QAM Modulator Software Version 2.4

Release Notes and Installation Instructions

Please Read

Important

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

Notices

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Contents

About This Guide

Introduction

This document provides the following information and procedures for upgrading a Model D9476 Quadrature Amplitude Modulation (QAM) modulator to QAM software version 2.4:

- Chapter 1 provides a description of new features and improvements that this software version offers including change requests implemented in this release. It also lists the requirements for upgrading a QAM modulator with QAM software version 2.4.
- Chapter 2 provides step-by-step instructions for installing QAM software version 2.4 onto a QAM modulator.
- Chapter 3 provides general information for contacting Cisco Services.
- Appendix A provides a procedure for backing out of this upgrade should it not succeed for some unforeseen reason.

Who Should Read This Publication?

Cisco engineers or system operators who are responsible for installing the QAM software onto a QAM modulator should read this publication.

Scope

This document provides instructions for upgrading a Model D9476 QAM modulator with QAM software version 2.4. It does not provide instructions for installing a QAM modulator in your headend.

Note: For instructions on installing a QAM modulator in your headend or for a complete description of QAM features, refer to *QAM Modulator Model D9476 Installation and Operation Guide*

Document Version

This is the second release of this document.

1

Introducing QAM Software Version 2.4

Introduction

This chapter lists the requirements for upgrading the Model D9476 QAM Modulator with QAM software version 2.4. QAM software version 2.4 includes several feature enhancements and performance improvements over previous releases of QAM software. These enhancements and improvements are described in the change requests (CRs) implemented in this release. For additional details, go to ***Implemented CRs*** (on page 4) and ***Want To Know More?*** (on page 5).

In This Chapter

About QAM Software Version 2.4

Introduction

QAM software version 2.4 is designed to be installed on a QAM modulator. After the software is installed and the modulator is active, it provides additional support for sites that deploy video-on-demand (VOD), *anything*-On-Demand (xOD), and other interactive broadcast services. This additional support is described in the CRs implemented in this release. For additional details, go to ***Implemented CRs*** (on page 4) and ***Want To Know More?*** (on page 5).

Note: For a complete description of the QAM modulator, refer to the *QAM Modulator Model D9476 Installation and Operation Guide*.

This chapter includes the system release and application compatibility requirements, application platform release dependencies, software requirements, and hardware requirements for installing QAM software version 2.4. This chapter also provides guidance on when to perform the upgrade. In addition, this chapter also includes the CRs implemented in this release of QAM software.

System Release and Application Compatibility Requirements

QAM software version 2.4 can be installed on a Digital Broadband Delivery System (DBDS) that is running System Release (SR) 2.2/SR 3.2 (or later) *prior* to installing QAM software version 2.4.

For a complete configuration listing or to upgrade your system, contact Cisco Services.

Application Platform Release Dependencies

The following table shows the application platform release dependencies for QAM software version 2.4. You must have the correct application platform software installed on your system *prior* to installing QAM software version 2.4.

Important! Failure to have the correct application platform software *or later* installed *prior* to installing QAM software version 2.4 can result in video freezing and black screens when using VOD or xOD applications.

Set-Top Platform	Operating System (OS)	SARA*	PowerKEY Version
Explorer 8300 DVR v. 1.3.1a17 (or later)	OS 6.14.10.1	1.87.14.1	3.7.5
Explorer 8000/8010 DVR 1.3.1a17 (or later)	OS 6.12.7.1	1.87.13.1	3.7.5
Explorer 3250HD MR4 p1 (or later)	OS 3.12.8.1	1.57.8.1	3.7.5
Explorer 2xxx, 31xxx, 3200, 3100HD	OS 3.10.9	1.54.23.1	1.0.6.20 (Explorer 2000s) 1.0.7 (all others)
Pace	Pace to provide OS build	N/A	2.0.4.11
Pioneer	Pioneer to provide OS build	N/A	2.0.4.11

* *Cisco Resident Application*

Software Requirements

QAM software version 2.4 includes the following codes:

- QAM Host Application code 2.4
- QAM Host Boot code 2.1.0

Hardware Requirements

QAM software version 2.4 supports only the Model D9476 QAM Modulator.

When to Perform the Upgrade

To reduce the impact of service interruptions, perform the upgrade during a scheduled maintenance window.

Implemented CRs

Introduction

The following matrix lists the implemented CRs addressed by QAM software version 2.4. Additionally, this matrix lists the following attributes associated with the implemented CRs:

- The CR number
- A brief description of the CR appears in the Subscriber column if the subscriber is affected by the CR
- A brief description of the CR appears in the Cable Service Provider column if the cable service provider is affected by the CR
- The process most affected by the CR

Note: If you would like to review these CRs in more detail, go to ***Want to Know More?*** (on page 5).

Quick Reference Matrix for CRs

CR Number	Subscriber	Cable Service Provider	Process Affected
54738	Temporary loss of services	Corrected an occasional issue where inserted program specific information (PSI) packets caused the PowerKEY CAQAM to reboot when the Open Cable Compliant option is selected, or in other configurations when the SI Insert Rate is set lower than recommended.	CAQAM Application and PowerKEY

Want to Know More?

Introduction

This section provides additional detail on each change for QAM software version 2.4. The changes described in this section appear in numerical order by CR number, like the quick reference table earlier in this chapter.

Inserted PSI Packets No Longer Cause PowerKEY® CAQAM Reboots

In earlier releases, when the DNCS was in ATSC mode with Open Cable Compliance selected, the PowerKEY CAQAM would occasionally reboot. These reboots did not occur when the DNCS was in DVB-SI mode or when Open Cable Compliance was not selected. When Open Cable Compliance is selected, PSI packets are inserted into the CAQAM. This condition could also occur in other configurations (for example, if the SI Insert Rate is set lower than recommended). **CR 54738** corrects this issue.

