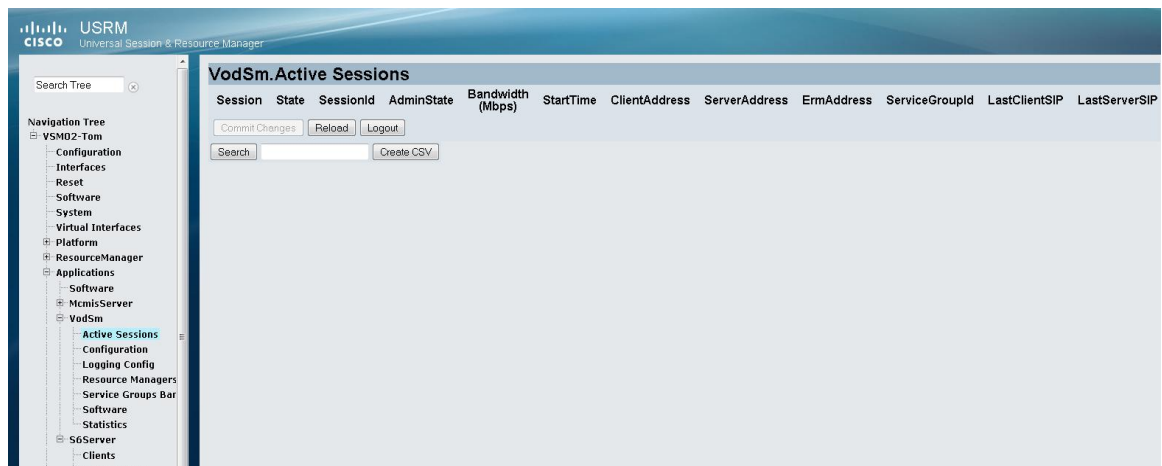
The following table explains the McmisServer - Software page parameters.

Parameter	Description
Software Version	Indicates the software version for this component.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

VodSm - Active Sessions Page

This page allows the operator to view and manage active VOD sessions. Each row in the table indicates the status of an active VOD session.

The Active Sessions page displays the set of in-progress sessions managed by the VOD service manager (VodSm). This table tracks the state of a session from initial request to teardown at completion. The software uses the information in this table to track and maintain states for the sessions managed by the application software.



Parameters

The following table explains the VodSm - Active Sessions page parameters.

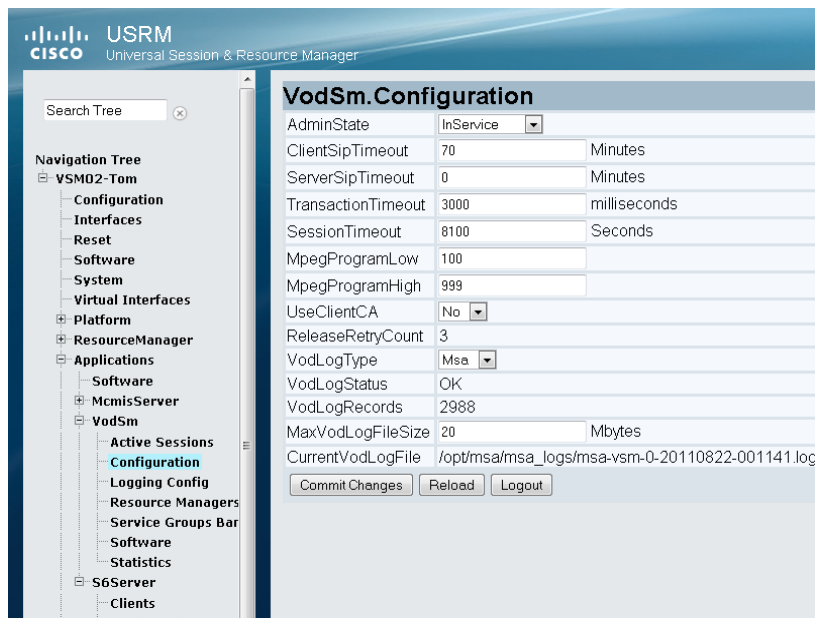
Parameter	Description
Session	The Session column identifies the session number entry in the table. The active sessions table will maintain up to 100000 sessions. The Session column indicates the number of the entry in the table.

Parameter	Description
State	The State column indicates the current state for the corresponding session. To set up a session for VOD use, you must complete several steps with required transactions for multiple external devices and subsystems. The application software uses the State column to track and manage the progress of a session during setup, while the session is active, and during teardown at completion. The states and their respective use are as follows: ■ Server1Indication: The first step in a VOD session setup request is to forward the request for video to the back office for validation. The application software forwards the request to the back office and marks the state as Server1Indication. This state indicates the request was forwarded to the back office and the application software is waiting on the response from the back office. ■ Server2Indication: The reply from the back office can indicate a redirect to a second server. The Server2Indication state indicates that the request was forwarded to a second back office server, and the application software is waiting on the reply. ■ Server3Indication: The Server3Indication state indicates the request was forwarded to a third server, and the application software is waiting on a response. ■ ResourceRequest: The ResourceRequest state indicates that the application software has issued a request for a resource and is waiting on the response. ■ ResourceConfirm: The ResourceConfirm state indicates that the resource has been granted and confirmations will be transmitted before transitioning to the Active state. ■ NoResource: The NoResource state indicates that one or more resources need to grant the service but are not available. Responses will be transmitted to affected devices and the entry will be deleted from the table. ■ Active: The Active state indicates that the session is active.
Sessionid	The SessionId is the label/identifier for the session. When the client device requests a service, the request is identified and tracked with a 10-byte session ID generated by the client.

Parameter	Description
AdminState	The AdminState control provides a method for the operator to manually delete a session. The normal/default state is Active. Setting the state to Release causes the application software to release the resources associated with the service and to issue teardown commands to the affected resources.
Bandwidth (Mbps)	The bandwidth indicates the bandwidth of the active session.
StartTime	The StartTime indicates the time the service was initiated.
ClientAddress	The ClientAddress indicates the IP address of the client device that requested the service.
ServerAddress	The ServerAddress indicates the IP address of the server that delivers the service.
ErmAddress	The ErmAddress indicates the IP address of the edge resource manager that provided the resources for the service. The address "0.0.0.0" or "n/a" indicates that the resources are managed by the server that hosts the VSM application.
LastClient SIP	The LastClientSip indicates the time of the last received session in progress message that was sent from the client device consuming the service.
LastServer SIP	The LastServerSip indicates the time of the last received session in progress message that was sent from the server device generating the service.

VodSm - Configuration Page

This page allows the operator to configure operational parameters for VodSm.



Parameters

The following table explains the VodSm - Configuration page parameters.

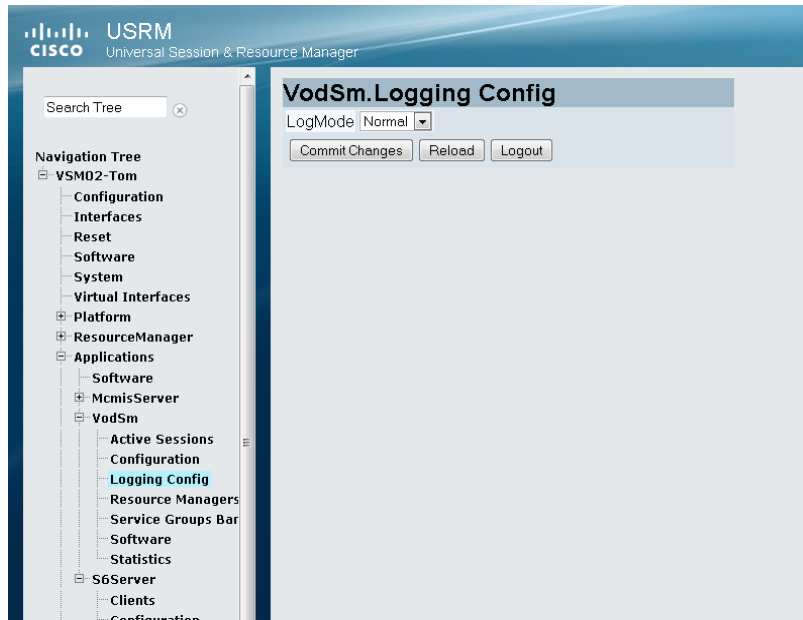
Parameter	Description
AdminState	The AdminState provides operator control over the application. The allowed states are InService, OutOfService and Release. ■ Inservice indicates the software is ready to provide service. ■ OutOfService indicates that the software will not process requests for service. Requests from client devices will be accepted and discarded without a reply to the client device. ■ Release causes the application to release all sessions and associated resources.
ClientSip Timeout	The ClientSipTimeout indicates the timeout period for client session-in-progress messages. If the application software does not receive a session-in-progress message from the client device within the timeout value, the session and associated resources are released. The default value is 10 minutes. Configuring the value to 0 causes the application software to not require client session-in-progress messages to maintain the session.

Parameter	Description
ServerSip Timeout	The ServerSipTimeout indicates the timeout period for server session-in-progress messages. If the application software does not receive a session-in-progress message from the server device within the timeout value, the session and associated resources are released. The default value is 10 minutes. Configuring the value to 0 causes the application software to not require server session-in-progress messages to maintain the session.
Transaction Timeout	The TransactionTimeout indicates the timeout value for session processing. If the service setup transaction does not complete within the configured time, the service request is terminated, and the request is denied to the requesting device.
Session Timeout	The SessionTimeout specifies the maximum duration of a session (i.e., how long the session stays active) after it has been set up by the application.
MpegProgramLow	The MpegProgramLow selects the low limit of program numbers used by the application. Program numbers are assigned from a range.
MpegProgramHigh	The MpegProgramHigh selects the high limit of program numbers used by the application.
UseClientCA	This setting selects whether to accept the capabilities information in the client request or to determine the client CA type using internal business rule logic. The "Yes" state causes the software to accept the CA capability information and select an encryption type using this data. The "No" state does not use CA capability information from the STB in determining the CA type.
ReleaseRetryCount	This setting configures the number of retries on release requests. This setting applies for a distributed edge resource manager configuration where one USRM manages the edge resources and another USRM hosts the VOD session manager application.
VodLogType	This setting configures the activity logging type. The sole supported log type is MSA. MSA is a standard VOD log format defined by Time Warner Cable.
VodLogStatus	This parameter indicates the status of logging.
VodLogRecords	This parameter indicates the number of records generated in the current file.
MaxVodLogFileSize	This parameter indicates the maximum size of the log file in megabytes.

Parameter	Description
CurrentVodLogFile	This parameter provides the full path and name of the current VOD log file.

VodSm - Logging Config Page

This page allows the operator to configure the logging level for VodSm logging.



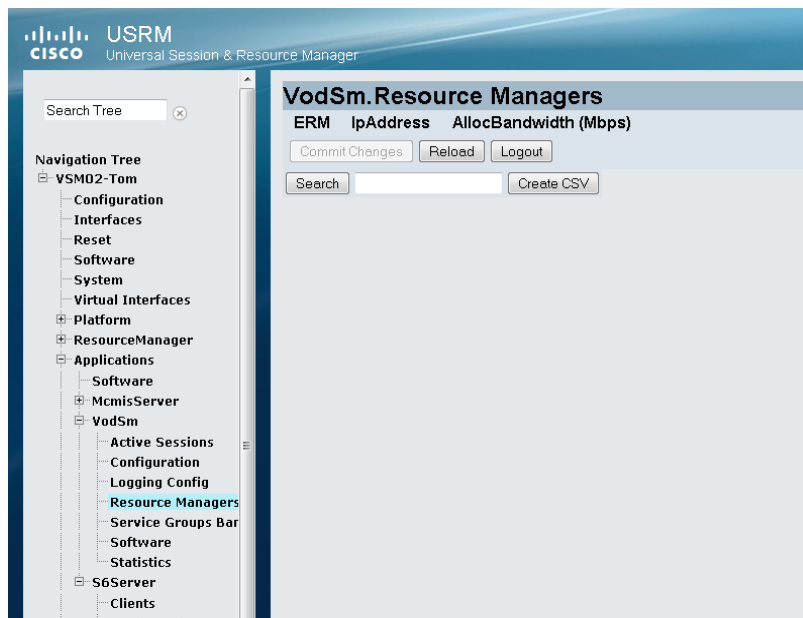
Parameters

The following table explains the VodSm - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

VodSm - Resource Managers Page

This page provides status information on resource managers used by VodSm.



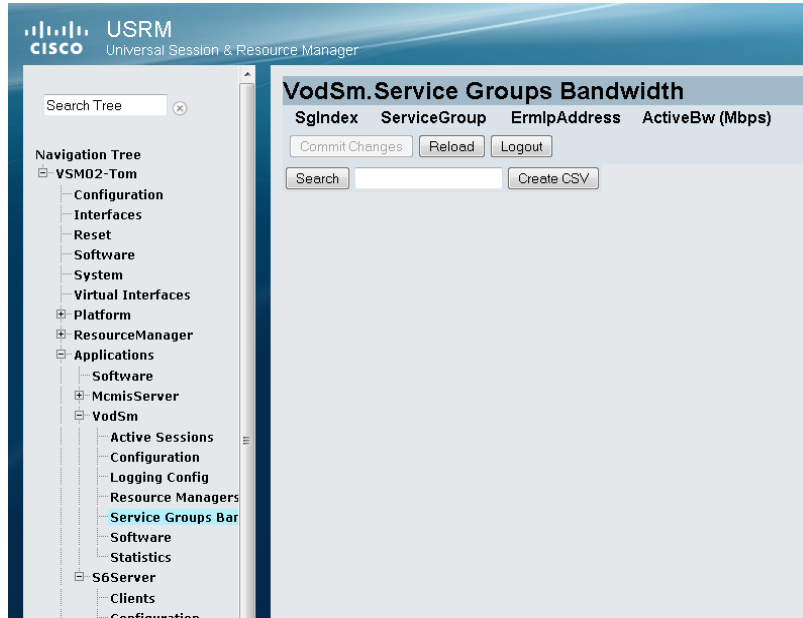
Parameters

The following table explains the VodSm - Resource Managers page parameters.

Parameter	Description
ERM	This parameter is the entry number for the table. The table contains one entry per edge resource manager used by the VOD session manager. If bandwidth is allocated to VOD services on an edge resource manager, then an entry appears in this table corresponding to the edge resource manager.
IpAddress	This parameter indicates the IP address of the edge resource manager. The value "Local" indicates that bandwidth is allocated on the local resource manager. The local resource manager is the resource manager on the USRM hosting the VOD session manager application.
AllocBandwidth (Mbps)	This field indicates the total bandwidth allocated for VOD services on the corresponding resource manager.

VodSm - Service Groups Bandwidth Page

The following illustration shows the VodSm - Service Groups Bandwidth page.



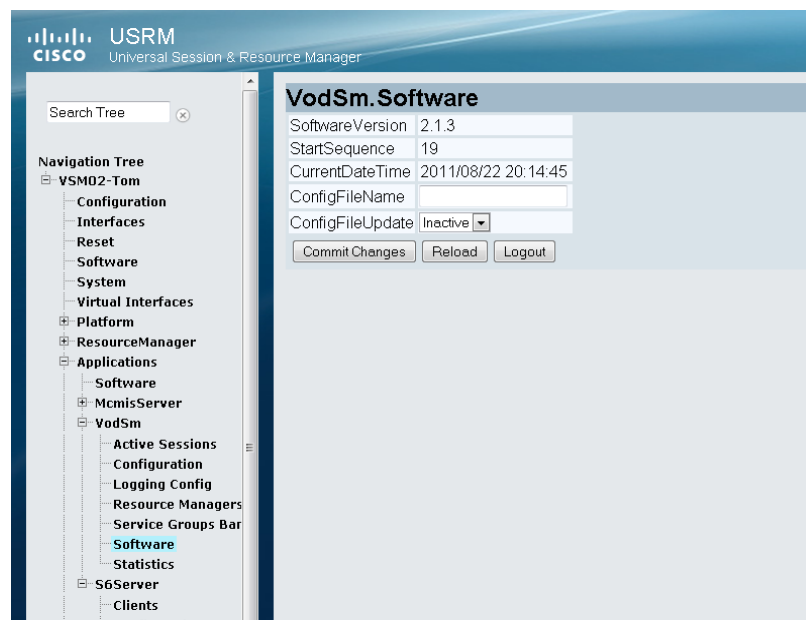
Parameters

The following table explains the VodSm.Service Groups page parameters.

Parameter	Description
SgIndexGroup	The service group index number for this entry.
ServiceGroupId	The service group ID for this entry.
ErmIpAddress	The IP address for the edge resource manager.
ActiveBw (Mbps)	The bandwidth currently in use by this service group.

VodSm - Software Page

This page displays software information for VodSm and allows the operator to manage the configuration file update parameter.



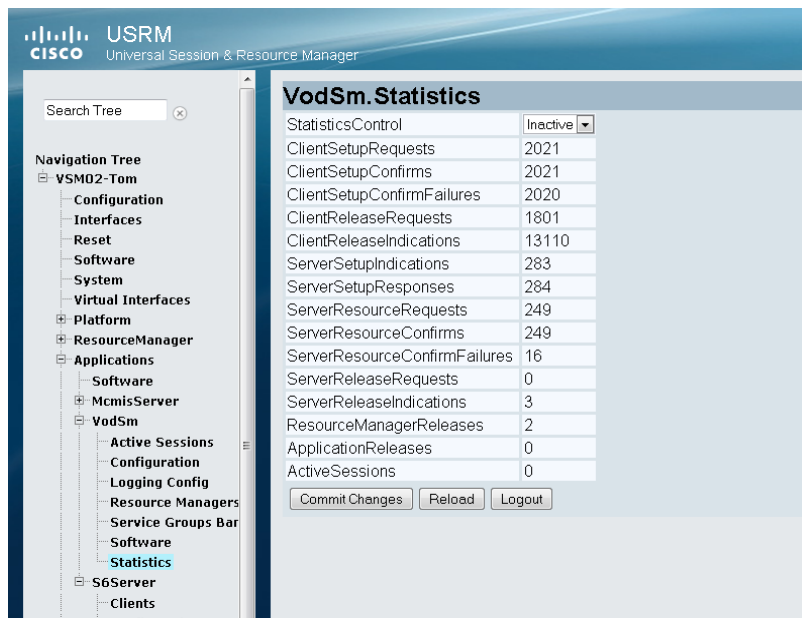
Parameters

The following table explains the VodSm - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

VodSm - Statistics

This page displays VOD statistics and allows the operator to reset the statistic counters.



Parameters

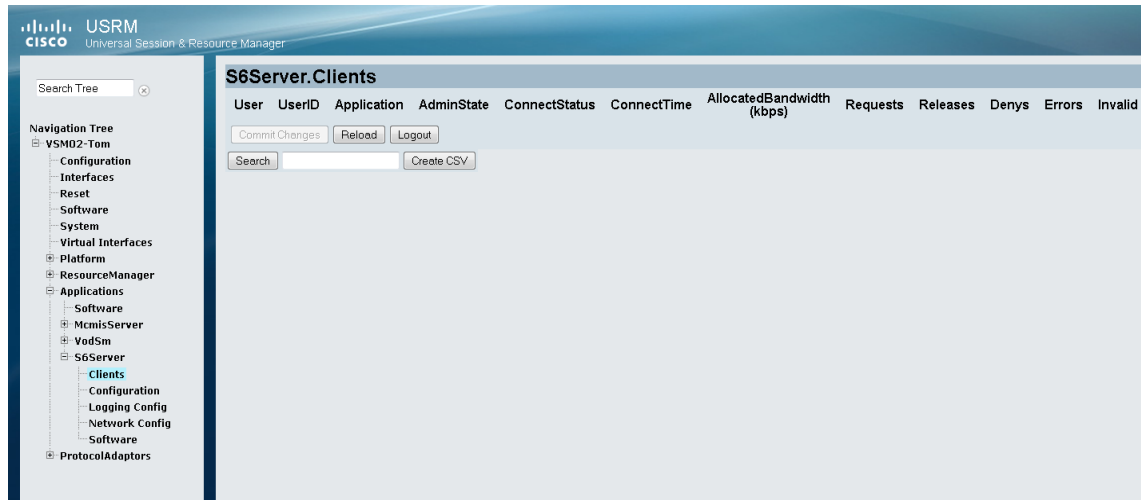
The following table explains the VodSm - Statistics page parameters.

Parameter	Description
StatisticsControl	Allows the operator to reset the statistics accumulators.
ClientSetupRequests	Indicates the total number of client setup requests. The client setup request is the initial request from a client for a VOD asset.
ClientSetupConfirms	Indicates the total number of client setup confirmations. The client setup confirm is the confirmation to a client corresponding to the initial request from a client for a VOD asset.
ClientSetupConfirmFailures	Indicates the total number of client confirm failures. If the request for a VOD asset fails for any reason, this accumulator is incremented.
ClientReleaseRequests	Indicates the total number of client release requests. The client release request is the request from a client to terminate a VOD transaction.

Parameter	Description
ClientReleaseIndications	Indicates the total number of client release indications. The client setup release indication is an indication to the client from the VOD session manager that the VOD session has ended.
ServerSetupIndications	Indicates the total number of server setup indications. The server setup indication is transmitted to the back office upon receiving the initial client setup request.
ServersSetupResponses	This accumulator indicates the total number of server setup responses to the server setup indications. The server setup indication is transmitted to the back office upon receiving the initial client setup request.
ServerResourceRequests	This accumulator indicates the total number of server resource requests. The server setup indication is transmitted to the back office upon receiving the initial client setup request. After validation of the request by the back office, the back office issues a resource request to request a resource for the VOD session. The request specifies the service group ID, bandwidth and conditional access requirements.
ServerResourceConfirms	This accumulator indicates the total number of confirmations to the server resource requests.
ServerResourceConfirmFailures	This accumulator indicates the total number of confirmation failures to the server resource requests. If the resource cannot be allocated (insufficient bandwidth, unknown service group, etc.), then the confirmation contains a failure code.
ServerReleaseRequests	This accumulator indicates the total number of server release requests. The server release request is an indication from the VOD server that the VOD session is terminated.
ServerReleaseIndications	This accumulator indicates the total number of server release indications. The server release indication is a message from the VOD session manager to the VOD server indicating that the session has terminated.
ResourceManagerReleases	This accumulator indicates the total number of session releases performed by the resource manager. The resource manager releases sessions upon request from the operator.
ApplicationReleases	This accumulator indicates the total number of session releases performed by the VOD session manager application.
ActiveSessions	This counter indicates the total number of active VOD sessions.

S6Server - Clients Page

The following illustration shows the S6Server - Clients page.



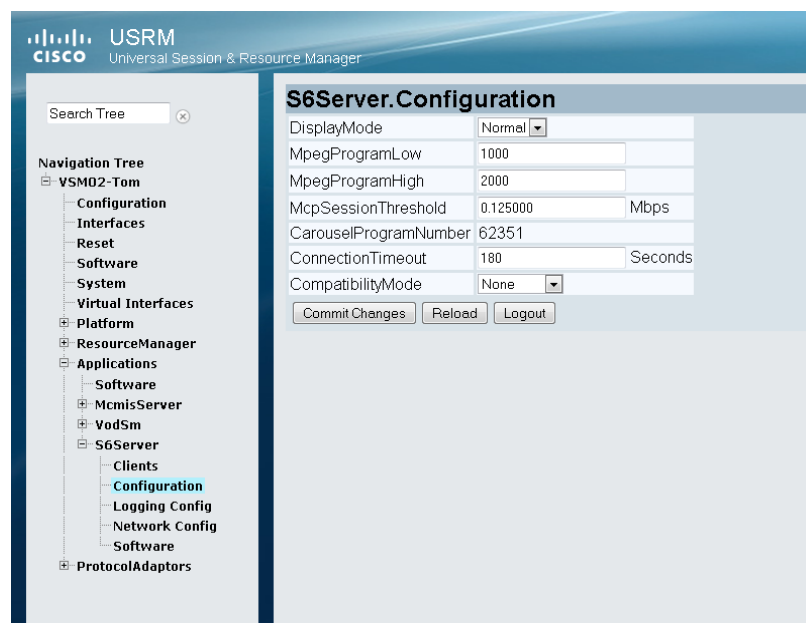
Parameters

The following table explains the S6Server - Clients page parameters.

Parameter	Description
User	Indicates the index to the user.
UserID	IP address of the client.
Service	The type of service for this client, VOD or SDV.
AdminState	The administrative state of the client. The supported states are InService and OutOfService. InService - The normal and default state. OutOfService - Causes the application to suspend operation of the client.
ConnectStatus	The current state of the client.
ConnectTime	The time the connection to the client was established.
AllocatedBandwidth(Mbps)	The amount of bandwidth allocated to the client.
Requests	The number of requests from the client.
Releases	The number of releases for this client.
Denys	The number of denys to client requests.
Errors	The number of errors for this client.
Invalid	Not supported in the current release.

S6Server - Configuration Page

The following illustration shows the S6Server - Configuration page.



Parameters

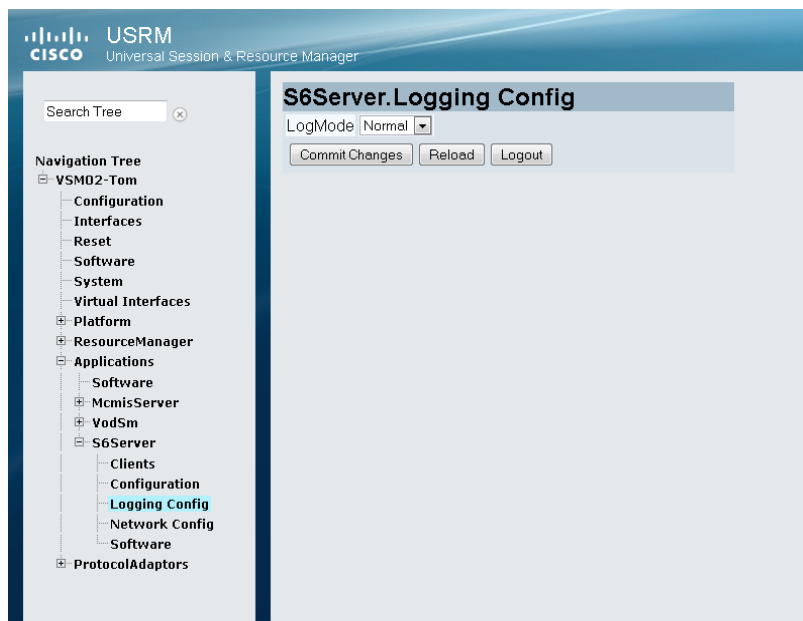
The following table explains the S6Server - Configuration page parameters.

Parameter	Description
DisplayMode	Sets the web interface display mode, as follows: Normal - only populated entries in tables are displayed. Config - all rows or entries of a table are displayed, allowing you to enter values into the displayed rows for configuration purposes. The server implements dynamic rows that exist, if configured. The Config mode exposes all rows of a table, allowing manual data entry into the table. This technique is used to create an entry in a table.
MpegProgramLow	The USRM assigns MPEG program numbers to programs when they are activated. This configured parameter sets the first program number of the range assigned to services managed by the SdvSm Application. The server uses the least-recently-used (LRU) algorithm to assign program numbers. When a program number is released from use, the time of release is marked for the program. When the server assigns a new program number, the release times are used to select the oldest program number.

Parameter	Description
MpegProgramHigh	The highest available MPEG program number to be allocated. The range must be less than 1000 total program numbers. The high range is adjusted down to enforce this restriction.
McpSessionThreshold	Not supported in the current release.
CarouselProgramNumber	Output program number for USRM generated mini-carousel.
ConnectionTimeout	The amount of time the USRM will wait for a connection.
CompatibilityMode	None or Tandberg

S6 Server - Logging Config

This page allows the operator to configure the logging level for S6Server logging.



Parameters

The following table explains the S6Server - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

S6Server - Network Configuration Page

The following illustration shows the S6Server - Network Config page.



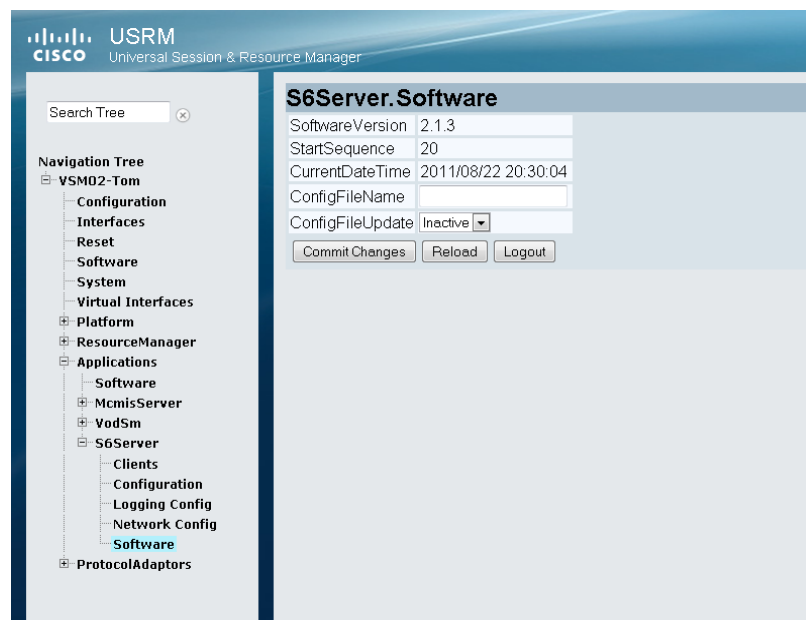
Parameters

The following table explains the S6Server - Network Config page parameters.

Parameter	Description
S6Port	The UDP port used for the S6 protocol connection.
S6Interface	The physical Ethernet port used for the S6 connection.

S6Server - Software Page

This page displays software information for S6Server and allows the operator to manage the configuration file update parameter.



Parameters

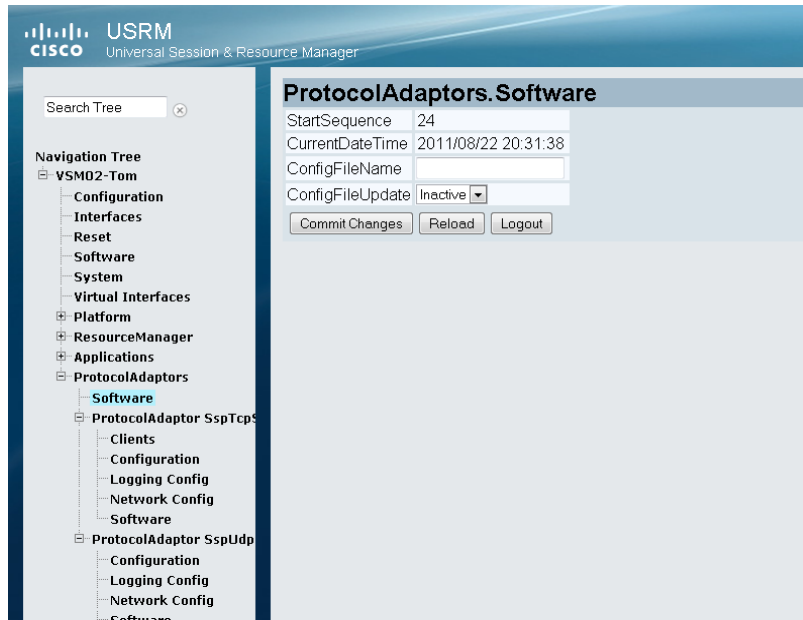
The following table explains the S6Server - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

USRM Web Interface - Protocol Adaptors

Protocol Adaptors - Software Page

This page displays software information for Protocol Adaptors and allows the operator to manage the configuration file update parameter.



Parameters

The following table explains the Protocol Adaptors - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

SspTcpServer - Clients Page

This page displays TCP Server session information for Client connections and allows the operator to place SspTcpServer in- or out-of-service.

User	UserID	Application	AdminState	ConnectStatus	ConnectTime	AllocatedBandwidth (Mbps)	Receives	Transmits	Connections	LastRxTime
1	172.168.10.1		InService	Connected	2011/08/18 09:35:59	0.000	228875	229482	1193	2011/08/22 21:17:36
2	192.168.12.66		InService	Disconnected	2011/08/02 12:01:08	0.000	78961282	116820752	5771	2011/08/08 11:09:05
3	192.168.12.192		InService	Connected	2011/08/18 09:38:58	0.000	123315142	183281935	10134	2011/08/22 21:10:08
4	192.168.12.128		InService	Disconnected	2011/06/21 16:31:09	0.000	52445980	77341893	11048	2011/06/23 17:35:31
5	192.168.12.134		InService	Connected	2011/08/18 09:35:57	0.000	92547288	138098094	3813	2011/08/18 09:35:57
6	192.168.12.140		InService	Connected	2011/08/18 09:35:54	0.000	79567118	114816920	8868	2011/08/18 10:36:33
7	192.168.12.63		InService	Disconnected	2011/06/15 07:18:02	0.000	4633855	6916709	41	2011/06/15 07:18:02

Parameters

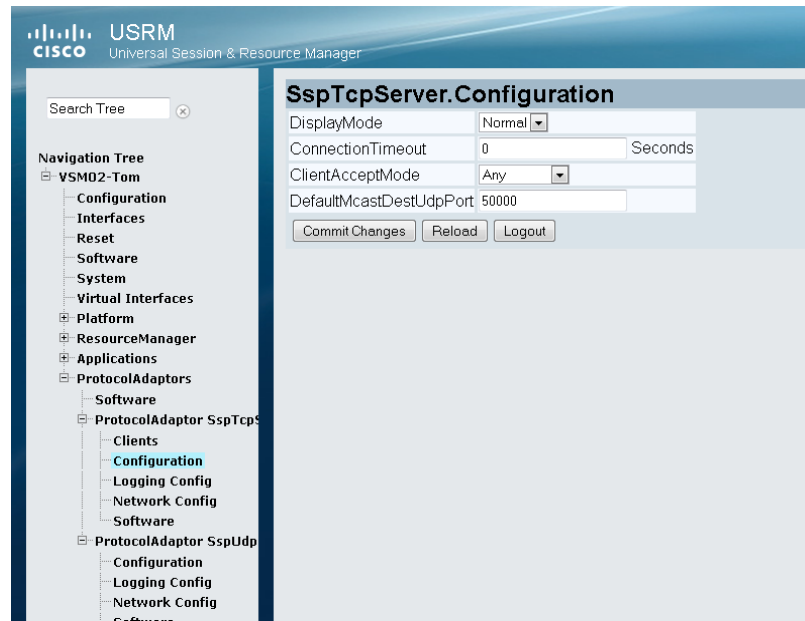
The following table explains the SspTcpServer - Clients page parameters.

