



# Cisco D9824 Advanced Multi Decryption Receiver Software Version 4.0 Installation and Configuration Guide

**Please Read This Entire Guide**

**Veillez lire entièrement ce guide**

**Bitte das gesamte Handbuch durchlesen**

**Sírvase leer completamente la presente guía**

**Si prega di leggere completamente questa guida**

**Important**

Please read this entire guide before you install or operate this product. Give particular attention to all safety statements.

**Important**

Veillez lire entièrement ce guide avant d'installer ou d'utiliser ce produit. Prêtez une attention particulière à toutes les règles de sécurité.

**Zu beachten**

Bitte lesen Sie vor Aufstellen oder Inbetriebnahme des Gerätes dieses Handbuch in seiner Gesamtheit durch. Achten Sie dabei besonders auf die Sicherheitshinweise.

**Importante**

Sírvase leer la presente guía antes de instalar o emplear este producto. Preste especial atención a todos los avisos de seguridad.

**Importante**

Prima di installare o usare questo prodotto si prega di leggere completamente questa guida, facendo particolare attenzione a tutte le dichiarazioni di sicurezza.

# Notices

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## Safety Precautions

This symbol alerts you to the presence of uninsulated dangerous voltage inside the product enclosure that poses a risk of electric shock.	<div style="border: 1px solid black; padding: 5px; text-align: center; margin: 5px 0;"> <b>CAUTION</b>                      RISK OF ELECTRIC SHOCK                      DO NOT OPEN                 </div>	This symbol alerts you to important operating and maintenance (servicing) instructions included with this product.
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center; font-size: 10px;">TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVERS FROM THIS UNIT. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL. SEE ADDITIONAL SAFETY INSTRUCTIONS BELOW.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center; font-size: 10px;">TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center; font-size: 10px;">THIS EQUIPMENT MAY HAVE UP TO TWO POWER SUPPLY CORDS. TO REDUCE THE RISK OF ELECTRIC SHOCK, TWO POWER SUPPLY CORDS MAY HAVE TO BE DISCONNECTED BEFORE SERVICING.</p> </div>		

- 1 Read Instructions - All the safety and operating instructions should be read before the product is operated.
- 2 Retain Instructions - The safety and operating instructions should be retained for future reference.
- 3 Heed Warnings - All warnings on the product and in the operating instructions should be adhered to.
- 4 Follow Instructions - All operating and use instructions should be followed.
- 5 Cleaning - Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.  
  
 Exception: A product that is meant for uninterrupted service and that, for some specific reason, such as the possibility of the loss of an authorization code for a CATV converter, is not intended to be unplugged by the user for cleaning or any other purpose, may exclude the reference to unplugging the product in the cleaning description above.
- 6 Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- 7 Water and Moisture - Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
- 8 Accessories - Do not place this product on an unstable cart, stand, tripod, bracket, or table.

The product may fall, causing serious injury to a child or adult, and serious damage to the product.

## Safety Precautions

Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

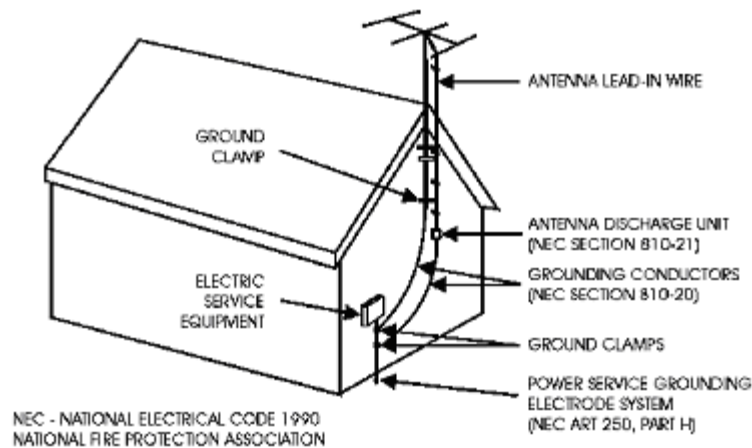
- 9 A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

### PORTABLE CART WARNING



- 10 Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 11 Power Sources – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.
- 12 Grounding or Polarization – This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternate Warnings – This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- 13 Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

- 14 Protective Attachment Plug - The product is equipped with an attachment plug having overload protection. This is a safety feature. See Instruction Manual for replacement or resetting of protective device. If replacement of the plug is required, be sure the service technician has used a replacement plug specified by the manufacturer that has the same overload protection as the original plug.
- 15 Outdoor Antenna Grounding - If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.



TO CATV SYSTEM INSTALLER  
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the National Electrical Code (NEC) that provides guidelines for proper grounding, and in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of entry as practical.

- 16 Lightning - For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
- 17 Power Lines - An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
- 18 Overloading - Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
- 19 Object and Liquid Entry - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

## Safety Precautions

- 20 Servicing – Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 21 Damage Requiring Service – Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - a When the power-supply cord or plug is damaged,
  - b If liquid has been spilled, or objects have fallen into the product,
  - c If the product has been exposed to rain or water,
  - d If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation,
  - e If the product has been dropped or damaged in any way, and
  - f When the product exhibits a distinct change in performance – this indicates a need for service.
- 22 Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 23 Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
- 24 Wall or Ceiling Mounting – The product should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 25 Heat – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

Protect yourself from electric shock and your system from damage!




- This product complies with international safety and design standards. Observe all safety procedures that appear throughout this guide, and the safety symbols that are affixed to this product.
- If circumstances impair the safe operation of this product, stop operation and secure this product against further operation.

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions!



**You will find this symbol on the product and/or in the literature that accompanies this product.**

**It indicates important operating or maintenance instructions.**

-  You may find this symbol on the product and/or in the literature that accompanies this product.  
It indicates a live terminal; the symbol pointing to the terminal device.
-  You may find this symbol on the product and/or in the literature that accompanies this product.  
It indicates a protective earth terminal.
-  You may find this symbol on the product and/or in the literature that accompanies this product.  
It indicates excessive or dangerous heat.

### Power

- Important! This is a Class I product. You must earth this product. This equipment may have up to two power supply cords. To reduce the risk of electric shock, two power supply cords may have to be disconnected before servicing.
- This product plugs into a socket-outlet. The socket-outlet must be near this product, and must be easily accessible.
- Connect this product only to the power source that is indicated on the rear panel of this product.
- If this product does not have a mains power switch, the power cord serves this purpose

### Enclosure

- Do not allow moisture to enter this product.
- Do not open the enclosure of this product unless otherwise specified.
- Do not push objects through openings in the enclosure of this product.

### Cables

- Always disconnect all power cables before servicing this product.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Do not walk on or place stress on cables or plugs.

### Factory service

- Refer service only to service personnel who are authorized by the factory.

## Règles de sécurité


Protégez-vous des risques d'électrocution et protégez votre système contre les endommagements éventuels.


Ce produit respecte les standards internationaux de sécurité et de conception. Veuillez observer toutes les procédures de sécurité qui apparaissent dans ce guide, ainsi que les symboles de sécurité qui figurent sur le produit.


Si, du fait des circonstances, ce produit cesse de fonctionner normalement, cessez de l'utiliser et empêchez-en l'utilisation future.

Évitez le risque de blessures et de dommages aux produits! Ne procédez à aucune tâche tant que vous n'aurez pas entièrement assimilé les conditions indiquées par un symbole!

 Ce symbole figure dans la documentation accompagnant ce produit. Il indique d'importantes instructions de fonctionnement ou d'entretien.

 Ce symbole peut être attaché à ce produit. Il indique une borne sous tension; la direction indique la borne.

 Ce symbole peut être attaché à ce produit. Il indique une borne de terre de protection.

 Ce symbole peut être attaché à ce produit. Il indique une température excessive ou dangereuse.

### Alimentation

- Important! Ce produit fait partie de la classe I. Vous devez le mettre à la terre.
- Ce produit se branche dans une prise murale. Cette dernière doit être placée à proximité du produit et doit être facilement accessible.
- Ne branchez ce produit qu'à la source d'alimentation indiquée sur son panneau arrière.
- Si ce produit n'a pas d'interrupteur d'alimentation générale, le cordon d'alimentation remplit ce rôle.

### Enceinte

- Ne laissez pas l'humidité pénétrer dans ce produit.
- N'ouvrez pas l'enceinte de ce produit, sauf instructions contraires.
- Ne forcez pas d'objets dans les ouvertures du boîtier.

### Câbles

- Débranchez toujours tous les cordons d'alimentation avant de réparer ce produit.
- Tirez toujours sur la prise ou le connecteur pour débrancher un câble. Ne tirez jamais directement sur le câble.

- Ne marchez pas sur les câbles ou les prises et n'y exercez aucune pression.

#### Réparations effectuées à l'usine





- Ne confiez les travaux de réparations qu'au personnel autorisé par l'usine.

## Sicherheitsvorkehrungen

Schützen Sie sich gegen elektrischen Schlag, und Ihr Gerät gegen Beschädigung!

- Dieses Gerät entspricht internationalen Sicherheits-und Ausführungsnormen. Beachten Sie alle in diesem Handbuch enthaltenen Sicherheitshinweise sowie die am Gerät angebrachten Warnzeichen.
- Sollten örtliche Umstände den sicheren Betrieb dieses Gerätes beeinträchtigen, schalten Sie es ab und sichern es gegen weitere Benutzung.

Vermeiden Sie Verletzungen sowie Beschädigung des Gerätes! Wenn Sie zu einem der folgenden Warnzeichen gelangen, nicht weiterarbeiten, bis Sie seine Bedeutung voll verstanden haben!

-  **Dieses Symbol erscheint auf dem Gerät und/oder in der ihm beiliegenden Literatur. Es bedeutet wichtige, zu beachtende Betriebs-oder Wartungsanweisungen.**
-  **Wenn dieses Zeichen am Gerät angebracht ist, warnt es vor einer spannungsführenden Stelle.**
-  **Dieses Symbol kennzeichnet auf dem Gerät die Anschlußstelle der Sicherheitserde.**
-  **Wenn dieses Zeichen am Gerät angebracht ist, warnt es vor heißen Stellen, die zu Verbrennungen führen können.**

#### Netzspannung

- Wichtig! Dieses Gerät ist ein Produkt der Schutzklasse I. Es muß geerdet werden.
- Das Gerät ist an einer Steckdose anzuschließen. Diese muß sich leicht zugänglich in unmittelbarer Nähe des Gerätes befinden.
- Die Netzversorgung muß den auf der Rückwand des Gerätes angegebenen Werten entsprechen.
- Falls sich kein Hauptschalter am Gerät befindet, dient das Netzkabel diesem Zweck.

#### Gehäuse

- Das Innere des Gerätes ist vor Feuchtigkeit zu schützen.
- Das Gehäuse ist nicht zu öffnen.
- Niemals einen Gegenstand durch die Gehäuseöffnungen einführen!

## Safety Precautions

### Kabel

- Vor jeglicher Wartung des Gerätes sind alle Kabel zu entfernen.
- Hierzu grundsätzlich am Stecker oder Verbindungsstück und niemals am Kabel selber ziehen.
- Nicht auf die Kabel oder Stecker treten oder diese einer Zugbelastung aussetzen.

### Hersteller-Wartung

- Wartungsarbeiten sind nur durch vom Hersteller autorisierte Techniker vorzunehmen.





## Precauciones de seguridad

¡Protéjase contra la electrocución y proteja su sistema contra los daños!

Este producto cumple con los criterios internacionales de seguridad y diseño. Observe todas los procedimientos de seguridad que aparecen en esta guía, y los símbolos de seguridad adheridos a este producto.

Si las circunstancias impiden la operación segura de este producto, suspenda la operación y asegure este producto para que no siga funcionando.

¡Evite lastimarse y evite dañar el producto! No avance más allá de cualquier símbolo hasta comprender completamente las condiciones indicadas!

-  **Encontrará este símbolo en el impreso que acompaña a este producto. Este símbolo indica instrucciones importantes de funcionamiento o mantenimiento.**
-  **Es posible que este símbolo esté pegado al producto. Este símbolo indica un terminal vivo, la flecha apunta hacia el aparato terminal.**
-  **Podría encontrar este símbolo pegado al producto. Este símbolo indica un terminal de protección de tierra.**
-  **Podría encontrar este símbolo pegado al producto. Este símbolo indica calor excesivo o peligroso.**

### Alimentación

- Importante! Este es un producto de Clase I. Tiene que estar conectado a tierra.
- Este producto se conecta a un enchufe. El enchufe necesita estar cerca del producto y ser fácilmente accesible.
- Conecte este producto únicamente a la fuente de suministro eléctrico indicada en el panel posterior del producto.
- Si el producto no tiene interruptor para la línea principal, utilice el cordón toma de corriente para este propósito.



### Cubierta

- No permita que la humedad penetre en este producto.
- No abra la cubierta del producto a menos que se indique lo contrario.
- No introduzca objetos a través de las aberturas de la cubierta del producto.

### Cables

- Siempre desconectar todos los cables eléctricos antes de revisar o reparar el producto.
- Tire siempre del enchufe o del conector para desconectar un cable. Nunca tire del cable mismo.
- No camine ni aplique presión sobre los cables o enchufes..

### Revisión y reparación de fábrica





- Solo personal aprobado por la fábrica puede darle servicio al producto.

## Precauzioni di sicurezza

Protegetevi da scosse elettriche e proteggete il vostro sistema da possibili danni!

- Questo prodotto soddisfa le norme internazionali per la sicurezza ed il design. Seguite tutte le procedure di sicurezza contenute in questa guida e i simboli di sicurezza applicati al prodotto.
- Se circostanze avverse compromettono la sicurezza d'uso di questo prodotto, interrompetene l'uso e assicuratevi che il prodotto non venga più utilizzato.

Evitare infortuni alla persona e danni al prodotto! Non procedere oltre a qualunque simbolo fino a quando non si siano comprese pienamente le condizioni indicate!

-  **Questo simbolo, che appare nella letteratura di accompagnamento del prodotto, indica importanti istruzioni d'uso e di manutenzione.**
-  **Sul prodotto potete vedere questo simbolo che indica un dispositivo terminale sotto tensione; la freccia punta verso il dispositivo.**
-  **Potrete trovare il presente simbolo applicato a questo prodotto. Questo simbolo indica un terminale protettivo di messa a terra.**
-  **Potrete trovare il presente simbolo attaccato a questo prodotto. Questo simbolo indica un calore eccessivo o pericoloso.**

### Alimentazione

- Importante! Questo prodotto è di Classe I. Va messo a terra.
- Questo prodotto si inserisce in una presa di corrente. La presa di corrente deve essere in prossimità del prodotto, e deve essere facilmente accessibile.

## **Safety Precautions**

- Collegare questo prodotto solamente alla fonte di alimentazione indicata sul pannello posteriore di questo prodotto.
- Se questo prodotto non è dotato di un interruttore principale, il cavo di alimentazione funge a questo scopo.

## **Chiusura**

- Proteggete da umidità questo prodotto.
- Non aprire la chiusura di questo prodotto a meno che non sia specificato diversamente. Non inserire oggetti attraverso le fessure della chiusura.

## **Cavi**

- Staccare sempre tutti i cavi di alimentazione prima di svolgere l'assistenza tecnica al prodotto.
- Per scollegare un cavo tirate la spina o il connettore, non tirare mai il cavo stesso.
- Non calpestare o sottoporre a sollecitazioni i cavi o le prese.

