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QPSK (Release C70) Software Upgrade and Installation Instructions

Overview

Introduction

These upgrade and installation instructions provide you with the following information:

- An overview of what's new in the QPSK C70 software upgrade, including features introduced since QPSK A62
- Guidelines that define how and when to monitor Explorer® Digital Home Communications Terminals (DHCTs) sign-on rates
- A description of the optional QPSK range extension features, which allow DHCTs to sign on to the system and operate at extended distances from the headend

Who Should Upgrade to QPSK C70 Software?

All sites should upgrade to the C70 version of QPSK modulator software. If you have any questions regarding the compatibility of QPSK C70 with your current system release, call Cisco Services before installing the QPSK C70 software.

Read Me

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.

Overview, Continued

Audience

These instructions are written for headend technicians using the Model D9482 QPSK Modulator with either the Cisco® Resident Application (SARA) or the Pioneer resident application.

These instructions are also written for Cisco Services engineers and cable service provider personnel qualified in the following skills required to complete the upgrade process successfully:

- Working knowledge of UNIX vi editor or the text editor on your system
- Recognizing differences between system errors currently seen on your Digital Broadband Delivery System (DBDS) network and new DBDS network errors
- Troubleshooting for basic system errors
- Stopping and starting system components
- Backing up file systems and databases
- Working knowledge of Sun hardware and Sun DiskSuite software

Note: The Sun DiskSuite software is necessary for the disk mirroring procedure.

- Working knowledge of Solaris
- Working knowledge of script languages

Document Version

This is the second release of the QPSK C70 software upgrade and installation instructions.

Overview, Continued

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What's New in QPSK C70 Software?

Features and Benefits

The QPSK modulator C70 software builds upon the features introduced in previous QPSK modulator software releases, and includes new features.

The following features and benefits, including those introduced since QPSK modulator A62, are provided in the QPSK modulator C70 software:

- DHCTs sign on to the network faster
- QPSK modulator reboots are reduced
- The number of unnecessary alarms is reduced
- The extended range settings are maintained after QPSKs are rebooted
- The QPSK demodulator software version number changes only when new demodulator code is downloaded (See **Demodulator Software Version Numbers**, next in this section, for more information.)
- A Provider ID (Provider_Identifier) is added in the DAVIC provisioning channel message. This feature enables Cisco set-tops to identify the Cisco QPSK when initiating the sign-on process.

Important: This feature is necessary for the Explorer 8300 set-tops running a DOCSIS version of software, or Explorer 1850 and 4200 set-tops, to successfully complete the sign-on process.

- The TCP (Transmission Control Protocol) timeout value allows the QPSK modulator to accommodate abnormal network latency conditions

QPSK Modulator and Demodulator Software Version Numbers

In the past, when you downloaded a new version of QPSK modulator software, the version number of the QPSK demodulator software changed to match the QPSK modulator software version number, even though the QPSK demodulator code had not changed. Beginning with the QPSK C65 software, to streamline the upgrade process the QPSK demodulator software version number changes only when the demodulator code changes.

Examples:

- If your site is currently running QPSK A62, the QPSK modulator will load the newer version of QPSK modulator software (in this case, QPSK C70) and the demodulator will reboot and keep the A62 code.
- If your site is currently running some other combination of QPSK modulator and demodulator software, then both the QPSK modulator and demodulator will download the newer code (C70 and A62 respectively).

What's Fixed?

Introduction

This section provides a description of specific CRs implemented in QPSK C70 and a summary of corrected CRs implemented since the release of QPSK A62.

CRs Corrected in QPSK C70

The following CR is implemented in QPSK C70:

CR 45831: When a DHCT loses its DAVIC connection, a message is logged in the */var/log/dnCSLog* reflecting this loss. With the introduction of the QPSK code C66, this message to the DNCS was not always being reported in the DNCS log file when the DAVIC connection to the DHCT was released. This change corrects this condition by correctly reporting *all* DAVIC loss in the */var/log/dnCSLog* as it did prior to the C66 release.

Summary of Corrected CRs Implemented Since QPSK A62

In addition to the features and benefits described in the previous **What's New in QPSK C70 Software** section, and the CRs implemented in QPSK C70, several other CRs were implemented since QPSK A62 to resolve QPSK and DHCT reboot issues.

The following lists of implemented CRs impact your system, depending on the version of QPSK software currently installed on your system.

If QPSK A62 Is Currently Installed On Your System

The CRs in the following list were implemented since you installed QPSK A62 on your system and are included in the QPSK C70 software.

CR Number	Description of Fix
9035, 24997 34705	Extended range settings are maintained after QPSKs modulators are rebooted. Subscribers will experience fewer disruptions in two-way services.
9441, 9589	A massive release of DHCTs due to loss of signal no longer causes QPSK modulators to reboot.
10816	The QPSK modulator issues an alarm to alert the DNCS of non-responsive demodulators.

What's Fixed?, Continued

CR Number	Description of Fix
11110	The QPSK modulator software automatically reprovisions Explorer DHCTs when they are moved from one QPSK demodulator to another.
11288	<p>The subnet configuration can be modified to more realistically accommodate the needs and the size of the system, and to conservatively use IP address space.</p> <p>Note: The QPSK modulator software is still limited to a maximum of 16,000 IP addresses.</p>
12932	The QPSK modulator front panel carrier wave (CW) mode alarm is generated and remains active until the alarm is manually turned off at the front panel of the QPSK modulator.
13343	It is no longer necessary to reboot the QPSK modulator when a router is replaced. Subscribers will experience shorter disruptions when a router is replaced.
13573	A QPSK modulator reboot issue associated with the loss of communication to the DNCS has been corrected.
17973, 27016	The QPSK processing is changed to eliminate sending unnecessary ranging alarms. This change avoids QPSK reboots due to volume of alarm traffic. Subscribers will experience fewer disruptions in two-way services.
17998	The corruption of the DAVIC Reprovision Frequency message that could potentially cause DHCTs to write over their memory is eliminated. Subscribers will experience fewer disruptions in two-way services.
26987 27017 28305	Process changes enable the QPSK modulator to more efficiently handle large volumes of messages. Subscribers will experience fewer disruptions in two-way services.
36659	The QPSK modulator throttle mechanism is corrected to avoid a condition where sign-on counts were erroneously suspended.
38983	The QPSK modulator verifies that out-of-band SI packets destined for the standard subnet broadcast address have the correct UDP length and UDP checksum. Packets that have an invalid checksum are discarded.

What's Fixed?, Continued

CR Number	Description of Fix
42156	The TCP (Transmission Control Protocol) timeout value allows the QPSK modulator to accommodate abnormal network latency conditions.
45831	When a DHCT loses its DAVIC connection, a message is logged in the <code>/var/log/dnclsLog</code> reflecting this loss. With the introduction of the QPSK code C66, this message to the DNCS was not always being reported in the DNCS log file when the DAVIC connection to the DHCT was released. This change corrects this condition by correctly reporting <i>all</i> DAVIC loss in the <code>/var/log/dnclsLog</code> as it did prior to the C66 release.
46569	The number of queue buffers is increased; this contributes to the reduction of spontaneous reboots.
46570	The reference to the error printing function in the PCI bridge error recovery logic is removed; this contributes to the reduction of spontaneous reboots.

If QPSK C62 Is Currently Installed On Your System

The CRs in the following list were implemented since you installed QPSK C62 on your system and are included in the QPSK C70 software.