CA Descriptor and VOD Sessions

Overview

Versions of QAM software prior to software version 2.3.5 inserted the PowerKEY CA descriptor into the PMT for unencrypted on-demand content. If the DHCT OS found the CA descriptor in the PMT, the OS started the PowerKEY decryptor.

The PowerKEY scheduler within the DHCT then prioritized ECMs by waiting until an ECM was processed before allowing any other CA messages or requests to be processed.

Background

During this waiting period, when no ECMs were delivered, non-ECM requests (for example, a request for a Multi-Room DVR [MR-DVR] session), remained in the queue, and were not processed until the PowerKEY decryptor was stopped. Therefore, no MR-DVR sessions could be established while the MR-DVR server was streaming unencrypted VOD.

Solution

QAM software version 2.4 carries forward the modification from QAM software version 2.3.5 to insert the CA descriptor only for encrypted sessions, including those which will be encrypted after ISK setup. Consequently, the OS now correctly detects the encryption status of the stream. Detecting the encryption status enables sessions (including VOD and MR-DVR sessions) to be established correctly on a Multi-Room server.

2

Upgrading QAM Modulator Software

Introduction

This chapter describes how to upgrade the Model D9476 QAM Modulator with QAM software version 2.4.

In This Chapter

Upgrade Process Overview

Introduction

This section provides a brief overview of the tasks you must complete to upgrade the Model D9476 QAM Modulator with QAM software version 2.4.

Before You Begin

Before you upgrade to QAM software version 2.4, be sure that your system meets the configuration specified in ***About QAM Software Version 2.4*** (on page 2).

If you will not download QAM software version 2.4 from a File Transfer Protocol (FTP) site, make sure that you have obtained the CD **QAM V2.4**, part number 4013527.

Important! Do *not* proceed with installing QAM software version 2.4 until you have read and followed the directives in ***About QAM Software Version 2.4*** (on page 2).

Time to Complete

When upgrading QAM modulators with QAM software version 2.4, consider the following tasks and the amount of time required for each:

- Completing pre-upgrade tasks takes from 35 to 50 minutes.

  Note: If you are upgrading from an FTP site, allow an additional 10 to 15 minutes to download QAM software from the FTP site. The speed of the connection and the size of the files determine the download time.

- Downloading QAM software version 2.4 to a QAM modulator takes about 5 minutes for each QAM modulator.

- Verifying the functionality of a QAM modulator depends on the number of sessions that the modulator carries and takes approximately 5 to 10 minutes.

Note: It is not necessary to rebuild non-VOD sessions on the QAM modulators that you upgrade. The non-VOD sessions are rebuilt automatically after QAM software version 2.4 is downloaded to a QAM modulator.

Subscriber Impact

When QAM modulators are reset (rebooted) during the upgrade, the services they carry are interrupted. DHCTs will show a frozen picture or black screen until the upgrade is complete and the DNCS has restarted all of the active sessions on the QAM modulator.

Impact of TVs with QAM Tuners

When upgrading QAMs to new releases of software, you must reset the QAMs in order for the devices to download the new software from the DNCS. When the software download is complete, the DNCS then recreates any broadcast sessions that were active on the QAMs. The DNCS also activates encryption for any secure services that were running on the QAMs.

An increasing number of TVs are being manufactured and sold with QAM tuners that can access services which are not properly encrypted. Therefore, as a part of the upgrade process, we encourage you to verify that the DNCS re-establishes encryption for *all* secure services on the upgraded QAMs. This extra step ensures that no potentially objectionable content can be viewed inadvertently when using a TV that is equipped with a QAM tuner.

For further assistance, refer to the following procedures found later in this chapter:

- ***Verifying the Functionality of QAM Modulators That Carry Broadcast Sessions*** (on page 29)
- ***Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions*** (on page 30)

Process Overview

This section provides an overview of the process required to upgrade to QAM software version 2.4.

CAUTION:

If upgrading more than one QAM modulator, download QAM software version 2.4 to one modulator and verify its functionality before attempting to download QAM software to another modulator. Verifying the functionality of one QAM modulator at a time enables you to better isolate any failures that may occur and enables you to minimize service interruptions.

Pre-Upgrade Tasks

1. If you are installing from a CD, verify the integrity of the installation CD. For further instructions, refer to the installation and upgrade documentation for your system release.
2. Generate a Doctor Report using the **–av** option to verify system stability and functionality.

   Important! If new or unexpected errors appear in the Doctor Report, contact Cisco Services before upgrading your QAMs.

   Note: For further instructions on running the Doctor Report, refer to Chapter 5, **Analyze System Configuration With the Doctor Report**, in the *DBDS Utilities Installation Instructions and DNCS Utilities User's Guide.*

3 Perform the System Validation Tests found in the installation and upgrade documentation for your system release version to verify the functionality and performance of the set-tops in your system.

Important! If new or unexpected errors occur, contact Cisco Services before upgrading your QAMs.

4 Verify the current QAM software version running on your DNCS.

5 Make a copy of the current QAM configuration file. In the unlikely event of a failure, you can use this backup copy to restore your system to the previous version of QAM software.

6 Verify that the package install tool (install_pkg) is installed on your DNCS. Follow these steps:

a Open an xterm window on the DNCS and type **cd /usr/sbin** and press **Enter**. The /usr/sbin directory becomes the working directory.

b Type **ls** and press **Enter**.

c Is the install_pkg file listed in the directory?

- If **yes**, continue with the pre-upgrade tasks.
- If **no**, download and install the install_pkg file from the Cisco FTP site.