Parameter	Description
User	This parameter is the entry number in the table.
UserID	This parameter indicates the IP address of the server connected to the USRM.
Application	This configuration setting defines the name of the application corresponding to the server connected to the USRM. Requests from this server will be tagged with this application name for policy server processing.
AdminState	The administrative state of the client. The supported states are InService and OutOfService. InService - The normal and default state. OutOfService - Causes the application to suspend operation of the client.
ConnectStatus	This parameter indicates the connection status of the server.
ConnectTime	This parameter indicates the date and time that the server connected to the USRM.
Allocate Bandwidth (Mbps)	This parameter indicates the bandwidth allocated to this server.
Receives	This accumulator indicates the number of messages received from the connected server.

Parameter	Description
Transmits	This accumulator indicates the number of messages transmitted from the USRM to the connected server.
Connections	This counter indicates the number of connections performed by the connected server.
LastRxTime	This status indicates the date and time of the message received from the connected server.

SspTcpServer - Configuration Page

This page allows the operator to configure SspTcpServer parameters for client connections.



Parameters

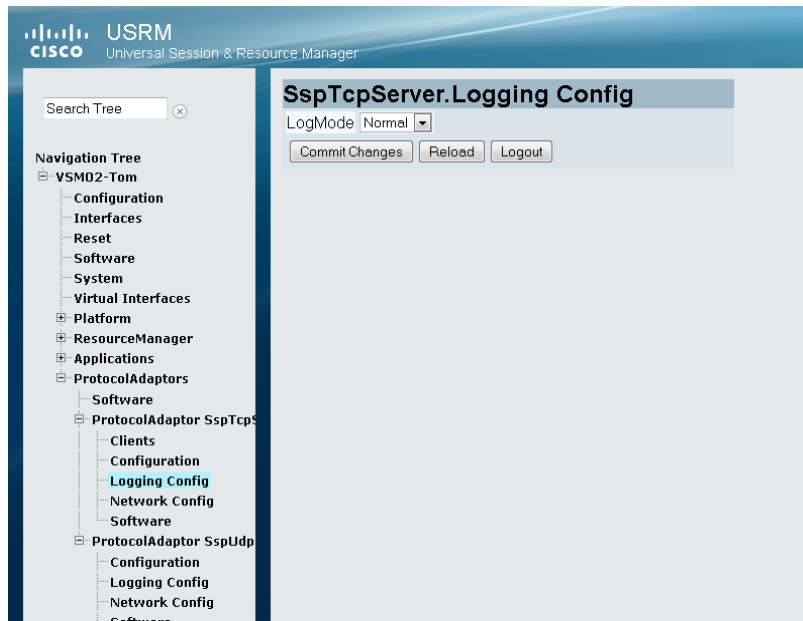
The following table explains the SspTcpServer - Configuration page parameters.

Parameter	Description
DisplayMode	This configuration setting is the standard DisplayMode setting. The state Config causes the software to open tables for addition of entries.
ConnectionTimeout	This configuration setting configures the connection timeout. If the connected server does not send a message within this time, the USRM drops the connection to the connected server. Setting this parameter to 0 indicates that there is no timeout.
ClientAcceptMode	This configuration setting determines how client connections are accepted. The state "Any" causes the USRM software to accept a connection from any server. The state "Configured" causes the USRM software to only accept connections from servers with an IP address entry in the table.

Parameter	Description
DefaultMcastDestUdpPort	This configuration setting configures the default multicast destination port number. If a connected server requests a multicast session and does not specify the UDP port, then the default port number is used to grant the request.

SspTcpServer - Logging Config Page

This page allows the operator to configure the logging level for SspTcpServer logging.



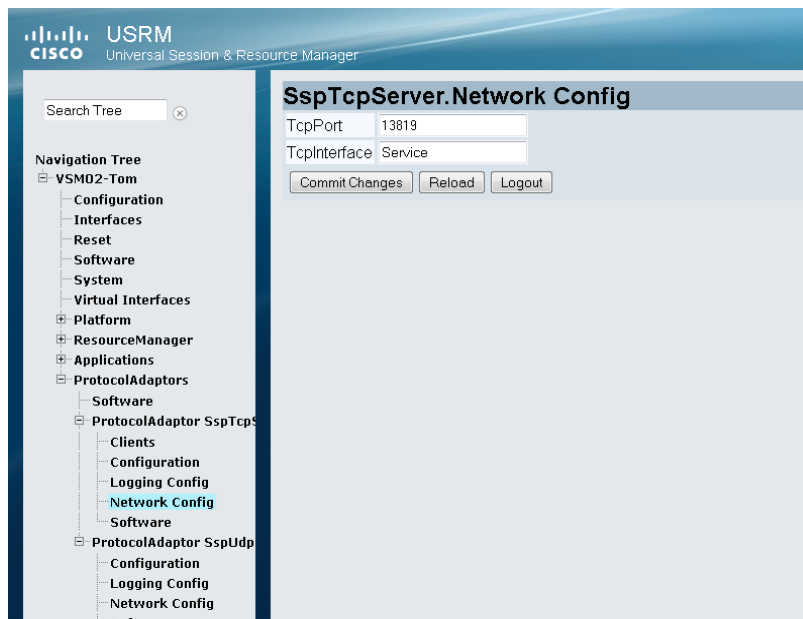
Parameters

The following table explains the SspTcpServer - Logging Config page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

SspTcpServer - Network Config Page

This page allows the operator to set the TCP port number and interface service name.



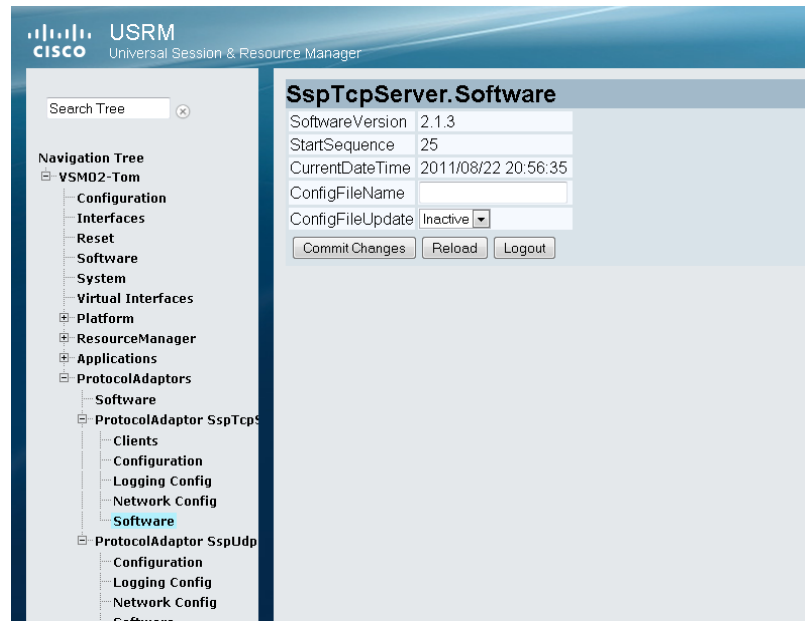
Parameters

The following table explains the SspTcpServer - Network Config page parameters.

Parameter	Description
TcpPort	Displays the UDP port number for SspTcpServer connections.
TcpInterface	Displays the interface name for SspTcpServer connections. For more information on interface names, see <i>Interfaces Page</i> (on page 38).

SspTcpServer - Software Page

This page displays software information for the SspTcpServer and allows the operator to manage the configuration file update parameter.



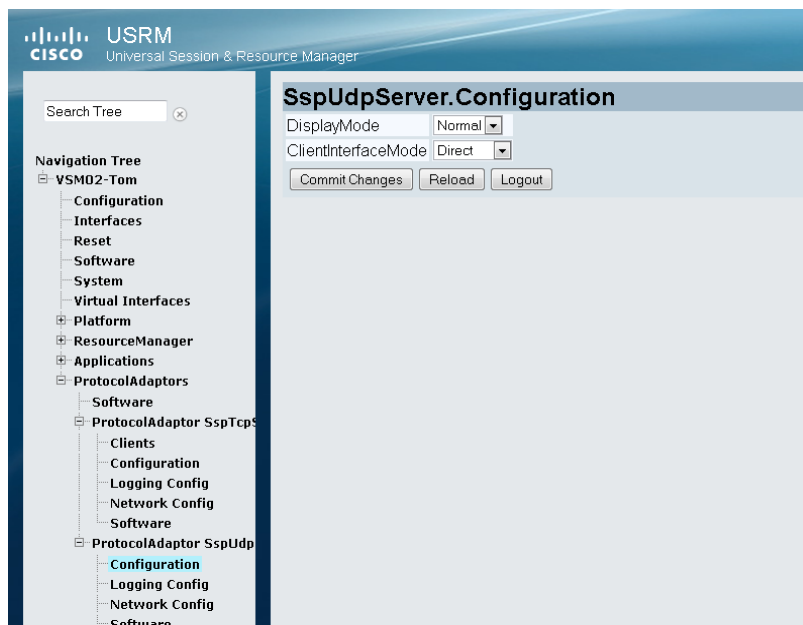
Parameters

The following table explains the SspTcpServer - Software page parameters.

Parameter	Description
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

SspUdpServer - Configuration Page

This page allows the operator to configure SspUdpServer parameters for client connections.



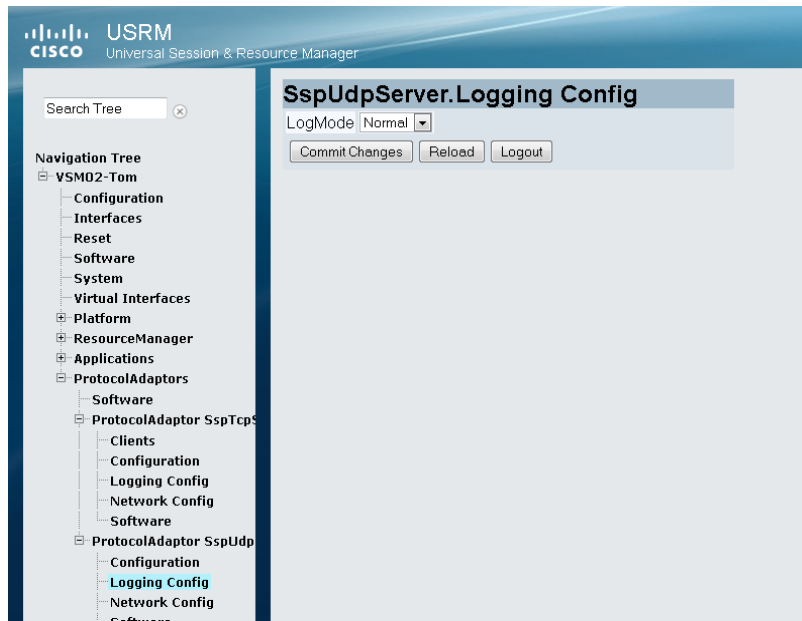
Parameters

The following table explains the SspUdpServer - Configuration page parameters.

Parameter	Description
DisplayMode	This configuration setting is the standard DisplayMode setting. The state Config causes the software to open tables for addition of entries.
ClientInterfaceMode	Determines the type of connection to the client device. ■ Direct indicates that the USRM sends messages directly to the client device. ■ Gateway indicates that an intermediate device exists between the USRM and the client device. ■ Mixed indicates either direct or gateway devices can connect with the USRM. The USRM determines how to handle the communications by the type of messaging it receives.

SspUdpServer - Logging Config Page

This page allows the operator to configure the logging level for SspUdpServer logging.



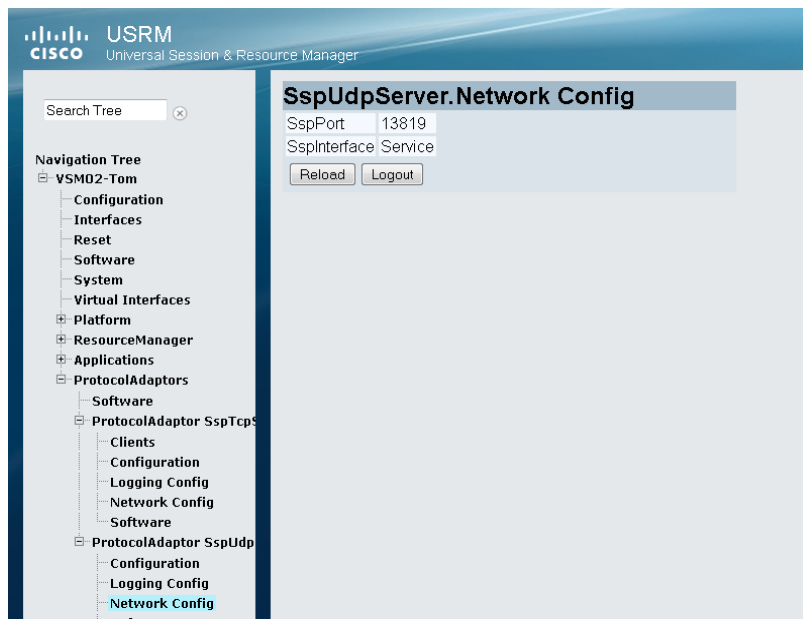
Parameters

The following table explains the SspUdpServer - Logging Configuration page parameters.

Parameter	Description
LogMode	Log modes are None , Min , Normal , Max , and Capture . See <i>Logging Levels</i> (on page 53) for mode descriptions.

SspUdpServer Network Config Page

This page allows the operator to set the UDP port number and interface service name.



Parameters

The following table explains the SspUdpServer - Network Config page parameters.

Parameter	Description
SspPort	Displays the UDP port number for SspUdpServer connections.
SspInterface	Displays the interface name for SspUdpServer connections. For more information on interface names, see <i>Interfaces Page</i> (on page 38).

SspUdpServer Software Page

This page displays software information for the SspUdpServer and allows the operator to manage the configuration file update parameter.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. On the left is a 'Navigation Tree' with a search box and a list of categories: Configuration, Interfaces, Reset, Software, System, Virtual Interfaces, Platform, ResourceManager, Applications, and ProtocolAdaptors. Under ProtocolAdaptors, there are sub-items for Software, ProtocolAdaptor SspTcpS, and ProtocolAdaptor SspUdp. The main area on the right is titled 'SspUdpServer. Software' and contains the following fields and controls:

- SoftwareVersion: 2.1.3
- StartSequence: 26
- CurrentDateTime: 2011/08/22 21:10:02
- ConfigFileName: (empty text box)
- ConfigFileUpdate: Inactive (dropdown menu)
- Buttons: Commit Changes, Reload, Logout

Parameters

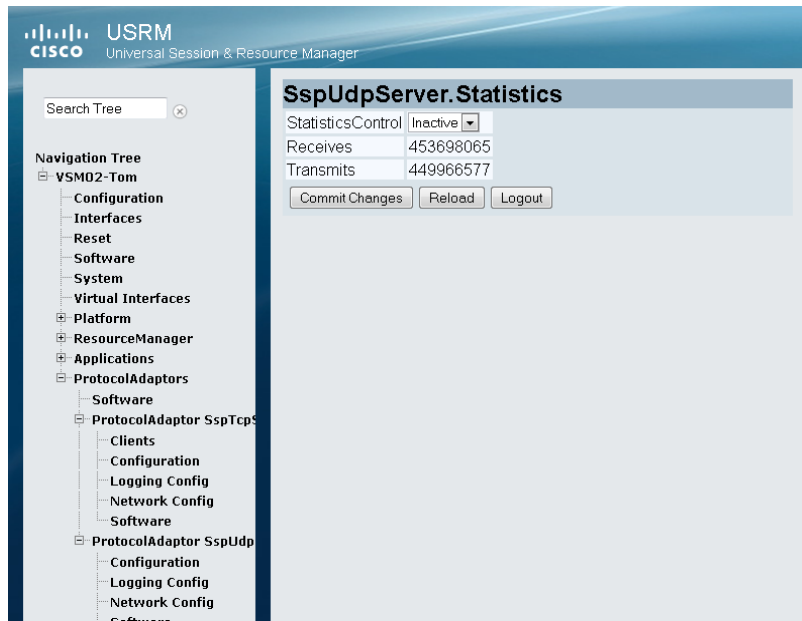
The following table explains the SspUdpServer - Software page parameters.

Parameter	Description
SoftwareVersion	Displays the current software version.
StartSequence	Displays the start-up sequence of the component. When components are created, the component is assigned a nonvolatile sequence number. The sequence number increments with the addition of each new component. When the software is restarted, the components are started in their order of creation.
CurrentDateTime	Displays the last date and time the web page was refreshed.
ConfigFileName	Displays the name of the configuration file for this component.

Parameter	Description
ConfigFileUpdate	This parameter controls ConfigFileUpdates. Inactive - Default setting: Idle. Read - Read the ConfigFile and apply the settings to the device. Write - Take current settings of the device and write to the ConfigFile, thus saving the settings.

SspUdpServer Statistics Page

This page records transmit and receive statistics for SspUdpServer and allows the operator to reset the transmit and receive accumulators.



Parameters

The following table explains the SspUdpServer - Statistics page parameters.

Parameter	Description
Statistics Control	Operator control for resetting the transmit and receive accumulators. Select Reset to set the accumulators to zero. Default condition is Inactive , which means reset is not in process.
Receives	Total number of UDP receive packets, since last reset.
Transmits	Total number of UDP transmit packets, since the last reset.

4

Operation

Introduction

The USRM features a convenient web interface which is accessible via browser from any computer with Internet access.

Scope of This Chapter

This chapter explains how to start up and configure the USRM and how to use the USRM web interface.

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Operation Overview

USRM Startup Command Options

In "supervised" mode, the startup state of the USRM is governed by the DNCS. The software is started in this mode using the "--supervised" command line option. This causes the software to start and request provisioning from the DNCS. Typically, this mode is only used with the DNCS. The DNCS contains special provisioning software to provision the unit and designate the proper startup role (primary, standby, or transition).

In "standalone" mode, no DNCS is available to provide provisioning and startup state. The server is configured directly using its web interface. The software is started in this mode using "--auto" option. The --auto mode activates software that determines the correct startup role for the server when the server is used in a redundant configuration.

When a primary server starts in --auto mode, the server queries the standby to determine if the standby is acting for the primary server. If not, the server starts in the primary role. If the standby is active for the primary server, the server starts in the transition mode. Transition mode is a recovery mode in which the primary connects to the standby server, gets the current state, and then switches to the online mode, causing the standby to reset and restart in the standby role.

Important: The role of the server must first be designated at least once before using the "--auto" option to start the server in standalone mode or the "--supervised" option in supervised mode. Once the role of the server has been set, the software should be terminated and then restarted using the "--auto" option. The software will then operate continuously, with the USRM automatically determining the correct role in the event of hardware or power failure.

The USRM operating mode, or the USRM server role, is set via command line options when the USRM is started. The following table lists a summary of the startup command line options.

Command Line Option	Description
-h	Display this help text and exit.
-v	Display version number and exit.
(no option)	Sets server's role as a Primary server.
--standby	Sets server's role as a Standby server.
--admin	Sets server's role as an Admin Terminal.
Note: This feature is not available in the current release.	

Command Line Option	Description
--supervised	Start in supervised mode. Note: The server waits on provisioning. You must set the server's role prior to using this option.
--auto	Start in standalone mode. Note: You must set the server's role prior to using this option.

Note:

- The watchdog always starts the software in the last startup mode. Thus the watchdog will always start the software with the --auto or --supervised option, resulting in the correct mode for the server software.
- There are two dashes (--) prior to the Standby, Admin, Supervised, and Auto mode options.

USRM Initial Setup and Startup

Accessing the USRM

The USRM can be accessed by any of the following methods:

- **Monitor, Keyboard, and Mouse:** If you connect a monitor, keyboard, and a mouse (optional) to the USRM, you will get a Linux login prompt on boot up.
- **Serial Console:** The USRM has a serial console available via the serial port on the back panel. To access it, attach a null-modem serial cable between the USRM and a PC. On the client PC, set the serial port speed to 9600 baud. When you connect, you will see a Linux login prompt.
- **Secure Shell Network Login:** If the network you first attach the USRM to has a DHCP server, you can use SSH to access the system remotely from any computer with an SSH client. You need to know the USRM's IP address to log on via this method.

USRM Setup Procedure

Important: The operating system and the USRM software come pre-installed. This condition is a prerequisite for first time setup. If these software components are not installed, refer to *OS Recovery, Software Re-Installation & Upgrade* (on page 379) for instructions on re-installing the software.

Running the USRM Setup Script

Follow these steps to setup and configure the USRM.

- 1 Log in to the USRM as user "root" using the default password "generic".
- 2 Type the following command at the system prompt and press **Enter**:

```
cd /opt/usrm
```

Note: Be sure to include the space in the command.

- 3 Type the following command at the system prompt and press **Enter**:

```
./setupusrm.sh
```

Result: The setup script prints out your MAC address for reference and then prompts you with a series of questions about your particular setup environment.

- 4 Answer the following on-screen questions to set up the network and USRM for your particular environment.

Note: If you make an incorrect entry during step 4, press **CTRL - C** and start over at step 3. The letters next to the questions are for reference only and do not appear on screen.

a Do you wish to enable eth0? (yes/no)

Answer "yes" if you want to enable the first Ethernet device. If you answer "yes" to this question, you are prompted with question "b".

- b** Acquire eth0 info via DHCP? (yes/no)

Answer "yes" if you have a DHCP server you would like the machine to get its IP address from. If you answer "no", you will be prompted with questions "c" and "d".

- c** Enter the IP address for eth0:

Answer this question with information provided by your network administrator.

- d** Enter the netmask for eth0:

Answer this question with information provided by your network administrator.

Note: After answering these questions for eth0, you are prompted for the same information for eth1. Answer these questions as outlined above.

- e** Do you want to set a default gateway? (yes/no)

Answer "yes" if your network has a central server that routes all of the network traffic. If you answer "yes" to this question, you are prompted with question "f".

- f** Enter the IP address of the default gateway:

Enter the IP address of the central server that routes your network traffic.

- g** Do you want to set a nameserver? (yes/no)

Answer "yes" if you have a nameserver you would like the USRM Server to use. If you answer "yes" to this question, you are prompted with question "h".

- h** Enter the IP address of the nameserver:

- i** Do you want to set a hostname? (yes/no)

Answer "yes" if you would like the machine to have a unique name on your network. If you answer "yes", you will be prompted with questions "j" and "k".

- j** Enter the hostname:

- k** Enter the domainname:

- l** Do you want this USRM server be provisioned via SNMP? (yes/no)

Answer "yes" if you have a DNCS server or other SNMP provisioner on your network that you would like the USRM to acquire its provisioning from. If you answer "yes", you will be prompted with question "m".

- m** Enter the SNMP Provisioner IP address:

- n** Enter the SNMP Provisioner Host Name [dnccsatm]:

Type a name for your SNMP Provisioner. Use only valid characters A-Z, a-z, and 0-9. To use the default name (dnccsatm), just press Enter. The system displays a message similar to the following:

```
host=dncsatm
Writing DNCS config file... Done.
Adding dncsatm entry to the /etc/hosts file... Done.
```

Note: In the example above, "dncsatm" is replaced by your specific host name if you chose one.

- o** Do you want to setup interfaces on the USRM server?
(yes/no)

Answer "yes" if you want to set which protocols go with which ports. If you answer "yes", you will be prompted with question "p". Select which option, 1 - 3, that best matches your setup, or enter "4" to use the USRM default settings.

- p** Select a custom configuration:
 - (1) All USRM interfaces on one physical interface (eth0)
 - (2) Management on separate interface. (http on eth1, all others on eth0)
 - (3) MiniCarousel on separate interface. (MCP on eth1, all others on eth0)
 - (4) Defaults. Do not write a custom config.

Result: The system writes the USRM interfaces config file and then prompts you with the following choices.

```
Setup Complete. Would you like to:
(1) Exit
(2) Restart Networking
(3) Reboot
Make a selection:
```

Note:

Entering "1" exits and saves your settings but does not put them into effect until the next reboot.

Entering "2" saves the new settings and restarts the USRM to put them into effect.

Entering "3" saves the new settings and clean reboots the USRM to put them into effect.

Result: Server initial setup is complete.

Setting Static Routes

If your network setup requires the use of static routes, you can set those up using the standard scripts available in RedHat Linux Enterprise 5. Follow these steps to setup static routes:

- 1** Create a file `/etc/sysconfig/network-scripts/route-ethX` where X corresponds to the network interface on which you want to set the additional route(s).
- 2** Set three fields in this new file for each new route on the interface: GATEWAY, NETMASK, and ADDRESS. (Each field should have a number appended to it to designate its associated route.) Here is an example of a file which sets static routes on eth0:

```
/etc/sysconfig/network-scripts/route-eth0
```

```
GATEWAY0=10.0.0.1
NETMASK0=255.0.0.0
ADDRESS0=10.0.0.0

GATEWAY1=10.0.1.1
NETMASK1=255.255.255.0
ADDRESS1=192.168.1.0
```

- 3 Save the modified file and either reboot the system or restart networking by entering:

```
service network restart
```

Controlling the USRM Watchdog

The USRM uses a watchdog application to monitor up time and to manage the upgrading of the USRM. Once the USRM software is installed, the watchdog starts automatically on boot.

Important: The watchdog never needs to be shutdown or restarted. The following section is for system maintenance only and should never be required during normal system operation.

Note: If you start the watchdog manually, it will not start the USRM. Once the watchdog has been started, you can start the USRM manually. From that point on, the watchdog will monitor the USRM.

The watchdog can be manually stopped and started using the **tnoswdog** startup script located in the `/etc/init.d` directory. Type the script command, with desired option, at the system prompt and press Enter.

The script can be run with the following options:

Script and Option	Function
<code>/etc/init.d/tnoswdog start</code>	Starts the watchdog.
<code>/etc/init.d/tnoswdog stop</code>	Stops the watchdog. The USRM continues to run but the watchdog no longer maintains it.
<code>/etc/init.d/tnoswdog restart</code>	Restarts the watchdog.
<code>/etc/init.d/tnoswdog status</code>	Displays the status of the watchdog. The status displays whether the watchdog was previously started or stopped.

USRM Startup Procedure

Follow these steps to start up and run the USRM.

- 1 Make sure that you have completed the initial setup procedure in the previous section.

- 2 Log in to the USRM as user "root" using the default password "generic".

- 3 Type the following command at the system prompt and press **Enter**:

```
cd /opt/usrm
```

Note: Be sure to include the spaces in the command.

- 4 Type the following command at the system prompt and press **Enter**:

```
./usrm [command options]
```

where [command options] is replaced by the available command line option(s). Refer to *USRM Startup Command Options* (on page 286) for a command option list.

Result: The USRM starts up, and text similar to the following displays:

```
Application startup
Web server startup
CLI startup
SNMP agent startup
Status monitor startup
Status monitor active
Enter User ID:
```

- 5 Type a user ID and press **Enter**:

Note: The default user IDs are "user" and "admin". The "user" access level is used for normal operation of the server. The "admin" access level is used to modify the configuration of the server, typically during the installation process.

Result: The following prompt displays:

```
Enter Password:
```

- 6 Type the user's password and press **Enter**:

Note: The default password for user is "user". The default password for admin is "admin". These passwords can be changed using the command line interface (CLI). See *Start the Server in Supervised Mode* (on page 407) for details.

Result: The USRM application is running and the following prompt displays:

```
USRM-Pri:
```

or

```
USRM-Sec:
```

Creating QAMs on the USRM

General Rules for Creating QAMs

Observe the following rules for setting up QAMs for use on a USRM.

- The GQAM must be provisioned by a Digital Network Control System (DNCS) or a USRM running BootpServer and tftpserver.
- RFGW1, xDQA, generic QAMs and NGOD QAMs must be manually provisioned on the QAM itself.
- When setting up a QAM as a GQAM, xDQA and RFGW1 using QAM-specific models, the Control IP Address and Service Group (SG) information must be entered on the USRM. The USRM queries the QAM for frequencies, TSIDs, Edge Inputs, etc. If there are valid output ports without assigned TSIDs, such ports must be set to OutOfService before the QAM can be used.
- When setting up a QAM as a generic (GQI) QAM, all information (frequencies, TSIDs, SGs, etc.) must be entered into the USRM manually or via a configuration text file. If there are valid output ports without assigned TSIDs, these ports must be set to OutOfService before the QAM can be used.
- Setting up a NGOD QAM only requires the StreamingZone to be set on the USRM. The QAM announces itself to the USRM and pushes all parameter settings to the USRM. The USRM license file must contain the Component:D6 to work with the NGOD QAM.

NGOD QAM Setup

Perform the following steps to set up a NGOD QAM.

- 1 Select the Resource Manager - Configuration page in the USRM web interface.
- 2 Enter the name of the NGOD zone in the StreamingZone parameter field, as shown in the following illustration.

The screenshot shows the USRM web interface with the 'ResourceManager.Configuration' page. The 'StreamingZone' field is highlighted with a red circle. The interface includes a navigation tree on the left and a configuration table on the right.

ResourceManager.Configuration	
AdminState	InService
StreamingZone	
ResourceAllocationMode	nMLT
MostLoadedThreshold	15.000000
ResourceProtection	Automatic
PingPeriod	2
ResourceDeviceCapacity	Seconds
OverrideMacAddr	1000
MaxServiceGroups	000000000000
DisplayMode	2500
MaxQamChannels	Normal
MaxSupportedSessions	1000
ConfigHashWidth	100000
SessionUdpPortMin	16
SessionUdpPortMult	10000
SessionUdpPortMax	1
ServerName	65535
HeadendName	
HubName	
SessionUserDataFormat	UUID
MinimumTransactionTimeout	2000
PolicyMode	milliseconds
GbePortProtection	GuaranteeAll
ResourceDeviceSelectMode	Automatic
	PriorityEncrypt

Buttons at the bottom: Commit Changes, Reload, Logout

Note: This name must exactly match the name entered on the NGOD QAM.

- 3 Click **Commit Changes**.
- 4 Set up the streaming zone and the ERM IP (the IP address of the USRM Service port) on the NGOD QAM.

GQAM, xDQA, RFGW-1, and Generic QAM Setup

Perform the following step to set up a GQAM, xDQA, RFGW-1, or generic QAM.

- 1 Select the Platform - ConfigManager - Resource Create page in the USRM web interface.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. On the left is a 'Navigation Tree' with a search box and a list of categories including VSM02-Tom, Configuration, Interfaces, Reset, Software, System, Virtual Interfaces, Platform, and others. Under 'Platform', 'ConfigManager' is expanded, and 'Resource Create' is selected. The main content area is titled 'ConfigManager.Resource Create' and features a table with the following data:

Type	TypeName	CreateName
1	Mqam	
2	gqam	
3	Ermi2Qam	
4	GqiQam	
5	CaManagerPk	
6	Rfgw1	
7	xDQA24	
8	D6Qam	
9	ERM	
10	CMTS	
11	GqiQam36	
12	TableQam	
13	netcrypt	

Below the table are buttons for 'Commit Changes', 'Reload', and 'Logout'. At the bottom, there is a 'Search' button and a 'Create CSV' button.

- 2 Enter a unique QAM name in the CreateName field as required for your QAM types and Click **Commit Changes**.

Note: An xDQA is entered as a GqiQam in this example (xDQA899). For customer/field deployments, use the xDQA24 model (Type 7) in order to get the SNMP information associated with the xDQA reported back to the USRM.

- 3 Refresh the page by clicking refresh on your browser or by selecting the top of the navigation tree in the USRM web interface.

Chapter 4 Operation

- 4 Expand the ResourceManager - QAMs branch of the tree to view the new QAMs.

ConfigManager.Resource Create

Type	TypeName	CreateName
1	Mqam	
2	gqam	
3	Ermi2Qam	
4	GqiQam	
5	CaManagerPk	
6	Rfgw1	
7	xDQA24	
8	D6Qam	
9	ERM	
10	CMTS	
11	GqiQam36	
12	TableQam	
13	netcrypt	

Commit Changes Reload Logout

Search Create CSV

GQAM Setup Using GQAM Model

Perform the following steps to set up a GQAM using a GQAM model.

- 1 Expand the ResourceManager - QAMs branch in the USRM web interface, and then select the QAM <QamName> - Chassis page.

Note: In this example, the QAM is named QAM GQAM03.

- 2 Enter the CtrlIpAddress, and then click **Commit Changes**.

The screenshot shows the Cisco USRM (Universal Session & Resource Manager) web interface. On the left is a navigation tree with the following structure:

- NLS
- Network Config
- PCMM Config
- Resource Backup
- Server Status
- Service Groups Chann
- Service Groups Config
- Service Groups Graph
- Service Groups Statist
- Session List
- Software
- Statistics 15-mins
- Statistics Accumulator
- Statistics Daily
- Status
- Adaptors
- QAMs
 - Software
 - QAM GQAM03
 - Chassis (highlighted)
 - Configuration
 - Data GbE Ports
 - Logging Config
 - Output Ports
 - QAM Channels
 - Sessions
 - Snmp Config
 - Software
 - QAM RFGW1-1
 - QAM RFGW1-416
 - CA Support
 - Chassis
 - Configuration
 - Edge Inputs

The main content area is titled "GQAM03.Chassis" and contains the following configuration fields:

ProductType	GQAM
Name	GQAM03
NumOutputPorts	4
NumChansPerPort	4
AlarmThreshold	1
FailThreshold	1
Protection	Automatic
CtrlIpAddress	172.16.6.4
CtrlMacAddress	0002de828890
SubnetMask	255.255.255.0
GatewayIPAddr	n/a
ConfigFile	
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000 ms
Commands	4266475
CommandFailures	38
QueueDepth	0
MaxQueueDepth	67
AllocatedBandwidth	0.000000
ActiveSessions	0
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps

At the bottom of the configuration area are three buttons: "Commit Changes", "Reload", and "Logout". The "CtrlIpAddress" field is circled in red in the original image.