CR Number	Description of Fix
34705	Extended range settings are maintained after QPSK modulators are rebooted. Subscribers will experience fewer disruptions in two-way services.
26987 27017 28305	Process changes enable the QPSK modulator to more efficiently handle large volumes of messages. Subscribers will experience fewer disruptions in two-way services.
27016	The QPSK processing is changed to eliminate sending unnecessary ranging alarms. This change avoids QPSK reboots due to volume of alarm traffic. Subscribers will experience fewer disruptions in two-way services.
36659	The QPSK modulator throttle mechanism is corrected to avoid a condition where sign-on counts were erroneously suspended.

What's Fixed?, Continued

CR Number	Description of Fix
38983	The QPSK modulator verifies that out-of-band SI packets destined for the standard subnet broadcast address have the correct User Datagram Protocol (UDP) length and UDP checksum. Packets that have an invalid checksum are discarded.
42156	The TCP (Transmission Control Protocol) timeout value allows the QPSK modulator to accommodate abnormal network latency conditions.
45831	When a DHCT loses its DAVIC connection, a message is logged in the /var/log/dnCSLog reflecting this loss. With the introduction of the QPSK code C66, this message to the DNCS was not always being reported in the DNCS log file when the DAVIC connection to the DHCT was released. This change corrects this condition by correctly reporting all DAVIC loss in the /var/log/dnCSLog as it did prior to the C66 release.
46569	The number of queue buffers is increased; this contributes to the reduction of spontaneous reboots.
46570	The reference to the error printing function in the PCI bridge error recovery logic is removed; this contributes to the reduction of spontaneous reboots.

What's Fixed?, Continued

If QPSK C65 Is Currently Installed On Your System

The CRs in the following list were implemented since you installed QPSK C65 on your system and are included in the QPSK C70 software.

CR Number	Description of Fix
36659	The QPSK modulator throttle mechanism is corrected to avoid a condition where sign-on counts were erroneously suspended.
38983	The QPSK modulator verifies that out-of-band SI packets destined for the standard subnet broadcast address have the correct UDP length and UDP checksum. Packets with invalid checksum are discarded.
42156	The TCP (Transmission Control Protocol) timeout value allows the QPSK modulator to accommodate abnormal network latency conditions.
45831	When a DHCT loses its DAVIC connection, a message is logged in the /var/log/dncsLog reflecting this loss. With the introduction of the QPSK code C66, this message to the DNCS was not always being reported in the DNCS log file when the DAVIC connection to the DHCT was released. This change corrects this condition by correctly reporting all DAVIC loss in the /var/log/dncsLog as it did prior to the C66 release.
46569	The number of queue buffers is increased; this contributes to the reduction of spontaneous reboots.
46570	The reference to the error printing function in the PCI bridge error recovery logic is removed; this contributes to the reduction of spontaneous reboots.

Known Issues

Introduction

The known issues listed in this section were not introduced by C70 and therefore should not represent a significant concern for most operators. This information is provided so that you can avoid extensive investigation of an issue that has already been reported.

CR 6781: QPSK modulator: auto-detection of Ethernet mode

The QPSK modulator has been observed to have difficulty in 10/100BaseT auto detection and operation with network equipment.

Workaround: Lock the port on the network equipment to 10BaseT mode.

CR 8887: Poor QPSK upstream reservation mode performance

QPSK upstream reservation mode performance may be degraded when using the extended ranging option.

Note: Currently deployed applications rarely use the reservation mode.

CR 14309: Sustained high rate/small packet upstream traffic causes QPSK reboot

In a lab environment, a sustained high rate of small packets of upstream traffic in reservation mode may cause a QPSK modulator to reboot.

Note: Currently deployed applications rarely use the reservation mode.

CR 33022: QPSK Modulator front panel information changes formatting

When viewing information on the front panel of the QPSK modulator using the Options button, the information sometimes runs together on the bottom line of the display.

CR 33023: QPSK modulator reset from DNCS QPSK GUI returns an RPC error

When resetting a QPSK modulator from the DNCS, the QPSK GUI times out. The QPSK modulator reset occurs as intended, but the modulator does not provide an acknowledgment of the reset commands.

CR 36649: QPSK RPC queue is full and QPSK stops communicating with the DNCS

In the field, there are some occasions where the RPC queue gets full and stays in that mode; this prevents messages going to the DNCS from being delivered. When this occurs, new DHCTs cannot sign-on and the QPSK needs to be rebooted.

What Version of QPSK Software is Currently Installed?

Introduction

Before you continue, determine which version of QPSK software is installed on the DNCS.

Important: If QPSK C70 software was installed as part of a system release upgrade do not install the QPSK C70 software again.

Determining the Current Version of QPSK Software

To determine the version of QPSK software currently installed on the DNCS, complete the following steps.

1. Press the **Options** button on the front panel of any QPSK modulator until the LED displays **OPTION: 302 App Version**.
2. Does the bottom line on the LED display look similar to **A302_C70**?
 - If **yes**, QPSK C70 is installed on the DNCS; do not install it again. However, to take full advantage of the DHCT monitoring and ranging features provided in the QPSK software, Cisco recommends that you complete the procedures described in **The Upgrade Process**, next in these instructions.

Assumption: The assumption is that most, if not all, of your QPSK modulators have the same version of QPSK software installed.
 - If **no**, go to **The Upgrade Process**, next in these instructions.

The Upgrade Process

Introduction

This section provides a timeline for each stage of the QPSK C70 upgrade and installation process. Read this section carefully; some of these procedures are not addressed in system release installation instructions.

Take Full Advantage of QPSK DHCT Monitoring and Ranging Features

If the QPSK C70 software is already installed on your DNCS and downloaded to the QPSK modulators, do *not* install it again.

However, to take full advantage of the DHCT monitoring and ranging features provided in the QPSK software, Cisco recommends that you complete the procedures described in the following sections. These procedures are not included in system release installation instructions:

- Monitor the DNCS Disk Space
- Monitor DHCT Sign-On Rates
- Set DNCS Tracing Levels
- What to Look For in the signonCount Data
- Continue to Monitor the DHCT Sign-On Traffic
- What Is the QPSK Range Extension Feature?
- Activate the Range Extension Feature (Optional)

Are You Replacing An Earlier Version of QPSK Software With QPSK C70?

If you are replacing an earlier version of QPSK software, complete all of the procedures provided in these instructions to upgrade to QPSK C70.

The Upgrade Process, Continued

How Much Time is Required to Install the QPSK C70 Software?

The initial monitoring of the system and installing the QPSK C70 software requires approximately 2 hours. When installation is complete, continue to monitor the DHCT sign-on traffic for several hours. The following table provides a description and approximate time required for each stage of the QPSK C70 upgrade and installation process.

Stage	Description	Time Required
1	Monitor the available DNCS disk space. If the percentage of used disk space exceeds 80 percent, the DNCS is at risk of becoming full, which would cause the DNCS to stop abruptly. Call Cisco Services immediately.	5 minutes
2	Monitor the DHCT sign-on rates using the data produced by the signonCount utility. Review the signonCount utility Help window for an understanding of the procedure.	30 - 60 minutes
3	Set the DNCS tracing levels to trace the maximum level of system activity.	5 minutes
4	Display and interpret the data produced by the signonCount utility so you can take appropriate action.	30 - 60 minutes
5	Obtain the software either by ordering the software CD or by connecting to an FTP server maintained by Cisco Services.	5 minutes
6	Install the QPSK C70 software onto the DNCS.	15 minutes
7	Reset a QPSK modulator. Allow the new QPSK C70 software to download to the QPSK modulator and wait for DHCTs to reconnect to the system. Verify that the software successfully downloaded to the QPSK modulator.	15 minutes per unit, average
8	After downloading the QPSK C70 software, continue to monitor the DHCT sign-on traffic for 10 to 48 hours. Note: You do not need to watch the sign-on traffic continuously for 10 to 48 hours. You should check occasionally during this time to ensure that there are no problems.	10 - 48 hours

The Upgrade Process, Continued

Is Service Impacted During the Upgrade?