Notes:

- You must also download and follow the installation instructions contained in the **install_pkg README_3.0.1.3p2EP1.txt** file.
- The files are located in the following folders on the Cisco FTP site:
  - For Cisco internal access, navigate to the **/external_pub/SciCare/RELEASED/SR2.2Patches** folder
  - For external access, navigate to the **/pub/SciCare/RELEASED/SR2.2Patches** folder
- Set the ftp transfer mode to **ASCII** (Asc) before downloading the files.

7 Install QAM software version 2.4 onto the DNCS.

8 If you are upgrading more than one QAM modulator, establish an order for upgrading the modulators.

9 If the QAM modulators you are upgrading currently carry broadcast sessions, determine the sessions that are running on the modulators you plan to upgrade so that you can verify these sessions are rebuilt after the new software is downloaded to the modulators.

Note: If your QAM modulator will carry VOD sessions, documenting current sessions is not necessary. VOD sessions are set up as needed when a DHCT requests a session.

Upgrade Tasks

CAUTION:

All active sessions on the QAM modulator will be interrupted when the modulator is reset. DHCTs downstream of the modulator will lose their ability to display services until sessions are reestablished.

1 Upgrade QAM modulators with QAM software version 2.4 by resetting the modulator. Resetting the modulator causes it to reboot, update the software, and re-establish existing sessions. Follow the instructions found in **Download QAM Software to the QAM Modulators** (on page 23).

Note: If resetting the modulator does not cause it to reboot and load QAM software version 2.4, turn power to the modulator off and on again. For assistance cycling power to the modulator, refer to the *QAM Modulator Model D9476 Installation and Operation Guide*.

2 Verify that the QAM modulator is functioning properly following the upgrade.

Important! Read and follow the directives contained in **Impact of TVs With QAM Tuners** (on page 9).

3 To upgrade another QAM modulator, repeat steps 1 and 2. Then go to step 4.

4 After the upgrade is complete, generate a Doctor Report using the **–av** option to verify system stability and functionality.

Important! If new or unexpected errors appear in the Doctor Report, contact Cisco Services.

Note: For further instructions on running the Doctor Report, refer to Chapter 5, **Analyze System Configuration With the Doctor Report**, in the *DBDS Utilities Installation Instructions and DNCS Utilities User's Guide*.

5 After the upgrade is complete, perform the System Validation Tests found in the installation and upgrade documentation for your system release version to verify the functionality and performance of the set-tops in your system.

6 Check the individual modulators to verify that they received the new code.

Important! If new or unexpected errors occur, contact Cisco Services.

Verify the Current QAM Software Version on the DNCS

Introduction

Before attempting to upgrade to QAM software version 2.4, verify the QAM software version currently installed on your DNCS. This section describes how to verify the QAM software version currently installed on your DNCS.

Checking the Configuration File

On occasion, for testing purposes, the configuration file for a test device or a set of test devices is changed to a non-standard value (for example qam226.config instead of qam.config). If your site has been involved in this type of testing (and you are now ready to use the released code again), you should update the configuration (config) file setting for your test units to reflect the default values.

Note: The default value for the CAQAM the file is: /tftpboot/qam.config.

Failure to correct the configuration of a unit from using a unique configuration to using the default configuration will result in the unit remaining in the uniquely-specified configuration. Specifically, it will not load the new code and it will continue to load test code specified in the unique configuration file.

In extremely rare cases, the configuration file may have been specified in or may need to be specified in the /etc/bootptab file. In the event that a headend device fails to load the code you intended it to receive, you should check to see if a unique file was specified either through the DNCS GUI or in the /etc/bootptab file before contacting Cisco Services for assistance.

Verifying the Current QAM Software Version on the DNCS

1. Open an xterm window on the DNCS.
2. Type **cd /tftpboot** and press **Enter**. The tftpboot directory becomes the working directory.
3. Type **grep qam_app qam.config** and press **Enter**. The system displays a result similar to the following:

   ApplCodePath - caqam_app226.bin

   Note: The preceding result indicates that QAM software version 2.2.6 is installed on the DNCS.

4 Does the information indicate that QAM software version 2.4 has been installed?

- If **yes**, QAM software version 2.4 is already installed on this modulator. You do not need to install QAM software version 2.4 onto the DNCS. You may ignore the remainder of these instructions.
- If **no**, QAM software version 2.4 is not installed on the DNCS. Before installing QAM 2.4 on the DNCS, back up the QAM configuration file currently installed on your DNCS. Go to **Back Up the Current QAM Configuration File** (on page 14).

Back Up the Current QAM Configuration File

Introduction

Before installing QAM software version 2.4 on a QAM modulator, copy the configuration file of the version of QAM software currently installed. In the unlikely event of a failure, you can use the copy to restore the current version of QAM software to your system. This section provides instructions for copying the configuration file of your current QAM software version.

CAUTION:

Do not proceed with installing QAM software version 2.4 until you have created a backup of the current configuration file of the QAM software installed on your system. Otherwise, you will be unable to restore the previous version of QAM software to your system in the unlikely event of a failure.

Restore the previous version of QAM software to your system only when recommended by Cisco Services.

Backing Up the Current QAM Configuration File

1. Open an xterm window on the DNCS. The system displays a **dncs** user prompt.
2. Type **su –** and press **Enter.** The system prompts you to enter the password for the root user.
3. Type the password for the root user and press **Enter**. The system logs you in as the root user and displays a root user prompt.
4. Type **cd /tftpboot** and then press **Enter**. The root prompt appears.
5. Type **pwd** and then press **Enter**. The /tftpboot directory name appears. This name indicates you are in the correct directory.
6. Type c**p –p qam.config qam.config.bakxxx** and then press **Enter**. A copy of the configuration file qam.config, which contains QAM configuration settings, is saved to a configuration file named qam.config.bakxxx.

   Note: In this example, xxx represents your current QAM software version. For example, if your current QAM software version is 2.2.6, name the file **qam.config.bak226.**
7. Type **ls -l** and then press **Enter**. A list of files appears. The file qam.config.bakxxx appears in the list.

