



Program and System Information Protocol Configuration for System Releases 2.5, 2.7, 3.5, 3.7, 4.0, 4.2, and CV 3.4

Overview

Introduction

Program and System Information Protocol (PSIP) is a type of system information (SI) that is generated by the broadcaster and delivered in-band with MPEG content. Cable-ready digital devices ("hosts") use PSIP to receive navigation and guide information for unencrypted digital channels. The September 2003 FCC Report and Order requires that broadcast PSIP be carried inband without modification to enable PSIP navigation for hosts that do not have a PowerKEY® CableCARD™ module, or point-of-deployment (POD) module, installed.

PSIP support is only required for unencrypted content, and PSIP is not used to carry SI for encrypted content. Cable-ready hosts equipped with a PowerKEY CableCARD module can decrypt content and receive out-of-band (OOB) SI data in order to navigate and display encrypted MPEG content.

Purpose

This document explains how to configure the network to carry unencrypted MPEG content with unmodified PSIP configured on the DNCS as a Third-Party Source. This document also describes the headend configuration needed to support delivery of services with broadcaster-generated, in-band PSIP on unencrypted digital broadcast streams.

Audience

This document is written for headend engineers, system operators, technical staff, and Cisco Services Engineers.

System Release Requirement

This document applies to System Releases (SR) 2.5, SR 2.7, SR 3.5, SR 3.7, SR 4.0, SR 4.2, and SR CV 3.4.

Prerequisite

The recommendations described in this document assume that you use an 8-VSB receiver capable of providing a compliant multi-program transport stream (MPTS).

Important: Before you begin, you must contact Cisco Services to have the DNCS "Third-Party Source" feature support **enabled** on your system. You must do this to complete the procedure called *Setting Up Non-Cisco Digital Sources* (on page 7).

Document Version

This is the third formal release of this guide. This document contains minor text and graphic changes, and is written for systems running SR 2.5, SR 2.7, SR 3.5, SR 3.7, SR 4.0, SR 4.2, and SR CV 3.4.

Important: An earlier technical bulletin, *Program and System Information Protocol Configuration* (part number 4007581, published June 2004), provides PSIP configuration instructions for systems running SR 2.2.

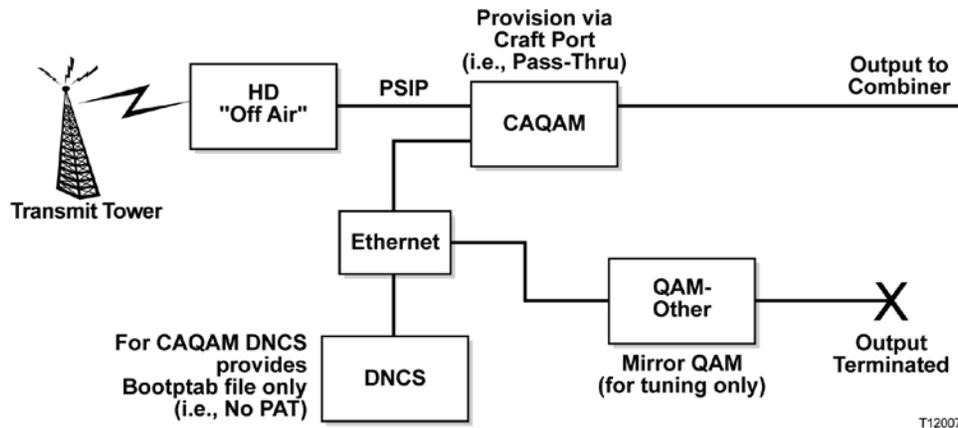
In This Document

■ Former Network Architecture (Mirror QAMs)	3
■ Target Network Architecture (Clear QAMs)	4
■ Configure Unencrypted Transport Streams	5

Former Network Architecture (Mirror QAMs)

Background

In earlier system releases, MSOs use "mirror" QAMs to pass unmodified PSIP to DHCTs, as shown in the following diagram.