## **Riparazioni di fabbrica**

- Per le riparazioni contattate solamente personale tecnico autoizzato dalla fabbrica.

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# About This Manual

## Objective

This manual describes how to install, use and maintain the Cisco D9824 Advanced Multi Decryption Receiver.

**Note:** The manual describes all available options for the D9824 receiver. Your D9824 receiver may only have some of the features described in this manual.

## Audience

The audience of this manual includes users (operators) and service personnel who are responsible for the installation, configuration, operation, monitoring and service of the D9824 receiver.

## Required Knowledge

To use this documentation, the user should have a basic knowledge of the technology used in relation to this product. Service personnel should have additional skills and be familiar with cabling, electronic circuitry, and wiring practices.

This manual is intended for operators who are responsible for the configuration, remote operation and maintenance of the D9824 receiver.



# 1

---

## Introduction

### Overview

This chapter is a general introduction to the D9824 Advanced Multi Decryption Receiver. It describes the most common applications and interfaces of the receiver.

### In This Chapter

- D9824 Advanced Multi Decryption Receiver ..... 2
- Transport Stream Inputs/Outputs ..... 4

## D9824 Advanced Multi Decryption Receiver

The D9824 Multi Decryption Receiver is designed for satellite content distribution applications requiring Digital Video Broadcasting - Satellite (DVB-S) and Digital Video Broadcasting - Satellite - Second Generation (DVB-S2) reception capabilities with advanced digital outputs for digital tier program distribution. A built-in decoder can decode an MPEG-2 or MPEG-4 Advanced Video Coding (AVC) high definition (HD) program is also available for analog. By supporting decryption of up to 32 Cisco PowerVu® encrypted programs, the D9824 receiver allows users to efficiently receive and distribution programs through their network using a single receiver.

### Digital Program Distribution

The Asynchronous Serial Interface (ASI) transport output provides a number of output modes and can carry decrypted programs for digital tier distribution. This capability helps ensure that compressed video programs are efficiently distributed to households equipped with digital set-top boxes.

### Digital Program Mapping

Digital program mapping allows programmers to "transparently" substitute programs at the uplink. It maintains predictable and compliant transport output during service replacement, network information table (NIT) retuning, and channel changes, including forced tunings. This feature remaps the packet identifier (PID) information from the primary service to an alternate service, allowing downstream devices to continue to operate without headend operator intervention. This helps ensure availability of alternative programming in the digital tier.

### Digital Advertisement Insertion

Digital program insertion (DPI) information is available with the video and audio PIDs for external advertisement insertion in a compressed digital format.

### Key Features

- Four L-Band inputs
- DVB-S quaternary phase shift keying (QPSK) demodulation
- DVB-S2QPSK and eight phase shift keying (8PSK) demodulation
- PowerVu conditional access with Data Encryption Standard (DES) or DVB descrambling
- Supports Basic Interoperable Scrambling System (BISS) conditional access for a

single key for 32 programs

- DVB Common Interface (DVB-CI) support for CAM-based conditional access
- 4:2:0 High Definition MPEG-4 AVC and MPEG-2 1080i and 720p decoding
- 4:2:0 Standard Definition MPEG-4 AVC and MPEG-2 decoding
- Aspect ratio conversion (4:3, 16:9, 14:9) with Active Format Descriptor (AFD) control for SD programs
- AFD support for down-conversion of HD programs with aspect ratio conversion
- ASI output
- Closed Captioning support for EIA-608 and EIA-708
- MPEG and Dolby™ Digital (AC-3) audio decoding
- DVB or Imtext subtitling
- Four audio outputs providing either two stereo pairs (four mono channels) of balanced audio, each with the ability to use part of their output for applications, such as SAP and cue tones
- Uplink addressable decoder output control (VBI, audio routing, DPI, and ASI output)
- Fingerprint Trigger for the decoded program
- Field upgradeable software and security
- Simple Network Management Protocol (SNMP) for setup, control, and monitoring
- Front panel liquid crystal display (LCD) for control and monitoring
- Web browser interface for easy setup, control, and monitoring
- DVB-VBI and SCTE-127 support
- Dual-tone multifrequency (DTMF) cue tone and cue trigger outputs for advertisement insertion
- Digital Program Mapping providing uplink control for service replacements in blackout areas
- Live Event Control Support
- Multiprotocol Encapsulation (MPE) output
- Multi Program Transport Stream (MPTS) MPEGoIP output
- MPEGoIP Input
- Forward Error Correction (FEC) capability

## Transport Stream Inputs/Outputs

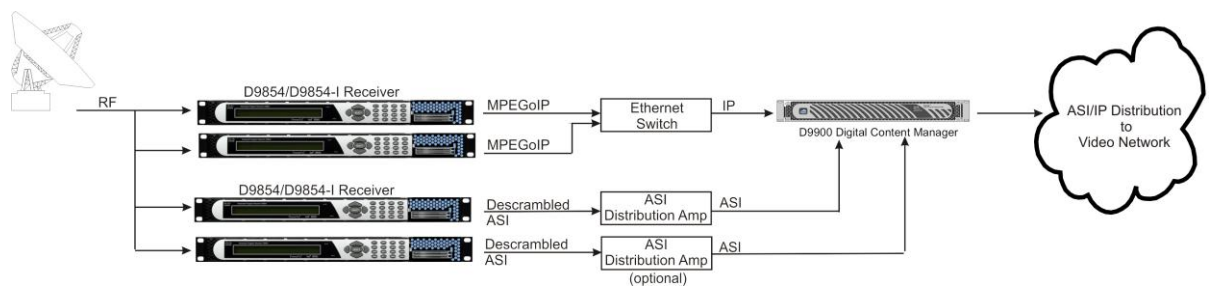
### DVB-ASI Output

The D9824 receiver has one DVB-ASI output. This output can be used as an input for a DVB-T transmitter or other types of DVB-ASI reception equipment.

### MPEGoIP Output

The MPEGoIP output provides a number of output modes including the capability of carrying a decrypted program for digital tier distribution. This helps ensure that compressed video programs are efficiently distributed to households equipped with digital set-top boxes. Digital Program Insertion (DPI) information will also be available along with the video and audio PIDs (Packet Identifiers) for external ad-insertion in compressed digital format.

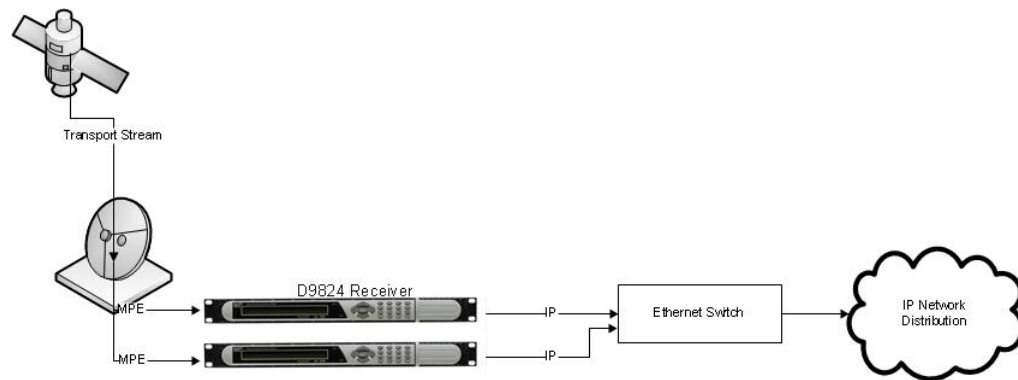
The diagram below shows an example of the D9824 receiver used in an MPEGoIP application.



## MPE Output

The Multiprotocol Encapsulation (MPE) output provides a means to carry packet oriented IP protocols on top of a transport stream. The MPE output receives IP packets from the transport stream and the IP data can be sent through an Ethernet switch to an IP router or directly to a receiving device.

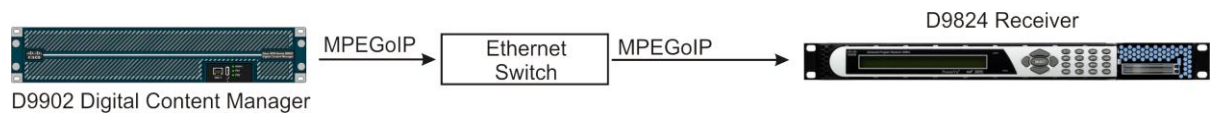
The diagram below shows an example of the D9824 receiver used in an MPE application.



## MPEGoIP Input

The MPEGoIP input allows a decoder to process User Datagram Protocol (UDP) or Real-time Transport Protocol (RTP)-encapsulated MPEG transport streams (protected streams) from the IP/Ethernet network. The incoming stream is either MPTS or Single Program Transport Stream (SPTS).

The diagram below shows an example of the D9824 receiver receiving MPEGoIP transport streams:







# 2

---

## Quick Setup - Read Me First!

### Overview

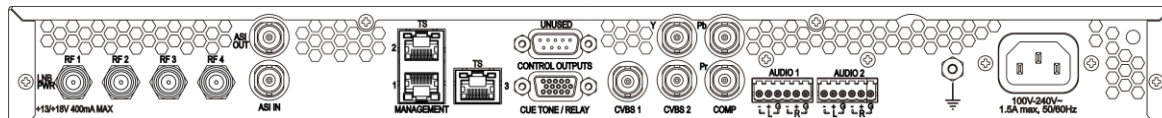
This chapter provides a quick setup for your D9824 receiver. If you are unsure about which receiver settings to use, contact your local service provider for assistance.

### In This Chapter

- Connecting the Receiver to Other Equipment..... 8
- Setting up for Network Connection..... 9
- Quick Setup Instructions for RF Acquisition..... 10
- Assigning a Program Channel to a PE (Program Entry)..... 11
- Setting up the ASI Output ..... 12
- Setting the DPM Mode..... 13

## Connecting the Receiver to Other Equipment

The following displays the rear panel of the D9824 Multi Decryption Receiver:



- 1 Connect the L-Band signal to RF1. 13V or 18V LNB power is only available on the RF1 port. The factory default setting for LNB power is OFF.
- 2 Connect the ASI OUT port to an ASI device for digital tier applications.
- 3 Connect the Composite Video Output to a video monitor.
- 4 Connect the terminal block balanced audio outputs labeled AUDIO 1 and AUDIO 2 to monitoring equipment.
- 5 Apply power by connecting the receiver to a power outlet. The message "Application Starting" will appear on the front panel. The boot process approximately 1 minute for the unit to initialize. When ready, the front panel display shows the startup screen.
- 6 The Ethernet Management port supports the following network protocols: Telnet, SSHv2, HTTP, HTTPS, SNMPv2, Syslog/DTX, SNTP, FTP (client side), and TFTP.
- 7 Connect the ASI output (ASI OUT) to signal processing equipment or monitoring equipment, if applicable.

## Maintenance of EMC Compliance

The power cord (consisting of appliance coupler, flexible cord, and plug) supplied with this product meets the requirements for use in the country for which this product was purchased. In general, the power cord must be approved by an acceptable, accredited agency responsible for evaluation in the country where the product will be used.

Double-shielded (braid/foil or braid/braid) cables should be used for all ASI I/O and RF inputs. Single-shield cables are acceptable for all other inputs and outputs. For terminal block (Alarms) I/O, no shielding is required.

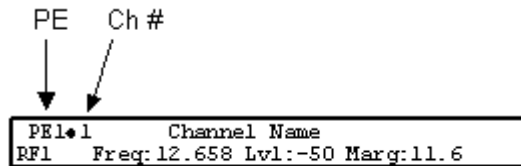
## Setting up for Network Connection

- 1 Press **MENU** to display the Main menu.
- 2 Press **▶** to go to the Setup menu. Press **SELECT**. Press **▶** twice to select the IP menu. Press **SELECT** twice to go to the IP menu.
- 3 Use the **▲▼** arrow keys to navigate up and down the IP menu, and the **◀▶** arrow keys to move across the IP menu to set the IP Address, Mask and Gateway parameters. Use the number keys to directly enter numbers in the fields. For more information on keypad operation, see Keypad Convention.
- 4 Press **SELECT** each time to save the changes. Press **MENU** four times to return to the startup screen.

## Quick Setup Instructions for RF Acquisition

- 1 Press **MENU** to display the Main menu.
- 2 Press **▶** to go to the Setup menu. Press **SELECT**. Press **▶** to move to the TS Input menu. Press **SELECT**.
- 3 To setup the ASI input port, go to step 4. To setup the RF1 input port, go to step 5.
- 4 Press **SELECT** three times. Press **▼** to set the ASI port to Act (Activate). Press **SELECT**. Go to step 11.
- 5 Press **SELECT**. Press **▶** to go to RF1. Press **SELECT** twice. Use **▼** to set the RF1 port parameter to Act (Activate). Press **SELECT**.
- 6 Press **▼** to move to the LO1, LO2, Crossover menu. Verify these parameters for your application. If no change is needed, go to Step 7. If required, you may modify these settings. Use **▶** to move to the parameter that you want to modify. Press **SELECT**. Use the numerical keypad to enter new frequencies. Press **SELECT**.
- 7 Press **▼** five times to move to the Modulation and Rolloff menu. Press **SELECT**. Use **▲▼** to choose DVB-S or DVB-S2. Press **SELECT**. If DVB-S2 is used, press **▶** to choose Rolloff. Press **SELECT**. Use **▲▼** to choose the value. Press **SELECT**.
- 8 Press **▲** to move to the Freq., Sym Rate, and FEC menu. Press **SELECT**. Enter the RF frequency. Press **SELECT**. Press **▶** to move to the Sym. Rate menu. Press **SELECT**. Enter the symbol rate. Press **SELECT**. If DVB-S2 is used, proceed to step 9. If DVB-S is used, press **▶** to set up the FEC. Press **SELECT**. Use **▲▼** to select AUTO. Press **SELECT**.
- 9 Press **▼** twice to move to the Net ID menu. Press **▶** to choose Net ID. Press **SELECT**. Enter the value. Press **SELECT**.
- 10 Press **▼**. Press **SELECT**. Use **▲▼** to change the LNB power, if needed. Only the RF1 port is capable of providing 13V or 18V. Press **SELECT**.
- 11 Press **MENU** three times to acquire the network. The receiver will search for the signal and display "Acquisition Successful". It will find the first available channel on the network.
- 12 Press **▶** to move to Save & Exit. Press **SELECT**. Save & Exit will return you to the Main: Setup menu; Abandon & Exit will go back to the last menu accessed with the original parameters; Cancel will go back to the last menu accessed with changes saved.
- 13 If the front LED is solid green, the unit is authorized. Proceed with Assigning a Program Channel to a PE (Program Entry). If the front LED is flashing green, the unit is unauthorized. Please contact your service provider and provide the Tracking ID number for authorization. The Tracking ID can be found on the **ABOUT** menu. To locate the Tracking ID, press **MENU**, press **▶** twice, and then press **SELECT** twice. Make a note of the Tracking ID number. Press **MENU** three times to return to the startup screen.

## Assigning a Program Channel to a PE (Program Entry)



- 1 At the start-up screen, PE1 is initially displayed.
- 2 You can assign up to 32 program entries by pressing the **ADV** key to select PE1.
- 3 Use the **▲▼** keys to scroll through the available program entries.
- 4 Press **ADV** again to select the channel number.
- 5 Use the **▲▼** keys to scroll through the available program channels or directly enter the channel number using the 0 to 9 keys; press **SELECT** to save the channel selection.