   Note: The **l** used in "ls" and "-l" is the lowercase of the letter L, not the number 1.
8. Type **exit** and then press **Enter** to exit from the root user.
9. Type **exit** and press **Enter** again to close the xterm window.

10 Now that you have made a copy of the current QAM configuration file on your DNCS, you are ready to install QAM software version 2.4 onto your DNCS. Go to ***Install QAM Software onto the DNCS*** (on page 16).

Install QAM Software onto the DNCS

Introduction

This section describes how to install QAM software version 2.4 onto the DNCS using either of the following methods:

- From the CD **QAM V2.4**, part number 4013527
- From Cisco's FTP server

Installing the QAM Software from a CD

1. Open an xterm window on the DNCS. The system displays a **dncs** user prompt.
2. Type **su –** and press **Enter.** The system prompts you to enter the password for the root user.
3. Type the password for the root user and press **Enter**. The system logs you in as the root user and displays a root user prompt.
4. Insert the CD **QAM V2.4** into the CD-ROM drive of the DNCS.
5. Wait approximately 30 seconds for the system to mount the **CD** before continuing to step 6.

   Note: Shortly after inserting the CD, a File Manager window will display. When it does, it may block the xterm window. If this occurs, click the xterm window to bring the xterm window to the forefront.
6. From the xterm window, type **df –n** and then press **Enter** to confirm that the system mounted the CD successfully. A list of the mounted and unmounted file systems appears.

   Note: The presence of **/cdrom/dvsg** in the list confirms that the system correctly mounted the CD.
7. Type **cd /cdrom/cdrom0** and press **Enter**.
8. Type **/usr/sbin/install_pkg** and press **Enter.**

   Results:

   - The system lists the packages that will be installed.
   - A confirmation message appears asking you to confirm that you want to proceed with the installation.

9 Type **y** and press **Enter** to start the installation. When the installation is complete, the system displays a message stating that the installation was successful and a prompt for the root user appears.

Note: The installation should take less than one minute.

10 Was the installation successful?

- If **yes**, type **exit** and press **Enter** to log out as root user. Then go to step 11.
- If **no**, contact Cisco Services.

11 Type **exit** and press **Enter** to close the xterm window. The xterm window closes so that the File Manager window is now visible.

12 From the File Manager window, click **File** and select **Eject**. The CD ejects and the File Manager window closes.

13 Remove the CD from the CD drive and store it in a secure location. Go to ***Establish a Download Sequence*** (on page 20).

Installing the QAM Software From Cisco's FTP Server

In this section, you will create a directory on the DNCS into which you will load the QAM software version 2.4 file. Then, you will use the FTP file transfer utility to obtain the file from Cisco's FTP server and load it into the newly created directory. Next, you will decompress and extract the compressed file. Finally, you will install QAM software version 2.4 from the file you created at the beginning of this procedure.

Creating the Directory

1 Open an xterm window on the DNCS. The system displays a **dncs** user prompt.

2 Type **su –** and press **Enter**. The system prompts you to enter the password for the root user.

3 Type the password for the root user and press **Enter.** The system logs you in as the root user and displays a root user prompt.

4 Type **cd /export/home/dncs/download** and then press **Enter**. The /export/home/dncs/download directory becomes the working directory.

Important! If the directory does not exist, use the **mkdir** command to create the /export/home/dncs/download directory. Then, repeat this step.

5 Type **mkdir CAQAM24** and then press **Enter**. The system creates a subdirectory called CAQAM24 in the /export/home/dncs/download directory.

6 Type **cd CAQAM24** and then press **Enter**. The /export/home/dncs/download/CAQAM24 directory becomes the working directory.

7 Go to ***Obtaining the QAM Software File*** (on page 18).

Obtaining the QAM Software File

1 Log on to Cisco's FTP server.

Notes:

- The address of the server is **ftp.sciatl.com** or 172.168.43.143.
- The username is **anonymous**.
- The password is the email address of the person logging in.

2 Choose one of the following options to navigate to the folder in which the file is located:

- If you are outside of Cisco's firewall, type **cd /pub/scicare/RELEASED/CAQAM** to navigate to the correct folder**.**
- If you are inside of Cisco's firewall, type **cd /external_pub/scicare/RELEASED/CAQAM** to navigate to the correct folder**.**

3 Type **bin** and then press **Enter**. The system sets the ftp transfer mode to binary.

4 Type **hash** and then press **Enter**. The system configures itself to display hash marks that show file-transfer progress.

5 Type g**et CAQAM24.tar.gz** and press **Enter**. The system begins copying files into the /export/home/dncs/download/ directory on your DNCS.

6 Type **bye** and press **Enter**. The system logs you out of Cisco's FTP server.

7 Go to ***Decompressing and Extracting the File*** (on page 18).

Decompressing and Extracting the File

In this procedure, you will use the gzip and tar file-processing utilities to decompress and extract the file you just loaded onto your system.

1 Type **gzip -d CAQAM24.tar.gz** and then press **Enter**. The system decompresses the QAM software file.

2 Type **tar xvf CAQAM24.tar** and then press **Enter**. The system extracts the individual files.

3 Go to ***Installing QAM Software onto the DNCS*** (on page 19).

Installing QAM Software onto the DNCS

Follow these instructions to install QAM software version 2.4 from the directory you created at the beginning of this procedure.

1 Type **/usr/sbin/install_pkg** and press **Enter.**

Results:

- The system lists the packages that will be installed.
- A confirmation message appears asking you to confirm that you want to proceed with the installation.

2 Type **y** and press **Enter** to start the installation. When the installation is complete, the system displays a message stating that the installation was successful and a prompt for the root user appears.

Note: The installation should take about a minute.

