CISCO™

September 2005

Adding and Splitting QPSK Modulators for System Releases 2.5, 3.5, and 4.0

Overview

Introduction

When cable service providers expand or upgrade services, it is often necessary to add new quadrature phase-shift keying (QPSK) modulators and QPSK demodulators to the Digital Broadband Delivery System (DBDS). As a part of the upgrade, it is also occasionally necessary to move certain cable boxes that are provisioned on an *existing* QPSK modulator to a *new* QPSK modulator and demodulator. This procedure is often referred to as "splitting" QPSK modulators.

Who Should Perform This Procedure?

Adding new QPSK modulators and demodulators on the DBDS and splitting existing QPSK modulators must be performed with care. Do not attempt this procedure unless you are an experienced headend technician.

When Should I Perform This Procedure?

Perform this procedure during a maintenance window of approximately 1 to 3 hours due to the need to reboot the cable boxes affected by the split.

System Release Version

This document is written for sites operating System Release 2.5, 3.5, or 4.0.

Purpose

Maintaining optimum system performance during system upgrades and improvements is vital in providing high-quality uninterrupted programming and services to subscribers. This document provides a procedure for successfully moving existing cable boxes to new QPSK modulators and demodulators on the DBDS in order to prevent disruption or degradation of services to subscribers during network upgrades and improvements.

Why Add or Split QPSK Modulators?

Several scenarios exist under which you would want to add or split QPSK modulators on your system. The following are examples of some of these scenarios:

- Changing the RF combining on your network
- Upgrading your data network to add new services such as high-speed data or Voice over Internet Protocol (VoIP) services
- Achieving better balance and distribution of cable boxes on your hubs or your QPSK modulators

Critical Assumptions

This document makes the following critical assumptions:

- You have decided that you need to split QPSK modulators on your network
- You are preparing to split QPSK modulators on hubs running DAVIC only
- You know what type of route you use (default or static) to send cable box messages from the Digital Network Control System (DNCS) to cable boxes
- You have already configured your data communications including routes, routers, switches, and communications links
- You have already configured your RF network
- You know the IP addresses, MAC addresses, subnets, input attenuator levels, and frequencies you need to use for the new QPSK modulator

Scope

This document provides procedures for adding and splitting QPSKs in hubs that are running DAVIC only. If you are running both DAVIC and DOCSIS on the same hub, do *not* use this document to add or split QPSKs for the hub. Instead, contact Cisco® Services for assistance.

Audience

This document is written for DBDS system operators and engineers, DNCS operators and engineers, Cisco field service and system upgrade installation engineers, and Cisco Services personnel. Individuals who use this document must be skilled and knowledgeable network technicians and headend engineers.

Important: Sites using the Pioneer Passport or other resident applications should contact their vendor for the latest procedure for rebooting cable boxes.

Document Version

- This is the second release of this document.

In This Document

Before You Begin

Introduction

Adding and splitting QPSK modulators and demodulators requires extensive planning and preparation. Preceding the upgrade, you must plan the RF combining on your network; verify input attenuator settings and levels; and verify sufficient quantities and types of cables, combiners, pads, and rack space. In addition, you must install the new QPSK modulators and demodulators in the racks and then connect them to the Ethernet network.

Important:

- Plan to add and split QPSK modulators and demodulators during a maintenance window. This process is service impacting because you have to create an outage and restart numerous processes.
- Do *not* connect the new QPSK modulators and demodulators to the RF network at this time.
- If you are using *anything*-On-Demand (xOD) or video-on-demand (VOD) on your system, notify your video vendor to add the routes for the new QPSK modulator to the video servers.
- Move only *one* set of QPSK demodulators at a time.

This section outlines the procedures you must follow before you can add and split QPSK modulators and demodulators on the DBDS.

Configuring the Data Network

This document assumes that all network equipment (including switches, routers, the DNCS, and any other servers) is correctly configured with the necessary routing entries. If you are unsure about how to configure this equipment, contact Cisco Services before starting the split.

Planning RF Combining

Before you begin, you must have your network map. If you cannot locate your network map, contact Cisco Services. Use your network map to plan the RF combining for the additional QPSK modulators and demodulators on your DBDS.

Verifying Input Attenuator Settings and Levels

Before you begin, you must carefully plan and determine your input attenuator settings based on the requirements of your system.