The service impact to subscribers will vary based on the applications installed on your system, and how the applications react to a loss of both the forward and reverse QPSK data paths. For a subscriber not actively using an interactive application, the outage will most likely go unnoticed.

System Requirements

Upgrading from Earlier Versions of QPSK Software

The installation information in these instructions applies only to systems operating QPSK software version A47 or later.

If you are upgrading from QPSK software version A34 or earlier, you cannot directly upgrade to QPSK C70. You must first upgrade to QPSK A47, and then upgrade to QPSK C70 or later. Call Cisco Services to obtain information about upgrading from earlier versions of QPSK software.

Taking Advantage of the Variable-Length Subnet Masks (VLSM) Feature

To take advantage of variable-length subnet masks (VLSM), you must have SR 2.x/3.x or later installed. SR 2.x/3.x and later utilize the Solaris 8 operating system (OS) that includes full support for VLSM. To optimize network configuration and to take advantage of VLSM network technology, Cisco recommends that you modify all applicable network configuration files on both the Digital Network Control System (DNCS) and the Application Server when upgrading to SR 2.x/3.x or later.

Monitor the DNCS Disk Space

Introduction

The utilities used in monitoring the system during the loading of QPSK C70 software require that you enable the process tracing for some DNCS functions. This tracing may result in a significant increase in the size of the dncsLog file. If allowed to grow unchecked, the dncsLog file could, in rare cases, fill the hard disk and as a result cause the DNCS to stop functioning.

The procedures in this section describe how to monitor the DNCS disk space that is presently available. The procedures also indicate when to call Cisco Services to take action should the system start to run low on storage space. Use these monitoring procedures each time you are directed to check available disk space.

Monitoring Available Disk Space

To monitor the disk space on the DNCS, complete the following steps.

1. From an xterm window, type **df -k** and press **Enter**.

Result: A list of DNCS files and disk space appears in the xterm window.

```
<PONY_DNCS_1>DNCS--/export/home/dnCS $ df -k
Filesystem      1024-blocks    Used    Available  Capacity  Mounted on
/dev/md/dsk/d500 482455        48794    385421    12%      /
/dev/md/dsk/d51  962571       125272    741043    15%      /usr
/proc            0             0         0         0%      /proc
Fd               0             0         0         0%      /dev/fd
/dev/md/dsk/d50  1927383      133792    160086    8%       /var
/dev/md/dsk/d53  6694765     2524602    3500693    42%      /disk1
/dev/md/dsk/d52  5781917     2391729    2811998    46%      /export/home
swap            422712       5152     417560    2%      /tmp
<PONY_DNCS_1>DNCS--/export/home/dnCS $
```

2. In the **Mounted On** column locate **/var**, and in the **Capacity column**, locate the **percentage** that relates to **/var**.
3. Before you activate the tracing process, is the capacity of used disk space in **/var** less than 80 percent?
 - If **yes**, it is safe to set the tracing levels for DNCS processes. But first, go to **Monitor DHCT Sign-On Rates**, next in these instructions, to understand how the signonCount utility can facilitate the DHCT sign-on process.
 - If **no**, call Cisco Services for assistance in freeing up space.

Monitor DHCT Sign-on Rates

Introduction

When DHCTs download new software for the operating system and resident application, they lose the contents of their volatile memory. After the download, DHCTs sign back on to the network and their network configuration data is reloaded. The `signonCount` utility is useful in monitoring the rate at which DHCTs sign on to the network.

Because some DHCTs make repeated attempts to sign on to the network before they are successful, too many sign-on attempts by DHCTs contribute to network congestion. The `signonCount` utility can help system operators quickly identify those DHCTs that are having trouble signing on, and the utility can then be used to facilitate the DHCT sign-on process.

When to Use the `signonCount` Utility

The `signonCount` utility enables system operators and Cisco engineers to monitor the rate at which DHCTs sign on to the network. This monitoring is required in the following circumstances:

- When DHCTs download new software – DHCTs lose the contents of their volatile memory when the DHCT downloads new software for the operating system and resident application. DHCTs reconnect to the network after the download, and the memory that contained information about the DHCT network connection (IP address, transmit timing, and level) is re-loaded. For systems that are forced to rapidly load DHCT software, the `signonCount` utility is useful in determining when to trigger the next group of DHCTs to load code.
- When the QPSK modulator and demodulator software is upgraded – In this case, the `signonCount` utility is used in the following two situations:
 - The first situation is to determine if the system is healthy enough to be upgraded. If it is not, the `signonCount` utility also provides a secondary mode of operation that can dramatically improve the health of the system prior to moving forward with the upgrade.
 - The second situation is to use the `signonCount` utility to provide more meaningful guidance regarding when you can move forward with upgrading the next QPSK modulator. Previous upgrade guides instructed you either to wait a little while between upgrading units or to monitor the log file, but they offered no real tools to help in this effort.

Monitor DHCT Sign-on Rates, Continued

Two Modes of Operation

You can run the `signonCount` utility in two modes: **Fix Mode Off** and **Fix Mode On**. Both modes help system operators monitor the rate at which DHCTs are trying to sign on to the network.

- When run in *Fix Mode Off*, the utility takes no corrective action regarding DHCTs that are having difficulty signing on.
- When run in *Fix Mode On*, however, the utility reboots those DHCTs that have tried to sign on more than three times during a 10-minute period.

Note: By forcing DHCTs that are having trouble signing on to reboot, the memory in the DHCT is refreshed and the sign-on process is made easier.

Important: By default, the utility runs in *Fix Mode Off*. Because the utility interacts with the database when run in *Fix Mode On*, Cisco recommends that you contact Cisco Services before switching modes.

Accessing the `signonCount` Help Window

Before using the `signonCount` utility to monitor the DHCT sign-on rates, Cisco recommends that you review the descriptions, entries, and options provided on the `signonCount` utility Help window. The information on the Help window may supplement the information and procedures in these instructions.

Note: If the `signonCount` utility is not currently installed on your system, call Cisco Services for assistance.

To access the `signonCount` utility Help window, complete the following instructions.


1. Open an xterm window on the DNCS and then maximize the window.
2. Type **`signonCount -h`** and press **Enter**.
Result: The Help window for the `signonCount` utility opens.
3. Press the **Spacebar** as often as necessary to page through the Help window.
4. After reviewing the descriptions, entries, and options provided on the `signonCount` utility Help window, go to **Set DNCS Tracing Levels**, next in these instructions.

Set DNCS Tracing Levels

Introduction

Before you begin using the `signonCount` utility, you need to set the tracing levels of three DNCS processes to level 2. By setting the tracing levels for these processes to level 2, you ensure that the DNCS captures the maximum level of detail for these processes. The three DNCS processes are:

- `hctmConfig`
- `hctmMac`
- `hctmProvision`

 **CAUTION:** Activating the tracing process as described in this section could cause the `dncslog` file to grow large enough to fill the hard disk. If this is allowed to happen, the DNCS will stop functioning. While gathering data, carefully monitor the disk usage.