## Setting up the ASI Output

- 1 Press **MENU** to move to the Main Menu.
- 2 Press **▶** to move to the **Setup** menu. Press **SELECT**.
- 3 Press **▼** to move to the **Outputs** menu. Press **SELECT**.
- 4 Press **▶** to move to the **TS Out** menu. Press **SELECT**.
- 5 Press **SELECT** to access the **ASI** menu. Press **▼**. Press **SELECT**. Use **▲▼** to select the output mode. The factory default is No Output. It is recommended to set the **Output Mode** to **MAP Svc Chans Only**.
- 6 Press **SELECT**. Press **▶** to select **Yes** if requested to "RESYNC ALL?". Press **SELECT**.
- 7 Press **▼** to move to **Descramble Mode** menu. Press **SELECT**. Use **▲▼** to select the scrambling mode. Press **SELECT**.
- 8 Press **▶** to move to **Insert Null Packet**. Press **SELECT**. Use **▲▼** to change the mode to **Yes**. Press **SELECT**.
- 9 Press **APPLY**. Press **SELECT**.
- 10 Press **MENU** five times to return to the startup menu.

## Setting the DPM Mode

A program can be set to one of three Digital Program Mapping (DPM) modes, either Drop, Pass or Map respectively. For more information, see *TS Out - DPM* (on page 106) .

LCD Setting	Description
Drop	Removes the service and its associated PMT reference from the transport output.
Pass	Permits the source content and PMT reference to appear in the transport output with the same references unless the source material is mapped on another PE.
Map	Provides the flexibility to define all the outgoing PID numbers for a PE, including those not currently on transmission.

- 1 Press **MENU** to display the Main Menu.
- 2 Press **▶** to move to the **Setup** menu. Press **SELECT**.
- 3 Press **▶** five times to move to the **Outputs** menu. Press **SELECT**.
- 4 Press **▶** to move to the **TS Out** menu. Press **SELECT**.
- 5 Press **▶** to move to the **DPM** menu. Press **SELECT**.
- 6 Press **SELECT** to access the **Global** menu.
- 7 Press **SELECT** to choose ASI for Resync All. Press **▶** and then press **SELECT** to continue.
- 8 Press **MENU**. Press **▶** to move to the **ASI** menu. Press **SELECT**. Verify the PE1 "InCh" and "OutCh" programs.
- 9 Press **▶** three times to choose **Act**. Press **SELECT**. Use **▲▼** to select the DPM action for the PID associated with the PE. Press **SELECT**. Press **APPLY**. Press **SELECT** to save the changes.
- 10 Press **MENU** six times to return to the start-up screen.





# 3

## Installation

### Introduction

This chapter contains the information for technicians installing the Cisco D9824 Advanced Multi Decryption Receiver.

### Qualified Personnel

Only appropriately qualified and trained service personnel should attempt to install, operate, or maintain the D9824 receiver.



**WARNING:**

**Allow only authorized and qualified service personnel to install, operate, maintain, and service this product. Otherwise, personal injury or equipment damage may occur.**

### In This Chapter

■ Power Connection.....	16
■ Installing the D9824 Receiver .....	17
■ D9824 Receiver Rear Connector Panel.....	19
■ Connecting the Input/Output Signals.....	21
■ Setting Admin User Privileges via a Telnet/SSH Connection .....	27
■ Common Interface Modules.....	30

## Power Connection

To operate the receiver, you must connect it to an AC power source. For information about connecting the chassis to AC power, see *Appendix B - Technical Specifications* (on page 323). As Cisco units are designed for continuous operation, some products do not have a power switch. In this case the mains cord and/or DC power supply cable serve(s) as the mains disconnect device.



**WARNING:**

**Make sure that at least one end of the power cable(s) remains easily accessible for unplugging, if you need to switch off the unit. For example: Ensure that the socket outlet is installed near the product.**



**WARNING:**

**To avoid electrical shock, connect the three-prong plug on this product to an earth-grounded three-pin socket outlet only.**

# Installing the D9824 Receiver

## Rack Mounted

The D9824 receiver is a 1U unit with connector access at the rear panel. The receiver is intended for mounting in a standard 19" rack with minimum 1U spacing between units to allow adequate ventilation/air flow.

The D9824 receiver is vented from front to back. Multiple units can be stacked in a rack, provided that adequate cooling is available.

## Cooling

The D9824 receiver is cooled by the use of internal fans. The air intake is from the front and the air outlet is on the rear.

**Note:** Adequate cooling must be provided equaling 107 W (maximum) at 25°C per unit to avoid overheating.



**CAUTION:**

The inlet air temperature must not exceed 50°C/122°F at any time.

## Grounding

You must ensure that the unit is properly connected to ground in order to meet safety and EMC requirements. Before any other connection is made, the unit must be connected to a protected ground terminal as described below:

- Via the three wire power cord of the AC power supply. This connection is mandatory.
- In addition, via the protective ground terminal on the rear panel of the unit. This connection provides additional protection of the equipment.

## Mounting the D9824 Receiver to a Rack

- 1 Mount L-brackets in the rack to support each D9824 receiver to be installed.
- 2 Place the receiver in its position in the rack.
- 3 Mount the receiver securely to the rack by securing the mounting flanges to the rack using the four screws provided.
- 4 Make sure the air outlet holes on the back of the receiver are not obstructed to allow air flow from the front to the back of the chassis.

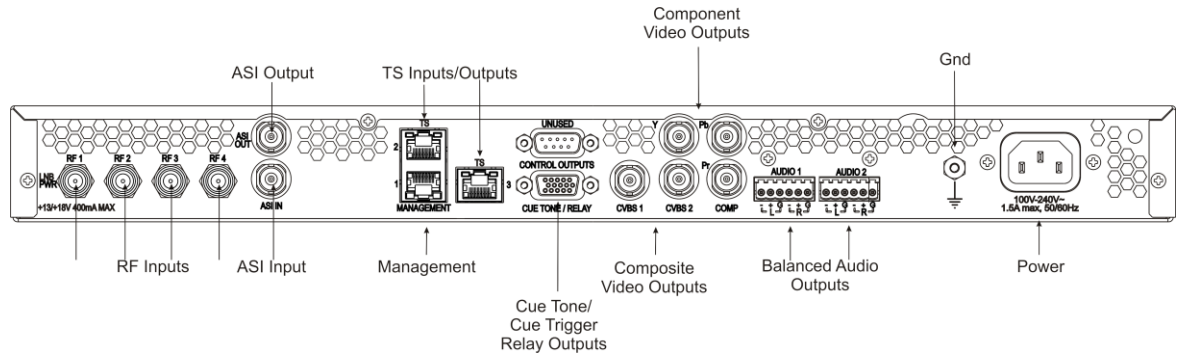
## Connecting AC Power to the D9824 Receiver

- 1 Connect the power cord (supplied with the D9824 receiver) between the rear panel power receptacle and a 100 to 120/200 to 240 V AC power outlet.
- 2 Make sure that the power cable is connected to protective ground. See *Grounding* (on page 17) for more information.

The D9824 receiver is equipped with one power supply located in the rear of the chassis. Note the location of the power supply in the event of alarms/warnings resulting in replacement of a power supply. Alarm messages appear in the Message Log.

## D9824 Receiver Rear Connector Panel

The following diagram shows the rear connector panel of the D9824 receiver:



The following table describes the function and type of the various connectors.

Connector	Description	Type
RF Inputs	Each input accepts an LNB signal input. RF1 provides LNB power for use when no external LNB power source is available. RF2 to RF4 require an external LNB power source.	F
ASI Input	Asynchronous Serial Interface Input.	BNC
ASI Output	One Asynchronous Serial Interface Output.	BNC
Management	Supports the following network protocols: Telnet, SSHv2, HTTP, HTTPS, SNMPv2, Syslog/DTX, SNTP, FTP (client side), and TFTP.	RJ-45
TS Inputs/Outputs (2)	These are for the MPEGoIP Inputs, and MPEGoIP and MPE outputs.  The MPEGoIP output transmits the decrypted transport stream encapsulated in IP packets to a groomer for distribution.  The MPE output receives and outputs the IP data packets from the incoming transport stream.  The MPEGoIP input allows the decoder to receive its streams from the terrestrial IP network.	RJ-45
Cue Tone/Cue Trigger Relay Outputs	Program relay provides programmed responses for alarms.	15-pin sub-D female

### Chapter 3 Installation

<b>Connector</b>	<b>Description</b>	<b>Type</b>
Composite Video Outputs	CVBS 1 and CVBS 2 provide two identical SD composite video outputs for monitoring applications.	BNC
Component Video Outputs	SD to HD upconverted component video output for HD monitoring applications.	BNC
Balanced Audio Outputs	Audio 1 and Audio 2 provide two stereo pairs or four mono channels.	Terminal Blocks
Ground	Screw	Grounding point for the receiver
Power	AC power	IEC 60320 Sheet 14

## Connecting the Input/Output Signals

### Connecting the RF Inputs

Connect up to four LNB RF cables to the RF connectors labeled RF1 through RF4 on the rear of the unit.

Use 75-ohm (braid/foil or braid/braid), low insertion loss coaxial cable.

Each input accepts an LNB signal input. RF2 to RF4 require an external LNB power source.

### Connecting the IP TS Input/Output

The RJ-45 interface IP TS is 100/1000BASE-T Ethernet. It is intended for the MPEGoIP input/output and the MPE output. The MPEGoIP output of the transport stream is encapsulated in the IP packets to a groomer (for example, Cisco D9900 Digital Content Manager) for distribution. The MPE output receives IP packets from the transport stream. The MPEGoIP input receives transport streams from the IP network.

**Note:** For reliable Ethernet operation; to run over a maximum segment length of 100 m and up to 100BASE-T, the cable has to comply with the EIA/TIA Category 5 (or higher) wire specifications, and for 1000BASE-T, Category 6 is required.

Connect a crossed RJ-45 cable between the Ethernet connector (DATA port only) on the D9824 receiver and the Ethernet port of the equipment after the D9824 receiver. The equipment after the D9824 receiver could be an IP router or a switch.

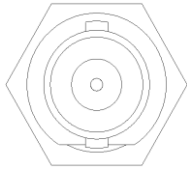
### Connecting the ASI Input

If desired, connect to the ASI IN port to an asynchronous serial interface for uplink monitoring.

### Connecting the Video Outputs

The video output connectors are of the BNC type.

The following table shows the video connector.

Connector	Interface type	Connector type
	SMPTE-292M	BNC female

### Connecting the Component Video Output

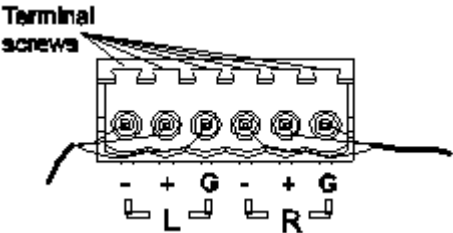
Connect a video monitor to the connectors labeled Pr, Pb, and Y.

### Connecting the Composite Video Output

Connect a video monitor to the CVSB 1 and CVSB 2 connectors. The two outputs are identical. Use a 75-ohm double-braided coax cable.

## Connecting the Balanced Audio Outputs

- 1 Connect the AUDIO 1 and AUDIO 2 balanced audio outputs to monitoring equipment. Use a multi-conductor, pluggable cable from the receiver's AUDIO 1 and AUDIO 2 (Left and Right) terminals to your equipment, as shown in the following illustration.

Connector	Connector type
 <p>Terminal screws</p>	Terminal Block

- 2 Feed the stripped ends of the positive, negative and ground wires into the appropriate terminals as labeled, and then screw the terminal screws (located on the top of the terminal block) finger tight to each wire.



## Connecting the Ethernet Management Interface

The RJ-45 interface for 100/1000 BaseT Ethernet is currently intended for upgrading/downloading the software application. You must set up the IP address, the default gateway and the subnet mask to match the network connection. This is done through the front panel menu. For further information, see *Setting up for Network Connection* (on page 9).

**Note:** Proper cables are required for reliable Ethernet operation; to run up to a maximum segment length of 100 m and up to 100baseT, the cable has to comply with the EIA/TIA Category 5 (or higher) wire specifications, and for 1000baseT, Category 6 is required. For EMC protection, shielded cables must be used.

- 1 Connect an RJ-45 cable between the Ethernet connector on the D9824 receiver and the Ethernet port of your PC.
- 2 Set up the IP address on the D9824 receiver (via the front panel display). For information on setting up the IP address via the front panel, see *Setting up for Network Connection* (on page 9).

## Connecting the ASI Output

Connect the output signal from the D9824 receiver ASI OUT connector.

Use a Belden “Brilliance” cable with foil/braid construction. The shield must provide 99% or better shielding effectiveness.

The equipment after the D9824 receiver could be a Cisco D9887 HDTV Receiver.

## External Alarm System Connector

The D9824 receiver and Alarm relay functionality. See *Connecting the Cue Tone/Cue Trigger Interface* (on page 25) for more information on Cue Tone and Cue Trigger equipment connections. These outputs are user-configurable via the Setup Menu on the front panel.

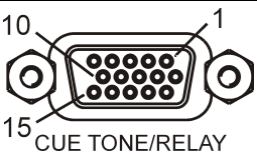
The Alarm output connector is a 15-pin sub-D female connector. The following diagram shows the connector and the pin allocation table for the Alarm output pins.

The connector pin states depend on the selected Relay Mode. The Relay Mode is set on the front panel via the Main: Setup: Outputs menu.

### Changing the Relay Mode for Alarm Monitoring

The Alarm relay is a program relay that can be configured to provide programmed responses for alarms, warnings, cue trigger states for ad-insertion equipment, or a cue tone output for connection to ad-insertion equipment. As a default, the Alarm Relay is configured for Alarm mode.

- 1 On the front panel menu, go the Main: Setup: Outputs, and select **Cueing**.
- 2 Use the down arrow key to scroll through the menu to Relay Mode.
- 3 Change the state to **Alarm** and press the **Select** key to save the new setting. As a result, the rear panel connector pin states will change to that shown in the table below for Alarm mode.

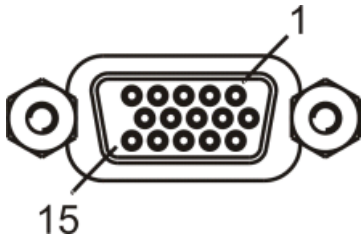
Connector	Normally closed pin	Common pin	Normally open pin	Relay Mode
	11	10	15	Trigger
	15	10	11	Alarm (default)

**Note:** A normally closed state implies the state when power is applied to the relay in a normal operating state, without a trigger or alarm condition present.

## Cue Tone/Cue Trigger Interface

The D9824 receiver is equipped with a connector labeled Cue Tone/Relay for alarm relay outputs for remote alarm signaling. This connector provides Cue Tone, Cue Trigger and Alarm relay functionality. These outputs are user-configurable via the Setup Menu on the front panel.

The connector is a 15-pin sub-D female connector. The following diagram shows the connector and the pin allocation table for Cue Tone, Cue Trigger and Alarm relay connections.