Preparing Cables, Combiners, Pads, and Racks

Before you begin, you must verify that you have the required quantities and types of cables, combiners, pads, and racks to add the new QPSK modulators and demodulators to your DBDS.

Important: You will also need at least one properly functioning cable box to connect to the new QPSK modulator in order to verify system functionality.

Download the hubfix.sh Script

Introduction

The hubfix.sh script clears the IP addresses, QPSK modulator IDs, and QPSK demodulator IDs for the cable boxes from the DNCS database. This section describes how to download the hubfix.sh script from the FTP site to your PC, and then transfer the script to your DNCS.

Downloading and Transferring the hubfix.sh Script to the DNCS

Complete these steps to obtain the hubfix.sh script from the FTP site and transfer the script to the /dvs/dncs/bin directory on the DNCS.

1   Use FTP to copy the hubfix.sh script from the PC to the DNCS, and place it in the **/dvs/dncs/bin** directory.

   The script can be accessed using the following information:

   ■ **FTP Site:** ftp.sciatl.com or 172.18.45.203

   ■ **User:** anonymous

   ■ **Password:** your email address

   ■ **Directory containing script for external users:**
      /pub/scicare/tools/QPSKmigration

   ■ **Directory containing script for Cisco personnel:**
      external_pub/scicare/tools/QPSKmigration

   ■ **File name of script:** hubfix.sh

   Note: Be sure to use the **ascii** option when transferring the script.

2   In an xterm window on the DNCS, type **cd /dvs/dncs/bin** and press **Enter**.

   Result: The /dvs/dncs/bin directory becomes the working directory.

3   Type **sum –r /dvs/dncs/bin/hubfix.sh** and press **Enter**.

   Result: The following output appears.

```
DNCS $ sum –r hubfix.sh
04269     3   hubfix.sh
```

4 Did the result appear correctly as shown in the previous step?

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

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

5 Type **chmod 755 /dvs/dncs/bin/hubfix.sh** and press **Enter**.

Result: The permissions are updated so that anyone can read or execute the script, and the owner can write to the script.

6 Type **chown dncs:dncs /dvs/dncs/bin/hubfix.sh** and press **Enter**.

Result: The dncs user is the owner of the script. The hubfix.sh script is ready for use later in this document.

Add and Provision the QPSK Modulators

Introduction

After you have installed the new QPSK modulators and connected them to the Ethernet network, you must follow the instructions in this section to provision the new QPSK modulators.

Before You Begin

Before you add a QPSK modulator, you must have your network map, which should contain the following required information:

- IP address for the QPSK modulator
- MAC address for the QPSK modulator
- Subnet mask for the QPSK modulator
- IP address of the default router associated with the QPSK modulator
- Base IP address for all cable boxes within the domain of the QPSK modulator
- Subnet mask for all cable boxes within the domain of the QPSK modulator
- RF output frequency assigned to the QPSK modulator
- Frequency for the QPSK demodulators
- Input attenuator settings
- Broadcast IP address for the base IP subnet for the *existing* QPSK modulator
- Broadcast IP address for the base IP subnet for the *new* QPSK modulator

Note: All of this information should be recorded on your network map. However, if it is not, contact your system administrator to obtain the information or contact Cisco Services for assistance.

Process Overview

Be sure to allow yourself adequate time to complete this procedure. To add a QPSK modulator to the DNCS, you must complete the following tasks. See the *Digital Network Control System Online Help* for assistance in performing these tasks.

Important: You can add QPSK modulators at any time. There is no impact to subscribers.

1 Define new hubs where necessary.

2 Define new node sets where necessary.

3 Set up the basic parameters for the new QPSK modulator.

4 Set up the advanced parameters for the new QPSK modulator.

5 Set up the QPSK demodulators you are moving to the new QPSK modulator.

6 Associate hubs to QAM modulators where necessary.

Defining New Hubs in a Non-RCS Environment

A hub is a logical element that represents the point at which out-of-band (QPSK-modulated) frequencies combine with inband (QAM) frequencies to be transmitted to subscribers through the radio frequency (RF) network.

If necessary, you can add new hubs to your network. The procedure you follow to define new hubs varies depending on whether RCS (Regional Control System) is enabled for your system. The following procedure describes how to define new hubs in a non-RCS environment.

Note: If RCS *is* enabled for your system, see **Defining New Hubs in an RCS Environment** (on page 10).

Complete these steps to add a new hub in a non-RCS environment.

