GQAM Modulator Software
Version 4.2.1

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.

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About This Guide

Introduction

This document provides information and procedures for upgrading a Model D9479 Gigabit Quadrature Amplitude Modulation (GQAM) Modulator (GQAM) to GQAM software version 4.2.1. This document also includes a description of the new features and change requests (CRs) implemented in this release.

Purpose

This document enables system operators to perform the following tasks:

- Upgrade the GQAM with software version 4.2.1.

- Roll back to earlier version of software in the unlikely event that a site encounters problems after upgrading the software.

Scope

This document provides instructions for upgrading the Model D9479 GQAM Modulator with GQAM software version 4.2.1. It does not provide instructions for installing a GQAM modulator in your headend.

Note: For instructions to install a GQAM modulator in your headend or for a complete description of GQAM features, refer to the *Gigabit QAM Modulator Model D9479 Hardware Installation and Operation Guide* (part number 745431) or the *Dual SFP Gigabit QAM Modulator Installation and Operation Guide* (part number 4014102).

Audience

System operators or field service engineers who are responsible for installing the GQAM software onto a GQAM modulator should read this publication.

Related Publications

You may find the following publications useful as resources when you implement the procedures in this document.

- *DNCS Online Help (PC) 4.2.0.3* (part number 4012121)*****

- *Digital Network Control System Online Help (PC) Version 4.3.0.3* (part number 4019356)******

- *DNCS Report Writer 4.2 User's Guide* (part number 4013430)

- *DNCS Report Writer 4.2.1 User Guide* (part number 4022012)

- *DNCS Report Writer Version 4.3 for DNCS and ISDS User Guide* (part number 4021181)

- *Dual SFP Gigabit QAM Modulator Installation and Operation Guide* (part number 4014102)

- *Gigabit QAM Modulator Model D9479 Hardware Installation and Operation Guide* (part number 745431)

- *System Release 4.2 Release Notes* (part number 4012157)

- *System Release 4.3 Release Notes* (part number 4019358)

* *The DNCS Online Help (UNIX) 4.2.0.3 (part number 4012122) should already be installed on your Digital Network Control System (DNCS). The PC version is a separate CD that allows you to view the same online Help on a PC separate from the DNCS workstation.*

** *The Digital Network Control System Online Help (UNIX) Version 4.3.0.3 (part number 4019357) should already be installed on your Digital Network Control System (DNCS). The PC version is a separate CD that allows you to view the same online Help on a PC separate from the DNCS workstation.*

Document Version

This is the third formal release of this document. In addition to minor text and graphic changes, this revision adds several open CRs. See *Known Issues* (on page 10).

1

Introducing GQAM Software Version 4.2.1

Introduction

This chapter lists the requirements for upgrading the Model D9479 GQAM Modulator with GQAM software version 4.2.1 and includes several feature enhancements and performance improvements over previous releases of GQAM software. These enhancements and improvements are described in the change requests (CRs) implemented in this release. For additional details, go to *What's Fixed?* (on page 5).

In This Chapter

Why Choose This Release?

Overview

GQAM software version 4.2.1 is designed to be installed on a GQAM. 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 or broadcast services.

Note: For a complete description of the GQAM modulator, refer to the *Gigabit QAM Modulator Model D9479 Hardware Installation and Operation Guide* (part number 745431) or the *Dual SFP Gigabit QAM Modulator Installation and Operation Guide* (part number 4014102).

This section provides descriptions of the major new features supported in GQAM software version 4.2.1.

New Features

Transport Stream Route Support

The FCC requires Program and System Information Protocol (PSIP) support for off-air content. A transport stream route (TSR) is required to support PSIP on a GQAM. This feature provides the following enhancements:

- Enables a passthrough mode on a GQAM for PSIP support

- Allows GQAMs to be used for tru2way™ (formerly OCAP™) common download

- Allows system operators to select and encrypt a single multi-program transport stream (MPTS)

- Allows GQAMs to be used with a Netcrypt™ Overlay Bulk Encryptor (NOBE) at Overlay sites

- Allows for re-purpose and re-use of GoQAMs

Important: System Release (SR) 4.3 is required to configure this feature on the GQAM.

Real Time Protocol Tolerance

Real time protocol (RTP) was originally developed for voice applications and is now used in both VoIP and video applications. As a part of the new MPEG encapsulation scheme, the MPEG UDP packets are encapsulated in an RTP header. This feature enables GQAMs to accommodate this new MPEG scheme by stripping off the header and then transmitting the MPEG stream. A significant benefit of this new feature is that RTP reduces jitter and packet loss through upstream network components.

MPEG-4 Support

This new feature gives GQAMs full compliance with MPEG-4 and enables GQAMs to support set-tops with MPEG-4 coding.

Universal Session and Resource Manager Support

The Cisco® Universal Session and Resource Manager (USRM) is a standard Intel/Linux-based server that supports many major VOD and switched digital video (SDV) interfaces and protocols. The USRM has the ability to integrate modules such as VOD and SDV, delivering a new level of performance and features such as more efficient QAM sharing, policy-based bandwidth assignment across services, and improved addressable advertising.

USRM allows applications to access the network and then deliver the request content to edge devices under its control. USRM supports all standard interfaces.

Important: This feature requires DNCS release 4.2.1.24 or later.

New Web-based Diagnostic Tool

Providing customer support for GQAMs is now easier than ever. GQAM software version 4.2.1 provides a new and innovative web interface tool that enables you to monitor the performance of each GQAM in your system quickly, accurately, and in real-time. In addition, this tool allows you to monitor and diagnose the overall performance of a GQAM in an effort to determine possible areas of concern.

Support for QAM Striping

QAM striping provides the ability to offer SDV services via the USRM and VOD services via the DNCS on the same GQAM. QAM striping covers *both* port and frequency striping.

Examples:

- Within a port you can configure 2 frequencies for SDV and 2 frequencies for VOD.

- Across two ports you can configure 2 ports for SDV and 2 ports for VOD.

Enhancements were also made to the remote procedure call (RPC) interface to allow a GQAM to work simultaneously with the Cisco USRM and the DNCS with no user intervention required.