3 Was the installation successful?

- If **yes**, type **exit** and press **Enter** to log out as root user. Then go to step 4.
- If **no**, contact Cisco Services.

4 Use the UNIX **rm -rfi** command to remove the following file and directory:

- CAQAM24.tar (file)
- SAIqam (directory)

Example: Type **rm -rfi CAQAM24.tar** and press **Enter**.

Result: A confirmation question message appears asking you to confirm the removal.

5 Type **Yes** and press **Enter** when prompted to remove the CAQAM24.tar file and the contents of the SAIqam directory.

6 Type **exit** and press **Enter** to close the xterm window. The xterm window closes. You are now ready to determine a sequence for downloading QAM software version 2.4 to the QAM modulators in your system.

7 Go to ***Establish a Download Sequence*** (on page 20).

Establish a Download Sequence

Introduction

This section provides guidance for establishing a sequence to follow when downloading QAM software version 2.4 onto more than one QAM modulator.

Note: For more information about the DNCS and operating the DNCS software, refer to the *DNCS Online Help* for your system.

Establishing a Sequence for Downloading QAM Software onto Each QAM Modulator

CAUTION:

If downloading QAM software version 2.4 to more than one QAM modulator, download the software to one modulator and verify its functionality before attempting to download software to another modulator. Verifying the functionality of one modulator at a time enables you to better isolate any failures that may occur.

The order in which you download QAM software onto QAM modulators allows you to verify that the download is successful before proceeding. Follow these guidelines to establish an order in which to download QAM software version 2.4 to QAM modulators. The method that you follow depends on the type of sessions that the QAM modulator carries (xOD/VOD sessions or broadcast sessions).

xOD/VOD Sessions

When upgrading QAM modulators that carry xOD or VOD sessions, we suggest that you upgrade all modulators in one hub and verify the functionality of those modulators before upgrading modulators in another hub.

Use the following guidelines to determine the order in which to upgrade modulators within a hub:

- If any QAM modulators act as spares, start by downloading QAM software version 2.4 on these modulators.
- If your system does not have a spare QAM modulator, download QAM software version 2.4 on the modulator carrying the fewest number of sessions.
- Continue downloading the software to modulators by working your way up to the modulator carrying the most sessions.

Broadcast Sessions

When upgrading QAM modulators that carry broadcast sessions, upgrade the modulators in one hub (one modulator at a time), and verify its functionality before proceeding to the next modulator in the hub.

Use the following guidelines to determine the order in which to upgrade modulators:

- If any QAM modulators act as spares, start by downloading QAM software version 2.4 on these modulators.
- If your system does not have a spare QAM modulator, download QAM software version 2.4 on the modulator carrying sessions that are least viewed.
- If you have a QAM modulator that is carrying BFS carousel sessions, download QAM software version 2.4 to the BFS QAM.
- Continue downloading the software to modulators in this hub by working your way up to the modulator carrying sessions that are most frequently viewed.

What's Next?

After you have established an order for downloading QAM software version 2.4 onto the QAM modulators in your system, the next step depends on the type of sessions your QAM modulators carry (xOD/VOD sessions or broadcast sessions).

xOD/VOD Sessions

If all of your QAM modulators carry xOD or VOD sessions, you are ready to begin downloading QAM software version 2.4 to QAM modulators. Go to ***Download QAM Software to the QAM Modulators*** (on page 23).

Note: Because xOD and VOD sessions are not pre-configured, but are set up as needed when a subscriber requests them, generating a list of existing sessions is not necessary.

Broadcast Sessions

If you have QAM modulators that carry broadcast sessions, use Cisco's Report Writer to generate the Channels, Sources & Sessions Report. This report lists the existing broadcast sessions in your system along with the channels and sources in your system that each modulator currently carries.

The Channels, Sources & Sessions Report lists each *display channel* (channel number) in the system. The report also displays information about the *carriage* of each channel (how the channel is transmitted on the DBDS). The report starts from each Source in your system and ends with each QAM modulator in your system.

Generating this report helps you to verify that these sessions are successfully rebuilt after QAM 2.4 is downloaded to the modulator.

Note: You can also use the DNCS Session List to determine the existing broadcast sessions in your system.

Important! Refer to the *DNCS Report Writer Version 3.5 User's Guide* or the *DNCS Online Help* for your system for further assistance.

Download QAM Software to the QAM Modulators

Introduction

To download QAM software version 2.4 to QAM modulators, you must reset (reboot) the modulators. After the modulators reboot, QAM software version 2.4 is downloaded from the DNCS to the modulators.

Important! Read and follow the directives contained in ***Impact of TVs with QAM Tuners*** (on page 9).

You have the following methods available when you reset QAM modulators:

- You can reset the modulators through the DNCS GUI.
- You can use the new auditQam utility to reset the modulators through the command line of the DNCS.
- You can reset the modulators through the back panel of the QAM.

Important! Use the ***Monitoring Remote QAM Resets*** (on page 25) procedure when resetting QAMs from the DNCS GUI or when using an auditQam script to reset multiple QAMs.

Which Reset Method to Use

Resetting QAM modulators from the DNCS GUI or from the back panel can be time-consuming. If you have many modulators to reset, consider using the new auditQam utility. The auditQam utility takes, as an argument, the IP address of the modulator that you want to reset. While the auditQam utility script runs, you are free to complete other upgrade-related tasks.

Notes:

- Instructions for resetting modulators through the DNCS GUI are found in ***Resetting the QAM Modulator Through the DNCS GUI*** (on page 24).
- Instructions for resetting modulators through the auditQam utility are found in ***Resetting QAM Modulators Through the auditQam Utility*** (on page 26).
- Instructions for resetting modulators from the back panel are found in ***Resetting the QAM Modulator from the Back Panel*** (on page 28).

Important! Use the ***Monitoring Remote QAM Resets*** (on page 25) procedure when resetting QAMs from the DNCS GUI or when using an auditQam script to reset multiple QAMs.