1 On the DNCS Administrative Console, click the **DNCS** tab.

2 Click the **Element Provisioning** tab.

3 Click **Hub** to open the Hub List window.

4 Click **File** and select **New** to open the Set Up Hub window.

5 Click the **Headend Name** arrow and select the headend associated with this hub.

6 In the **Hub Name** field, type the name you will use to identify this hub (for example, **HE1_Hub1**). You can use up to 15 alphanumeric characters.

   Note: Be sure to use a name that is consistent with the naming scheme used on your network map.

7   In the **Hub ID** field, type the number you will use to identify this hub. For example, you might type **11** as a numerical representation for Headend 1, Hub 1. You can use up to eight numerical characters.

8   Click the **Timezone** arrow and select the time zone where this hub is located.

9   The system selects the **Daylight Savings Time Observed** option by default. If this hub is not in an area that observes daylight savings time, click to clear this option.

   Important: To manage time correctly on your network, you must install the Digital System Time Kit, if not installed previously. Refer to the *Managing System Time in the DBDS Technical Bulletin* for more information.

10   Click **Save**.

11   Add the new hub to your network map as specified in the Cisco Client Configuration Management (CCM) process.

   Note: For more information about the CCM process, refer to the CCM Process topic in the *Digital Network Control System Online Help*.

12   Do you need to add another hub?

   ■   If **yes**, repeat this procedure from step 4.

   ■   If **no**, click **File** and select **Close** to close the Hub List window.

13   Does this hub support reverse data (for example, PPV services and email)?

   ■   If **yes**, your next step is to add at least one node set to this hub. Go to **Defining a Node Set** (on page 12).

   ■   If **no**, go to **Setting Up Basic Parameters for a New QPSK Modulator** (on page 13).

Defining New Hubs in an RCS Environment

A hub is a logical element that represents the point at which out-of-band (QPSK-modulated) frequencies combine with inband (QAM) frequencies to be transmitted to subscribers through the radio frequency (RF) network.

If necessary, you can add new hubs to your network. The procedure you follow to define new hubs varies depending on whether RCS (Regional Control System) is enabled for your system. The following procedure describes how to define new hubs in an RCS environment.

If RCS is *not* enabled on your system, go back to **Defining New Hubs in a Non-RCS Environment** (on page 9).

Complete these steps to add a hub to your network if your system has RCS enabled.

1   On the DNCS Administrative Console, click the **DNCS** tab.

2   Click the **Element Provisioning** tab.

3   Click **Hub** to open the Hub Summary window.

4   Click **Add Hub.** A new row containing empty fields appears in the Hub Summary window.

5   In the **Hub Name** field, type the name you will use to identify this hub (for example, **HE1_Hub1**). You can use up to 15 alphanumeric characters.

   Note: Be sure to use a name that is consistent with the naming scheme used on your network map.

6   In **Hub ID** field, type the number you will use to identify this hub. For example, you might type **11** as a numerical representation for Headend 1, Hub 1. You can use up to eight numerical characters.

7   Click the **Headend Name** arrow and select the headend associated with this hub.

8   Click the **Timezone** arrow and select the time zone where this hub is located.

9   The system selects the **Daylight Savings Time Observed** option by default. If this hub is not in an area that observes daylight savings time, click the check box to clear this option.

   Important: To manage time correctly on your network, you must install the Digital System Time Kit, if not installed previously. Refer to the *Managing System Time in the DBDS Technical Bulletin* for more information

10   Click **Save.**

11   Add the new hub to your network map as specified in the CCM process.

   Note: For more information about the CCM process, refer to the CCM Process topic in the *Digital Network Control System Online Help*.

12 Do you need to add another hub?

- If **yes**, repeat this procedure from step 4.

- If **no**, click **Exit** to close the Hub Summary window.

13 Does this hub support reverse data (for example, PPV services and email)?

- If **yes**, your next step is to add at least one node set to this hub. Go to **Defining a Node Set** (on page 12).

- If **no**, go to **Setting Up Basic Parameters for a New QPSK Modulator** (on page 13).

Defining a Node Set

After you add a hub to a headend, you must add at least one node set to that hub if the hub supports reverse data.

A node set represents the point at which reverse data from a collection of upstream transmitters is combined and sent to a single QPSK demodulator. The QPSK demodulator then sends the data through the QPSK modulator to the DNCS for processing.