Once you begin the tracing process, do not leave the DNCS unattended. The disk space capacity must be closely monitored because it can change rapidly. If the disk space capacity approaches or exceeds 80 percent, call Cisco Services immediately.

Setting the DNCS Tracing Levels

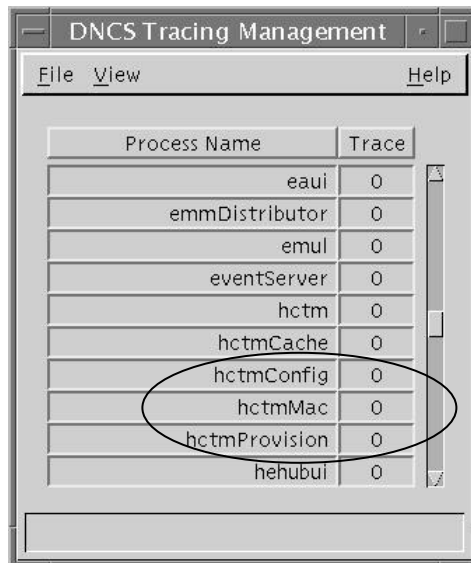
To set the tracing levels of the `hctmConfig`, `hctmMac`, and `hctmProvision` processes to level 2, complete the following instructions.

1. From the DNCS Administrative Console, select the **Utilities** tab.
2. Click **Tracing**.

Result: The DNCS Tracing Management window opens.

Set DNCS Tracing Levels, Continued

3. Scroll until the **hctmConfig**, **hctmMac**, and **hctmProvision** processes come into view.



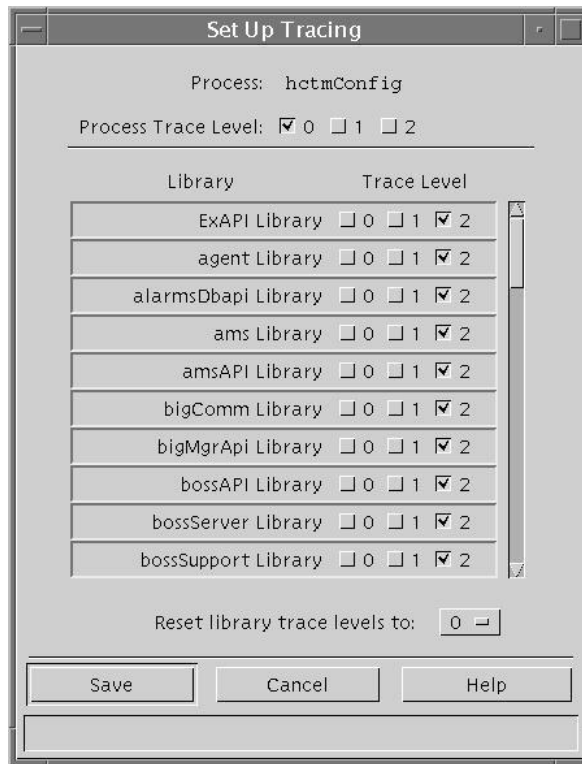
4. Are the tracing levels, in the Trace column, for all three of these processes already set to 2?
 - If **yes**, continue with **What to Look for in the signonCount Data**, next in these instructions.
 - If **no**, go to step 5 to begin setting the tracing levels.
5. Double-click one of the processes.

Example: Double-click **hctmConfig**.

Result: The Set Up Tracing window opens.

Set DNCS Tracing Levels, Continued

6. Select **2** in the **Process Trace Level** field and then click **Save**.

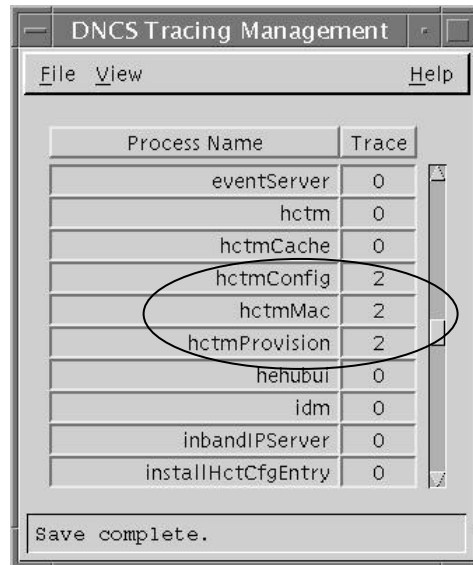


Results:

- The DNCS Tracing Management window updates with the new tracing level.
 - The Set Up Tracing window closes.
7. Repeat steps 5 and 6 to update the tracing level to **2** for the other two processes (if necessary).

Set DNCS Tracing Levels, Continued

- When you are finished, the DNCS Tracing Management window should look like the following example. The tracing levels for the hctmConfig, hctmMac, and hctmProvision utilities are set to level 2.



- Click **File** and select **Close** to close the DNCS Tracing Management window.
- Go to **What to Look for in the signonCount Data**, next in these instructions.

What to Look for in the signonCount Data

Introduction

This section provides instructions on how to display the signonCount utility interface, provides an explanation of each field of the interface, and states which fields you should focus on first.

Displaying the signonCount Interface

Follow these steps to display the interface of the signonCount utility.

1. If necessary, open an xterm window on the DNCS.
2. Click and drag the edges of the xterm window to maximize the screen width.
Note: The signonCount utility fills the width of the screen with data.
3. Type **signonCount** and press **Enter**.
Result: The signonCount utility interface opens.
4. Look at the following example of the signonCount utility interface; then, go to **Understanding the signonCount Utility Data Fields**, next in this section.

signonCount Utility Example

The signonCount utility interface is similar to the following example.

SETTOP SIGNON STATUS																	
TIME	FIX Mode	Verified Rcvd Sent	DAVIC Made	UN-Config Rcvd Sent	DAVIC Lost	Threshold Exceeds Ver	UCfg	Inv HCT Type	IHCT Wrng Mod	Total In-Srvc 2-Way	Total DHCTs NonResponding w/o IP	Total DHCTs w/IP	DAVIC 2-Way	NUM of DHCT CHANGE	TOTAL PERCENT SIGN-ON	QPSK Reboots	
Nov 11 16:40	OFF	9 9	7	13	5	9	0 0	0 0	0 0	93643	3973	3203	86467	0	92.33%		
Nov 11 16:41	OFF	16	16	11	19	11	17	0 0	0 0	93643	3973	3203	86467	0	92.33%		
Nov 11 16:42	OFF	9 9	6	20	4	7	0 0	0 0	0 0	93643	3973	3203	86467	0	92.33%		
Nov 11 16:43	OFF	18	18	16	28	15	16	0 0	0 0	93643	3972	3203	86468	1	92.33%		
Nov 11 16:44	OFF	16	16	14	13	8	13	0 0	0 0	93643	3972	3203	86468	0	92.33%		
Nov 11 16:45	OFF	14	14	13	20	12	14	0 0	0 0	93643	3972	3203	86468	0	92.33%		
Nov 11 16:46	OFF	19	19	16	17	9	14	0 0	0 0	93645	3973	3202	86469	1	92.33%		
Nov 11 16:47	OFF	18	18	13	22	14	18	0 0	0 0	936X2	3980	3202	86470	1	92.33%		
Nov 11 16:48	OFF	16	16	13	21	6	19	0 0	0 0	93660	3988	3201	86471	1	92.32%		
Nov 11 16:49	OFF	15	15	13	18	8	14	0 0	0 0	93664	3992	3201	86471	0	92.32%		

What to Look for in the signonCount Data, Continued

Understanding the signonCount Utility Data Fields

This section provides an explanation of the meaning associated with each field of the signonCount utility.

