GQAM Modulator Software Version 4.3.4 Release Notes

Overview

Introduction

This document describes the new features and benefits of upgrading a Model D9479 Gigabit Quadrature Amplitude Modulation (GQAM) Modulator to GQAM software version 4.3.4. This document also includes a description of the change requests (CRs) implemented in this release.

Audience

This document is intended for system operators or field service engineers who are responsible for installing the GQAM software onto the GQAM.

Scope

These release notes provide an executive overview of GQAM software version 4.3.4. If you have questions about this release or require more detailed information, contact Cisco Services.

Document Version

This is the second formal release of this document.

Introducing GQAM Software Version 4.3.4

GQAM software version 4.3.4 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 broadcast services.

Note: For a complete description of a GQAM, refer to the following documents:

- *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 Compatibility and Prerequisites

GQAM software version 4.3.4 can be installed on a Digital Broadband Delivery System (DBDS) that is running one of the following system releases (SR) and Digital Network Control System (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 4.3.4 includes the following software code:

- GQAM Host Application code 4.3.4
- GQAM Host Boot code 4.3.4
- GQAM RF 2.6
- GQAM Input App code 4.3.4
- GQAM Input Boot code 4.3.4
- GQAM Output App code 4.3.4
- GQAM Output Boot code 4.3.4

You will need to provide the following file name for the **Before You Begin** section of the *QAM Software Installation Instructions* (part number 4026030):

GQAM434.tar.gz

Hardware

GQAM 4.3.4 supports only the Model D9479 GQAM (both the single GigE Port and dual GigE Port models).

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.

What's New?

DTA Support for both Simple Content Protection and Clear Content

This feature allows the Digital Transport Adapter Control System (DTACS) to establish an IP multicast in-band management channel through the GQAM for control of individual Digital Terminal Adapter (DTA) devices. This in-band management channel carries a variety of DTA specific command and control information, including code download, channel maps, and DTA activiation/deactivation.

Manual IGMPv3 SSM Source Selection

This feature provides a GQAM web interface control that allows an operator to specify which source of an IGMPv3 SSM multicast group the GQAM should select. This is useful in forcing the GQAM back to a specific source once a network failure has been remedied.

What's Fixed?

This section provides a description of the Change Requests (CRs) implemented in GQAM software version 4.3.4.

CR 84891-02: 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. This issue is corrected in GQAM 4.3.4.

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. This issue is corrected in GQAM 4.3.4.

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

The SNMP trap feature introduced in GQAM software version 4.2.1, 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 documented a possibility that SNMP traps may still not function properly even after performing this procedure. This issue is corrected in GQAM 4.3.4.

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 multi-program transport stream (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. This issue has been corrected in GQAM 4.3.4.

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. This issue has been corrected in GQAM 4.3.4.

CR 95751-02: IGMP V2 Random Delay Causes Video Interruption

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. This issue has been corrected in GQAM 4.3.4.

CR 95987-02: 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. This issue has been corrected in GQAM 4.3.4.

CR 96152-02: 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 has been corrected in GQAM 4.3.4, but it also requires CR 96182 to be implemented for the USRM.

CR 96318: GQAM Web UI Needs Authentication Page

The web interface developed in GQAM software version 4.2.1 does not support user authentication. This introduces minimal risk because the GQAM web interface is only accessible from the DNCS management network and this should be a private network. Also, the GQAM web interface is a read-only interface. The only exception to the read-only rule is a Reset GQAM button available on the software versions page. GQAM 4.3.4 adds user authentication.

CR 96543: GQAM Web UI Displays Data for Wrong Port

When using Mozilla Firefox browser, the GQAM Web UI sometimes displays data for a port that is different than the selected port. This behavior is not present when using Microsoft Internet Explorer. This issue has been corrected in GQAM 4.3.4.

CR 97765-02: GQAM TSR Configured as Muliticast with UDP

In GQAM 4.2.1, if a TSR is configured as multicast with a UDP port specified, the GQAM does not pass the PID for the PAT to the output. This issue has been corrected in GQAM 4.3.4.

CR 97788-01: GQAM TSR Macroblocking with Music Choice

In GQAM 4.2.1, macroblocking and broken audio occur when tuning Music Choice if the MPTS configuration uses CBR. This issue has been corrected in GQAM 4.3.4.