Cisco recommends that you have only one node set for each demodulator on your system. For more recommendations on setting up node sets, refer to the *Configuring Node Sets for the Digital Broadband Delivery System Technical Bulletin*.

Complete these steps to add a node set to your network.

1 On the DNCS Administrative Console, click the **DNCS** tab.

2 Click the **Element Provisioning** tab.

3 Click **Node Set**.

4 Click **File** and then select **New**.

5 In **Node Set Name** field, type the name you will use to identify this node set (for example, **HE1_Hub1_Nodeset1**). You can use up to 20 alphanumeric characters.

   Note: Be sure to use a name that contains no spaces and that is consistent with the naming scheme used on your network map.

6 Click the **Hub Name** arrow and select the hub associated with this node set.

7 Click **Save**.

8 Add the new node set to your network map as specified in the CCM process.

9   Do you need to add another node set?

   ■ If **yes**, repeat this procedure from step 4.

   ■ If **no**, click **File**, and then select **Close** to close the Node Set List window and return to the DNCS Administrative Console.

Setting Up Basic Parameters for a New QPSK Modulator

Complete these steps to set up the basic parameters for a new QPSK modulator.

1 On the DNCS Administrative Console, click the **DNCS** tab.

2 Click the **Element Provisioning** tab.

3 Click **QPSK/CMTS**.

4 Click **File**, select **New**, and then choose **QPSK** to open the Set Up QPSK Modulator window.

5 From the Basic Parameters tab, click the **Hub Name** arrow and select the hub associated with this modulator.

6 In the **Name** field, type the name of this modulator (for example, **HE1hub1QPSKMod1**). You can use up to 15 alphanumeric characters.

7 In the **IP Address** field, type the IP address for this modulator. Be sure to properly place the dots (.) between numbers.

8 In the **Physical Address** field, type the MAC address for this modulator.

9 In the **Subnet Mask** field, type the number for the subnet mask where this modulator resides.

10 In the **Default Router** field, type the IP address for the router associated with this modulator. Be sure to properly place the dots (.) between numbers.

11 In the **DHCT Base IP Address** field, type the base IP address for all cable boxes within the domain of this modulator.

12 In the **DHCT Subnet Mask** field, type the subnet mask for all cable boxes within the domain of this modulator.

13 In the **Frequency** field, type the RF output frequency assigned to this modulator. This value can be from 70 MHz to 130 MHz in increments of 0.25 MHz.

14 In the **DCM** (DHCT Communications Mode) field, select **DAVIC**.

15 Leave the Set Up QPSK Modulator window open, and go to **Setting Up Advanced Parameters for a New QPSK Modulator** (on page 14).

Setting Up Advanced Parameters for a New QPSK Modulator

Important: Many of the QPSK modulator advanced parameters should remain unchanged from the default settings. If you change any of the default settings, you must stay within the signal capacity of your plant design. Otherwise, the cable boxes may not be able to communicate with the DBDS.

In addition, anytime you change advanced parameters, you must reboot the QPSK modulator and wait for all corresponding cable boxes to sign on again before any changes will take effect. You reboot the QPSK modulators later in this document.

Complete these steps to set up the advanced parameters for a new QPSK modulator.

1   On the Set Up QPSK Modulator window, click the **Advanced Parameters** tab.

2   In the **Service Channel Frequency** field, enter a value from 8 MHz to 26.5 MHz based on your plant design.

   Note: The service channel frequency is the frequency that the cable boxes use to broadcast to the demodulators on this hub.

3   Are you using a backup service channel?

   ■   If **yes**, enter a value from 8 MHz to 26.5 MHz in the **Backup Service Channel Frequency** field, based on your plant design.

   ■   If **no**, enter the same value in the **Backup Service Channel Frequency** field that you entered for the Service Channel Frequency.

4   Click the **Tuner Input Attenuator** button to display a list of options. Then, select a cable box calibration setting based on the design targets of your RF plant and the combining networks. If you need assistance, contact Cisco Services.

5   Do not change any other values unless you are specifically instructed to do so by Cisco.

6   Click **Save**.

7   Add the new QPSK modulator to your network map as specified in the CCM process.

   Note: For more information about the CCM process, refer to the CCM Process topic in the *Digital Network Control System Online Help*.

8   Do you need to add another QPSK modulator?

   ■   If **yes**, go back to **Setting Up Basic Parameters for a New QPSK Modulator** (on page 13).