Support for SNMP Traps

All prior releases of GQAM software have only supported SNMP queries. With the addition of SNMP trap support, the GQAM can now be configured to autonomously announce internal alarms to an external SNMP trap server. The GQAM trap server is defined using an environmental variable in the gqam.config file called TrapServerIpAddr. By default, this variable is set to the internal loopback address 127.0.0.1. In order to specify a trap server, the configuration file specified for the GQAM should by modified to set TrapServIpAddr to the appropriate IP address.

Note: The GQAM must be rebooted before this modification takes effect.

Support for IGMP Anycast

Similar to multicast, anycast is a one-to-many routing topology. Previous releases of GQAM software only supported strict implementations of Internet Group Management Protocol (IGMP) v3 and required the transmission source IP address be specified in session-specific parameters. With the addition of "Anycast support," the transmission source IP address is now an optional parameter and can be omitted in networks designed for the anycast routing topology. Specifically, this feature allows multicast groups to be defined on the GQAM in an IGMP network where sources are not known or not duplicated.

Support for Virtual IP Addresses

Virtual IP address support, also known as VOD redundancy, allows both physical input ports on the dual-port GQAM to share a common IP address. With the addition of this feature, each input Gigabit Ethernet (GigE) port maintains a separate physical IP address and a third VOD redundancy IP address is shared between them. The VOD redundancy IP address is used to specify the destination IP address for VOD services.

The GQAM VOD redundancy IP address can be configured on a dual-port GQAM via the DNCS in the Gigabit Ethernet Ports section of the Set Up GQAM window on the Basic Parameters tab.

With the addition of this feature, dual-port GQAMs can now support both broadcast services and VOD simultaneously while using redundant GigE feeds.

Important: SR 4.3 is required to configure this feature on the GQAM.

What's Fixed?

Implemented CRs

This section provides a description of the CRs implemented in GQAM software version 4.2.1 for issues found in GQAM software version 4.0.17 and later.

CR 79852: Under Certain Conditions, the GQAM May Calculate Incorrect CRC in IGMPv3 Messages

In previous versions of GQAM software, IGMPv3 query responses used a fixed length value to calculate the message CRC. If the IP header contains additional data, this CRC value is not correct and some switches and routers may reject the response. The result of the bad CRC rejection is a momentary video freeze every two minutes. **CR 79852** corrected this issue.

CR 80982: GQAMs Were Occasionally Unable to Properly Tune to Frequencies Between 800 and 860 MHz at Ambient Temperatures Above 45°C (113°F)

In earlier versions of GQAM software, when high ambient temperatures (>45°C/113°F) occurred, the GQAM was occasionally unable to operate at frequencies between 800 and 860 MHz. **CR 80982** contains a minor adjustment to an integrated circuit (IC) used for frequency synthesization that provides reliable tuning characteristics at elevated temperatures.

CR 81948: GQAM Output PCR Jitter Now Conforms With Specification

In earlier versions of GQAM software, output program clock reference (PCR) jitter occasionally exceeded 500 nanoseconds. This did not cause video impairments. **CR 81948** corrected this issue.

CR 82363: Alarm Manager Now Returns the Correct Pointer to the Buffer Pool

Previously, memory corruption could occur when the Alarm Manager queue became full. This corruption prevented the GQAM from processing any new sessions. The only way to clear this condition was to reboot the GQAM. Now the Alarm Manager returns the correct pointer to the buffer pool. **CR 82363** corrected this issue.

CR 82667: Packets With No Payload Data No Longer Cause Pixilated Video

Previously, GQAMs did not filter "empty adaptation field only" packets from incoming streams. A new grooming technique adopted by a single Mux vendor uses program map table (PMT) extensions of empty adaptation fields to groom video streams rather than the more conventional NULL packets to "stuff" variable bit rate (VBR) to constant bit rate (CBR) streams. This reduces the GQAM's ability to correct clock accuracy errors which leads to occasional pixilation issues with video. Previously, this issue was resolved with a Netcrypt patch that filtered the empty adaption fields so they did not reach the GQAM. With the introduction of **CR 82667**, the GQAM is compatible with this grooming method and the Netcrypt patch is no longer required.

CR 86703: Trick Modes Occasionally Caused Dejitter Buffer Overflows on GQAMs

Previously, using VOD trick modes (Pause, FF, or Rewind) on three or more set-tops simultaneously could cause the GQAM jitter buffers to overflow. This overflow occasionally caused momentary video impairments on other streams on both the same QAM frequency and adjacent QAM frequencies. **CR 86703** corrected this issue.

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What Are the Site Requirements?

System Release Compatibility and Prerequisites

This GQAM software can be installed on a DBDS that is running one of the following system releases and DNCS application versions:

- SR 2.7/3.7/4.2 and associated Service Packs

- SR 2.7.1/3.7.1/4.2.1

- SR 2.8/3.8/4.3

For a complete configuration listing, or to upgrade your system, contact Cisco Services at 1-800-283-2636.

Software

GQAM software version 4.2.1 includes the following software code:

- GQAM Host Application code 4.2.1

- GQAM Host Boot code 4.2.1

- GQAM RF 2.6

- GQAM Input App code 4.2.1

- GQAM Input Boot code 4.2.1

- GQAM Output App code 4.2.1

- GQAM Output Boot code 4.2.1

Hardware

GQAM software version 4.2.1 supports only the Model D9479 GQAM (both the single GigE Port and dual GigE Port models).

Application Platform Release Dependencies

The following table shows the set-top and Multi-Stream CableCARD™ (M-Card™) module software application platform release dependencies for this software release.

Important: Failure to have the correct application platform software *or later* installed on your system *prior* to installing the software can result in video freezing and black screens when using VOD or xOD applications.

Set-Top or M-Card Platform	Operating System (OS)	SARA	PowerKEY Conditional Access Version
Explorer 8300 DVR v. 1.4.3a10 or later v. 1.5.2	OS 6.14.74.1 OS 6.14.79.1	1.88.22.1 1.89.16.2	3.9 3.9
Explorer 8000/8010 DVR v. 1.4.3a10 or later v. 1.5.2	OS 6.12.74.1 OS 6.12.79.1	1.88.21.1 1.89.16.2	3.7.5 3.7.5
Explorer 3250HD MR4 P1 or later	OS 3.24.5.2	1.59.18.1	3.9
Explorer 2xxx, 31xx, 3200, 3100HD	OS 3.13.6.1	1.60.6.2	1.0.6.20 (Explorer 2000s) 1.0.7 (all others)
Explorer 4250HDC Exp. 2.0.0 (0701) or later	OS 6.20.28.1	1.61.5.a100	4.0.1.1
Explorer 8300HDC DVR 1.5.3 (0801) or later	OS 6.20.28.1	1.90.5a101	3.9.7.13
M-Card OS 1.1.10p5 or later	OS 1.1.10p5	Not applicable	Not applicable
Explorer 8550HDC Explorer 8540HDC RNG200 DVR1.5.5	OS 8.0.42.1	1.90.19.1	Not applicable

Important: If you are not using SARA, contact your resident application provider to verify that you have the most recent version.