Connector	Pin	Pin allocation
	1	Cue Trig 1
	2	Cue Trig 2
	3	Cue Trig 3
	4	Cue Trig 4
	5	Cue Trig 5
	6	Cue Trig 6
	7	Cue Trig 7
	8	Cue Trig 8
	9	Not connected
	10	Alarm - Ground
	11	Alarm - Normally open
	12	Chassis ground
	13	Cue Tone -
	14	Cue Tone +
	15	Alarm - Normally closed

### Connecting the Cue Tone Interface

Connect the Cue Tone pins, 13 and 14 to a device to facilitate ad-insertion using DTMF Analog Cue Tones.

### Connecting the Cue Trigger Interface

Connect the Cue Trigger pins (1 to 8) to up to 8 serial control devices or a device to control ad-insertion. These outputs are user-configurable on the front panel menu.

## Configuring Open-collector Outputs

The D9824 supports decoding of SCTE-35 messages with DTMF descriptor. The D9824 outputs tones or sets the open collector contacts according to the content of the DTMF descriptor in the Cisco D9054 HDTV Encoder and the Cisco D9036 Modular Encoding Platform. For information on the open-collector output settings, see the *Cisco D9054 HDTV Encoder Installation and Operation Guide* and *Cisco D9036 Modular Encoding Platform Installation and Configuration Guide*.

# Setting Admin User Privileges via a Telnet/SSH Connection

## Administrator User Privileges

Up to 10 usernames/passwords can be defined for login use via a telnet, SSH, or Web GUI (i.e., http) session on the D9824 receiver.

When a user tries to login via a telnet, SSH, or http connection, the user is required to provide a username and a password. The user is granted access only if this username/password pair exists in the authentication table.

The factory preset "Admin" account has Admin privileges and is allowed to add new users, delete users, change usernames, and modify its own passwords. Users with non-Admin privileges (for example, User and Guest) are only allowed to modify their own passwords.

## Starting a Telnet/SSH Session

To start a communication session with the receiver, use a utility such as Tera Term Pro or PuTTY.

Proceed as follows to log into a new connection using Tera Term:

- 1 In the New Connection window, enter the IP address in the **Host** field.
- 2 If you want to start a telnet session, select **Telnet** and enter 23 in the **TCP Port#** field.
- 3 If you want to start an SSH session, select **SSH** and enter 22 in the **TCP Port#** field.
- 4 Click **OK**.
- 5 If you started a Telnet session:
  - a At the Login prompt, type the username and press **Enter**.
  - b At the Password prompt, type the password and press **Enter**.  
**Note:** The username and password are case-sensitive. The default username is **admin** and the default password is **localadmin**.
  - c Type **lr** and press **Enter**.
- 6 If you started an SSH session:
  - a A Security Warning message is displayed (first time only). Select **Add this machine and its key to the known hosts list** and click **Continue**. The SSH Authentication window is displayed.
  - b In the **User name** field, type the username, **admin**.

- c In the **Passphrase** field, type the password, **localadmin**. Wait a few seconds, until the **Use rhosts to log in** is disabled.

**Note:** The username and password are case-sensitive. The default username is **admin** and the default password is **localadmin**.

- d Click **OK**.

- 7 Type `lr` and press **Enter**.

## Adding a New User

- 1 At the admin prompt, type `pwd add_user` and press **Enter**.
- 2 At the NEW USERNAME prompt, type a new username and press **Enter**.
- 3 At the NEW PASSWORD prompt, type a new password and press **Enter**.  
**Note:** The new password must follow the rules configured in the Password Complexity parameter. For more information, see *To Change the User Login Passwords* (on page 249) for the web GUI or *IP* (on page 72) for the Front Panel.
- 4 At the CONFIRM NEW PASSWORD prompt, type the new password again and press **Enter**.  
**Note:** The New Password and Confirm New Password should be identical.
- 5 At the NEW USER PRIVILEGES prompt, enter the type of account you want to assign the user. The following table illustrates the different login types:

Account Type	Enter	Access
Guest	3	View settings only.
User	2	View and edit settings.
Admin	1	View, edit settings, and add/delete user accounts.

- 6 At the ADMINISTRATOR PASSWORD prompt, type the administrator's password and press **Enter**.

## Deleting a User

- 1 At the admin prompt, type `pwd del_user` and press **Enter**.
- 2 At the USERNAME prompt, type the username you want to remove and press **Enter**.
- 3 At the ADMINISTRATOR PASSWORD prompt, type in the administrator's password and press **Enter**.

## Changing a Username

- 1 At the admin prompt, type `pwd username_change` and press **Enter**.
- 2 At the CURRENT USERNAME prompt, type the username you want to edit and press **Enter**.
- 3 At the NEW USERNAME prompt, type the new username to which you want to change and press **Enter**.  
**Note:** Ensure that the new username should not match any of the usernames already defined in the authentication table.
- 4 At the ADMINISTRATOR PASSWORD, type the administrator's password and press **Enter**.

## Changing a Password (allowed by all Users)

Passwords can be changed by all users.

- 1 At the admin prompt, type `pwd password_change` and press **Enter**.
- 2 At the CURRENT PASSWORD prompt, type the current login password you want to change and press **Enter**.
- 3 At the NEW PASSWORD prompt, type a new login password and press **Enter**.
- 4 At the CONFIRM NEW PASSWORD prompt, type the new login password again to confirm and press **Enter**.  
**Note:** The new password and the confirm new password should be identical. Each user, including the admin user, can modify only his own password.

## Printing the List of Users

At the admin prompt, type `pwd list_users` and press **Enter**.

**Note:** Only usernames will be printed. Passwords will not be visible.

## Resetting the Login Credentials

At any time, the user authentication table can be reset from the front panel. This option is under the Setup: IP: IP menu. Scroll down to Reset Credentials and press **SELECT**. Press **►** and then press **SELECT** to confirm the operation. A new login username and randomly generated password will be displayed on the front panel display for approximately 30 seconds. The new account will have Admin privileges. It is recommended that this account be replaced by a login username and password chosen by the administrator. To change the username and password, you must be an Admin user. Refer to *To Change the User Login Passwords* (on page 249).

**Note:** After this recovery procedure, all existing user accounts will be lost.

## Common Interface Modules

The following is a list of all the supported CAMs:

- SMiT Consumer Irdeto
  - Hardware Version: 2.2.1
  - Application Version: IRD-STD-3.7.0m-2
  - Serial Number: 1004004052 and 1004004051
- SMiT Professional Irdeto
  - Hardware Version: 2.2.1
  - Application Version: IRD-STD-3.7.0m-8
  - Serial Number: 1103000494 and 1103000276
- Conax Aston
  - Hardware Version: 1.0100
  - Application Version: 2.2300B
  - Serial Number: 1900-237064
- Conax Professional (SMiT)
  - Hardware Version: 2.2.1 and 4.0.3
  - Application Version: CNX-STD-2.5.9m8 and CNX-SECPLUSGRC-2.8.0m8
  - Serial Number: 1104000101 and 1204069309



# 4

## Front Panel Operation

### Overview

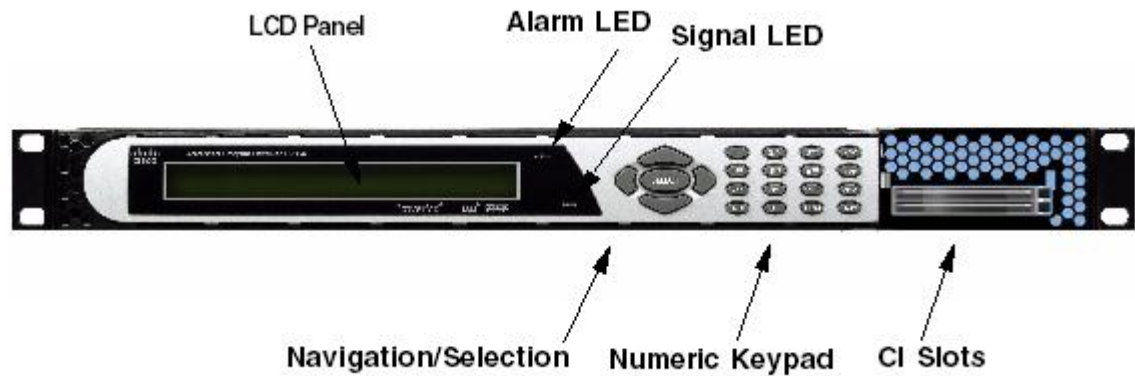
This chapter describes how to set up the D9824 Advanced Multi Decryption Receiver using the front panel keys and display. This information is primarily applicable for standalone operation.

### In This Chapter

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■ Locking/Unlocking the Front Panel .....	36
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## About the Front Panel

The D9824 receiver is operated using controls and indicators on the front panel. These include the numeric keypad, the Navigation/Selection keypad, the LCD, the Alarm and Signal indicators. These are shown in the following illustration.



### LCD

The LCD provides information on the selections available at any menu level, current settings for parameters, and certain status and alarm indications. This is a 2x40, backlit LCD display. The top line may be status data or identifier information. It can also display optional functions available for tuning operations. The bottom line will show selections or parameter values available using the navigation/selection keypad. The items are selected by pressing the **SELECT** (center key) or **DOWN** Arrow key on the navigation/selection keypad.

### Keypad

The numeric keypad is used to enter alphanumeric values. The **MENU** key sets the software to the initial menu and returns to the previous menu. The **MENU** key can also be used to cancel a numeric entry at any point during the entry sequence, and the **LEFT** Arrow key allows backspacing through the entry.

### CI Slots

The CI slots allow the use of CAM (Conditional Access Module) Smart Card to decrypt purchased programming. For setup information, see *Setup Menu: Common Interface (CI)* (on page 91). For a list of supported CAMs, refer to *Common Interface Modules* (on page 30).

## Front Panel LEDs

The functions of the LEDs are described in the table below.

LED	Signal State/Color	Explanation
ALARM	Red	Solid for five seconds indicates a Warning.
	Red	Flashing indicates an Alarm.
SIGNAL	Green	Solid indicates all of the following conditions: <ul style="list-style-type: none"> <li>■ active RF inputs are enabled, locked to a signal, and are not muted.</li> <li>■ all outputs are operating without an error.</li> </ul>
	Green	Flashing indicates one of the following conditions: <ul style="list-style-type: none"> <li>■ difficulty with an input, route, or output.</li> <li>■ one or more of the inputs are not synchronized.</li> <li>■ one or more outputs are routed, but muted by a fault condition.</li> <li>■ no RF signal is present or detected, or it is muted.</li> <li>■ receiver is not authorized to receive the program.</li> </ul>
	Off	Off indicates all of the following conditions: <ul style="list-style-type: none"> <li>■ no RF input signal is available, enabled or detected, or the input is muted.</li> <li>■ no ASI input is present</li> <li>■ no valid inputs are available.</li> </ul>






## Navigation/Selection Keypad

Throughout this manual, there are references to parts of a keypad on the front of the receiver. The navigation keys (**LEFT**, **RIGHT**, **UP**, and **DOWN**) and the **SELECT** key are the primary controllers. Each navigation key performs various functions, depending on the current state of the menu system (i.e., sometimes the left navigation key backspaces over an entry and sometimes moves the cursor to a different menu item). Once the cursor is over the desired function, pressing the **SELECT** (center key) key selects the current item. Pressing the **SELECT** key stores any entered values.

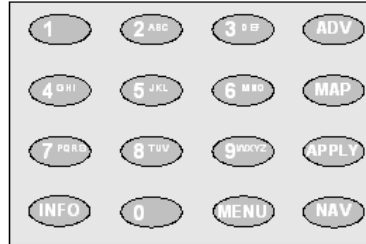
The following is the Navigation/Selection keypad, which changes its function, depending on the current state of the menu.



The following table shows which parts of this integral interface are being referenced by which term.

Button	Function	
LEFT Arrow key	When moving through menus, highlights the menu item to the left. When entering data, moves the cursor to the left. In some menus, backspaces over the data entry.	
RIGHT Arrow key	When moving through menus, highlights the menu item to the right. When entering data, moves the cursor to the right.	
UP Arrow key	Highlights the menu item above.	
DOWN Arrow key	Highlights the menu item below.	
SELECT key	Runs the highlighted command or opens the highlighted menu.	

Button	Function
INFO key	<p>Press the key on the lower left of the numeric keypad for context-sensitive help messages, when available.</p> <p>When entering characters in numeric or alphanumeric fields, this key can be used to toggle between upper and lower case.</p>
MENU key	<p>Press the key on the lower right of the numeric keypad. Starts the on-screen display. Also functions as the Escape key so you can back out of menus and data entry fields.</p>
Alphanumeric Entry	<p>Pressing the numeric keys 2-9 once will enter the respective digit into a data entry field. Pressing these buttons again will enter the first of the letters displayed beside the number. Repeatedly pressing the button will toggle through all of the key's possible choices. When entering text, the 1 button can be used to insert spaces (press twice).</p> <p>To delete a character, press 0 twice.</p>
ADV	Toggles between Program Entry and Channel number.
MAP	Edit, insert, and delete Digital Program Mapping (DPM) Modes on Program Entries or on PIDS within Program Entries.
NAV	For future use.



## Locking/Unlocking the Front Panel

Depending on the customer's default settings, the receiver is shipped with a locked or unlocked front panel. You can lock or unlock the front panel using the front panel keypad.

- 1 From the Startup screen, press **SELECT** and then **INFO**. This will unlock the front panel keypad and allow you to make changes to all the operating parameters; however, if the keypad remains untouched for the duration of the set timeout period (default is 60 seconds), the keypad will change back to the Lock state unless you change the keypad state on the Admin Menu. Likewise you can toggle the keypad lock state back using **SELECT** and **INFO** at any time, provided the KB Lock state on the Admin Menu is Enabled. For more information on front panel keypad buttons, see *Navigation/Selection Keypad* (on page 34).

**Note:** If the lock level is 3 or 4, you must enter a password to unlock the front panel. For more information on lock level password, see *Setup Menu: Admin* (on page 55).

- 2 To disable Lock completely, navigate to **Setup, Admin, KB Lock** in the LCD display and press the **SELECT** key.
- 3 Change the **KB Lock** state from **Enabled** to **Disabled**.
- 4 The front panel will now be unlocked, allowing you to change any of the operating parameters.

To lock the front panel, perform the same procedure, except use **▲▼** to change the state. In this case, you will not be prompted to confirm the operation.

## Startup Screen

### Main Structure

On power-up and initialization, the startup screen is displayed similar to that shown below. The screen also indicates the signal status.

PE16 ♦12345 Channel Name RF1 Freq:12.658 Lvl:100 Marg:10.8	PE: 1 2 3 4 5 6 7 8 9 10111213141516 Auth:Y N Y N Y Y Y Y Y Y Y Y Y Y Y Y	PE: 17181920212223242526272829303132 Auth:Y N Y N Y Y Y Y Y Y Y Y Y Y Y Y
Startup Screen	Channel Authorization Status	

### Channel Authorization Status

From the startup screen, press the right or left arrow keys on the front panel keypad to move to the PE entry authorization status screen. This screen indicates whether the selected channel is authorized.

Auth Status	Description
Y	Indicates the channel is authorized.
N	Indicates the channel is not authorized.

