



## **Cisco QAM Gateway Manager User Guide, Release 1.1**

### **Corporate Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-4100

Text Part Number: OL-5763-02



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## About This Guide

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This guide provides the necessary information to help you use Cisco QAM Gateway Manager to configure and monitor Cisco uMG9850 QAM Modules installed in Cisco Catalyst 4500 series switches. The Cisco uMG9850 QAM module supports the delivery of digital broadcast and video-on-demand (VoD) services on a hybrid fiber coax (HFC) cable network.

This section discusses the following major topics:

- [Document Audience](#)
- [Document Organization](#)
- [Document Conventions](#)
- [Related Documentation](#)
- [Obtaining Documentation](#)
- [Documentation Feedback](#)
- [Cisco Product Security Overview](#)
- [Obtaining Technical Assistance](#)
- [Obtaining Additional Publications and Information](#)

# Document Audience

This guide is a reference resource for network managers, system administrators responsible for managing the video network, and network analysts responsible for configuring the network.

# Document Organization

This document is organized as shown in [Table 1](#).

**Table 1** Document Organization

Chapter/Appendix Title	Description
Chapter 1, “Introduction to Cisco QAM Gateway Manager”	Provides a product overview and describes basic concepts and tasks.
Chapter 2, “Installing Cisco QAM Gateway Manager”	Outlines minimum system requirements and set-up requirements.
Chapter 3, “Using Cisco QAM Gateway Manager”	Describes the use of Cisco QAM Gateway Manager for configuration of Cisco QAM Gateway devices.
Chapter 4, “Monitoring”	Provides information on monitoring configured devices and lists application display messages.

# Document Conventions

The following conventions are used in this document:

Convention	Description
<b>boldface</b> font	Commands and keywords are in <b>boldface</b> .
<i>italic</i> font	Arguments for which you supply values are in <i>italics</i> .
[ ]	Elements in square brackets are optional.
{x   y   z}	Alternative, mutually exclusive, keywords are grouped in braces and separated by vertical bars.
[x   y   z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in <code>screen font</code> .
<b>boldface screen font</b>	Information you must enter is in <b>boldface screen font</b> .
<i>italic screen font</i>	Arguments for which you supply values are in <i>italic screen font</i> .



Convention	Description
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords, are in angle brackets in contexts where italics are not available. Angle brackets are also used for variables.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

**Tip**

Means *the following information might help you solve a problem.*

**Note**

Means reader take note. Notes contain helpful suggestions or references to material not covered in the publication.

**Caution**

Means *reader be careful.* In this situation, you might do something that could result in corruption of data.

## Related Documentation

The following documentation provides information relating to the installation, configuration, and operation of Cisco uMG9850 QAM Modules, Cisco Catalyst 4500 series switches, and Cisco QAM Gateway Manager.

### Cisco uMG9850 QAM Module

Information regarding the Cisco uMG9850 QAM module can be found at this URL:

<http://www.cisco.com/univercd/cc/td/doc/product/cable/vod/umg9850/index.htm>

### Cisco Catalyst 4500 Series Switches

Information regarding Cisco Catalyst 4500 series switch hardware can be found at this URL:

[http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/hw\\_doc/index.htm](http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/hw_doc/index.htm)

Information regarding Cisco Catalyst 4500 series switch software can be found at this URL:

<http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/index.htm>

## Cisco QAM Gateway Manager

Additional documentation for Cisco QAM Gateway Manager can be found at this URL:

<http://www.cisco.com/univercd/cc/td/doc/product/cable/vod/cqgm/index.htm>

## Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

### Cisco.com

You can access the most current Cisco documentation at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

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### Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

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<http://www.cisco.com/en/US/partner/ordering/>

Cisco Marketplace:

<http://www.cisco.com/go/marketplace/>

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Cisco Systems  
Attn: Customer Document Ordering  
170 West Tasman Drive  
San Jose, CA 95134-9883

We appreciate your comments.

## Cisco Product Security Overview

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[http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html)

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

[http://www.cisco.com/en/US/products/products\\_psirt\\_rss\\_feed.html](http://www.cisco.com/en/US/products/products_psirt_rss_feed.html)

## Reporting Security Problems in Cisco Products

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- Emergencies—[security-alert@cisco.com](mailto:security-alert@cisco.com)
- Nonemergencies—[psirt@cisco.com](mailto:psirt@cisco.com)



We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

<http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on>

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In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

## Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

## Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year, at this URL:

<http://www.cisco.com/techsupport>

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>



### Note

Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

---

## Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

## Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

**Severity 1 (S1)**—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

**Severity 2 (S2)**—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

**Severity 3 (S3)**—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

**Severity 4 (S4)**—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

## Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

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- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

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- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

<http://www.cisco.com/packet>

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

<http://www.cisco.com/go/iqmagazine>

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

<http://www.cisco.com/ipj>

- World-class networking training is available from Cisco. You can view current offerings at this URL:

<http://www.cisco.com/en/US/learning/index.html>



# Introduction to Cisco QAM Gateway Manager

This chapter provides basic information about Cisco QAM Gateway Manager and includes the following sections:

- [Overview, page 1-1](#)
- [Cisco QAM Gateway Manager Views, page 1-2](#)
- [Basic Tasks, page 1-15](#)

## Overview

Cisco QAM Gateway Manager is a PC-based graphical user interface (GUI) element management application to be used with Cisco uMG9850 QAM Modules installed in Cisco Catalyst 4500 series switches. The SNMP-based Java application is used for basic configuration, monitoring, and troubleshooting, and also includes hierarchical views of devices and their components, as well as a Telnet interface to the managed devices.

## Hardware and Software Supported

[Table 1-1](#) lists Cisco hardware supported by Cisco QAM Gateway Manager, along with the minimum software release required for each.

**Table 1-1** Supported Hardware and Software

	Product Number	Description	Minimum Software Release	Notes
<b>Cisco Catalyst Switches</b>	WS-C4506	Cisco Catalyst 4506 switch chassis	12.2(20)EU	
	WS-C4507R	Cisco Catalyst 4507R switch chassis	12.2(20)EU	
<b>Cisco uMG9850 QAM Module</b>	WS-X4712-UMG9850	QAM card for Cisco Catalyst 4500 series switches (Annex B)	12.2(20)EU	Used in Cisco Catalyst 4506 and Cisco Catalyst 4507R switches

# Cisco QAM Gateway Manager Views

Cisco QAM Gateway Manager uses a variety of views for configuration, monitoring, and troubleshooting:

- [Chassis View](#)
- [Slot View](#)
- [All Session View](#)
  - [All Session Details](#)
- [Session View](#)
- [Multicast Session View](#)
  - [Multicast Session Details](#)
- [QAM Summary View](#)
- [QAM Channel View](#)
- [ASI Port View](#)
- [Ethernet Port View](#)
- [Notification History Table](#)

A brief description of each of these views is provided in the sections that follow.



## Chassis View

The Chassis View (see [Figure 1-1](#)) lists for a selected device, the contents of each slot in the device, including the status of fan tray and power supply assemblies, and operating status. The Chassis View also provides the means to configure global timeouts and program-specific information (PSI) parameters.

**Figure 1-1 Chassis View**

Chassis View - Switch\_5(172.22.95.35)

Chassis Status

Software Revision: 12.1(20040809:201710)EWW1

Slot Number	Card Name	Card Type	Operating Status
Slot 1	1000BaseX (GBIC) Supervisor	Supervisor	ok
Slot 2	24 QAM with 1 SFP(1000BaseX), 1 RJ45(10/100/1000) ports	uMG9850	ok
Slot 3	24 QAM with 1 SFP(1000BaseX), 1 RJ45(10/100/1000) ports	uMG9850	ok
Fan Tray Bay	FanTray	Fan tray	normal
Power Supply Bay 1	Power Supply (AC 1000W)	Power supply	ok
Power Supply Bay 2			

Global Timers

Session Close Timeout (1-1440)min

Signal Loss Timeout (200-10000)ms

Program Association Table Interval (50-450)ms

Program Mapping Table Interval (50-450)ms

Apply OK Cancel Help

121601



### Note

To access Chassis view for a specific Cisco Catalyst switch, highlight the switch in the navigation tree and choose **View > Chassis**.

## Slot View

The Slot View (see Figure 1-2) lists for a specific Cisco uMG9850 module, a summary of the QAM channels' administrative and link status, and the administrative and link status of ASI and Ethernet ports. Also provided is information on the number of incoming sessions and outgoing programs.

The Slot View also allows configuration of slot-level timeouts, video routing, emulation mode, jitter, and Program Data Delivery (PDD), and provides links to the configuration of conditional access system (CAS) parameters, QAM parameters, and jumbo frames.

**Figure 1-2 Slot View**

The screenshot shows the 'Slot View' configuration window for a Cisco uMG9850 Linecard (slot 7). The window is divided into several sections:

- QAM Channels Summary Status:** A table listing QAM channels (e.g., QAM711.1, QAM711.2, QAM712.1, etc.) with columns for Channel, Admin status, Link status, and Sessions. The Sessions column shows values like 3, 3, 0, 0, etc.
- Ethernet Ports and ASI Port Summary Status:** A table listing ports (GigabitEthernet7/13, GigabitEthernet7/14, ASI7/15) with columns for Port, Admin status, and Link status.
- Slot Level Timeouts:** Fields for Session Close (1-1440)min (21) and Signal Loss (200-10000)ms (3200).
- Video Routing:** Fields for Input VLAN (Vlan134), IP Address (192.168.134.6), Min UDP Port (0-65535) (0), and Max UDP Port (0-65535) (65535).
- Emulation Mode:** Fields for Emulation Mode (None) and No Of IP Addresses (1).
- Jitter:** Field for Jitter (1-300)ms (100).
- All Session Information:** Fields for Incoming Sessions (6) and Outgoing Programs (6), with Create and Detail buttons.
- Annex Mode:** Field for Annex Mode (Annex B).

Buttons at the bottom include 'Configure QAM Channels', 'Apply', 'OK', 'Cancel', and 'Help'. A vertical label '127916' is visible on the right side of the window.



### Note

To access Slot view, highlight a Cisco uMG9850 slot in the navigation tree and choose **View > Slot**.

# All Session View

The All Session View (see Figure 1-3) lists session statistics for idle, inactive, and active sessions, and for invalid PSI states.

Figure 1-3 All Session View

UDP Port	Video Module Address	Source IP	Out QAM	Bandwidth (Mbps)	Clonable	UMCast	Status
257	192.168.134.6	192.168.50.112	QAM7/1.1	3.738	No	Unicast	Active
258	192.168.134.6	192.168.50.112	QAM7/1.1	3.738	No	Unicast	Active
259	192.168.134.6				No	Unicast	Idle
513	192.168.134.6	192.168.50.112	QAM7/1.2	3.74	No	Unicast	Active
514	192.168.134.6	192.168.50.112	QAM7/1.2	3.738	No	Unicast	Active
515	192.168.134.6	192.168.50.112	QAM7/1.2	3.739	No	Unicast	Active
47201	192.168.134.6				No	Unicast	Idle
47202	192.168.134.6				No	Unicast	Idle
47203	192.168.134.6				No	Unicast	Idle
47204	192.168.134.6				No	Unicast	Idle
47205	192.168.134.6				No	Unicast	Idle
47206	192.168.134.6				No	Unicast	Idle
47207	192.168.134.6				No	Unicast	Idle
47208	192.168.134.6				No	Unicast	Idle
47209	192.168.134.6				No	Unicast	Idle
47210	192.168.134.6				No	Unicast	Idle
47211	192.168.134.6				No	Unicast	Idle
47212	192.168.134.6				No	Unicast	Idle
47213	192.168.134.6				No	Unicast	Idle
47214	192.168.134.6				No	Unicast	Idle
47215	192.168.134.6				No	Unicast	Idle
47216	192.168.134.6				No	Unicast	Idle
47217	192.168.134.6				No	Unicast	Idle
47218	192.168.134.6				No	Unicast	Idle

**Note**

To access All Session view, highlight a Cisco uMG9850 slot in the navigation tree and choose **View > All Sessions**, or click **Detail** in the All Sessions Information section of Slot view.

## All Session Details

All Session Details (see [Figure 1-4](#)) provides read-only values for a specific session.

**Figure 1-4** All Session Details

All Session Details - 172.22.24.182 - Session UDP Port 514 - 192.168.134.6	
Slot Number	Slot 7
UDP Port Number	514
Status	Active
Maximum Jitter	8.129
Source IP Address	192.168.50.112
Bandwidth (Mbps)	3.738
Missing Sync. Bytes	0
Start Time	Wed, 22 Dec 2004 03:52:09 UTC

127331



**Note**

To access All Session Details for a particular session, double-click on that session in All Session view.

## Session View

Session View (see [Figure 1-5](#)) lists session statistics for active and inactive sessions, and invalid PSI states.

**Figure 1-5** Session View

Sessions Status: Showing 1 to 5 of 5

UDP Port	Video Module Address	Source IP	Out QAM	Bandwidth (Mbps)	Clonable	UMCast	Status
257	192.168.134.6	192.168.50.112	QAM7/1.1	3.739	No	Unicast	Active
258	192.168.134.6	192.168.50.112	QAM7/1.1	3.739	No	Unicast	Active
513	192.168.134.6	192.168.50.112	QAM7/1.2	3.739	No	Unicast	Active
514	192.168.134.6	192.168.50.112	QAM7/1.2	3.738	No	Unicast	Active
515	192.168.134.6	192.168.50.112	QAM7/1.2	3.74	No	Unicast	Active

127332



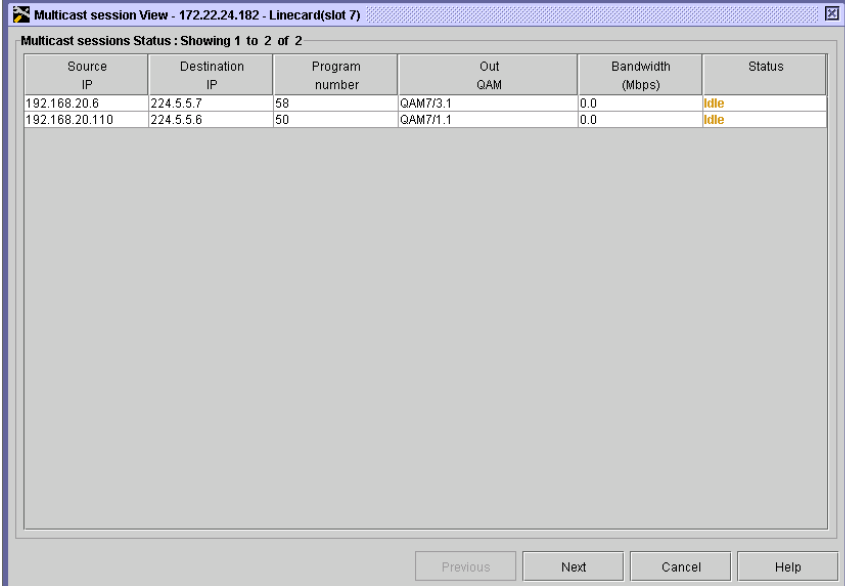
**Note**

To access Session view, highlight a Cisco uMG9850 slot in the navigation tree and choose **View > Sessions**.

## Multicast Session View

Multicast Session view (see [Figure 1-6](#)) lists statistics for multicast sessions.

**Figure 1-6** Multicast Session View



The screenshot shows a window titled "Multicast session View - 172.22.24.182 - Linecard(slot 7)". Below the title bar, it says "Multicast sessions Status: Showing 1 to 2 of 2". The main content is a table with the following data:

Source IP	Destination IP	Program number	Out QAM	Bandwidth (Mbps)	Status
192.168.20.6	224.5.5.7	58	QAM7/3.1	0.0	idle
192.168.20.110	224.5.5.6	50	QAM7/1.1	0.0	idle

At the bottom of the window, there are four buttons: "Previous", "Next", "Cancel", and "Help". A vertical label "127333" is positioned to the right of the window.



**Note**

To access Multicast Session view, highlight a Cisco uMG9850 slot in the navigation tree and choose **View > Multicast sessions**.

## Multicast Session Details

Multicast Session Details (see [Figure 1-4](#)) provides read-only values for a specific multicast session.

**Figure 1-7** Multicast Session Details

All Session Details	
Slot Number	Slot 7
UDP Port Number	N/A
Status	Idle
Destination IP Address	224.5.5.6
Source IP Address	192.168.20.110
Bandwidth (Mbps)	0.0
Out QAM	QAM7/1.1
Program number	50

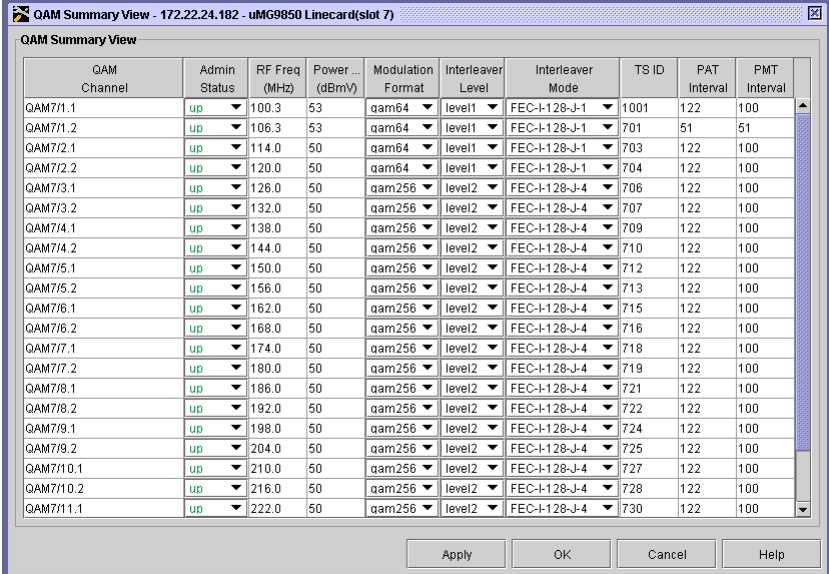
**Note**

To access Multicast Session Details for a particular session, double-click on that session in Multicast Session view.