When to Perform the Upgrade

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

Operational Consideration

There is a limitation in the dual port GQAM that prevents it from supporting both GigE ports and the ASI ports simultaneously. If you are utilizing any of the ASI ports, the second GigE port is automatically disabled.

If you want to use *both* GigE ports, the ASI ports must be empty and contain no sessions. You must tear down any sessions on the ASI ports. Once you enable the second GigE port, you will not be able to add sessions on the ASI ports.

Known Issues

This section lists CRs that were found while testing this software product. Efforts to address these issues are ongoing in our laboratories.

CR 84891: GQAMs With a Large Number of Active Sessions Reboot on a Sudden Loss of Content

In GQAM software version 4.2.1 and earlier, a GQAM with more than 120 active sessions may reboot spontaneously if all of the incoming content is removed at once.

CR 90704: Dual SFP GQAM Front Panel Does Not Update the Active Port Indicator Dynamically

In GQAM software version 4.2.1, the front panel indicator for Active Port does not update dynamically. If the active input GigE port switches while this display is selected, the operator must use the **Options** button to scroll back to the Active Port display to view the updated information.

CR 90739: SNMP Traps May Not Work Correctly After Changing the TrapServerIpAddr Setting in the gqam.config File

The SNMP trap feature is available in GQAM software version 4.2.1, but it is disabled by default. To enable SNMP traps, use a text editor to manually edit the gqam.config file, change the environment variable **TrapServerIpAddr** to the IP address of the SNMP trap collector, and then reboot the GQAM. This procedure enables the SNMP trap feature.

CR 90739 notes there is a possibility that SNMP traps may *still* not function properly even after performing this procedure. In this case, use one of the following workarounds:

Workaround 1

1   Connect a laptop to the craft port on the GQAM.

2   Type the following command and press **Enter**:

trap_mode 1

Notes:

■   In this command, the "1" is the number one (1) and not a lowercase letter L.

■   This command updates non-volatile memory and only has to be performed one time for the duration that this GQAM is used.

■   This issue will be corrected in a later release of GQAM software.

Workaround 2

1   Establish a Telnet session on the GQAM by connecting to the management IP address of the GQAM and using **Gqam**/**Gqam** for the username/password.

2   Perform step 2 of the previous procedure, Workaround 1.

3   To exit (quit) the Telnet session, type **Ctrl+C** and press **Enter**.

CR 93019: GQAM SMDG With Only Six SD Programs Causes the Set-Top to Display Intermittent Screen Freezing

In GQAM software version 4.2.1 and earlier, if an incoming MPTS has 10 to 12 programs and only six of these programs have GQAM sessions built on a stat mux dejitter group (SMDG), the resulting output streams may have intermittent video freezing. To prevent this condition, only remove sessions from the GQAM once the programs have been removed from the incoming MPTS.

CR 94293: Incorrect Default Value for Dual Port Switch Timing

In GQAM software version 4.2.1, an invalid timing parameter stored in non-volatile memory may lead to the GQAM incorrectly reporting a successful port switch when no content is present at either GQAM input. This condition has no operational impact. There is a workaround to correct this value.

Workaround

From either a GQAM telnet connection or the GQAM craft port, type this command:

gigadual w 1 0 100 3

This command only has to be entered once for the life of the GQAM.

CR 95751: GQAM Failure to Respond to IGMPv2 Query Causes Intermittent Momentary Loss of All Multicast Content

In GQAM software version 4.2.1 and earlier, the GQAM may fail to respond to two consecutive IGMPv2 general queries. When this occurs, all IGMPv2 multicast content is temporarily cut off at the switch causing all IGMPv2 video content to drop for approximately 30 to 45 seconds. This occurrence rate is random, but may happen one to three times a month. The only workaround is to use an IGMPv3 multicast network.

CR 95987: Dual Port GQAM in an SR 4.3 SDV-Only Environment Experiences RPC Communication Failures

When GQAM software version 4.2.1 is installed on a dual port GQAM, the GQAM will experience an RPC communication failure and be unable to communicate with the DNCS, the SDV Server, or the USRM when used only for SDV services in an SR 4.3 system. This issue does not occur with SR 4.2 or SR 4.2.1.

There are two potential workarounds for this issue:

Workaround 1

Add one broadcast session to the GQAM.

Workaround 2

Select manual port switching on the DNCS GQAM provisioning GUI.

CR 96152: SDV Sessions Created by the USRM Display as VOD Sessions on the GQAM Web Interface

When GQAM software version 4.2.1 is used in conjunction with USRM 1.5, SDV sessions are displayed as VOD unicast sessions on the GQAM web interface and craft port display. This issue is cosmetic only and causes no operational impact. This issue will be corrected in a future GQAM software release and also requires CR 96182 to be implemented for the USRM.

CA Descriptor and VOD Sessions

Overview

Versions of GQAM software prior to software version 1.0.6 inserted the PowerKEY Conditional Access (CA) descriptor into the PMT for unencrypted on-demand content. If the Digital Home Communications Terminal (DHCT) operating system (OS) found the CA descriptor in the PMT, the OS started the PowerKEY decryptor.

The PowerKEY scheduler within the DHCT then prioritized Entitlement Control Messages (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 session) remained in the queue and were not processed until the PowerKEY decryptor was stopped. Therefore, no Multi-Room DVR sessions could be established while the Multi-Room DVR server was streaming unencrypted VOD.

Solution

GQAM software version 4.2.1 carries forward the modification from GQAM software version 1.0.6 to insert the CA descriptor only for encrypted sessions, including those that will be encrypted after interactive session key (ISK) setup. Consequently, the OS now correctly detects the encryption status of the stream. Detecting the encryption status enables sessions (including VOD and Multi-Room DVR sessions) to be established correctly on a Multi-Room server.