   ■   If **no**, continue with this procedure.

9 Do you need to assign a QPSK demodulator to this modulator?

■ If **yes**, go to **Move and Provision the QPSK Demodulators** (on page 17).

■ If **no**, click **File** and select **Close** to close the QPSK List window. Go to **Prepare the QPSK Modulators and Demodulators for the Split** (on page 22).

Move and Provision the QPSK Demodulators

Introduction

After you have installed the new QPSK demodulators and connected them to the proper QPSK modulator, you must follow the instructions in this section to move and provision the new QPSK demodulators.

Before You Begin

Before you move a QPSK demodulator, you need the latest version of the signonCount utility. Contact Cisco Services to obtain the latest version of this utility before you begin this procedure.

You also need your network map, which should contain the following required information:

- Name of the QPSK modulator physically connected to this QPSK demodulator
- Port number where this QPSK demodulator is physically connected to the QPSK modulator
- Name of the node set you want to associate with this QPSK demodulator

  Important: Cisco recommends that you assign each QPSK demodulator to a unique node set.

- Service channel frequency of the QPSK demodulator this QPSK modulator will be connected to

When Should I Perform This Procedure?

You can set up *new* QPSK demodulators at any time. If you are moving *existing* QPSK demodulators, perform this procedure in a maintenance window. Estimated time to move and provision the QPSK modulators is 1 to 3 hours.

Important: If you are moving *existing* QPSK demodulators, do *not* connect the *new* QPSK modulators and demodulators to the RF network at this time.

Moving and Provisioning a QPSK Demodulator

Complete these steps to move and provision QPSK demodulators.

1   In an xterm window on the DNCS, type **doctor – nv** to verify network connectivity and communication between the network devices.

2   Test a cable box connected to each QPSK modulator involved in the split to verify that there are no disruptions to services.

3   In an xterm window, start the signonCount utility to monitor the progress of cable box reboots.

4   On the DNCS Administrative Console, click the **DNCS** tab.

5   Click the **Element Provisioning** tab.

6   Click **QPSK/CMTS** to open the QPSK/CMTS List window.

7   Select the QPSK modulator from which you need to remove the existing QPSK demodulator.

8   Click **File** and select **Demodulators**. The QPSK Modem window opens with an illustration of the QPSK modulator and its eight possible port connections.

9   Select the QPSK demodulator you want to delete.

10 Select **File** and click **Delete Demod**. You are prompted to confirm the deletion.

11 Click **Yes** to confirm the deletion. The QPSK demodulator is removed from the QPSK modulator.

12 Do you have any other QPSK demodulators that you want to remove from the QPSK modulator?

   ■   If **yes**, repeat this procedure from step 7.

   ■   If **no**, continue with this procedure.

13 Click **File** and select **Close** to close the QPSK Modem window.

14 In the QPSK/CMTS List window, select the new QPSK modulator to which you need to add QPSK demodulator(s).

15 Click **File** and select **Demodulators**. The QPSK Modem window opens with an illustration of the QPSK modulator and its eight possible port connections.

16 Click **File** and select **New Demod** to open the Set Up QPSK Demodulator window.

17 Choose the QPSK port to which the demodulator will be connected.

18 Click the **Node Set Name** arrow and select the node set you want to associate with this QPSK demodulator.

Note: Cisco recommends that you assign each QPSK demodulator to a unique node set. If you need to add hubs or nodes, refer to the *Digital Network Control System Online Help* for detailed instructions.

19 How is the QPSK demodulator going to be used?

  ■ If the QPSK demodulator is used for the service channel, enter the service channel frequency of the modulator in the **Frequency** field for the demodulator.

  ■ If the QPSK demodulator is used for the backup service channel, enter the backup service channel frequency of the modulator in the **Frequency** field for the demodulator.

  Important: All frequencies must be either a service channel frequency or a backup service channel frequency.

20 Click **Save**.

  Results:

  ■ An information window opens and directs you to check the associated modulator service channel frequency. This window appears because you chose an RF input frequency other than the default RF input frequency. If you are confident that you entered either a correct service channel frequency or a backup service channel frequency, you can ignore this information window.

  ■ The Set Up QPSK Demodulator window closes, and the QPSK Modem window opens with the new QPSK demodulator appearing in the illustration.