### LCD Panel

The LCD panel displays basic signal and program information in the LCD display, as described in the following illustration:

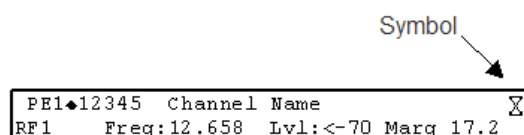
PE1♦12345 Channel Name	⏸
RF1 Freq:12.658 Lvl:<-70 Marg 17.2	

LCD Setting	Description
PE	Program Entry (PE). The receiver supports up to 32 program entries.  All 32 PEs support PowerVu descrambling.  All 32 PEs can use the Conditional Access Modules (CAMs).
12345	Channel for program monitoring.
Channel name	Name of the monitored program.
RF	Active RF input port.  <b>Note:</b> ASI will be shown if the ASI input port is active.
Freq:	Downlink frequency of the tuned signal in GHz.





LCD Setting	Description
Lvl:	Signal level in dBm.
Marg:	Carrier-to-noise (C/N) margin in dB.
DEGD	The Degraded indicator only appears if there is degraded tuning information in use. This occurs if the SI tables are not consistent on the incoming stream. The receiver will attempt to identify the service list based on the information available. Check the SI acquisition and stream information to ensure that the channels, network, and tuning information are operating as expected.

## LCD Symbol




Various symbols will periodically appear in the top right-hand corner of the LCD panel, indicating which user actions are currently acceptable. The following displays the location of the symbol:



The following table describes the various symbols:

LCD Symbol	Description
	The Hourglass indicates that parameters are being saved in the background. You can continue to perform any operation desired.  <b>Note:</b> If a power-cycle/interruption occurs while the hourglass is displayed, some parameters may not be saved. Refrain from powering off the unit while the hourglass is displayed.
	The Info symbol indicates that the INFO key is active. In most cases, this will display contextual information on the LCD screen.
	The Select symbol indicates that the SELECT key is active.
	The Left/Right symbol indicates that the RIGHT/LEFT arrow key is active; e.g., pressing the RIGHT/LEFT arrow key will have an affect, such as moving the cursor to the right/left.



LCD Symbol	Description
▲▼	The up/down symbol indicates that the UP/DOWN arrow key is active.
	The Download In Progress (DL) symbol indicates that the receiver is currently downloading a software update and storing it into memory in the background. <b>Note:</b> Service interruption occurs during a reboot, which is always required when the receiver's software is updated.
	The Download Trigger (DT) symbol indicates new software is ready for download, but a download trigger by the receiver is required before it will be downloaded. <b>Note:</b> Service interruption occurs during a reboot, which is always required when the receiver's software is updated.
	The Download symbol indicates that a software download for a version of software already in memory has been detected.
o	The Session Open symbol indicates that you are changing a group of related items.

## Assigning Program to the Program Entry

- 1 Press MENU until you display the startup screen.

PE # Ch #



```
PE1♦706 Channel Name
RF1 Freq:12.658 Lvl:-50 Marg:11.6
```

The PE (Program Entry) channel is initially displayed.

**Note:** PE1 is the default.

- 2 Press the ADV key to select PE1.

PE

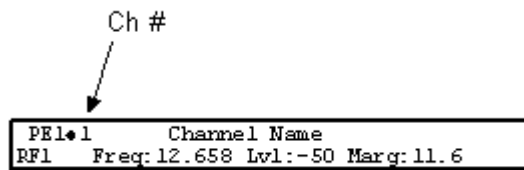


```
♦PE1 1 Channel Name
RF1 Freq:12.658 Lvl:-50 Marg:11.6
```

- 3 Press ▲▼ to scroll through the available program entries.

## Chapter 4 Front Panel Operation

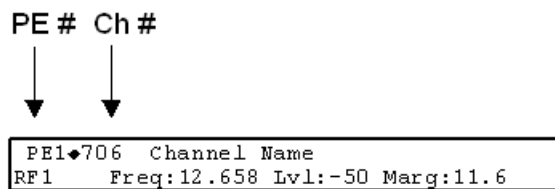
- 4 Press **ADV** again to select the channel number.



- 5 Directly enter the channel number using the 0 to 9 keys and press **SELECT** to apply the channel number, or press **▲▼** to scroll through the available channels.

### Deleting a Program from the Program Entry

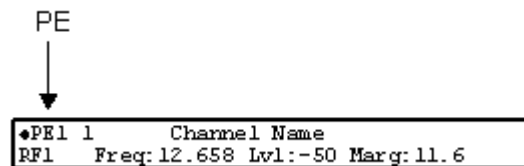
- 1 Press **MENU** until the startup screen appears.



The PE channel is displayed.

**Note:** PE1 is the default.

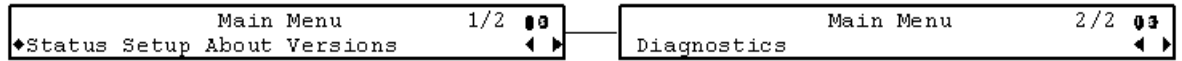
- 2 Press the **ADV** key to select PE1.



- 3 Press the **UP** or **DOWN** arrow key to scroll through the available program entries.
- 4 Press **ADV** again to select the channel number.
- 5 Enter the channel number 0 with the numeric keys and press **SELECT** to apply and delete the program.

## Main Menu

Operation of the D9824 receiver begins at the Main menu. From the startup screen, press the **MENU** key to view the Main menu.



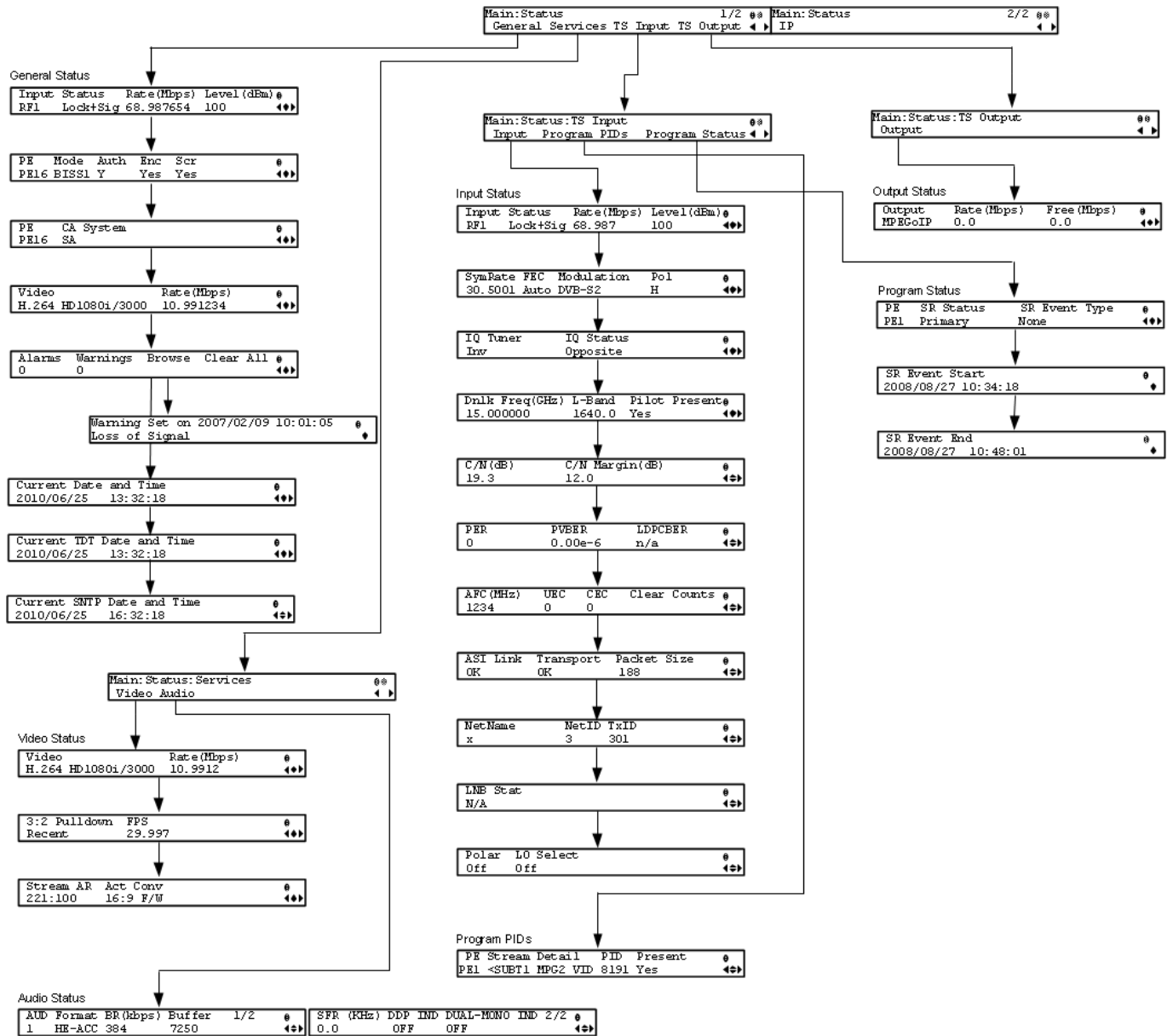
Select the desired function by moving the cursor left or right by pressing the **LEFT** or **RIGHT** arrow key. Once a selection is made by pressing the **SELECT** key, the LCD presents the second menu level for the selected function. Succeeding levels for each function include all the hierarchical levels for the function in the front panel LCD.

# Status Menu

To view the Status menu from the Main menu, press the **SELECT** key. The Status menu indicates the status of the input and output signals, the video and audio services, and allows you to browse and/or configure the alarms and warnings.

The Status menu is split into four parts; General, Services, TS Input and TS Output. Each parameter is described in this section. For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The Status menu has the following structure:



## Status Menu: General

Menu Item	Description	Parameters
Input	Indicates the currently selected input source.	RF1 to RF4, ASI, or IP
Status	Indicates whether the input signal is locked.	Locked - Indicates the receiver is locked to a carrier with no valid content. Lock+Sig - Indicates the receiver is locked to a carrier with valid content. No Lock - Indicates the receiver is not locked to a carrier.
Rate (Mbps)	Indicates the bit rate of the input transport stream, in Mbps.	
Level (dBm)	Indicates the strength of the received signal level, in dBm.	
PE	Select the Program Entry to view.	PE1 to PE32
Mode	Indicates how the program is scrambled.	Unkn, DES, DVB, BISS1, BISS2, or BISS3
Auth	Indicates whether the receiver is authorized to receive the program.	Yes or No
Enc	Indicates whether the received program is encrypted.	Yes or No
Scr	Indicates whether the received program is scrambled.	Yes or No
CA System	Indicates the type of Conditional Access (CA) system used by the program.	SA, BISS, or FTA (Free To Air)
Video	Indicates the video encoding, format, and resolution of the received program.	MPEG1, MPEG2, or H264 format with a resolution of: SD480i/2997, SD480i/3000, SD576i/2500, HD720p/5000, HD720p/5994, HD720p/6000, HD1080i/2500, HD1080i/2997, or HD1080i/3000  Unknown or Unsupported
Rate (Mbps)	Indicates the bit rate of the received video stream, in Mbps.	
Alarms	Displays the number of active alarms.	
Warnings	Indicates the number of active warnings.	

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Browse	Select to view the current active alarms and warnings, including additional details.	
Clear All	Select to clear all the active alarms and warnings. You will be prompted to verify whether you want to clear all the alarms and warnings.	Abort, Continue. Select <b>Abort</b> to cancel the operation or <b>Continue</b> to clear all the warnings and alarms.
Current Date and Time	Displays the current SNTP date and time, if available. Otherwise, the current TDT date and time is displayed. <b>Note:</b> This is displayed as local time.	
Current TDT Date and Time	Displays the current TDT (Time and Date Table) date and time received from the DVB stream. <b>Note:</b> This is displayed as local time.	
Current SNTP Date and Time	Displays the current SNTP (Simple Networking Time Protocol) date and time if IRD receives a valid reply from the NTP server. <b>Note:</b> This is displayed as local time.	

## Status Menu: Services

### Video

Menu Item	Description	Parameters
Video	Indicates the video encoding, format, and resolution of the received program.	MPEG1, MPEG2, or H264 format with a resolution of: SD480i/2997, SD480i/3000, SD576i/2500, HD720p/5000, HD720p/5994, HD720p/6000, HD1080i/2500, HD1080i/2997, or HD1080i/3000 Unknown, or Unsupported
Rate (Mbps)	Indicates the bit rate of the received video stream, in Mbps.	
3:2 Pulldown	Indicates whether the 3:2 pulldown is detected, was recently detected, or not detected in the input video stream.	Yes, No or Recent

## Status Menu

Menu Item	Description	Parameters
FPS	Indicates the frame rate of the input video stream.	Typically 25.0, 29.97, 30.0, 50.0, 59.94, 60.0, unknown or unsupported
Stream AR	Indicates the aspect ratio of the incoming video stream.	4:3 or 16:9
Act Conv	Displays the actual applied aspect ratio conversion.	None, 4:3 L/B, 4:3 P/B, 14:9, 14:9, 4:3 F/H or 16:9 F/W

## Audio

Menu Item	Description	Parameters
AUD	Indicates the current audio decoder status.	AUD1 for audio channel Aud1. AUD2 for audio channel Aud2. AUD1 to AUD4 for two stereo audio channels.
Format	Indicates the format of the audio input stream.	None, Sine, Pink, Beep, MPEG1L1, MPEG1L2, MPEG2L1, MPEG2L2, AC3, LOAS AAC, ADTS AAC, LOAS HEAAC, ADTS HEAAC, or DDP
BR (Kbps)	Indicates the bit rate of the audio input stream, in kbps.	
Buffer	Indicates the buffer level of the input audio stream, in bytes.	
SFR (KHz)	Indicates the sample rate of the input audio stream, in kHz.	32.0, 44.1, or 48.0 kHz
DDP IND	Indicates the presence of Dolby® Digital Plus frames within a Dolby Digital Plus audio stream.	OFF or ON
DUAL-MONO IND	Indicates the presence of dual mono audio outputs in the audio stream. If the dual mono indicator is set to ON, the left and right outputs will correspond to mono channel 1 and mono channel 2 respectively.	OFF or ON

## Status Menu: TS Input

### Input

Menu Item	Description	Parameters
Input	Indicates the active input port receiving the signal.	RF1, RF2, RF3, RF4, ASI, or IP
Status	Indicates the current signal lock status for the input.	Locked - Indicates the receiver is locked to a carrier with no valid content. Lock+Sig - Indicates the receiver is locked to a carrier with valid content. No Lock - Indicates the receiver is not locked to a carrier.
Rate (Mbps)	Indicates the bit rate of the received input signal.	in Mbps
Level (dBm)	Indicates the signal level of the received signal.	in dBm
SymRate	Indicates the Symbol Rate of the received signal.	in Msymbols/second
FEC	Indicates the FEC (Forward Error Correction) rate of the received signal.	N/A, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8, 8/9 or 9/10
Modulation	Indicates the modulation type for the received signal.	N/A, QPSK, 8PSK, DVB-S, DVB-S2 or 16QAM
Pol	Indicates the signal polarization setting. This setting is only applicable when LNB Power is set to H-NIT or V-NIT. The selected setting must match the polarization of the transmitted signal.	Horiz (Horizontal), Vert (Vertical) or Auto
IQ Tuner	Indicates the IQ (Input Signal Inversion) for the received signal.	Inv or NonInv
IQ Status	Indicates the input signal spectrum inversion setting (IQ), which allows the operator to track and select inverted and non-inverted digital signals.	Auto, Opposite, or Normal
Dnlk Freq (GHz)	Indicates the current downlink frequency.	in GHz
L-Band	Indicates the current L-Band frequency.	in MHz



## Status Menu

<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
Pilot Present	Indicates whether a Pilot is present for the received signal. The Pilot is set on the modulator for input signal synchronization purposes.	Yes, No, or N/A
C/N (dB)	Indicates the current Carrier-to-Noise ratio.	in dB
C/N Margin (dB)	Indicates the current Carrier-to-Noise Margin for the received signal. The Carrier-to-Noise margin is the actual distance that C/N is from the noise threshold.	Values can be displayed in the range of -32.0 to +30.0 dB.
PER	Indicates the current PER (Packet Error Rate) of the received signal (DVB-S2).	
PVBER	Indicates the PV (Post-Viterbi) BER for the received signal (DVB-S).	
LDPCBER	Indicates the LDPC (Low Density Parity Check) error rate for the received signal (DVB-S2).	
AFC (MHz)	Indicates the current Automatic Frequency Control count.	in MHz
UEC	Indicates the current Uncorrected Error Count for the received signal.	
CEC	Indicates the current Corrected Error Count for the received signal (DVB-S).	
Clear Counts	Select this option to clear the error counters.	
ASI Link	Indicates whether there is a transport stream link error.	Error, Ok, or N/A
Transport	Indicates the current transport synchronization status.	Error, Ok, or N/A
Packet Size	Indicates the packet size (in bytes) for the ASI input.	188, 204, or N/A
Net Name	Indicates the name assigned to the network.	Up to 12 alphanumeric characters.