## QAM Summary View

The QAM Summary View (see [Figure 1-8](#)) allows viewing and configuration of all QAM channels for all parameters except bandwidth utilization and video sessions mapping.

**Figure 1-8** QAM Summary View



QAM Channel	Admin Status	RF Freq (MHz)	Power (dBmV)	Modulation Format	Interleaver Level	Interleaver Mode	TS ID	PAT Interval	PMT Interval
QAM7/1.1	up	100.3	53	qam64	level1	FEC-I-128-J-1	1001	122	100
QAM7/1.2	up	106.3	53	qam64	level1	FEC-I-128-J-1	701	51	51
QAM7/2.1	up	114.0	50	qam64	level1	FEC-I-128-J-1	703	122	100
QAM7/2.2	up	120.0	50	qam64	level1	FEC-I-128-J-1	704	122	100
QAM7/3.1	up	126.0	50	qam256	level2	FEC-I-128-J-4	706	122	100
QAM7/3.2	up	132.0	50	qam256	level2	FEC-I-128-J-4	707	122	100
QAM7/4.1	up	138.0	50	qam256	level2	FEC-I-128-J-4	709	122	100
QAM7/4.2	up	144.0	50	qam256	level2	FEC-I-128-J-4	710	122	100
QAM7/5.1	up	150.0	50	qam256	level2	FEC-I-128-J-4	712	122	100
QAM7/5.2	up	156.0	50	qam256	level2	FEC-I-128-J-4	713	122	100
QAM7/6.1	up	162.0	50	qam256	level2	FEC-I-128-J-4	715	122	100
QAM7/6.2	up	168.0	50	qam256	level2	FEC-I-128-J-4	716	122	100
QAM7/7.1	up	174.0	50	qam256	level2	FEC-I-128-J-4	718	122	100
QAM7/7.2	up	180.0	50	qam256	level2	FEC-I-128-J-4	719	122	100
QAM7/8.1	up	186.0	50	qam256	level2	FEC-I-128-J-4	721	122	100
QAM7/8.2	up	192.0	50	qam256	level2	FEC-I-128-J-4	722	122	100
QAM7/9.1	up	198.0	50	qam256	level2	FEC-I-128-J-4	724	122	100
QAM7/9.2	up	204.0	50	qam256	level2	FEC-I-128-J-4	725	122	100
QAM7/10.1	up	210.0	50	qam256	level2	FEC-I-128-J-4	727	122	100
QAM7/10.2	up	216.0	50	qam256	level2	FEC-I-128-J-4	728	122	100
QAM7/11.1	up	222.0	50	qam256	level2	FEC-I-128-J-4	730	122	100



### Note

To access QAM Summary view, click **Configure QAM Channels** while in Slot view.

127180



## QAM Channel View

The QAM Channel View (see [Figure 1-9](#)) lists the current configuration parameters for the selected QAM channel, and allows configuration of these parameters.

**Figure 1-9** QAM Channel View

Channel Information	
Channel Name	QAM3/1.1
Administrative Status	up
Output Frequency (50000000-854000000)Hz	717000000
Output Power (42-58)dBmV	55
Modulation Format	qam64
QAM Group	1
Video Sessions Mapping	
Maximum number of sessions (2-25, 1-default map)	1
Starting UDP port number (256-65535, 0-default port)	0
Starting program number (1-255)	0
Even UDP port numbers only?	false
Clear Video Session Mapping?	<input type="checkbox"/>
Utilization	
Bandwidth Utilization (%)	0
Low Utilization Threshold (0-95)%	0
High Utilization Threshold (5-95)%	5
Identifiers	
Transport Stream ID (1-65535)	300
Network Information Table Packet ID (16-8191)	65535
Timers	
Program Association Table Interval (50-450)ms	55

Buttons: Apply, OK, Cancel, Help

121626



**Note**

To access QAM Channel view, select a QAM port from the navigation tree and choose **View > Interface**.

## ASI Port View

The asynchronous serial interface (ASI) Port View (see [Figure 1-10](#)) lists the current configuration parameters for the ASI port and allows configuration of these parameters.

**Figure 1-10** ASI Port View

The screenshot shows a configuration window titled "ASI port View - 172.22.95.35 - ASI3/15". The window contains a section labeled "ASI port configurations" with the following fields:

- Interface name: ASI3/15
- Administrative Status: down
- Byte Gap (1-4): 0
- Qam Routed: QAM3/1.1

At the bottom of the window, there are four buttons: Apply, OK, Cancel, and Help. A vertical label "121600" is visible on the right side of the window.



**Note**

To access the ASI Port view, highlight the ASI port on the Cisco uMG9850 module in the navigation tree, and choose **View > Interface**.

## Ethernet Port View

The Ethernet Port View (see [Figure 1-11](#)) lists information on port configuration and status, and allows setting of administrative status for the port, switchport status, and VLAN number.

**Figure 1-11 Ethernet Port View**

Ethernet Information	
Interface Name	GigabitEthernet7/13
Administrative Status	up
Operating Status	down
Switchport Status	<input checked="" type="checkbox"/>
VLAN	Vlan50
IP Address	
Subnet Mask	
MAC Address	000f.3449.ad51
DHCP Enabled?	Disabled
Input Packets	0
Output Packets	0
Dropped Input Packets	0
Dropped Output Packets	0

127334



**Note**

To access Ethernet Port view, highlight an Ethernet port on a Cisco uMG9850 module in the navigation tree, and choose **View > Interface**.

## Notification History Table

The Notification History table (see [Figure 1-12](#)) lists statistics for a device. Each time a device threshold is passed or an invalid PSI data condition is detected, an entry is recorded in the table.

**Figure 1-12 Notification History Table**

Notification History - 172.22.24.182

Notification Details : Showing 1 to 25 of 28

Entity name	Message	Notification Time	Status
QAM7/1.1	Utilization has gone above the higher threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/1.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/2.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/2.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/3.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/3.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/4.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/4.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/5.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/5.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/6.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/6.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/7.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/7.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/8.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/8.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/9.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/9.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/10.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/10.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/11.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/11.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/12.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/12.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/1.1	Utilization has fallen below the lower threshold value	01 Dec 2004 06:33:14 PM PST	warning

127181

Previous Next Cancel Help



### Note

To access the Notification History Table, highlight a Cisco Catalyst switch in the navigation tree. Right-click and choose **View Notification**.

# Basic Tasks

The following basic tasks are covered in subsequent chapters of this user guide:

- Installing and uninstalling Cisco QAM Gateway Manager (Chapter 2)
- Before using Cisco QAM Gateway Manager (Chapter 2)
- Launching Cisco QAM Gateway Manager (Chapter 3)
- Using Help (Chapter 3)
- Exiting Cisco QAM Gateway Manager (Chapter 3)
- Establishing communication with Cisco QAM Gateway devices (Chapter 3)
  - Adding a device
  - Removing a device
  - Using the Telnet window
- Configuration tasks (Chapter 3)
  - Loading a configuration
  - Configuring SNMP parameters
  - Saving a configuration to a TFTP server
  - Configuring Gigabit Ethernet input ports into a VLAN
  - Configuring video routing
  - Setting emulation mode
  - Setting output frequency and output power for the QAM channels
  - Setting up, editing, and routing a video stream to QAM channels
  - Setting PSI parameters
  - Configuring Program Data Delivery
- Monitoring Cisco QAM Gateway devices (Chapter 4)
  - Using CLI **show** commands
  - Configuring the ASI port for QAM channel routing
  - Setting and monitoring utilization thresholds
  - Application display messages





## Installing Cisco QAM Gateway Manager

This chapter describes the tasks that should be performed prior to using Cisco QAM Gateway Manager.

- [Minimum System Requirements, page 2-1](#)
- [Installing Cisco QAM Gateway Manager, page 2-1](#)
- [Before Using Cisco QAM Gateway Manager, page 2-2](#)
- [Removing Software, page 2-3](#)

### Minimum System Requirements

[Table 2-1](#) lists the minimum system requirements for Cisco QAM Gateway Manager running on the Microsoft Windows platform.

**Table 2-1** *Microsoft Windows System Requirements*

Specification	Requirement
Processor	600 MHz
Operating system	Microsoft Windows 2000 or XP
Available disk space	50 MB
Memory	256 MB

### Installing Cisco QAM Gateway Manager

Cisco QAM Gateway Manager runs in a Java environment. The application and the necessary Java components are bundled together and can be downloaded without charge from Cisco.com.

## Downloading and Starting Cisco QAM Gateway Manager

To download the Cisco QAM Gateway Manager application from Cisco.com:

---

**Step 1** If you are currently running a version of Cisco QAM Gateway Manager, close the application.



**Note** When installing a new version of Cisco QAM Gateway Manager, any version of the application that is in the default directory is uninstalled automatically. If you use a directory different from a previous installation, an additional application is installed.

---

**Step 2** Access the Cisco QGM installation file from the following URL:

<http://www.cisco.com/cgi-bin/tablebuild.pl/qam-gateway>

**Step 3** Click on the executable (.exe) file. InstallShield loads and presents a welcome screen. Click **Next**.

**Step 4** Read and accept the End User License Agreement and click **Next**. (If you do not agree to the terms of the agreement, click the non-acceptance button to end the installation.)

**Step 5** Accept the default installation directory or click **Browse** to select another one. Click **Next**.

**Step 6** Click the **Create desktop icon** button if you want a shortcut to the application to appear on your desktop. Click **Next**.

**Step 7** Read the summary information and confirm by clicking **Install**. If the information is not accurate, click **Back** to make corrections or **Cancel** to stop the installation process.

**Step 8** The application is installed and a successful install screen is displayed. Click **Finish** to complete the process.

**Step 9** Start Cisco QAM Gateway Manager by clicking on the shortcut icon on your desktop or by choosing **Start > Programs > Cisco Systems > Cisco QAM Gateway Manager**.

---

## Before Using Cisco QAM Gateway Manager

This section summarizes the minimum configuration required before using Cisco QAM Gateway Manager. These tasks would normally be completed in advance by the network or device administrator using the device command line interface (CLI).

To see the detailed steps for completing each of these tasks, refer to the Cisco Catalyst 4500 series switch documentation listed in [Related Documentation](#).

Before using Cisco QAM Gateway Manager, ensure that you have the following information for each device to be managed:

- Telnet password
- IP address
- SNMP community string
- VLAN information:
  - VLAN numbers
  - IP addresses



## Telnet Password

A Telnet password should be set to control access to the device through the Telnet window in Cisco QAM Gateway Manager. You need to know this password to use the application's Telnet function.

## SNMP Setup

Cisco QAM Gateway Manager uses Simple Network Management Protocol (SNMP) and a special management information base (MIB) to manage Cisco QAM gateway devices. The MIBs are included in the software releases shown in [Table 1-1 on page 1-1](#).

## Ethernet Port for SNMP Configuration

An IP address must be configured for each device for SNMP use. You must have this information when adding devices to the device list in Cisco QAM Gateway Manager.

## SNMP Community String

The SNMP community string authenticates access to MIB objects, and functions as an embedded password. You must have this information when adding devices to the device list in Cisco QAM Gateway Manager. Cisco Catalyst switches must be configured with SNMP community strings before using Cisco QAM Gateway Manager to monitor or configure these devices.

## Setting Up Input Video Traffic and VLAN information

Video input specifications and any required VLANs must be configured on the device before using Cisco QAM Gateway Manager.

# Removing Software

## Removing Cisco QAM Gateway Manager from the PC

To remove Cisco QAM Gateway Manager from the PC, click **Start > Settings > Control Panel > Add/Remove Programs** and select **Cisco QAM Gateway Manager**.

**Note**

When installing a new version of Cisco QAM Gateway Manager, any version of the application that is in the default directory is uninstalled automatically. If you use a directory different from a previous installation, an additional application is installed.





## Using Cisco QAM Gateway Manager

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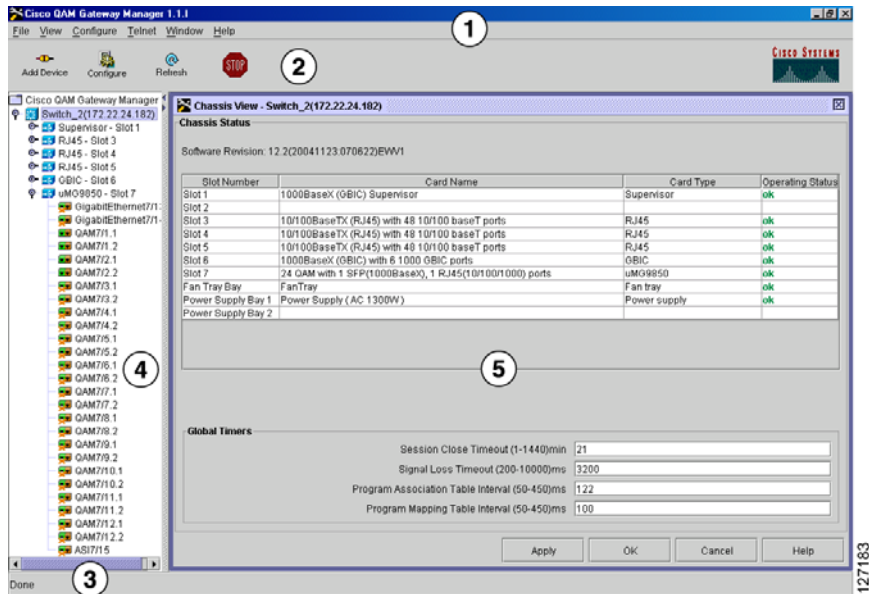
This chapter describes the steps required to launch Cisco QAM Gateway Manager and configure Cisco uMG9850 QAM modules installed in Cisco Catalyst switches.

- [Launching Cisco QAM Gateway Manager, page 3-1](#)
- [Main Window Components, page 3-2](#)
- [Using Help, page 3-10](#)
- [Exiting Cisco QAM Gateway Manager, page 3-12](#)
- [Establishing Communication with Cisco QAM Gateway Devices, page 3-13](#)
- [Configuration Tasks, page 3-18](#)

### Launching Cisco QAM Gateway Manager

To launch Cisco QAM Gateway Manager, click on the **CQGM** shortcut icon on the desktop or click **Start > Programs > Cisco Systems > Cisco QAM Gateway Manager**. After displaying a splash screen, the Main Window appears (see [Figure 3-1 on page 3-2](#)).

Figure 3-1 Main Window



## Main Window Components

The main window (see [Figure 3-1](#)) consists of five areas:

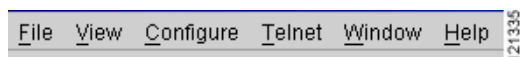
1. Menu bar
2. Toolbar
3. Status bar
4. Navigation tree
5. Work area

Each of these areas is discussed in the following sections.

## Menu Bar

The menu bar (see [Figure 3-2](#)) provides access to common application functions and tasks (see [Table 3-1](#)).

Figure 3-2 Menu Bar



**Table 3-1 Menu Bar Functions**

Menu	Function	Description
File	Add Device	Adds Cisco Catalyst switches to the device list.
	Load configuration	Provides options to: <ul style="list-style-type: none"> <li>• Load a configuration file from a TFTP server to the startup configuration.</li> <li>• Load a configuration file from a TFTP server to the running configuration.</li> <li>• Copy startup configuration to running configuration.</li> <li>• Copy running configuration to startup configuration.</li> </ul>
	Save configuration to TFTP server	Provides options to: <ul style="list-style-type: none"> <li>• Save the startup configuration to a TFTP server.</li> <li>• Save the running configuration to a TFTP server.</li> </ul>
	Configure SNMP Parameters	When “Cisco QAM Gateway Manager” (root) is selected in the navigation tree, configures SNMP polling parameters.  When a Cisco Catalyst switch is selected in the navigation tree, configures the SNMP community string for that device.
	Close All	Closes all open views and configuration dialog boxes.
	Exit	Exits Cisco QAM Gateway Manager application.
View	Chassis	Displays chassis statistics.
	Slot	Displays contents and status of the Cisco uMG9850 modules in Cisco Catalyst switch chassis, and provides multiple configuration options.
	All Sessions	Lists both active and idle sessions.
	Sessions	Lists only active sessions.
	Multicast Sessions	Lists all multicast sessions.
	Interface	Displays QAM, ASI, or Ethernet interface configurations.
Configure	Configure VLAN	Assigns an IP address and optional subnet mask to a selected VLAN. Activates or suspends a VLAN.
Telnet	Device 1	Allows selection of connected devices for Telnet sessions.
	Device n	
Window	various	Lists all open/active views and configuration dialog boxes.
Help	Contents	Provides access to all help files by Table of Content heading and text search.
	About	Displays software version of Cisco QAM Gateway Manager.

## Toolbar

The toolbar (Figure 3-3) provides quick access to some commonly performed tasks (see Table 3-2).

**Figure 3-3** *Toolbar*



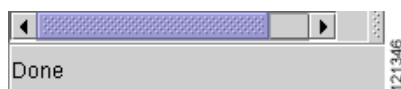
**Table 3-2** *Toolbar Functions*

Tool	Description
Add Device	Adds Cisco Catalyst switches to the navigation tree.
Configure	When “Cisco QAM Gateway Manager” (root) in the navigation tree (see Figure 3-1) is selected, allows configuration of SNMP polling parameters. When device is selected in the navigation tree, configures the SNMP community string for that device.
Refresh	Refreshes current view.
Stop	Stops refresh process for current view.

## Status Bar

The Status Bar (see Figure 3-4) indicates status of configuration load and refresh operations (see Table 3-3).