Resetting the QAM Modulator Through the DNCS GUI

CAUTION:

All active sessions on the QAM modulator will be interrupted when the modulator is reset. DHCTs downstream of the modulator will lose their ability to display services until sessions are reestablished.

Important! Use the ***Monitoring Remote QAM Resets*** (on page 25) procedure when resetting QAMs through the DNCS GUI.

1 If you have not already done so, provision the modulator on the DNCS.

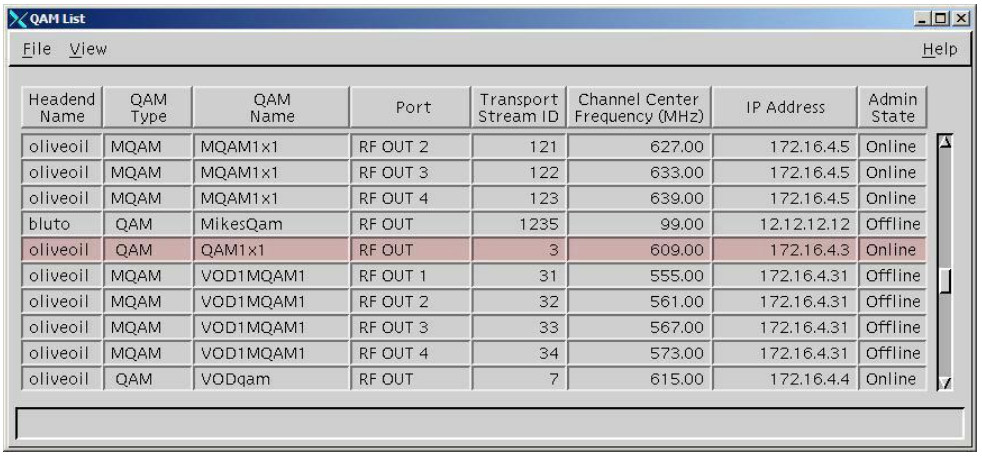
Note: For instructions on provisioning the QAM modulator, refer to the *QAM Modulator Model D9476 Installation and Operation Guide*.

2 From the DNCS Administrative Console, click the **DNCS** tab, click the **Element Provisioning** tab, and then click **QAM**. The QAM List window opens.

3 Open an xterm window on the DNCS for use later in this procedure.

4 Based on the order you determined earlier, select the QAM modulator that you want to reset by highlighting it in the QAM List window.

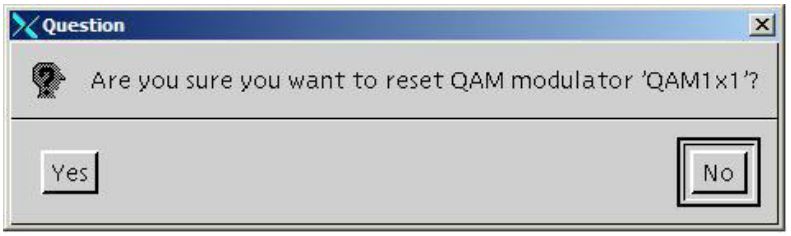
Example: The following diagram shows an example of a QAM modulator selected in the QAM List window.



Headend Name	QAM Type	QAM Name	Port	Transport Stream ID	Channel Center Frequency (MHz)	IP Address	Admin State
oliveoil	MQAM	MQAM1x1	RF OUT 2	121	627.00	172.16.4.5	Online
oliveoil	MQAM	MQAM1x1	RF OUT 3	122	633.00	172.16.4.5	Online
oliveoil	MQAM	MQAM1x1	RF OUT 4	123	639.00	172.16.4.5	Online
bluto	QAM	MikesQam	RF OUT	1235	99.00	12.12.12.12	Offline
oliveoil	QAM	QAM1x1	RF OUT	3	609.00	172.16.4.3	Online
oliveoil	MQAM	VOD1MQAM1	RF OUT 1	31	555.00	172.16.4.31	Offline
oliveoil	MQAM	VOD1MQAM1	RF OUT 2	32	561.00	172.16.4.31	Offline
oliveoil	MQAM	VOD1MQAM1	RF OUT 3	33	567.00	172.16.4.31	Offline
oliveoil	MQAM	VOD1MQAM1	RF OUT 4	34	573.00	172.16.4.31	Offline
oliveoil	QAM	VODqam	RF OUT	7	615.00	172.16.4.4	Online

5 Click **File** and then select **Reset**. The Question window appears with the name of the selected QAM modulator inside the quotation marks (‘… ‘).

Example: The following diagram shows an example of the Question window.



6 Click **Yes**. The QAM List window displays the following message:
The reset request has been received by QAM modulator <Name of QAM>

Note: The <Name of QAM> represents the name of the modulator you just reset.

7 Repeat steps 4 through 6 for up to three additional modulators, and then go to step 8.

Important! Never reset more than four modulators at once, or you may overload the DNCS.

Note: In step 10, you will have the opportunity to reset additional modulators.

8 Wait a few minutes and then, in the xterm window you opened earlier, type **ping [IP address]** and press **Enter** to ping each modulator you just reset.

Example: ping 172.16.4.77

Result: The ping command displays a message similar to **Device is alive** when the modulator has been reset.

Important! If the ping fails, wait a few minutes and retry the ping. If the ping fails an additional time, contact Cisco Services.

Note: It may take up to 5 minutes for each modulator to reset.

9 Select one of the following options and then, return to step 10 of this procedure.

- For QAM modulators that carry broadcast sessions, go to ***Verifying the Functionality of QAM Modulators That Carry Broadcast Sessions*** (on page 29).
- For QAM modulators that carry xOD or VOD sessions, go to ***Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions*** (on page 30).