2

Upgrading the Software

Introduction

This chapter describes how to upgrade the Model D9479 GQAM Modulator with GQAM software version 4.2.1.

In This Chapter

Upgrade Process Overview

Before You Begin

Before you upgrade to GQAM software version 4.2.1, be sure that your system meets the criteria specified in *System Release Compatibility and Prerequisites* (on page 7) and *Application Platform Release Dependencies* (on page 8).

If you will not be downloading the GQAM software from our File Transfer Protocol (FTP) site, make sure that you have obtained the CD, **GQAM V4.2.1**, part number 4021954.

Time to Complete

When upgrading GQAMs with the new software, consider the following tasks and the amount of time required for each:

- Completing pre-upgrade tasks takes from 30 to 45 minutes.

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

- Downloading new software to the GQAM takes approximately 8 minutes for each modulator.

- For GQAMs that carry broadcast sessions, the DNCS will restart the sessions after the GQAMs load new software.

- For GQAMs that carry VOD sessions, only those sessions that are determined to be active will be restarted. Because subscribers may tune away when the GQAM reboots, the total number of recovered sessions may not match the original number of sessions on the GQAMs.

Note: It is not necessary to rebuild non-VOD sessions on the GQAMs that you upgrade. The non-VOD sessions are rebuilt automatically after the new software is downloaded to the GQAM.

Subscriber Impact

When GQAMs 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 GQAM.

Impact of TVs with QAM Tuners

When upgrading GQAMs to new releases of software, you must reset the GQAMs 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 GQAMs. The DNCS also activates encryption for any secure services that were running on the GQAMs.

An increasing number of TVs are being manufactured and sold with QAM tuners that can access services that 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 GQAMs. This extra step ensures that no GQAM that may be carrying content inappropriate for children can be viewed inadvertently when using a TV that is equipped with a QAM tuner. For additional information, refer to the following procedures:

- *Verifying the Functionality of GQAM Modulators That Carry Broadcast Sessions* (on page 35)

- *Verifying the Functionality of GQAM Modulators That Carry xOD or VOD Sessions* (on page 36)

Process Overview

This section provides an overview of the process required to upgrade to GQAM software version 4.2.1.

Important: You should only upgrade GQAMs to new releases of software if your network is running in a healthy state (for example, a system can boot and stage set-tops). If your network is not in a healthy state, you should not upgrade to the new release of software unless the new release contains a remedy to your system issue.

> ⚠ **CAUTION:**
>
> **If you are upgrading more than one GQAM, download the new software to one modulator group (for example, all modulators in a single rack or hub) and verify its functionality before attempting to download the software to another modulator group. Verifying the functionality of one modulator group at a time enables you to better isolate any failures that may occur and enables you to minimize service interruptions.**

Pre-Upgrade Tasks

Important: Performing the pre-upgrade tasks will not impact system performance.

1 Verify that the install tool (install_pkg) exists on the DNCS.

  Note: For procedures on how to check for the install_pkg tool, see *Verify the Install Package Exists on the DNCS* (on page 39).

2 Determine the configuration (config) files currently in use on your system.

3 Verify the software version associated with the configuration files.

4   Make a backup copy of the *current* GQAM configuration file.

5   If you are upgrading more than one GQAM, establish an order for upgrading the modulators.

6   Install the GQAM software onto the DNCS from either our FTP site or a CD.

> ⚠ **CAUTION:**
>
> **Installing GQAM software version 4.2.1 may overwrite the existing IP addresses for the GQAM GigE ports. Therefore, you must locate and write down the IP addresses of the GQAM GigE ports provisioned on your system for the GQAMs that you are planning to upgrade.**

7   Follow these steps to locate and write down the IP addresses of the GQAM GigE ports provisioned on your system that you are planning to upgrade.

   a   On the front panel of each GQAM you are planning to upgrade, press the **Options** button ten times. The GigE IP address appears.

   b   Write down the GigE IP address for each GQAM you are planning to upgrade.

   Important: Be sure to match each GigE IP address with the correct GQAM.

   c   Verify that the GigE IP addresses defined in the Set Up GQAM GUI on the DNCS match the IP addresses that display on the front panel LCD screen of each corresponding GQAM you are planning to upgrade.

8   Do the GigE IP addresses match?

   ▪   If **yes**, go to step 6.

   ▪   If **no**, change the GigE port IP addresses in the Set Up GQAM GUI to match the IP addresses shown on the front panel LCD screen for each corresponding GQAM you are planning to upgrade. Then, go to step 6.

Note: If your GQAM 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

Important: Performing the upgrade tasks will result in a temporary loss of service as GQAMs are reset.

1   Download the new software to the GQAMs.

2   If the GQAMs you are upgrading currently carry broadcast sessions, determine the sessions that are running on those modulators you plan to upgrade. This will allow you to verify that these sessions are rebuilt after the new software is downloaded to the modulators.

3 Verify that the upgraded GQAM is functioning properly.

   Important: Read and follow the directives contained in *Impact of TVs with QAM Tuners* (on page 17).

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

5 Perform System Validation Tests for your system release version.

Verify the Current Software Version on the DNCS

Introduction

Before attempting to upgrade to GQAM software version 4.2.1, verify the number of configuration files in use and what GQAM software version is associated with each 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 gqam111.config instead of gqam.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 file setting for your test units to reflect the default values.

Note: The default configuration file for the GQAM is **/tftpboot/gqam.config**.

Failure to correct a unit from using a unique 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 the 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.

Checking for Multiple Config Files

1 From the DNCS Administrative Console, click **Utilities** and click **xterm**. The xterm window opens.

2 Type **dbaccess dncsdb <<%** and press **Enter**.

3 Type **unload to gqamdata select qam_name, configfile from pdcaqam where modeltype=3;** and press **Enter**.

4 Type **%** and press **Enter**. A result, similar to the following output, appears.

```
Database selected.

5 row(s) unloaded.

Database closed.
```

5 Type **more gqamdata** and press **Enter**. A result, similar to the following output, appears.

6 Did more than one config file appear?

- If **yes**, keep the xterm window open and go to step 7.

- If **no**, go to *Checking the Software Version Associated with the config File* (on page 21).