21 Click **OK** to close the information window.

22 Click **File** and select **Close** to close the QPSK Modem window.

23 Do you need to move another QPSK demodulator to a QPSK modulator?

  ■ If **yes**, repeat this procedure from step 7.

  ■ If **no**, click **File** and select **Close** to close the QPSK/CMTS List window. Continue with this procedure.

24 Remove the RF and Ethernet connections from the QPSK demodulators to be moved, move the demodulators, and then replace *only* the ATM 25 cable.

25 Connect the other end of the ATM 25 cable to the appropriate port on the back panel of the new QPSK modulator.

  Important: Do *not* connect the RF cable.

26 Power on the new QPSK modulators and demodulators using the Power switch on the back panel.

27 Wait about 15 minutes for the QPSK modulators and demodulators to receive software and correctly provision on the DNCS.

28 Verify that the QPSK modulators and demodulators correctly received software and were correctly provisioned on the DNCS.

29 Refer to your QPSK software installation instructions for further information on verifying the software download.

30 Place both the existing QPSK modulator and the new QPSK modulator into **Broadcast** mode.

31 Reset both the existing QPSK modulator and the new QPSK modulator to allow Broadcast mode to take effect.

Verifying Hub/QAM Association

Complete these steps to verify QAMs are associated with the correct hubs.

1 On the DNCS Administrative Console, click the **DNCS** tab.

2 Click the **Element Provisioning** tab.

3 Click **QAM** to open the QAM List window.

4 From the list of QAMs, select the QAM you want to verify.

5 Click **File** and select **Open** to open the Set Up QAM window.

6 From the Basic Parameters tab, click the **Hubs** button under the Port to Hubs column that appears in the bottom right area of the window.
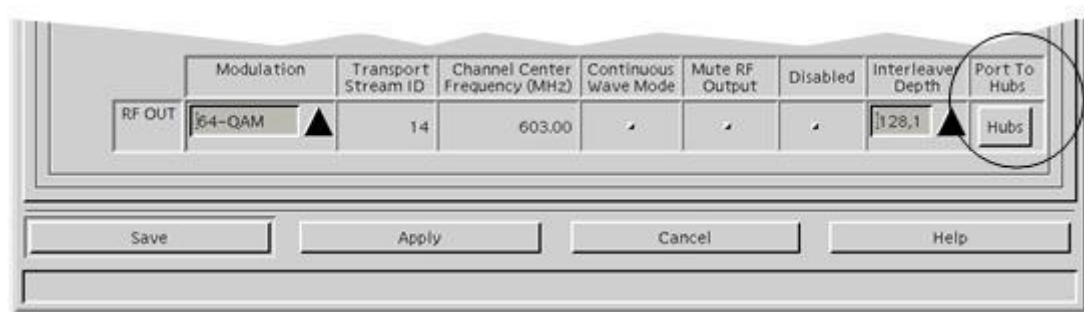
Result: The RF Output Port window opens and shows the list of Available Hubs and Selected Hubs.

Important: If you want to send data from this QAM modulator to *all* hubs in the headend, make sure no hubs appear in the **Selected Hubs** field. Any QAM with no hubs selected is actually feeding all hubs.

7   Is the QAM you selected associated with the correct hub(s)?

- ■   If **yes**, click **Cancel** and go to step 10.
- ■   If **no**, continue this procedure.

8   Add and remove hubs from the **Selected Hubs** list as necessary. Keep in mind that no hubs should appear in the Selected Hubs list if you want the QAM to feed all hubs.

9   Click **Save** in the RF Output Port window.

10   Click **Save** in the Set Up QAM window.

11   Repeat this procedure from step 4 for each QAM in the list.

12   When you have finished repeating this procedure for each QAM in the list, select **File** and click **Close** to close the QAM List window.

Prepare the QPSK Modulators and Demodulators for the Split

Introduction

Prior to splitting the existing QPSK modulators, you must prepare the new QPSK modulators and demodulators for the split. This section provides a procedure for preparing the new QPSK modulators and demodulators.

Important: Do not connect the new QPSK modulators and demodulators to the RF network at this time.

This preparation process involves the following tasks:

- Reboot the cable boxes on each QPSK modulator involved in the split.
- Configure and update the IP addresses for the new QPSK modulators and demodulators and the cable boxes you are planning to split from the existing QPSK modulators and demodulators to the new QPSK modulators and demodulators.
- Perform all necessary changes to the RF network.