**Figure 3-4** *Status Bar*



**Table 3-3** *Status Bar Messages*

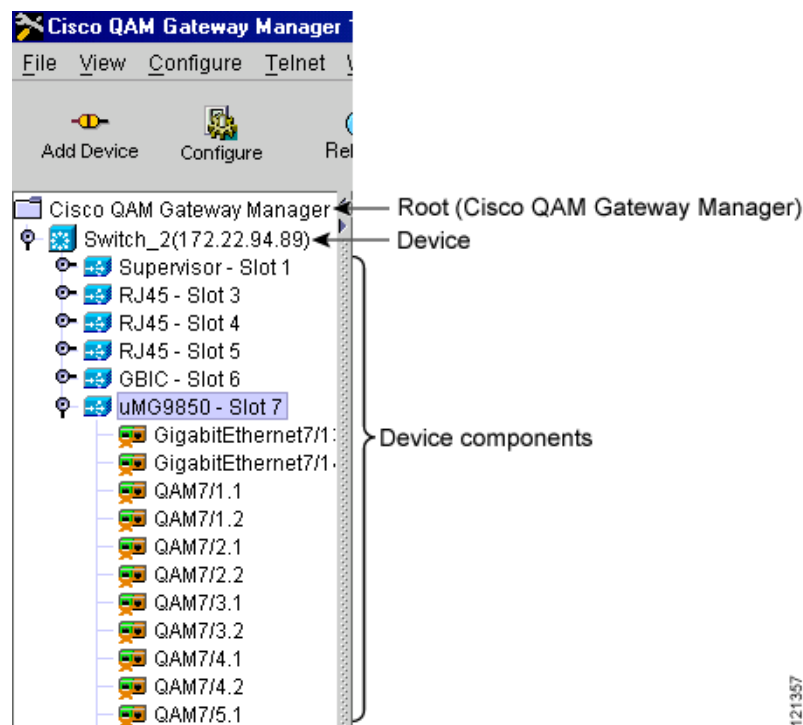
Function	Description
Done	Function is complete.
Refreshing tree. Please wait.	Navigation tree refresh in process.
Loading slot configuration. Please wait.	Slot View information being loaded.
Loading Ethernet configurations. Please wait.	Ethernet Port View information being loaded.
Loading QAM channel configurations. Please wait.	QAM Channel View information being loaded.
Loading chassis configurations. Please wait.	Chassis View information being loaded.

**Table 3-3** Status Bar Messages (continued)

Function	Description
Loading session configuration. Please wait.	Session View or session status information is being loaded.
Loading notification history. Please wait.	Refreshing Notification History table.
Loading VLAN configurations. Please wait	Refreshing VLAN configuration information.

## Navigation Tree

The Navigation Tree (see [Figure 3-5](#)) lists all added devices. Each entry expands to display its components. Use the scroll bar to see the full expansion.

**Figure 3-5** Navigation Tree

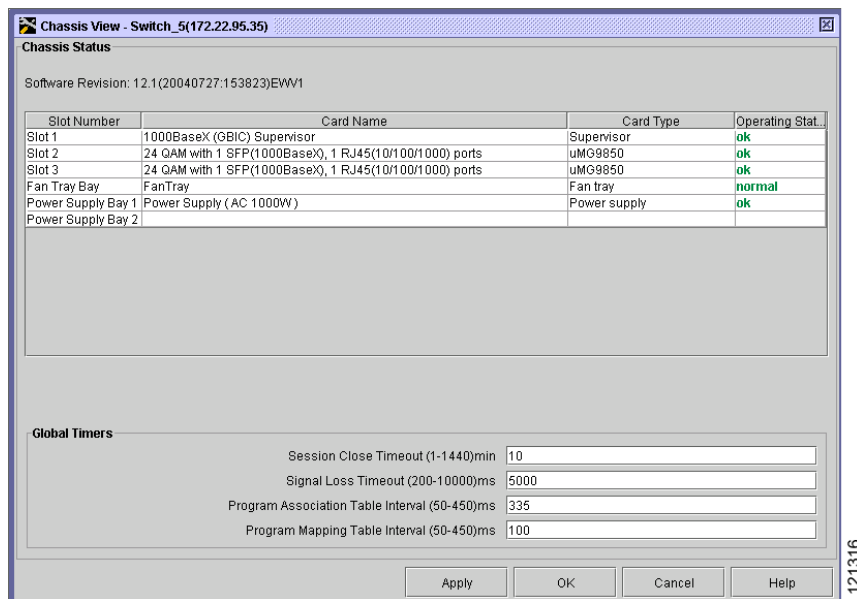
To refresh the navigation tree, select and right-click on “Cisco QAM Gateway Manager” at the top of the tree and choose **Refresh tree**. (See [Figure 3-6](#) on page 3-6.)

**Figure 3-6 Refresh Navigation Tree****Note**

Refreshing the navigation tree also collapses the navigation tree to the device level.

## Work Area

The Work area (see [Figure 3-7](#)) can contain a variety of view windows and configuration dialog boxes. This area changes depending on the function being performed (see [Table 3-4](#)). Up to 30 of these windows can be open simultaneously.

**Figure 3-7 Work Area**

[Table 3-4 on page 3-7](#) lists configuration, monitoring, and troubleshooting tasks that are commonly performed, and provides a cross-reference to the appropriate view or configuration window.

**Tip**

Print out [Table 3-4](#) and keep it as a quick reference tool.



**Table 3-4 Quick Reference—Work Area Navigation Map**

Go To . . .	For This Task . . .	Or Subtask . . .	Notes
<b>Chassis View</b> <ul style="list-style-type: none"> <li>Contents and operating status of each slot in the Cisco Catalyst switch.</li> </ul>	Setting Up PSI Parameters, page 3-37.	Setting PMT and PAT Intervals for the Switch, page 3-37.	
		Setting PMT and PAT Intervals for a QAM Channel, page 3-37.	
		Setting TSID and NIT-PID Values, page 3-38.	
	Setting Up, Editing, and Routing a Video Stream to QAM Channels, page 3-32.	Statically Setting Session Timeouts, page 3-33.	
<b>Slot View</b> <ul style="list-style-type: none"> <li>For a specific QAM device, a summary of the QAM channels' administrative and link status, and the administrative and link status of ASI and Ethernet ports.</li> <li>Information on number of incoming sessions and outgoing programs.</li> </ul>	Configuring Gigabit Ethernet Input Ports into a VLAN, page 3-27 (see Notes).	Configuring Video Routing, page 3-29.	See also <a href="#">Ethernet Port View</a> and <a href="#">Modifying a VLAN's Address or Administrative Status</a> , page 3-28.
	Setting Up, Editing, and Routing a Video Stream to QAM Channels, page 3-32.	Configuring Maximum Jitter for a Session, page 3-36. Statically Setting Session Timeouts, page 3-33.	See also <a href="#">QAM Channel View</a> and <a href="#">Chassis View</a> .
	Setting Emulation Mode, page 3-30.		
	Configuring Program Data Delivery, page 3-39.		
<b>Session View</b> <ul style="list-style-type: none"> <li>Statistics for active sessions.</li> </ul>	View table of all active sessions.		
<b>All Session View</b> <ul style="list-style-type: none"> <li>Statistics for both idle and active sessions.</li> </ul>	View table of both idle and active sessions.	View individual session statistics.	
<b>Multicast Session View</b> <ul style="list-style-type: none"> <li>Statistics for multicast sessions.</li> </ul>	View table for multicast sessions.	View individual session statistics.	

Table 3-4 Quick Reference—Work Area Navigation Map (continued)

Go To . . .	For This Task . . .	Or Subtask . . .	Notes
<b>ASI Port View</b> <ul style="list-style-type: none"> <li>For a specific ASI port, lists the current configuration parameters for the ASI port.</li> </ul>	Setting administrative status for the port Setting Byte Gap Select QAM Routed		
<b>Ethernet Port View</b> <ul style="list-style-type: none"> <li>For a specific Ethernet port, lists current status and configuration and allows configuration of the administrative status, switchport status, VLAN number, IP address and subnet mask.</li> </ul>	Setting administrative status for the port Setting switchport status		
	<a href="#">Configuring Gigabit Ethernet Input Ports into a VLAN, page 3-27.</a>	<a href="#">Assigning the Input GE Port to a VLAN, page 3-28.</a>	<a href="#">See also Ethernet Port View, page 3-8 and Slot View, page 3-7.</a>
<b>QAM Channel View</b> <ul style="list-style-type: none"> <li>Lists the current configuration parameters for the selected QAM channel.</li> </ul>	<a href="#">Configuring Gigabit Ethernet Input Ports into a VLAN, page 3-27.</a>	Set administrative status for the port	<a href="#">Also see QAM Summary View.</a>
	<a href="#">Setting Up, Editing, and Routing a Video Stream to QAM Channels, page 3-32.</a>	<a href="#">Setting the Modulation Format, page 3-32.</a>	
		<a href="#">Configuring the FEC Interleave Level and Mode, page 3-33.</a>	
		<a href="#">Statically Routing a Range of Program Sessions to a QAM Channel (UDP Port Mapping), page 3-35.</a>	
	<a href="#">Setting the Output Frequency and Output Power of the QAM Channels, page 3-31.</a>		
<b>QAM Summary View</b> <ul style="list-style-type: none"> <li>Allows viewing and configuration of all QAM channels on a specific Cisco uMG9850 QAM module slot.</li> </ul>			

**Table 3-4 Quick Reference—Work Area Navigation Map (continued)**

Go To . . .	For This Task . . .	Or Subtask . . .	Notes
<b>Notification History</b> <ul style="list-style-type: none"> <li>Lists statistics for a device. Each time a device threshold is passed or an error condition is detected, an entry is recorded in the table.</li> </ul>			See also <a href="#">Setting and Monitoring Utilization Thresholds</a> , page 4-8.
<b>Telnet Window</b> <ul style="list-style-type: none"> <li>Allows entry of CLI commands to configure Cisco Catalyst switches.</li> </ul>	<a href="#">Using the Telnet Window</a> , page 3-16 <a href="#">Telnet—CLI show commands</a> , page 4-5.		

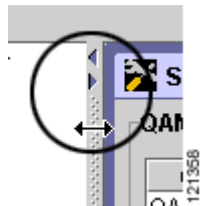
Choose an already opened view from the Window menu or open a new one using the View menu. To close all views simultaneously, choose **File > Close All**.

## Resizing the Navigation Tree and Work Area

To hide the navigation tree and expand the work area, click on the left arrow. To hide the work area and expand the navigation tree, click on the right arrow. (See [Figure 3-8](#).)

**Figure 3-8 Hide Buttons**

To readjust the navigation tree and work area to specific widths, place the cursor on the margin as shown in [Figure 3-9](#). When it becomes a double-ended arrow, drag the margin to the left or right.

**Figure 3-9 Sizing the Navigation Tree and Work Area**

# Using Help

The help files for the Cisco QAM Gateway Manager application are provided to simplify the use of the application. These files can be accessed in two ways:

- Help for a specific screen can be accessed by clicking **Help** on that screen.
- The full help set can be accessed by choosing **Help > Contents** or by pressing **F1**.

## Screen-Specific Help

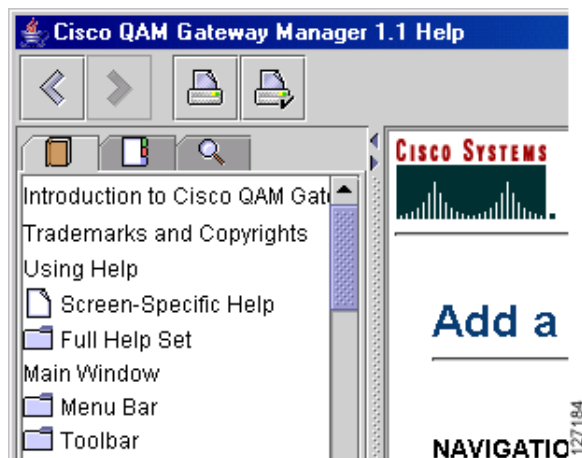
Clicking **Help** in a window opens the help set and displays help files for that particular window. These files include discussions of any configuration options or read-only values present. Further navigation cross-references are included where necessary for greater understanding.

## Full Help Set

Choose **Help > Contents** or press **F1** to open the entire help set.

The navigation pane on the left side of the window includes three tabs: the Contents tab, the Index tab, and the Search tab. Navigation and printing aids are present in the help files and in the help toolbar. See [Figure 3-10](#).

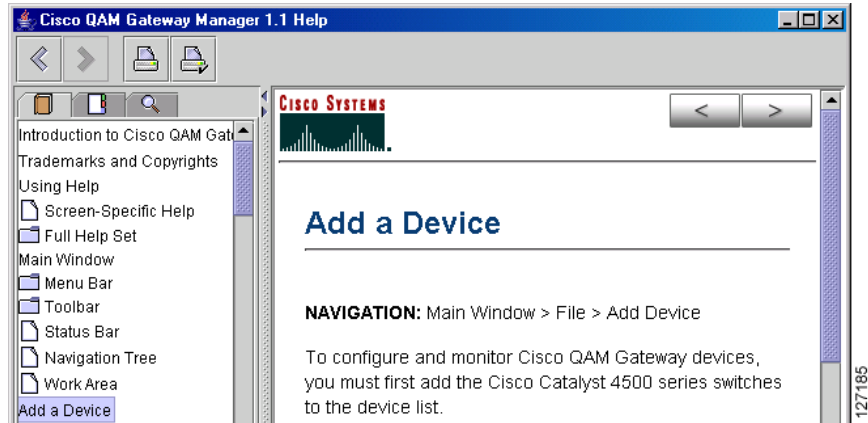
**Figure 3-10** Help Tools and Tabs



## Contents Tab

Click the **Contents** tab to display a Table of Contents of all help files, which allows you to click on a specific subject or task for information. See [Figure 3-11](#).

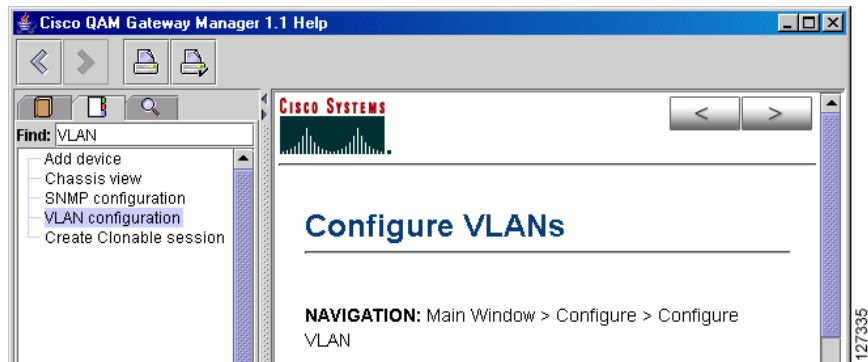
**Figure 3-11** Help File Table of Contents



## Index Tab

Click the **Index** tab and enter an index term. The index term list is searched and if found, the page is displayed. See [Figure 3-12](#).

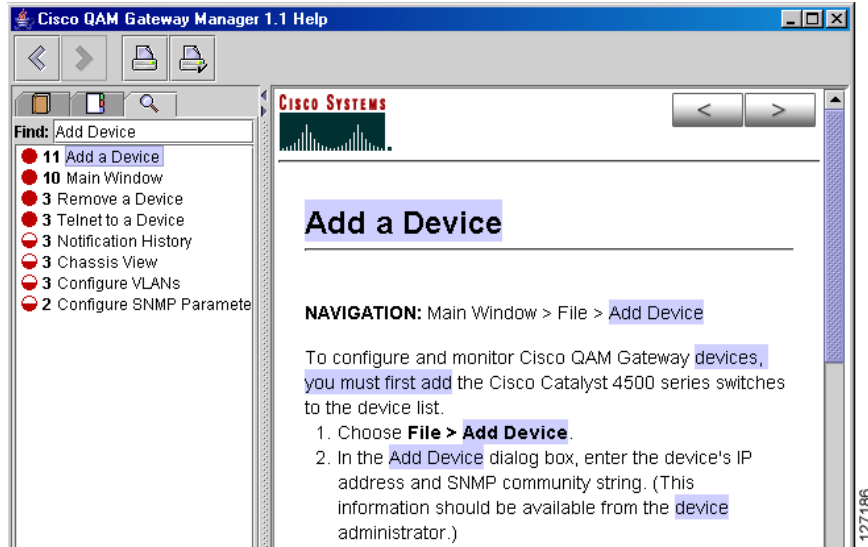
**Figure 3-12** Help File Index Tab



## Search Tab

Click the **Search** tab and enter a text search term. All help files are searched for the term, and the results (number of occurrences) are displayed in the left side of the window in order of significance. The page containing the first occurrence appears on the right. See [Figure 3-13](#).




Figure 3-13 Help Files Search Tab



## Navigation

Table 3-5 shows the navigation buttons and describes their use.

Table 3-5 Navigation Buttons

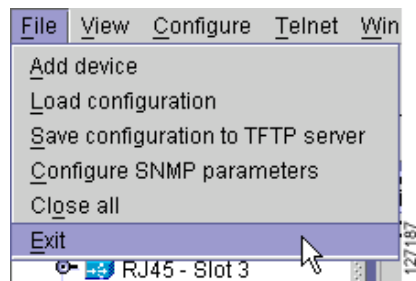
Icon	Name	Use
	Navigation Arrows	Click the arrows at the top and bottom of all help file text windows to step backward and forward sequentially through the files.
	Return to Previous	Use the arrows in the toolbar to return directly to the most recently viewed text.
	Printer Functions	Click the printer icons in the toolbar for direct printing (left icon) or page setup (right icon).