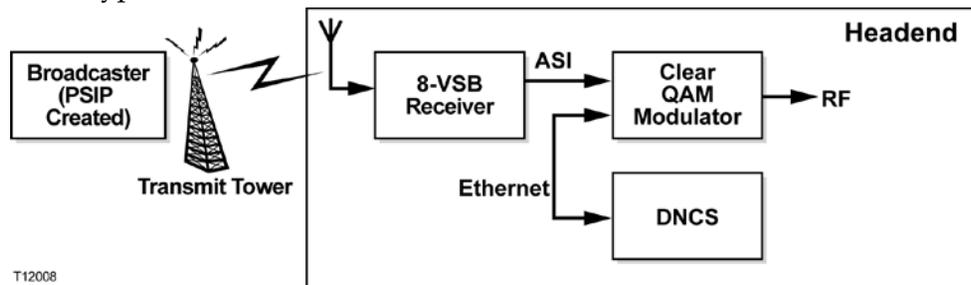
The major disadvantage of this configuration is that it required two QAM modulators for each service or set of services. One QAM actually passed the content and the PSIP to the DHCTs; the second ("mirror") QAMs provided tuning information to the DHCTs.

Target Network Architecture (Clear QAMs)

Background

Beginning with SR 2.5/3.5/4.0, MSOs can use "clear" QAMs (QAMs that are configured to pass content through without modification) to deliver unchanged PSIP to DHCTs. In this architecture, the DNCS allows you to specify a Third-Party Source Definition. This means that the use of the mirror QAM becomes unnecessary.

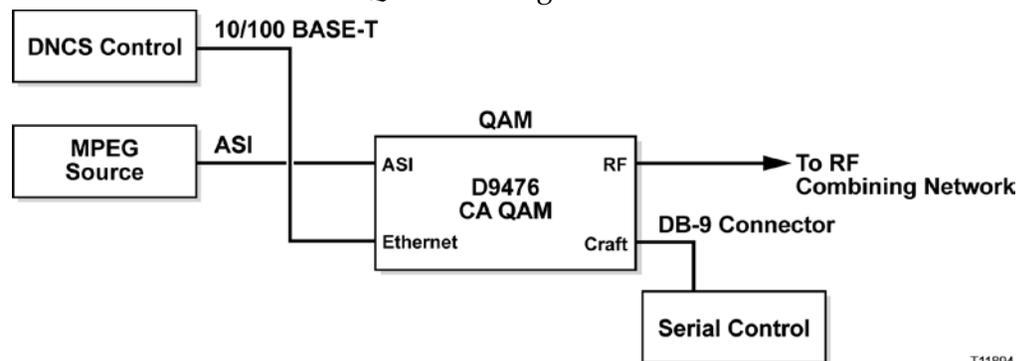
In the following example, the clear QAM transmits the multiplexed transport stream with unmodified PSIP data from the input device. The clear QAM passes the unencrypted MPEG and PSIP data without modification.



Configure Unencrypted Transport Streams

In order to make the stream available to DHCTs and hosts with PowerKEY CableCARD modules, a special configuration is needed. Complete the following tasks to set up this headend configuration.

- 1 Contact Cisco Services to enable the "Third-Party Source" feature on the DNCS. Doing so allows you to configure non-Cisco (non-Cisco) digital sources on the DNCS.
- 2 Configure the clear QAM on the DNCS as if it were a regular content QAM. See *Setting Up the Clear QAM* (on page 5) for more information. The following illustration shows how the QAM is configured.



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- 3 Set up the non- Cisco digital source definitions for the content. See *Setting Up Non-Cisco Digital Sources* (on page 7) for more information.
- 4 Delete any existing mirror QAMs. See *Deleting Existing Mirror QAMs* (on page 11) for more information.
- 5 Delete any existing mirror MPEG sources. See *Deleting Existing Mirror MPEG Sources* (on page 12) for more information.

Setting Up the Clear QAM

Setting Up the QAM for Operation

This section provides a procedure for setting up the QAM for operation. This procedure enables the passthru mode on the QAM modulator.

Note: You can use either a D9476 CA QAM or an MQAM as your clear QAM. If you use an MQAM, you can only use one input and one output. However, the MQAM can broadcast at a frequency of up to 867 MHz.

Before You Begin

Consider the following factors as you complete the procedures in this section:

- You must configure the QAM using the Set Up QAM window on the DNCS. You must do this before the QAM is able to boot.

Note: In earlier software releases, you were required to use the `/etc/bootptab` file to configure the QAM. This is no longer required. If the `/etc/bootptab` file contains any QAMs, you should delete them from the `/etc/bootptab` file.