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- 3 Select the ResourceManager - QAMs - QAM <QamName> - Data GbE Ports page.

The screenshot shows the Cisco USRM (Universal Session & Resource Manager) web interface. On the left is a navigation tree with categories like NLS, Network Config, PCMM Config, Resource Backup, Server Status, Service Groups, and Adaptors. Under Adaptors, the 'QAMs' section is expanded, showing a list of QAMs including 'QAM GQAM03'. The 'Data GbE Ports' configuration page for 'GQAM03' is displayed on the right. It contains a table with the following fields: DataIpAddress (172.16.15.9, circled in red), RedundancyMode, DataIpAddress2 (n/a), VirtualIpAddr (n/a), ActiveGigEPort, ActiveIpAddress (n/a), and GbESubnetMask (255.255.255.0). There are 'Reload' and 'Logout' buttons at the bottom of the configuration area.

- 4 Verify the DataIpAddress. The DataIpAddress field is editable by Admin users in version 1.6.x.
- 5 Select the ResourceManager - QAMs - QAM <QamName> - Output Ports page.

The screenshot shows the Cisco USRM web interface, specifically the 'GQAM03.Output Ports' configuration page. The left navigation tree is similar to the previous screenshot, but the 'Output Ports' option under 'QAM GQAM03' is selected. The main content area displays a table with columns: Port, ServiceGroupId (circled in red), AdminState, and AllocatedBandwidth (Mbps). The table contains four rows of data. Below the table are buttons for 'Commit Changes', 'Reload', and 'Logout', along with a 'Search' field and a 'Create CSV' button.

Port	ServiceGroupId	AdminState	AllocatedBandwidth (Mbps)
1	0	InService	0.000000
2	43	InService	0.000000
3	16	InService	0.000000
4	0	InService	0.000000

- 6 Enter the Service GroupId for applicable RF Ports, and then click **Commit Changes**.

- 7 Select the ResourceManager - Service Groups Config page.

ResourceManager.Service Groups Config

SgIndex	ServiceGroupId	Name	Hub	AdminState
1	16		0	InService
2	43		0	InService
3	10226		0	InService
4	10225		0	InService
5	10227		0	InService
6	10228		0	InService
7	10000		0	InService
8	10001		0	InService
9	10002		0	InService
10	10003		0	InService
11	10004		0	InService
12	10005		0	InService
13	10006		0	InService
14	10007		0	InService
15	10008		0	InService
16	10009		0	InService
17	10010		0	InService
18	10011		0	InService
19	10012		0	InService
20	10013		0	InService
21	10014		0	InService
22	10015		0	InService
23	10016		0	InService
24	10017		0	InService
25	10018		0	InService

- 8 Verify or enter Service Group information as required, and then click **Commit Changes**.
- 9 Select the Applications - McmisServer - Service Groups page.

McmisServer.Service Groups

ServiceGroup	ServiceGroupId	Name	McpDestAddress	McpVersionNumber
--------------	----------------	------	----------------	------------------

- 10 Verify or enter Mcmis information as required.
- 11 Enter the McpDestAddress for each Service Group, and then click **Commit Changes**.
- 12 Select the Applications - SdvSm - Service Groups Config page.

SgIndex	ServiceGroupId	Name	Hub	AdminState	Zone	MinActiveBandwidth (Mbps)	MaxActiveBandwidth (Mbps)	STBCapacityStatus	STBCapacityExhausted
1	11		0	InService	0	0.000000	300.000000	OK	OK
2	41		0	InService	0	0.000000	300.000000	OK	OK
3	1442		0	InService	0	0.000000	150.000000	OK	OK
4	1443		0	InService	0	0.000000	150.000000	OK	OK
5	1444		0	InService	0	0.000000	150.000000	OK	OK
6	1445		0	InService	0	0.000000	150.000000	OK	OK
7	1446		0	InService	0	0.000000	150.000000	OK	OK
8	1447		0	InService	0	0.000000	150.000000	OK	OK
9	1448		0	InService	0	0.000000	150.000000	OK	OK
10	1449		0	InService	0	0.000000	150.000000	OK	OK
11	1450		0	InService	0	0.000000	150.000000	OK	OK
12	1451		0	InService	0	0.000000	150.000000	OK	OK
13	1452		0	InService	0	0.000000	150.000000	OK	OK
14	1453		0	InService	0	0.000000	150.000000	OK	OK
15	1454		0	InService	0	0.000000	150.000000	OK	OK
16	1455		0	InService	0	0.000000	150.000000	OK	OK
17	1456		0	InService	0	0.000000	150.000000	OK	OK
18	1457		0	InService	0	0.000000	150.000000	OK	OK
19	1458		0	InService	0	0.000000	150.000000	OK	OK
20	1459		0	InService	0	0.000000	150.000000	OK	OK
21	1460		0	InService	0	0.000000	150.000000	OK	OK
22	1461		0	InService	0	0.000000	150.000000	OK	OK
23	1462		0	InService	0	0.000000	150.000000	OK	OK
24	1463		0	InService	0	0.000000	150.000000	OK	OK
25	1464		0	InService	0	0.000000	150.000000	OK	OK

- 13 Verify or enter Service Group information as required, and then click **Commit Changes**.

Note: If MinActiveBandwidth = 0 on this page, then the Global MinActiveBandwidth value will be used from Applications - SdvSm - Configuration - MinActiveBandwidth.

- 14 Select the Applications - SdvSm - Service Group Bandwidth page.

SgIndex	ServiceGroup	ErmlpAddress	ActiveBw (Mbps)
---------	--------------	--------------	-----------------

USRM

Universal Session & Resource Manager

Adaptors

QAMs

Applications

Software

SdvSm

Active Progs Base

Activity Log

Configuration

ERM Configuration

Hub Names

Log2 Clients

Log2 Configuration

Logging Config

Network Config

Offered Progs Base

Offered Progs Form

Offered Progs Offe

Offered Progs Zone

Program Zones

Programs Backup

Qam Channels

STB Conditional-Ac

STB Default Capabi

STB Inventory

STB Network

STB Non-Responde

STB Screens

STB Tuner-Capabili

STB Tuner-State

Service Groups Bar

Service Groups Cor

Service Groups Sta

Software

Source Priority

Status

McmisServer

NgodSdvMcp

NgodCdfSdvMcp

S6Server

BootpServer

SdbServerAgent

SdvSm.Service Groups Bandwidth

SgIndex	ServiceGroup	QamGraphic	Active (Mbps)	Fill (Mbps)	Background (Mbps)	Recapture (Mbps)
1	11	Display	7.500000	0.000000	0.000000	7.500000
2	41	Display	11.250000	0.000000	0.000000	0.000000
3	1442	Display	0.000000	0.000000	0.000000	0.000000
4	1443	Display	0.000000	0.000000	0.000000	0.000000
5	1444	Display	0.000000	0.000000	0.000000	0.000000
6	1445	Display	0.000000	0.000000	0.000000	0.000000
7	1446	Display	0.000000	0.000000	0.000000	0.000000
8	1447	Display	0.000000	0.000000	0.000000	0.000000
9	1448	Display	0.000000	0.000000	0.000000	0.000000
10	1449	Display	0.000000	0.000000	0.000000	0.000000
11	1450	Display	0.000000	0.000000	0.000000	0.000000
12	1451	Display	0.000000	0.000000	0.000000	0.000000
13	1452	Display	0.000000	0.000000	0.000000	0.000000
14	1453	Display	0.000000	0.000000	0.000000	0.000000
15	1454	Display	0.000000	0.000000	0.000000	0.000000
16	1455	Display	0.000000	0.000000	0.000000	0.000000
17	1456	Display	0.000000	0.000000	0.000000	0.000000
18	1457	Display	0.000000	0.000000	0.000000	0.000000
19	1458	Display	0.000000	0.000000	0.000000	0.000000
20	1459	Display	0.000000	0.000000	0.000000	0.000000
21	1460	Display	0.000000	0.000000	0.000000	0.000000
22	1461	Display	0.000000	0.000000	0.000000	0.000000
23	1462	Display	0.000000	0.000000	0.000000	0.000000
24	1463	Display	0.000000	0.000000	0.000000	0.000000
25	1464	Display	0.000000	0.000000	0.000000	0.000000

Commit Changes

Reload

Logout

Prev Page

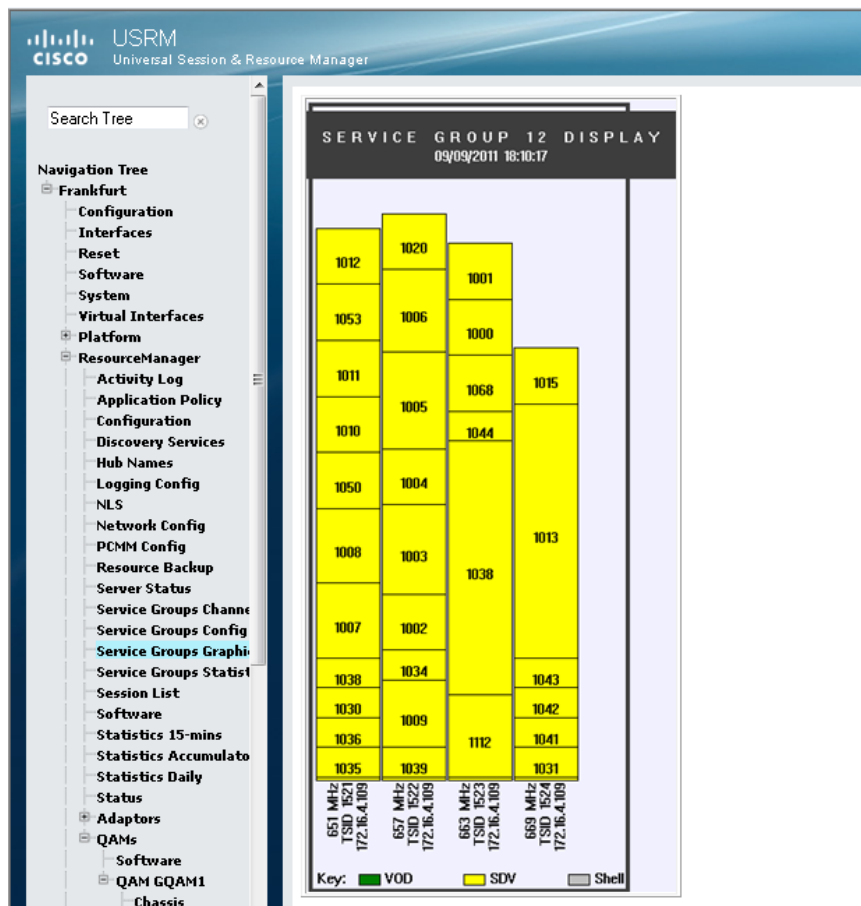
Next Page

Search

Create CSV

15 Verify that the proper bandwidth has been allocated to the Service Group.

- 16 Select the ResourceManager - Service Groups Graphics page, and then select QamComposition - Display.



- 17 Verify GQAM carriers on the Service Group display.

xDQA QAM Setup Using xDQA Model

Perform the following steps to set up an xDQA QAM using an xDQA QAM model.

- 1 Expand the ResourceManager - QAMs branch in the USRM web interface and select the QAM <QamName> - Chassis page.

Note: In this example, the xDQA QAM is named QAM xDQA_Scott

- 2 Enter the CtrlIpAddress, DataIpAddress, Protection, and AdminState, and then click **Commit Changes**.

The screenshot shows the USRM (Universal Session & Resource Manager) web interface. The left sidebar contains a navigation tree with the following structure:

- Virtual Interfaces
 - Platform
 - ResourceManager
 - Activity Log
 - Application Policy
 - Configuration
 - Discovery Services
 - Hub Names
 - Logging Config
 - NLS
 - Network Config
 - PCMM Config
 - Resource Backup
 - Server Status
 - Service Groups Chann
 - Service Groups Config
 - Service Groups Graph
 - Service Groups Statist
 - Session List
 - Software
 - Statistics 15-mins
 - Statistics Accumulator
 - Statistics Daily
 - Status
 - Adaptors
 - QAMs
 - Software
 - QAM RGW-15-d
 - QAM xDQA_Scott
 - Chassis (selected)
 - Configuration
 - Gbe Link Status
 - Logging Config

The main panel displays the configuration for **xDQA_Scott.Chassis**. The configuration fields are as follows:

ProductType	xDQA-24
Name	xDQA_Scott
NumOutputPorts	12
NumChansPerPort	2
AlarmThreshold	1
FailThreshold	1
Protection	Automatic
CtrlIpAddress	172.16.4.40
DataIpAddress	172.18.40.1
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000
ms	
Commands	59
CommandFailures	0
QueueDepth	0
MaxQueueDepth	3
AllocatedBandwidth	7.900000
ActiveSessions	4
QamGraphic	Display
OverheadBandwidth	0.000000
Mbps	
EmbeddedSoftwareVersion	V04.01.39 (20/05/08)
SwitchingMode	Session

At the bottom of the panel, there are three buttons: **Commit Changes**, **Reload**, and **Logout**.

Chapter 4 Operation

- 3 Select the ResourceManager - QAMs - QAM <QamName> - Output Ports page.

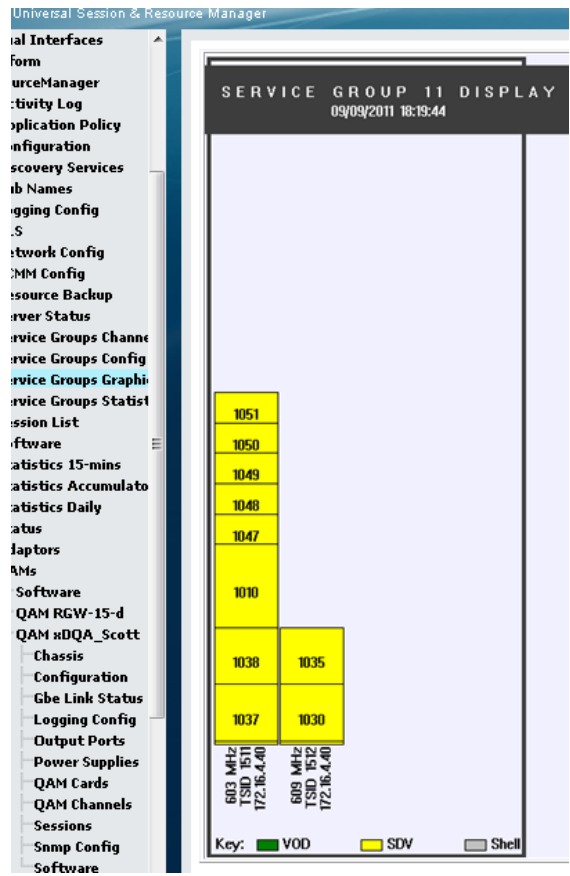
Port	ServiceGroupId	ModulationFormat	AdminState	AllocatedBandwidth (Mbps)
1	11	QAM-256	InService	7.900000
2	0	QAM-256	InService	0.000000
3	0	QAM-256	InService	0.000000
4	0	QAM-256	InService	0.000000

Commit Changes Reload Logout

Search Create CSV

- 4 Set the ServiceGroupId as required, and then click **Commit Changes**.
- 5 If not already done, perform steps for the xDQA similar to steps 5 through 15 shown in the GQAM example under GQAM Setup Using GQAM Model.

- 6 Select the ResourceManager - Service Groups Graphics page, and then select QamComposition - Display.



- 7 Verify xDQA carriers on the Service Group display.

RFGW-1 QAM Setup Using RFGW-1 Model

Perform the following steps to set up an RFGW-1 QAM using an RFGW1 model.

- 1 Expand the ResourceManager - QAMs branch in the USRM web interface, and then select the QAM <QamName> - Chassis page.

Note: In this example, the QAM is named QAM RFGW_416.

- 2 Enter the CtrlIPAddress, Protection, AdminState, and DeviceName, and then click **Commit Changes**.

Note: DeviceName is not settable in version 1.6.0.

USRM
Universal Session & Resource Manager

Configuration

- Discovery Services
- Hub Names
- Logging Config
- NLS
- Network Config
- PCMM Config
- Resource Backup
- Server Status
- Service Groups Chann
- Service Groups Config
- Service Groups Graph
- Service Groups Statist
- Session List
- Software
- Statistics 15-mins
- Statistics Accumulator
- Statistics Daily
- Status
- Adaptors
- QAMs
 - Software
 - QAM QAM03
 - QAM RFGW1-1
 - QAM RFGW1-416
 - CA Support
 - Chassis
 - Configuration
 - Edge Inputs
 - Gbe Ports

RFGW1-416.Chassis

ProductType	RFGW1
Name	RFGW1-416
CtrlMacAddress	00504b113236
DeviceName	rfgw-1d 4.16
ChannelsPerPort	8
CtrlIp Address	172.16.4.16
AdminState	InService
State	OK
InterfaceStatus	OK
TransactionTimeout	5000 ms
Commands	0
CommandFailures	0
QueueDepth	0
MaxQueueDepth	0
AllocatedBandwidth	0.000000
ActiveSessions	0
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps
ActiveReleaseVersion	06.00.11
InactiveReleaseVersion	06.00.09

Commit Changes Reload Logout

- 3 Select the ResourceManager - QAMs - QAM <QamName> - Output Ports page.

Note: This example shows a 48-channel RFGW-1. The display for a 96-channel RFGW-1 is similar.

USRM
Universal Session & Resource Manager

Service Groups Config

- Service Groups Graph
- Service Groups Statist
- Session List
- Software
- Statistics 15-mins
- Statistics Accumulator
- Statistics Daily
- Status
- Adaptors
- QAMs
 - Software
 - QAM QAM03
 - QAM RFGW1-1
 - QAM RFGW1-416
 - CA Support
 - Chassis
 - Configuration
 - Edge Inputs
 - Gbe Ports
 - Logging Config
 - Output Ports
 - Power Supplies
 - QAM Cards
 - QAM Channels
 - Sessions
 - Snmp Config
 - Software

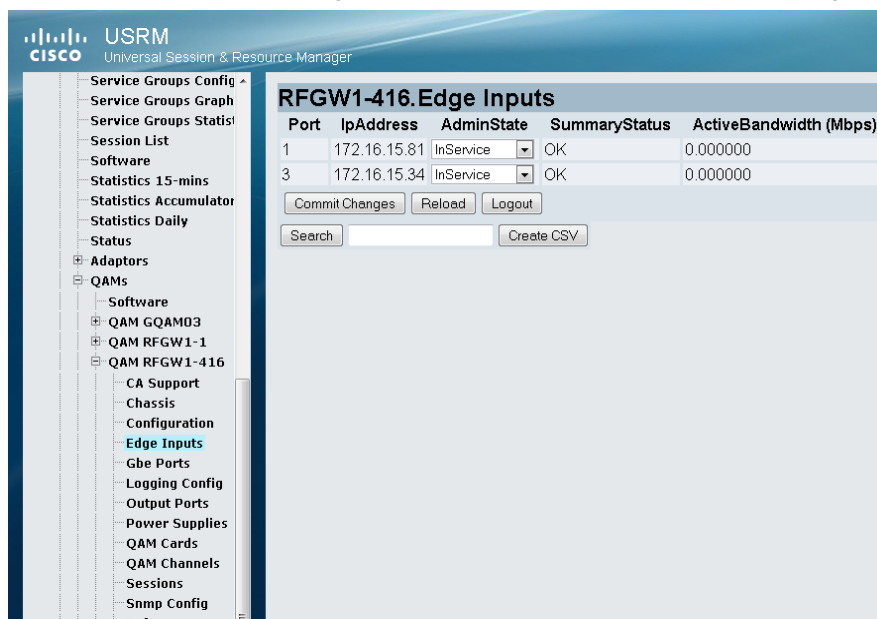
RFGW1-416.Output Ports

Port	ServiceGroupId	ModulationFormat	AdminState	OutputLevel (dBmV)	ChannelMode	ChannelMode2	PortControl	AllocatedBandwidth (Mbps)
1	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
2	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
3	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
4	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
5	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
6	0	QAM-256	InService	52.0	Quad	Quad	On	0.000000
11	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000
12	0	QAM-256	InService	50.0	Quad	Quad	On	0.000000

Commit Changes Reload Logout

Search Create CSV

- 4 Verify the ServiceGroupId, ModulationFormat, AdminState, OutputLevel, and ChannelMode(s) as required.
- 5 Select the ResourceManager - QAMs - QAM <QamName> - Edge Inputs page.



- 6 Verify the edge inputs.

Note: If only one input is to be used or if the RFGW-1 will be controlling the load balancing, set the Port 3 AdminState to OutOfService. If the USRM will be controlling the load balancing, verify or set Port 1 and Port 3 AdminState to InService as shown above.

- 7 Select QAMs <QamName> - Gbe Ports and verify these settings.

Port	IpAddress	InterfaceState	PortMask	PortMacAddress	VirtualIPAddress	LinkStatus	LinkRecoveryTime	RedundancyMode
1	150.158.231.250	Connected	255.255.255.0	00504b11300c	172.18.90.1	OK	2011/08/16 18:05:41	Auto
2	150.158.232.250	NotConnected	255.255.255.0	00504b11300d	172.18.90.1	n/a	2011/08/16 18:06:15	Auto
3	150.158.233.250	NotConnected	255.255.255.0	00504b11300e	172.18.90.1	n/a	2011/08/17 10:20:53	Auto
4	150.158.234.250	NotConnected	255.255.255.0	00504b11300f	172.18.90.1	n/a	2011/08/16 18:06:15	Auto

Port	IpAddress	InterfaceState	PortMask	PortMacAddress	LinkStatus	LinkRecoveryTime
1	172.16.15.81	Connected	255.255.255.252	00504b113238	OK	n/a
2	172.18.63.5	NotConnected	255.255.255.0	00504b113239	n/a	2011/08/27 15:41:35
3	172.16.15.34	Connected	255.255.255.252	00504b11323a	OK	n/a
4	172.18.62.5	NotConnected	255.255.255.0	00504b11323b	n/a	2011/04/19 15:24:12

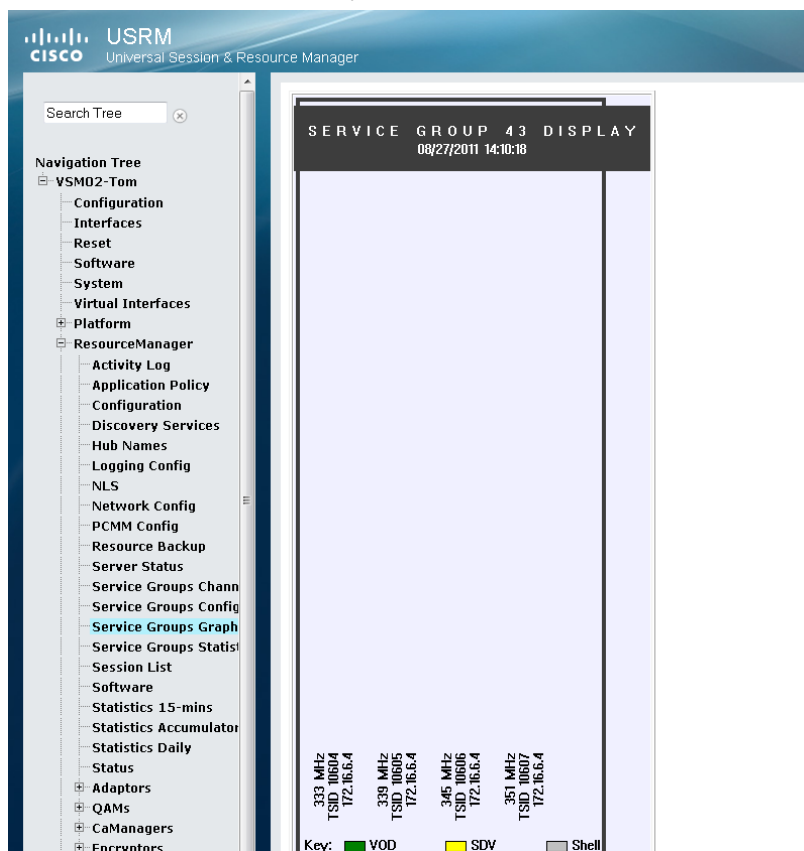
Note: The example shown above is for Port Pairs. There is also an Independent mode in which all four ports are independent. The four-port independent mode is needed if the RFGW-1 is to be used as a 96-port QAM. An example of four-port independent mode is shown below.

Port	IpAddress	InterfaceState	PortMask	PortMacAddress	VirtualIPAddress	LinkStatus	LinkRecoveryTime	RedundancyMode
1	150.158.231.250	Connected	255.255.255.0	00504b11300c	172.18.90.1	OK	2011/08/16 18:05:41	Manual
2	150.158.232.250	NotConnected	255.255.255.0	00504b11300d	172.18.90.1	n/a	2011/08/31 13:02:21	Manual
3	150.158.233.250	NotConnected	255.255.255.0	00504b11300e	172.18.90.1	n/a	2011/08/31 13:02:21	Manual
4	150.158.234.250	NotConnected	255.255.255.0	00504b11300f	172.18.90.1	n/a	2011/08/31 13:02:21	Manual

For additional important information, see the **Note on Four-Port Independent Mode** at the end of this section.

- 8 If not already done, perform steps for the RFGW-1 similar to steps 5 through 15 shown in the GQAM example under GQAM Setup Using GQAM Model.

- 9 Select the ResourceManager - Service Groups Graphics page, and then select QamComposition - Display.



- 10 Verify RFGW-1 carriers on the Service Group display.

Note on Four-Port Independent Mode

You can change an RFGW-1 from dual port pairs to independent mode at any time. However, you should only change the GbE Data Port mode during a maintenance window; otherwise, active users will see frozen video.

Also, you should make this change on the RFGW-1 and not on the USRM. To ensure optimum operation, you must delete the QAM and add it back to the USRM.

When the RFGW-1 is in Four-Port Independent mode, there is no indication on the USRM that some of the fields on the USRM are no longer used. These fields include the following:

- Virtual IP Address
- Redundancy Mode
- Primary Port
- Active Port

Generic QAM Setup

Perform the following steps to set up a generic QAM.

- 1 Expand the ResourceManager - QAMs branch in the USRM web interface and select the QAM <QamName> - Chassis page.

Note: In this example, the QAM is named QAM D5-415.

Enter the CtrlIPAddress, Protection, AdminState and OverheadBandwidth, and then click **Commit Changes**.

The screenshot shows the Cisco Universal Session & Resource Manager (USRM) web interface. On the left is a navigation tree with the following structure:

- Search Tree
- Boulder
 - Configuration
 - Interfaces
 - Reset
 - Software
 - System
 - Virtual Interfaces
 - Platform
 - ResourceManager
 - Activity Log
 - Application Policy
 - Configuration
 - Discovery Services
 - Hub Names
 - Logging Config
 - NLS
 - Network Config
 - PCMN Config
 - Resource Backup
 - Server Status
 - Service Groups Chan
 - Service Groups Con
 - Service Groups Grap
 - Service Groups Stat
 - Session List
 - Software
 - Statistics 15-mins
 - Statistics Accumula
 - Statistics Daily
 - Status
 - Adaptors
 - QAMs
 - Software
 - QAM rfgw1-424
 - QAM D5-415
 - Chassis
 - Configuration
 - Edge Inputs
 - Logging Config
 - Output Ports
 - QAM Channels
 - Sessions
 - Software

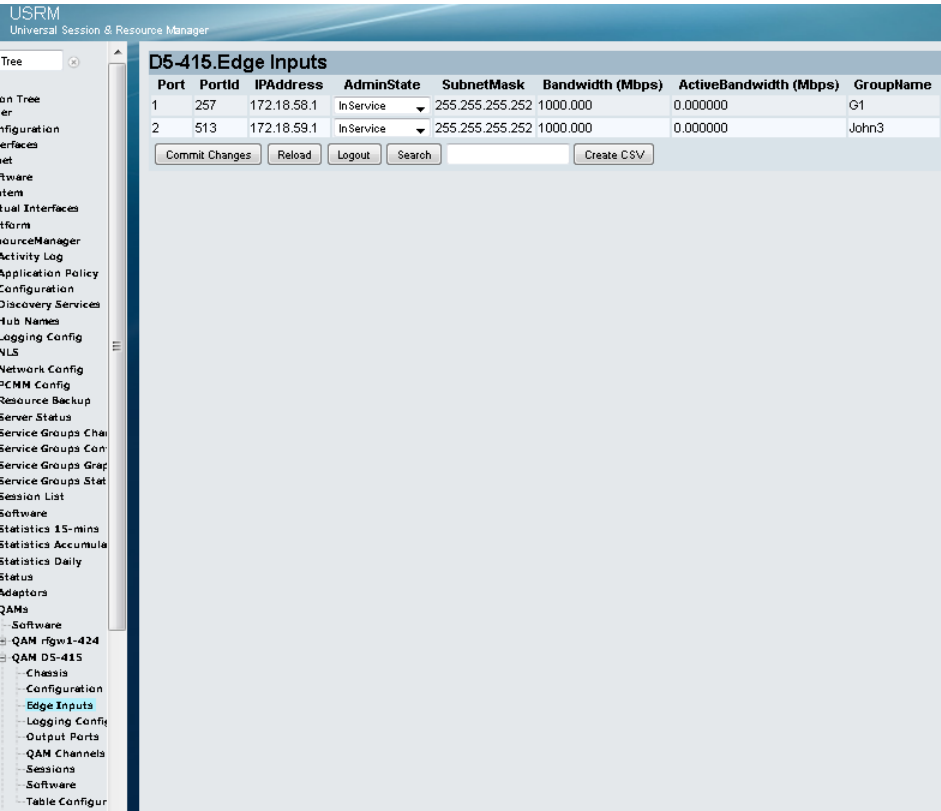
The main content area displays the configuration for 'D5-415.Chassis'.

ProductType	D6Qam
Name	D5-415
NumOutputPorts	192
NumChansPerPort	1
AlarmThreshold	1
FailThreshold	2
Protection	Manual
CtrlIpAddress	172.16.4.15
Cost	1
ServiceState	Operational
AdminState	Out Of Service
State	OK
InterfaceStatus	OK
Commands	78926
CommandFailures	0
QueueDepth	0
MaxQueueDepth	22
AllocatedBandwidth	0.000000
ActiveSessions	0
QamGraphic	Display
OverheadBandwidth	0.000000 Mbps
VrepVersion	2
SessionTimeout	3600 Seconds
ConnectionTimeout	300 Seconds

At the bottom of the configuration area are three buttons: **Commit Changes**, **Reload**, and **Logout**.

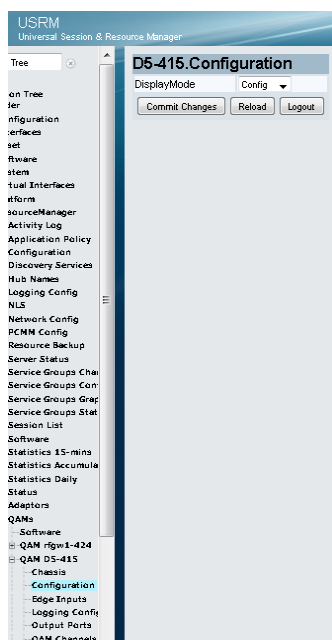
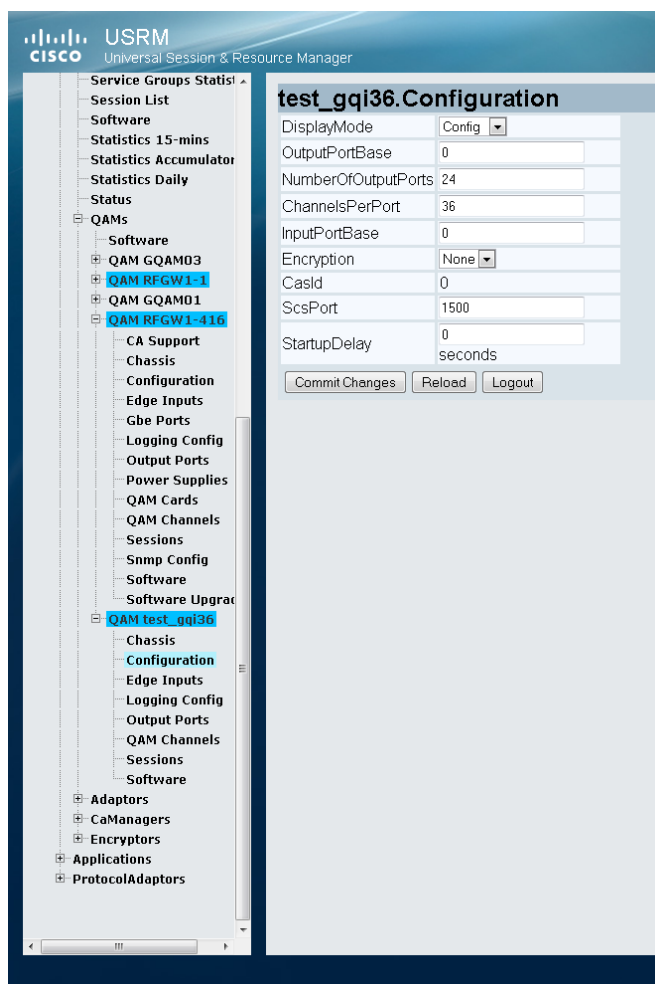
- 2 Select the ResourceManager - QAMs - QAM <QamName> - Edge Inputs page.
- 3 Enter the IP Address(es), and then click **Commit Changes**.

Creating QAMs on the USRM



- 4 Select the ResourceManager - QAMS - QAM <QamName> - Configuration Page.

Chapter 4 Operation



- 5 Set the OutputPortBase, NumberOfOutputPorts, and ChannelsPerPort. Set the DisplayMode to Config, and then click **Commit Changes**.
- 6 Select the ResourceManager - QAMs - QAM <QamName> - Output Ports page.