## Exiting Cisco QAM Gateway Manager

To exit the application, follow these steps:

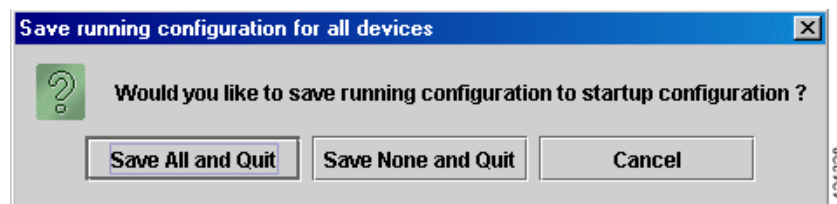
- Step 1** Do the following:
- Choose **File > Exit** (see Figure 3-14).

Figure 3-14 File Exit



The Save Running Configuration dialog box appears (see Figure 3-15).

Figure 3-15 Save Running Configuration



- Step 2** Click **Cancel** to keep the application active and return to configuration tasks, click **Save All and Quit** to save all configurations applied during this session to the startup configuration, or click **Save None and Quit** to exit without saving any configurations applied during this session. All active windows are closed and the Cisco QAM Gateway Manager session ends.

**Note**

If the Save all configurations to startup configuration? check box is selected in the Add Device or Configure SNMP Parameters dialog box (see “[Adding a Device](#)” section on page 3-13 and “[Configuring SNMP Parameters](#)” section on page 3-21), configuration changes are automatically saved to the startup configuration each time **Apply** is clicked, independently of Save All and Quit or Save None and Quit selections.

## Establishing Communication with Cisco QAM Gateway Devices

- [Adding a Device](#)
- [Removing a Device](#)
- [Using the Telnet Window](#)

### Adding a Device

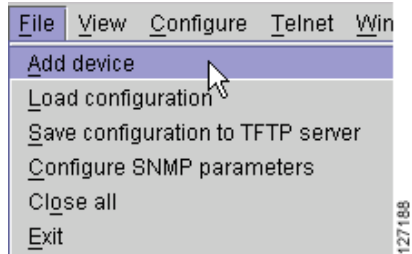
To configure and monitor Cisco QAM Gateway devices, you must first add Cisco Catalyst switches to the device list. Up to 20 devices can be managed by Cisco QAM Gateway Manager.

To add a device:

**Step 1** Select Add Device using one of the following methods:

- Choose **File > Add device** (see [Figure 3-16](#)).

**Figure 3-16 Add Device Using File Menu**



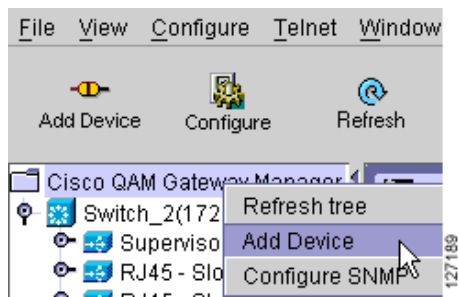
- Click the Add Device tool (see [Figure 3-17](#)).

**Figure 3-17 Add Device Using Add Device Button**



- In the navigation tree, select, then right-click “Cisco QAM Gateway Manager” (see [Figure 3-18](#)).

**Figure 3-18 Add Device Using Right Mouse Click**



**Step 2** In the Add Device dialog box, enter the IP Address and Community String of the device (see [Figure 3-19](#)).



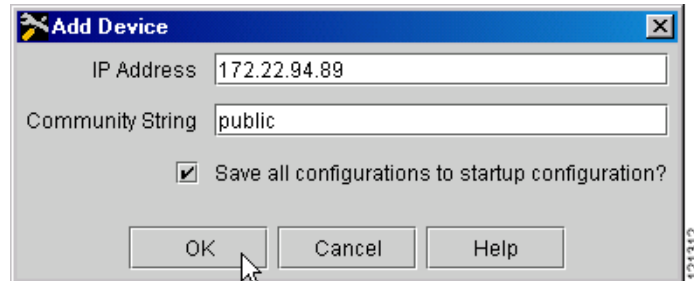
**Note**

Entering the SNMP community string does not change the value on the device. It authenticates access to the device. The community string must be defined before adding the device to the list. See [Before Using Cisco QAM Gateway Manager, page 2-2](#).



If you want to automatically save all configurations to the startup configuration, click the check box. When the check box is selected, any change made to a device using Cisco QAM Gateway Manager is automatically saved to both the running and startup configuration files of that device. If the check box is not selected, configuration changes are saved only to the running configuration.

**Figure 3-19 Add Device Dialog Box**

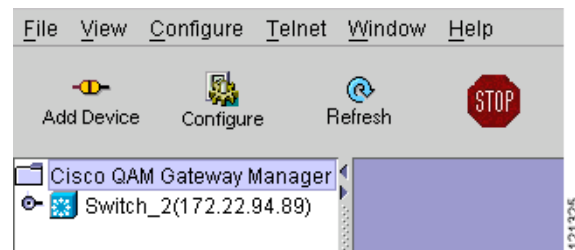


**Note**

When using the option to automatically save all changed configuration information to the startup configuration file, you can make a backup of the existing startup configuration to a TFTP server before changing configurations. Choose **File > Save configuration to TFTP server**. This backup can be used in case it is necessary to restore the original startup configuration after a device reload. (See [Saving a Configuration to a TFTP Server, page 3-25](#).)

**Step 3** Click **OK**. The device name and its IP address are displayed in the navigation tree (see [Figure 3-20](#)).

**Figure 3-20 Navigation Tree with Device Added**

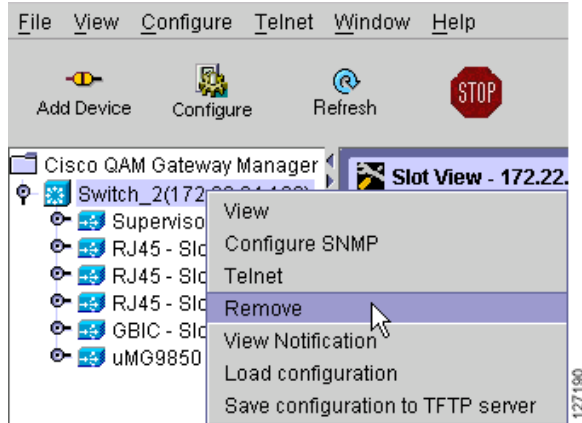


## Removing a Device

To remove a Cisco Catalyst switch from the list:

**Step 1** In the navigation tree, select the switch to remove, then right-click. (see [Figure 3-21](#)).

Figure 3-21 Selecting Remove



**Step 2** Choose **Remove**. A confirmation window appears.

**Step 3** Click **Yes**.

## Using the Telnet Window

Use the Telnet window to enter command-line interface (CLI) commands such as **show** commands, or perform other configuration tasks on Cisco Catalyst switches listed in the navigation tree.



### Note

For further information regarding CLI commands refer to *Configuring the Cisco uMG9850 QAM Module*, the *Cisco Catalyst 4500 Series IOS Software Configuration Guide*, and the *Catalyst 4500 Series Switch Cisco IOS Command Reference*.

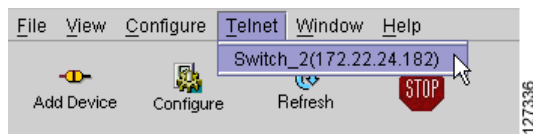
Commonly used **show** commands are summarized in Chapter 4, “Monitoring”.

To access a Cisco Catalyst switch using the Telnet window:

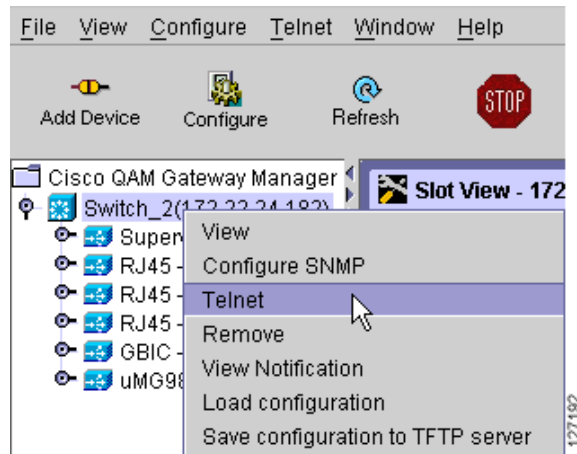
**Step 1** Choose the switch using one of the following methods:

- Choose **Telnet** > *device name* from the menu bar (see Figure 3-22).

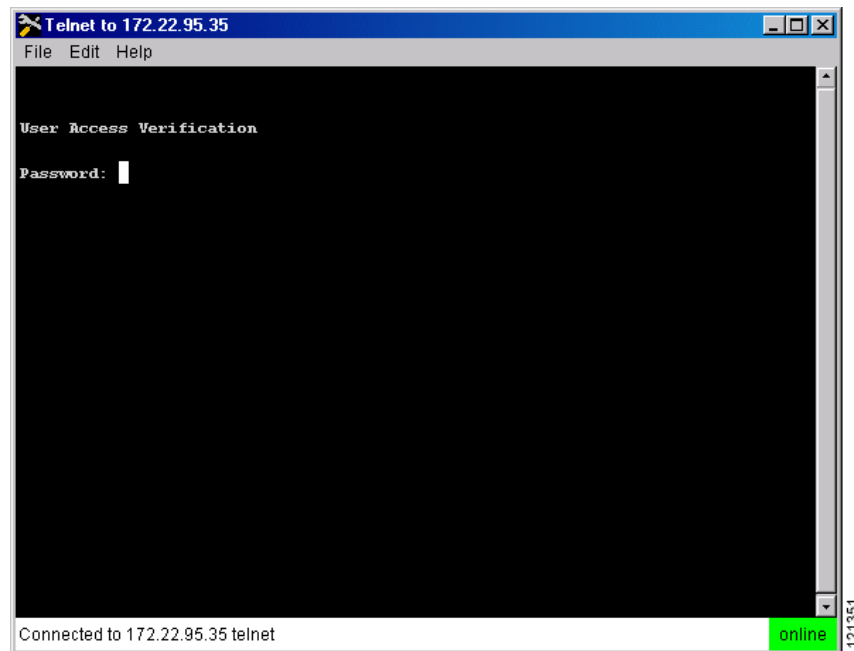
Figure 3-22 Telnet to Cisco Catalyst Switch



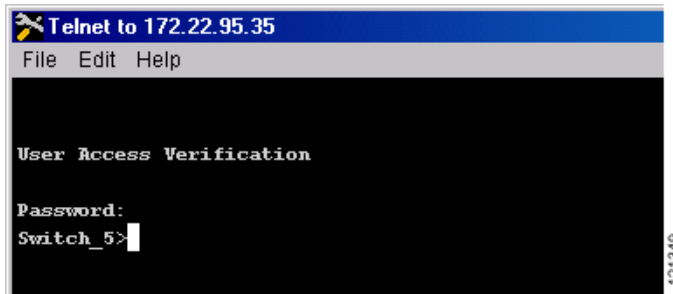
- Right-click on the Cisco Catalyst switch in the navigation tree and choose **Telnet** (see Figure 3-23).

**Figure 3-23** Telnet to Device Using Right-Click

The Telnet window appears (see [Figure 3-24](#)).

**Figure 3-24** Telnet Window

**Step 2** Enter the Telnet password for the switch and press **Enter** (see [Figure 3-25](#)).

**Figure 3-25** Logged on to the Switch

**Step 3** Enter the required CLI commands.

**Step 4** To terminate the Telnet session, type **exit** (see [Figure 3-26](#)), or choose **File > Exit** in the Telnet window menu bar.

**Figure 3-26** Exiting Telnet Session

**Step 5** To close the Telnet window, click the **X** in the upper right of the window.

## Configuration Tasks

The following configuration tasks can be accomplished using Cisco QAM Gateway Manager. Instructions for each are provided in the subsections that follow.

- [Loading a Configuration](#)
- [Configuring SNMP Parameters](#)
- [Saving a Configuration to a TFTP Server](#)
- [Configuring Gigabit Ethernet Input Ports into a VLAN](#)
- [Configuring Video Routing](#)
- [Setting Emulation Mode](#)
- [Setting the Output Frequency and Output Power of the QAM Channels](#)
- [Setting Up, Editing, and Routing a Video Stream to QAM Channels](#)
- [Setting Up PSI Parameters](#)
- [Configuring Program Data Delivery](#)

## Loading a Configuration

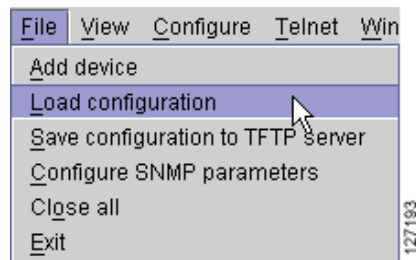
You can copy the Cisco Catalyst switch startup configuration to the running configuration, copy the running configuration to the startup configuration, or load a configuration file from a TFTP server to the running configuration or the startup configuration of the switch.

### Copying the Startup Configuration to Running Configuration

To copy the switch startup configuration to the running configuration:

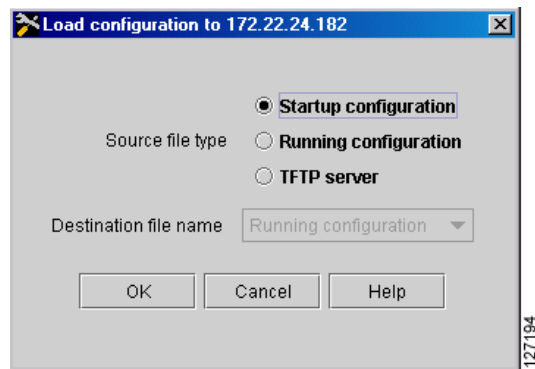
- Step 1** Select the Cisco Catalyst switch in the navigation tree, and choose **File > Load configuration** (see [Figure 3-27](#)).

**Figure 3-27 Load Configuration**



- Step 2** In the Load Configuration dialog box, click the **Startup configuration** button (see [Figure 3-28](#)).

**Figure 3-28 Startup Configuration Button**



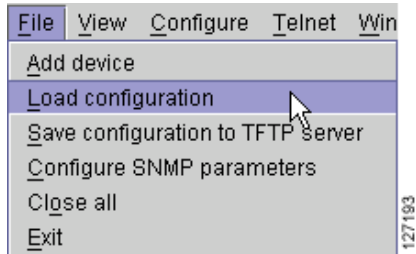
- Step 3** Click **OK** to start the copy. A confirmation message appears.
- Step 4** Click **Yes** to confirm and start the copy, or click **No** or **Cancel** to cancel the copy.

## Copying the Running Configuration to Startup Configuration

To copy the switch running configuration to the startup configuration:

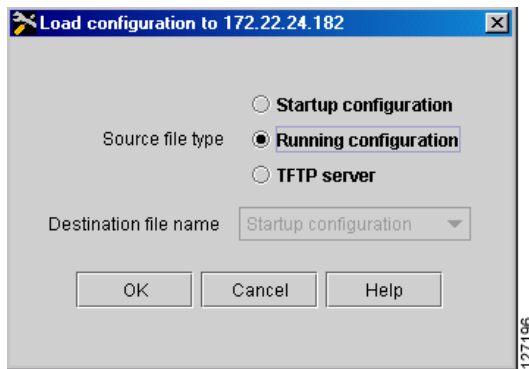
- Step 1** Select the Cisco Catalyst switch in the navigation tree, and choose **File > Load configuration** (see [Figure 3-29](#)).

**Figure 3-29 Load Configuration**



- Step 2** In the Load Configuration dialog box, click the **Running configuration** button (see [Figure 3-30](#)).

**Figure 3-30 Running Configuration Button**

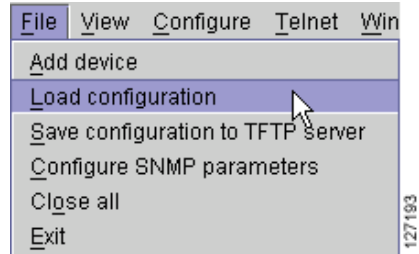


- Step 3** Click **OK** to start the copy. A confirmation message appears.
- Step 4** Click **Yes** to confirm and start the copy, or click **No** or **Cancel** to cancel the copy.

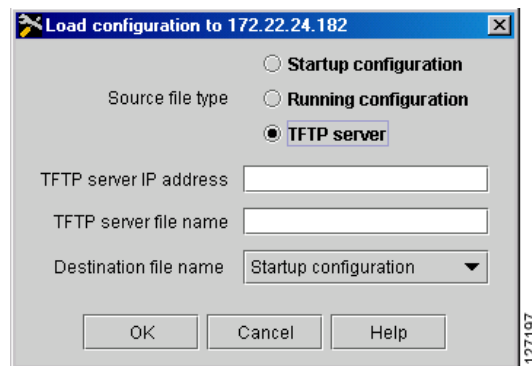
## Loading a Configuration from a TFTP Server

To load a startup configuration or a running configuration from a TFTP server to the Cisco Catalyst switch:

- Step 1** Select the device and choose **File > Load configuration** (see [Figure 3-31](#)).

**Figure 3-31 Load Configuration**

**Step 2** Click the **TFTP server** button (see [Figure 3-32](#)).

**Figure 3-32 TFTP Server Button**

**Step 3** Enter the IP address and filename of the TFTP server.

**Step 4** Choose the destination file (either **Startup configuration** or **Running configuration**) from the Destination file name pull-down menu.

**Step 5** Click **OK** to start the load. A confirmation message appears.

**Step 6** Click **Yes** to confirm and start the load, or click **No** or **Cancel** to cancel the load.



**Note** The switch must be reloaded for the startup configuration to take effect. Changes to the running configuration take effect immediately.

## Configuring SNMP Parameters

Cisco QAM Gateway Manager uses Simple Network Management Protocol (SNMP) and a special management information base (MIB) to manage Cisco QAM Gateway devices. Two SNMP parameters, Polling Interval and SNMP Community String, can be set using Cisco QAM Gateway Manager as described in the following sections.