Preparing the QPSK Modulators and Demodulators for the Split

Complete these steps to prepare the QPSK modulators and demodulators for the split.

1   From an xterm window on the DNCS, log on as **dncs** user.

2   Type **/dvs/dncs/bin/hubfix.sh** and press **Enter**. A message similar to the following appears:

Qmod_modem_id qmod_name
4 QPSK1
5 QPSK2
6 DummyTest1

Which hub number (QPSK) do you want to clean?

3 Type the number of the existing hub you want to clean and press **Enter**.

   Example: Based on the output in the previous step, you would type **4** to clean QPSK1.

   Result: A message similar to the following appears:

   Database selected
   36 row(s) updated
   Database closed

4 Repeat steps 2 and 3 for the hubs impacted by the changes. Then, continue with this procedure.

5 Place the existing QPSK modulators involved in the split into two-way mode.

6 Power off the existing QPSK modulators involved in the split.

7 Make the RF connections required for the QPSK modulators and demodulators involved in the split and complete any other combining changes needed.

8 Power on the modulators and demodulators and verify that all modulators and demodulators boot and provision correctly.

Activate the Cable Boxes

Introduction

Now that you have completed the changes to the QPSK modulators and demodulators, configured the DNCS, and cleared IP addresses, you can activate the cable boxes. This section provides the procedures required to force the affected cable boxes to reconnect to the network.

Note: You need the latest version of the signonCount utility to complete the tasks in this section. You should have obtained this utility earlier in this guide. If you did not, contact Cisco Services to obtain the latest version of this utility.

Process Overview

To correctly activate the cable boxes, you must complete the following tasks.

1 Stop and then restart the DNCS HCT Manager Element Group, the DNCS siManager process, the DNCS BFS Server Element Group, the DNCS qpskManager process, and the DNCS Pass Through process.

2 After all DNCS processes status indicators display green in the DNCS Control window, reboot all the cable boxes connected to the impacted QPSK modulators and demodulators.

Activating the Cable Boxes

Complete these steps to activate cable boxes.

1 Stop and then restart the DNCS HCT Manager Element Group.

   Notes:

   ■ The DNCS HCT Manager Group consists of hctmConfig, hctmInd, hctmMac, and hctmProvision.

   ■ The osm process status indicator will first change to *yellow* and then will change to *green* after the HCT Manager Group restarts. It is normal for processes to sometimes change from *red* to *yellow* and then to *green* during this procedure.

2 Wait until all DNCS process status indicators change from *red* to *green*. Then, continue with this procedure.

3 Stop and restart (bounce) the following processes on the DNCS *one at a time*. Wait until the status indicator for each process changes from *red* to *green* before stopping and restarting the next process:

- siManager (part of the DNCS DSM/BSM & SiManager Element Group)
- bfsServer (part of the DNCS BFS Server Element Group)
- bfsRemote (part of the DNCS BFS Server Element Group)
- qpskManager (part of the BossServer/IDM/QAM BIG & QPSK Managers Element Group)

4 Wait until all DNCS process status indicators change from *red* to *green*. Then, continue with this procedure.

5 Stop and restart the **Pass Through** process on the DNCS.

6 Wait for all the status indicators to change from *red* to *green*. Then, continue with this procedure.

7 Type **listQpsk 500** and press **Enter** to obtain the broadcast IP addresses of the QPSK modulators. You will need the broadcast IP address for the base IP subnet for the existing QPSK modulator to complete a step later in this procedure.

8 Is your site a Pioneer Passport or other application server site?

- If **yes**, follow the procedure you obtained from your vendor to reboot the cable boxes.
- If **no**, continue with this procedure.

9 Complete these steps to reboot all of the cable boxes provisioned on the impacted QPSK modulator(s).

Important: Cisco recommends that you boot one QPSK modulator at a time, watch the signonCount activity, and then boot the next QPSK modulator when the signonCount activity diminishes.

a Type the following command in an xterm window on the DNCS and press **Enter**:

/dvs/resapp/Tools/cmd2000 –udpCommands <broadcast IP address for the base IP subnet for the existing QPSK modulator> "resdiag RebootNOW"

Example: /dvs/resapp/Tools/cmd2000 –udpCommands **10.1.127.255** "resdiag RebootNOW"

  b Repeat step a) twice. All of the cable boxes on the existing QPSK modulator are rebooted.

  c Repeat steps a) and b) for each QPSK modulator impacted by the split.

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.