- This procedure allows the QAM to pass everything that it receives on the ASI input through to the RF output.

Because the DNCS will not be used to build sessions, be careful that the data rate on the ASI input to the QAM does not exceed the output capacity of the QAM (27 Mbps for 64 QAM or 38 Mbps for 256 QAM).

- Beginning with CAQAM 2.5.1 and MQAM 2.6.11, the passthru setting is stored in non-volatile memory (NVM). If you are using CAQAM 2.5.1 or MQAM 2.6.11, you do not have to re-enable passthru mode whenever the QAM loses power. However, earlier versions of the QAM software did not store the passthru setting in NVM. Because this setting is now persistent through reboots, an uninterruptible power supply is no longer required.

In order to set up non-Cisco digital sources, you must know the program numbers for content passed through the QAM.

Set Up the Clear QAM

Complete this process to set up the clear QAM.

- 1 Configure the QAM on the DNCS as if it were a standard QAM.

Important:

- Do not assign this QAM to a service group. You cannot use this QAM to set up broadcast or VOD sessions. The QAM will not allow you to set up sessions when it is in passthru mode.
- Be sure that you record the frequency and modulation type of this QAM for later use. You will need this information in *Setting Up Non-Cisco Digital Sources* (on page 7).

- 2 Boot the QAM so it can fully load the appropriate software and receive provisioning information from the DNCS.
- 3 Connect a PC terminal to the craft port on the back panel of the QAM being configured. Use a standard RS-232 cable with a DB9 connector.

- 4 Power on the PC and activate a ProComm or HyperTerminal window using the following modem connection settings:
 - 9600 baud
 - 1 stop bit
 - No parity
 - 8 data bits
 - No flow control
- 5 Press the **Enter** key. A **QAM>** prompt appears.
- 6 Type **pidmode 1** and press **Enter** to enable passthru mode.
- 7 Repeat steps 1 through 6 for any additional QAMs.
- 8 Go to *Setting Up Non-Cisco Digital Sources* (on page 7).

Setting Up Non-Cisco Digital Sources

Complete these steps to set up a non-Cisco digital source.

- 1 On the DNCS Administrative Console, click the **DNCS** tab.
- 2 Click the **System Provisioning** tab.
- 3 Click **Source**. The Source List window opens.



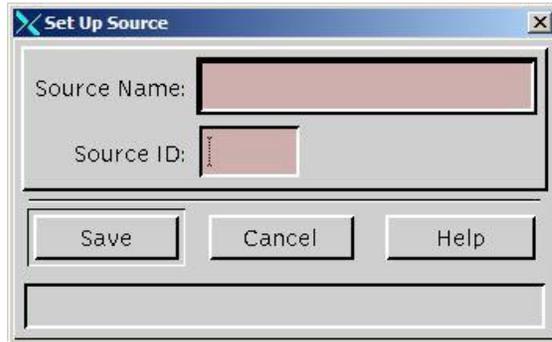
The screenshot shows a window titled "Source List" with a menu bar containing "File", "View", and "Help". Below the menu bar is a table with three columns: "Source Name", "Source ID", and "Current Security Mode". The table contains ten rows of data, with the row for "A031 FOXN" highlighted in red.

Source Name	Source ID	Current Security Mode
A007 TBS	1007	Clear
A008 GTV	1008	Clear
A009 UPA	1009	Clear
A024 ESPN	1024	Clear
A031 FOXN	1031	Clear
A036 TWC	1036	Clear
A037 GOLF	1037	Clear
A067 USA	1067	Clear
A073 SCIFI	1073	Clear
A077 GALA	1077	Clear

- 4 Does the source already exist?
 - If **yes**, click once on the row containing the source, then go to step 10.
 - If **no**, go to step 5.

Configure Unencrypted Transport Streams

- 5 Click **File**, and then select **New**. The Set Up Source window opens.



- 6 Click in the **Source Name** field and type the name you will use to identify this source. You can use up to 20 alphanumeric characters.

Note: We recommend that you use a naming scheme that indicates the source type (analog or digital), the channel number the service will use, and the service name. For example, a source name of **D02 WeatherScan** indicates that this is a digital source (**D**) providing content on channel 2 (**02**) for the WeatherScan service.