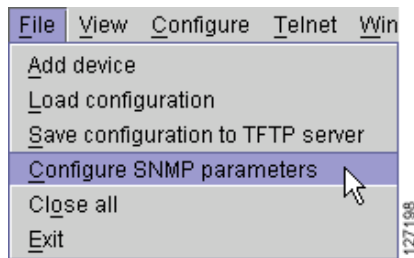
## Setting SNMP Polling Interval

The polling interval determines how frequently Cisco QAM Gateway Manager requests status information from each of the managed devices.

To set the SNMP polling parameters for all devices:

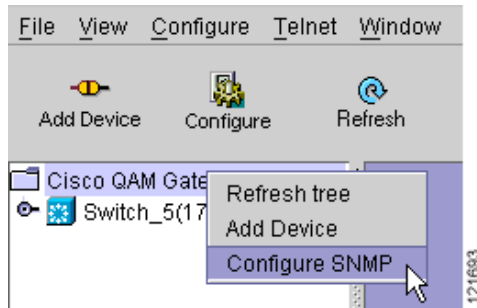
- Step 1** Select “Cisco QAM Gateway Manager” in the navigation tree, then set the polling parameters using one of the following methods:
- Choose **File > Configure SNMP Parameters** (see [Figure 3-33](#)).

**Figure 3-33 Using File Menu**



- Right-click on “Cisco QAM Gateway Manager” and choose **Configure SNMP** (see [Figure 3-34](#)).

**Figure 3-34 Using Right Click**



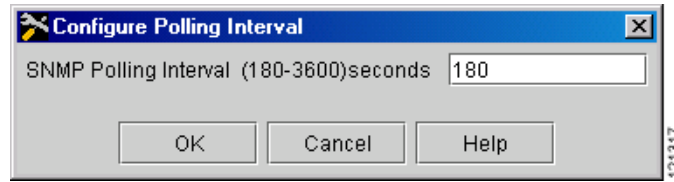
- Click the Configure button in the tool bar (see [Figure 3-35](#)).

**Figure 3-35 Using the Tool Bar**



- Step 2** The default is 180 seconds. To change this value, enter a new polling interval from 180 to 3600 seconds (see [Figure 3-36](#)).



**Figure 3-36** Polling Interval Configuration Dialog Box

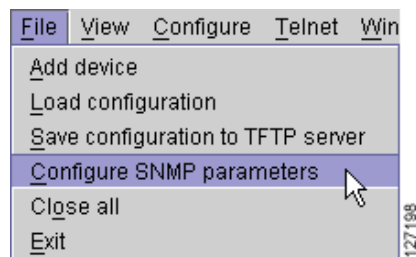
- Step 3** Click **OK** to save the configuration, or click **Cancel** to close the dialog box and discard any changes.

## Setting the SNMP Community String

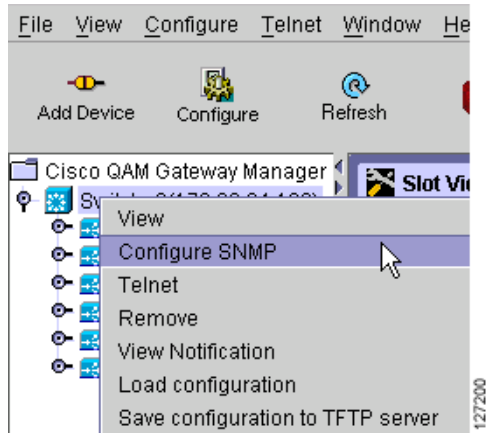
If the system administrator changes the community string on the Cisco Catalyst switch, use this function to set the new SNMP community string for that switch in Cisco QAM Gateway Manager.

To set the community string:

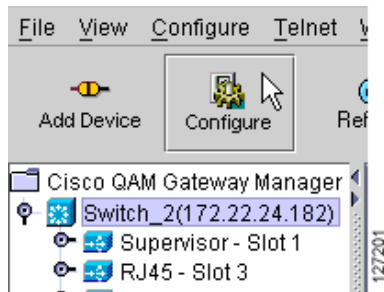
- Step 1** Select a Cisco Catalyst switch in the navigation tree, then set the SNMP community string using one of the following methods:
- Choose **File > Configure SNMP Parameters** (see [Figure 3-37](#)).

**Figure 3-37** Using File Menu

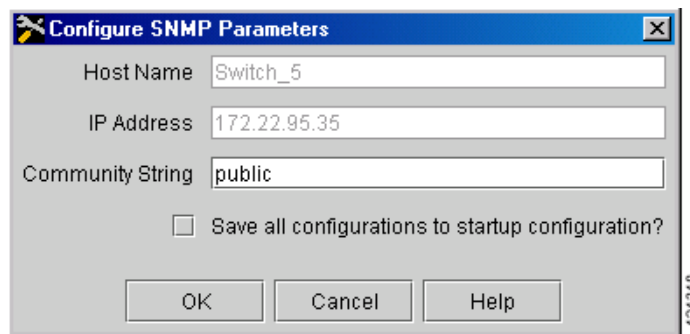
- In the navigation tree, right-click on the Cisco Catalyst switch and choose **Configure SNMP** (see [Figure 3-38](#)).

**Figure 3-38** Using Right Click

- Select the Cisco Catalyst switch in the navigation tree and click **Configure** in the toolbar (see [Figure 3-39](#)).

**Figure 3-39** Using Configure Button

- Step 2** Enter the new SNMP community string and, if there has been a requirement change since first adding the device, select or deselect the Save all configurations to startup configuration? box (see [Figure 3-40](#)).

**Figure 3-40** Configure SNMP Parameters Dialog Box

- Step 3** Click **OK** to save the configuration, or click **Cancel** to close the dialog box and discard any changes.

## Saving a Configuration to a TFTP Server

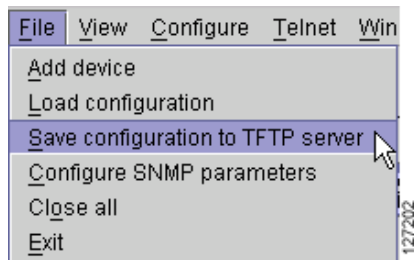
The startup configuration or the running configuration of a Cisco Catalyst switch can be saved to a TFTP server.

### Saving the Startup Configuration to a TFTP Server

To save the startup configuration to a TFTP server:

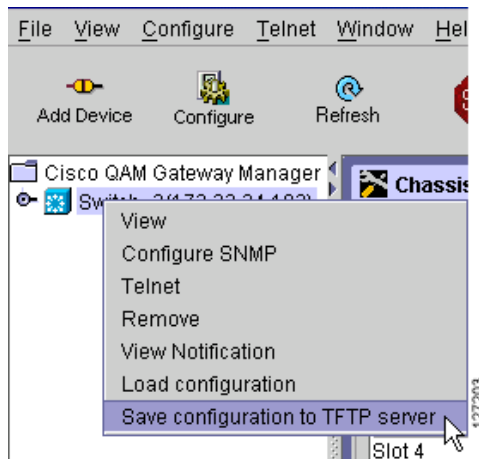
- Step 1** Do one of the following:
- Select the Cisco Catalyst switch on the navigation tree and choose **File > Save configuration to TFTP server** (see [Figure 3-41](#)).

**Figure 3-41 Save Configuration to TFTP Server**

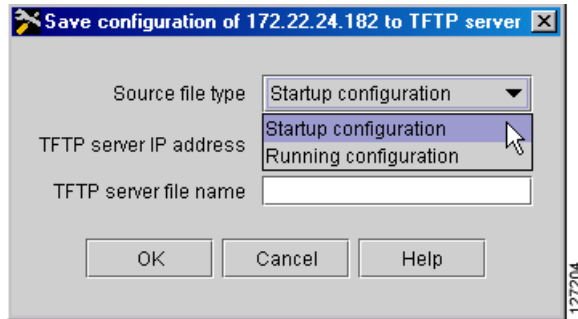


- In the navigation tree, right click on the desired Cisco Catalyst switch in the navigation tree and choose **Save configuration to TFTP server** (see [Figure 3-42](#)).

**Figure 3-42 Save Configuration to TFTP Server Using Right-Click**



- Step 2** Choose **Startup configuration** from the Source file type pull-down menu (see [Figure 3-43](#)).

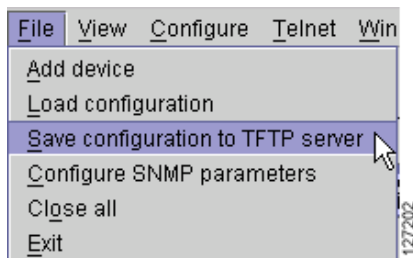
**Figure 3-43 Startup Configuration**

- Step 3** Enter the IP address and filename of the TFTP server.
- Step 4** Click **OK**. A confirmation box appears.
- Step 5** Click **Yes** to start the save process, or click **No** or **Cancel** to cancel the operation.

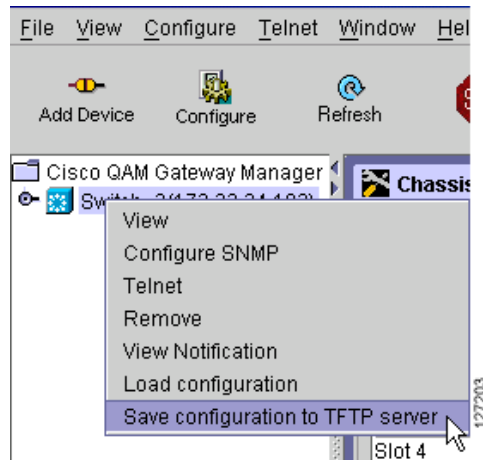
## Saving the Running Configuration to a TFTP Server

To save the running configuration to a TFTP server:

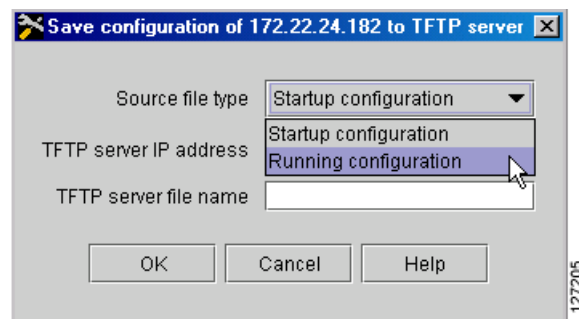
- Step 1** Do one of the following:
- Select the Cisco Catalyst switch on the navigation tree and choose **File > Save configuration to TFTP server** (see [Figure 3-44](#)).

**Figure 3-44 Save Configuration to TFTP Server**

- Right click on the Cisco Catalyst switch in the navigation tree and choose **Save configuration to TFTP server** (see [Figure 3-45](#)).

**Figure 3-45 Save Configuration to TFTP Server Using Right-Click**

- Step 2** Choose **Running configuration** from the Source file type pull-down menu (see [Figure 3-46](#)).

**Figure 3-46 Running Configuration**

- Step 3** Enter the TFTP server's IP address and filename.
- Step 4** Click **OK**. A confirmation box appears.
- Step 5** Click **Yes** to start the save process, or click **No** or **Cancel** to cancel the operation.

## Configuring Gigabit Ethernet Input Ports into a VLAN

Video streams on inbound GE interfaces are included in single VLANs to use network addresses more efficiently. The IP addresses and subnet masks configured for each VLAN interface populate the IP switching table on the switch with the forwarding information needed to forward the video packets to their destination. The number and use of VLANs varies according to the programming and management needs of the system operator.



### Note

Though optional, the use of VLANs for dedicated video traffic is recommended. For a detailed discussion, refer to *Configuring the Cisco uMG9850 QAM Module*.

Do the following to create a VLAN interface, assign an IP address to the incoming (video source) interface, and assign input Gigabit Ethernet (GE) ports to the VLAN.

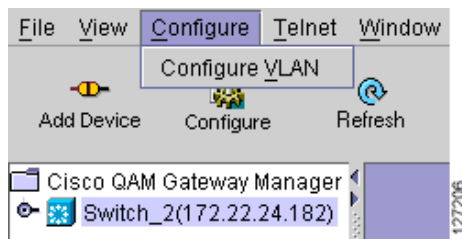
**Note**

When it is necessary to create a new VLAN, use the Telnet window to create and enable the VLAN using commands found in *Cisco Catalyst 4500 Series IOS Software Configuration Guide*.

## Modifying a VLAN's Address or Administrative Status

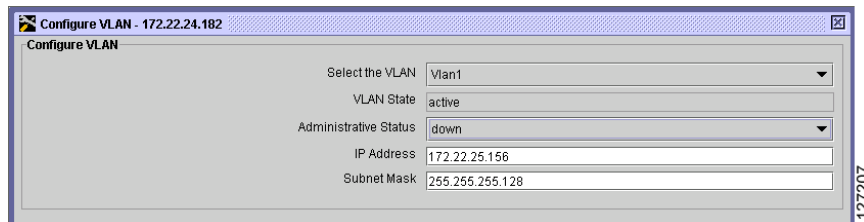
- Step 1** Select a Cisco Catalyst switch in the navigation tree and choose **Configure > Configure VLAN** (see [Figure 3-47](#)).

**Figure 3-47** Configure VLAN Menu



The Configure VLAN dialog box appears (see [Figure 3-48](#)).

**Figure 3-48** Configure VLAN Dialog Box



- Step 2** Choose an existing VLAN from the pull-down menu. If necessary, enter a different IP address and subnet mask, or change the Administrative Status using the pull-down menu and choosing **up** to enable the VLAN or **down** to disable it.

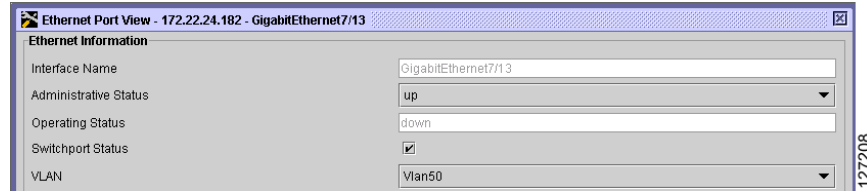
## Assigning the Input GE Port to a VLAN

To assign the input gigabit Ethernet (GE) port to a VLAN:

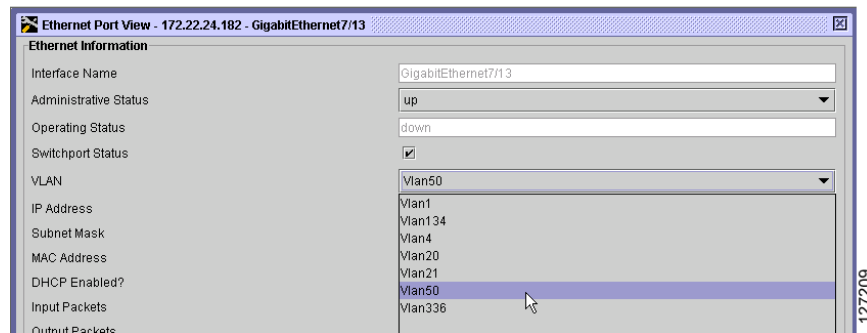
- Step 1** Go to Ethernet Port View for a specific GE interface and assign the GE interface of the incoming video stream to be included in the VLAN.
- Step 2** Set switchport status to **switchport** by clicking on the check box (see [Figure 3-49](#)). Choose no switchport by deselecting the switchport check box.

**Note**

Switchport status must be set to switchport mode when LANs are used.

**Figure 3-49** Selecting Switchport

**Step 3** Select the VLAN from the VLAN pull-down menu (see [Figure 3-50](#)).

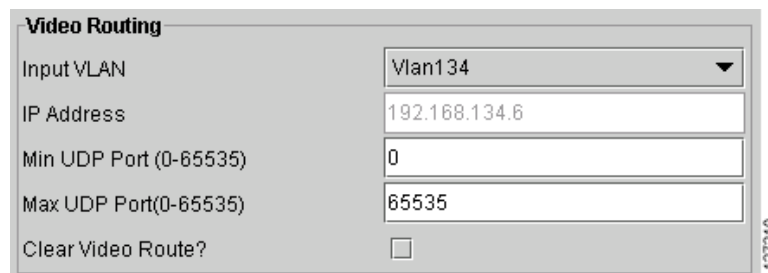
**Figure 3-50** Selecting the VLAN


**Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Configuring Video Routing

This configuration task sets up the routing of UDP/IP (video) packets to the Cisco uMG9850. Acting as the IP host, the supervisor engine in the switch generally receives video traffic on the IP address configured on a VLAN. When the IP address of the selected VLAN is configured as the destination IP address of the video packets, any video packet destined for this IP address—and whose destination port number matches the UDP range specified for video—is routed to the selected Cisco uMG9850. For further discussion of this process, refer to *Configuring the Cisco uMG9850 QAM Module*.

**Step 1** Go to the Video Routing section of Slot View (see [Figure 3-51](#)).

**Figure 3-51** Configure Video Routing

- Step 2** Select a VLAN and assign an IP address in the same subnet as that assigned to the VLAN in Step 1 in the [Assigning the Input GE Port to a VLAN](#) section.
- Step 3** Specify a minimum and maximum UDP port range or accept the default range.
-  **Note** To remove the routing configuration for the module, click the Clear Video Route? selection box.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.
- Step 5** Repeat these steps for additional VLAN and GE interfaces, as required.

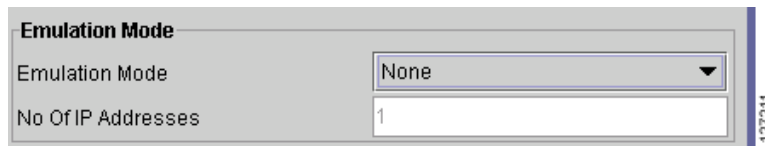
## Setting Emulation Mode

You can configure the Cisco uMG9850 to emulate the UDP port mapping of third-party QAM gateways that accommodate fixed QAM-channel groups of 8 or 24 channels each. Up to three 8-channel gateways or one 24-channel gateway can be emulated. The user's mappings are converted to the scheme used by the Cisco uMG9850, and then are reconverted to the user's mapping scheme.