USRM
Universal Session & Resource Manager

D5-415.Output Ports

Chan	ServiceGroupID	AdminState	AllocatedBandwidth (Mbps)
1	15	InService	0.000000
2	15	InService	0.000000
3	15	InService	0.000000
4	15	InService	0.000000
5	15	InService	0.000000
6	15	InService	0.000000
7	25	InService	0.000000
8	25	InService	0.000000
9	25	InService	0.000000
10	25	InService	0.000000
11	20	InService	0.000000
12	20	InService	0.000000
13	20	InService	0.000000
14	20	InService	0.000000
15	26	InService	0.000000
16	26	InService	0.000000
17	26	InService	0.000000
18	26	InService	0.000000
19	21	InService	0.000000
20	21	InService	0.000000
21	21	InService	0.000000
22	21	InService	0.000000
23	27	InService	0.000000
24	27	InService	0.000000
25	27	InService	0.000000
26	27	InService	0.000000
27	22	InService	0.000000
28	22	InService	0.000000
29	22	InService	0.000000
30	22	InService	0.000000

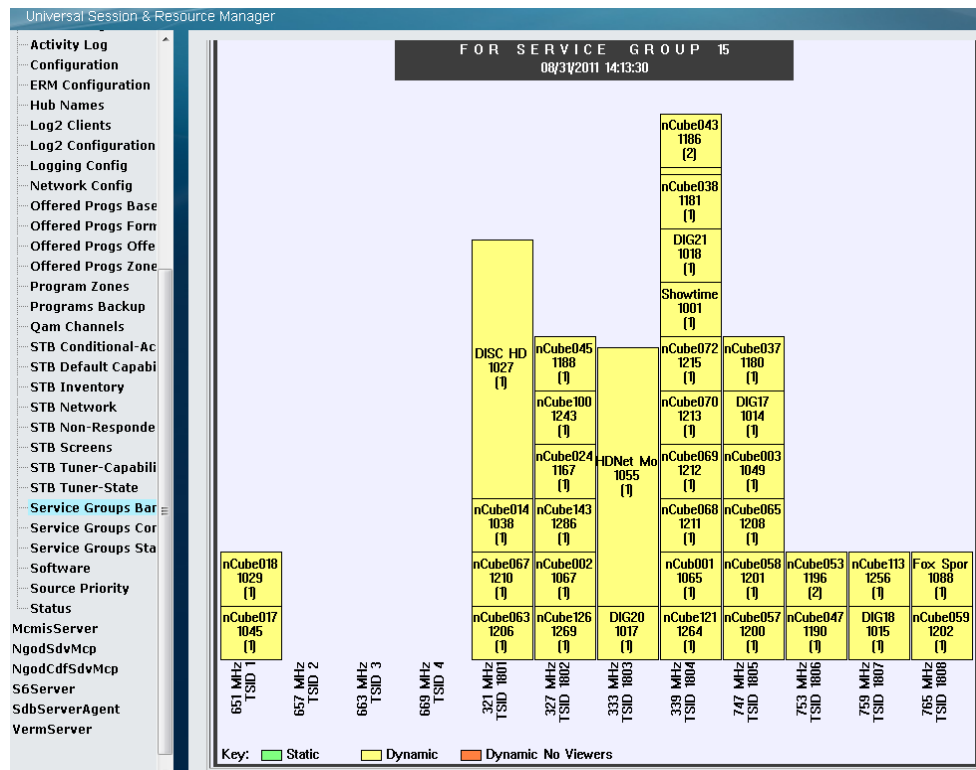
Commit Changes Reload Logout Prev Page Next Page
Search Create CSV

- 7 Set the ServiceGroupID as required, and then click **Commit Changes**.
- 8 Select the ResourceManager - QAMs - QAM <QamName> - QAM Channels page.

Chapter 4 Operation

D5-415.QAM Channels											
Chan	TSID	Frequency (MHz)	ModulationFormat	Service	AdminState	Application	ReservedBandwidth (Mbps)	ReservedSessions	AllocatedBandwidth (Mbps)	UdpPortBase	
1	14011	261.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
2	14021	267.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
3	14031	273.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
4	14041	279.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
5	14051	285.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
6	14061	291.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
7	14191	369.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
8	14201	375.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
9	14211	381.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
10	14221	387.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
11	14251	411.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
12	14261	417.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
13	14271	423.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
14	14281	429.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
15	14311	447.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
16	14321	453.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
17	14331	459.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
18	14341	465.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
19	14371	477.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
20	14381	483.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
21	14391	489.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
22	14401	495.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
23	14431	519.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
24	14441	525.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
25	14451	531.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
26	14461	537.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
27	14491	579.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
28	14501	585.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
29	14511	591.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	
30	14521	597.000000	QAM-256	Any	InService		0.000000	0	0.000000	0	

- Set the TSID, Frequency, ModulationFormat, and AdminState, and then click **Commit Changes**.
- If not already done, perform steps for the QAM similar to steps 5 through 15 shown in the GQAM example under GQAM Setup Using GQAM Model.
- Select the ResourceManager - Service Groups Graphics page, and then select **QamComposition - Display**.



12 Verify generic QAM carriers on the Service Group display.

Removing a QAM Chassis From the USRM

Perform the following steps to remove a QAM chassis from the USRM.

- 1 Select the Resource Manager - QAMs - QAM <QamName> - Output Ports page, where QamName is the name of the QAM to be removed.
- 2 Set the AdminState to Release and click **Commit Changes**.
Result: This releases all sessions on all output ports of the QAM.
- 3 Set the AdminState to Delete and click **Commit Changes**.
Result: This removes the QAM from the USRM database.
- 4 Refresh the navigation tree and verify that the QAM is gone.

Note: In a DNCS 4.2.0 system, once a GQAM is removed from a USRM, you should update the DNCS Service Group page(s) by removing the GQAM TSIDs from the Selected Ports window and placing them back into the Available Ports window. For a system running DNCS release 4.2.1 or greater, this is also applicable to any third party QAMs that are being used or shared by the DNCS and USRM.

Adding and Deleting Service Groups to a USRM Using the Web Interface

Adding Service Groups to a USRM

Adding a service group and other resources to a USRM in release 1.5.0 or greater requires a process that is a combination of procedures on the USRM as well as on the DNCS. The basic flow of the process is as follows.

- 1 From the DNCS, create the service group and assign it to the USRM.
- 2 From the USRM, create/add/modify resources and associate service groups to the QAM output ports.
- 3 From the USRM, associate zone information with the service groups for sites configured with zones.

Note: You should open a tail of the USRM's EventLog to monitor the actions that occur during the process.

The following sections explain each of these procedures in detail.

Creating/Modifying a SDV-Enabled Service Group on the DNCS

Perform the following steps to create or modify a SDV-enabled service group on the DNCS.

- 1 Access the Service Group Data - Open Service Group screen.

DNCS/Service Group Data/Open Service Group

[Save Service Group](#)

[Exit](#)

[Help](#)

Edit Service Group

Service Group Id	Parent Id	Name	Children
2	0	SG 2	

Ports

Available Ports

- GQAM20-RF OUT 4 (16)
- GQAM02-RF OUT 1 (2)
- GQAM02-RF OUT 1 (3)
- GQAM02-RF OUT 1 (4)
- GQAM02-RF OUT 3 (9)
- GQAM02-RF OUT 3 (10)
- GQAM02-RF OUT 3 (11)
- GQAM02-RF OUT 3 (12)
- GQAM02-RF OUT 4 (13)
- GQAM02-RF OUT 4 (14)

[Add ==>](#)

[<== Remove](#)

Selected Ports

- GQAM02-RF OUT 2 (7)
- GQAM02-RF OUT 2 (8)

SDV Enabled ☒

Primary SDV Server: Stuttgart

Mini-Carousel Destination IP: 232.100.0.2

Maximum Bandwidth: 150 Mbps

Bandwidth Release Increment: 0 Mbps

Bandwidth Release Interval: 0 Seconds

Recapture Bandwidth Threshold: 0 Mbps

	Quantity	Rate(Mpbs)	Channels Overhead
Contiguous Bandwidth 1:	0	0	0
Contiguous Bandwidth 2:	0	0	0
Contiguous Bandwidth 3:	0	0	0

- 2 Select the desired USRM under Primary SDV Server. Enter the mini-carousel multicast destination IP address. Enter the service group maximum bandwidth.
- 3 Recommended optional step: In a DNCS 4.2.0 system, if GQAMs are used in the USRM's SDV service group, enter the QAM carriers into the Selected Ports window. While this information is not directly provisioned into the USRM by the DNCS, allocating the carriers here eliminates the potential that an operator will inadvertently "reuse" them as a VOD carrier by taking them out of the Available Ports list.

Note: For a system running DNCS release 4.2.1 or greater, step 3 is also applicable to any third party QAMs that are being used/shared by the DNCS and USRM.

- 4 Click **Save Service Group** to save your changes.

Adding Resources to the USRM and Associating QAM Output Ports to Service Groups

The USRM supports all Cisco QAMs (GQAM, RFGW, xDQA) as well as third party QAMs that adhere to the GQI and NGOD specifications. This procedure uses Cisco QAMs as examples.

Perform the following steps.

- 1 Create the QAM on the USRM.

Adding and Deleting Service Groups to a USRM Using the Web Interface

- a On the Platform - ConfigManager - Resource Create page, enter a unique resource name in the CreateName field associated with the device type you want to create.
Note: QAM names cannot contain spaces.
 - b Click **Commit Changes**.
 - c Repeat this for all resources to be added.
 - d Refresh the navigation tree. Either click the top-level USRM name or click the web browser refresh button.
Note: This causes the newly-added resources to display in the navigation tree in the ResourceManager section.
- 2 Read the QAM settings. (Cisco QAMs only.)
 - a Select the Resource Manager - QAMs - QAM <QamName> - Chassis page.
 - b Enter the IP Address of the QAM's management port in the CtrlIpAddress field and click **Commit Changes**.
Note: This causes the USRM to read the QAM settings (frequency, TSID, etc.) via SNMP and place the information in the USRM tables.
 - c Select the Resource Manager - QAMs - QAM <QamName> - QAM Channels page.
 - d Verify the QAM settings, particularly that the Service Type (SDV, VOD) and Admin States are set properly.
- 3 Assign service groups.
 - a Select the Resource Manager - QAMs - QAM <QamName> - Output Ports page.
 - b Enter the Service Group ID associated with each port, then set the Admin State to InService and click **Commit Changes**.
 - c Select the ResourceManager - Service Groups:Config page and verify the AdminState is set to InService. If not, set it.
 - d Verify that sessions are created as follows.
 - i Monitor the EventLog tail.
 - ii Check the Resource Manager - QAMs - QAM <QamName> - Sessions page for video and MCP sessions.
 - iii On the Applications - McmisServer - MCP Sessions page, verify that mini-carousels are created.
 - iv For a graphical view of sessions, select either the Applications - SdvSm - Service Groups/Bandwidth page and click **QamGraphic** or select the ResourceManager - ServiceGroups:Graphics page and click **QamComposition** for the desired service group.

Notes: The Resource Manager page displays all video and mini-carousel sessions created on a QAM carrier in the service group. All sessions displays as yellow since all sessions are active. The SdvSm page displays only video sessions (no mini-carousels). Sessions with users display as yellow. Sessions without users display as orange (max mode only).

Updating Zone Configuration Information

This step is only required for sites using zones.

Perform the following steps to associate zone information with the service groups.

- 1 Select the Applications - SdvSm - Service Groups/ Config page.
- 2 Enter the zone information for each service group.
- 3 Click **Commit Changes**.

Deleting Service Groups From a USRM

Deleting a service group and other resources from a USRM in release 1.5.0 or greater requires a process that is a combination of procedures on the USRM as well as on the DNCS. The basic flow of the process is as follows.

- 1 From the USRM, release all of the sessions associated with the service group in the Resource Manager.
- 2 From the DNCS, remove the service group from the USRM.
- 3 From the USRM, delete the service group from the SdvSm.
- 4 From the USRM, delete the service group from the QAM output ports.
- 5 From the USRM, delete the service group from the Resource Manager.

Note: You should open a tail of the USRM's EventLog to monitor the actions that occur during the process.

The following sections explain each of these procedures in detail.

Releasing Sessions From a Service Group in Resource Manager

Perform the following steps to release all sessions from a service group in resource manager.

- 1 Select the Resource Manager - Service Groups:Config page
- 2 Set the AdminState of the service group to Release and click **Commit Changes**.
- 3 Verify that the AdminState is set to OutOfService.
- 4 Verify that the sessions were released as follows.
 - a Monitor the EventLog tail.
 - b For a graphical view, select the Applications - SdvSm - Service Groups/Bandwidth page and click **QamGraphic** for the desired service group.

Removing a SDV-Enabled Service Group Via the DNCS

Perform the following steps to remove a SDV-enabled service group via the DNCS.

- 1 Access the Service Group Data - Open Service Group screen.

DNCS/Service Group Data/Open Service Group

[Save Service Group](#)

[Exit](#)

[Help](#)

Edit Service Group

Service Group Id	Parent Id	Name	Children
2	0	SG 2	

Ports

Available Ports

- GQAM20-RF OUT 4 (16)
- GQAM02-RF OUT 1 (2)
- GQAM02-RF OUT 1 (3)
- GQAM02-RF OUT 1 (4)
- GQAM02-RF OUT 3 (9)
- GQAM02-RF OUT 3 (10)
- GQAM02-RF OUT 3 (11)
- GQAM02-RF OUT 3 (12)
- GQAM02-RF OUT 4 (13)
- GQAM02-RF OUT 4 (14)

[Add ==>](#)

[<== Remove](#)

Selected Ports

- GQAM02-RF OUT 2 (7)
- GQAM02-RF OUT 2 (8)

SDV Enabled ☒

Primary SDV Server:

Mini-Carousel Destination IP:

Maximum Bandwidth: Mbps

Bandwidth Release Increment: Mbps

Bandwidth Release Interval: Seconds

Recapture Bandwidth Threshold: Mbps

	Quantity	Rate(Mpbs)	Channels Overhead
Contiguous Bandwidth 1:	0	0	0
Contiguous Bandwidth 2:	0	0	0
Contiguous Bandwidth 3:	0	0	0

- 2 Set the Primary SDV Server field to None.
- 3 Recommended optional step: If a service group is being migrated as-is to another USRM, then leave the QAM carriers in the Selected Ports window and leave the mini-carousel IP address. If the service group is being eliminated, then remove both completely.
- 4 Click **Save Service Group** to save your changes.
- 5 Monitor the EventLog to verify that the SNMP commands are sent by the DNCS.

Deleting the Service Group from SdvSm on the USRM

Perform the following steps to delete the service group from the SdvSm.

- 1 Select the Applications - SdvSm - ServiceGroups/Config page.
- 2 Verify that the service group has been deleted.
- 3 If an entry does exist for the service group, set its AdminState to Delete and click **Commit Changes**.

Deleting the Service Group From the QAM Output Ports

Note: If all service groups are being removed from the QAM and the QAM is going to be removed from the USRM, then this procedure can be replaced with the Removing a QAM Chassis from the USRM procedure in this section.

Perform the following steps to delete the service group from the QAM output ports.

- 1 Select the Resource Manager - QAMs - QAM <QamName> - Output Ports page, where QamName is the QAM that is or was associated with the service group being deleted.
- 2 Set the AdminState of the desired port(s) to Release and click **Commit Changes**.
Result: This releases all sessions on the port(s) and sets the AdminState to OutOfService.
- 3 Set the ServiceGroupId of the port to 0 and click **Commit Changes**.
- 4 Repeat steps 1 through 3 for each port of each QAM in the service group.

Deleting the Service Group From the Resource Manager

Perform the following steps to delete the service group from the resource manager.

- 1 Select the ResourceManager - Service Groups:Config page.
- 2 Set the AdminState of the service group(s) to be deleted to Delete and click **Commit Changes**.

Note: In order for a Service Group to be deleted, no QAM ports can be associated with it. If QAM ports are still associated with a service group when AdminState is set to Delete, the Service Group will remain in the table, with an AdminState of OutOfService. Remove the remaining QAM ports and set the AdminState to Delete again to remove the Service Group.

Zone Provisioning

The Zone feature of USRM Server lets you configure up to 10 unique zones per server and associate individual service groups with these zones. You can use zones for Advertising zone functionality or for remote network control system (RNCS) zone functionality. You can associate multiple service groups with a zone, but there can be only one zone per service group.

For each program offered in the switched tier, you can create zone versions of the program. When a client requests a switched program, the server tests to see if a zone version of the program exists, and if so, delivers that program.

Creating zone programs is similar to creating other programs in a digital broadband delivery system. You create a new source definition for an existing source ID, and then assign a unique multicast destination IP address to the new source. The new source is then used as the basis for the zone stream.

The USRM Server has several roles in this process:

- It associates the multicast destination address of the new zone program with its default source ID in a given zone.
- It lets you create a new source address and UDP port for a zone program that is different than the source address(es) of the default SDV source ID.
- It associates service groups with zones.

You provision zones using the USRM Server web interface. You must access four pages to provision zone entries:

- Applications.SdvSm.Configuration
- Applications.SdvSm.Program Zones
- Applications.SdvSm.Offered Progs Zones
- Applications.SdvSm.Service Groups Config

Note: You must have Administrator privileges to perform zone provisioning.

To Create the Source Definition from the DNCS

You create unique source definitions for zone programs. The source definitions are created under a shared source ID, but have the zone multicast destination address (MDA) associated with them. The following illustration shows an example of creating a source definition for a zone program.

Multicast Digital Session Definition	
Source ID: 1201	
Session ID: 12:01:00:00:00:01-1201	
INPUT	OUTPUT
Bandwidth: 3.750000 Mbps	Destination: 232.0.1.1
Netcrypt: NBESDVLAB	Multicast:
Netcrypt I/O Port: 1	IP Address:
SDV Session: ☐	UDP Port:
UDP Port: 49512	

Important: Selecting the SDV Session box triggers the SDV Manager to populate the USRM Server Offered Progs source-specific multicast (SSM) address table for source redundancy. Therefore:

- **Check** the SDV Session box when creating source definitions with the (default) SDV MDA for multiple source locations.
- **Uncheck** the SDV Sessions box when creating source definitions for zone programs.

To Configure Server Display Mode Using the Web Interface

Important: Before performing zone provisioning, you must set the Display Mode parameter on the Applications.SdvSm.Configuration page to **Config**.

The USRM Server implements tables with dynamic rows. In normal use, only rows with defined entries are displayed. The Display Mode parameter lets you enable the display of all rows of a table, including empty entries. This mode lets you configure an entry in a table directly.

The Display Mode parameter is located on the Applications.SdvSm.Configuration page of the USRM Server web interface. To add a new zone configuration or zone program, set the Display Mode parameter to **Config**. Once configuration is complete, be sure to reset the Display Mode to **Normal**.

To Configure Zones Using the Web Interface

A USRM Server can support up to 10 separate zone configurations. Before creating zones, you must first create zone configurations. To configure zones, you assign names to each zone you want to set up.

Note: The following steps refer to Web UI Pages under the Applications.SdvSm section of the USRM Web UI.

Perform the following steps to configure your zones.

- 1 Navigate to the Configuration page of the USRM Server web interface.
- 2 On the Configuration page, set the Display Mode parameter to **Config**.
- 3 Select the **Program Zones** page from the web interface navigation tree. The Program Zones page appears as shown below.

Zone	Name	AdminState
1	Lakers	InService
2	Celtics	InService
3	Heat	InService
4		InService
5		InService
6		InService
7		InService
8		InService
9		InService
10		InService

Commit Changes Reload Logout

Search Create CSV

- 4 Enter the names for your desired zones in the Name fields and click **Commit Changes**. Your zone names are configured.
- 5 On the Configuration page, set the Display Mode parameter back to **Normal**. The Program Zones page now only displays the configured zones.

Zone	Name	Admin State
1	Lakers	InService
2	Celtics	InService
3	Heat	InService
4		InService

Commit Changes Reload Logout

Search Create CSV

To Add Zone Programs Using the Web Interface

Important: Before creating zone programs using the Offered Progs Zones page, you must set Display Mode to **Config** on the Configuration page.

The Offered Progs Zones page displays a list of all offered programs in the switched tier for each of the zone configurations you have created using the Program Zones page.

Note: The following steps refer to Web UI Pages under the Applications.SdvSm section of the USRM Web UI.

Complete the following steps to add and provision zone programs.

- 1 On the Configuration page of the USRM Server web interface, set the Display Mode parameter to **Config**.
- 2 Select the **Offered Progs Zones** page from the web interface navigation tree. The Offered Progs Zones page appears as shown below.

Zone	Program	SourceId	AdminState	MulticastDestAddr	SrcAddr1	SrcAddr2	SrcAddr3	InputPort
1.1	Lakers SDV Cinemax HD2	4032	UseBase	n/a	n/a	n/a	n/a	0
1.2	Lakers Action Max 4	5056	UseBase	n/a	n/a	n/a	n/a	0
1.3	Lakers HBO Comedy E	1216	InService	232.1.1.16	172.16.17.1	172.16.17.5	172.16.17.9	49500
1.4	Lakers MMAK E	1217	UseBase	n/a	n/a	n/a	n/a	0
1.5	Lakers More Max 4	5057	UseBase	n/a	n/a	n/a	n/a	0
1.6	Lakers HBO Zone E	1218	UseBase	n/a	n/a	n/a	n/a	0
1.7	Lakers Max East 4	5058	UseBase	n/a	n/a	n/a	n/a	0
1.8	Lakers MMAK E	1219	UseBase	n/a	n/a	n/a	n/a	0
1.9	Lakers HBO Comedy East 4	5059	UseBase	n/a	n/a	n/a	n/a	0
1.10	Lakers MC_True_Country	1347	UseBase	n/a	n/a	n/a	n/a	0
1.11	Lakers 5 Star MMA e	1220	UseBase	n/a	n/a	n/a	n/a	0
1.12	Lakers MMAK E 4	5060	UseBase	n/a	n/a	n/a	n/a	0
1.13	Lakers Thriller MMA E	1221	UseBase	n/a	n/a	n/a	n/a	0
1.14	Lakers HBO Zone East 4	5061	UseBase	n/a	n/a	n/a	n/a	0
1.15	Lakers MC_Today's_Country	1349	UseBase	n/a	n/a	n/a	n/a	0
1.16	Lakers Outer MMAK E	1222	InService	232.1.1.22	172.16.17.1	172.16.17.5	172.16.17.9	0
1.17	Lakers 5 Star Max East 4	5062	UseBase	n/a	n/a	n/a	n/a	0
1.18	Lakers Outer Max East 4	5063	UseBase	n/a	n/a	n/a	n/a	0
1.19	Lakers Showtime West 2	5001	UseBase	n/a	n/a	n/a	n/a	0
1.20	Lakers Showtime 2 West 2	5002	UseBase	n/a	n/a	n/a	n/a	0
1.21	Lakers Showtime 3 West 2	5003	UseBase	n/a	n/a	n/a	n/a	0
1.22	Lakers WOLA-Wa	1227	UseBase	n/a	n/a	n/a	n/a	0
1.23	Lakers TMC West 2	5004	UseBase	n/a	n/a	n/a	n/a	0
1.24	Lakers Tlx West 2	5005	UseBase	n/a	n/a	n/a	n/a	0
1.25	Lakers TMC2 West 2	5007	InService	232.1.1.7	172.16.17.1	172.16.17.5	172.16.17.9	0

- 3 Enter the new multicast destination IP address in the MulticastDestAddr field in the row associated with the Program and SourceId of the program it is to replace.

Note:

- If zone programs have source addresses (SrcAddr) or Input UDP port numbers (InputUdpPort) that differ from the addresses associated with the (default) SDV Source ID, enter these values into this table.
- If the source address fields are left blank, the zone programs use the values specified in the Offered Programs Formats table; that is, they use the same sources specified for the (default) SDV program.

- If the Program name or Source IDs are known, it may be easier to use the Search function on the Offered Progs Zones page to segregate the programs. Refer to **Searching Zones** below for details.

- 4 Click **Commit Changes** to save your zone programs.
- 5 On the Configuration page, set the Display Mode parameter back to **Normal**.
Note: In Normal display mode, the Zone Programs page displays a table of already provisioned zone programs similar to the following. If no zone programs have been provisioned, this table will be empty in Normal display mode.

SdvSm.Offered Progs Zones

Zone,Program	Zone	Program	SourceId	AdminState	MulticastDestAddr	SrcAddr1	SrcAddr2	SrcAddr3	InputPort
1.3	Lakers	HBO Comedy E	1216	InService	232.1.1.16	172.16.17.1	172.16.17.5	172.16.17.9	49500
1.16	Lakers	Outer MAK E	1222	InService	232.1.1.22	172.16.17.1	172.16.17.5	172.16.17.9	0
1.25	Lakers	TMC2 West 2	5007	InService	232.1.1.7	172.16.17.1	172.16.17.5	172.16.17.9	0
2.104	Celtics	HBO East 4	5050	InService	232.2.2.12	172.16.17.1	172.16.17.5	172.16.17.9	49520
3.3	Heat	HBO Comedy E	1216	InService	232.3.3.16	172.16.17.1	172.16.17.5	172.16.17.9	49492
3.16	Heat	Outer MAK E	1222	InService	232.3.3.22	172.16.17.1	172.16.17.5	172.16.17.9	0
3.23	Heat	TMC West 2	5004	InService	232.3.3.4	172.16.17.1	172.16.17.5	172.16.17.9	0

Commit Changes

Reload

Logout

Search

Create CSV

Program Source Example

In the following example, the first three zone configurations have zone programs that use the same Source(s) as the default, or Zone 0, switched tier of offered programs. The last five zone configurations specify a different SSM IP address from the default Offered Programs table.

SdvSm.Offered Progs Zones

Zone,Program	Zone	Program	SourceId	AdminState	MulticastDestAddr	SrcAddr1	SrcAddr2	SrcAddr3	InputPort
1.3	Lakers	HBO Comedy E	1216	InService	232.1.1.16	172.16.17.1	172.16.17.5	172.16.17.9	49500
1.16	Lakers	Outer MAK E	1222	InService	232.1.1.22	172.16.17.1	172.16.17.5	172.16.17.9	0
1.25	Lakers	TMC2 West 2	5007	InService	232.1.1.7	172.16.17.1	172.16.17.5	172.16.17.9	0
2.104	Celtics	HBO East 4	5050	InService	232.2.2.12	172.16.17.1	172.16.17.5	172.16.17.9	49520
3.3	Heat	HBO Comedy E	1216	InService	232.3.3.16	172.16.17.1	172.16.17.5	172.16.17.9	49492
3.16	Heat	Outer MAK E	1222	InService	232.3.3.22	172.16.17.1	172.16.17.5	172.16.17.9	0
3.23	Heat	TMC West 2	5004	InService	232.3.3.4	172.16.17.1	172.16.17.5	172.16.17.9	0

Commit Changes

Reload

Logout

Search

Create CSV

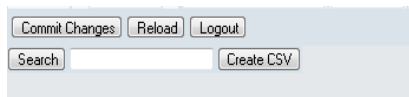
Searching Zones

If the Program name or Source IDs are known, it may be easier to use the search function on the Offered Progs Zones page to segregate the programs. The search returns entries for each program zone that is defined.

Chapter 4 Operation

By Source ID

To search by Source ID, enter the Source ID in the search text box and click **Search**.



Commit Changes Reload Logout

Search Create CSV

The Offered Progs Zones page displays a list of zone programs with the requested Source ID.

SdvSm.Offered Progs Zones

Zone	Program	SourceId	AdminState	MulticastDestAddr	SrvAddr1	SrvAddr2	SrvAddr3	InputPort
1.3	Lakers HBO Comedy E	1216	InService	232.1.1.16	172.16.17.1	172.16.17.5	172.16.17.9	49500
1.16	Lakers Outer MAK E	1222	InService	232.1.1.22	172.16.17.1	172.16.17.5	172.16.17.9	0
1.25	Lakers TMC2 West 2	5007	InService	232.1.1.7	172.16.17.1	172.16.17.5	172.16.17.9	0
2.104	Celtics HBO East 4	5050	InService	232.2.2.12	172.16.17.1	172.16.17.5	172.16.17.9	49520
3.3	Heat HBO Comedy E	1216	InService	232.3.3.16	172.16.17.1	172.16.17.5	172.16.17.9	49492
3.16	Heat Outer MAK E	1222	InService	232.3.3.22	172.16.17.1	172.16.17.5	172.16.17.9	0
3.23	Heat TMC West 2	5004	InService	232.3.3.4	172.16.17.1	172.16.17.5	172.16.17.9	0

Commit Changes

Reload

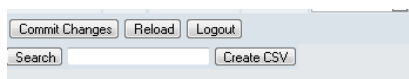
Logout

Search

Create CSV

By Program Name

To search by Program name, enter the Program name in the search text box and click **Search**.



Commit Changes Reload Logout

Search Create CSV

The Offered Progs Zones page displays a list of zone programs with the requested Program name.

SdvSm.Offered Progs Zones

Zone	Program	SourceId	AdminState	MulticastDestAddr	SrvAddr1	SrvAddr2	SrvAddr3	InputPort	
1.3	Lakers	HBO Comedy E	1216	InService	232.1.1.16	172.16.17.1	172.16.17.5	172.16.17.9	49500
1.16	Lakers	Outer MAK E	1222	InService	232.1.1.22	172.16.17.1	172.16.17.5	172.16.17.9	0
1.25	Lakers	TMC2 West 2	5007	InService	232.1.1.7	172.16.17.1	172.16.17.5	172.16.17.9	0
2.104	Celtics	HBO East 4	5050	InService	232.2.2.12	172.16.17.1	172.16.17.5	172.16.17.9	49520
3.3	Heat	HBO Comedy E	1216	InService	232.3.3.16	172.16.17.1	172.16.17.5	172.16.17.9	49492
3.16	Heat	Outer MAK E	1222	InService	232.3.3.22	172.16.17.1	172.16.17.5	172.16.17.9	0
3.23	Heat	TMC West 2	5004	InService	232.3.3.4	172.16.17.1	172.16.17.5	172.16.17.9	0

Commit Changes

Reload

Logout

Search

Create CSV

To Associate Zones and Service Groups Using the Web Interface

You can associate any of your service groups with a particular zone, as shown in the following sample ServiceGroups Config page.

SdvSm.Service Groups Config

SgIndex	ServiceGroupId	Name	Hub	AdminState	Zone	MinActiveBandwidth (Mbps)	MaxActiveBandwidth (Mbps)	STBCapacityStatus	STBCapacityExhausted
1	7	SG7	0	InService	1	0.000000	300.000000	OK	OK
2	7903	SG7903	0	InService	0	300.000000	300.000000	OK	OK
3	7902	SG7902	0	InService	0	300.000000	300.000000	OK	OK
4	7901	SG7901	0	InService	0	300.000000	300.000000	OK	OK
5	7904	SG7904	0	InService	0	300.000000	300.000000	OK	OK
6	7905	SG7905	0	InService	0	300.000000	300.000000	OK	OK
7	7906	SG7906	0	InService	0	300.000000	300.000000	OK	OK
8	7907	SG7907	0	InService	0	300.000000	300.000000	OK	OK
9	7908	SG7908	0	InService	0	300.000000	300.000000	OK	OK
10	7909	SG7909	0	InService	0	300.000000	300.000000	OK	OK

Note:

- A zone of 0 uses all of the default USRM offered programs.
- Within a particular zone configuration, the server uses a combination of default and zone programs according to the provisioned Offered Progs Zones table.

To Add Zone Programs Using a Configuration File

USRM Server software versions 1.5 and later provide a method of managing all zones and zone programs, across all service groups, on a single DNCS using one configuration file.

The single configuration file can contain all the service groups for every USRM in the system. The USRM software loads its own service groups while ignoring service groups from other USRM servers.

Note: The single-zone configuration file scheme presented here assumes that each USRM server uses the same set of zone programs. If different zone programs are required for different USRM servers, you must create a zone configuration file for each unique zone. This discussion assumes the use of one set of zone programs for all USRM servers.

You can create the single configuration file, store it on the DNCS, and push it to all USRM Servers using a simple script. The servers monitor the file and automatically load any new version (based on file date and time stamp) within a configurable time of receiving the file.

You use the Platform.ConfigManager.Configuration Files page to set this up by entering the name of the file in the AutoConfigFileName field on each server. You only need to do this once; after that, the server monitors the file and loads any new one.

Zone Configuration File Example

The following is an example configuration file. See the next section for instructions on creating and formatting each section of the file.

Note: The configuration file must be located in the /opt/usrm/ConfigFiles directory.

```
Object SdvSm
ZoneTable.Name.1 Lakers Zone
ZoneTable.AdminState.1 InService
ZoneTable.Name.2 Celtics Zone
ZoneTable.AdminState.2 InService
ZoneTable.Name.3 Heat Zone
ZoneTable.AdminState.3 InService
ZoneProgramTable.AdminState.1.SID1216 InService
ZoneProgramTable.MulticastDestAddr.1.SID1216 232.1.1.16
ZoneProgramTable.AdminState.1.SID1222 InService
ZoneProgramTable.MulticastDestAddr.1.SID1222 232.1.1.22
ZoneProgramTable.AdminState.2.SID5050 InService
ZoneProgramTable.MulticastDestAddr.2.SID5050 232.2.2.12
ZoneProgramTable.AdminState.3.SID1216 InService
ZoneProgramTable.MulticastDestAddr.3.SID1216 232.3.3.16
ZoneProgramTable.SrcAddr1.2.SID5050 172.16.17.1
ZoneProgramTable.SrcAddr2.2.SID5050 172.16.17.5
ZoneProgramTable.SrcAddr3.2.SID5050 172.16.17.9
ZoneProgramTable.AdminState.3.SID1216 InService
ZoneProgramTable.MulticastDestAddr.3.SID1216 232.3.3.16
ZoneProgramTable.SrcAddr1.3.SID1216 172.16.17.1
ZoneProgramTable.AdminState.3.SID1216 InService
ZoneProgramTable.MulticastDestAddr.3.SID1216 232.3.3.16
ZoneProgramTable.SrcAddr1.3.SID1216 172.16.17.5
ZoneProgramTable.SrcAddr2.3.SID1216 172.16.17.9
ServiceGroupTable.Zone.SGID7 1
```

Zone Configuration File Format

The configuration file must contain three sections of information:

- Zone configuration information
- Zone program information
- Service group information

Important: Zone configuration information must appear in the file before zone program information. For this reason, we recommend constructing the file in the order listed above.