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
NetID	Indicates the Network ID of the uplink signal the receiver is to receive when using the selected preset. The receiver's Network ID must match the Network ID associated with the transmitted signal that identifies the NIT to be used. <b>Note:</b> Each network must be assigned a unique ID (number).	1 to 65535
TxID	Indicates the Transport ID.	1 to 65535
LNB Stat	Indicates the current Low Noise Block (LNB) connection status.	No Load, Over Loaded, Over Temperature, Short Circuit, Disabled, Normal or N/A
Polar	Indicates the polarity of the LNB Power supply.	Off, 13V, or 18V
LO Select	Indicates whether a 22 kHz tone is available on input port RF1. This is applicable for dual-band applications.	On or Off

### Program PIDs

Menu Item	Description	Parameters
PE	Select the Program Entry to view.	PE1 to PE32
Stream	Indicates the name assigned to the Program Entry.	Up to 4 alphanumeric characters
Detail	Indicates any detail associated with the program PID (e.g., MPG2 PID).	MPG1 VID, MPG2 VID, 422 VID, H264 VID, HD VID, MPG4 VID, MPG AUD, MPG2 AUD, DVB AC3, DVB DDP, AAC AUD, HEAAC, AUD, MPG4 AUD, DBE AUD, DTS AUD, DVB TXT, DVB VBI, DVB SUBT, DVB ASYN, DVB SYNS, DVB SYND, DVB MPE, DVB DCAR, DVB OCAR, SA VBI, ATSC AC3, ATSC DDP, SA UTLD, SCTE DPI, SA HSD, SA CDDL, SA WBD, SA SUBT, ECM, EMM, PCR, or UNKNOWN
PID	Indicates the program PID number.	1 to 8191
Present	Indicates whether the PID is present in the incoming stream.	Yes or No

**Program Status**

Menu Item	Description	Parameters
PE	Select the Program Entry number to view.	PE1 to PE32
SR Status	This displays the status of an alternate authorized program/service from the same transport stream when the receiver is not authorized to view the primary program. This is an uplink initiated function that maps the alternate service to the original (primary) service PIDs, replacing the original service with the alternate service at the digital transport output. No local intervention is required by the receiver operator for provision of this service replacement feature.	<p>Not Started - Indicates that an event has not started.</p> <p>Primary - Indicates that a service replacement event is active, but the primary program is being displayed.</p> <p>Alternate - Indicates that a service replacement event is active, and that the receiver has tuned to and is displaying the alternate program/event as it is not authorized to view the scheduled event.</p>
SR Event Type	Indicates the type of service replacement event.	<p>None - Indicates that no service replacement event is scheduled.</p> <p>Scheduled - Indicates that all receivers will tune to the alternate program at the scheduled time. This status is applicable to PE1 to PE32 programs.</p> <p>CA - Indicates that only receivers unauthorized to view the scheduled program will tune to the alternate program according to the selected authorization tier bits. This status is applicable to PE1 to PE32 programs.</p> <p>Cue Trigger - Indicates that only receivers authorized by the Cue Trigger mask will tune to the scheduled program/event.</p> <p><b>Note:</b> The Cue Trigger service replacement event type is not supported in the current release.</p>

## Chapter 4 Front Panel Operation

<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
SR Event Start	Displays the start time of the service replacement event when one is scheduled; otherwise, the default start time is displayed. The default start time is 2007/09/01 00:00:00.	
SR Event End	Displays the end time of the service replacement event when one is scheduled; otherwise, the default end time is displayed. The default end time is 2007/09/01 00:00:00.	

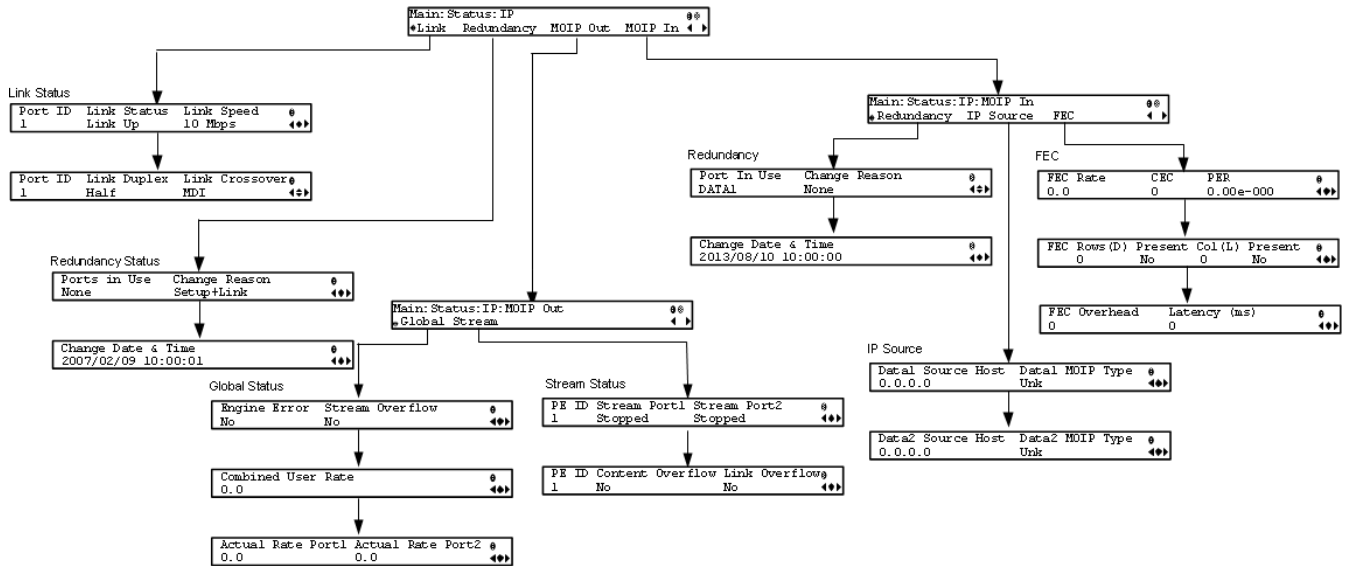
### Status Menu: TS Output

<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
Output	Indicates the output type.	ASI or MPEGoIP
Rate (Mbps)	Indicates the current output bit rate.	0 to 206 Mbps
Free (Mbps)	Indicates the available bandwidth, in Mbps (without stuffing).	

## Status Menu - IP

To view the IP menu from the **Status** menu, press the **RIGHT** arrow key four times. The IP menu provides Link, Redundancy, and MOIP status information.

The IP menu has the following structure:



### Link Status

The Link Status parameters display the port information, such as the status, speed, duplex and crossover. Port 1 is the management port, port 2 is the Data1 port, and port 3 is the Data2 port.

### Redundancy Status

Menu Item	Description	Parameters
Ports in Use	The current output port in use.	None, Data1, Data2, or Both
Change Reasons	Description of the reason for the last redundancy status change.	Link, Setup, or Setup+Link
Change Date & Time	Displays the last date and time the redundancy status changed.	YYYY/MM/DD HH:MM:SS

### MOIP Out Global Status

Menu Item	Description	Parameters
Engine Error	Indicates a critical hardware error that may require a unit reboot.	Yes or No

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Stream Overflow	Indicates the MPEG over IP transport stream(s) overflow status.	Yes or No
Combined User Rate	Displays the combined output bit rate for all the configured streams (including FEC).	-
Actual Rate Port 1/2	Displays the current output bit rates for Data1 and Data2 ports (including FEC).	0 to 206 Mbps

### MOIP Out Stream Status

Menu Item	Description	Parameters
PE ID	Displays the program entry channel.	1 to 32
Stream Port1/Port2	Indicates the stream status of the Data1 and Data2 ports.	Stopped, Suspended, Active, or Muted
Content Overflow	Indicates if the rate of the transport stream(s) to be encapsulated (including FEC) is higher than the configured output bit rate.	Yes or No
Link Overflow	Indicates if the configured output bit rate (including FEC) is close or higher than the current Ethernet link speed for the Ethernet port used for MPEGoIP output.	Yes or No

### MOIP In Redundancy Status

Menu Item	Description	Parameters
Port In Use	The current input port in use.	Data1 or Data2
Change Reason	Description of the reason for the last redundancy status change.	None, Setup, EthLinkStatus, TS Status, ProgStatus
Change Date & Time	Displays the last date and time the redundancy status changed.	YYYY/MM/DD HH:MM:SS

### MOIP In IP Source Status

Menu Item	Description	Parameters
Data1/Data2 Source Host	When locked, this displays the source/host IP address of the originator. If the signal is not locked, it will display N/A.	

**Status Menu**

<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
Data1/Data2 MOIP Type	Displays the encapsulation type of transport stream received from the DATA1 or DATA2 port.	UDP or RTP

**MOIP In FEC Status**

<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
FEC Rate	Displays the input stream bit rate, reported by the FEC decoder.	in Mbps
CEC	Indicates the current Corrected Error Count for the received signal.	
PER	Indicates the current Packet Error Rate of the received signal.	
FEC Rows(D)	Displays the number of FEC rows.	0 to 20
Present	Displays whether the FEC rows stream is present.	Yes or No
Col(L)	Displays the number of FEC columns.	0 to 20
Present	Displays whether the FEC columns stream is present.	Yes or No
FEC Overhead	Displays the FEC overhead, compared to the transport stream bit rate, in percentage.	
Latency (ms)	Displays the delay that is introduced by the FEC decoder, in milliseconds.	

## Setup Menu

To view the Setup menu from the Main menu, press the **RIGHT** arrow key once and the **SELECT** key. The Setup menu is split into nine parts; Administration, TS Input, IP, Services, CI, Outputs, CA, Alarms/Warnings, and Noise Cutoff. For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The Setup menu allows you to set all the parameters associated with the following:

- Administration - lock level, password, factory reset, keypad lock, download mode and date and time
- TS Input - frequency parameters for acquiring and locking on to an RF signal, or receiving an ASI input
- IP - parameters for setting up the Ethernet ports
- Services - audio video, captions, and VBI
- CI - parameters to decrypt programming available from service provider programmers via CAM Smart Cards
- Outputs - alarm relays, cue tone/cue trigger setup, parameters for setting up the transport stream out, which includes DPM
- CA - conditional access
- Alarms/Warnings - enables alarms/warnings traps and relays
- Noise Cutoff - muting thresholds

The Setup menu has the following structure:



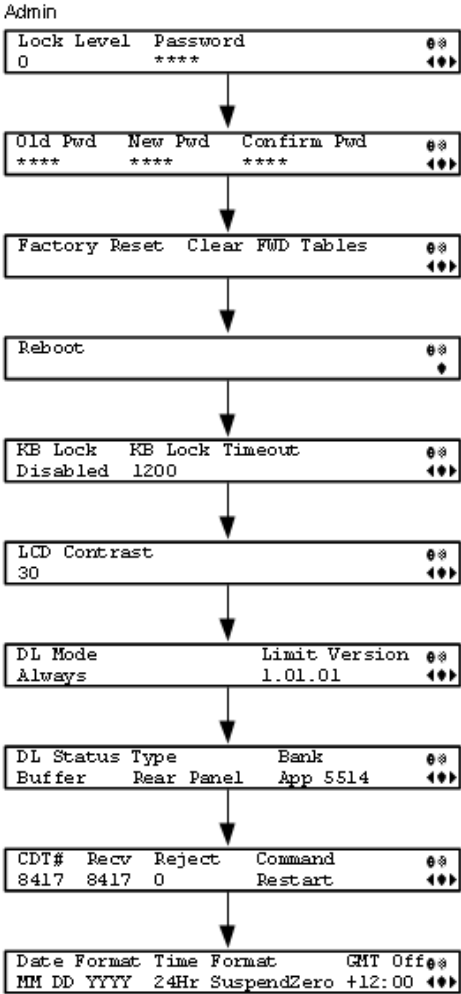


## Setup Menu: Admin

To view the **Admin** menu from the Setup menu, press the **SELECT** key.

For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The **Admin** menu has the following structure:



Menu Item	Description	Parameters
Lock Level	<p>Sets the front panel interface lock level.</p> <p>For information on each of the lock levels, see <i>Factory Default Settings and Lock Levels</i> (on page 340).</p>	0, 1, 2, 3, or 4

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Password	Enter the password to successfully set the current lock level. Depending on the unit, the default password for all lock levels is 1234. For more information on the default password, contact Cisco customer support.	
Old Pwd, New Pwd, Confirm Pwd	To change the password, enter the old password (Old Pwd). Next, enter the new password (New Pwd, four digits in the range from 0000 to 9999) and re-enter the new password for confirmation (Confirm Pwd). To change the password, the receiver must be in Lock Level 0. Depending on the unit, the default password is 1234. For more information on the default password, contact Cisco customer support.	
Factory Reset	Select this option to perform a reset of receiver settings back to the factory set (default) values. A warning message prompts you to confirm the operation.	Reboots Unit - you are prompted to verify the operation. Abort or Continue
Clear FWD tables	Select to clear settings that are only used in older applications. Reverting back to an older application will revert to the default values of the cleared settings. A warning message prompts you to confirm the operation.	Abort or Continue
Reboot	Allows you to reboot the receiver. You will be asked to confirm the operation.	Select <b>Continue</b> to reboot the receiver or Abort to cancel the operation.
KB Lock	Select whether to lock the front panel keypad after a time of disuse.	Enabled or Disabled
KB Lock Timeout	If KB Lock is enabled, you can set the keypad lock timeout period, in seconds. The keypad will lock after the set period of disuse. Avoid setting the period to a short duration when the keypad is used often.	5 to 1800 seconds. The default is 60 seconds.