To set emulation mode:

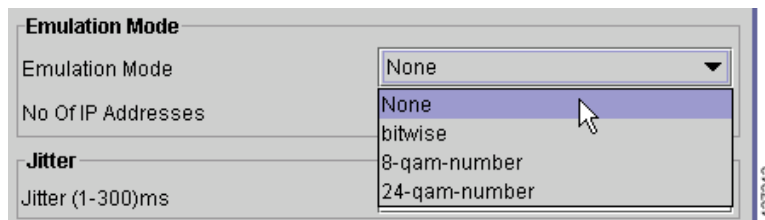
- Step 1** Go to Slot View, Emulation Mode Section (see [Figure 3-52](#)).

**Figure 3-52** Emulation Mode Section



- Step 2** Select the emulation mode from the pull-down menu (see [Figure 3-53](#)).

**Figure 3-53** Selecting Emulation Mode



Values are:

- none—no emulation
- bitwise—for a third-party eight-channel QAM gateway that uses bitwise mapping
- 8-qam-number—for a third-party 8-channel QAM gateway that uses bitwise mapping
- 24-qam-number—for a third-party 24-channel QAM gateway that uses bitwise mapping



- Step 3** Enter the number of IP addresses:
- Bitwise emulation mode supports up to three IP addresses.
  - 8-qam-number supports up to three IP addresses.
  - 24-qam-number supports only one IP address.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Setting the Output Frequency and Output Power of the QAM Channels

Each F-connector (QAM port) provides two QAM channels, and the frequency and output power are configured for both channels simultaneously. Setting frequency and power for one QAM channel automatically sets the appropriate values for the other channel in the same interface.

The Frequency value configures the frequency for the upconverter connected to a QAM port. Configuring the frequency for one QAM channel automatically configures the correct frequency for the other QAM channel in its upconverter group. The frequency bandwidth of each QAM upconverter block is 12 MHz. Consequently, if *slot/port.1* is set to frequency *f1*, then *slot/port.2* is automatically set to frequency *f1 + 6 MHz*. Similarly, if *slot/port.2* is set to frequency *f2*, then *slot/port.1* is automatically set to frequency *f2 - 6 MHz*.

The power value configures the power level for the upconverter connected to a QAM channel. Configuring the output power for one QAM channel automatically configures the same power level for the other QAM channel in its upconverter group. If both QAM channels are up, RF power is configured to *dBmV + 3 dBmV*. If only one channel is up, RF power is configured to *dBmV*. If no channel is up, RF power is not configured.

### Setting the Output Frequency

To set the output frequency of the QAM channel:

- Step 1** Go to QAM Channel View, Channel Information section (see [Figure 3-54](#)).

**Figure 3-54** Setting the QAM Channel Frequency and Output Power in QAM Channel View

Channel Information	
Channel Name	QAM7/2.2
Administrative Status	up
Output Frequency (56000000-860000000)Hz	120000000
Output Power (42-55)dBmV	50
Modulation Format	qam64
QAM Group	1

- Step 2** Enter the frequency for the selected channel. The frequency range for QAM channel 1 is 50000000 to 854000000 Hz, and for QAM channel 2 is 56000000 to 860000000.
- Step 3** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

**Note**

For further information regarding the setting of QAM channel frequency and power, refer to *Configuring the Cisco uMG9850 QAM Module*.

## Setting the Output Power

To set the QAM channel output power:

- 
- Step 1** Go to QAM Channel View, Channel Information section (see [Figure 3-54](#)).
  - Step 2** Enter the QAM channel power. If both QAM channels in an RF port are enabled, the power range is 42 to 55 dBmV. If only one QAM channel is enabled, the allowed range is 45 to 58 dBmV. The default is 50 dBmV.
  - Step 3** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.
- 

## Setting Up, Editing, and Routing a Video Stream to QAM Channels

### Setting the Modulation Format

Each Cisco uMG9850 has six modulator groups, yielding a total of 24 channels per module. Setting the modulation format on one QAM channel applies the same format to all four QAM channels in a modulator group. For example, QAM channels 5/1.1, 5/1.2, 5/2.1, and 5/2.2.

To set the modulation format for the QAM channel:

- 
- Step 1** Go to QAM Channel View, Channel Information section (see [Figure 3-54 on page 3-31](#)).
  - Step 2** Set the modulation format to either qam64 or qam256. The default is qam256.

**Note**

If the FEC interleave level is set to 1, the value 256 is not valid. See the “[Configuring the FEC Interleave Level and Mode](#)” section that follows.

- Step 3** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

**Note**

If level 1 is already selected and it is necessary to change to qam256, first change the FEC Interleave level to 2, then click **Apply** and wait for the configuration change to take effect. Select **qam256**.

---

## Configuring the FEC Interleave Level and Mode

The FEC interleave settings set the Reed-Solomon forward error correction (FEC) interleave level and mode on a QAM port. Forward error correction reduces bit error rate (BER) in data transmission by correcting recovered bit errors in the demodulator. Interleaving is a technique that reorders (in time) individual code-word bits with other code-word bits to spread error bursts over many different code words. The technique used is compliant with ITU J.83, Annex B.

Setting the interleave level and mode on any of the 12 QAM interfaces (ports) sets the QAM symbol rate on that port only. If the interleave level and mode is set on one QAM channel, the same value is applied to all four QAM channels in a modulator group.



### Caution

The default settings should be satisfactory. Varying the settings can result in an increase in packet latency. Always monitor new settings to ensure that resulting BERs are acceptable.

To configure the FEC interleave level and mode:

- Step 1** Go to QAM Channel View, Interleave parameters section (see [Figure 3-55](#)).

**Figure 3-55** Setting the FEC Interleave Level and Mode

Interleave parameters	
FEC Interleave level	level1
FEC Interleave mode	1 - FEC-I-128-J-1

- Step 2** Choose the interleave level. FEC interleave level can be level1 or level2. The default is level2.



### Note

If the FEC interleave level is set to level1, the modulation format option of qam256 (256 QAM) is not valid. (See the [“Setting the Modulation Format”](#) section on page 3-32.)

- Step 3** Select the value for FEC interleave mode. The default is 6-FEC-I-128-J-4.



### Note

The interleave mode can be set only when the interleave level is set to level2 (default).

- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Statically Setting Session Timeouts

You can statically set a session timeout for a single Cisco uMG9850 QAM module or for the entire Cisco Catalyst switch to determine when the session is closed once packets no longer come into the session. You can also set the time following the absence of packets, at which a loss of signal is reported. Use **global timeouts** to address the entire switch or QAM gateway, and **slot-level timeouts** to address an entire module in a given slot. The options and parameters are the same in both cases.

**Note**

When a session is closed, this means that the Cisco uMG9850 has not received any video packets for the given session's UDP port for the period determined by the module-level or switch-level session close timeout. The session no longer exists.

When a session is inactive, this means that the Cisco uMG9850 or has not received any video packets for the given session's User Datagram Protocol (UDP) port for the period determined by the global or slot-level timeout signal-loss. The session still exists, and is listed following a **show** command. If packets start arriving before the timer set by slot-level session-close timeout or global session-close timeout counts down, the session becomes active.

The value for slot-level timeout signal-loss or global timeout signal-loss should always be larger than the value configured for jitter. See [Configuring Maximum Jitter for a Session, page 3-36](#).

To configure global timeouts:

- Step 1** Go to Chassis View, Global Timers section. (See [Figure 3-56](#).)

**Figure 3-56** Setting Global Timers

Global Timers	
Session Close Timeout (1-1440)min	10
Signal Loss Timeout (200-10000)ms	5000
Program Association Table Interval (50-450)ms	335
Program Mapping Table Interval (50-450)ms	100

- Step 2** The default value for the Session Close Timeout timer is 10 minutes. To change the setting, enter a new value from 1 to 1440 minutes.
- Step 3** The default value for the Signal Loss Timeout timer is 5000 milliseconds. To change the setting, enter a new value from 200 to 10000 milliseconds.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

To configure slot-level timeouts:

- Step 1** Go to Slot View, Slot Level Timeouts section (see [Figure 3-57](#)).

**Figure 3-57** Setting Slot-Level Timers

Slot Level Timeouts	
Session Close (1-1440)min	10
Signal Loss (200-10000)ms	450

- Step 2** The default for Session Close Timeout is 10 minutes. To change Session Close Timeout, enter a new value from 1 to 1440 minutes.

- Step 3** The default for Signal Loss timeout is 5000 milliseconds. To change Signal Loss Timeout, enter a new value from 200 to 10000 milliseconds.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Statically Routing a Range of Program Sessions to a QAM Channel (UDP Port Mapping)

The UDP port number of each program session allows each session to be routed to a designated QAM channel by default. You can overwrite the default routing (which is signaled by the port number) and route a range of program sessions to a QAM channel.

To route a range of program sessions to a QAM channel:

- Step 1** Go to QAM Channel View, Video Sessions Mapping section (see [Figure 3-58](#)).

**Figure 3-58** Statically Routing a Range of Program Sessions to a QAM Channel



**Note** [Figure 3-58](#) displays the default values, indicating that the device is using default UDP port mapping. If you want to use default port mapping, do not change these values. If you want to create a static port map, proceed to Step 2.

- Step 2** Enter the maximum number of sessions for this UDP port mapping. The range is 2 to 25. The default is 1.
- Step 3** Enter the starting UDP port number to be mapped. The range is 256 to 65535. The default starting port number is 0.
- Step 4** Enter the starting output program number to be mapped. The range is 1 to 255.
- Step 5** To use only even UDP port numbers, reserving odd numbers for Real-Time Control Protocol (RTCP) for other purposes, set the value to true. The default is false.
- Step 6** To clear video session mapping and revert to the session defaults, click the **Clear Video Session Mapping** check box.



**Note** This returns the device to default port mapping mode. See *Configuring the Cisco uMG9850 QAM Module* for additional information on default port mapping.

- Step 7** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

**Note**

Active video sessions must be stopped while the port map settings are changed. Stop the video sessions by temporarily disabling the VLAN bringing video into the switch. After port maps are changed, the VLAN can be enabled to allow active video streams.

Video session mapping cannot be changed if the Cisco uMG9850 is set to emulation mode.

## Configuring Maximum Jitter for a Session

You can set the maximum allowable network jitter (packet latency variation) for a specified UDP port session. This global video setting affects the overall packet latency (at the buffer level) within an entire Cisco uMG9850.

**Note**

The jitter option sets the size of a dejittering buffer that absorbs the input jitter. This buffer introduces system delay (the time for a packet to enter and leave the Cisco uMG9850). The greater the value of jitter, the greater the delay introduced to the output stream. You can change the size of the dejitter buffer at either the slot or the session level. Changing it at the slot level changes the default value for jitter. (Consequently, for all sessions having the default value for jitter, the jitter value is changed to the new value. For sessions that have nondefault jitter values, their current jitter value is maintained.)

To configure maximum jitter:

- Step 1** Go to Slot View, Jitter section (see [Figure 3-59](#)).

**Figure 3-59** Setting the Jitter Specification

- Step 2** The default for jitter is 100 milliseconds. To change the jitter setting, enter a new value from 1 to 300 milliseconds.

**Tip**

When setting the jitter value (the size of the dejitter buffer), take into consideration the network jitter (the inherent jitter introduced at the input of the Cisco uMG9850), and allow for clock tracking. Leave approximately 50 milliseconds for clock tracking. For example, if peak-to-peak network jitter is 100 milliseconds, set the jitter value to 150 milliseconds.

The value for global timeout signal loss or slot-level timeout signal loss should always be larger than the value configured for jitter.

- Step 3** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Setting Up PSI Parameters

You can set up various program-specific information (PSI) parameters, either globally (for the entire switch) or on an individual QAM channel.



### Note

If any sessions are active in the switch, new global Program Association Table (PAT) and Program Map Table (PMT) settings are rejected. Active sessions can be suspended while PAT and PMT variables are updated by disabling either the VLAN bringing video into the switch or the Ethernet port assigned to that VLAN.

## Setting PMT and PAT Intervals for the Switch

The Program Association Table (PAT) interval sets the interval at which the PAT is distributed for all Cisco uMG9850 modules in the switch. Changing the default rate in this configuration mode overwrites the rate for the switch.

The Program Mapping Table (PMT) interval sets the interval at which the PMT is distributed to all Cisco uMG9850 modules in the switch. Changing the default rate in this configuration mode overwrites the rate for the switch.

To set PMT and PAT intervals for the switch:

- Step 1** Go to Chassis View, Global Timers section (see [Figure 3-60](#)).

**Figure 3-60** Setting PSI Parameters (Switch) in Chassis View

Global Timers	
Session Close Timeout (1-1440)min	10
Signal Loss Timeout (200-10000)ms	5000
Program Association Table Interval (50-450)ms	335
Program Mapping Table Interval (50-450)ms	100

- Step 2** The default for the PAT interval is 100 milliseconds. To change the setting, enter a value from 50 to 450 milliseconds.
- Step 3** The default for the PMT interval is 100 milliseconds. To change the setting, enter a value from 50 to 450 milliseconds.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Setting PMT and PAT Intervals for a QAM Channel

These parameters set the intervals at which an individual QAM channel distributes the PAT and PMT.

To set these parameters:

- Step 1** Go to QAM Channel View, Timers section. (See [Figure 3-61](#))

**Figure 3-61** Setting PSI Parameters

Timers	
Program Association Table Interval (50-450)ms	100
Program Mapping Table Interval (50-450)ms	100

- Step 2** The default for the PAT interval is 100 milliseconds. To change the setting, enter a value from 50 to 450 milliseconds.
- Step 3** The default for the PMT interval is 100 milliseconds. To change the setting, enter a value from 50 to 450 milliseconds.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Setting TSID and NIT-PID Values

At each hub, each QAM channel must have a unique transport stream ID (TSID). The software checks for and guarantees the uniqueness of a TSID within a chassis only. These identifiers specify the TSID used to identify transport stream packets sent on the QAM channel and the packet ID (PID) used to identify Network Information Table (NIT) packets sent on a QAM port.



### Caution

It is the responsibility of the operator to avoid TSID conflicts among switches. To see all the TSIDs within a switch, look at the QAM Summary View.

The PID for the network information table, or NIT-PID, can be configured from the QAM interface. If the NIT-PID is already used as a video, audio, or data PID, the configuration is rejected.

For the transport stream that is to be transmitted over a QAM channel, you must configure the TSID and NIT-PID values for that channel.

To set these parameters:

- Step 1** Go to QAM Channel View, Identifiers section (see [Figure 3-62 on page 3-38](#)).

**Figure 3-62** Setting TSID and NIT-PID Values (in QAM Channel View)

Identifiers	
Transport Stream ID (1-65535)	203
Network Information Table Packet ID (16-8191)	16

- Step 2** Set the value of the Transport Stream ID for the QAM channel. The range is 1 to 65535. By default, nonconflicting TSIDs are assigned to all modules in a chassis.
- Step 3** The default value for the NIT-PID is 16. To change the NIT-PID number, enter a new value from 16 to 8191.
- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.



## Configuring Program Data Delivery

The Program Data Delivery (PDD) support provided by the Cisco uMG9850 and QAM module makes possible the delivery of electronic program guide (EPG) data, other client data, and navigation data to a client application running on the set-top box (STB), enabling the subscriber to browse and select content for viewing. (PDD applies to both broadcast video and video on demand.) Program data can be delivered to the STB either in-band (on a shared QAM channel with digital video services) or out-of-band (on a DOCSIS or QPSK channel). When delivered in-band, the program data is typically delivered as private data in a low-bitrate MPEG program with multiple PIDs. Most cable systems deliver such data through one or more in-band carousels to which the client tunes at startup, as well as during program navigation, as needed.

**Caution**

Keep in mind that the Cisco uMG9850 remaps the PIDs of incoming sessions to ensure uniqueness in the outgoing MPTS (except for pass-through sessions, where PID remapping is not necessary). When PIDs are remapped, any references to PID values in PDD streams become invalid.

Program-related information is streamed from a server, and can be delivered to subscribers in-band through the Cisco uMG9850. The data is encapsulated as SPTS MPEG-2 streams delivered by means of IP/UDP, as regular sessions are. However, program data, unlike a normal SPTS, can be delivered by means of multicast or unicast.

To maximize the efficiency of the IP network, a single copy of a program data stream is sent to a Cisco uMG9850 QAM channel, where the stream can be cloned to one, several, or all QAM channels. Also, the program data stream may contain program clock references (PCRs), or may be a pure data stream without timing information. To support PDD and similar functionality, the Cisco uMG9850 remaps the PID, either by using the default map or a user-specified configuration.

**Caution**

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned multicast or unicast sessions. You cannot make changes if sessions are active. For unicast traffic, temporarily disable the VLAN before making changes. For multicast traffic, temporarily disable the GE port before making changes.

For additional PDD information, refer to “Configuring Program Data Delivery (PDD) Features” in *Configuring the Cisco uMG9850 QAM Module*.

### Cloning a Unicast UDP Session to One, Several, or All QAM Channels on a Module (PDD)

You can clone (map) a unicast input UDP session to one, several, or all QAM channels on a Cisco uMG9850 with a specified output-program number. Program numbers can vary.

**Caution**

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned unicast sessions. You cannot make changes if sessions are active. For unicast traffic, temporarily disable the VLAN before making changes.

**Note**

To clone default UDP ports, you must use program 26 and above.

**Step 1**

Go to Slot View, All Session Information section.