7 Do you need to continue to run different versions of GQAM software on some GQAMs in your network?

- If **yes**, refer to *Load Multiple Versions of GQAM Code* (on page 41).

- If **no**, go to step 8.

8 Update the GQAMs to use the same config file by performing the following steps:

  a From the DNCS Administrative Console, click **Network Element Provisioning** and click **QAM**. The QAM List window opens.

  b Select the GQAM, click **File** and select **Open**. The Set Up GQAM window opens.

  c Click **Advanced Parameters** and modify the configuration file, as needed.

9 Go to *Checking the Software Version Associated with the config File* (on page 21).

Checking the Software Version Associated with the config File

1 From the xterm window, type **cd /tftpboot** and press **Enter**. The tftpboot directory becomes the working directory.

2 For each unique config file identified in *Checking for Multiple config Files* (on page 20), type **grep Appl <config file name>** and press **Enter**.

Example: grep Appl gqam.config

Result: A result, similar to the following output, appears.

```
flame:/export/home/dncs$ >cd /tftpboot
flame:/tftpboot$ >grep Appl gqam.config
# if the file path/name in ApplCodePath is different than it was
# ApplCodePath should contain a string indicating the path and
# Example: ApplCodePath = [pathname/filename]
ApplCodePath = gqam_app_3_1_6.bin
flame:/tftpboot$ >
```

**Indicates v3.1.6 code is in use
with the gqam.config file**

3   Is the proper version of software installed?

Note: See the GQAM Host Application code version listed in *Software*
(on page 7) to verify the correct software version.

- If **yes**, type **exit** and press **Enter**.

- If **no**, go to *Back Up the Current GQAM Configuration File* (on page 23).

Back Up the Current GQAM Configuration File

Introduction

Before installing the new GQAM software, make a backup file of the config file currently installed on the DNCS by completing the following steps.

> ⚠ **CAUTION:**
>
> **Do not install new software until you have created a backup of the configuration file currently installed on your system. Having a backup file will enable you to restore the previous version of GQAM software in the unlikely event of a failure.**
>
> **Restore the previous version of software to your system only when recommended by Cisco Services.**

Backing Up the Current GQAM Configuration File

1   Complete the following steps to log on to the xterm window as **root** user.

    a   Type **su -** and press **Enter**. The password prompt appears.

    b   Type the root password and press **Enter**.

2   Type **cd /tftpboot** and press **Enter** to access the tftpboot directory.

3   Type **pwd** and press **Enter**. The /tftpboot directory name appears and indicates that you are in the correct directory.

4   Copy the current configuration file to a backup file.

    Example: Type **cp –p gqam.config gqam.config.old** and press **Enter.**

    Note: If you are using a non-standard config file (for example, gqam.test), substitute that config file name for gqam.config.

    Result: A copy of the gqam.config file (or the file name you specified), which contains configuration settings, is saved to a configuration file named gqam.config.old.

5   Remain logged in as root user and go to *Install GQAM Software onto the DNCS* (on page 24).

Install GQAM Software onto the DNCS

Introduction

This section describes how to install the new software onto the DNCS. Software is installed from either of the following locations:

- GQAM Software V4.2.1 CD, part number 4021954. Go to *Installing the GQAM Software from a CD* (on page 24).

- Our FTP server. Go to *Installing the GQAM Software from the FTP Server* (on page 25).

Installing the GQAM Software from a CD

1 Insert the **GQAM V4.2.1** CD into the CD-ROM drive of the DNCS.

2 Did the File Manager window display?

- If **yes**, the CD mounted successfully. Go to step 4.

- If **no**, type **df -k** to determine where the CD is mounted and then go to step 3.

3 Is /cdrom listed in the output?

- If **yes**, go to step 4.

- If **no**, contact Cisco Services.

4 From an xterm window where you are logged in as root, type **cd /cdrom/cdrom0** and press **Enter** to access the cdrom0 directory.

5 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.

6 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 30 seconds.

7 Was the installation successful?

- If **yes**, go to step 8.

- If **no**, contact Cisco Services.

8 From the xterm window where you are logged in as root, type **exit** and press **Enter**. You are logged out as root user.

9 Complete one of the following options:

■ **If the File Manager is present**: From the File Manager window, click **File** and select **Eject**. The CD is ejected from the CD drive and the File Manager window closes.

■ **If the File Manager is not present**: From an xterm window, type the following command: **cd /.; eject; exit**. The CD is ejected from the CD drive.

10 Type **exit** and press **Enter** to close the xterm window.

11 Go to *Establish a Download Sequence* (on page 27).

Installing the GQAM Software from the FTP Server

Creating the Directory

1 From the xterm window where you are logged in as root, type **cd /export/home/dncs/download** and press **Enter**. The /export/home/dncs/download directory becomes the working directory.

Important: If this directory does *not* exist, use the **mkdir** command to create it. Then, repeat step 1.

2 Type **mkdir GQAM42** and press **Enter**. The system creates a subdirectory called GQAM42 in the /export/home/dncs/download directory.

3 Type **cd GQAM42** and press **Enter** to access the GQAM42 directory.

4 Go to *Obtaining the GQAM Software File* (on page 25).

Obtaining the GQAM Software File

1 Log on to the FTP server.

Notes:

■ The address of the server is **ftp.sciatl.com** or **192.133.243.133**.

Note: The address for the FTP server is subject to change. If you are unable to reach the FTP server, please contact Cisco Services for the latest address.

■ The username is **anonymous**.

■ The password is the e-mail address of the person logging in.

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

■ If you are *outside* our firewall, type **cd /pub/scicare/RELEASED/GQAM**

■ If you are *inside* our firewall, type **cd /external_pub/scicare/RELEASED/GQAM**

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

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

5   Type **prompt** and press **Enter**. The system indicates that interactive mode is off.

6   Type **get GQAM42.tar.gz** and press **Enter**. The system begins copying the file (or files) from the FTP site to the current directory on your DNCS.

7   Type **bye** and press **Enter** to log out of the FTP server.

8   Go to *Decompressing and Extracting the File* (on page 26).

Decompressing and Extracting the File

1   From the xterm window, type **gzip -d GQAM42.tar.gz** and press **Enter**. The system decompresses the GQAM software file.

2   Type **tar xvf GQAM42.tar** and press **Enter**. The system extracts the individual files.

3   Go to *Installing GQAM Software* (on page 26).

Installing GQAM Software

1   From the xterm window where you are logged in as root, 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.

  Note: The installation should take less than 30 seconds.