Setting Objects in USRM Configuration Files

Each expandable element of the USRM navigation tree is considered an object. For example, Applications.SdvSm is the Switched Digital Video Session Manager object.

The USRM configuration file lets you set any commandable parameter in any object from a central location: the Platform.ConfigManager.Configuration Files page.

Because any commandable parameter in any object can be set, the configuration file must specify the object to which the lines that follow apply. For the zone configuration, the first line of the file should always set the object to SdvSm, as follows:

Object SdvSm

Zone Configuration Section Example

For the following zones:

- Zone 1 = Lakers, admin state = InService
- Zone 2 = Celtics, admin state = InService

The zone configuration section of the file would appear as follows:

```
ZoneTable.Name.1 Lakers Zone
ZoneTable.AdminState.1 InService
ZoneTable.Name.2 Celtics Zone
ZoneTable.AdminState.2 InService
ZoneTable.Name.3 Heat Zone
ZoneTable.AdminState.3 InService
```

Zone Program Section Examples

The Offered Progs Zones table is indexed first by Program Zones Zone Number and then by Offered Progs Base and Formats tables.

For the following zone program, SID 5184 in Zone 1, admin state = InService. The zone program section of the file would appear as follows:

```
ZoneProgramTable.AdminState.1.SID5184 InService
ZoneProgramTable.MulticastDestAddr.1.SID5184 232.0.0.1
```

The 1.SID5184 after the AdminState in the first line above is the index described above. 1.5184 refers to the first zone in the Program Zones table and the program with Source ID 5184 in the Offered Progs table.

Note: This zone program uses the same sources as the base Offered Programs.

For the following zone program, SID 1216 in Zone 3, admin state = InService. The zone program section of the file would appear as follows:

```
ZoneProgramTable.AdminState.3.SID1216 InService
ZoneProgramTable.MulticastDestAddr.3.SID1216 172.16.17.1
ZoneProgramTable.SrcAddr1.3.SID1216 172.16.17.1
ZoneProgramTable.SrcAddr1.3.SID1216 172.16.17.5
ZoneProgramTable.SrcAddr1.3.SID1216 172.16.17.9
```

The 2.SID1216 after the AdminState of the first line above is the index described above. 2.SID1216 refers to the second zone in the Program Zones table and the program with Source ID 1216 in the Offered Progs table.

Note: This program does not use the Offered Program sources. It has its own source(s) specified.

Service Group Section Example

For the following service group, Service Group 7 uses Zone 1 programs. The service group section of the file would appear as shown below.

ServiceGroupTable.Zone.SGID7 1

To Remove Zone Programs

To remove a zone program, simply set the multicast IP address to 0.0.0.0.

If unique source-specific addresses are used for the zone being removed, we recommend setting all SrcAddrX fields to **n/a** when removing a program from a zone. This removes the zone program from the Offered Progs Zones table. You can perform this step from either the webUI or the zone configuration file.

If the zone program to be removed was configured using the webUI, remove the zone program as follows:

- 1 Access the **Offered Progs Zones** table.
- 2 Select the program to be removed.
- 3 Set the multicast IP address to **0.0.0.0**.
- 4 Set any SrcAddrX addresses to **n/a**.
- 5 Click **Commit Changes**.

Bandwidth Reclamation

The main purpose of the USRM bandwidth reclamation feature is to allow the server to reclaim unused bandwidth, i.e., bandwidth with no active end users, if that bandwidth is needed to satisfy another request.

In normal operation, i.e. the default setting of RecaptureMode = OnDemand, the USRM will not reclaim bandwidth unless it is actually needed even though all of the conditions for bandwidth reclamation have been met. There is another setting (RecaptureMode = Immediate) which causes the USRM to reclaim all available bandwidth immediately, regardless of USRM need, after the conditions for bandwidth reclamation are met.

The USRM is designed to log all user activity, whether it is channel change requests or simply increasing volume or pulling up a menu. Any remote keystroke is considered user activity.

User activity is monitored to determine if bandwidth reclamation conditions are met as follows:

- If an active user stays on a particular channel and generates activity, at the end of the STB Reporting Interval a Last User Activity (LUA) report is sent from the client to the Server, noting the time of the last user activity.
- If a user remains on a single channel and does not generate activity, a LUA report will not be sent at the end of the time period.
- If a STB Reporting Interval passes without any user activity, then the next activity will cause a LUA report to be sent immediately, i.e., it does not wait until the end of the next STB Reporting Interval, and the STB Reporting Interval timer is reset.
- Recapture Time at the USRM is reset upon the receipt of any LUA report from that set-top box for activity that occurs after the Recapture Time period has begun.

The bandwidth reclamation process is started if Recapture Time expires without the server receiving any LUA reports.

Note: This assumes only one set-top box is tuned to the program. If other set-top boxes are watching the same program, the bandwidth reclamation process will not begin until all set-top boxes meet these bandwidth recapture requirements.

Bandwidth Reclamation Parameters

The Bandwidth Reclamation feature uses five timers and one threshold setting to control its operation, as follows.

- Settop Reporting Interval (StbReportInterval) is the time period of the LUA Report. It is set to a default value of 1 hour by the USRM and is located on the Applications.McmisServer.STB Configuration page of the USRM Web UI. The StbReportInterval is sent to the STB client via the mini-carousel. The LUA is sent by the STB client to the USRM and contains the time stamp of the last user activity that occurred during the reporting interval. Default = 1 hour.

Note: This value should always be less than Recapture Time for actual field applications.

- Recapture Time is the time period after which a Bandwidth Reclamation banner is displayed on the set-top box. In a DNCS network, this value is provisioned by the SDV Manager, set at the DNCS during source provisioning, and displayed on the Applications.SdvSm.Offered Progs Base page of the USRM. If, after this time period expires, a USRM has received no LUA reports, the server will send an EventIndication to the set-top box commanding the client to display a Bandwidth Reclamation banner on the TV screen. This banner asks, essentially, "Is anyone really watching out there? If so, please press a button on the remote". Default = 4 hours. Minimum = 2 hours.

In a non-DNCS system, the Recapture Time must be provisioned by the system administrator (usually with a configuration file) as part of the Offered Programs table.

- Recapture Acknowledgement Time (RecaptureAckTime) is the amount of time the subscriber has to respond to the Bandwidth Reclamation banner. In a DNCS network, this value is provisioned by the SDV Manager, set at the DNCS during source provisioning, and displayed on the Applications.SdvSm.Offered Progs Base page of the USRM. During this time period, bandwidth cannot be reclaimed by the server. If the subscriber does respond to the banner, the server will "know" there is a user watching the program and will send a command to the set-top box to remove the banner. The server will also clear all its timers and will NOT reclaim the subscriber's bandwidth. If the subscriber does not respond, after this time period expires the server may reclaim the bandwidth if it is needed. Default = 10 minutes.

In a non-DNCS system, the Recapture Acknowledgement Time must be provisioned by the system administrator (usually with a configuration file) as part of the Offered Programs table.

- STB Bandwidth Reclaim Timeout is the amount of time the Bandwidth Reclamation banner is displayed on the subscriber's TV screen. It is set to a default value of 5 minutes by the USRM and is located on the Applications.McmisServer.STB Configuration page of the USRM webUI. The STB Bandwidth Reclaim Timeout is sent to the STB client via the mini-carousel.

Default = 5 minutes.

- Recapture Threshold is a setting that determines when the Server will begin any bandwidth reclamation process. It is set to a default value of 100 Mbps by the USRM and is located on the Applications.SdvSm.Configuration page of the USRM webUI. If there is less than this amount of bandwidth available to the server, it will begin sending the EventIndication message when bandwidth is eligible for reclamation. Another way to consider this is that if the server has used more than (Max Available BW - Recapture Threshold) Mbps, the server will begin the bandwidth reclamation process. Prior to this threshold being met, the server will not attempt to reclaim any unused bandwidth, regardless of how long there has been no user activity (unless RecaptureMode is set to Immediate). Default = 100 Mbps.

Note: Max Available Bandwidth for a Service Group is calculated by multiplying the max bw per QAM carrier * the number of QAM carriers in a Service Group. The default value for max available bandwidth for a 256-QAM carrier in the USRM is 38.814 Mbps.

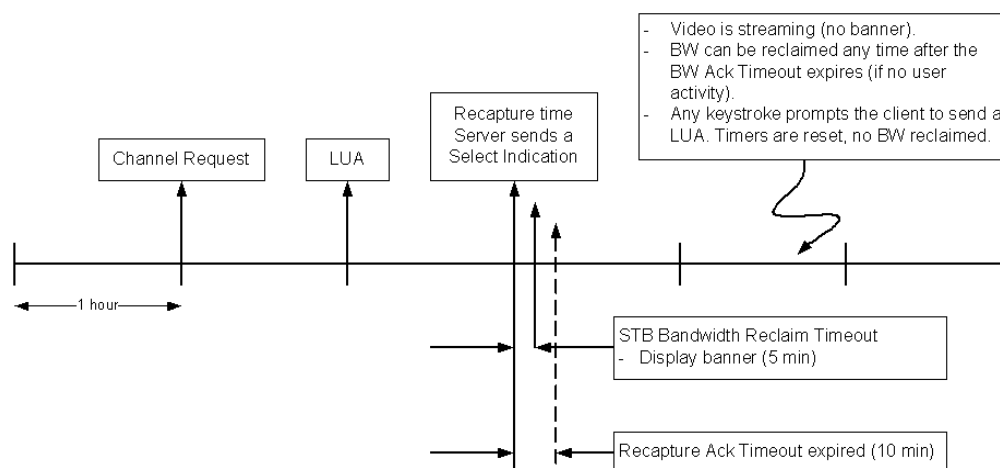
- Recapture Test Period is a setting that determines how often the USRM should check to see if any bandwidth is eligible for recapture. It is set to a default value of 5 minutes by the USRM and is located on the Applications.SdvSm.Configuration page of the USRM webUI. Default = 5 minutes.

Bandwidth Reclamation Example

This example uses the following parameters:

- Recapture Time = 2 hours (DNCS minimum allowed setting)
- Recapture Mode = On Demand
- LUA = 1 hour (default)

The process, represented by the following illustration, is explained in detail below.



Assuming no user activity after the Channel Request, the following sequence of events occurs.

- 1 A LUA is sent from the STB to the USRM at the end of the STB Reporting Interval, logging the time of the channel change request activity, i.e., the last user activity.
- 2 Two hours after the last user activity (which, in this case, is the channel change request), the USRM will send a SelectIndication to the set-top box, causing the set-top box to display the bandwidth reclamation banner, and start the Recapture Acknowledgement Time period.
- 3 At this point, i.e., during the STB Bandwidth Reclaim Timeout period or after, any user activity (i.e., any remote key press) will immediately prompt the client to send a LUA to the USRM (since more than 1 STB Reporting Interval has expired without any user activity). All timers are then reset and bandwidth is not reclaimed.
- 4 If the subscriber does not press a remote key, i.e., there is still no user activity, then after the 5 minute STB Bandwidth Reclaim Timeout expires, the banner is removed from the screen. Note, however, that the Recapture Acknowledgement Time is still in effect and bandwidth still cannot be reclaimed at this point.
- 5 After the 10 minute Recapture Acknowledgement Timeout expires, if the subscriber still has not pressed a remote key, then the bandwidth is eligible for reclamation at any time by the USRM.

Min Mode vs. Max Mode and Available Bandwidth

When a USRM Server operating in supervised mode first comes online, it sends a trap to the DNCS to request provisioning. The DNCS responds by sending provisioning information for the server, which includes (among other things) a value for the maximum bandwidth for the service group(s).

In the "old" SDV Server world, this value determined how much bandwidth (in the form of shell sessions) the DNCS would allocate to the SDV Server, and was the maximum available bandwidth in the service group. In the "new" USRM world, however, the DNCS no longer allocates QAM/Service Group bandwidth, so the term "maximum bandwidth" takes on a slightly different meaning.

For SDV Service Groups on a USRM, the maximum available bandwidth for a service group is equal to the maximum bandwidth of a QAM carrier times the number of QAM carriers in the service group. For a 256-QAM carrier, the USRM uses a value of **38.814 Mbps¹** as the maximum available bandwidth on a QAM carrier. So for a service group made up of four 256-QAM carriers, the maximum available bandwidth in the service group is equal to $38.814 * 4 = 155.256$ Mbps. Regardless of max mode or min mode settings, the USRM attempts to use all 155.256 Mbps of available QAM bandwidth, if it can, for programs requested by a user.

The USRM interprets the terms "maximum bandwidth" and "minimum bandwidth" as measures of how much programming the USRM should keep created on the QAM. Take, for example, a service group that is comprised of 16 256-QAM carriers where the USRM is designated to operate in max mode, and the operator sets a value of 600 Mbps as the maximum bandwidth for the service group. The USRM attempts to always keep 600 Mbps of programming created on the service group. However, the USRM will satisfy requests for up to 620 Mbps of services if enough bandwidth exists for a particular service on any one carrier.

As another example, consider a service group set up initially with 12 256-QAM carriers and a max bandwidth value of 450 Mbps. If four additional 256-QAM carriers are added to the service group but this max bandwidth setting is not changed, the USRM will fill 450 Mbps of bandwidth with programming (max mode), but will use all 620 Mbps of bandwidth to satisfy customer requests.

¹ For non-Cisco QAMs, this value may not be 38.814. We recommend verifying the maximum allowable bandwidth on a 256-QAM carrier with each QAM vendor. This setting can be changed on a USRM-wide basis by a Cisco service-level user.

Modes and Settings Affecting Available Bandwidth

The USRM Server has two modes of operation with regard to what to do with available bandwidth: Min mode or Max mode. In Min mode, only programs that have active users are bound to QAM carriers. In Max mode, the USRM SDV Session Manager (SdvSm) continually checks to be sure that it binds as much content as it possibly can to bandwidth that is available in a given service group, regardless of whether there are active users or not.

Programs without users - or "fill" programs - are bound according to the FillSelectMode setting, which is either Priority or UserDemand.

- Priority means to fill programs according to a priority value that was assigned to each program during program creation.
- User Demand means to fill programs according to which programs are tuned first or most often.

In the USRM, there are two settings for Minimum Bandwidth and Maximum Bandwidth. The first is a "global" setting which applies to all USRMs. The second is a service group level setting. This setting overrides the global setting for a particular service group. That is, one service group can be set up in min mode while all others are in max mode, or vice versa.

For a USRM operating in a DNCS environment (supervised mode), the "global" max mode/min mode setting is set on the DNCS and provisioned on the USRM at startup. Also, the maximum bandwidth on the DNCS service group page, as discussed above, is provisioned as the maximum service group bandwidth at the service group level on the USRM. Offered Program priority is also set on the DNCS. There are three settings: high, medium, and low, which correspond to a value of 1, 2, or 3 on the USRM, with 1 being the highest priority.

For a USRM operating in a non-DNCS environment (auto mode), the "global" max mode/min mode setting is set on the USRM webUI at Applications > SdvSm > Configuration. For min mode, set MinActiveBandwidth to 0. For max mode, set MinActiveBandwidth to 999.999999. Offered Programs priority is set under Applications > SdvSm > Offered Progs Base, Priority. This value can be set between 1 and 16, with 1 being the highest priority.

For non-Cisco QAMs, this value may not be 38.814. We recommend verifying the maximum allowable bandwidth on a 256-QAM carrier with each QAM vendor. This setting can be changed on a USRM-wide basis by a Cisco service-level user.

STB Reclamation

STB reclamation is very similar in concept to bandwidth reclamation. When a STB initializes with an USRM Server, it is added to the server database and listed in the USRM Server STB pages. Whenever the server receives any CCMIS messaging (including LUA reports), the LastCommTime parameter for the STB is updated in the STB Inventory page. These timestamps help provide an indication of active STBs.

STBDeleteThreshold Configuration Parameter

STBDeleteThreshold is the configuration parameter that determines how long a STB remains in the server database, without the server receiving a LUA, before it is eligible for reclamation. The intent is to automatically age inactive STBs to make room for new devices without manual operator intervention. When a STB has not communicated with the server for a period longer than the delete threshold, the STB is then considered inactive, and may be deleted if room is needed for a new STB.

The STBDeleteThreshold parameter is located on the SdvSm. Configuration page. The default value is 60 days. This means that if the server has not received a LUA or any communication from a STB in 60 days, it is no longer considered to be an active STB. The STB physically remains in the database, but it will not be included in the count of active STBs as indicated by the TotalActiveSTBs parameter on the SdvSm.Status page. The TotalActiveSTBs count is an indication of the number of STBs that are considered active. After the STBDeleteThreshold is reached, and the server needs to use this space to add new STBs, it overwrites this entry in the database. If the 60 days has expired but the server does not need to use its space for a new STB, the STB continues to remain in the database, but is not counted as active.

To see which STBs are ready for reclamation, go to the **STB Inventory** page under SdvSm. The far right column is titled Age Status. When this entry is Inactive, this STB is ready for reclamation. To see a list of these STBs, enter **Inactive** as the search criteria at the bottom of the page.

Note:

- You can set the STB Delete Threshold to any value greater than 2 days. Under normal operating conditions, the default value of 60 days should be sufficient. If a shorter time is desired, we recommend setting this value to a minimum of 30 days. This ensures that STBs are not deleted if, for example, a subscriber goes on vacation.
- All channel-change events are logged in a daily activity log using one of two possible formats, TWC or Comcast. Each TWC record contains the ID of the STB and the requested channel. The ID of the STB is hashed to prevent identification of the associated user. The hash ID is based on the table entry. When a STB is deleted and then recreated later, the hash ID will change. This does not affect system operation, but it will change the ID of a STB in the activity logs.

Offered Programs - Offer State by Service Group

Beginning with USRM 1.6.1, offered programs can be configured to be either static or dynamic per service group. A new Web UI page is introduced titled Offered Progs OfferState and is located in the Navigation Tree under Applications.SdvSm.

There are three states available:

- Use Base (default). When assigned this state, the offered program uses the offer state of the program in the Offered Progs Base Table (default = dynamic).
- Static. When assigned this state, the offered program is always available in the service group and is not subject to reclamation.
- Dynamic. When assigned this state, the offered program is treated as a normal switched channel. This setting is only needed when the program in the Offered Progs Base table is set to static, but a particular service group requires the program to be dynamic.

Settings

You can make Offered Progs OfferState settings either via the Web UI or via config file. The procedures in this section describe the Web UI interface and settings.

You must access two pages to provision Offer States:

- Applications.SdvSm.Configuration
- Applications.SdvSm.Offered Progs OfferState

Note: You must have Administrator privileges to set Offered Progs OfferState parameters.

To Configure Server Display Mode

Important: The DisplayMode parameter on the Applications.SdvSm.Configuration page must be set to **Config** in order to make settings on the Offered Progs OfferStates page.

The USRM implements tables with dynamic rows. In normal use, only rows with defined entries are displayed. The DisplayMode parameter lets you enable the display of all rows of a table, including empty entries. This mode allows you to directly configure an entry in a table.

The DisplayMode parameter is located on the Applications.SdvSm.Configuration page of the USRM Web interface.

Note: To set a program offer state, this parameter must be set to **Config**. Once configuration is complete, set the display mode back to **Normal**.

To Set Offered Programs Offered State

Important: The DisplayMode parameter on the Offered Progs Offerstate page must be set to **Config** in order to set the offer states of programs via the Offered Progs OfferState page.

The Offered Programs OfferState page displays a list of all Offered Programs in the switched tier for each Service Group on the USRM.

Perform the following steps to set Offered Progs OfferStates parameters:

- 1 Set the DisplayMode parameter to **Config** on the SdvSm.Configuration page of the USRM Web interface.
- 2 Select the **Offered Progs OfferState** page from the Web interface navigation tree. The SdvSm.Offered Progs OfferState page appears as shown in the following example.

SdvSm.Offered Progs OfferState				
SglIndex.Program	ServiceGroup	SourceId	Name	State
1.1	11	5056	nCube056	UseBase ▼
1.2	11	5120	nCube120	UseBase ▼
1.3	11	5184	nCube184	UseBase ▼
1.4	11	4032	CineMax HD 2	UseBase ▼
1.5	11	1344	MC Party Favorites	UseBase ▼
1.6	11	5057	nCube057	UseBase ▼
1.7	11	5121	nCube121	UseBase ▼
1.8	11	5185	nCube185	UseBase ▼
1.9	11	1345	MC Hit List	UseBase ▼
1.10	11	5058	nCube058	UseBase ▼
1.11	11	5122	nCube122	UseBase ▼
1.12	11	5186	nCube186	UseBase ▼
1.13	11	1346	MC Tropicales	UseBase ▼
1.14	11	5059	nCube059	UseBase ▼
1.15	11	5123	nCube123	UseBase ▼
1.16	11	5187	nCube187	UseBase ▼
1.17	11	1347	MC True Country	UseBase ▼
1.18	11	5060	nCube060	UseBase ▼
1.19	11	5124	nCube124	UseBase ▼
1.20	11	5188	nCube188	UseBase ▼
1.21	11	1348	MC Soundscapes	UseBase ▼
1.22	11	5061	nCube061	UseBase ▼
1.23	11	5125	nCube125	UseBase ▼
1.24	11	5189	nCube189	UseBase ▼
1.25	11	1349	MC Todays Country	UseBase ▼

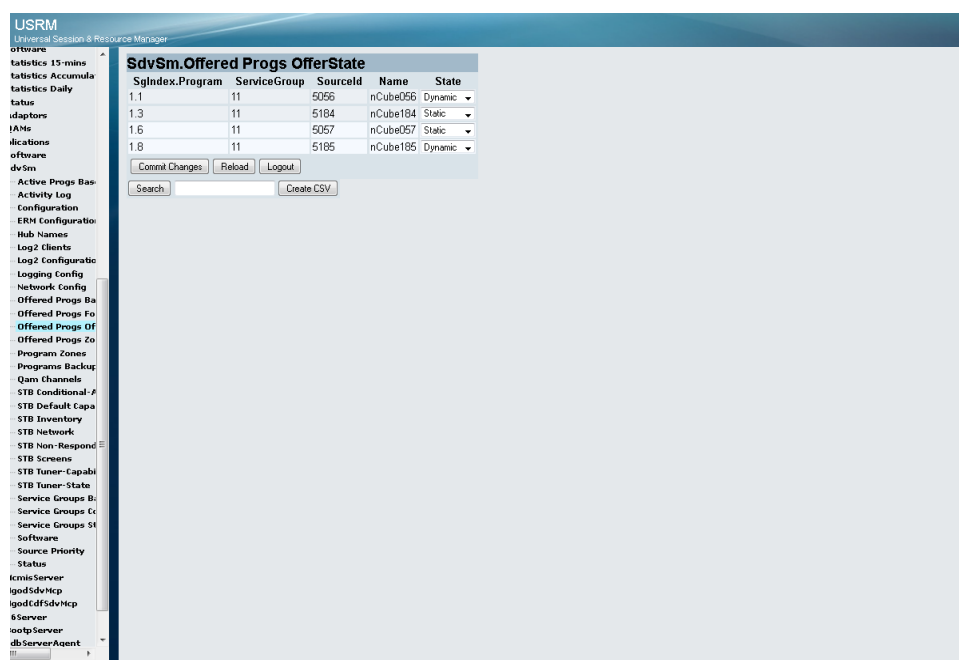
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Chapter 4 Operation

- 3 Set the State of individual offered programs per service group using the drop down menu.
- 4 Click **Commit Changes** to save the offer states. The offer states are saved and provisioned.
- 5 Set the DisplayMode parameter back to **Normal** on the SdvSm.Configuration page.

Note: In Normal display mode, the Offered Progs OfferState page displays a table of programs whose offer states have been set by an operator. If no offer states have been set for individual service groups, this table will be empty in Normal display mode.



To Search for Programs

If the Program name or Source IDs are known, it may be easier to use the search function on the Offered Progs OfferState page to segregate the programs. The search returns entries for each program or Source ID that is defined.

By Source ID

To search by Source ID, enter the Source ID in the search text box, and then click **Search**.



Offered Programs - Offer State by Service Group

The Offered Progs OfferState page displays a list of offered programs with the requested Source ID, as shown in the following example.

SdvSm.Offered Progs OfferState				
SglIndex.Program	ServiceGroup	SourceId	Name	State
1.1	11	5056	nCube056	Dynamic ▾
1.3	11	5184	nCube184	Static ▾
1.6	11	5057	nCube057	Static ▾
1.8	11	5185	nCube185	Dynamic ▾
Commit Changes Reload Logout Search Create CSV				

By Program Name

To search by Program name, enter the program name in the search text box, and then click **Search**.

Prev Page Next Page Search Create CSV

The Offered Progs OfferState page displays a list of offered programs with the requested program name, as shown in the following example.

SdvSm.Offered Progs OfferState				
SglIndex.Program	ServiceGroup	SourceId	Name	State
1.1	11	5056	nCube056	Dynamic ▾
1.3	11	5184	nCube184	Static ▾
1.6	11	5057	nCube057	Static ▾
1.8	11	5185	nCube185	Dynamic ▾
Commit Changes Reload Logout Search Create CSV				

5

Advanced Operations

This chapter describes a variety of procedures that should be performed only by advanced users of USRM.

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Sharing a QAM Chassis Between Two USRMs

Cisco GQAM chassis are capable of being shared between two USRM servers.

Sharing GQAMs

No special configuration on the USRM is required to share GQAMs. However, the GQAM code version must be version 4.2 or later.

Sharing RFGW-1 and xDQA24 QAMs

The following code versions are required to share these QAMs between two USRMs:

- RFGW-1 code must be version 1.3.9 or later
- xDQA code must be version 4.1.39

On the USRM, any QAM output port that is controlled by another USRM must have its AdminState set to OutOfService. This can be done from the web interface or via a configuration file, as follows.

- 1 From the USRM web interface:
 - a Select the Resource Manager - QAMs - QAM <QamName> - Output Ports page, where QamName is the QAM involved.
 - b Set the AdminState of the ports controlled by another USRM to OutOfService and click **Commit Changes**.

OR

- 2 Via a Configuration file:
 - a In the QAM configuration file, set the PortTable.AdminState entries of the ports controlled by another USRM to OutOfService.
 - b Load and run the configuration file using Platform - ConfigManager in the web interface.

Creating QAMs With a Configuration File

QAMs can be created by using a configuration file. Once created, the configuration files can be loaded and processed using the USRM web interface, as follows:

- 1 Select the Platform - ConfigManager - Config Utils page.
- 2 Enter the configuration file name in the LoadConfigFileName field, and then click **Commit Changes**.

Result: The configuration file is processed, and the QAM resources added to the network configuration.

Creating GQAM, xDQA, and RFGW-1 QAMs

GQAM, xDQA and RFGW-1 QAMs can be created using a text configuration file in the following format.

Note: The text file should reside in the /opt/usrm/ConfigFiles directory.

```
Rfgw1 RFGW1 adminstate=preprovision\
CtrlIpAddress=172.16.4.8\
PortTable.ServiceGroupId.1 2\
PortTable.ServiceGroupId.2 6\
PortTable.ServiceGroupId.3 7\
PortTable.ServiceGroupId.4 8\
PortTable.ServiceGroupId.5 9\
PortTable.ServiceGroupId.6 10\
PortTable.ServiceGroupId.7 11\
PortTable.ServiceGroupId.8 12\
PortTable.ServiceGroupId.9 13\
PortTable.ServiceGroupId.10 14\
PortTable.ServiceGroupId.11 15\
PortTable.ServiceGroupId.12 16 adminstate=inservice

gqam GQAM1 CtrlIpAddress=172.16.4.2\
PortTable.ServiceGroupId.1 6\
PortTable.ServiceGroupId.2 7\
PortTable.ServiceGroupId.3 8\
PortTable.ServiceGroupId.4 9
```

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```
xDQA24 xDQA2 adminstate=preprovision\  
CtrlIpAddress=172.16.4.6\  
DataIpAddress=172.18.6.1\  
OverheadBandwidth 1.114\  
PortTable.ServiceGroupId.1 2\  
PortTable.ServiceGroupId.2 6\  
PortTable.ServiceGroupId.3 7\  
PortTable.ServiceGroupId.4 8\  
PortTable.ServiceGroupId.5 9\  
PortTable.ServiceGroupId.6 10\  
PortTable.ServiceGroupId.7 11\  
PortTable.ServiceGroupId.8 12\  
PortTable.ServiceGroupId.9 13\  
PortTable.ServiceGroupId.10 14\  
PortTable.ServiceGroupId.11 15\  
PortTable.ServiceGroupId.12 16 adminstate=inservice
```

Creating GQI or Generic QAMs

GQI or generic QAMs can be created using a text configuration file in the following format.

Note: The text file should reside in the /opt/usrm/ConfigFiles directory. This example is for creating a generic QAM (GqiQam) using an xDQA (xDQA899).

Creating QAMs With a Configuration File

```
GqiQam xDQA899 adminstate=preprovision\  
CtrlIpAddress=172.16.4.6\  
DataIpAddress=172.18.6.1\  
OverheadBandwidth 1.214\  
PortTable.ServiceGroupId.1 1\  
PortTable.ServiceGroupId.2 1\  
PortTable.ServiceGroupId.3 2\  
PortTable.ServiceGroupId.4 2\  
PortTable.ServiceGroupId.5.3\  
PortTable.ServiceGroupId.6.3\  
PortTable.ServiceGroupId.7.4\  
PortTable.ServiceGroupId.8.4\  
PortTable.ServiceGroupId.9.5\  
PortTable.ServiceGroupId.10.5\  
PortTable.ServiceGroupId.11.6\  
PortTable.ServiceGroupId.12.6\  
ChannelTable.Frequency.1.1 100 ChannelTable.ModulationFormat.1.1 ITUB-QAM-256  
ChannelTable.TSID.1.1 101\  
ChannelTable.Frequency.1.2 106 ChannelTable.ModulationFormat.1.2 ITUB-QAM-256  
ChannelTable.TSID.1.2 102\  
ChannelTable.Frequency.2.1 112 ChannelTable.ModulationFormat.2.1 ITUB-QAM-256  
ChannelTable.TSID.2.1 103\  
ChannelTable.Frequency.2.2 118 ChannelTable.ModulationFormat.2.2 ITUB-QAM-256  
ChannelTable.TSID.2.2 104\  
ChannelTable.Frequency.3.1 124 ChannelTable.ModulationFormat.3.1 ITUB-QAM-256  
ChannelTable.TSID.3.1 105\  
ChannelTable.Frequency.3.2 130 ChannelTable.ModulationFormat.3.2 ITUB-QAM-256  
ChannelTable.TSID.3.2 106\  
ChannelTable.Frequency.4.1 136 ChannelTable.ModulationFormat.4.1 ITUB-QAM-256  
ChannelTable.TSID.4.1 107\  
ChannelTable.Frequency.4.2 142 ChannelTable.ModulationFormat.4.2 ITUB-QAM-256  
ChannelTable.TSID.4.2 108\  
ChannelTable.Frequency.5.1 148 ChannelTable.ModulationFormat.5.1 ITUB-QAM-256  
ChannelTable.TSID.5.1 109\  
ChannelTable.Frequency.5.2 154 ChannelTable.ModulationFormat.5.2 ITUB-QAM-256  
ChannelTable.TSID.5.2 110\  
ChannelTable.Frequency.6.1 160 ChannelTable.ModulationFormat.6.1 ITUB-QAM-256  
ChannelTable.TSID.6.1 111\  
ChannelTable.Frequency.6.2 166 ChannelTable.ModulationFormat.6.2 ITUB-QAM-256  
ChannelTable.TSID.6.2 112\  
ChannelTable.Frequency.7.1 172 ChannelTable.ModulationFormat.7.1 ITUB-QAM-256  
ChannelTable.TSID.7.1 113\  
ChannelTable.Frequency.7.2 178 ChannelTable.ModulationFormat.7.2 ITUB-QAM-256  
ChannelTable.TSID.7.2 114\  
ChannelTable.Frequency.8.1 184 ChannelTable.ModulationFormat.8.1 ITUB-QAM-256  
ChannelTable.TSID.8.1 115\  
ChannelTable.Frequency.8.2 190 ChannelTable.ModulationFormat.8.2 ITUB-QAM-256  
ChannelTable.TSID.8.2 116\  
ChannelTable.Frequency.9.1 184 ChannelTable.ModulationFormat.9.1 ITUB-QAM-256  
ChannelTable.TSID.9.1 117\  
ChannelTable.Frequency.9.2 190 ChannelTable.ModulationFormat.9.2 ITUB-QAM-256  
ChannelTable.TSID.9.2 118\  
ChannelTable.Frequency.10.1 184 ChannelTable.ModulationFormat.10.1 ITUB-QAM-256  
ChannelTable.TSID.10.1 119\  
ChannelTable.Frequency.10.2 190 ChannelTable.ModulationFormat.10.2 ITUB-QAM-256  
ChannelTable.TSID.10.2 120\  
ChannelTable.Frequency.11.1 184 ChannelTable.ModulationFormat.11.1 ITUB-QAM-256  
ChannelTable.TSID.11.1 121\  
ChannelTable.Frequency.11.2 190 ChannelTable.ModulationFormat.11.2 ITUB-QAM-256  
ChannelTable.TSID.11.2 122\  
ChannelTable.Frequency.12.1 184 ChannelTable.ModulationFormat.12.1 ITUB-QAM-256  
ChannelTable.TSID.12.1 123\  
ChannelTable.Frequency.12.2 190 ChannelTable.ModulationFormat.12.2 ITUB-QAM-256  
ChannelTable.TSID.12.2 124 adminstate=inservice
```

Configuration Files For an Unsupervised USRM

All configuration files shown in this section are processed only when the USRM is initialized. These files are not required for a supervised USRM under DNCS control.

Note: These files should all reside in the /opt/usrm/ConfigFiles directory.

MCP Parameters

Use the McmisServer.txt file to specify MCP parameters in the following format.