TIME
Feb 21 09:40
Feb 21 09:41
Feb 21 09:42
Feb 21 09:43
Feb 21 09:44
Feb 21 09:45
Feb 21 09:46
Feb 21 09:47
Feb 21 09:48
Feb 21 09:49

TIME – The system polls the communication link between the QPSK modulators and the DNCS every minute and records the date and time.

Fix Mode
OFF
OFF
OFF
OFF
OFF
OFF
OFF
OFF
OFF
OFF

Fix Mode – This field reveals whether the signonCount utility is configured to correct DHCT sign-on problems (*Fix Mode On*) or whether the utility is running in information-only mode (*Fix Mode Off*).

Note: By default, the utility runs in Fix Mode Off.

Important: Do not change modes unless you have been instructed to do so by Cisco Services engineers.

Verified Rcvd Sent
57 55
73 73
62 59
66 61
64 62
74 64
94 95
70 66
67 6X
78 72

Verified Rcvd – The QPSK modulator reports the number of DHCTs that have made sign-on requests.

Verified Sent – The DNCS has responded to this number of DHCTs.

DAVIC Made
18
26
8
15
20
16
37
17
19
22

DAVIC Made – The QPSK modulator reports the number of DHCTs that have connected to the QPSK modulator and are waiting for UN-Config information.

What to Look for in the signonCount Data, Continued

UN-Config Rcvd Sent	
0	0
0	0
4	4
3	3
6	6
4	4
8	8
3	3
5	5
2	2

UN-Config Rcvd – This number of DHCTs is requesting a UN-Config message from the DNCS.

The UN-Config message contains information, like an IP address, that allows DHCTs to sign on to the network.

UN-Config Sent – The DNCS has sent this number of UN-Config messages to DHCTs, allowing the DHCTs to sign on to the network.

At this point, the DHCTs are physically in two-way mode and have completed the sign-on process.

DAVIC Lost
30
23
23
19
28
26
33
20
32
17

DAVIC Lost – This field indicates the number of DHCTs that have lost the communication link with the QPSK modulator.

The QPSK modulator then sends a message to DHCTs that have lost the communication link. The message requests that the DHCTs recalibrate themselves with the modulator so the entire sign-on process can begin again.

Threshold Exceeds	
Ver	UCfg
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

Threshold Exceeds Ver – The DNCS reports the number of DHCTs that simultaneously attempt to verify their configuration in excess of what the system queues allow.

Threshold Exceeds UCfg – The DNCS reports the number of DHCTs that simultaneously attempt to sign on to the system in excess of what the system queues allow.

The numbers in the Threshold Exceeds Ver and Threshold Exceeds UCfg columns should be zero.

Inv HCT Type
0
0
0
0
0
0
0
0
0
0

Inv HCT Type – This field represents the number of DHCTs reporting a DHCT type that does not match the values presently in the database.

What to Look for in the signonCount Data, Continued

IHCT Wrng Mod
0
0
0
0
0
0
0
0
0

IHCT Wrng Mod – This field represents the number of DHCTs that have responded through a QPSK modulator that differs from the modulator through which the DHCT responded in the past.

Numbers in this column typically represent DHCTs that have been moved from one subscriber’s home to another without having gone through the correct process.

Total In-Srvc 2-Way
100694
100694
100695
100695
100697
100697
100697
100702
100703
100704

Total In-Srvc 2-Way – The utility reports the number of DHCTs listed in the database with a status of In-Service 2-Way.

These DHCTs should be capable of two-way communication.

Total DHCTs NonResponding	
w/o IP	w/IP
6114	12331
6113	12328
6114	12338
6113	12343
6115	12346
6115	12349
6115	12348
6118	12351
6119	12358
6120	12356

The following fields list the number of DHCTs in the database that should be capable of two-way communication, but they are listed as non-responders:

- **w/o IP** – The number of two-way DHCTs that have never connected to the network to receive an IP Address.
- **w/IP** – This number of DHCTs that have connected at least once to the network and have an IP address, but they are presently not responding.

Total DAVIC 2-Way
82249
82253
82243
82239
82236
82233
82234
82233
82226
82228

Total DAVIC 2-Way – This field represents the number of DHCTs that have physically signed on to the network with two-way communication ability.

What to Look for in the signonCount Data, Continued

NUM of DHCT Change
-8
4
-10
-4
-3
-3
1
-1
-7
2

NUM of DHCT Change – This field represents the number of DHCTs with two-way capability that have been added to or removed from the database during the last minute.

Substantial numbers in this column usually indicate staging activity.

TOTAL PERCENT SIGN-ON
81.68%
81.68%
81.67%
81.66%
81.66%
81.66%
81.6X%
81.6X%
81.68%
81.68%

TOTAL PERCENT SIGN-ON – The DNCS reports the percentage of DHCTs with two-way capability that are signed on to your network.

QPSK Reboots

QPSK Reboots – In the event that a QPSK modulator reboots, the name and ID of the modulator is listed in this column.

Concentrate on Three Fields

Allow the system to gather signonCount data for several minutes and then examine the numbers in the following fields:

- **Verified Rcvd** (Verified Received)
- **Verified Sent**
- **DAVIC Made**

These fields track the number of sign-on requests made by DHCTs (Verified Rcvd and Verified Sent), as well as the number of sign-on requests that were successful (DAVIC Made). Ideally, the numbers in the three fields should be equal.

If you notice that the numbers in the DAVIC Made column regularly becoming less than the numbers in the Verified Rcvd and Verified Sent columns, your DHCTs may be having trouble signing on and may be contributing to network congestion.

What to Look for in the signonCount Data, Continued

When to Call Cisco Services for Assistance

If you notice that the numbers in the DAVIC Made column regularly becoming less than the numbers in the Verified Rcvd and Verified Sent columns, call Cisco Services. Cisco Services engineers may log in to your system and examine the logfiles associated with the hctmConfig, hctmMac, and hctmProvision processes. Additionally, Cisco Services engineers may instruct you to run the signonCount utility in *Fix Mode On*.

Important: Do not run the utility in *Fix Mode On* unless you have been instructed to do so by Cisco Services engineers.

If the TOTAL PERCENTAGE SIGN-ON number is less than 85 percent, contact Cisco Services. There are a number of possible reasons for low sign-on percentages. Most are easily remedied; however, they must be looked at on a case-by-case basis.

Important: If your system is not currently operating in a typical manner, do not proceed with this upgrade. Instead, call Cisco Services.

Obtain the Software

Introduction

There are two ways to obtain the QPSK C70 software from Cisco. You can order the software CD or you can download the software by connecting to an FTP server maintained by Cisco Services. This section provides instructions for downloading the software from the Cisco FTP Server.

Downloading the QPSK Software from an FTP Server Onto the DNCS

Access to the FTP server requires current FTP server site access information. The following procedure provides generic steps to directly download software from the FTP server onto the DNCS. Since many sites do not allow an open Internet connection to the DNCS for security reasons, this procedure provides generic instructions to access the FTP server and download the software onto the DNCS.

This procedure also assumes the software is in a tar file format. The tar file is a compressed image format that is the typical format of a software image released on CD. If you have any questions about this process, contact Cisco Services.