**Step 2** Click **Create**. The Create Session dialog box appears. (See [Figure 3-63](#).)

**Figure 3-63** Create Session Dialog Box

Clone	QAM Channel	Program
<input type="checkbox"/>	QAM711.1	0
<input type="checkbox"/>	QAM711.2	0
<input type="checkbox"/>	QAM712.1	0
<input type="checkbox"/>	QAM712.2	0
<input type="checkbox"/>	QAM713.1	0
<input type="checkbox"/>	QAM713.2	0
<input type="checkbox"/>	QAM714.1	0
<input type="checkbox"/>	QAM714.2	0
<input type="checkbox"/>	QAM715.1	0
<input type="checkbox"/>	QAM715.2	0
<input type="checkbox"/>	QAM716.1	0
<input type="checkbox"/>	QAM716.2	0
<input type="checkbox"/>	QAM717.1	0
<input type="checkbox"/>	QAM717.2	0
<input type="checkbox"/>	QAM718.1	0
<input type="checkbox"/>	QAM718.2	0
<input type="checkbox"/>	QAM719.1	0
<input type="checkbox"/>	QAM719.2	0

**Step 3** Perform the following.

### Cloning a Single Copy to a Specified QAM Channel



**Caution**

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned unicast sessions. You cannot make changes if sessions are active. For unicast traffic, temporarily disable the VLAN before making changes.

To clone a single copy of a PDD stream or unicast session to a specified QAM channel on a Cisco uMG9850, with a specified output-program number:

**Step 1** Ensure that the Unicast button is selected.

**Step 2** Select the QAM channel and select the **Clone** check box for that channel (see [Figure 3-64 on page 3-41](#)).

**Figure 3-64** Selecting the QAM Channel

Clone	QAM Channel	Program
<input type="checkbox"/>	QAM7/1.1	0
<input type="checkbox"/>	QAM7/1.2	0
<input type="checkbox"/>	QAM7/2.1	0
<input type="checkbox"/>	QAM7/2.2	0
<input type="checkbox"/>	QAM7/3.1	0
<input type="checkbox"/>	QAM7/3.2	0
<input checked="" type="checkbox"/>	QAM7/4.1	0
<input type="checkbox"/>	QAM7/4.2	0
<input type="checkbox"/>	QAM7/5.1	0
<input type="checkbox"/>	QAM7/5.2	0
<input type="checkbox"/>	QAM7/6.1	0
<input type="checkbox"/>	QAM7/6.2	0
<input type="checkbox"/>	QAM7/7.1	0
<input type="checkbox"/>	QAM7/7.2	0
<input type="checkbox"/>	QAM7/8.1	0
<input type="checkbox"/>	QAM7/8.2	0
<input type="checkbox"/>	QAM7/9.1	0
<input type="checkbox"/>	QAM7/9.2	0
<input type="checkbox"/>	QAM7/10.1	0

- Step 3** In the Create Clonable Session box (see [Figure 3-65](#)), enter the output program number. The range is 1 to 255.

**Figure 3-65** Output Program Number

**Create Clonable Session**

Unicast     Multicast

All QAMs

Program Number (1-255)

Passthrough

No Snoop

- Step 4** In the Unicast box (see [Figure 3-66](#)), either select a UDP port number from the pull-down menu or enter a new UDP port number. The range is 49152 to 65535.

**Figure 3-66** UDP Port Number

**Unicast**

UDP port (49152-65535)

- Step 5** If necessary, repeat steps 1 and 2 for each additional session and program to be mapped.

- Step 6** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

### Cloning a Single Copy to All 24 QAM Channels



#### Caution

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned unicast sessions. You cannot make changes if sessions are active. For unicast traffic, temporarily disable the VLAN before making changes.

To clone a single copy of a PDD stream or unicast session to all 24 QAM channels on a Cisco uMG9850 with a specified output program number, do the following:

- Step 1** Ensure that the Unicast button is selected.
- Step 2** Click the All QAMs check box.

**Figure 3-67 All QAMs Check Box**

**Create Clonable Session**

**Unicast**     **Multicast**

All QAMs

Program Number (1-255)

Passthrough

No Snoop

127341

- Step 3** In the Create Clonable Session box (see [Figure 3-65](#)), enter the output program number. The range is 1 to 255.

**Figure 3-68 Output Program Number**

**Create Clonable Session**

**Unicast**     **Multicast**

All QAMs

Program Number (1-255)

Passthrough

No Snoop

127342

- Step 4** In the Unicast box (see [Figure 3-66](#)), either select a UDP port number from the pull-down menu or enter a new UDP port number. The range is 49152 to 65535.

Figure 3-69 UDP Port Number

The screenshot shows a configuration window titled "Unicast". Inside the window, there is a label "UDP port (49152-65535)" followed by a text input field containing the number "52349". Below the input field is a pull-down menu. On the right side of the window, there is a vertical label "127340".

- Step 5** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Modifying or Deleting a Unicast Session



### Caution

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned unicast sessions. You cannot make changes if sessions are active. For unicast traffic, temporarily disable the VLAN before making changes.

To modify a unicast session:

- Step 1** Select the unicast entry you want to modify by selecting the UDP port number from the pull-down menu.
- Step 2** Make any changes necessary. (To remove a QAM, deselect that QAM in the QAM list.)
- Step 3** Click **Apply**.

To delete a unicast session:

- Step 1** Deselect all the selected QAMs.
- Step 2** Click **Apply**.

## Cloning a PDD Stream or Multicast UDP Session to one, Several, or All QAM Channels on a Module

You can clone a PDD stream or multicast session to one, several, or all QAM channels on a Cisco uMG9850. It is assumed that the multicast source is on one VLAN, and the Cisco uMG9850 is on another VLAN.



### Caution

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned multicast sessions. You cannot make changes if sessions are active. For multicast traffic, temporarily disable the GE port before making changes.

Do the following:

- Step 1** Click **Create** in the All Sessions Information section of Slot View. The Create Clonable Session dialog appears (see [Figure 3-63 on page 3-40](#)).
- Step 2** Click the **Multicast** button (see [Figure 3-70](#)).

**Figure 3-70 Create Clonable Session—Multicast**

**Create Clonable Session**

Unicast  **Multicast**

All QAMs

Program Number (1-255)

Passthrough

No Snoop

127195

- Step 3** In the Multicast box, select or enter the source IP address and multicast destination IP address (see [Figure 3-71](#)).



**Note**

The range of multicast addresses is 224.0.0.0 to 239.255.255.255.

**Figure 3-71 Source and Destination IP Address**

**Multicast**

Source IP Address

▼

Destination IP Address

▼

127352

- Step 4** Select one or more output QAM channels (see [Figure 3-64 on page 3-41](#)), or click **All QAMs** to select all QAM channels.
- Step 5** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window and discard any changes.

## Modifying or Deleting a Multicast Session



**Caution**

You must disable any traffic being routed to the Cisco uMG9850 QAM module before creating or changing any cloned multicast sessions. You cannot make changes if sessions are active. For multicast traffic, temporarily disable the GE port before making changes.

To modify a multicast session

- 
- Step 1** Select the multicast entry you want to modify by selecting the source and destination IP addresses from the pull-down menu.
  - Step 2** Make any changes necessary. (To remove a QAM, deselect that QAM in the QAM list.)
  - Step 3** Click **Apply**.
- 

To delete a multicast session:

- 
- Step 1** Deselect all the selected QAMs.
  - Step 2** Click **Apply**.
- 

## Setting MPTS Passthrough

Digital broadcast programs are typically delivered in a multiple program transport stream (MPTS) from a statistical multiplexer (or other video source) to the Cisco uMG9850. The Cisco uMG9850 passes the MPTS through to the set-top boxes without remultiplexing the video streams. The Cisco uMG9850 may update the PCR or TSID information in the MPTS as necessary to output a valid transport stream. The Cisco uMG9850 outputs the MPTS on one or more QAM channels based on the UDP port map (for unicast sessions) or multicast group address (for multicast sessions) of the incoming stream.

To enable MPTS passthrough on a selected Cisco uMG9850, click the **Passthrough** selection box (see [Figure 3-72](#)). This causes an MPTS multicast session to be passed through to the selected QAM channels. To disable MPTS passthrough, click the **Passthrough** selection box to remove the check mark, then click **Apply**.

**Figure 3-72** Selecting MPTS Pass-Through

The screenshot shows a dialog box titled "Create Clonable Session". At the top, there are two radio buttons: "Unicast" (which is selected) and "Multicast". Below these are three checkboxes: "All QAMs" (unchecked), "Passthrough" (checked), and "No Snoop" (unchecked). There is also a text input field labeled "Program Number (1-255)". The dialog box has a vertical ID number "127345" on the right side.

In the QAM to Clone section (see [Figure 3-64](#)), click to select the QAM channels to allow passthrough. To disallow passthrough, deselect the QAM channels, then click **Apply**.

## Setting No-Snoop

Operators can inject externally generated service information (SI) packets onto an output QAM channel. When the Cisco uMG9850 is so configured, it does not snoop (no snoop) or modify any of the incoming packets. Rather, it simply takes each packet and inserts it into the outgoing channel along with the other VoD programs.


**Note**

The No Snoop setting is not available for channels configured for MPTS pass-through.

To enable or disable No Snoop, click the **No Snoop** selection box (see [Figure 3-73 on page 3-46](#)).

**Figure 3-73** *Selecting No Snoop*

**Create Clonable Session**

Unicast     Multicast

All QAMs

Program Number (1-255)

Passthrough

No Snoop

127346

## Emulation Mode

The Emulation Mode section (see [Figure 3-74](#)) is read-only and can be used for reference. To change these values, go to Slot View.

**Figure 3-74** *Emulation Mode (Read-Only)*

**Emulation Mode**

Emulation Mode

No Of IP Addresses

127347





## Monitoring

---

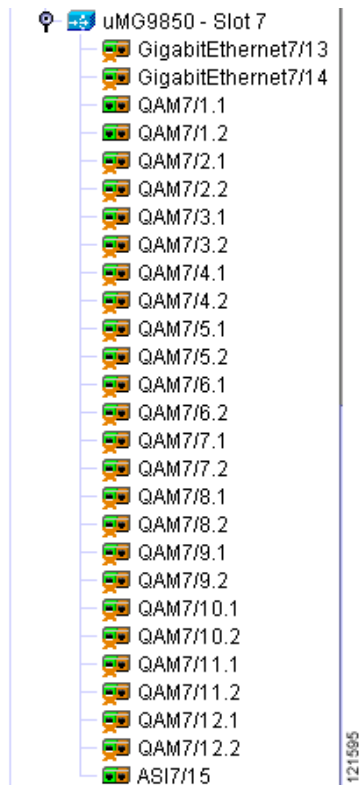
This chapter provides information on the monitoring of configured Cisco uMG9850 modules, and the Cisco Catalyst switches in which they are installed, to ensure proper operation of the network. Information can be displayed using Cisco QAM Gateway Manager views and by using the command line interface within the application's Telnet window.

- [Navigation Tree, page 4-1](#)
- [Chassis View, page 4-2](#)
- [Slot View, page 4-3](#)
- [QAM Channel Summary View, page 4-4](#)
- [Telnet—CLI show commands, page 4-5](#)
- [Configuring the ASI Port for QAM Channel Routing, page 4-7](#)
- [Notification History Table, page 4-8](#)
- [Application Display Messages, page 4-10](#)

## Navigation Tree

Using the navigation tree, you can observe the status of all QAM, Ethernet, and ASI ports (see [Figure 4-1 on page 4-2](#)). When a port's administrative or operating status is down, an X appears on the icon representing that port. To see the details for a specific port, double-click on the port. The detail QAM, Ethernet, or ASI port view will appear.

Figure 4-1 Navigation Tree



## Chassis View

The Chassis Status section of the Chassis View displays the components of the device. For each device, each slot number is listed along with the name of the card in that slot, the card type, and the operating status. Power supplies and fan tray information also is included in the component list. (See Figure 4-2.)

Figure 4-2 Chassis Status

Chassis View - Switch\_2(172.22.94.89)

Chassis Status

Software Revision: 12.1(20040824:041800)EWW1

Slot Number	Card Name	Card Type	Operating Status
Slot 1	1000BaseX (GBIC) Supervisor	Supervisor	ok
Slot 2			
Slot 3	10/100BaseTX (RJ45) with 48 10/100 baseT ports	RJ45	ok
Slot 4	10/100BaseTX (RJ45) with 48 10/100 baseT ports	RJ45	ok
Slot 5	10/100BaseTX (RJ45) with 48 10/100 baseT ports	RJ45	ok
Slot 6	1000BaseX (GBIC) with 6 1000 GBIC ports	GBIC	ok
Slot 7	24 QAM with 1 SFP(1000BaseX), 1 RJ45(10/100/1000) ports	uMG9850	ok
Fan Tray Bay	FanTray	Fan tray	normal
Power Supply Bay 1	Power Supply (AC 1300W)	Power supply	ok
Power Supply Bay 2			

# Slot View

Using the Slot View QAM Channels Summary Status Table (see [Figure 4-3 on page 4-3](#)), you can monitor the status of all the QAM channels in a specific slot. For each QAM channel, the administrative and link status (green for up and red for down), and the number of sessions on that channel are listed.

**Figure 4-3 Slot View QAM Channels Summary Status**

Slot View - 172.22.94.89 - uMG9850 Linecard(slot 7)

**QAM Channels Summary Status**

Channel	Admin status	Link status	Sessions
QAM7/1.1	●	●	0
QAM7/1.2	●	●	0
QAM7/2.1	●	●	0
QAM7/2.2	●	●	0
QAM7/3.1	●	●	0
QAM7/3.2	●	●	0
QAM7/4.1	●	●	0
QAM7/4.2	●	●	0
QAM7/5.1	●	●	0
QAM7/5.2	●	●	0
QAM7/6.1	●	●	0
QAM7/6.2	●	●	0
QAM7/7.1	●	●	0
QAM7/7.2	●	●	0
QAM7/8.1	●	●	0
QAM7/8.2	●	●	0
QAM7/9.1	●	●	0
QAM7/9.2	●	●	0
QAM7/10.1	●	●	0
QAM7/10.2	●	●	0
QAM7/11.1	●	●	0
QAM7/11.2	●	●	0
QAM7/12.1	●	●	0
QAM7/12.2	●	●	0

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The Ethernet Ports and ASI Port Summary Status Table lists the administrative and link status for Ethernet and ASI ports on the slot—green for up and red for down. (See [Figure 4-4](#).) Double-click on the Ethernet or ASI ports to access the Ethernet or ASI port views.

Figure 4-4 Slot View Ethernet Ports and ASI Port Summary Status

Ethernet Ports and ASI Port Summary Status		
Port	Admin status	Link status
GigabitEthernet7/13	<span style="color: green;">●</span>	<span style="color: red;">●</span>
GigabitEthernet7/14	<span style="color: green;">●</span>	<span style="color: red;">●</span>
ASI7/15	<span style="color: green;">●</span>	<span style="color: green;">●</span>

## QAM Channel Summary View

The QAM Summary View (see Figure 4-5) shows on one screen the current configurations for all QAMs in a slot for the following parameters:

- Administrative status
- RF frequency
- Power
- Modulation format
- Interleaver level
- Interleaver mode
- TSID
- PAT interval
- PMT interval

Figure 4-5 QAM Channel Summary View

QAM Summary View - 172.22.24.182 - uMG9850 Linecard(slot 7)									
QAM Summary View									
QAM Channel	Admin Status	RF Freq (MHz)	Power ... (dBmV)	Modulation Format	Interleaver Level	Interleaver Mode	TS ID	PAT Interval	PMT Interval
QAM7/1.1	up	100.3	53	qam64	level1	FEC-I-128-J-1	1001	122	100
QAM7/1.2	up	106.3	53	qam64	level1	FEC-I-128-J-1	701	51	51
QAM7/2.1	up	114.0	50	qam64	level1	FEC-I-128-J-1	703	122	100
QAM7/2.2	up	120.0	50	qam64	level1	FEC-I-128-J-1	704	122	100
QAM7/3.1	up	126.0	50	qam256	level2	FEC-I-128-J-4	706	122	100
QAM7/3.2	up	132.0	50	qam256	level2	FEC-I-128-J-4	707	122	100
QAM7/4.1	up	138.0	50	qam256	level2	FEC-I-128-J-4	709	122	100
QAM7/4.2	up	144.0	50	qam256	level2	FEC-I-128-J-4	710	122	100
QAM7/5.1	up	150.0	50	qam256	level2	FEC-I-128-J-4	712	122	100
QAM7/5.2	up	156.0	50	qam256	level2	FEC-I-128-J-4	713	122	100
QAM7/6.1	up	162.0	50	qam256	level2	FEC-I-128-J-4	715	122	100
QAM7/6.2	up	168.0	50	qam256	level2	FEC-I-128-J-4	716	122	100
QAM7/7.1	up	174.0	50	qam256	level2	FEC-I-128-J-4	718	122	100
QAM7/7.2	up	180.0	50	qam256	level2	FEC-I-128-J-4	719	122	100
QAM7/8.1	up	186.0	50	qam256	level2	FEC-I-128-J-4	721	122	100
QAM7/8.2	up	192.0	50	qam256	level2	FEC-I-128-J-4	722	122	100
QAM7/9.1	up	198.0	50	qam256	level2	FEC-I-128-J-4	724	122	100
QAM7/9.2	up	204.0	50	qam256	level2	FEC-I-128-J-4	725	122	100
QAM7/10.1	up	210.0	50	qam256	level2	FEC-I-128-J-4	727	122	100
QAM7/10.2	up	216.0	50	qam256	level2	FEC-I-128-J-4	728	122	100
QAM7/11.1	up	222.0	50	qam256	level2	FEC-I-128-J-4	730	122	100

**Note**

This view also can be used to configure these parameters.

**Tip**

Right-click on a field to copy a value to all other fields in that column.

## Telnet—CLI show commands

A variety of **show** commands provides additional information about the configuration and operation of the Cisco Catalyst switches managed by Cisco QAM Gateway Manager. These commands can be entered using the CLI in the Telnet window. For instructions on how to use the Telnet window, see the [“Using the Telnet Window” section on page 3-16](#). For further information regarding the command-line interface and the commands themselves, including sample output, refer to *Configuring the uMG9850 QAM Module*, and Cisco Catalyst switch documentation listed in the [“Related Documentation” section on page ix](#).