CR 97999-02: Changes to GQAM TSR Port, Source, or PAT Cause Video Impairments

In GQAM 4.2.1, if a source switch or port switch occurs on a TSR, a black screen will result. If a PAT update occurs, the GQAM will ignore the update. This issue has been corrected in GQAM 4.3.4.

CR 101049-02: Rapid PSI Updates in Input Stream Disrupt GQAM TSR

In GQAM 4.2.1, rapid PAT/PMT updates on an input stream transmitted on a GQAM TSR exposed a race condition between two internal GQAM processes that resulted in a stream handling deadlock. Once deadlocked, the GQAM could no longer properly process the incoming stream, which resulted in black screens appearing. This issue has been corrected in GQAM 4.3.4.

CR 101976-02: GQAM Needs Support for DVB to ATSC AC-3 Audio Filter

A new GQAM craft command 'ac3_filter' has been added to GQAM 4.3.4. When this command is set to '1', the GQAM will map DVB AC-3 audio stream type 0x06 with descriptor 0x6A to ATSC stream type 0x81 with descriptor text "AC3". The setting is maintained in non-volatile memory and is persistent across reboots and power cycles.

CR 102523-02: GQAM TSR with ASI Input Does Not Pass All PIDs

In GQAM 4.2.1, Transport Stream Routes created from ASI input ports only pass elementary stream PIDs specified in the input PSI. In GQAM 4.3.4, all PIDs present in the incoming ASI feed are passed properly on the TSR.

CR 103923-02: Encrypted Broadcast Sessions May Be Transmitted in the Clear if the Segment is Not Included in a Package

Earlier GQAM releases had a potential of transmitting encrypted broadcast content in the clear. The specific condition required to expose this issue is a broadcast IP multicast feed built as an encrypted session and added to a segment, but the segment is not included in a package. Initially the content is encrypted and not viewable on either a QAM tuner TV or a set-top box. If the incoming IP multicast feed is interrupted for more than one second, the session will be transmitted in the clear upon recovery. The content is viewable on a QAM tuner TV but not a set-top box. This issue has been corrected in GQAM 4.3.4.

CR 103944-04: GQAM May Produce Black Screens Following MSK Switch

Earlier GQAM releases did not gracefully handle the swap of MSK parity. This issue has been corrected in GQAM 4.3.4.

CR 104049-02: GQAM IGMPv3 SSM Exponential Back-Off for Source Switching

Earlier versions of GQAM would send IGMPv3 source switch requests for each missing multicast group on a constant one second interval. When many GQAMs had many missing multicast groups, the resulting flood of source switch messages could overwhelm some routers. This change introduces an exponential back-off timer so the GQAM will send source switch requests less frequently. The maximum source switch request period has increased from 1 to 16 seconds.

Known Issues

Introduction

This section provides a list of known system issues identified during testing of GQAM software version 4.3.4. Resolutions to these issues are currently under investigation or in development.

For More Information

The list in this section is not intended to be comprehensive. If you have questions about a particular change request, contact Cisco Services.

CR 104833-02: Active Source IP Address is 0.0.0.0 after Source Switch

In GQAM 4.3.4, the active source IP address displayed for mulicast IGMPv3 sessions on the GQAM GUI and perf_sess_info command is correct at first, but changes to 0.0.0.0 after a source switch. This issue makes it difficult to determine if the forced source switch feature has provided the desired results.

CR 105331: GQAM Encryption Audit

The GQAM needs an audit to detect any encrypted content from streaming in the clear. If this condition is detected it should be automatically corrected. If the GQAM is unable to automatically correct the condition, the GQAM will alarm the condition.

CR 105390-02: GQAM RPC Communication Failures with SR4.3 when Four SDV Servers are Connected

GQAM 4.2.x and 4.3.x software releases experience a RPC communication link failure when connected to a DNCS running SR4.3 and four SDV servers. This condition prevents the addition of new sessions and can cause spontaneous GQAM resets.

CA Descriptor and VOD Sessions

Overview

Versions of GQAM software prior to software version 2.5 inserted the PowerKEY® Conditional Access (CA) descriptor into the Program Map Table (PMT) for unencrypted on-demand content. If the Digital Home Communication 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 4.3.4 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.

Cisco Systems, Inc. 678 277-1120
5030 Sugarloaf Parkway, Box 465447 800 722-2009
Lawrenceville, GA 30042 www.cisco.com

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