Accessing the FTP Server

Complete the following steps to access the FTP server.

1. Open an xterm window on the DNCS, if necessary.
2. Do you have a directory created for the FTP files?
 - If **yes**, go to step 3.
 - If **no**, follow this procedure to create a directory.
 - a) Type **mkdir /export/home/dnccs/download/QPSK** and press **Enter**.
 - b) Type **cd /export/home/dnccs/download/QPSK** and press **Enter**.
 - c) Go to step 3.
3. Clear the current contents of the download directory. First type **pwd** to confirm you are in the correct directory; then, type **rm -i ***.
4. You will be prompted to delete each file in the directory. Press **y** to delete each file.
5. Type **su root** and press **Enter** to log on as root user.

Result: The **password** prompt appears.
6. Type the root password and press **Enter**.

Obtain the Software, Continued

7. Log on to Cisco's FTP server.
Notes:
 - The address of the server is **ftp ftp.sciatl.com** or **172.18.45.203**.
 - The username is **anonymous**.
 - The password is the email address of the person logging in.
8. Access the one of the following subdirectories on the FTP server, depending on your network connection:
 - If you are outside of Cisco's firewall, type **cd /pub/scicare/RELEASED/QPSK** to navigate to the correct directory.
 - If you are inside of Cisco's firewall, type **cd /external_pub/scicare/RELEASED/QPSK** to navigate to the correct directory.
9. Type **bin** and press **Enter**.
Result: This command enables the binary transfer mode of the file.
10. Type **hash** and press **Enter**.
The following message appears: **Hashmark printing on**
11. Type **get QPSKC70.tar.gz** and press **Enter**.
Result: This command initiates the system transfer of the files from the FTP server to the DNCS.
Note: The average download time is 10 to 15 minutes. The speed of the connection and the size of the files determine the download time.
12. Type **bye** and press **Enter**.
Result: You exit the connection from the FTP server.
13. Type **ls** and press **Enter**.
Note: Type the lower case of the letter L in this entry.
Result: Verify the file was successfully downloaded to the DNCS from the FTP server.
14. Type **# /usr/local/bin/gzip -d QPSKC70.tar.gz** and press **Enter**.
15. Type **tar xvf QPSKC70.tar** and press **Enter**.
Result: The system extracts the files.
16. Go to **Install QPSK C70 Software Onto the DNCS**, next in these instructions.

Install QPSK C70 Software Onto the DNCS

Introduction

This section provides instructions for installing the QPSK C70 version of software. You can install the software from either the Cisco FTP Server or from a CD.

Before You Begin

Locate and have available the CD with software version of QPSK currently installed on your system. In the unlikely event that you need to roll back to the current version of QPSK software, you will need to have that CD available.

Making a Backup File of the Current `qpsk.config` File

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

1. From an xterm window on the DNCS, log in as a **root** user.
2. Type **cd /tftpboot** and press **Enter** to change the directory.
3. Type **cp -p qpsk.config qpsk.config.old** and press **Enter** to make a backup copy of the current file.
4. Go to **Installing the QPSK C70 Software**, next in this section.

Installing the QPSK C70 Software

Complete the following steps to install the QPSK C70 software onto the DNCS.

1. Are you installing the software from a CD or from the FTP site?
 - If you are installing the software from a CD, insert the CD labeled **QPSK Mod/Demod C70** into the CD-ROM drive of the DNCS.
Result: The system automatically mounts the CD to `/cdrom/cdrom0` within 30 seconds.
 - If you are installing the software from the FTP site, go to step 3.
2. Type **df -n** and press **Enter**.
Result: A list of the mounted file systems appears.
Note: The presence of `/cdrom` in the output confirms that the system correctly mounted the CD.

Install QPSK C70 Software Onto the DNCS, Continued

3. Depending on the location of the QPSK software, use one of the following commands to switch to the correct install directory.
 - If installing from a CD, type **cd -d /cdrom/cdrom0** and press **Enter**.
 - If installing from an FTP server, type **cd /export/home/download/QPSK** and press **Enter**.
4. Type **./install_pkg** and press **Enter**. (Be sure to include a . (period) at the beginning of the entry.)

Result: A confirmation message appears.
5. Type **y** and press **Enter** to start the installation.

Result: The QPSK software installs.
6. Depending on the location of the QPSK software, use one of the following commands to switch to the correct install directory.
 - If installing from a CD, type **cd/; eject cdrom** and press **Enter**; then go to step 8.

Result: The CD ejects.
 - If installing from an FTP server, go to step 7.
7. Type **rm -rf SAIqpsk** and press **Enter**. Then, type **rm *** and **Enter** to clear all the files from the QPSK directory.
8. Type **exit** and press **Enter** to log out as root user.
9. Type **exit** and press **Enter** to close the xterm window.
10. Go to **Download QPSK C70 Software to the QPSK Modulators**, next in these instructions.

Download QPSK C70 Software to the QPSK Modulators

Introduction

After installing the QPSK C70 software on the DNCS, your next step is to upgrade the QPSK modulators.

When you reset a QPSK modulator, the DNCS downloads the new QPSK software to the QPSK modulator and, if needed, to the QPSK demodulator. Follow the instructions in this section to download the QPSK C70 software to the QPSK modulators.

What Version of Software is on the QPSK Demodulator?

The demodulator code has not changed with the release of the QPSK C70 software. If your site is currently running software version A62 on both the QPSK modulator and demodulator when you download version C70, only the modulator will load the new software; the demodulator will continue to run the currently installed A62 software.

If your site is currently running some other combination of QPSK modulator and demodulator software, then the modulator will download the new software and the demodulator will reboot and download the A62 demodulator software.

Do I Need to Place the QPSKs in Broadcast Mode Before Upgrading?

No. When upgrading the QPSK software, it is no longer required that you place the QPSKs in Broadcast mode.

For sites that have interactive applications deployed, download the QPSK C70 software at a time when subscribers or staging activity will be least impacted.

For sites that do *not* have interactive applications deployed, you can download the QPSK C70 software and reset a QPSK at any time with little, if any, noticeable impact to subscribers or staging activity.

Download QPSK C70 Software to the QPSK Modulators, Continued

Downloading the QPSK C70 Software

To download the QPSK C70 software to the QPSK modulators, complete the following steps.

1. From the DNCS Administrative Console, select the **DNCS** tab.
2. Select the **Element Provisioning** tab.
3. Click **QPSK/CMTS**.

Result: The QPSK List window opens.

4. From the QPSK List window, highlight the QPSK you are upgrading.

Important: Cisco recommends that when you are downloading software to the QPSKs, begin with a test hub or a QPSK with the smallest DHCT population.

5. Select **File** and choose **Reset**.

Result: A confirmation message appears.

6. Click **Yes** on the confirmation message.

Result: A message appears stating that the QPSK modulator has received the reset command.

7. Go to **Verify QPSK C70 Software Downloaded**, next in these instructions.

Verify QPSK C70 Software Downloaded

Verifying Software Download

To verify that the QPSK C70 software downloaded to the DHCTs successfully, complete the following steps.

1. Is the QPSK modulator located at the headend?
 - If **yes**, verify that the new software downloaded successfully by completing the following steps.
 - a) Press the **Options** button on the front panel of the QPSK modulator until the LED displays **OPTION: 302 App Version**. If the LED display includes **A302_C70** on the bottom line, the software downloaded successfully. Otherwise, repeat the **Download QPSK C70 Software to the QPSK Modulators** procedures earlier in these instructions.
 - b) Press the **Status** button on the front panel of the QPSK demodulators associated with the QPSK modulator until the LED displays **STATUS: Software Version**. If the LED display includes **app_A62** on the bottom line, the software downloaded successfully. Otherwise, repeat the **Download QPSK C70 Software to the QPSK Modulators** procedures earlier in these instructions.