[Table 4-1](#) describes common **show** commands for the Cisco Catalyst switch that can be useful for determining status of the switch related to video configuration and operation.

**Table 4-1 Cisco Catalyst Switch Show Commands**

Show Command	Description
<b>show interface asi</b> <i>interface</i> <b>video</b>	View information about a single QAM channel routed to the output ASI interface: <ul style="list-style-type: none"> <li>• Port status</li> <li>• QAM channel routed to the ASI interface</li> <li>• Program details (if available).</li> </ul>
<b>show interface qam</b> <i>interface</i> <b>video</b>	View video information about both channels on an output QAM interface: <ul style="list-style-type: none"> <li>• Number of active QAMs and QAM status (up/down)</li> <li>• QAM modulator group number</li> <li>• TSID, NIT PID, and PSI interface values</li> <li>• Upconverter frequency and power, and QAM modulation type</li> <li>• Port error status</li> </ul>
<b>show interface qam</b> <i>interface.qam</i> <b>video</b>	View video information about a single QAM channel: <ul style="list-style-type: none"> <li>• Number of programs and active sessions</li> <li>• TSID and NIT-PID information</li> <li>• Packets per second and bit rate through the channel</li> <li>• Active trick modes</li> <li>• Video and audio format for each session</li> <li>• QAM error status (such as oversubscribed, underflow)</li> </ul>

Table 4-1 Cisco Catalyst Switch Show Commands (continued)

Show Command	Description
<b>show interface qam</b> <i>interface.qam</i> <b>video portmap</b>	View information about the UDP portmaps on an output QAM interface: <ul style="list-style-type: none"> <li>• UDP port number, in decimal and hexadecimal</li> <li>• Output program number</li> </ul>
<b>show video slot</b>	View information related to the modulator groups, including frequency and power: <ul style="list-style-type: none"> <li>• Active modulator groups</li> <li>• Upconverter frequency and power for each channel</li> </ul>
<b>show video slot psi session</b>	View program-specific information (PSI) related to the input for a selected Cisco uMG9850: <ul style="list-style-type: none"> <li>• UDP port number and session status</li> <li>• PSI parameters</li> <li>• Source program</li> <li>• Streams and stream types</li> </ul>
<b>show video slot psi session multicast</b> <b>source-address</b> <i>src-ip</i> <b>dest-address</b> <i>dst-ip</i>	View multicast program-specific information (PSI) related to the input for a selected Cisco uMG9850.
<b>show video slot route</b>	View video route information related to the input for a selected Cisco uMG9850: <ul style="list-style-type: none"> <li>• VLAN number and ip-address</li> </ul>
<b>show video slot session multicast</b>	View a variety of video details related to sessions for a selected Cisco uMG9850: <ul style="list-style-type: none"> <li>• For all sessions: <ul style="list-style-type: none"> <li>– All session information</li> <li>– Input errors</li> <li>– CC errors</li> <li>– Sync loss</li> <li>– Sender information (source IP address and UDP for each session)</li> </ul> </li> <li>• For a specified session: <ul style="list-style-type: none"> <li>– Session start time</li> <li>– Source IP address</li> <li>– Input CC errors</li> <li>– Jitter (peak, average)</li> <li>– Source data rate</li> </ul> </li> </ul>
<b>show video slot ts_table</b>	View the transport stream ID (TSID) table for each QAM channel for a selected Cisco uMG9850: <ul style="list-style-type: none"> <li>• TSID for each QAM channel</li> </ul>

Table 4-1 Cisco Catalyst Switch Show Commands (continued)

Show Command	Description
<code>show video slot version</code>	View software and hardware version information for a selected Cisco uMG9850: <ul style="list-style-type: none"> <li>Hardware details</li> <li>Software details</li> </ul>
<code>show { running-config   startup-config }</code>	View running configuration or startup configuration for the device.

## Configuring the ASI Port for QAM Channel Routing

Using the Asynchronous serial interface (ASI) port, you can set or change the gap spacing of data bytes in the ASI port output and route the input of a single QAM channel to the ASI port to monitor the channel.



**Note**

Routing the input of a QAM channel to the ASI port does not disrupt the RF output.

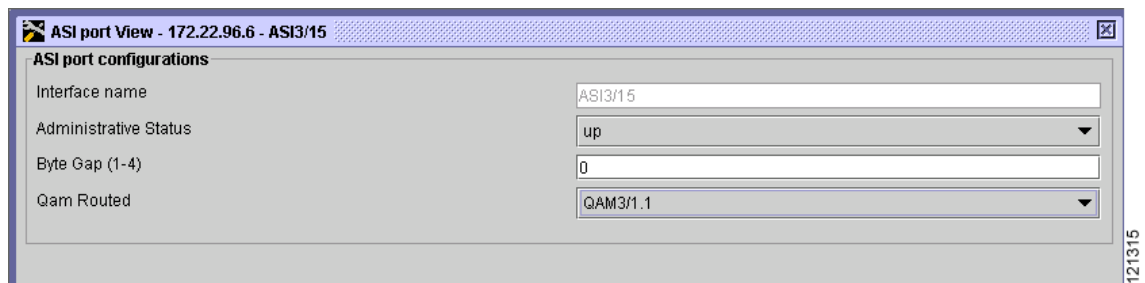
## Setting the Byte-Gap Value (S-Rate) of the ASI Port

You can change the gap spacing of the data bytes in the output of the ASI port. The S-rate is the spacing of data bytes (the number of ASI transport null bytes between the data bytes) within the output transport stream. If there is not a sufficient number of data bytes in the stream, padding the stream with null bytes maintains the signal voltage and integrity.

To set byte gap:

- Step 1** Go to ASI Port View. (See [Figure 4-6](#).)

**Figure 4-6** Setting the Byte-Gap Value



- Step 2** Enter a value for byte gap. Values are 1 to 4.
- Step 3** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window without any changes.

## Routing the Output of a QAM Channel to the ASI Port

You can route the output of a QAM channel (a single program) to the asynchronous serial interface (ASI) port (in ASI signaling format), to monitor the output of the channel. Use a video decoder to view the selected program.


**Note**

For Cisco uMG9850 QAM modules, the ASI port is always addressed as *slot/15*.

To configure this parameter:

- Step 1** Go to ASI Port View (see [Figure 4-6](#)).
- Step 2** In the QAM Routed menu, choose the QAM whose output you want directed to the ASI port.
- Step 3** Click **Apply** to save all changes and keep the window open, click **OK** to save the changes and close the window, or click **Cancel** to close the window without any changes.

## Notification History Table

### Setting and Monitoring Utilization Thresholds

It is possible that a given QAM channel can be either overwhelmed or underutilized. To monitor and correct for this, you can set both minimum and maximum bandwidth-utilization thresholds for video streams over a QAM channel. If the percentage of QAM bandwidth being used is below the value for the low utilization threshold, then the QAM channel is being underutilized. If the percentage of QAM bandwidth being used is above the value for high utilization threshold, then the QAM channel is being overutilized.


**Note**

The high utilization threshold must be greater than the low utilization threshold.

To specify the high and low utilization thresholds for video streams:

- Step 1** Go to QAM Channel View, Utilization section (see [Figure 4-7](#)).

**Figure 4-7** Low and High Threshold Utilization Settings

Utilization	
Bandwidth Utilization (%)	123
Low Utilization Threshold (0-95)%	0
High Utilization Threshold (5-95)%	75

- Step 2** Set the Low Utilization Threshold. The default is 0%. To change the setting, enter a new value from 0 to 95%.
- Step 3** Set the high Utilization Threshold. The default is 75%. To change the setting, enter a new value from 5 to 95%.



- Step 4** Click **Apply** to save all changes and keep the window open, click **OK** to close the window and save all changes, or click **Cancel** to close the window and discard all changes.

If the percentage of QAM bandwidth being used drops below the low threshold or climbs above the high threshold, or invalid PSI data is detected, an entry appears in the Notification History table (see Figure 4-8).

**Figure 4-8 Notification History Table**

Entity name	Message	Notification Time	Status
QAM7/1.1	Utilization has gone above the higher threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/1.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/2.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/2.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/3.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/3.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/4.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/4.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/5.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/5.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/6.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/6.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/7.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/7.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/8.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/8.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/9.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/9.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/10.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/10.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/11.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/11.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/12.1	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/12.2	Utilization has fallen below the lower threshold value	29 Nov 2004 04:58:04 PM PST	warning
QAM7/1.1	Utilization has fallen below the lower threshold value	01 Dec 2004 06:33:14 PM PST	warning

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## Warning Messages in the Notification History Table

### Error Message **The video session nnnn has invalid PSI data**

**Explanation** Data arriving at a VoD-enabled port does not conform to standard MPEG data. MPEG data must have PSI tables embedded within it for a receiver to correctly map the contents.

### Error Message **Utilization has gone above the higher threshold value**

**Explanation** The QAM channel is being overutilized.

### Error Message **Utilization has fallen below the lower threshold value.**

**Explanation** The QAM channel is being underutilized.

# Application Display Messages

The following is a list of typical error messages that Cisco QAM Gateway Manager may display. The exact wording of some messages may vary, and messages may appear that are not shown below.

## **Apply changes?**

Configuration changes have been made. Do you want to copy them to the running configuration?

## **An unknown error occurred while configuring *parameter* on device at *ip-address***

An error has occurred while configuring the named parameter. Be sure the values entered are correct and try the operation again.

## **Cannot change PMT rate, programs are present.**

The Program Mapping Table (PMT) can be set using the Chassis view, but cannot be changed while there are active video sessions being sent to that module. Disable the video session by disabling the GE port used by the VLAN assigned to the video route. Make the necessary changes, then re-enable the GE port.

## **Cisco QAM Gateway Manager is already running.**

You have launched more than one instance of the application. Ensure that all but one instance has been closed.

## **Configuration loaded to device at *ip-address***

The configuration load operation has completed successfully.

## **Configuration loaded to device at *ip-address* from TFTP server *ip-address*.**

The configuration from the specified TFTP server has successfully loaded to the device at the specified IP address.

## **Configuration successful.**

The configuration has been copied to the running configuration of the device.

## **Device *ip-address* has changed. All open screens except chassis view will be closed for the device.**

Since the information for the device has changed, all open screens may be invalid. Reopen the screens to see the updated information.

## **Device *ip-address* is not reachable or has timed out.**

Cisco QAM Gateway Manager is unable to access the device at the specified address. This could be due to a reload taking place or the device is off-line. Contact your system administrator.

## **Device at *ip-address* inaccessible. Continue refreshing?**

A device in the history file is not accessible, or the device is not reachable during a refresh. Do you want to keep trying to refresh this device?

## **Device at *ip-address* inaccessible. Keep in navigation tree?**

Select **Yes** to keep the device in the Navigation Tree and mark it as offline. Select **No** to remove it from the Navigation Tree.

## **Device at *ip-address* has timed out. Continue refreshing?**

The device has timed out during a refresh. Do you want to keep trying to refresh this device?

## **Enter file name.**

There was an error while loading a configuration from the TFTP server. File name is required.

**Enter value between *lower value* and *upper value*.**

An out of range value has been entered. Enter a new value between these two.

***error at ip-address. Unable to load configuration from TFTP server at ip-address***

Cisco QAM Gateway Manager cannot load a configuration from the IP address specified in the Load Configuration dialog box. Verify that the address of the TFTP server is correct and that the file that you want to load is present.

**Error while copying configuration from TFTP Server *ip-address*.****Error while copying configuration to TFTP Server.**

Cisco QAM Gateway Manager cannot successfully copy a file from the TFTP server at the specified IP address. Verify that the IP address is correct and that the file to be loaded is in the TFTP server directory.

**Integer value expected, Refer to the help!**

A non-integer value has been entered in an integer field. Click **Help** and review the valid entries for the field.

**Invalid session close timeout value.**

An invalid value has been entered for Session Close Timeout. Enter a value from 1 to 1440 minutes.

**Invalid Signal loss timeout value.**

An invalid value has been entered for Signal Loss Timeout. Enter a value from 200 to 10000 milliseconds.

**Invalid IP address/ host name or community string.**

Device is being added and Cisco QAM Gateway Manager cannot make an SNMP query to the device.

**Multicast Session Source *ip-address* destination *ip-address* is active. Shutdown VLAN before removing this session.**

Self-explanatory.

**No video session map available to clear!**

You have already cleared the video route or no video route was configured.

**Number of active sessions have changed in device at *ip-address*. Sessions will be rediscovered.**

The number of active sessions has changed in the device at the specified address. The sessions will be re-evaluated.

**Number of sessions have changed in device at *ip-address*. Sessions will be rediscovered.**

The number of sessions has changed in the device at the specified address. The sessions will be re-evaluated.

***parameter-name* value is out of range for *qam* Channel.**

An invalid parameter value has been entered. Click **Help** and review valid parameter ranges.

***port-value* UDP port is already in use in *ip-address***

A UDP port is already in use for one line card. Look in the CLI configuration for commands that use UDP port numbers. Look for conflicts and disable the unneeded ones.

**Route IP *ip-address* overlays with Slot *slot-number* IP *ip-address***

The IP address might be in use by another VLAN. Make sure that the IP address is not being used by another VLAN or **video route** command.

**Running configuration of device at *ip-address* saved.**

The running configuration of the specified device was successfully saved to a TFTP server.

**Running configuration saved to startup configuration for device at *ip-address*.**

The running configuration of the specified device was successfully saved to the device's startup configuration.

**Select a QAM gateway from the navigation tree.**

**View > Chassis** was chosen before a device was selected in the navigation tree.

**Select a device.**

**File > Load Configuration** or **File > Save Configuration to TFTP server** was chosen before a device was selected in the navigation tree.

**Select a Cisco Catalyst switch in navigation tree.**

This function requires selection of a Cisco Catalyst Switch.

**Select a uMG9850 slot.**

**View > Slot** or **View > All Sessions** was chosen before a slot was selected in the navigation tree.

**Select a uMG9850 module to launch the session view.**

**View > Sessions** or **View > Multicast sessions** was chosen before a slot was selected in the navigation tree.

**Session close timeout value out of range!**

An invalid value has been entered for Session Close Timeout. Enter a value from 1 to 1440 minutes.

**Signal loss timeout value out of range!**

An invalid value has been entered for Signal Loss Timeout. Enter a value from 200 to 10000 milliseconds.

**SNMP error occurred while configuring parameter on device at *ip-address*. Reason: *reason***

An SNMP error has occurred during configuration. Possible reasons are:

- Request timed out.
- SNMP response exceeds size limitation.
- Variable name not found in MIB.
- MIB object/instance is read-only.
- Object value cannot be retrieved.
- Invalid community string or access credentials.
- Value/type mismatch.
- Value length exceeded.
- Wrong encoding for object.
- Value not compatible with MIB.
- Trying to create or set a nonexistent variable.
- MIB variable may be in inconsistent state, not accepting set requests.

System resources unavailable for set/get operations.

Set commit has failed.

Set operation has failed, agent unable to roll back.

SNMP command cannot be authenticated, or incorrect community string found.

MIB object not responding to set operations: read-only access or incorrect community string.

Set operation failed: variable in inconsistent state.

**SNMP Error: Unknown host.**

The host is not recognized.

**SNMP Query timed out, check the community string of the device!**

The device cannot be added to the navigation tree, possibly because of an invalid community string. Check the community string and try the operation again.

**SNMP polling interval configured successfully.**

The polling interval for the managed devices has been successfully set.

**Some fields are empty. Please fill the missing values and try again.**

The configuration fields have not all been completed. Click **Help** to determine which fields must be completed as well as the ranges and default values for those fields.

**Startup configuration of device at *ip-address* saved to TFTP server *ip-address*.**

The startup configuration of the specified device was successfully saved to the specified TFTP server.

**The device at *address* is not a uMG9800 device.**

The device being added is not a Cisco Catalyst switch with a Cisco uMG9850 installed. Only those devices can be managed by Cisco QAM Gateway Manager.

**There are no changes in screen to be updated.**

An update has been requested but there have been no changes made.

**Too many views open. Please close unneeded views.**

The maximum number of simultaneously open views has been reached. In order to open additional views, some of the currently unneeded views must be closed.

**Unable to load configuration from TFTP server on device *ip-address* from *ip-address***

The Load Configuration from TFTP server operation has failed. Check ip addresses for the device and the TFTP server and try the operation again.

**Unable to save running configuration to startup configuration for device *ip-address*. Reason: SNMP Timeout or Invalid access error.**

The save operation has failed. Be sure that the proper privilege levels are in effect and try the operation again.

**Unable to save startup config of *ip-address* to *ip-address* (TFTP server). Reason: error string**

An error has occurred while the startup configuration was being saved to the TFTP server. When possible, correct the error and try the operation again.

**Unknown error occurred while refreshing device at *ip-address*. Continue refreshing?**

An undetermined error occurred while refreshing the named device. Do you want to keep trying to refresh this device?

**Unknown error occurred while refreshing device at *ip-address* inaccessible. Continue refreshing?**

An unknown error has occurred during a refresh, and the device is currently inaccessible. Do you want to keep trying to refresh this device?

**uMG9850 is in emulation mode; sessions cannot be mapped.**

The uMG9850 is running in emulation mode. Video sessions mapping cannot be done in emulation mode.

**Unknown Error–Device *ip-address* is inaccessible. Keep in the Navigation Tree?**

Select **Yes** to keep the device in the Navigation Tree and mark it as offline. Select **No** to remove it from the Navigation Tree.

**Value out of range. Refer to the help!**

The value entered is not within the specified range. Click **Help** to review valid entries for this function.

**Video Route VLAN *vlan number* overlays with Slot *slot number*'s VLAN.**

In a video route configuration, an attempt was made to assign an IP address or VLAN number already in use. The IP address and the VLAN must be unique for each video route configuration.