10 Do you have additional modulators to reset?

- If **yes**, repeat steps 4 through 9 as many times as necessary until all of your modulators have been reset, and then go to step 11.
- If **no**, go to step 11.

11 Click **File** and then select **Close** to close the QAM List window.

12 In the xterm window, type **exit** and press **Enter** to close the xterm window.

Monitoring Remote QAM Resets

1 Open an xterm window on the DNCS.

2 Type **cd /dvs/dncs/tmp** and press **Enter**. The cvs/dncs/tmp directory becomes the working directory.

3 Type **ls -ltr boot*** and press **Enter**. A list of files starting with "boot" appears in the xterm window.

4 Locate the current bootpd.xxx file name.

Note: This will be the bootpd.xxx file with the highest number and the most recent date.

5 Type **tail -f bootpd.xxx | awk '/qam/'** to show the last QAM to reboot.

6 As you reset the QAMs in the QAM List window, monitor the bootpd file to verify that each QAM reset.

Resetting QAM Modulators Through the auditQam Utility

The *reset* option of the auditQam utility allows you to reset a QAM modulator from the command line of the DNCS, a process that is usually quicker than resetting the modulator through the DNCS GUI or modulator panel. If you have only a few modulators to reset, you can just type the IP address of the modulator as an argument to the **auditQam -reset** command. If you have many modulators to reset, consider creating a script. Instructions and guidelines for both situations follow next in this section.

Resetting a Few QAM Modulators

If you want to reset only a few modulators, complete this procedure for each modulator.

1 If necessary, open an xterm window on the DNCS.

2 Type the following command and press Enter:

auditQam -reset [QAM ip address]

Result: The system shuts down and reinitializes the modulator.

Note: The system also performs an audit to ensure that the session list for the modulator matches the session list from the DNCS.

3 Select one of the following options:

- For QAM modulators that carry broadcast sessions, go to ***Verifying the Functionality of QAM Modulators That Carry Broadcast Sessions*** (on page 29).
- For QAM modulators that carry xOD or VOD sessions, go to ***Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions*** (on page 30).

Resetting Many QAM Modulators

When performing an upgrade, you often do not want to manually reset hundreds of modulators from the DNCS GUI. To save time, you can create a script that resets the QAMs. Refer to the example on the following page for a sample script.

This sample script will reset four QAMs, wait for 5 minutes (sleep 300 seconds), and then ping the units to verify that they are responsive. The ping is followed by a 60 second waiting period to allow the QAMs to fully provision on the system. The script will then continue in the same manner to update the other QAMs in the network.

Important! Use the ***Monitoring Remote QAM Resets*** (on page 25) procedure when resetting QAMs using an auditQam script to reset multiple QAMs.

Note: You can save and re-use this script each time you need to reboot your QAMs.

```
auditQam  -reset  123.123.123.123
sleep 1
auditQam  -reset  123.123.123.124
sleep 1
auditQam  -reset  123.123.123.125
sleep 1
auditQam  -reset  123.123.123.126
sleep 300
ping  123.123.123.123
sleep 1
ping  123.123.123.124
sleep 1
ping  123.123.123.125
sleep 1
ping 123.123.123.126
sleep 60
# end of first set
auditQam  -reset  123.123.123.127
sleep 1
auditQam  -reset  123.123.123.128
sleep 1
auditQam  -reset  123.123.123.129
sleep 1
auditQam  -reset  123.123.123.130
sleep 300
ping  123.123.123.127
sleep 1
ping  123.123.123.128
sleep 1
ping  123.123.123.129
sleep 1
ping 123.123.123.130
sleep 60
end of second set
```

Important! Resetting a QAM interrupts all active sessions on the QAM for up to 10 minutes. Complete this task during a maintenance period whenever possible.

Note: After resetting the QAMs, select one of the following options:

- For QAM modulators that carry broadcast sessions, go to ***Verifying the Functionality of QAM Modulators That Carry Broadcast Sessions*** (on page 29).
- For QAM modulators that carry xOD or VOD sessions, go to ***Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions*** (on page 30).

Resetting the QAM Modulator from the Back Panel

1 Follow these instructions to record the Session Count, the Program Count, and the IP address of your QAM modulators.

Note: Skip this step for any QAM modulator that is used for video-on-demand (VOD).

a Press the **Options** button on the front panel until the **Session Count** total appears.

b Record the Session Count on a piece of paper.

c Press the **Options** button on the front panel until the **Program Count** total appears.

d Record the Program Count on a piece of paper.

e Repeat steps a) through d) for all of your QAM modulators.

2 To reset a QAM modulator, turn off the power switch on the back of the QAM modulator, wait a few seconds, and then turn it back on.

3 Repeat step 2 for up to three additional modulators, and then go to step 4.

Important! Never reset more than four modulators at once, or you may overload the DNCS.

Note: In step 6, you will have the opportunity to reset additional modulators.

4 Verify the Program and Session Count totals for each modulator not used for VOD that you just reset, using the totals you recorded in step 1 of this procedure.

5 Do the Program and Session Count totals match?

- If **yes**, select one of the following options and then return to step 6 of this procedure.
  - For QAM modulators that carry broadcast sessions, go to ***Verifying the Functionality of QAM Modulators That Carry Broadcast Sessions*** (on page 29).
  - For QAM modulators that carry xOD or VOD sessions, go to ***Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions*** (on page 30).
- If **no**, contact Cisco Services.

6 Do you have additional modulators to reset?

- If **yes**, repeat steps 2 through 5 as many times as necessary until all of your modulators have been reset, and then go to step 7.
- If **no**, go to step 7.

7 Go to ***Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions*** (on page 30).

8 Click **File** and then select **Close** to close the QAM List window.

9 In the xterm window, type **exit** and press **Enter** to close the xterm window.

Verifying the Functionality of QAM Modulators That Carry Broadcast Sessions

Follow these steps to verify the functionality of your QAM modulators by confirming that a DHCT downstream of the QAM modulators can tune to authorized channels.