3   Did a message appear indicating that the installation was successful?

  ■ If **yes**, go to step 4.

  ■ If **no**, contact Cisco Services.

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

  ■ GQAM42.tar (file)

  ■ SAIGQAM (directory)

  Example: Type **rm –rf SAIgqam GQAM42.tar** and press **Enter**.

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

5   Type **exit** and press **Enter** to log out as root user.

6   Type **exit** and press **Enter** to close the xterm window.

7   Go to *Establish a Download Sequence* (on page 27).

Establish a Download Sequence

Establishing a Sequence for Downloading Software onto Each GQAM

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

> ⚠️ **CAUTION:**
>
> **If you are downloading new software to more than one GQAM modulator group, download the software to one modulator group (for example, all modulators in a single rack or hub) and verify its functionality before attempting to download software to another modulator group. Verifying the functionality of one modulator group at a time enables you to better isolate any failures that may occur.**

xOD/VOD Sessions

When upgrading GQAMs 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:

1 If any GQAMs act as spares, download the software on these modulators first.

2 If your system does not have a spare GQAM, download the software on the modulator carrying the fewest number of sessions.

3 Continue downloading the software to modulators by working your way up to the modulator carrying the most sessions.

Broadcast Sessions

When upgrading GQAMs that carry broadcast sessions, upgrade the modulators in one hub, four modulators at a time, and verify their functionality before proceeding to other GQAMs in the hub.

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

1 If any GQAMs act as spares, download the software on these modulators first.

2 If your system does not have a spare GQAM, download the software on the modulator carrying sessions that are least viewed.

3   If you have GQAMs that carry BFS sessions, download the software to the BFS GQAM first.

4   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?

xOD/VOD Sessions

If all of your GQAMs carry xOD or VOD sessions, you are ready to begin downloading the new software to the GQAMs. Go to *Download Software to the GQAM Modulators* (on page 29).

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 GQAMs that carry broadcast sessions, use our DNCS Report Writer to view 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 maps each source to the transport device used to deliver the source (analog frequency on GQAMs).

Generating this report helps you to determine which sessions/services are carried by each GQAM. This report also helps you to verify that these sessions are successfully rebuilt after the new software is downloaded to the GQAM.

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

Important: Depending on your system release, refer to the *DNCS Report Writer 4.2 User's Guide* (part number 4013430), the *DNCS Report Writer 4.2.1 User Guide* (part number 4022012), the *DNCS Report Writer Version 4.3 for DNCS and ISDS User Guide* (part number 4021181), or the *DNCS Online Help* for your system for further assistance.

Download Software to the GQAM Modulators

Introduction

To download the new software to GQAMs, you must first reset (reboot) the modulators using one of the following methods:

- DNCS GUI

- auditQam utility

- Front panel of the GQAM

⚠ **CAUTION:**

All active sessions on the GQAM 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 procedure for *Preparing to Monitor Remote GQAM Resets* (on page 30) when resetting GQAMs from the DNCS GUI or when using an auditQam script to reset multiple GQAMs.

After the modulators reset, the software is downloaded from the DNCS to the modulators and existing sessions are reestablished.

Important Note Regarding the auditQam Utility

If you are using the auditQam utility to reset your GQAMs, your system must be operating SR 4.0 SP1 or later.

Choose a Reset Method

Choose one of the following methods to reset your GQAMs:

- To reset modulators through the DNCS GUI, go to *Preparing to Monitor Remote GQAM Resets* (on page 30).

- To reset modulators using the auditQam utility, go to *Preparing to Monitor Remote GQAM Resets* (on page 30).

- To reset modulators through the front panel, go to *Physically Resetting the GQAM Modulator* (on page 32).

Note: Resetting GQAMs from the DNCS GUI or from the front panel can be time-consuming. If you have a number of modulators to reset, consider using the auditQam utility.

Preparing to Monitor Remote GQAM Resets

1 From the xterm window, type **cd /dvs/dncs/tmp** and press **Enter** to access the TMP directory.

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

3 Locate the current bootpd.xxx file name.

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

4 Type **tail -f bootpd.xxx | awk '//'** to show the last GQAM to reboot.

5 As you reset GQAMs (in the QAM List window or using the auditqam utility), monitor the bootpd file to verify that each GQAM reset.

Note: The bootpd file will roll over to the next log as it grows. If logging stops, repeat steps 2 through 4 to see if a new log file is being used.

6 Go to one of the following sections, as desired:

- ■ *Resetting the GQAM Modulator Through the DNCS GUI* (on page 30)
- ■ *Resetting GQAM Modulators Through the auditQam Utility* (on page 32)

Resetting the GQAM Modulator Through the DNCS GUI

This section describes how to reset GQAMs in order to load new software. Use the *Preparing to Monitor Remote GQAM Resets* (on page 30) procedure before resetting GQAMs through the DNCS GUI.

⚠️ **CAUTION:**

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

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

Note: For instructions to provision the GQAM modulator, refer to *Gigabit QAM Modulator Model D9479 Hardware Installation and Operation Guide* (part number 745431), or the *Dual SFP Gigabit QAM Modulator Installation and Operation Guide* (part number 4014102).

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

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

Important: Although each GQAM modulator that has been provisioned is listed sixteen times, select only one of the sixteen modulators listed.

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

QAM List

File View   Help

Headend Name	QAM Type	QAM Name	RF Port	Transport Stream ID	Channel Center Frequency (MHz)	IP Address	Admin State
BillyHE1	GQAM	EmulGQAM77	RF OUT 1 (4)	23231	621.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 1 (3)	22231	615.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 4 (16)	23234	621.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 4 (15)	22234	615.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 4 (13)	20234	603.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 1 (2)	21231	609.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 1 (1)	20231	603.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 4 (14)	21234	609.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 2 (5)	20232	603.00	172.16.4.77	Online
BillyHE1	GQAM	EmulGQAM77	RF OUT 2 (6)	21232	609.00	172.16.4.77	Online

4 Click **File** and then select **Reset**. The Question window opens and asks you to confirm the reset of the GQAM.

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

Notes:

- The <Name of GQAM> represents the name of the modulator you just reset.

- It may take up to 8 minutes for each modulator to reset.