```
ServiceGroupTable.McpDestAddress.1 232.1.0.2
ServiceGroupTable.McpDestAddress.2 232.1.0.6
ServiceGroupTable.McpDestAddress.3 232.1.0.7
ServiceGroupTable.McpDestAddress.4 232.1.0.8
ServiceGroupTable.McpDestAddress.5 232.1.0.9
ServiceGroupTable.McpDestAddress.6 232.1.0.10
ServiceGroupTable.McpDestAddress.7 232.1.0.11
ServiceGroupTable.McpDestAddress.8 232.1.0.12
ServiceGroupTable.McpDestAddress.9 232.1.0.13
ServiceGroupTable.McpDestAddress.10 232.1.0.14
ServiceGroupTable.McpDestAddress.11 232.1.0.15
ServiceGroupTable.McpDestAddress.12 232.1.0.16
McpBandwidth 0.200000
```

Resource Manager Parameters

Use the ResourceManager.txt file to specify resource manager parameters in the following format.


```

ServiceGroupTable.Name.1 SG2
ServiceGroupTable.ServiceGroupId.1 2
ServiceGroupTable.Name.2 SG6
ServiceGroupTable.ServiceGroupId.2 6
ServiceGroupTable.Name.3 SG7
ServiceGroupTable.ServiceGroupId.3 7
ServiceGroupTable.Name.4 SG8
ServiceGroupTable.ServiceGroupId.4 8
ServiceGroupTable.Name.5 SG9
ServiceGroupTable.ServiceGroupId.5 9
ServiceGroupTable.Name.6 SG10
ServiceGroupTable.ServiceGroupId.6 10
ServiceGroupTable.Name.7 SG11
ServiceGroupTable.ServiceGroupId.7 11
ServiceGroupTable.Name.8 SG12
ServiceGroupTable.ServiceGroupId.8 12
ServiceGroupTable.Name.9 SG13
ServiceGroupTable.ServiceGroupId.9 13
ServiceGroupTable.Name.10 SG14
ServiceGroupTable.ServiceGroupId.10 14
ServiceGroupTable.Name.11 SG15
ServiceGroupTable.ServiceGroupId.11 15
ServiceGroupTable.Name.12 SG16
ServiceGroupTable.ServiceGroupId.12 16
ServerName USRM2

```

SdvSm Parameters

Use the SdvSm.txt file to specify SdvSm parameters in the following format.

```

ProgramTable.SourceId.1 1101
ProgramTable.Name.1 America's_Voice
ProgramFormatTable.DestAddr.1.1 232.0.1.41
ProgramFormatTable.InputPort.1.1 50000
ProgramFormatTable.SrcAddr1.1.1 172.16.20.1
ProgramFormatTable.SrcAddr2.1.1 172.16.21.1
ProgramFormatTable.SrcAddr3.1.1 172.16.22.1
ProgramTable.Priority.1 1
ProgramFormatTable.Bandwidth.1.1 3.75

ProgramTable.SourceId.49 1464
ProgramTable.Name.49 Discovery_HD_1080i
ProgramFormatTable.DestAddr.49.1 232.0.1.40
ProgramFormatTable.InputPort.49.1 50000
ProgramFormatTable.SrcAddr1.49.1 172.16.20.1
ProgramFormatTable.SrcAddr2.49.1 172.16.21.1
ProgramFormatTable.SrcAddr3.49.1 172.16.22.1
ProgramTable.Priority.49 1
ProgramFormatTable.Bandwidth.49.1 15.0

```

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```
ProgramNumberMode SourceId
ProgramHoldTime 0
ActivityLogFormat TWC
ActiveUpdatePeriod 30
RecaptureTestPeriod 30

ServiceGroupTable.MinActiveBandwidth.1 0.0
ServiceGroupTable.MaxActiveBandwidth.1 225.0
ServiceGroupTable.MinActiveBandwidth.2 0.0
ServiceGroupTable.MaxActiveBandwidth.2 375.0
ServiceGroupTable.MinActiveBandwidth.3 0.0
ServiceGroupTable.MaxActiveBandwidth.3 375.0
ServiceGroupTable.MinActiveBandwidth.4 0.0
ServiceGroupTable.MaxActiveBandwidth.4 375.0
ServiceGroupTable.MinActiveBandwidth.5 0.0
ServiceGroupTable.MaxActiveBandwidth.5 375.0
ServiceGroupTable.MinActiveBandwidth.6 0.0
ServiceGroupTable.MaxActiveBandwidth.6 225.0
ServiceGroupTable.MinActiveBandwidth.7 0.0
ServiceGroupTable.MaxActiveBandwidth.7 225.0
ServiceGroupTable.MinActiveBandwidth.8 0.0
ServiceGroupTable.MaxActiveBandwidth.8 225.0
ServiceGroupTable.MinActiveBandwidth.9 0.0
ServiceGroupTable.MaxActiveBandwidth.9 225.0
ServiceGroupTable.MinActiveBandwidth.10 0.0
ServiceGroupTable.MaxActiveBandwidth.10 225.0
ServiceGroupTable.MinActiveBandwidth.11 0.0
ServiceGroupTable.MaxActiveBandwidth.11 225.0
ServiceGroupTable.MinActiveBandwidth.12 0.0
ServiceGroupTable.MaxActiveBandwidth.12 225.0

ServiceGroupTable.Name.1 SG2
ServiceGroupTable.ServiceGroupId.1 2
ServiceGroupTable.Name.2 SG6
ServiceGroupTable.ServiceGroupId.2 6
ServiceGroupTable.Name.3 SG7
ServiceGroupTable.ServiceGroupId.3 7
ServiceGroupTable.Name.4 SG8
ServiceGroupTable.ServiceGroupId.4 8
ServiceGroupTable.Name.5 SG9
ServiceGroupTable.ServiceGroupId.5 9
ServiceGroupTable.Name.6 SG10
ServiceGroupTable.ServiceGroupId.6 10
ServiceGroupTable.Name.7 SG11
ServiceGroupTable.ServiceGroupId.7 11
ServiceGroupTable.Name.8 SG12
ServiceGroupTable.ServiceGroupId.8 12
ServiceGroupTable.Name.9 SG13
ServiceGroupTable.ServiceGroupId.9 13
ServiceGroupTable.Name.10 SG14
ServiceGroupTable.ServiceGroupId.10 14
ServiceGroupTable.Name.11 SG15
ServiceGroupTable.ServiceGroupId.11 15
ServiceGroupTable.Name.12 SG16
ServiceGroupTable.ServiceGroupId.12 16
```

WebServer Parameters

Use the WebServer.txt file to specify WebServer parameters in the following format.

```
ClientPasswordTimeout 999999
```

Adding and Deleting USRM Service Groups Using Configuration Files

Overview

As Cisco SDV sites transition from using the original SDV Server to a USRM, there is a change in the management and control aspects of SDV Resources. Whereas the original SDV Server was totally dependent on the DNCS for all bandwidth and resource management, in the SDV 3.0 architecture, control of these parameters has transitioned to the USRM. Shell sessions and bandwidth/resource borrowing are out. The USRM now has control of all SDV QAM resources and their associated bandwidth.

Implementing SDV 3.0 in a DNCS 4.2 environment is possible and is being successfully done in the field. However, it must be noted that the DNCS interfaces to the USRM have not changed. Thus, the USRM has adapted the information from the original SDV MIB and uses it for initial provisioning. Included in this are Offered Programs, Service Group name, Mini-Carousel IP address, and Min/Max mode. A major component that is missing is QAM information. In the original SDV, the server did not learn about its resources until after it requested service group bandwidth. Consequently, there is no mechanism present for the DNCS to provision the USRM with this information on startup. Hence, this information must be entered by the operator.

During the initial SDV Server-to-USRM upgrade, a script was written which read the DNCS database and gathered all QAM/Service Group information for each server. This information was captured as a configuration file and written into the USRM database. Going forward, the Cisco USRM team recommends using configuration files to manage QAMs. This approach will work for GQAMs, RFGW QAMs, or third-party QAMs (TPQs). With the future release of USRM 2.0, Cisco will introduce an admin console which will be a single machine where administration of all USRMs can take place.

We also envision at this time that the USRM will only require and use Offered Program Table information from the DNCS. For USRM 1.x releases, we will continue to offer support in a "hybrid" manner: some control by the DNCS, some control by the USRM. This interim approach is necessary to get the required USRM functionality to the field in a timely manner.

Adding Service Groups to a USRM

Adding a service group and other resources to a USRM in release 1.5.0 and later requires a process that is a combination of procedures on the USRM as well as on the DNCS.

Notes:

- This procedure requires the creation or modification of a single resource configuration file for each USRM.
- Configuration files should be located in the `/opt/usrm/ConfigFiles` directory.
- Configuration files can be modified/created ahead of time and executed during a maintenance window.

The basic flow of the process is as follows.

- 1 Create the configuration file for the QAM resources and service groups for each USRM.
- 2 From the DNCS, create the service group and assign it to the USRM.
- 3 From the USRM, run the configuration file to add the QAM resources and assign service groups to QAM ports.
- 4 For sites configured with zones, update and/or run the zone configuration file.

Creating Configuration Files

Use a text editor such as Notepad to create a configuration file similar to the following file for each USRM. The configuration file should be prepared in advance for each USRM. The file name used in this example is just a suggestion. However, if other names are used, you should choose a descriptive file name that ties it to an individual server.

The `Qams_Servername.txt` file will serve as the QAM provisioning file for a USRM. It is a list of all QAMs along with the service group assignment per QAM port.

Cisco recommends that this file be used as the basis for managing all QAMs on the USRM. Any further QAM additions or deletions should be appended to or removed from this file. The USRM has an `AutoConfigFileName` field on the Platform - ConfigManager - Configuration Files page. If a configuration file's filename is entered in this field, the USRM automatically runs this file any time the file is modified (change to the date/time stamp). One caveat, however, is that a QAM will not be automatically removed from a USRM by removing it from this file. To remove a QAM from a USRM, follow the instructions provided in the deleting resources section.

The following example shows how to add a GQAM configured with service groups 5 and 15 on ports 1 and 2 respectively, and ports 3 and 4 unassigned, to a USRM. This file also assigns service group 5 to zone 1 and service group 15 to zone 0. This example file can be used as a template for any number of service groups by simply creating additional resources and appending them to the list.

Note: If zones are not being used, the section beginning with "Object SdvSm" containing all of the zone information can be left out or, alternatively, can be left in with all service groups assigned to zone 0.

This example file is for creating a GQAM. For configuration file formats for other QAM types, refer to *Creating QAMs With a Configuration File* (on page 347).

```
create gqam GQAM02
adminstate=preprovision
CtrlIpAddress=172.16.6.3
PortTable.ServiceGroupId.1 5
PortTable.ServiceGroupId.2 15
PortTable.ServiceGroupId.3 0
PortTable.ServiceGroupId.4 0
PortTable.AdminState.1 InService
PortTable.AdminState.2 InService
PortTable.AdminState.3 OutOfService
PortTable.AdminState.4 OutOfService
adminstate=inservice
Object ResourceManager
ServiceGroupTable.AdminState.SGID5 InService
ServiceGroupTable.AdminState.SGID15 InService
Object SdvSm
ServiceGroupTable.Zone.SGID5 1
ServiceGroupTable.Zone.SGID15 0
```

Importing the Configuration File

Copy the configuration file to the /opt/usrm/ConfigFiles directory on the USRM using a tool such as WinSCP.

Optionally, copy the file using the scp command from an xterm window, as follows.

- 1 Enter the following command at the system prompt and press **Enter**.

```
scp <configuration file name> root@<ip address of USRM>:
/opt/usrm/ConfigFiles
```

Note: You will be prompted for the password for the USRM. The default password is "generic".

Creating/Modifying a SDV-Enabled Service Group on the DNCS

Perform the following steps to create or modify a SDV-enabled service group on the DNCS.

- 1 Access the Service Group Data - Open Service Group screen.

Adding and Deleting USRM Service Groups Using Configuration Files

DNCS/Service Group Data/Open Service Group

[Save Service Group](#)

[Exit](#)

[Help](#)

Edit Service Group

Service Group Id	Parent Id	Name	Children
2	0	SG 2	

Ports

Available Ports

- GQAM20-RF OUT 4 (16)
- GQAM02-RF OUT 1 (2)
- GQAM02-RF OUT 1 (3)
- GQAM02-RF OUT 1 (4)
- GQAM02-RF OUT 3 (9)
- GQAM02-RF OUT 3 (10)
- GQAM02-RF OUT 3 (11)
- GQAM02-RF OUT 3 (12)
- GQAM02-RF OUT 4 (13)
- GQAM02-RF OUT 4 (14)

Add ==>

<== Remove

Selected Ports

- GQAM02-RF OUT 2 (7)
- GQAM02-RF OUT 2 (8)

SDV Enabled ☒

Primary SDV Server: Stuttgart

Mini-Carousel Destination IP: 232.100.0.2

Maximum Bandwidth: 150 Mbps

Bandwidth Release Increment: 0 Mbps

Bandwidth Release Interval: 0 Seconds

Recapture Bandwidth Threshold: 0 Mbps

	Quantity	Rate(Mpbs)	Channels Overhead
Contiguous Bandwidth 1:	0	0	0
Contiguous Bandwidth 2:	0	0	0
Contiguous Bandwidth 3:	0	0	0

- 2 Select the desired USRM under Primary SDV Server. Enter the mini-carousel multicast destination IP address. Enter the service group maximum bandwidth.
 - 3 Recommended optional step: In a DNCS 4.2.0 system, if GQAMs are used in the USRM's SDV service group, enter the QAM carriers into the Selected Ports window. While this information is not directly provisioned into the USRM by the DNCS, allocating the carriers here eliminates the potential that an operator will inadvertently "reuse" them as a VOD carrier by taking them out of the Available Ports list.
- Note:** For a system running DNCS release 4.2.1 or greater, step 3 is also applicable to any third party QAMs that are being used/shared by the DNCS and USRM.
- 4 Click **Save Service Group** to save your changes.

Adding Resources to the USRM and Associating QAM Output Ports to Service Groups (Config Files)

Perform the following steps to add resources and associate output ports using the configuration file.

- 1 Select the Platform - ConfigManager - Configuration page.

- 2 Set the DisplayMode to Config and click **Commit Changes**.
- 3 Select the Platform - ConfigManager - Configuration Files page.
- 4 Enter the name of the QAM configuration file into the AutoConfigFileName field and click **Commit Changes**.
- 5 Select the Platform - ConfigManager - Configuration page.
- 6 Set the DisplayMode to Normal and click **Commit Changes**.

Result: The configuration file now automatically loads any new information or changes whenever the file's date/time stamp is changed. If the file is modified and saved, the USRM automatically loads the new changes.

Note: The USRM does not delete any information that is taken out of a configuration file. A separate delete command is required.

Updating Zone Configuration Information

This step is only required for sites using zones.

If service groups are added or deleted on a USRM, the zone configuration file needs to be "touched" even if there are no changes to zones. Modify the existing configuration file on the USRM to reflect the new zone information.

Example of Adding a Service Group

This is an example of adding a service group using a configuration file named QAMs_Stuttgart.txt. The configuration file does the following.

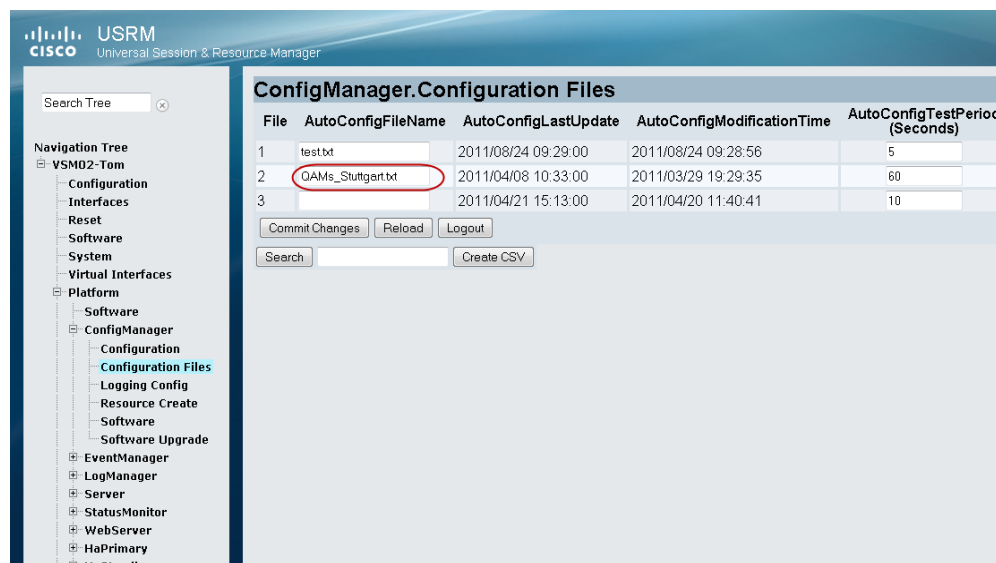
- 1 Adds a GQAM (device type=gqam) named GQAM02.
- 2 Sets the QAM management ip address to 172.16.6.3.
- 3 Assigns Port 1 to SGID=5, Port 2 to SGID=15, and leaves ports 3 and 4 unassigned.
- 4 Sets the AdminState for each of the assigned ports to InService and each of the unassigned ports to OutOfService.
- 5 Creates entries for these service groups in the Resource Manager Service Group Table and sets the AdminState to InService.

The configuration file QAMs_Stuttgart.txt is shown below.

Adding and Deleting USRM Service Groups Using Configuration Files

```
create gqam GQAM02
adminstate=preprovision
CtrlIpAddress=172.16.6.3
PortTable.ServiceGroupId.1 5
PortTable.ServiceGroupId.2 15
PortTable.ServiceGroupId.3 0
PortTable.ServiceGroupId.4 0
PortTable.AdminState.1 InService
PortTable.AdminState.2 InService
PortTable.AdminState.3 OutOfService
PortTable.AdminState.4 OutOfService
adminstate=inservice
Object ResourceManager
ServiceGroupTable.AdminState.SGID5 InService
ServiceGroupTable.AdminState.SGID15 InService
Object SdvSm
ServiceGroupTable.Zone.SGID5 1
ServiceGroupTable.Zone.SGID15 0
```

Note: After the configuration file is created and placed in the opt/usrm/ConfigFiles directory on the USRM, you must enter the configuration file's name on the Platform - ConfigManager - Configuration Files page as shown, and click **Commit Changes**. This loads and processes the file to add the service group.



Deleting Service Groups From a USRM

Note: This procedure requires the modification of the resource configuration file created in the Adding Service Groups to a USRM procedure, as well as the creation of two other configuration files as described in this section.

Deleting a service group and other resources from a USRM in release 1.5.0 and later requires a process that is a combination of procedures on the USRM as well as on the DNCS. The basic flow of the process is as follows.

- 1 From the USRM, release all of the sessions associated with the service group in the Resource Manager.
- 2 From the DNCS, remove the service group from the USRM.
- 3 From the USRM, modify and run the QAM_Servername file to remove the service groups from the QAM output ports and the associated tables.
- 4 From the USRM, delete the service group from the Resource Manager.

Note: These files can be created/modified prior to the maintenance window.

The following sections explain each of these procedures in detail.

Required Configuration Files

Use a text editor, such as Notepad, to create the following configuration files for each USRM. The configuration file should be prepared in advance for use during a maintenance window.

Note: The file names shown are just suggestions, but will be used in all following examples.

sgRelease_Servername.txt

The following is an example file that releases sessions from service group 15. Use this as a template to create other files of this type.

This template can be used for any number of service groups by adding additional ServiceGroupTable entries. You do not need to redefine "object ResourceManager" before each ServiceGroupTable entry.

```
object ResourceManager
ServiceGroupTable.AdminState.SGID15 Release
```

sgDelete_Servername.txt

The following is an example file that deletes sessions from service group 15. Use this as a template to create other files of this type.

Note: When you delete a service group, all STBs in that service group will immediately be deleted from the USRM.

Adding and Deleting USRM Service Groups Using Configuration Files

This template can be used for any number of service groups by adding additional ServiceGroupTable entries. You do not need to redefine "object ResourceManager" before each ServiceGroupTable entry.

```
object ResourceManager
ServiceGroupTable.AdminState.SGID15 Delete
```

Qams_Servername_sgDelete.txt

This file is a modification to the Qams_Servername.txt file created under the Creating Configuration Files procedure and loaded into the AutoConfigFileName field of the USRM web interface. The file with "_sgDelete" appended to its name is a temporary file that can be created ahead of time. Its contents can be copied into the Qams_Servername.txt file during maintenance window activities.

The following is an example that deletes service group 15 from the QAMS_Stuttgart.txt file created earlier. This was done by removing any reference to SGID15 in the original file and placing any unused QAM ports AdminState setting to OutOfService.

Note: Use this as a template to create other files of this type. It can be used for any number of service groups.

```
create gqam GQAM02
adminstate=preprovision
CtrlIpAddress=172.16.6.3
PortTable.ServiceGroupId.1 5
PortTable.ServiceGroupId.2 0
PortTable.ServiceGroupId.3 0
PortTable.ServiceGroupId.4 0
PortTable.AdminState.1 InService
PortTable.AdminState.2 OutOfService
PortTable.AdminState.3 OutOfService
PortTable.AdminState.4 OutOfService
adminstate=inservice
Object ResourceManager
ServiceGroupTable.AdminState.SGID5 InService
Object SdvSm
ServiceGroupTable.Zone.SGID5 1
```

Importing the Configuration File

Copy each of the configuration files to the /opt/usrm/ConfigFiles directory on the USRM using a tool such as WinSCP.

Optionally, copy the file using the scp command from an xterm window, as follows.

- 1 Enter the following command at the system prompt and press **Enter**.
scp <configuration file name> root@<ip address of USRM>:
/opt/usrm/ConfigFiles

Note: You will be prompted for the password for the USRM. The default password is "generic".

Releasing Sessions From a Service Group in Resource Manager

Perform the following steps to release all sessions from a service group in resource manager.

- 1 Select the ResourceManger - Software page.
- 2 In the ConfigFileUpdate field, enter "sgRelease_Servername.txt".
Note: Use your specific file name if different than our example. Don't include quote marks.
- 3 Select "Read" in the ConfigFileUpdate field's drop-down list and then click **Commit Changes**.
- 4 Refresh the navigation tree by either clicking the top-level USRM name or by clicking the web browser's refresh button.
- 5 Monitor the EventLog to verify that the configuration file was read and that sessions are deleted.
- 6 Select the Resource Manager - Service Groups:Config page and verify that the AdminState of the service group is now set to OutOfService.

Removing a SDV-Enabled Service Group Via the DNCS

Perform the following steps to remove a SDV-enabled service group on the USRM via the DNCS.

- 1 Access the Service Group Data - Open Service Group screen.
- 2 Set the Primary SDV Server field to None.
- 3 Recommended optional step: If a service group is being migrated as-is to another USRM, then leave the QAM carriers in the Selected Ports window and leave the mini-carousel IP address. If the service group is being eliminated, then remove both completely.
- 4 Click **Save Service Group** to save your changes.
- 5 Monitor the EventLog to verify that the SNMP commands are sent by the DNCS.
- 6 Select the Applications - SdvSm - ServiceGroups/Config page and verify that the service group does not appear in the table.

Modifying and Running the Qams_Servername.txt File

Note: This procedure assumes that the QAMs_Servername.txt file is already loaded in the AutoConfigFileName field and will automatically load and run once the file is modified.

- 1 Open an xterm window on the USRM.
- 2 Change to the /opt/usrm/ConfigFiles directory.
- 3 Replace the contents of the QAMs_Servername.txt file with the contents of the QAMs_Servername_sgDelete.txt file.

Adding and Deleting USRM Service Groups Using Configuration Files

Example: For our QAMs_Stuttgart.txt example, you would type the following command at the system prompt and press **Enter**:

```
cp QAMs_Stuttgart_sgDelete.txt QAMs_Stuttgart.txt
```

- 4 Select the Resource Manager - QAMs - QAM <QamName> - Output Ports page (where <QamName> is the name of the specific QAM), and verify that the Service Group ID has been removed.

Deleting the Service Group in Resource Manager

Perform the following steps to delete the service group in resource manager.

- 1 Select the ResourceManger - Software page.
- 2 In the ConfigFileUpdate field, enter "sgDelete_Servername.txt".
Note: Use your specific file name if different than our example. Don't include quote marks.
- 3 Select "Read" in the ConfigFileUpdate field's drop-down list and then click **Commit Changes**.
- 4 Refresh the navigation tree by either clicking the top-level USRM name or by clicking the web browser's refresh button.
- 5 Select the Resource Manager - Service Groups:Config page and verify that the service group has been deleted.

Deleting a Stranded Session/Set-top Box

Perform the following steps to delete a stranded session or set-top box (STB) using the USRM web interface.

- 1 Delete the session on the QAM as follows:
 - a Select the Applications - SdvSm - ActiveProgs Base page and find the session ID of the stranded program.
 - b Select the ResourceManager - SessionList page and find the QAM name.
 - c Select the ResourceManager - QAM - Sessions page and set the AdminState to Release.
- 2 Delete the STB as follows:

Note: You must be logged in with service level rights to perform this task.

 - a Select the Applications - SdvSm - ActiveProgs Base page and find the session ID of the stranded program.
 - b Select the Applications - SdvSm - STB:Tuner page and search on session ID to find the STB index.
 - c Select the Applications - SdvSm - STB:Inventory page and delete the STB.
- 3 Reclaim bandwidth as follows:
 - a Select the Applications - SdvSm - Configuration page and set RecaptureMode to Immediate.

Replacing GQAMs with RFGW-1 QAMs

Overview

The following procedure is recommended for a site replacing GQAMs with RFGW-1 QAMs. This procedure is based on creating and loading information using configuration files. Managing via configuration files has the advantages of being able to prepare the files in advance and to be able to verify accuracy prior to being activated in the field. Also, the following procedure allows you to pre-configure your working USRM with RFGW-1 QAMs during the day without affecting service by, or the performance of, the existing GQAMs and USRM.

When using this procedure, perform the following steps before a maintenance window.

- 1 Prepare the configuration files in advance.
- 2 Provision the RFGW-1 QAMs with service group information without impacting service to customers by placing the QAMs OutOfService.
- 3 Create the RFGW-1 QAMs on an active USRM without impacting service to customers.
- 4 Associate service groups to output ports.

You then perform the following steps during a maintenance window.

- 5 Remove the GQAMs from the USRM.
- 6 Enable the RFGW-1 QAMs to begin servicing the customers by placing the QAMs InService.

Creating Configuration Files

Four configuration files must be prepared in advance for each USRM. Use a text editor such as Notepad. The names below are just suggestions, but will be used in the following examples. If you use different names, choose descriptive names that associate the files with an individual USRM.

The four files and their specific uses are:

Gqams2Remove_*Servename*.txt

- lists the GQAMs to remove from the USRM
- *Servename* is the name or IP address of the USRM

CreateRfgw_Servername.txt

- initial creation of RFGW on the USRM
- the USRM reads the RFGW-1 settings (freq, tsid, card status)
- service groups are not provisioned at this time
- *Servername* is the name or IP address of the USRM

PreprovisionRfgw_Servername.txt

- provisions the RFGW-1 with service group information
- the QAM is in AdminState=OutOfService, so the USRM will not use it
- final check of QAMs before deleting GQAMs and turning up service
- *Servername* is the name or IP address of the USRM

Qams_Servername.txt

- sets the pre-provisioned QAMs to InService
- Sessions now build, QAMs are active
- *Servername* is the name or IP address of the USRM

Gqams2Remove_Servername.txt

The following is an example configuration file that removes QAMs named GQAM01 and GQAM02. This file can be used as a template to create this type file for any number of QAMs by substituting or adding your actual QAM names.

```
object GQAM01
adminstate=release
adminstate=delete
object GQAM02
adminstate=release
adminstate=delete
```

CreateRfgw_Servername.txt

The following is an example configuration file that creates two RFGW-1 QAMs named RFGW1-1 and RFGW1-2. This file can be used as a template to create this type file for any number of QAMs by substituting or adding your actual QAM names.

```
create Rfgw1 RFGW1-1
CtrlIpAddress=172.16.4.8
create Rfgw1 RFGW1-2
CtrlIpAddress=172.16.4.9
```


PreprovisionRfgw_Servername.txt

The following configuration file is an example that pre-provisions an RFGW-1 named RFGW1-1 with its service group assignments. The CreateRfgw_Servername.txt file must be run prior to running this file. This file adds the service groups, but places the AdminState of the QAM to OutOfService, so the USRM will not attempt to use it. When in this state, the operator can verify that all of the RFGW-1 provisioning is correct.

The following example assigns service groups to 11 ports and places the 12th port OutOfService. The file also pre-provisions the AdminState of the service groups in the Resource Manager to InService.

```
create Rfgw1 RFGW1-1
CtrlIpAddress=172.16.4.8
Protection Automatic
AdminState=OutOfService
PortTable.ServiceGroupId.1 5
PortTable.ServiceGroupId.2 6
PortTable.ServiceGroupId.3 7
PortTable.ServiceGroupId.4 8
PortTable.ServiceGroupId.5 9
PortTable.ServiceGroupId.6 10
PortTable.ServiceGroupId.7 11
PortTable.ServiceGroupId.8 12
PortTable.ServiceGroupId.9 13
PortTable.ServiceGroupId.10 14
PortTable.ServiceGroupId.11 15
PortTable.ServiceGroupId.12 0
PortTable.AdminState.1 InService
PortTable.AdminState.2 InService
PortTable.AdminState.3 InService
PortTable.AdminState.4 InService
PortTable.AdminState.5 InService
PortTable.AdminState.6 InService
PortTable.AdminState.7 InService
PortTable.AdminState.8 InService
PortTable.AdminState.9 InService
PortTable.AdminState.10 InService
PortTable.AdminState.11 InService
PortTable.AdminState.12 OutOfService
Object ResourceManager
ServiceGroupTable.AdminState.SGID5 InService
ServiceGroupTable.AdminState.SGID6 InService
ServiceGroupTable.AdminState.SGID7 InService
ServiceGroupTable.AdminState.SGID8 InService
ServiceGroupTable.AdminState.SGID9 InService
ServiceGroupTable.AdminState.SGID10 InService
ServiceGroupTable.AdminState.SGID11 InService
ServiceGroupTable.AdminState.SGID12 InService
ServiceGroupTable.AdminState.SGID13 InService
ServiceGroupTable.AdminState.SGID14 InService
ServiceGroupTable.AdminState.SGID15 InService
```

Qams_Servername.txt

This configuration file is the final QAM provisioning file. It essentially takes the preprovision file and sets its AdminState to InService. This prompts the USRM to start using the QAM to service customer requests on the specified service groups.

Cisco recommends that this file be used as the basis for managing all QAMs on the USRM. Any further QAM additions or deletions should be appended to or removed from this file. The USRM has an AutoConfigFileName field in the Platform - ConfigManager - Configuration Files page. If a configuration file name is entered in this field, then any time the file is modified (change to the date/timestamp), the USRM automatically runs this file. One caveat, however, is that a QAM will not be automatically removed from a USRM by removing it from this file. It would have to be removed via the web interface or by using the Gqams2Remove_Servername.txt configuration file.

```
create Rfgw1 RFGW1-1
CtrlIpAddress=172.16.4.8
Protection Automatic
AdminState=InService
PortTable.ServiceGroupId.1 5
PortTable.ServiceGroupId.2 6
PortTable.ServiceGroupId.3 7
PortTable.ServiceGroupId.4 8
PortTable.ServiceGroupId.5 9
PortTable.ServiceGroupId.6 10
PortTable.ServiceGroupId.7 11
PortTable.ServiceGroupId.8 12
PortTable.ServiceGroupId.9 13
PortTable.ServiceGroupId.10 14
PortTable.ServiceGroupId.11 15
PortTable.ServiceGroupId.12 0
PortTable.AdminState.1 InService
PortTable.AdminState.2 InService
PortTable.AdminState.3 InService
PortTable.AdminState.4 InService
PortTable.AdminState.5 InService
PortTable.AdminState.6 InService
PortTable.AdminState.7 InService
PortTable.AdminState.8 InService
PortTable.AdminState.9 InService
PortTable.AdminState.10 InService
PortTable.AdminState.11 InService
PortTable.AdminState.12 OutOfService
Object ResourceManager
ServiceGroupTable.AdminState.SGID5 InService
ServiceGroupTable.AdminState.SGID6 InService
ServiceGroupTable.AdminState.SGID7 InService
ServiceGroupTable.AdminState.SGID8 InService
ServiceGroupTable.AdminState.SGID9 InService
ServiceGroupTable.AdminState.SGID10 InService
ServiceGroupTable.AdminState.SGID11 InService
ServiceGroupTable.AdminState.SGID12 InService
ServiceGroupTable.AdminState.SGID13 InService
ServiceGroupTable.AdminState.SGID14 InService
ServiceGroupTable.AdminState.SGID15 InService
```

Replacement Procedure

The first four steps can be performed during normal hours while the USRM is operational with its existing resources. The last three steps must be performed during a maintenance window since service will be interrupted. This procedure assumes the RFGW-1 QAM has been fully provisioned using the RFGW-1 tools.

Provision the RFGW-1 QAM

Provision the RFGW-1 QAM according to its operating instructions using its provisioning tools.

Importing the Four Configuration Files

Copy the four configuration files to the /opt/usrm/ConfigFiles directory on the USRM using a tool such as WinSCP.

Optionally, copy the file using the scp command from an xterm window, as follows.

- 1 Enter the following command at the system prompt and press **Enter**.

```
scp <configuration file name> root@<ip address of USRM>:  
/opt/usrm/ConfigFiles
```

Note: You will be prompted for the password for the USRM. The default password is "generic".