CAUTION:

Verify the functionality of one QAM modulator group at a time. In the unlikely event of a failure, you can better isolate that failure without interrupting service for the remaining QAM modulators and their associated DHCTs.

1. Access a DHCT that is connected downstream of one QAM modulator.
2. Refer to the Channels, Sources & Sessions Report that you generated in Determine Existing Broadcast Sessions to verify restored QAM channels and sessions.
3. Tune the DHCT to each channel listed in the report for each QAM that you reset and upgraded.
4. Are all channels listed for the reset QAMs accessible from the DHCT?
   - If **yes**, go to step 5.
   - If **no**, *do not* attempt to upgrade the software of any additional QAM modulators, call Cisco Services.
5. For those QAMs that carry objectionable material, Cisco recommends that you verify encryption with one of the following methods:
   - Using a set-top that does not contain subscription service packages, tune to the respective channels and verify content is not viewable.
   - Verify that the program count is correct on the QAMs that carry objectionable material.
   - Using a QAM tuner television, tune to the respective channels and verify that objectionable content is not viewable.
6. Is the content viewable?
   - If **yes**, stop and then restart (bounce) the qamManager process on the DNCS, and repeat step 5. If the content continues to be viewable, contact Cisco Services. Then, go to step 7.
   - If **no**, go to step 7.
7. Have you completed resetting your QAMs?
   - If **yes**, go to step 8.
   - If **no,** return to the procedure you are using to reset your QAMs.

8 After the upgrade is complete, generate a Doctor Report using the **–av** option to verify system stability and functionality. If new or unexpected errors appear in the Doctor Report, contact Cisco Services.

Note: For further instructions on running the Doctor Report, refer to Chapter 5, **Analyze System Configuration With the Doctor Report**, in the *DBDS Utilities Installation Instructions and DNCS Utilities User's Guide*.

9 After the upgrade is complete, perform the System Validation Tests found in the installation and upgrade documentation for your system release version to verify the functionality and performance of the set-tops in your system. If new or unexpected errors occur, contact Cisco Services.

10 Over the next few days, check the individual modulators to verify that they received the new code.

Verifying the Functionality of QAM Modulators That Carry xOD or VOD Sessions

Sessions that exist on xOD or VOD QAMs that were upgraded will be interrupted and, in most cases, will recover. If the sessions do not recover, exit the xOD or VOD application (stop the xOD or VOD program or change to a different channel and then back to the previous channel) and restart the application and the xOD or VOD stream by resuming the playback of the "in progress" purchase. This process will vary depending the application you are using.

Important! Due to load balancing and traffic, it is difficult to determine with absolute certainty that all QAM modulators are functioning properly. For this reason, you should monitor these modulators for a few days following this upgrade to verify that Session and Program Counts are increasing and/or decreasing (whichever is applicable) as new xOD or VOD sessions are created.

Notes:

- After the upgrade is complete, perform the System Validation Tests found in the installation and upgrade documentation for your system release version to verify the functionality and performance of the set-tops in your system. If new or unexpected errors occur, contact Cisco Services.
- Over the next few days, check the individual modulators to verify that they received the new code.

3

Customer Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.

A

Roll Back to the Previous Version of QAM Software

Introduction

This appendix contains instructions for restoring the previous version of QAM software should you encounter problems after upgrading to QAM software version 2.4. Follow the instructions in this section only after Cisco Services directs you to restore the previous version of software.

Important! If after downloading QAM software version 2.4 you encounter problems, contact Cisco Services for assistance. In the event that Cisco Services directs you to download the previous version of software to QAM modulators, follow the procedures in this appendix while working with Cisco Services.

In This Appendix

Restore the Previous Version of QAM Software

Introduction

Contact Cisco Services if you notice that the system is reacting adversely after installing or upgrading to QAM software version 2.4. If Cisco Services recommends restoring the previous QAM software version, use the instructions in this section to assist you as you work with a Cisco Services engineer to restore the previous QAM software version.

CAUTION:

Contact Cisco Services before attempting to restore the previous QAM software version.

Restoring the Previous QAM Software Version

Follow these steps to restore the previous version of QAM software in the unlikely event that you encounter problems after upgrading to QAM software 2.4.

Note: To restore the previous QAM executable files, restore the configuration backup file that you saved in ***Back Up the Current QAM Configuration File*** (on page 14).

1. Open an xterm window on the DNCS and log on as the **root** user. The root prompt appears.
2. Type **cd /tftpboot** and then press **Enter**. The /tftpboot directory becomes the working directory.
3. Type **pwd** and then press **Enter**. The text /tftpboot appears at the prompt. This text indicates you are in the correct directory.
4. Type **cp –p qam.config qam.config.24** and then press **Enter**. The configuration file named QAM.config, which contains QAM version 2.4 configuration settings, is saved to a file named qam.config.24.
5. Type **cp –p qam.config.bakxxx qam.config** and then press **Enter**.

   Note: The xxx represents the original QAM software version number.

   Result The configuration file named qam.config.bakxxx, which contains the previous list of QAM configuration files, is copied to a configuration file named qam.config.

6 Type **ls -l** and then press **Enter**. A list of files displays. The files **qam.config.bakxxx**, **qam.config**, and **qam.config.24** appear in the list.

Note: The **l** used in "ls" and "-l" is the lowercase of the letter L, not the number 1.

7 Confirm that the date and size of **qam.config** matches those of **qam.config.bakxxx**.

8 Type **exit** and then press **Enter.**

9 You are now ready to download the previous version of QAM software to QAM modulators by rebooting the modulators. For detailed procedures, go to ***Download QAM Software to the QAM Modulators*** (on page 23).

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