- 7 Click in the **Source ID** field and type the number you will use to identify this source. Typically, the source ID is 1000 plus the number of the channel offering the service. For example, the source ID for a service appearing on channel 2 would be **1002**. You can use up to 5 numeric characters.

Notes:

- You must use a number that is greater than 200 for the source ID. Source ID numbers 1 through 200 are reserved for system-built service sources.
- Remember the source ID. You will need it as you continue to set up the service.

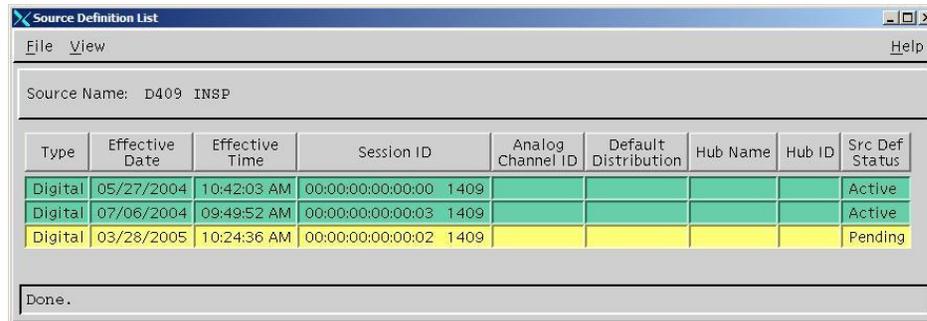
- 8 Click **Save**.

Results:

- The system saves the source information in the DNCS database and closes the Set Up Source window.
- The Source List window updates to include the new source.

- 9 In the Source List window, click on the row containing the source you just created.

- 10 Click **File**, and then select **Source Definitions**. The Source Definition List window opens for the source you selected.



The screenshot shows a window titled "Source Definition List" with a menu bar containing "File", "View", and "Help". Below the menu bar, there is a text field for "Source Name" containing "D409 IN3P". The main area of the window contains a table with the following data:

Type	Effective Date	Effective Time	Session ID	Analog Channel ID	Default Distribution	Hub Name	Hub ID	Src Def Status
Digital	05/27/2004	10:42:03 AM	00:00:00:00:00:00 1409					Active
Digital	07/06/2004	09:49:52 AM	00:00:00:00:00:03 1409					Active
Digital	03/28/2005	10:24:36 AM	00:00:00:00:00:02 1409					Pending

At the bottom of the window, there is a status bar that says "Done."

- 11 Do you have existing source definitions?

- If **yes**, in the Source Definition List window, locate and delete all existing source definitions for mirror QAMs.

Note: When you delete these source definitions, the DNCS prompts you to tear down the session associated with this source definition. Answer **Yes** to this prompt to tear down the active session on the Mirror QAM. (You will lose service for this source.) You will delete this mirror QAM later, in *Deleting Existing Mirror QAMs* (on page 11).

- If **no**, go to step 12.

Important: Subscribers will not be able to view this service until you have fully completed this entire procedure.

- 12 Read the following instruction before proceeding to step 13.

Important: Before you define any sources, you must determine how many source definitions you need. You must create a unique source definition for any service that has a unique frequency, MPEG number, or modulation scheme. In order to simplify the configuration, we recommend that you configure your QAM frequencies to be the same for these types of services.

Example: An off air service is carried to most hubs by a single QAM or by multiple QAMs at 573 MHz, but some hubs carry the service at 561 MHz. You must define a source for 573 MHz and make it a default distribution. Then you must create a separate source definition for each hub that receives the service at 561 MHz, and select "Hub" distribution.

- 13 Click **File**, and then select **New non-Cisco Digital**. The Set Up Non-Cisco Digital Source Definition window opens.

Note: If you do not see the **New non-Cisco Digital** selection in the **File** drop-down menu, contact Cisco Services to have the DNCS "Third-Party Source"

Configure Unencrypted Transport Streams

feature support **enabled** on your system.

The screenshot shows a dialog box titled "Set Up Non-SA Digital Source Definition". The "Source Name" field contains "A031 FOXN". The "Distribution" section has two radio buttons: "Default" (selected) and "Hub". The "Hub Name" field contains "Cape Coral". The "MPEG Program Number" field is empty. The "Channel Center Frequency" field is empty. The "Modulation Type" dropdown is set to "ITU J.83 Annex A (6 MHz)". The "Modulation" dropdown is set to "64-QAM". At the bottom, there are "Save", "Cancel", and "Help" buttons.