6 Do you see the IP address for the GQAM you reset in the bootpd log file?

- If **yes**, continue with this procedure.

- If **no**, call Cisco Services.

Note: For details about IP addresses in the bootpd log file, go to *Preparing to Monitor Remote GQAM Resets* (on page 30).

7 Repeat steps 3 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 cause GQAMs to have to retry downloads due to traffic congestion on the network.

8 Choose one of the following options and then come go to step 9 of this procedure.

- For GQAM modulators that carry broadcast sessions, go to *Verifying the Functionality of GQAM Modulators That Carry Broadcast Sessions* (on page 35).

- For GQAM modulators that carry xOD or VOD sessions, go to *Verifying the Functionality of GQAM Modulators That Carry xOD or VOD Sessions* (on page 36).

9   Do you have additional modulators to reset?

-   If **yes**, repeat steps 3 through 8.

-   If **no,** go to step 10.

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

Resetting GQAM Modulators Through the auditQam Utility

The *reset* option of the auditQam utility allows you to reset the GQAM from the command line of the DNCS, a process that is usually quicker than resetting the modulator through the DNCS GUI or modulator panel.

You can use one of the following two methods to reset the GQAM using auditQam:

-   Reset a single GQAM by typing the IP address of the modulator as an argument to the **auditQam -reset** command

-   Reset more than one GQAM by creating a script that includes a reset command for each modulator. The script includes a delay value that resets each GQAM over a period of time.

Note: Instructions and guidelines for both situations are provided in this section.

Resetting One GQAM

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

2   Type the following command and press **Enter**:

auditQam -reset [GQAM 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   Do you see the IP address for the GQAM you reset in the bootpd log file?

-   If **yes**, continue with this procedure.

-   If **no**, call Cisco Services.

4   Select one of the following options:

-   For GQAMs that carry broadcast sessions, go to *Verifying the Functionality of GQAM Modulators That Carry Broadcast Sessions* (on page 35).

-   For GQAMs that carry xOD or VOD sessions, go to *Verifying the Functionality of GQAM Modulators That Carry xOD or VOD Sessions* (on page 36).

Resetting More Than One GQAM

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

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

This sample script will execute the following functions:

- Reset four GQAMs

- After 8 minutes (480 seconds), reset another set of four GQAMs

Important: Use the procedure for *Preparing to Monitor Remote GQAM Resets* (on page 30) when using an auditQam script to reset multiple GQAMs.

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

```
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 480
# 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 480
# end of second set
```

After resetting the GQAMs, select one of the following options:

- For GQAMs that carry broadcast sessions, go to *Verifying the Functionality of GQAM Modulators That Carry Broadcast Sessions* (on page 35).

- For GQAMs that carry xOD or VOD sessions, go to *Verifying the Functionality of GQAM Modulators That Carry xOD or VOD Sessions* (on page 36).

Physically Resetting the GQAM Modulator

1   Record the Session Count and the Program Count for your GQAMs by completing the following steps:

   Note: Skip this step for any GQAM 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.

      Note: Press the **RF Select** button to access each component of the GQAM.

   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.

      Note: Press the **RF Select** button to access each component of the GQAM.

   e   Repeat steps a) through d) for each GQAM in your system.

2   Reset the GQAM by turning off and then back on the power switch located on the back panel.

   Note: If it is difficult to reach the power switch, you can reset the modulators by pressing the **Options** button on the front panel until the Reset option appears.

3   Repeat steps 1 and 2 for up to three additional modulators.

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

4   Repeat step 1 to record the current Session and Program Count totals for each modulator that you reset. Then, go to step 5.

5   Does the Session Count and Program Count recorded in step 1 and step 4 match?

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

   ◼   If **yes**, go to *Verifying the Functionality of GQAM Modulators That Carry Broadcast Sessions* (on page 35). Then, go to step 6 of this procedure.

   ◼   If **no**, contact Cisco Services.

6   Do you have additional modulators to reset?

   ◼   If **yes**, repeat steps 2 through 5 until each modulator has been reset, and then go to *Verifying the Functionality of GQAM Modulators That Carry xOD or VOD Sessions* (on page 36).

   ◼   If **no**, go to *Verifying the Functionality of GQAM Modulators That Carry xOD or VOD Sessions* (on page 36).

Verifying the Functionality of GQAM Modulators That Carry Broadcast Sessions

1 Access a DHCT that is connected downstream to one GQAM.

2 Refer to the Channels, Sources & Sessions Report that you generated and saved in *Broadcast Sessions* (on page 28) to verify restored GQAM channels and sessions.

3 Tune the DHCT to each channel listed in the report for each GQAM that you reset and upgraded.

4 Are all channels listed for the GQAMs that you reset accessible from the DHCT?

- ▪ If **yes**, go to step 5.

- ▪ If **no**, do *not* attempt to upgrade the software for any additional GQAM. Call Cisco Services at 1-800-283-2636.

5 For those GQAMs that carry content inappropriate for children, we recommend that you verify encryption using one of the following methods:

- ▪ Using a set-top that is authorized for all services, tune one by one to each service and check the PowerKEY Information diagnostic screen (page 6). If the Prog Stat and Prog Entitle fields are zero (0x00), then the program is in the clear. If these fields are non-zero, then the program is encrypted.

- ▪ Verify that the program count is correct on the GQAMs that carry inappropriate content before and after the reset.

- ▪ Using a QAM tuner television, tune to the respective channels and verify that inappropriate 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 GQAMs?

- ▪ If **yes**, go to step 8.

- ▪ If **no,** return to the procedure you are using to reset your GQAMs.

8 Generate a Doctor Report using the **–av** option to verify system stability and functionality.

Note: For further instructions on running the Doctor Report, refer to the chapter titled **Analyze System Configuration With the Doctor Report** in the *DBDS Utilities Version 6.1 Installation Instructions and DNCS Utilities User Guide* (part number 4020695).

9 Do new or unexpected errors appear in the Doctor Report?

- ▪ If **yes**, contact Cisco Services.

- ▪ If **no**, go to step 10.

10 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.

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

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

Sessions that exist on xOD or VOD GQAMs that were upgraded will be interrupted and, in most cases, will recover. If the sessions do not recover, choose one of the following options:

■ Exit the xOD or VOD application (stop the xOD or VOD program), and then restart the application and the xOD or VOD stream by resuming the playback of the "in progress" purchase.