- 2 Repeat step 1 for each configuration file.

Adding the RFGW-1 to the USRM

Perform the following steps to add the RFGW-1 to the USRM.

- 1 Select the ResourceManger - Software page.
- 2 In the ConfigFileUpdate field, enter "CreateRfgw_Servername.txt".

Note: Use your specific file name if different than our example. Don't include quote marks.
- 3 Select "Read" in the ConfigFileUpdate field's drop-down list and then click **Commit Changes**.
- 4 Refresh the navigation tree by either clicking the top-level USRM name or by clicking the web browser's refresh button.
- 5 Select the Resource Manager - QAMs - QAM <QamName> page (where <QamName> is the name of the specific QAM).
 - a Select the QAM Card page and verify that all cards are reporting as installed.
 - b Select the QAM Channels page and verify the TSIDs, frequency, service-type, and AdminState are all correct.

Associating Service Groups to Output Ports

Perform the following steps to associate service groups to output ports.

- 1 Select the ResourceManger - Software page.

- 2 In the ConfigFileUpdate field, enter "PreprovisionRfgw_Servername.txt".
Note: Use your specific file name if different than our example. Don't include quote marks.
- 3 Select "Read" in the ConfigFileUpdate field's drop-down list and then click **Commit Changes**.
- 4 Refresh the navigation tree by either clicking the top-level USRM name or by clicking the web browser's refresh button.
- 5 Select the Resource Manager - QAMs - QAM <QamName> page (where <QamName> is the name of the specific QAM).
 - a Select the Chassis page and verify that AdminState is set to OutOfService.
 - b Select the Output Ports page and verify that the SGIDs have been properly allocated.
 - c Select the Sessions page and verify that no sessions have been created.

Deleting the GQAM From the USRM

Perform the following steps to delete the GQAM from the USRM.

Important: This step must be performed during a maintenance window since service will be interrupted.

- 1 Select the ResourceManger - Software page.
- 2 In the ConfigFileUpdate field, enter "Gqams2Remove_Servername.txt".
Note: Use your specific file name if different than our example. Don't include quote marks.
- 3 Select "Read" in the ConfigFileUpdate field's drop-down list and then click **Commit Changes**.
Note: It will take some amount of time for the file to be read and for the USRM to release all the sessions and remove the QAMs. It is recommended to have a tail of the EventLog running during these procedures to be able to monitor the events in real-time.
- 4 Refresh the navigation tree by either clicking the top-level USRM name or by clicking the web browser's refresh button.
- 5 Verify that the GQAMs are no longer present in the navigation tree.
 - a Optionally, select the Resource Manager - Session List page and verify there are no GQAM sessions listed.
- 6 **Important:** Modify the Qams_Servername file, or any other AutoConfigFile that had the now-deleted QAM listed in it, and remove the deleted-GQAM's entry.
Note: For GQAMs on the USRM, this step can also be accomplished by rerunning the extractQams4Server script and re-importing the file into the DNCS after the QAM's ports have been removed from the service groups associated with the USRM.

Setting the AdminState of the RFGW-1 to InService

Perform the following steps to set the AdminState of the RFGW-1 to InService.

- 1 Create the AutoConfigFileName entry for the Qams_Servername file on the USRM and run the file.
 - a Select the Platform - ConfigManager - Configuration page.
 - b Set the DisplayMode to Config and click **Commit Changes**.
 - c Select the Platform - ConfigManager - Configuration Files page.
 - d Enter the Qams_Servername.txt file name into the AutoConfigFileName field and click **Commit Changes**.
 - e Select the Platform - ConfigManager - Configuration page.
 - f Set the DisplayMode to Normal and click **Commit Changes**.

Result: The configuration file now automatically loads any new information or changes whenever the file's date/time stamp is changed. If the file is modified and saved, the USRM automatically loads the new changes.

Note: The USRM does not delete any information that is taken out of a configuration file. A separate delete command is required.

- 2 Monitor the EventLog and verify that the file loads and that sessions are being created.
- 3 Go to the ResourceManager - Session List page and verify there are sessions listed for the RFGW-1 QAMs.

Connecting the RF Cables

Connect the RF cables to the appropriate RFGW-1 output ports, unmute ports, etc.

Service Group Migration

When necessary, you can migrate service groups from one USRM server to another. If there is a DNCS in the system, moving service groups between USRM servers involves changes on the DNCS as well as the USRM servers.

Migrating a service group from one USRM server to another involves little more than deleting the service group from the USRM server it is currently assigned to and adding it to a different USRM server.

Note: If you need to migrate multiple service groups, disable the SG Manager on the DNCS prior to starting the migration procedure and then enable it after all service groups are migrated.

On the USRM 1.6.0 platform, you can migrate service groups from one USRM server to another in either of two ways: using the USRM Web UI or using configuration files. Both methods use the same DNCS steps, described below.

When migrating a few service groups, the USRM Web UI method is probably easier. When migrating a larger number of service groups, using configuration files would save time within a maintenance window.

Note: Always perform a backup of all system files before beginning any major modifications to the configuration as suggested in these procedures.

Basic Process Flow

The following steps are common to both procedures for migrating service groups from one USRM server to another:

- 1 From the USRM, release all of the sessions associated with the service group in the Resource Manager.
- 2 From the DNCS, remove the Service group from the USRM.
- 3 From the USRM, delete the service group from the SdvSm.
- 4 From the USRM, delete the service group from the QAM output ports.
- 5 From the USRM, delete the service group from the Resource Manager.
- 6 From the DNCS, assign the Service group to the new USRM.
- 7 From the USRM, if needed, create/add resources for the new service groups.
- 8 From the USRM, associate service groups to the QAM output ports.
- 9 For sites configured with zones, associate zone information with the service groups.

The specific steps for each procedure are described in detail below.

Service Group Migration using the USRM Web UI

Deleting a Service Group from a USRM in USRM version 1.6.0 and later requires a combination of commands on the USRM as well as the DNCS.

Note: We recommend opening a tail of the USRM EventLog to monitor the actions that are about to occur.

- 1 Release all sessions from a service group in Resource Manager as follows:
 - a Go to the Resource Manager.Service Groups Config page, set the AdminState of the Service Group to **Release**, and then click **Commit Changes**.
 - b Verify that the AdminState is set to **OutOfService**.
 - c Verify that the sessions were released.
 - i Monitor the EventLog tail.
 - ii For a graphical view, go to the Applications.SdvSm.Service Groups Bandwidth page and click **QamGraphic Display** for the desired Service Group.
- 2 Delete an SDV-Enabled Service Group on the DNCS as follows:
 - a On the DNCS' Service Groups page, set the Primary SDV Server field to **None**.
Optional but recommended: If a service group is being migrated as-is to another USRM, leave the QAM carriers in the Selected Ports window and leave the mini-carousel IP Address. If the service group is being modified, make the appropriate changes.
 - b Monitor the EventLog to verify that the SNMP commands are sent by the DNCS to the USRM.
- 3 Verify the Service Group has been deleted from SdvSm as follows:
 - a Navigate to the Applications.SdvSm.Service Groups Config page and verify that the Service Group has been deleted. If not, verify step 2 above. If the DNCS is correct, then manually delete the service group from SdvSm.
 - i If needed, Set the AdminState of the desired service group to **Release**, and then click **Commit Changes**. This will set the AdminState to OutOfService.
 - ii Set the AdminState of the desired service group to **Delete**, and then click **Commit Changes**.
- 4 Delete the Service Group from QAM Output Ports as follows:
 - a Navigate to the ResourceManager.QAMs.QAM xyz.Output Ports page (where QAM xyz is an individual QAM named "xyz") that is (or was) associated with the Service Group being deleted.
 - b Set the AdminState of the desired port(s) to **Release**, and then click **Commit Changes**. This will release all sessions on the port and will set the AdminState to OutOfService.
 - c Set the ServiceGroupId of the port to **0**, and then click **Commit Changes**.

Note: If all Service Groups are being removed from the QAM and the QAM is going to be removed from the USRM, replace steps 4a – 4c with the procedure to Remove a QAM chassis from the USRM.

- 5 Delete the Service Group from ResourceManager as follows:
 - a Navigate to the ResourceManager.Service Groups Config page.
 - b Set the AdminState of the Service Group(s) to be deleted to **Delete**, and then click **Commit Changes**.

Note:

 - In order for a Service Group to be deleted, no QAM ports can be associated with it. If QAM ports are still associated with a service group when AdminState is set to Delete, the Service Group will remain in the table with an AdminState of OutOfService. Remove the remaining QAM ports and set AdminState to Delete again to remove the Service Group.
 - When you remove a Service Group from a USRM, all STBs in that Service Group will also be deleted from the USRM.
- 6 If the QAM will be removed completely from this USRM server, then:
 - a Navigate to the ResourceManager.QAMs.QAM xyz.Chassis page (where QAM xyz is an individual QAM named "xyz").
 - b Set the AdminState to **Release**, and then click **Commit Changes**. This releases all sessions on all output ports of the QAM, and sets the AdminState to OutOfService.
 - c Set AdminState to **Delete**, and then click **Commit Changes**. This deletes the QAM from the USRM database.
 - d Refresh the tree and verify that the QAM is gone.

Note: Once a QAM is removed from all USRM servers, it is recommended that the operator update the DNCS Service Group page(s) by removing the QAM TSIDs from the Selected Ports window and placing them back into the Available Ports window.
- 7 On the DNCS Service Group Web UI, set the Primary SDV Server to the new USRM server.

Note: If changes are to be made to the Selected Ports of the service group, they should be completed before setting the Primary SDV Server to the new USRM.
- 8 Add Resources to the USRM and associate output ports to Service Groups.

Note: The USRM supports all Cisco QAMs (GQAM, RFGW, xDQA) as well as third party QAMs that adhere to the GQI and NGOD specifications. This procedure uses Cisco QAMs as examples. When substituting a GQI or NGOD QAM, refer to earlier sections on adding resources to a USRM for details.

- a Create the QAM on the USRM as follows:
 - i Navigate to the Platform.ConfigManager.Resource Create page, enter a unique resource name in the CreateName field associated with the device type being created, and then click **Commit Changes**. Do this for all resources to be added.
 - ii Refresh the tree by clicking either the top-level USRM name or the web browser refresh button. This will cause the newly-added resources to show up in the tree in the ResourceManager.QAMs section.
- b Read the QAM settings (Cisco QAMs only) as follows:
 - i Navigate to the ResourceManager.QAMs.QAM xyz.Chassis page (where QAM xyz is an individual QAM named "xyz").
 - ii Enter the IP Address of the QAM management port in the CtrlIpAddress field, and then click **Commit Changes**.

This will cause the USRM to read the QAM settings (frequency, tsid, etc.) via SNMP and place the information in the USRM tables.
 - iii Verify the QAM settings by navigating to the QAM Channels page.

Important: Verify that the Service Type (SDV, VOD) and Admin States are set properly.
- c Assign Service Groups as follows:
 - i Navigate to the ResourceManager.QAMs.QAM xyz.Output Ports page (where QAM xyz is an individual QAM named "xyz").
 - ii Enter the Service Group ID associated with each port, verify that the Admin State is set to InService, and then click **Commit Changes**.
 - iii Verify that sessions are created:
 1. Monitor the EventLog tail.
 2. Resource Manager.QAMs.QAM xyz.Sessions page for video and MCP sessions.
 3. Verify that mini-carousels are created on the QAM by going to the Applications.McmisServer.MCP Sessions page.
 4. For a graphical view, go to the Applications.SdvSm.Service Groups Bandwidth page and click on QamGraphic Display for the desired Service Group.
- 9 Update Zone configuration information (for sites using zones).

Note: This step is only for sites using zones. For a site creating a zone from scratch, please refer to a separate document.

 - a Navigate to the Applications.SdvSm.Service Groups Config page, enter the zone for each service group, and then click **Commit Changes**.

Service Group Migration using Configuration Files

Deleting a Service Group from a USRM in USRM version 1.6.0 and later requires a combination of commands on the USRM as well as the DNCS.

Note:

- We recommend opening a tail of the USRM EventLog to monitor the actions that are about to occur.
 - Using this process requires creation and modification of USRM Configuration files. Only experienced users should use this process.
 - This process uses suggested names for the configuration files. In these examples, text within < > symbols is to be replaced with the actual data the name suggests. For the file name "sgRelease_<servername>.txt", for example, replace "servername" with the name of the USRM server for which this configuration file is being created.
 - This process is to move SGs from one USRM server to another. Repeat as required.
- 1 For each USRM, create the following configuration files. This can be done outside of a maintenance window.
 - a Service Group Deletion files:
 - i Create a file to release all sessions for the SGs to be migrated.
 1. sgRelease_<servername>.txt
 - ii Create a file to remove the SG designations from QAM Output ports.
 1. Qams_<servername>.txt
 - iii Create a file to delete the SGs from the USRM's Resource Manager.
 1. sgDelete_<servername>.txt
 - b Service Group Addition files:
 - i Create a file with the desired end result of QAMs and SGs.
 1. qams_<servername>_sgMigrate.txt

Note: This file will become qams_<servername>.txt.
 - c If zones are used, Modify the Zone Configuration file for the system:
 - i Create zone_sgMigrate.conf.

Note: This will become zone.conf.
 - d Copy these files to the /opt/usrm/ConfigFiles directory on the proper USRM server.
 - 2 Move deleted Service Groups.
 - a Release sessions from Resource Manager on the USRM:
 - i Run sgRelease_<servername>.txt by entering the filename on the ResourceManager.Software page in the ConfigFileName field.

- ii Click **Commit Changes**.
 - iii Select **Read** from the ConfigFileUpdate drop-down box.
 - iv Click **Commit Changes**.
 - b On DNCS, delete Service Groups from SdvSm:
 - i On the DNCS Service Groups page, select each service group to be migrated one at a time and edit.
 1. Set PrimaryServername to **None**.
 2. Save settings.
 - c On USRM, delete Service Groups from Resource Manager:
 - i Remove Service Groups designations from QAM Output ports.
 1. Run qams_<servername>_sgDelete.txt by entering the filename on the ResourceManager.Software page in the ConfigFileName field.
 2. Click **Commit Changes**.
 3. Select **Read** from the ConfigFileUpdate drop-down box.
 4. Click **Commit Changes**.
 - ii Delete Service Group.
 1. Run sgDelete_<servername>.txt by entering the filename on the ResourceManager.Software page in the ConfigFileName field.
 2. Click **Commit Changes**.
 3. Select **Read** from the ConfigFileUpdate drop-down box.
 4. Click **Commit Changes**.
 - 3 Add (deleted) Service Groups to new servers.
 - a Assign Service Groups to the new USRM servers:
 - i On the DNCS Service Groups page, select each service group to be migrated one at a time and edit.
 1. Set PrimaryServername to **<New USRM Server>**.
 2. Save settings.
 - b Add QAMs:
 - i In an SSH session to the USRM server, copy the qams_<servername>_sgMigrate.txt to qams_<servername>.txt.
 1. From the /opt/usrm/ConfigFiles directory, type **cp qams_<servername>_sgMigrate.txt qams_<servername>.txt**, and then press **Enter**. The USRM will automatically load the new file.
 - c If zones are being used:
 - i In an SSH session to the USRM server, copy the zone_sgMigrate.conf to zone.conf. The USRM will automatically load the new file.

6

OS Recovery, Software Re-Installation & Upgrade

Introduction

The USRM runs the Red Hat Linux operating system and USRM software.

Note: All software comes pre-installed on the server.

Scope of This Chapter

This chapter explains how to re-install the operating system software or install, upgrade, or downgrade the server software RPM file in the event that any of these items need to be re-installed.

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- USRM Software Upgrade/Downgrade 382
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Operating System Recovery

Important: Both the Red Hat Linux operating system and the USRM software come pre-installed on the server. If the server becomes corrupted, or otherwise inoperable, you will have to re-install both the operating system and the USRM software, in that order.

Re-installing the Operating System

Note: The USRM operating system overwrites all software currently on the system.

Follow these steps to re-install the USRM operating system.

- 1 Apply power to the USRM.
- 2 Insert the USRM Operating System Installation CD into the CD-ROM drive.

Result: The USRM boots from the CD.

Important: Step 3 must be performed within 60 seconds of boot up. If not, the default Red Hat Linux installation will run which does NOT properly install and configure the OS for the USRM. You will know if the default installation starts because you will receive screen prompts to enter information! If this happens, do NOT enter any information. Instead, stop immediately; recycle power to the USRM, and then start over.

- 3 Type the following command at the "boot:" prompt and press **Enter**:

```
linux ks=cdrom:/ks.cfg
```

Result: The installation process starts and proceeds automatically. After installation has completed, the CD ejects and the system automatically reboots to the operating system and displays a Linux login prompt.

- 4 Proceed to *USRM Software Re-installation* (on page 381).

Note: User "root" is the only user that is installed by default. The default password for user root is "generic".

USRM Software Re-installation

Re-Installing the USRM Software

The USRM software RPM file is a Red Hat Package Manager file that contains all the executable programs and files necessary for the operation of the USRM.

Note: The USRM software comes pre-installed. If the server becomes corrupted, or otherwise inoperable, you will have to re-install the operating system and the USRM software in that order.

Follow these steps to re-install the USRM software RPM file.

- 1 Make sure that the operating system is already installed.
- 2 Log into the server as user "root" using the default password "generic".
- 3 Insert the USRM Application CD in the CD-ROM drive.
- 4 Type the following command at the system prompt and press **Enter**:

```
mount /dev/cdrom /mnt/cdrom
```

Note: Be sure to include the spaces in the command.

- 5 Type the following command at the system prompt and press **Enter**:

```
cd /mnt/cdrom
```

- 6 Type the following command at the system prompt and press **Enter**:

```
ls usrm*
```

Result: The name of the RPM file displays showing the version, release, and operating system numbers. You need this information to perform step 7.

Note: The RPM file name is in the format usrm-VERSION-RELEASE.OS.i386.rpm; where VERSION and RELEASE are the current version and release numbers and OS is the current operating system. For example: usrm-1.4.1-8.el5.i386.rpm; where 1.4.1 is the version number, 8 is the release number, and el5 is Enterprise Linux 5.

- 7 Type the following command at the system prompt and press **Enter**:

```
rpm -Uvh usrm-VERSION-RELEASE.OS.i386.rpm
```

Note: Replace VERSION, RELEASE, and OS with the numbers obtained in step 6.

Result: The installation is complete.

USRM Software Upgrade/Downgrade

Introduction

We recommend that USRM software upgrading and downgrading be performed from the DNCS user interface when using the USRM in supervised mode, or from the USRM web interface Platform - ConfigManager - Software Upgrade page when using the USRM in standalone mode. Refer to your DNCS documentation or ConfigManager - Software Upgrade Page respectively for instructions on this procedure.

Important:

- The procedures in this section are provided for the system administrator's reference only. We recommend performing software upgrades and downgrades via DNCS or the USRM web interface as mentioned above.
- If you are operating the USRM in supervised mode with DNCS and perform the following procedures, the DNCS version will be out of sync.
- We recommend that the application be terminated prior to performing the following software upgrade and downgrade procedures.

Upgrading the USRM Software

Important: Use the server's web interface to shut down the application software before performing this procedure. Set the ServerState configuration parameter to "Terminate" on the System - Reset page.

Follow these steps to manually upgrade the USRM RPM file.

- 1 Make sure that the operating system is already installed.
- 2 Log into the USRM as user "root" using the default password "generic".
- 3 Insert the USRM Application CD containing the new version/release of the RPM file in the CD-ROM drive.
- 4 Type the following command at the system prompt and press **Enter**:

```
mount /dev/cdrom /mnt/cdrom
```

Note: Be sure to include the spaces in the command.
- 5 Type the following command at the system prompt and press **Enter**:

```
cd /mnt/cdrom
```
- 6 Type the following command at the system prompt and press **Enter**:

```
ls usrm*
```

Result: The name of the RPM file displays showing the version, release, and operating system numbers. You need this information to perform step 7.

Note: The RPM file name is in the format usrm-VERSION-RELEASE.OS.i386.rpm; where VERSION and RELEASE are the current version and release numbers and OS is the current operating system. For example: usrm-1.4.1-8.el5.i386.rpm; where 1.4.1 is the version number, 8 is the release number, and el5 is Enterprise Linux 5.

- 7 Type the following command at the system prompt and press **Enter**:

```
rpm -Uvh usrm-VERSION-RELEASE.OS.i386.rpm
```

Note: Replace VERSION, RELEASE, and OS with the numbers obtained in step 6.

Result: The upgrade is complete.

Downgrading the USRM Software

Important: Use the server's web interface to shut down the application software before performing this procedure. Set the ServerState configuration parameter to "Terminate" on the System - Reset page.

Follow these steps to manually downgrade the USRM RPM file.

- 1 Make sure that the operating system is already installed.
- 2 Log into the USRM as user "root" using the default password "generic".
- 3 Insert the USRM Application CD containing the downgrade RPM file in the CD-ROM drive.

- 4 Type the following command at the system prompt and press **Enter**:

```
mount /dev/cdrom /mnt/cdrom
```

Note: Be sure to include the spaces in the command.

- 5 Type the following command at the system prompt and press **Enter**:

```
cd /mnt/cdrom
```

- 6 Type the following command at the system prompt and press **Enter**:

```
ls usrm*
```

Result: The name of the RPM file displays showing the version, release, and operating system numbers. You need this information to perform step 7.

Note: The RPM file name is in the format usrm-VERSION-RELEASE.OS.i386.rpm; where VERSION and RELEASE are the current version and release numbers and OS is the current operating system. For example: usrm-1.4.1-8.el5.i386.rpm; where 1.4.1 is the version number, 8 is the release number, and el5 is Enterprise Linux 5.

- 7 Type the following command at the system prompt and press **Enter**:

```
rpm -Uvh usrm-VERSION-RELEASE.OS.i386.rpm
```

Note: Replace VERSION, RELEASE, and OS with the numbers obtained in step 6.

Result: The downgrade is complete.

Creating and Restoring Backup Files

In USRM versions 1.6.0 and higher, two Linux-based script files, `usrmbackup` and `usrmrestore`, are included for creating a backup of the USRM and restoring a backup to a USRM.

`usrmbackup`

The `usrmbackup` script creates a USRM database backup and causes the following files and directories to be converted to `.tar` format, compressed, and saved in the root directory (`/root`):

- `opt/usrm/ConfigFiles`
- `opt/usrm/persistdata`
- `home/dnscs`
- `etc/sysconfig/network-scripts`
- `etc/sysconfig/network`
- `etc/hosts`

The filename that this script creates provides the USRM server name and the date that the backup was performed. For example, **SdvSrv01.25Aug2009.tar.bz2** is the backup file created on August 25, 2009 for server `SdvSrv01`.

You can run the `usrmbackup` script from any directory by typing **`usrmbackup`** **<enter>**. The script is not service-impacting and can be run at any time. The resulting backup file is a snapshot of the system at the time that the script is executed.

We recommend copying the backup file to a secure location in case of a catastrophic failure of the USRM hardware.

We also recommend performing a backup periodically, as well as before and after a system configuration change.

- Performing a periodic backup provides recent known good snapshots of the system.
- Performing a backup before a configuration change allows for easy rollback, if required or desired.
- Performing a backup after a configuration change is completed and verified provides an up-to-date backup of the USRM.

Note: You should also perform a backup before and after a software upgrade.

usrmrestore

The usrmrestore script causes the previously stored backup files to be reinstalled onto the USRM. This script requires the user to specify the full path and filename.

Example

To restore the filename **SdvSrv01.25Aug2009.tar.bz2**, which is stored in the root directory:

```
usrmrestore /root/SdvSrv01.25Aug2009.tar.bz2
```

Note: The USRM software must not be running when a restore is executed.

When using the usrmrestore script to restore a known good USRM configuration, you should be able to stop the USRM software, execute the usrmrestore script, and restart the software.

When using the usrmrestore script to revert to a previous IP network configuration, you should restart the network service, or probably better still, restart the whole server.

When using the usrmrestore script to install an existing USRM configuration on new hardware, complete the following steps:

- 1 Install the USRM Redhat 5 version of the operating system, if needed.
- 2 Install the USRM software version from which the backup was made.
- 3 Execute the usrmrestore script.
- 4 Obtain a new license file for the new hardware.
- 5 Reboot the server.
- 6 Start the USRM software and verify proper operation.

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Customer Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.



USRM Red Hat Linux OS Technical Information

Scope of This Appendix

This appendix contains the technical information for the USRM Red Hat Linux operating system.

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Technical Information

Processes Running at Boot

The following is a list of processes running on a server that has the USRM application already running.

PID	PPID	C	STIME	TTY	TIME	CMD
1	0	0	13:27	?	00:00:00	init [3]
2	1	0	13:27	?	00:00:00	[migration/0]
3	1	0	13:27	?	00:00:00	[ksoftirqd/0]
4	1	0	13:27	?	00:00:00	[migration/1]
5	1	0	13:27	?	00:00:00	[ksoftirqd/1]
6	1	0	13:27	?	00:00:00	[events/0]
7	1	0	13:27	?	00:00:00	[events/1]
8	6	0	13:27	?	00:00:00	[khelper]
9	6	0	13:27	?	00:00:00	[kacpid]
38	6	0	13:27	?	00:00:00	[kblockd/0]
39	6	0	13:27	?	00:00:00	[kblockd/1]
57	6	0	13:27	?	00:00:00	[pdflush]
58	6	0	13:27	?	00:00:00	[pdflush]
40	1	0	13:27	?	00:00:00	[khubd]
60	6	0	13:27	?	00:00:00	[aio/0]
61	6	0	13:27	?	00:00:00	[aio/1]
59	1	0	13:27	?	00:00:00	[kswapd0]
205	1	0	13:27	?	00:00:00	[kseriod]
326	1	0	13:27	?	00:00:00	[scsi_eh_0]
344	1	0	13:27	?	00:00:00	[kjournald]
1451	1	0	13:27	?	00:00:00	udev
1721	6	0	13:27	?	00:00:00	[kauditd]
1825	1	0	13:27	?	00:00:00	[kjournald]
2567	1	0	13:28	?	00:00:00	syslogd -m 0
2571	1	0	13:28	?	00:00:00	klogd -x
2581	1	0	13:28	?	00:00:00	irqbalance
2599	1	0	13:28	?	00:00:00	portmap
2672	1	0	13:28	?	00:00:00	/usr/sbin/sshd
2685	1	0	13:28	?	00:00:00	xinetd -stayalive -pidfile /var/run/xinetd.pid
2697	1	0	13:28	?	00:00:00	/opt/usrm/tnoswdog
2699	2697	95	13:28	?	00:01:17	usrm
2707	1	0	13:28	?	00:00:00	/opt/usrm/brassd
2716	1	0	13:28	?	00:00:00	/opt/usrm/snmpdm -tcplocal -setvar_local -apall -log_stom -log_format 1 -log_file
2759	1	0	13:28	?	00:00:00	sendmail: accepting connections
2769	1	0	13:28	?	00:00:00	sendmail: Queue runner @01:00:00 for /var/spool /clientmqueue

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2779	1	0	13:28	?	00:00:00	gpm -m /dev/input/mice -t imps2
2788	1	0	13:28	?	00:00:00	crond
2805	1	0	13:28	?	00:00:00	/usr/sbin/atd
2814	1	0	13:28	?	00:00:00	dbus-daemon-1 --system
2824	1	0	13:28	?	00:00:00	hald
2832	1	0	13:28	tty1	00:00:00	/sbin/mingetty tty1
2833	1	0	13:28	tty2	00:00:00	/sbin/mingetty tty2
2834	1	0	13:28	tty3	00:00:00	/sbin/mingetty tty3
2835	1	0	13:28	tty4	00:00:00	/sbin/mingetty tty4
2836	1	0	13:28	tty5	00:00:00	/sbin/mingetty tty5
2837	1	0	13:28	tty6	00:00:00	/sbin/mingetty tty6
2838	1	0	13:28	ttyS0	00:00:00	/sbin/agetty ttyS0 9600 vt100 init q

Tools and Scripts for the USRM

USRM version 1.6 and later include two sets of script-based tools: a set of Linux scripts for use in USRM, and a set of Unix scripts for use in DNCS. This section provides details about each set of tools and their usage.

USRM Tools

The Linux script-based tools for USRM can be used for a number of purposes, from displaying the Eventlog realtime in a SSH session to extracting performance statistics from specific Eventlog files. These script files are located in the `/opt/usrm/linux-tools` directory on the USRM.

The following is a list of the USRM scripts.

- `evalsegfault.sh`
- `sdvlogtail -> /opt/usrm/linux-tools/usrmlogtail`
- `socketout`
- `usrmbackup`
- `usrmcctail`
- `usrmlogtail`
- `usrmrestore`
- `usrmstats`

These scripts are described in functional categories below.

usrmbackup

This command creates a USRM database backup and causes the following files and directories to be TARed, compressed, and saved in the root directory:

- `opt/usrm/ConfigFiles`
- `opt/usrm/persistdata`
- `home/dncs`
- `etc/sysconfig/network-scripts`
- `etc/sysconfig/network`
- `etc/hosts`

You can run this command from any directory by typing **usrmbackup**. We recommend that the resulting backup file be copied to a secure location in case of a catastrophic failure of the USRM hardware.

usrmrestore

This command causes the previously stored backup files to be re-installed onto the USRM. When using this script, you must specify the full path and filename.

For example, the following command restores the filename **SdvSrv01.25Sug2009.tar.bz2**, which is stored in the root directory:

```
usrmrestore /root/SdvSrv01.25Aug2009.tar.bz2
```

sdvlogtail

For SDV Server, the forerunner of USRM, a script tool named **sdvlogtail** was developed to let you easily monitor the Event log in real time. A new script tool was developed for USRM named **usrmlogtail**, which is described below.

To accommodate those users that are used to using **sdvlogtail**, a symbolic link was added that allows you to **sdvlogtail <Enter>** and monitor the Event log in real time. This symbolic link uses the **usrmlogtail** script tool.

usrmlogtail

This command tails the Event log file. It will continue to tail across files and/or days. To end the tail, type **[Ctrl] c**. You can run this command from any directory.

Example:

```
usrmlogtail - tails the entire EventLog file
usrmlogtail elete - tails the Eventlog for any line with "elete" in it

usrmlogtail elete
Tue Aug 25 16:55:15 EDT 2009
*****
Tailing /opt/usrm/EventLog/25Aug2009_000000.txt ...
2009/08/25 16:54:47.437
RmCmdExec,Cmd=DeleteSession,RID=172.16.6.4,Tid=1,SesId=001ec9bb7244/515
2009/08/25 16:54:47.459
RmCmdSuccess,Cmd=DeleteSession,RID=172.16.6.4,SesId=001ec9bb7244/515,Tid=1
2009/08/25 16:55:07.786
RmCmdExec,Cmd=DeleteSession,RID=172.16.4.8,Tid=1,SesId=001ec9bb7244/511
2009/08/25 16:55:07.790
RmCmdSuccess,Cmd=DeleteSession,RID=172.16.4.8,SesId=001ec9bb7244/511,Tid=1
```

usrmstats

This command gives statistics of channel changes and QAM operations. This script has options to specify a start and end time to narrow the results of the evaluation. When using this command, you must provide the full path to the log file to be evaluated.

The following are usage examples:

```
usrmstats /opt/usrm/EventLog/28Aug2009_000000.txt
InitRequests      =      0
InitConfirms      =      0
SelectRequests    = 51080
SelectConfirms    = 50298 (Success=50289 Failures=9)
                        NoBandwidth =      9
CreateSessions    = 44494 (Success=44494 Failures=0 Timeouts=0)
DeleteSessions    = 44491 (Success=44491 Failures=0 Timeouts=0)
QamResourceEnd    =      5
                        172.16.4.15 =      1
                        172.16.4.82 =      2
                        172.16.4.77 =      1
                        172.16.4.78 =      1
QamStarup         =      5
                        172.16.4.15 =      1
                        172.16.4.82 =      2
                        172.16.4.77 =      1
                        172.16.4.78 =      1
```

To specify a start and end time:

```
usrmstats -s 10:00 -e 12:00 /opt/usrm/EventLog/28Aug2009_000000.txt
```

usrmcctail

Use this command to display channel change and QAM operations, combining all operations related to a single transaction together. You can use this tool to display real time channel change operations or to evaluate an Event log file.

When evaluating a log file, start and end times can be specified to narrow the results of the evaluation. When using this tool, you must provide the full path to the log file to be evaluated.

The following are usage examples:

```
usrmcctail
+++++++ 001ac3a0c19c/0x50338 ++++++
SelConf      2009/08/28 13:33:16.833 RC=OK MPN=1044 Freq=735000000
+++++++ 001ac32783aa/0x1dacd ++++++
SelReq       2009/08/28 13:33:18.900 STB=10.7.0.114 Tuner=0 SGID=1192 SID=2016
RmBwReq      2009/08/28 13:33:18.902 BW=15000000 GDA=232.0.0.17
RmCreateSession 2009/08/28 13:33:18.903 SesId=001d09fa643c/4893841
RID=172.16.4.82 chan0=3 EdgeIn=172.18.81.1 GDA=232.0.0.17
SelConf      2009/08/28 13:33:18.904 RC=OK MPN=1035 Freq=747000000
RmCmdSuccess 2009/08/28 13:33:18.907 Cmd=CreateSession RID=172.16.4.82
+++++++ 001ac320ceed/0xb8a4 ++++++
SelReq       2009/08/28 13:33:19.668 STB=10.7.0.43 Tuner=0 SGID=1192 SID=1106
RmBwReq      2009/08/28 13:33:19.674 BW=3750000 GDA=232.1.1.11
RmCreateSession 2009/08/28 13:33:19.677 SesId=001d09fa643c/4893842
RID=172.16.4.82 chan0=3 EdgeIn=172.18.82.1 GDA=232.1.1.11
SelConf      2009/08/28 13:33:19.677 RC=OK MPN=1056 Freq=747000000
RmCmdSuccess 2009/08/28 13:33:19.681 Cmd=CreateSession RID=172.16.4.82

usrmcctail /opt/usrm/EventLog/28Aug2009_000000.txt

usrmcctail -s 10:00 -e 11:00 /opt/usrm/EventLog/28Aug2009_000000.txt
```

socketout

The socketout program is located in the linux-tools directory in /opt/usrm on a USRM server. This tool can act as a receiver of UDP messages. For example, if you configure USRM to send log messages to another system and then run socketout on the other system, socketout receives those messages and displays them to the screen. The output can also be piped to a file.