Menu Item	Description	Parameters
LCD Contrast	Adjusts the contrast of the LCD menu panel.	1 (lowest contrast) to 30 (highest contrast)
DL Mode	Set the unforced over-the-air download mode.	<p>Always - Unforced download will be accepted and saved in memory.</p> <p>Once - An unforced download will be accepted, followed by a reboot of the receiver, and the DL Mode will change to Never.</p> <p>Never - Unforced downloads will not be accepted.</p> <p><b>Note:</b> Forced downloads (initiated by the uplink) are always accepted and always result in a reboot of the receiver. <i>Service interruption will occur!</i></p>
Limit Version	Indicates the oldest version of the application that can be installed on the current unit. Older applications will not be installed.	Read-only alphanumeric value
DL Status	Indicates the current download state.	<p>Init - Download component is being initialized. You cannot perform a download while in this state.</p> <p>Ready - Download component is ready to receive downloads.</p> <p>Buffer - Download in progress. The CDTs are being received.</p> <p>Program - The application is being written to flash.</p> <p>Swap - The IRD is swapping to a new application and it will reboot.</p> <p>Shutdown - The IRD is shutting down and it will reboot.</p> <p>App Erase - An application is being erased from the flash.</p> <p>FPGA Erase - A Field Programmable Gate Array (FPGA) code is being erased from the flash.</p>

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Type	The type of download being performed.	<p>None - No download is being performed.</p> <p>Rear Panel - The rear panel download is being performed.</p> <p>HTTP - An HTTP download from the web GUI is being performed.</p> <p>Over Air - An over-the-air download is being performed.</p>
Bank	The type of code being downloaded.	<p>App 5514 - Currently downloading code for app5514 on the HDR/HDR2 board.</p> <p>App 7109 - Currently downloading code for app7109 on the HDR/HDR2 board.</p> <p>FPGA 7109 - Currently downloading FPGA code to the HDR/HDR2 board.</p> <p><b>Note:</b> The FPGA download does not occur over-the-air.</p>
CDT#	Indicates the total number of expected code tables in the current download.	Read-only numeric value.
Recv	Displays the number of code tables received since the last completed or aborted download, or power-cycle.	Read-only numeric value.
Reject	Displays the number of code tables rejected. Tables are rejected whenever validation fails due to things like CRC failure or incorrect code or receiver type.	Read-only numeric value.
Command	Select a command to issue to the current download. This command is for over-the-air downloads only. It has no effect on the rear panel or HTTP downloads.	<p>Abort - Stops a download that is currently being received.</p> <p>Restart - Restarts a previously aborted download.</p> <p><b>Note:</b> that the download does not resume from where it was aborted, but restarts from the beginning.</p> <p>None - No action is to be performed.</p>

**Setup Menu**

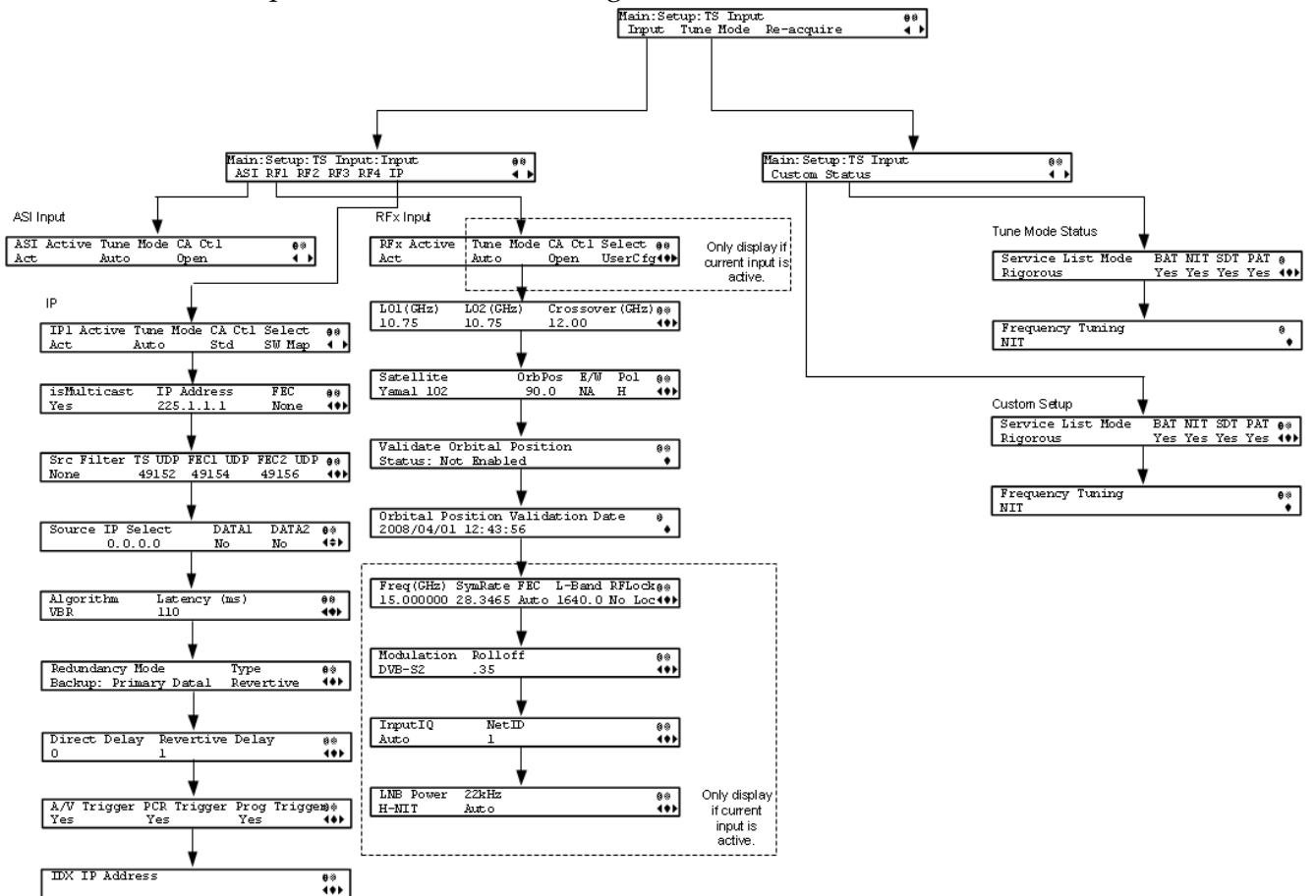
<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
Date Format	Select the date format.	YYYY_MM_DD, DD_MM_YYYY, or MM_DD_YYYY
Time Format	Select the time format.	24Hr, 24Hr SuspendZero, 12Hr, 12Hr SuspendZero. The SuspendZero options omit the leading zero.
GMT Off	Select the local time zone offset relative to the GMT time. The time information in the transmitted stream is broadcast as GMT time and changing this setting will allow the unit to correctly display the local time.	+13:00, +12:00, +11:00, +10:00, +09:30, +09:00, +08:00, +07:00, +06:30, +06:00, +05:45, +05:30, +05:00, +04:30, +04:00, +03:30, +03:00, +02:00, +01:00, GMT, -01:00, -02:00, -03:30, -04:00, -05:00, -06:00, -07:00, -08:00, -09:00, -10:00, -11:00, -12:00

## Setup Menu: TS Input

To view the TS (Transport Stream) Input menu from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key once and the **SELECT** key to view the TS Input menu.

For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The TS Input menu has the following structure:



### ASI Input

Menu Item	Description	Parameters
ASI Active	Select whether to tune to the ASI input.  <b>Note:</b> Setting a new input to be active will deactivate the currently active input.	Act or No

## Setup Menu

Menu Item	Description	Parameters
Tune Mode	Select the tables required for the service list creation and signal acquisition.	<p>Basic - Requires NIT to be present.</p> <p>Auto - Uses all the service list tables and it will acquire if any service list tables are present.</p> <p>Custom - Uses the Custom Tuning parameters, specified by the user.</p> <p>The default is Basic.</p>
CA Ctl	Sets how the conditional access will attempt to descramble the scrambled programs. The behavior of this setting is different between PowerVu streams and those that require a CAM.	<p>For PowerVu streams:</p> <p>Std - In standard mode, if a program is not authorized, even if some services are not scrambled, the whole program will not be authorized.</p> <p>Open - In open mode, if a program is not authorized, services in the program that are not scrambled will still be available.</p> <p>For Non-PowerVu (CAM) streams:</p> <p>Std - In standard mode, if a program's CA system is not supported by the CAM, the channel is not authorized.</p> <p>Open - In open mode, all the program's CA systems are validated by the CAM. The channel is always authorized.</p>

**RF1, RF2, RF3, RF4 (RFx) Input**

Menu Item	Description	Parameters
RFx Active (RF1, RF2, RF3, RF4)	Select the input to be active. <b>Note:</b> Setting a new input to be active will deactivate the currently active input.	Act or No
Tune Mode	Select which tables are required for the service list creation and signal acquisition. <b>Note:</b> When editing the tuning, the device is in a transient state while acquiring tuning information and channel lists, and so on. The receiver reverts to the previous set of tuning settings/information and channels until these changes are either saved or abandoned.	Basic - Requires NIT to be present. Auto - Uses all the service list tables and it will acquire if any service list tables are present. Custom - Uses the Custom Tuning parameters, specified by the user. The default is Basic.
CA Ctl	Sets how the conditional access will attempt to descramble the scrambled programs. The behavior of this setting is different between PowerVu streams and those that require a CAM.	For PowerVu streams: Std - In standard mode, if a program is not authorized, even if some services are not scrambled, the whole program will not be authorized. Open - In open mode, if a program is not authorized, services in the program that are not scrambled will still be available. For Non-PowerVu (CAM) streams: Std - In standard mode, if a program's CA system is not supported by the CAM, the channel is not authorized. Open - In open mode, all the program's CA systems are validated by the CAM. The channel is always authorized.



## Setup Menu

Menu Item	Description	Parameters
Select	Sets the method used by the RF tuner to determine which input to use when switching transports.	<p>UserCfg - User configuration will only use the active RF input.</p> <p>SW Map - Software map uses the orbital position settings from each input and map it to those in the NIT.</p>
LO1 (GHz)	Sets the lower oscillator frequency, in GHz, of the LNB. In a single band oscillator, set its frequency, in GHz.	0.0 to 15.0 GHz. Must be lower than the value for LO2.
LO2 (GHz)	Sets the higher oscillator frequency, in GHz, of the LNB. In a single band oscillator, set this value to 0.0.	0.0 to 15.0 GHz. Must be higher than the value for LO1.
Crossover (GHz)	This is the crossover frequency, which is an internal threshold frequency used for selecting the LO1 or LO2 frequency, depending on the current Downlink frequency settings. This option is only used in dual-band LNB applications.	0.0 to 15.0 GHz. In single-band LNB applications, set this value to 0.0.
Satellite	This is the name of the satellite currently selected. Choose the satellite you want to use to receive the signal from the list of satellites available. When you select a satellite, the orbital position (OrbPos) is displayed. This is important for automatic switching from one RF input to another in the event of loss of the signal, allowing the receiver to acquire an alternate signal.	When the satellite is not listed, enter the known orbital position (OrbPos) of the satellite you want to use to receive the signal.
OrbPos	<p>This is the location in orbit of the satellite currently being used. The satellite position (in degrees) in combination with the direction (either <b>E</b> (East) or <b>W</b> (West)) denotes the satellite position the dish connected to the current RF Input should point to. This is used when the satellite is not available in the look-up menu list.</p> <p>For manual configuration, simply enter the location of the satellite using the numerical keypad. The receiver will not recognize the satellite name and identify it as Unknown. This setting is required to resolve any ambiguity between RF inputs during automatic disaster recovery.</p>	Degrees

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
E/W	Denotes the satellite position the dish connected to the current RF Input should point to. This is used when the satellite is not available in the look-up menu list.	E, W or NA
Pol	Marks the polarity of the signal connected to this RF input.	H (horizontal), Vert (vertical), A (Auto). Auto is only applicable when LNB Power is set to H-NIT or V-NIT.
Validate Orbital Position	This option allows you to configure and validate the RF inputs to match those expected by the network. The receiver will check to see if all the frequencies in the Network Information Table (NIT) can be tuned to.	
Orbital Position Validation Date	This displays the last date that the 'Validate Orbital Position' operation was performed.	N/A
Freq (GHz)	This is the current Downlink operating frequency used by the receiver for tuning the received digital signal.	0.0 to 15.0 GHz
SymRate	This is the symbol rate. The symbol rate must match that of the transmitted signal.	1.0 to 45.0 Ms/s for DVB-S. 1.0 to 30.0 Ms/s for DVB-S2 if Pilot Present is set to Yes. 5.0 to 30.0 Ms/s for DVB-S2 if Pilot Present is set to No.
FEC	Select the Forward Error Correction (FEC) inner code rate. The FEC must match the FEC of the transmitted signal.	1/2, 2/3, 3/4, 5/6, 7/8, or Auto
L-Band	This is the L-Band operating frequency used by the receiver. This value is determined by the values set in the Freq and LO options.	950 to 2150 MHz
RF Lock	Indicate whether the tuner has locked onto the Radio Frequency signal with the current settings.	Lock or NoLock
Modulation	Sets the modulation type for the received signal.	DVB-S or DVB-S2

## Setup Menu

Menu Item	Description	Parameters
Rolloff	Sets the rolloff factor of the incoming signal.	.20, .25, .35. Use .20 or .35 when DVB-S modulation is used, and either of the three when DVB-S2 is used. Use a small number to reject or filter carriers close to the same frequency.
InputIQ	Select the Input signal spectrum inversion setting, which allows the operator to track and select inverted and non-inverted digital signals. This is normally used to automatically reject or filter out unwanted signals.	Auto, Normal, or Opposite. Auto - The signal is tracked and inverted for correct selection, as required. Opposite - The signal is always inverted. Normal - The signal is not inverted.
NetID	Select the Network ID of the uplink signal the receiver is to receive. The receiver's Network ID must match the Network ID associated with the transmitted signal.	1 to 65535. The default value is 1.
LNB Power	Set the power output of RF1 to the external LNB.	Off, 13V, 18V, V-NIT, or H-NIT. V-NIT and H-NIT will use vertical and horizontal polarity until it is automatically read from the NIT. <b>Note:</b> Power will not be applied to the LNB when set to Off.
22kHz	For dual band applications, select whether to transmit the 22 kHz tone Local Oscillator control signal of RF1.	On, Off, or Auto. Auto uses the crossover frequency to determine if the tone is transmitted.

IP Input

Menu Item	Description	Parameters
IP1 Active	Select the input to be active. <b>Note:</b> Setting a new input to be active will deactivate the currently active input.	Act or No
Tune Mode	Select which tables are required for the service list creation and signal acquisition. <b>Note:</b> When editing the tuning, the device is in a transient state while acquiring tuning information and channel lists, and so on. The receiver reverts to the previous set of tuning settings/information and channels until these changes are either saved or abandoned.	Basic - Requires NIT to be present. Auto - Uses all the service list tables and it will acquire if any service list tables are present. Custom - Uses the Custom Tuning parameters, specified by the user. The default is Basic.
CA Ctl	Sets how the conditional access will attempt to descramble the scrambled programs. The behavior of this setting is different between PowerVu streams and those that require a CAM.	For PowerVu streams: Std - In standard mode, if a program is not authorized, even if some services are not scrambled, the whole program will not be authorized. Open - In open mode, if a program is not authorized, services in the program that are not scrambled will still be available. For Non-PowerVu (CAM) streams: Std - In standard mode, if a program's CA system is not supported by the CAM, the channel is not authorized. Open - In open mode, all the program's CA systems are validated by the CAM. The channel is always authorized.