■ Change to a different channel, and then back to the previous channel. Restart the application and the xOD or VOD stream by resuming the playback of the "in progress" purchase.

Note: This procedure will vary depending on the application you are using.

Important: Due to load balancing and traffic, it is difficult to determine if all GQAMs 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.

Note: 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.

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

Verify the Install Package Exists on the DNCS

Introduction

For system releases that do not include the pre-packaged install tool, we recommend that you verify whether or not the tool exists on your DNCS; because, the tool is required to load new software onto the DNCS. This appendix provides procedures for checking for the install tool, as well as procedures for retrieving it from our FTP site.

In This Appendix

Check for the Install Tool on the DNCS

Checking for install_pkg on the DNCS

1 From an xterm window, type **cd /usr/sbin** and press **Enter**.

2 Type **ls** and press **Enter**.

3 Is the install_pkg file present on the DNCS?

- If **yes**, resume your installation procedures.

- If **no**, go to step 4.

4 Log on to our FTP server.

Notes:

- The address of the server is **ftp.sciatl.com** or **192.133.243.133**.

  Note: The address for the FTP server is subject to change. If you are unable to reach the FTP server, please contact Cisco Services for the latest address.

- The username is **anonymous**.

- The password is the email address of the person logging in.

5 Choose one of the following options to navigate to the directory in which the file is located:

- If you are *inside* our firewall, type **cd /external_pub/scicare/RELEASED/SR2.2Patches**.

- If you are *outside* our firewall, type **cd /pub/scicare/RELEASED/SR2.2Patches**.

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

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

8 Type **get install_pkg** and press **Enter**. The system begins copying files into the /export/home/dncs/download/directory on your DNCS.

9 Type **get install_pkg README_3.0.1.3p2EP1.txt**. The system begins copying files into the /export/home/dncs/download/directory on your DNCS.

10 Type **bye** and press **Enter** to log out of our FTP server.

11 Continue with the installation procedures.

B

Load Multiple Versions of GQAM Code

Introduction

The recommended upgrade process for GQAMs is based on a goal of getting all the units upgraded within a short period of time (typically one day). In some cases a site may choose to upgrade the GQAMs over time or may desire to load a unique version of code onto a single GQAM for extended testing. This appendix describes how to accomplish either of these goals.

In This Appendix

Loading Multiple Versions of GQAM Code

Note: If you need to determine which config files are being used by each GQAM, refer to *Checking for Multiple Config Files* (on page 20) for details. For this procedure, we will assume that gqam.config is the current configuration file.

1 Go to the /tftpboot directory on the DNCS and rename the current gqam.config file as **gqam.current**.

2 Install the new version of GQAM software that you intend to use using *Install GQAM Software onto the DNCS* (on page 24).

3 From the /tftpboot directory on the DNCS, rename the new gqam.config file as **gqam.new**.

4 From the /tftpboot directory on the DNCS, rename the original backup file (for example, rename gqam.current to gqam.config).

5 From the QAM List window on the DNCS, open the entry for the GQAM that should download the new code.

6 Click the **Advanced Parameters** tab, and change the configuration file name from gqam.config to **gqam.new**.

7 Click **Apply**.

8 From the QAM List window on the DNCS, reset the GQAM to which you want to download the new code.

9 Repeat steps 6 through 8 for each GQAM to which you want to download the new code.

10 When you are ready to load code to all of your GQAMs, perform one of the following approaches:

- **Preferred Approach**

 a Go to the /tftpboot directory and rename gqam.new as **gqam.config**.

 b From the QAM List window on the DNCS, reset all the GQAMs that are using the gqam.config file.

 c From the QAM List window on the DNCS, change the configuration file value for all GQAMs that currently use gqam.new to **gqam.config**. These units do not need to be reset.

- **Alternative Approach**

 a From the QAM List window, change the configuration file value for all modulators using gqam.config to use **gqam.new**.

 b Reset the changed GQAMs.

 Note: Units that were already using gqam.new as their configuration file do not need to be reset.

C

Roll Back to the Previous Version of GQAM Software

Introduction

This appendix contains instructions for restoring the previous version of GQAM software should you encounter problems after upgrading to GQAM software version 4.2.1. Follow the instructions in this appendix only after Cisco Services directs you to restore the previous version of software.

Important: If after downloading GQAM software version 4.2.1 you encounter problems, contact Cisco Services at 1-800-283-2636 for assistance. In the event that Cisco Services directs you to download the previous version of software to GQAMs, follow the procedures in this appendix while working with Cisco Services.

In This Appendix

Restore the Previous Version of GQAM Software

Introduction

Contact Cisco Services if you notice that the system is reacting adversely after installing or upgrading the GQAM software. If Cisco Services recommends restoring the previous GQAM software version, use the instructions in this section to assist you.

> ⚠️ **CAUTION:**
>
> **Contact Cisco Services at 1-800-283-2636 before attempting to restore the previous GQAM software version.**

Note: To restore the previous GQAM executable files, restore the configuration backup file that you saved in *Backing Up the Current GQAM Configuration File* (on page 23).

1 Open an xterm window on the DNCS and log on as the **root** user. The root prompt appears.

2 Type **cd /tftpboot** and press **Enter**. The root prompt appears.

3 Type **pwd** and press **Enter**. The text /tftpboot appears at the prompt. This text indicates you are in the correct directory.

4 Type **cp –p gqam.config gqam.config.yyy** and press **Enter**. The configuration file named gqam.config, which contains GQAM software version 4.2.1 configuration settings, is saved to a file named gqam.config.yyy.

   Note: The yyy represents the GQAM software version number you just installed.

5 Type **cp –p gqam.config.old gqam.config** and press **Enter.** The configuration file named gqam.config.old, which contains the previous list of GQAM configuration files, is copied to a configuration file named gqam.config.

6 Type **ls -l** and press **Enter**. A list of files displays. The files **gqam.config.old**, **gqam.config**, and **gqam.config.bakyyy** appear in the list.

   Note: The "l" used in **ls** and **-l** is a lowercase letter L.

7 Confirm that the date and size of **gqam.config** matches those of **gqam.config.old**.

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

9 Download the previous version of software to GQAMs by rebooting the modulators. For detailed procedures, go to *Download Software to the GQAM Modulators* (on page 29).