Note: If the software did not download successfully after the second attempt, call Cisco Services.
 - If **no**, go to step 2.
2. From an xterm window on the DNCS, type **ping <IP address>** and press **Enter**.

Note: The <IP address> refers to the IP address of the QPSK modulator.

Result: A message similar to **Device is alive** appears. This message means the QPSK has reset and is communicating again.
3. Before downloading the QPSK C70 software to the next modulator, go to **Continue to Monitor the DHCT Sign-On Traffic**, next in these instructions.

Continue to Monitor the DHCT Sign-On Traffic

Introduction

With the signonCount interface displayed, continue to monitor the signonCount utility output to determine the health of your system before downloading the QPSK C70 software to the next QPSK modulator.

Monitoring the DHCT Sign-On Traffic

To determine when it is safe to download the QPSK C70 software to the next QPSK modulator, complete the following steps.

1. Continue to monitor the DHCT sign-on traffic. Your system is healthy if the following conditions are true:
 - The values in the **Verified Rcvd**, **Verified Sent**, and **DAVIC Made** columns are the same.
 - The values in the **Un-Config Rcvd** and **Un-Config Sent** fields are approximately one fourth of the values in the **DAVIC Made** column.
 - The values in the **Threshold Exceeds Ver** and **Threshold Exceeds UCfg** columns are zero.
 - No QPSK modulators have rebooted.
2. Is your system healthy?
 - If **yes**, go to step 3.
 - If **no**, call Cisco Services. Do not continue with these instructions.

Continue to Monitor the DHCT Sign-On Traffic, Continued

3. Wait approximately 15 minutes before resetting the next QPSK. Then, repeat the procedures in the **Download QPSK C70 Software to the QPSK Modulators** and **Verify QPSK C70 Software Downloaded** sections, earlier in these instructions, for each QPSK modulator you are upgrading.

Important:

- After resetting each QPSK modulator, continue to monitor the DHCT sign on traffic. As each QPSK modulator reboots, notice that the values in the signonCount utility interface increases. This is to be expected. Also notice that as DHCTs sign on to the system, the values decrease, and the system returns to its healthy state.
 - After downloading the QPSK C70 software, continue to monitor the DHCT sign-on traffic for 10 to 48 hours. It is not necessary to watch the sign-on traffic continuously, but you should check occasionally during this time to ensure that there are no problems.
 - In the QPSK Reboots column of the signonCount Interface, you may notice that a QPSK modulator reboots automatically. If this occurs, wait 15 minutes before resetting (rebooting) the next QPSK.
4. When you have completed upgrading all QPSK modulators on your system, select **File** from the QPSK List window, and choose **Close**.

Results:

- The QPSK List window closes.
 - The QPSK C70 software is loaded and the range extension default setting is 0 km.
5. You have completed the QPSK C70 software installation.

What Is the QPSK Range Extension Feature?

Introduction

With prior versions of software, the Model D9482 QPSK Modulator was capable of successfully connecting and operating DHCTs within a distance of approximately 128 km round trip (64 km each way when forward and reverse paths are equal). (One kilometer equals 0.621 miles.)

This distance limitation is mainly due to the width of the ranging slots defined in the Digital Audio-Visual Council (DAVIC) standard for operation over the hybrid fiber-coax (HFC) plant.

The width of the ranging slots limits the maximum distance *between* DHCTs for successful connection and operation. Because the current modulator software assumes that the closest DHCT is at the same location as the QPSK modulator, an unnecessary limit is placed on the farthest distance that a DHCT can be located from that QPSK modulator.

Some cable service providers would prefer to physically locate the QPSK hardware in the headend and extend coverage to DHCTs that are farther from the QPSK modulator than the currently allowable maximum distance.

This optional feature for the Model D9482 QPSK Modulator allows Explorer DHCTs to sign on to the system and operate properly at extended distances from the QPSK modulator. (This feature provides the resolution to CR 6922.)

Using the front panel of the QPSK modulator, you can select one of nine different values of one-way range extension. The front panel displays the extension distance in kilometers.

Note: Though it is not possible to extend the maximum distance *between* the DHCTs, which must remain within 64 km, it is possible to delay the timing within the modulator such that the distance to all DHCTs can be extended. This software feature allows you to extend the distance to the closest DHCT from 0 km to 248 km, one way, in steps of 31 km.

What Is the QPSK Range Extension Feature?, Continued

Distance and Delay

The distance that appears on the front panel of the QPSK modulator is approximate and based on fiber with a propagation velocity of 68 percent of the speed of light in a vacuum.

Note: The modulator has no way of calculating how much coax or fiber is deployed between and to the DHCTs.

If you anticipate that DHCTs will be deployed near the limits of the distance ranges, Cisco recommends that you use delay numbers and translate the numbers to the actual length of fiber and/or coaxial cable deployed.

The delay numbers used in the modulator are as follows:

- With no extension, the modulator can range DHCTs to a distance corresponding to 628 microseconds round trip.
- Each front-panel step of 31 km (one way) corresponds to a round-trip delay extension of 300 microseconds.

Distance Between DHCTs

When the range extension mode is activated, the QPSK modulator expects a transmission delay that is equal to or greater than the distance value programmed into the QPSK modulator.

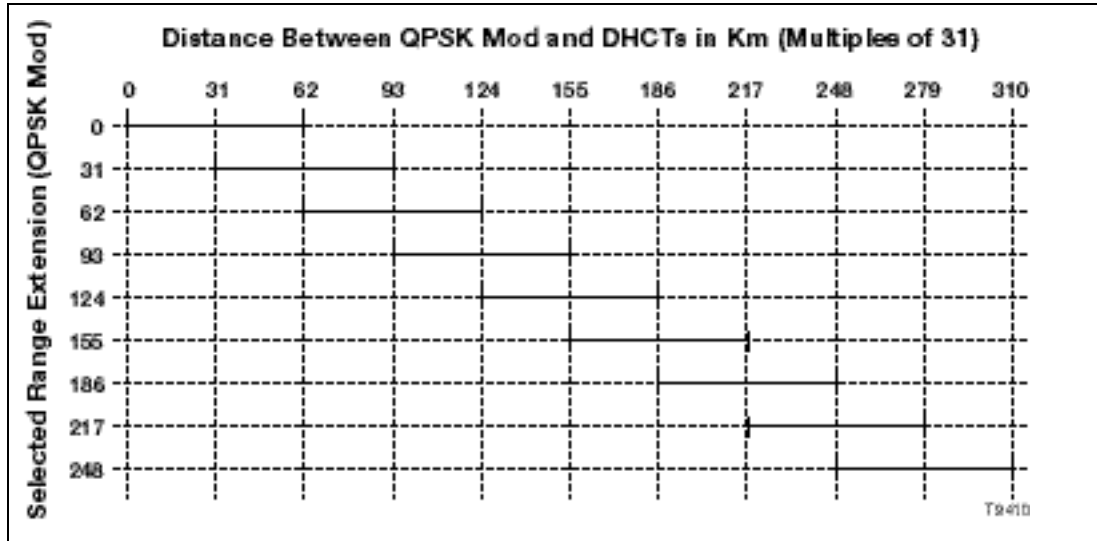
The distance between the closest and the farthest DHCT is still a maximum of 64 km. Thus, the closest a DHCT can be located is the distance programmed on the front panel of the QPSK modulator. The farthest a DHCT can be located from the headend is the sum of the programmed distance plus the 64 km ranging distance.