- 14 For **Distribution**, select either **Default** or **Hub**. If you select **Hub**, you must select the appropriate hub from the drop-down list.

Notes:

- Select **Default** if this source is transported to all hubs using a single clear QAM.
 - Select **Hub** if this source is only transported to certain hubs. Any hubs that do not have a hub-specific source defined will use the default source definition.
- 15 Click in the **MPEG Program Number** field and enter the MPEG program number being fed into the transport stream. This number must match the program number of the MPEG source as defined by your content provider.
 - 16 Click in the **Channel Center Frequency** field and type the frequency of the channel you will use to send data from this modulator to the hubs on your system. You can enter a value in 6 MHz increments from 91 MHz to 867 MHz.
 - 17 Click the **Modulation Type** arrow, and select **ITU J.83 Annex B (6 MHz)**.
Note: North American sites use the **ITU J.83 Annex B (6 MHz)** modulation standard.
 - 18 Click the **Modulation** arrow and select the modulation method to be used.
 - 19 Click **Save**. The system closes the Set Up Non-Cisco Digital Source Definition window and the Source Definition List window updates to include the new non-Cisco digital source.

- 20 Repeat steps 13 through 19 until all required non-Cisco source definitions have been built for this source.
- 21 From the Source Definition List window, select **File** and choose **Close** to exit the Source Definition List window.
- 22 Repeat steps 4 through 21 until all Sources have been updated or created.
- 23 From the Source List, note the Source ID for the new sources. You will need these when building SAM services. Then, select **File** and choose **Close** to exit the Source List.
- 24 Now that you have added sources and source definitions for each session to be carried by the clear QAMs, you must reboot the siManager process to have these additions take effect.

Important: Refer to the *Digital Network Control System Online Help* for your system for detailed procedures on rebooting the siManager process.

- 25 Select from one of the following options:
 - If you created *new* sources you must do the following:
 - Create SAM services for each of the new non-Cisco digital sources you just created.
 - Add the new SAM services to the channel map(s).
 - Create Interactive Program Guide (IPG) entries for each of the new services.
 - **Important:** Refer to the *Digital Network Control System Online Help* for your system for detailed instructions.
 - If you only *modified* existing sources, go to step 26.
- 26 To verify that you can view the new services, use a DHCT to tune to the new services.
- 27 Can you view the new services?
 - If **yes**, go to *Deleting Existing Mirror QAMs* (on page 11).
 - If **no**, call Cisco Services.

Deleting Existing Mirror QAMs

After creating new or modifying existing sources, we recommend that you clean up your system configuration by deleting your existing mirror QAMs.

Important: If you are going to use these QAMs for new services immediately, you have completed this procedure. You may skip both this section and *Deleting Existing Mirror MPEG Sources* (on page 12).

Complete these steps to delete existing mirror QAMs.

- 1 On the DNCS Administrative Console, select the **DNCS** tab, choose the **Element Provisioning** tab, and then click **QAM**. The QAM List window opens.
- 2 In the QAM List window, locate and select a mirror QAM you want to delete from the QAM List.
- 3 Select **File** and then click **Delete**. A confirmation message appears.
- 4 Click **Yes**. The selected mirror QAM is deleted.
- 5 Repeat steps 2 through 4 for each mirror QAM you want to delete.
- 6 Go to **Deleting Existing Mirror MPEG Sources**, next in this section.

Deleting Existing Mirror MPEG Sources

After deleting your existing mirror QAMs, we recommend that you clean up your system configuration by deleting your existing mirror MPEG sources.

Complete these steps to delete existing mirror MPEG sources.

- 1 On the DNCS Administrative Console, select the **DNCS** tab, choose the **Element Provisioning** tab, and then click **MPEG Source**. The MPEG Source List window opens.
- 2 In the MPEG Source List window, locate and select a mirror MPEG source you want to delete from the MPEG Source List.
- 3 Select **File** and then click **Delete**. A confirmation message appears.
- 4 Click **Yes**. The selected mirror MPEG source is deleted.
Important: If you are using a different source ID, you must update the SAM service to reflect the new source ID.
- 5 Repeat steps 2 through 4 for each mirror MPEG source you want to delete.

For Information

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.



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