Usage for this program is as follows:

```
"/socketout <UDP port> <enter>
```

```
Socketout 32701
```

The socketout program can also be used in TCP mode.

Usage for this mode is as follows:

```
"/socketout <UDP port> <IP Address> <enter>.
```

In this mode, socketout will establish a TCP connection with the server.

```
Socketout 61401 10.90.146.63
```

Additionally, a connect period and disconnectDelay can be specified for TCP operation. The connect period, in seconds, defines how long a connection is maintained. The disconnectDelay, in seconds, defines how long to wait before socketout reconnects to the server.

Usage for these parameters is as follows:

```
socketout <UDP Port Number> <USRM IPAddress to connect to> <connect>  
<disconnectDelay>
```

```
socketout 61401 10.90.146.63 10 5
```

DNCS Tools

The Unix script-based tools for DNCS can be copied to the DNCS and executed from there. These script files are located in the /opt/usrm/dncs-tools directory on the USRM. The dncs-scripts directory is included with each version of the USRM software.

Note: Each version of the USRM may contain different versions of these scripts modified to apply for the specific USRM version. These scripts should be copied to the DNCS and run from there.

The following is a list of the DNCS scripts.

- convertzone.sh
- doZonesAndQams.sh
- extractQams4Server.sh
- extractZoneInfo4Server.sh
- sdbreport.sh

Details and usage of these scripts are in the following section.

convertzone.sh

This script converts a Zone Configuration file from an SDV Server to the format required for a USRM server. It is mainly used during an upgrade from SDV to USRM.

doZonesAndQams.sh

This script extracts QAM information for all service groups belonging to the specified SDV Server from the DNCS database. The generated output can be loaded in using the Software page of the Resource Manager. The script outputs to the display and not a file; however, the output can be redirected to a file. See the usage example below.

This script has one optional parameter: -4.3. If this option is included in the command line, the script will include generic QAMs in the extracted information.

Usage is as follows:

```
./doZonesAndQams.sh <optional arg> <USRM Server IP Address> > <output file name> <enter>
```

Example without Generic QAMs option:

```
./doZonesAndQams.sh 192.168.12.61 > doZones.txt
```

Example with Generic QAMs option:

```
./doZonesAndQams.sh -4.3 192.168.12.61 > doZones.txt
```

extractQams4Server.sh

This script will access the DNCS database and gather the QAM and Service Group information for the specified USRM server and create a USRM config file. This file can then be copied to the specified USRM and loaded by the USRM software. This script is mainly used during Service Group migrations. This greatly speeds the migration of service groups from one USRM server to another. It also eliminates many human errors that might occur if all of this information has to be provisioned manually.

Usage is as follows:

```
./extractQams4Server.sh [-m][-GQI][-o <outputfile>][-scp] <serveripaddr><enter>
```

At minimum, the name of the script and the server IP Address are required.

This script supports the following options:

Option	Description
-m	This option was implemented for a unique case where GQAMs were added to the system and configured in service groups, but their outputs were muted because the carriers were not ready to activate. This option sets the AdminState of the carriers that are muted in the DNCS database to OutOfService. We do not recommend using this option.
-GQI	This option causes the script to include third-party (generic) QAMs.
-o <outputfile>	This option lets you specify an output file. In this case, the output of the script is sent to the display as well as to the specified file. Note: If the file exists, it is overwritten by the script.
-scd	This option copies the script output to a file that is secure-copied to the /opt/usrm/ConfigFiles directory of the specified USRM. This file is named AutoQamData.conf. This filename cannot be changed. This option was implemented to support automated updating of QAM configurations. This option also depends on SSH keys being present in the system for the secure copy.

Example:

This example uses the most popular option, -o, to specify the output file name.

```
./extractQams4Server.sh -o USRM1_QAMS.conf 192.168.12.61
```

sdbreport.sh

This script accesses the DNCS database and lists the following information about SDV and/or USRM servers:

- ServerName – Name of the SDV or USRM Server
- IPAddr – IP Address of the SDV or USRM Server
- SGID – Service Group ID
- Qamip – QAM Management IP Address
- Port – RF Port on the QAM
- Tsid – Transport Stream ID
- Freq – Frequency of the RF Carrier
- Mod – Modulation format
- Serv – Type of service to which this carrier is assigned.
- Output – State of the output, Enable or disabled for example.

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The output of the script can be redirected to a file by including the redirection operator and supplying a filename.

Usage is as follows:

`./sdbreport.sh <enter>`

`./sdbreport.sh > <output filename> <enter>`

Example:

```
bash-3.00$ ./sdbreport.sh
```

```
Database selected.
```

```
233 row(s) retrieved.
```

```
Database closed.
```

ServerName	IPAddr	SGID	gamip	port	tsid	freq	mod
serv	output						
Calgary	192.168.12.110	2	172.16.4.1	13	13	285000000	256
SDV	ENABLED						
Calgary	192.168.12.110	2	172.16.4.1	14	14	291000000	256
SDV	ENABLED						
Calgary	192.168.12.110	2	172.16.4.1	15	15	297000000	256
SDV	ENABLED						
Calgary	192.168.12.110	2	172.16.4.1	16	16	303000000	256
SDV	ENABLED						
Ryan1	192.168.12.124	3	172.16.4.35	1	1	699000000	256
SDV	ENABLED						

B

USRM Server Replacement

This appendix describes the procedures for configuring and starting a replacement USRM server.

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Introduction

In the event of failure of the USRM server, use the following procedures to start and configure the new server hardware once it is installed.

The process of starting up a replacement USRM server involves four main steps:

- Power up the server
- Perform initial server setup
- Initialize the primary server
- Start the server in Supervised mode

The following sections describe these procedures in detail.

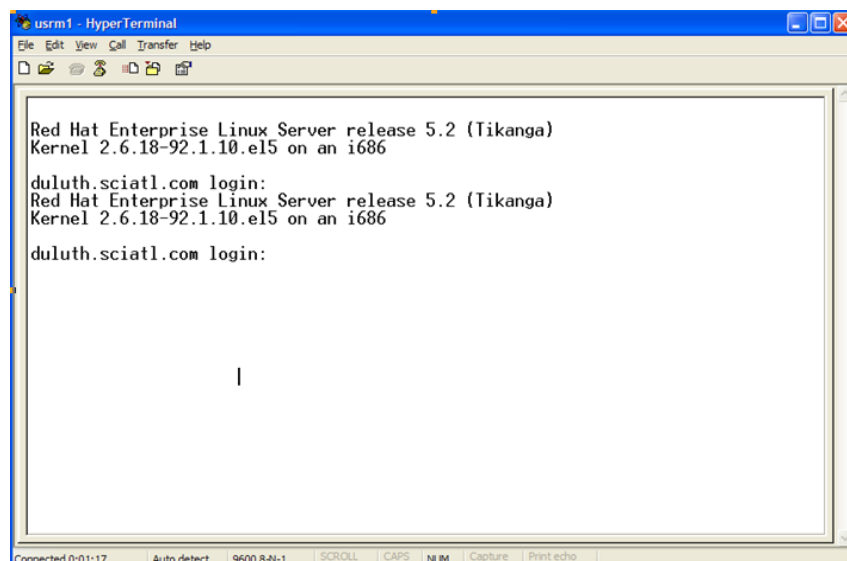
For Assistance

For assistance with any of the procedures described here, contact your Cisco Technical Assistance Center (TAC). See *Customer Information* (on page 387) for contact information.

Power Up the Server

Complete the following steps to get the server up and running.

- 1 Plug in the power cord and power on the primary server.
Note: Do not connect the network Ethernet cables into the Ethernet ports on the rear panel.
- 2 Connect the USRM server serial console by connecting a serial cable from the serial I/O port (green) on the server rear panel to the serial I/O port on a laptop PC.
Note: The serial cable must have cross (null modem) wiring.
- 3 Launch HyperTerminal by clicking the HyperTerminal program icon or via the Windows Start menu (typically Start > Windows > All Programs > Accessories > Communications > HyperTerminal).
 - a Choose **New Connection**.
 - b Enter the Name as **usrm1**, and then click **OK**.
 - c Choose to connect using the **COM1** port and apply the following port settings:
 - Bit per second = 9600
 - Data Bit = 8
 - Parity = None
 - Stop Bits = 1
 - Flow Control = None
 - d Click **Apply**, and then click **OK**.
- 4 Log in to the USRM as user **root** using the default password **generic**, as shown in the following example.



Appendix B

USRM Server Replacement

Note: If you use a different terminal emulation program to connect to the server via the serial port and the program supports logging to a file, it may help to log the output to a file for later examination, in case these steps do not correct the issue.

- 5 Verify and query the RPM package on the server by typing the following command at the system prompt, and then pressing **Enter**:
 1. `cd /opt/usrm`
 2. `rpm -q usrm`
`usrm-2.1.3-8.e15 (example of RPM package)`
- 6 Verify that the license configuration is valid by typing the following command at the system prompt, and then pressing **Enter**:
 1. `cd /opt/usrm`
 2. `./usrm -x`
`Configuration is VALID.`
`USRM Version x.x.x-x Example: (USRM Version 2.1.3-8)`

For Assistance

If the RPM package is incorrect or the license configuration is invalid on the server, contact Cisco Technical Assistance Center (TAC) as follows:

- For Technical Support, call toll-free (800) 553-2447.
- For Customer Service or to request an RMA number, call toll-free (800) 553-6387 or email: cs-support-us@cisco.com.

Perform Initial Server Setup

Complete the following steps to set up and configure the USRM.

- 1 Type the following command at the system prompt, and then press **Enter**:

```
cd /opt/usrm
```

Note: Be sure to include the space following `cd` in the command.

- 2 Type the following command at the system prompt, and then press **Enter**:

```
./setupusrm.sh
```

The setup script prints out your MAC address for reference, and then prompts you with a series of questions about your particular setup environment.

- 3 Answer the following on-screen questions to set up the network and USRM for your particular environment.

Note: If you make an incorrect entry, press **<CTRL> C** and start over.

- Do you wish to enable eth0? (yes/no)

Answer **yes** if you want to enable the first Ethernet device. If you answer yes to this question, you are prompted with the following question.

- Acquire eth0 info via DHCP? (yes/no)

Answer **yes** if you have a DHCP server you would like the machine to get its IP address from. If you answer no, you will be prompted with the following two questions.

- Enter the IP address for eth0 from the original server:

Answer this question with information provided by your network administrator.

- Enter the netmask for eth0:

Answer this question with information provided by your network administrator.

Note: After answering these questions for eth0, you are prompted to give the same information for eth1. Answer these questions as outlined above.

- Do you want to set a default gateway? (yes/no)

- Answer **yes** if your network has a central server that routes all of the network traffic. If you answer yes to this question, you are prompted with the next question.

- Enter the IP address of the default gateway:

Enter the IP address of the central server that routes your network traffic.

- Do you want to set a nameserver? (yes/no)

Answer **yes** if you have a nameserver you would like the USRM server to use. If you answer yes to this question, you are prompted with the following question.

- Enter the IP address of the nameserver:

Enter the IP address of the nameserver at the prompt.

- Do you want to set a hostname? (yes/no)

Answer **yes** if you would like the machine to have a unique name on your network. If you answer yes, you will be prompted with the next two questions.

- Enter the hostname from the original server:
- Enter the domainname:

Enter the requested information at the prompts.

- Do you want this USRM server to be provisioned via SNMP? (yes/no)

Answer **yes** if you have a DNCS server or other SNMP provisioner on your network that you would like the USRM to acquire its provisioning from. If you answer yes, you will be prompted with the following two questions.

- Enter the SNMP Provisioner IP address:
- Enter the SNMP Provisioner Host Name [dncsatm]:

- Type the IP address and name of your SNMP Provisioner. To form the name, use only valid characters A-Z, a-z, and 0-9. To use the default name (dncsatm), just press **Enter**.

The system displays a message similar to the following:

```
host=dncsatm
Writing DNCS config file... Done.
Adding dncsatm entry to the /etc/hosts file... Done.
```

Note: In the example above, dncsatm is replaced by your specific host name, if you chose one.

- Do you want to set up interfaces on the USRM server? (yes/no)

Answer **yes** if you want to set which protocols go out which ports. If you answer yes, you will be prompted with the next question.

Select a custom configuration:

- (1) All USRM interfaces on one physical interface (eth0)
- (2) Management on separate interface. (http on eth1, all others on eth0)
- (3) MiniCarousel on separate interface. (MCP on eth1, all others on eth0)
- (4) Defaults. Do not write a custom config.

Select option 1, 2, or 3 if that best matches your setup, or enter 4 to use the USRM default settings. The system writes the USRM interfaces config file.

- 4 Finally, the system prompts you with the following choices.

Setup Complete. Would you like to:

- (1) Exit
- (2) Restart Networking
- (3) Reboot

Make a selection:

Important: Enter **3** to save the new settings and clean reboot the USRM to put them into effect.

Initial server setup is now complete.

Initialize the Primary USRM Server

Complete the following steps to initialize a primary USRM server.

Note: Only perform the following procedure when initializing a primary USRM server.

- 1 Start the USRM software as follows to set the operational role of the USRM to that of a primary server.
 - a Type the following command at the system prompt, and then press **Enter**:
`cd /opt/usrm`
 - b Type the following command at the system prompt, and then press **Enter**:
`./usrm`
Allow the software to completely start. The following prompt appears:
Enter User ID: <enter>
- 2 After the software stops loading, terminate the USRM software by typing the following command at the USRM/Pri: prompt, and then pressing **Enter**:
USRM/Pri: quit
- 3 Establish network connectivity to the USRM server by connecting each network Ethernet cable into an Ethernet port on the rear panel.
- 4 Verify server network settings by typing the following command at the system prompt, and then pressing **Enter**:
 - 1) `ifconfig -a` (This will display the current networking settings. If network settings are not correct, please execute the `setupusrm.sh` script again.)
 - 2) `netstat -rn` (This will display the network route settings and default gateway in the Routing Table)
- 5 If static routes were defined on the failed primary server, use the commands below to restore them. If not, skip to the next section, *Start the Server in Supervised Mode* (on page 407).
- 6 Type the following command at the system prompt, and then press **Enter**:
 - 3) `cd /etc/sysconfig/network-scripts`
 - 4) `ls -l route-eth*`
 - a) `route-eth0`
 - b) `route-eth1`

Note: If route files are not located in directory, copy files from standby server into the directory.

Start the Server in Supervised Mode

Complete the following steps to start the USRM server in Supervised mode.

- 1 Start system logging on primary server as follows:
 - a Open a SSH session to the USRM primary server.
 - b Type the following command at the system prompt, and then press **Enter**:


```
a. cd /opt/usrm/EventLog
b. tail -f today's date_000000.txt Example: (12Aug2009_000000.txt )
```
- 2 Restart the USRM software with the **-supervised -d** options as follows:
 - a Open a second SSH session to the USRM primary server.
 - b Type **cd /opt/usrm** and then press **Enter** to navigate to the USRM directory.
 - c Type **./usrm -supervised -d** and then press **Enter** to restart the software.

Note:

 - There are 2 dashes before the "supervised" operand and 1 dash before the "d" operand.
 - Allow the software to completely start before continuing with this procedure.
- 3 Open a Web browser to the USRM Server. When you log on, you will be greeted with a dialog informing you that your password has expired. Re-enter and confirm your password.
- 4 Verify that the USRM primary server has taken control from the standby server and is ready to act as a primary server, as follows:
 - a Click **ERM/SdvSm** at the top of the navigation tree.
 - b Click **System**.
 - c Verify that the system settings are correct from the list and screen below:
 - NormalMode = Primary
 - StartupMode = Supervised
 - CurrentMode = Online

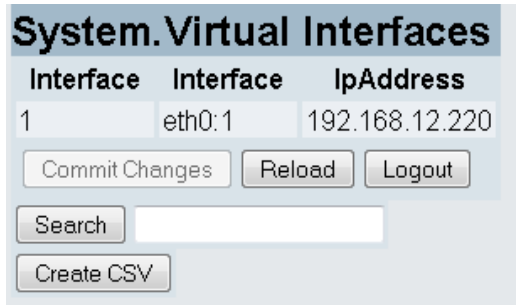
- ProvisionState = Transition

System.System	
NormalMode	Primary
StartupMode	Supervised
StartupTime	2011/08/31 13:59:48
CurrentMode	Online
ReplacingUsrm	
ReplacingUsrmlp	n/a
SwitchoverTime	2011/08/31 13:59:55
ProvisionState	Transition
ActivationCounter	72
PrimaryMacAddr	0014227b70ac
Reload Logout	

If any of the four system settings differs from the above, contact technical support.

- 5 Reset the Server Name as follows:
 - a Click **Configuration**.
 - b Enter the site name in the Site Name field.
 - c Click **Commit Changes**.
 - d Click the **Reload Current Page** icon or press the **F5** key to load the site name information and refresh the navigation tree.
- 6 Reset the AutoConfigFile Name(s) as follows:
 - a Select **Platform > ConfigManager > Configuration**.
 - b Change the display mode from Normal to **Config**, and then click **Commit Changes**.
 - c Select **Platform > ConfigManager > Configuration Files**.
 - d Add the configuration file(s) to the AutoConfigFileName field, and then click **Commit Changes**.
 - e Select **Platform > ConfigManager > Configuration**.
 - f Change display mode back to **Normal**, and then click **Commit Changes**.
- 7 Reset the Log Server Address and Port as follows:
 - a Select **Platform > LogManager > Configuration**.
 - b Set the Log Server IP address.
 - c Set the Log Server Port number.
 - d Click **Commit Changes**.

- 8 Reset the Client Password Timeout as follows:
 - a Select **Platform > WebServer > Configuration**.
 - b Set the Client Password Timeout [] seconds.
 - c Click **Commit Changes**.
- 9 Reset the users' name and password as follows:
 - a Select **Platform > UserManager > Configuration**.
 - b Change the display mode from Normal to **Config**, and then click **Commit Changes**.
 - c Select **Platform > UserManager > Users**.
 - d Add username(s) and password(s).
 - e Change State from Reset to **Active**.
 - f Click **Commit Changes**.
 - g Change the display mode back to **Normal**.
 - h Click **Commit Changes**.
- 10 If you are a TWC site using Log2, reset Program, Stream and Tuner Log Destination Addresses as follows:
 - a Select **Applications > SdvSm > Log2Configuration**.
 - b Set ProgramLogDestAddress.
 - c Set StreamLogDestAddress.
 - d Set TunerLogDestAddress.
 - e Click **Commit Changes**.
- 11 If the primary server has a virtual IP address as shown in the example below, reset Gratuitous Arp to Enabled as follows:



- a Click **Site Name** under Navigation Tree > Configuration.
- b Click the **GratuitousArp** drop-down arrow.
- c Highlight **<Enabled>**.

Appendix B
USRM Server Replacement

d Click **Commit Changes**.

System.Configuration	
GenericName	ERM/SdvSm
SiteName	VSM01-Tom
GratuitousArp	Enabled ▾
ArpReplyPeriod	30 seconds
DisplayMode	Normal ▾
Commit Changes Reload Logout	

Glossary

access network

An HFC network in a DBDS consisting of two elements: (1) fiber optic transmission systems that extend from a hub to the HFC nodes and (2) a coaxial bus network extending from the HFC nodes to the DHCTs at the end of the Access Network. The HFC network sends analog signals. QAM modulators allow digital signals to be carried on this analog medium.

application server

App Server or SARA Server. A server that executes applications that are required to provide digital services to subscribers. The Applications Server comes with the following set of standard applications:

- Virtual Channel Server (VCS)
- Interactive Program Guide (IPG)
- DHCT Configuration
- Pay-Per-View (PPV) event and service setup
- Emergency Alert System (EAS) messaging

The Application Server uses multi-mode fiber to transfer data through the ATM switch to the DNCS or router. Data is sent in ATM cells over permanent virtual circuits (PVCs).

BW

bandwidth. A measure of the information-carrying capacity of a communications channel, for example the range of usable frequencies that can be carried by a CATV system. The bandwidth corresponds to the difference between the lowest and highest frequency that can be carried by the channel.

CA

conditional access. The system, software, and components necessary to provide or deny subscribers selective access to specific services.

carousel

A logical element that carries information from a BFS server to DHCTs that request the information. The carousel makes the information available to all DHCTs in the system. However, only those DHCTs specifically authorized and looking for the information will receive it. Carousels are sometimes referred to as sources or data pumps.

Glossary

CCMIS

channel change message interface specification. Time Warner Cable switched digital video channel change protocol. Used by set-top box to indicate a channel change request.

channel map

A logical element that links a service with a channel so that the service can be viewed or used by the subscriber. For example, a channel map could link The Golf Channel with channel 63 so that when subscribers tune to channel 63, they view The Golf Channel.

CLI

command line interface. A command reference software that allows the user to interact with the operating system by entering commands and optional arguments.

CRL

certificate revocation list. A list of host devices that are not authorized to copy copy-protected content.

DBDS

Digital Broadband Delivery System. A network of hardware and software that works in conjunction with a traditional analog cable system to deliver MPEG-2 encoded video, audio, analog services, and digital data to subscribers through their DHCTs. Although analog and digital systems use separate signal processing and separate monitoring and control equipment, they share the HFC network for delivering signals to DHCTs. The same 6 MHz bandwidth slot that is required for a single analog channel allows 8 or more digital programs to be broadcast when using a DBDS. A DBDS also offers a real-time reverse path from the DHCT to the DNCS, allowing subscribers to initiate actions directly over the cable network and use interactive services. The end result is that cable operators can greatly increase the number of services that they can offer to subscribers.

DHCP

dynamic host configuration protocol. TCP/IP protocol that manages a pool of IP addresses.

DHCT

digital home communications terminal. A device that connects a subscriber's television to the DBDS, allowing the subscriber to receive broadband services. The DHCT provides services to subscribers by tuning to the appropriate digital channel, decompressing the video and audio streams, decrypting them if necessary, generating an analog output signal to carry the video and audio content, and then sending it to the television. DHCTs also modulate digital data over the HFC network to send data, such as event purchases, to QPSK demodulators. The type of data carried on each data channel is as follows:

- From the data FAT channel, the DHCT receives application files, modulation mode data, and satellite and transponder data.

- From the FDC, the DHCT receives system messages, as well as tuning and management data.
- The DHCT uses the reverse data channel to send data relating to billing, performance monitoring, email, event purchases, and the Internet upstream to QPSK demodulators.

DNCS

Digital Network Control System. A computer workstation that defines, organizes, monitors, and controls the components, features, and applications supported by the DBDS. The DNCS provides Cisco's Explorer DHCTs with broadcast services that are displayed on subscribers' televisions throughout a cable network. The DNCS works with the ATM switch and the Ethernet router providing data throughout the DBDS. The DNCS uses multi-mode fiber to transfer data through the ATM switch to the router. Data is sent in ATM cells over PVCs.

DSM-CC

digital storage media - command and control. DSM-CC, Part 6 of MPEG-2, is an ISO/IEC standard developed to provide the control functions and operations specific to managing MPEG-1 and MPEG-2 bitstreams. These protocols may be used to support applications in both stand-alone and heterogeneous network environments. In the DSM-CC model, a stream is sourced by a server and delivered to a client. Both the server and the client are considered to be users of the DSM-CC network. DSM-CC defines a logical entity called the Session and Resource Manager (SRM) which provides a (logically) centralized management of the DSM-CC Sessions and Resources.

DVR

digital video recorder. Component of the Explorer Home Entertainment Server that allows the user to do the following:

- Pause live TV for up to an hour
- Record and store up to 50 hours of programs
- Record one program and watch another on a different channel
- Record two programs and play back a third

EAS

Emergency Alert System.

element

A term used to refer to DBDS devices, groups of devices, and software components that must be provisioned from the DNCS.

ERM

edge resource manager.

Glossary

FCC

Federal Communications Commission. Federal organization set up by the Communications Act of 1934 which has authority to regulate all inter-state (but not intra-state) communications originating in the United States (radio, television, wire, satellite, and cable).

FTP

file transfer protocol. Allows users to transfer text and binary files to and from a personal computer, list directories on the foreign host, delete and rename files on the foreign host, and perform wildcard transfers between hosts.

GQAM modulator

gigabit quadrature amplitude modulation modulator. A device that receives MPEG-2 video content from four ASI inputs and a Gigabit Ethernet input. The GQAM routes the programs to any of the 16 QAM modulated outputs. The GQAM has a Gigabit Ethernet port that supports 1000BaseT as well as fiber, which can be operated in unidirectional or bi-directional modes. One GQAM replaces four MQAM modulators by providing four RF output channels. The GQAM supports direct connections to video servers, encoders, IRDs, and other digital video sources.

GQI

generic QAM interface.

GSRM

global session and resource manager. Time Warner Cable specification for a centralized session and resource manager.

GUI

graphical user interface. A program interface that takes advantage of a computer graphics capabilities to make the program visually easier to use.

headend

The local switching or processing center for the cable network in a hybrid fiber/coax network. Location for equipment that receives data from a satellite (or other) source and reformats that data for input to a broadband distribution network.

HFC

hybrid fiber/coaxial. A network that uses a combination of fiber optics and coaxial cable to transport signals from one place to another. A broadband network using standard cable television transmission components, such as optical transmitters and receivers, coaxial cable, amplifiers, and power supplies. The broadband output stream is transmitted as an optical signal, over the high-speed, fiber optic transmission lines to local service areas where it is split, converted to electrical RF signals, and distributed to set-tops over coaxial cable.

hub

A substation within a headend for the cable network. A logical element that represents the point at which out-of-band (QPSK-modulated) frequencies are combined with inband (QAM-modulated) frequencies for transmission to subscribers through the RF network. Each headend must have at least one hub.

IP

Internet protocol. A standard that was originally developed by the United States Department of Defense to support the internetworking of dissimilar computers across a network. IP is perhaps the most important of the protocols on which the Internet is based. It is the standard that describes software that keeps track of the internetwork addresses for different nodes, routes, and outgoing/incoming messages on a network. Some examples of IP applications include email, chat, and Web browsers.

IP address

Internet protocol address. A 32-bit sequence of numbers used for routing IP data. Each IP address identifies a specific component on a specific network. The address contains a network address identifier and a host identifier.

LRU

last recently used.

LUA

last user activity.

MAC address

media access control address. A unique 48-bit number that identifies the input/output card of a particular device. The MAC address is programmed into the card by the manufacturer. The MAC sub-layer handles access to shared media.

Mbps

megabits per second. A unit of measure representing a rate of one million bits (megabits) per second.

MCMIS

mini carousel message interface specification. Time Warner Cable in-band switched digital video mini-carousel protocol. The protocol advertises switched digital video configuration information plus the current active switched programs with associated tuning information.

MDA

multicast destination address.

Glossary

MHz

megahertz. A unit of measure representing one million cycles per second; measures bandwidth.

MoCA

Multimedia over Coax Alliance. An open, industry driven initiative promoting distribution of digital video and entertainment through existing coaxial cable in the home. MoCA technology provides the backbone for whole home entertainment networks of multiple wired and wireless products.

MoCA

code-division multiple access. A communications method used by wireless devices such as cell phones and mobile radio.

MPEG

Motion Picture Experts Group. A joint committee of the International Standards Organization (ISO) and the International Electrotechnical Commission (IEC). This committee develops and maintains the MPEG specification for a series of hardware and software standards designed to reduce the storage requirements of digital video and audio. The common goal of MPEG compression is to convert the equivalent of about 7.7 MB down to under 150 K, which represents a compression ratio of approximately 52 to 1. Current standards are MPEG-1, MPEG-2, and MPEG-4.

MPEG source

Equipment that takes incoming data, converts it into MPEG data, and then sends it to a specific QAM or MQAM modulator for delivery to DHCTs over the forward inband data path.

multiplex

Process of combining all audio, video, still picture, and other data streams into one encoded master file.

NGOD

next generation on demand. Comcast session management architecture.

NMS

network management system. A software system designed specifically to monitor a network and to facilitate troubleshooting.

NTP

network time protocol.

OID

object identifier.

orphaned session

A session without an associated QAM or MQAM modulator.

out-of-band data channel

Carries digital data (tuning, management, Internet, and at least two days of IPG data) in ATM cells, at a rate of at least 1.54 Mbps, on RF signals from the ATM switch to a router, which then forwards the data to the correct network; sometimes referred to as the forward data channel (FDC). DHCTs are always tuned to one of these channels.

physical element

A hardware device. DHCTs and QAM modulators are examples of physical elements within the DBDS.

PID

packet identifier or program identifier.

PowerTV Operating System (OS)

DHCT application environment that allows application programs (for example, WatchTV) to operate. You can compare the PowerTV OS to Windows, UNIX, or Mac OS, which must be loaded onto a PC for the PC to be able to run application programs such as word processing programs, Internet browsers, or spreadsheet programs.

PPV

pay-per-view.

program GQAM/MQAM/QAM modulator

A device that, as directed by the DNCS, receives program data, encrypts the data if needed, and modulates it onto an RF carrier over HFC for distribution to DHCTs. A program GQAM, MQAM, or QAM modulator can also be called a service GQAM, MQAM, or QAM modulator. The GQAM, MQAM, and QAM modulators use PowerKEY Conditional Access to encrypt data, ensuring against signal theft and protecting subscriber data. A program GQAM, MQAM, or QAM modulator can receive program data directly from a satellite IRT via a simplex DHEI, or directly from a broadband integrated gateway (BIG) using a Cisco single wire interface (SWIF).

provisioning

The process of preparing a device or service so that it operates properly and its control system recognizes it.

QAM modulator

quadrature amplitude modulation modulator. A device that receives MPEG packets and modulates them onto a radio frequency (RF) carrier over the HFC network. The type of data that a QAM receives is dependent upon what equipment is connected to it in the DBDS, as indicated in the following examples:

- When a QAM modulator is connected to an IRT or to a Grooming BIG, the QAM modulator receives programming data
- When a QAM modulator is connected to a BFS BIG, the QAM modulator receives system and service data

QAM modulation converts a 6-MHz channel slot into a 27 or 36 Mbps data channel that allows eight or more digital programs to be broadcast. Because the QAM modulator always performs the same function - receiving MPEG packets and modulating them onto an RF carrier - the procedure for setting up a QAM modulator is the same, regardless of the type of data the modulator processes.

RTSP

real time streaming protocol. An Internet Engineering Task Force (IETF) standard protocol for session setup.

SDV

switched digital video. A technology that allows cable system operators to recover bandwidth from infrequently-viewed channels, by making these channels "on-demand". Instead of sending all channels to the set-top boxes, lightly viewed channels are put into a switching pool and only sent to the set-top boxes when viewers tune to them.

SDVSM

switched digital video session manager.

service channel

Frequency that DHCTs use when they transmit return path data to QPSK demodulators.

service group

A set of QAM channels that have been combined to provide narrow cast services, such as VOD, to a unique grouping of DHCTs in a network.

sessions

Logical elements that define and allocate the resources that the network uses to deliver source content. When you build a session, you establish the equipment where the source content originates, such as an IRT, and the specific distribution equipment that places the source content on the HFC network, such as a QAM modulator. It may help to think of a session as a pipeline through the DBDS that is allocated to deliver content from a particular source.

SNMP

simple network management protocol. A protocol that governs network management and the monitoring of network devices and their functions.

SRM

session and resource manager or session and resource management.

SSP

session setup protocol.

STB

set-top box.

SVOD

subscription video-on-demand. Instead of paying per title as with traditional VOD, SVOD allows subscribers to pay a flat rate per month, or a one-time fee, for unlimited access to a packaged group of events, such as HBO on Demand. SVOD also allows you to offer access to popular programs for no fee at all (sometimes called free on-demand). As with a traditional VOD service, subscribers can view events at their own convenience, and they have the ability to use the remote control to pause, rewind, fast-forward, or stop.

TCP

transmission control protocol. One of the main protocols in TCP/IP networks. TCP enables two hosts to establish a connection and exchange streams of data. TCP guarantees delivery of data and packets, and will be delivered in the same order in which they were sent. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient routing through the Internet.

transport network

A network of transmission equipment that carries programming (audio, video, and data) in an MPEG format over QAM-modulated signals from the headend to the hub, passing the programs to the Access Network. Currently, most digital delivery systems use AM fiber to do this. However, more and more systems are beginning to use SONET.

TSID

transport stream identifier.

TTL

time to live. A field in many packet protocols that is used to ensure that packets that do not find their destinations are eventually eliminated from the network.

Glossary

UDP

user datagram protocol. A connectionless protocol, like TCP, that runs on top of IP networks. Unlike TCP/IP, UDP/IP provides very few error recovery services, offering instead a direct way to send and receive datagrams over an IP network without acknowledgements for guaranteed delivery.

URL

uniform resource locator. A standardized way of representing different documents, media, and network services on the World Wide Web. The URL is most commonly referred to as the Web address for a particular item. For example, the URL, or Web address, for Cisco is <http://www.cisco.com>.

USRM

universal session and resource manager.

VASP

value added service provider. A generic term for a server that is a part of the DBDS with data files that contain system information and configuration information. VASP data does not directly involve audio and video program services. Setting up a VASP enables the DNCS to recognize the server and establishes a path for them to communicate with each other.

VCS

virtual channel service. A service in the Program and System Information Protocol (PSIP), that provides a list of all the channels that are or will be on line, plus their attributes such as channel name and channel number. This information allows a receiver to tune and locate the particular service being broadcast.

VOD

video-on-demand. A service that allows a subscriber to use the remote control to select, purchase, and view an event. Once purchased, the viewer can then forward, reverse, pause, and play the event just as he or she would with a VCR.

VODSM

video on demand session manager.

xOD

anything-on-demand. A service that provides subscribers with unlimited, on-demand access to virtually any digital content. Includes VOD and SVOD.

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