DHCTs operated outside these bounds may not be able to connect to the system and may also potentially interfere with the transmissions of other DHCTs. The programmed distance applies to all of the demodulators connected to that modulator.

What Is the QPSK Range Extension Feature?, Continued

Range Distance Settings Diagram

The following diagram illustrates the correct range distance settings.



Example: With 155 km set on the QPSK, the closest distance you could locate a DHCT to a QPSK modulator is 155 km. The farthest distance you could locate a DHCT to a QPSK modulator is 217 km.

Network Configuration Application Rules

Follow these application rules when configuring the network for the QPSK ranging-distance extension mode.

Rule	Description
1	The QPSK modulator operates normally when no delay value is configured.
2	Only four D9482 QPSK Demodulators can be connected to a QPSK modulator operating in delay mode. These demodulators must be connected to ATM-25 port locations 5, 6, 7, and/or 8. (Ports 1 through 4 may not be used in the range extension mode.) The configuration at the DNCS should reflect this requirement.
3	The programmed delay distance should be less than or equal to the sum of the transport cable to the hub, plus the shortest optical cable distance on any of the attached nodes.

What Is the QPSK Range Extension Feature?, Continued

Rule	Description
4	The ranging radius is 0 km to 64 km, with 0 km set at the programmed cable length.
5	Transport distances are in integer multiples of 31 km to a maximum of 248 km.
6	All four demodulators are delayed by the same value programmed in the QPSK modulator.
7	The distance ranges stated in this document are approximate and based on a velocity of propagation in fiber of 68 percent of the speed of light in a vacuum (3×10^8 meters per second). Corrections to the setting of the QPSKs should be made where these distances do not apply, as in coaxial cable.
8	DHCTs closer than the programmed distance value may not range and may interfere with other DHCTs.
9	The delay distances that appear on the front panel of the QPSK are one-way path distances and assume an equal distance path on the forward and reverse connection. It is not necessary for the forward and reverse path to be the same distance as long as the total propagation delay matches the equivalent time delay.
10	It will <i>not</i> be possible to use a co-located DHCT directly connected to the QPSK modem as a test device for QPSK link verification when the ranging extension mode is used. This connection violates rule 8. However, you can test for QPSK link verification with a DHCT directly connected to the QPSK as long as the reverse path is not active.

Activate the Range Extension Feature (Optional)

Introduction

This section provides instructions for changing the modulator-to-node distance settings for the QPSK modulators on your system.

Changing the Distance Settings

If the modulator-to-node distance of the QPSK modulators on your system is more than 64 km, complete these steps to change the distance settings.

1. If the hub you are configuring supports existing customers, disconnect the **modulator RF output cable** for 15 minutes. Otherwise, go to step 2.
Note: While the QPSK is disconnected, the DHCTs on the hub are not fully functional.
2. See the **Range Distance Settings Diagram**, in the **What Is the QPSK Range Extension Feature** section, earlier in these instructions, to determine the QPSK range distance settings appropriate for your system setup. Then, complete the following steps to set the modulator-to-node distances.
 - a) On the front panel of the QPSK modulator, press the **Options** button until the Mod-Node Dist option appears.
 - b) Select a value of **optical fiber length** that is less than or equal to the sum of the actual optical cable length used for distribution to the remote hub, plus the minimum optical cable length used in the HFC network from the hub.
 - c) Adjust the setting if the cable propagation velocity factor is not equal to 68 percent of the speed of light in a vacuum.
 - d) Press the **up** and **down** buttons to choose the desired one-way fiber delay and then press **Enter**.

Results:

- The first time you change the modulator-to-node distance setting from 0 (zero) to xx, the QPSK will reboot.
 - The modified code is downloaded to the QPSK modulator and demodulator.
3. Reconnect the **cable** to force all DHCTs on the hub to reestablish a DAVIC connection with the appropriate time offsets.
 4. Place a DHCT at the closest possible location to where the HFC network transitions from optics to cable; then, boot the DHCT and press the **Power** button.

Activate the Range Extension Feature (Optional), Continued

5. Check the delay time on the DHCT diagnostic screen by choosing one of the following options:
 - For sites using SARA, look at the RF Statistical Information diagnostic screen, and choose one of the following options:
 - If the delay value is *less* than 761, the delay time is correct. Go to step 6.
 - If the delay value is *more* than 761, the DHCT is “too close.” Repeat step 2 and lower the modulator-to-node distance. Then, reboot the QPSK modulator.
 - For sites using the Pioneer resident application, call Pioneer for assistance in determining the current time delay.
6. Place a DHCT in the location with the maximum possible cable distance from the QPSK.
7. Again, check the delay time in the DHCT diagnostic screen by choosing one of the following options:
 - For sites using SARA, choose one of the following options from the RF Statistical Information diagnostic screen:
 - If the delay values fall within the 134 and 761 microsecond delay-time bound, the programmed delay values are correct.
 - If the delay value is less than 134 microseconds, the overall delay between DHCTs is “too far.” Call Cisco Services for assistance.
 - For sites using the Pioneer resident application, call Pioneer for assistance in determining the current time delay.

Rollback Procedures

Introduction

After loading the QPSK C70 software, if you notice that the system is reacting adversely, call Cisco Services. If they determine it is necessary to roll back the procedure, complete the steps in this section to restore the `qpsk.config` file and to deactivate the `signonCount` utility.

Important: Do not initiate these rollback procedures before contacting Cisco Services.

Restoring the `qpsk.config` Files

To restore the `qpsk.config` files, insert the CD with the previous version of QPSK software, and follow the instructions that came with the CD. If you do not have a CD with the previous version of QPSK software and you need to expedite the restoration, complete the following steps.

1. Open an **xterm** window.
2. Type **cd /tftpboot** and **Enter**.
3. Type **cp qpsk.config qpsk.new** and **Enter**.
4. Type **cp qpsk.<xxx> qpsk.config** and **Enter**.

Note: Replace `<xxx>` with the filename from step 3 in the Installing the QPSK C70 Software procedure in the **Install QPSK C70 Software Onto the DNCS** section, earlier in these instructions.

5. Reboot the QPSKs according to the procedure in the **Download QPSK C70 Software to the QPSK Modulator** section, earlier in these instructions.

Note: Using expedited roll back causes `pkginfo`, `doctor`, and other utilities to report an incorrect QPSK software version. This does not harm the system.

Rollback Procedures, Continued

Deactivating the signonCount Utility

Deactivating the signonCount utility stops it from running in the background. To stop the signonCount utility, deactivate it by completing the following steps.

1. Check if the signonCount utility is currently running. From an xterm window on the DNCS, type **ps -ef | grep sign** and press **Enter**.

Results:

- If the signonCount utility is currently running, a message similar to **/bin/ksh/dvs/dnCS/bin/signonCount.ksh** appears. Go to step 2.
- If the message does not appear, then signonCount is not running. You do not need to perform step 2.

2. If the signonCount utility is running in the background and you want to deactivate it, from an xterm window on the DNCS, type **signonCount uninstall** and press **Enter**.

Result: The following message appears: "SignonCount" has been removed as a background process.

3. You have completed the procedure to deactivate the signonCount utility.

For 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.



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