## Setup Menu

Menu Item	Description	Parameters
Select	Sets the method to determine which available MPEG over IP stream, for each data port, to use as a transport input.	<p>UserCfg - User can select one of the available MPEG over IP streams for Data1 and/or Data2 ports.</p> <p>SW Map - Pre-defined software algorithm is used to determine the MPEG over IP streams for Data1 and Data 2 ports.</p>
isMulticast	Select <b>Yes</b> to listen to MPEG over IP streams sent to a specific multicast IP address (group). Otherwise, select <b>No</b> to listen to the unicast MPEG over IP streams sent to the IP addresses of the Data1 and Data2 ports.	Yes or No
IP Address	If <b>isMulticast</b> is set to <b>Yes</b> , enter the multicast IP address.	Valid multicast IP address
FEC	Type of expected FEC streams for the decoder to analyze and use.	<p>None - All FEC streams are dropped.</p> <p>1D - Column stream is expected.</p> <p>2D - Column and row streams are expected.</p>
Src Filter	Select the source (host) filtering mode.	<p>None - All streams sent to a specific destination IP address (multicast or unicast) and destination TS and FEC UDP ports are received, without source restrictions.</p> <p>White List - The unit will only receive streams from the defined list of hosts/servers (Idx and IP Address). It will reject the streams received from the host/servers that are not defined on the list.</p> <p>Black List - The unit will reject the streams received from the defined list of hosts/servers (Idx and IP Address).</p>

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
TS UDP	The transport stream UDP port number. For RTP port, enter an even port number. For UDP port, you can enter an even or odd port number.  <b>Note:</b> FEC is only supported for RTP transport streams.	1 to 65534
FEC1 UDP	If FEC is set to 1D or 2D, set the FEC destination UDP port number of the column FEC stream.	2 to 65534
FEC2 UDP	If FEC is set to 2D, in addition to entering the port number of the column FEC stream, enter the FEC destination UDP port number of the row FEC stream.	2 to 65534
Source IP Select	Displays the detected host.	Valid host IP address or 0.0.0.0 if none is found.
DATA1/DATA2	Displays whether the detected host (Source IP Select) is available on DATA1 and/or DATA2 ports.	Yes or No
Algorithm	The de-jitter algorithm.	VBR, CBR
Latency (ms)	Buffer latency (delay), in milliseconds.	110 to 150 if VBR is selected as the Algorithm.  40 to 150 if CBR is selected as the Algorithm.
Redundancy Mode	Select the type of redundancy for the MOIP input data.	Manual Data1/Data2 - Only use Data1 (port 1) or Data2 (port 2) for input data. The remaining redundancy controls below are not applicable.  Backup: Primary Data1/Data2 - Use port 1 or port 2 as the primary data port. If an issue occurs, it will failover to port 2 or port 1 (the backup port).

## Setup Menu

Menu Item	Description	Parameters
Type	If Backup: Primary Data1/Data2 is set as the Redundancy mode, select the redundancy direction.	Revertive - Attempt to revert back to the primary port when using the backup port and the primary port is active again.  Non-revertive - Use the backup port (if active) when the primary port fails, without reverting back to the primary port, under any condition.
Direct Delay	Time to wait before switching from the primary data port to the backup data port after the system detects a failure on the primary port.	0 to 1000 milliseconds
Revertive Delay	Time to wait before reverting back to the primary port once the primary port is active again.  <b>Note:</b> If Non-Revertive is set as the <b>Type</b> , this field does not apply.	0 to 30 seconds
A/V Trigger	If set to <b>Yes</b> , it will trigger the MPEG over IP input redundancy failover if audio/video loss is detected.	Yes or No
PCR Trigger	If set to <b>Yes</b> , it will trigger the MPEG over IP input redundancy failover if program PCR loss is detected.	Yes or No
Prog Trigger	If set to <b>Yes</b> , it will trigger the MPEG over IP input redundancy failover if program PMT loss is detected.	Yes or No
Idx	The IP address entry number (index) for the Source Filter list.	
IP Address	If <b>White List</b> is selected as the <b>Src Filter</b> , the unit will only receive streams from the trusted IP addresses listed.  If <b>Black List</b> is selected as the <b>Src Filter</b> , the unit will receive all streams except from the IP addresses of hosts listed.  Press <b>ADV</b> to enter an address.	Valid host IP address

## Chapter 4 Front Panel Operation

### Tune Mode

#### Custom

This menu is where you set up your custom properties. Select the channel to set up and then edit it.

Menu Item	Description	Parameters
Services List Mode	If using custom tune mode, select which tables are required for tuning.	Rigorous - Requires all service list tables to be present to acquire the signal. Degraded - Requires any service list table to be present to acquire the signal.
BAT	This is not supported in the current release.	No
NIT	If using custom tune mode, select whether to use the Network Information Table (NIT) when creating the service list.	Yes or No
SDT	If using custom tune mode, select whether to use the Service Description Table (SDT) when creating the service list.	Yes or No
PAT	If using custom tune mode, select whether to use the Program Association Table when creating the service list.	Yes or No
Frequency Tuning	If using custom tune mode, select whether to use the NIT to tune to other transports, or to force the tuning to user configuration settings.	NIT - The receiver can change tuning parameters to use all transports available in the NIT. User Cfg - The receiver is forced to use the user selected tuning parameters.

#### Status

Menu Item	Description	Parameters
Service List Mode	Indicates if all the expected service list tables are present (Rigorous) or only some of the service list tables are present (Degraded)	Degraded or Rigorous
BAT	This is not supported in the current release.	No
NIT	Indicates whether the Network Information Table (NIT) is being used to create the service list.	Yes or No



## Setup Menu

Menu Item	Description	Parameters
SDT	Indicates whether the Service Description Table (SDT) is being used to create the service list.	Yes or No
PAT	Indicates whether the Program Association Table (PAT) is being used to create the service list.	Yes or No
Frequency Tuning	Indicates whether tuning is using the NIT to tune to other transports, or whether tuning is forced to use the user selected parameters.	NIT or User Cfg

## Re-Acquire

Menu Item	Description	Parameters
Re-Acquire	Re-acquires the signal using the tuning parameters from user settings.	Abort or Continue. Select Abort to cancel the operation or choose Continue to complete the operation.

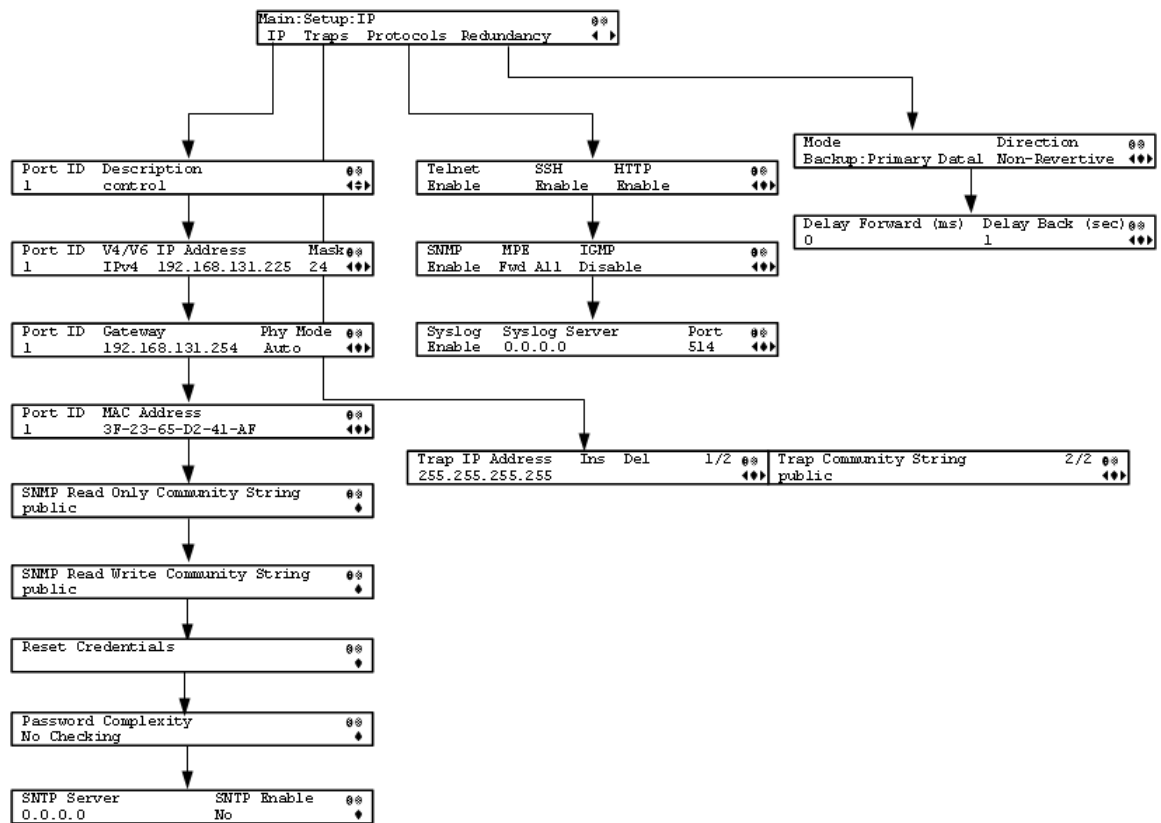
## Setup Menu: IP

To view the IP menu from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then, press the **RIGHT** arrow key twice and the **SELECT** key to view the IP menu.

The IP menu allows you to set the parameters for communicating with other equipment via the TS Output and Management ports for MPEGoIP and MPE applications and upgrading application software.

For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The IP menu has the following structure:



### IP

Menu Item	Description	Parameters
Port ID	Select the Ethernet interface to configure.	1, 2, or 3. Interface 1 is the control and management interface and interface 2 and interface 3 are data interfaces.
Description	Sets the description or name for the Ethernet interface.	Up to 20 alphanumeric characters in length.

## Setup Menu

Menu Item	Description	Parameters								
V4/V6	Select the IP protocol.	Only IPv4 is currently supported.								
IP Address	Sets the IPv4 IP address for the interface.	12 digits in length (###.###.###.###)								
Mask	Sets the number of CIDR (Classless Inter-Domain Routing) bits in the network mask.	8 to 30								
Gateway	Sets the Network Gateway Address on the Network, used to expose the receiver to a WAN.	<p>The IP Address/Mask and Gateway Address should be changed together, for example, as a group. The following table shows the most commonly used Subnet mask values to enter for a chosen IP address mask, which will depend on the size of your network.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Mask</th> <th>Subnet Mask</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>255.0.0.0</td> </tr> <tr> <td>16</td> <td>255.255.0.0</td> </tr> <tr> <td>24</td> <td>255.255.255.0</td> </tr> </tbody> </table>	Mask	Subnet Mask	8	255.0.0.0	16	255.255.0.0	24	255.255.255.0
Mask	Subnet Mask									
8	255.0.0.0									
16	255.255.0.0									
24	255.255.255.0									
Phy Mode	Set the speed and duplex type of the interface. Select Auto for PHY to negotiate speed and duplex with other devices on the network, or select 10 HD (half-duplex), 10 FD (full-duplex), 100 HD, 100 FD, or 1000 FD to lock into a fixed mode.	Auto (default), 1000FD (full duplex), 100HD (half duplex), 10FD, 100FD, or 10HD								
MAC Address	Displays the MAC address of the interface. It is set at the factory and is a read-only value.	N/A								
SNMP Read Only Community String	<p>Sets the password to read data from a device and to display diagnostics traps/alarms.</p> <p>This is used when communicating with a device within an SNMP environment.</p>	<p>Up to 31 alphanumeric characters in length. This string is case-sensitive.</p> <p>The default community string is: public.</p>								
SNMP Read Write Community String	<p>Sets the password to write data to a device.</p> <p>This is used when communicating with a device within an SNMP environment.</p>	<p>Up to 31 alphanumeric characters in length. This string is case-sensitive.</p> <p>The default community string is: public.</p>								

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Reset Credentials	<p>If for some reason, you cannot access the decoder (due to a forgotten password or corrupted data), the recovery procedure for the decoder is as follows:</p> <p>Using the keypad, choose this field on the front panel menu. A default login username and randomly generated password will be displayed on the front panel display for approximately 30 seconds. The new account will have Admin privileges. It is recommended that this account be replaced by a login username/password chosen by the administrator. To change the username and password, you must be an Admin user. Refer to <i>Setting Admin User Privileges via a Telnet/SSH Connection</i> (on page 27).</p> <p><b>Note:</b> After this recovery procedure, all existing user accounts will be lost.</p>	
Password Complexity	Sets the password complexity for all users. The complexity level changes will only affect the new user accounts and password changes. It will not affect existing accounts.	<p>No Checking, Minimal Checking, or Full Complexity Checking</p> <p>For more information, see the Password Complexity table below.</p>
SNTP Server	Sets the NTP server address. If the NTP server address is not set (0.0.0.0), the IRD will not attempt to connect to the server.	12 digits in length (###.###.###.###)
SNTP Enable	Periodically request NTP timestamps from the NTP server and to synchronize its system (i.e., non-DVB related) time with the NTP server.	Yes or No

### Password Complexity

Password Complexity	Description
No Checking	There are no restrictions on passwords.

Password Complexity	Description
Minimal Checking	<p>The passwords must comply with the following requirements:</p> <ul style="list-style-type: none"> <li>■ It cannot contain username or reversed username.</li> <li>■ It cannot contain any of the following strings: cisco, sciatl, ocsic, ltaics, atlsci, icslta, or any string achieved by full or partial capitalization of letters.</li> <li>■ No letter is repeated more than three times in a row.</li> <li>■ Must contain a minimum of four characters.</li> </ul>
Full Complexity Checking	<p>The passwords must comply with the following requirements:</p> <ul style="list-style-type: none"> <li>■ It cannot contain username or reversed username.</li> <li>■ It cannot contain any of the following strings: cisco, sciatl, ocsic, ltaics, atlsci, icslta, or any string achieved by full or partial capitalization of letters.</li> <li>■ No letter is repeated more than three times in a row.</li> <li>■ Must contain a minimum of eight characters.</li> <li>■ Must contain a minimum of three of the following types of characters: capital letters, small letters, digits, and special characters.</li> </ul>

### Traps

Menu Item	Description	Parameters
Trap IP Address	Sets the destination IP address for SNMP trap messages for system events (i.e., fault messages).	Up to 12 digits in length, e.g., 155.128.100.200
Ins, Del	You can choose to Insert or Delete entries. Up to 25 entries can be assigned to the Trap IP Address and Community String fields. To add a new entry, press <b>Ins</b> and enter the new entry in the IP Address or Community String field. To delete an existing entry, scroll to the IP address or community string you want to delete and press <b>Del</b> .	
Trap Community String	Sets the Community string for the Trap IP Address.	Public or custom string. Up to 35 characters. The default is: public.

## Chapter 4 Front Panel Operation

### Protocols

The Protocols menu allows you to control remote access protocols (Telnet, SSH, HTTP, and SNMP) to the IRD.

Menu Item	Description	Port Number	Parameters
Telnet	Controls Telnet access to the IRD.	TCP port #23	Enable (default) - Allow Telnet connections.  Disable - Disables the listener for the Telnet port.
SSH	Controls SSH access to the IRD.	TCP port #22	Enable (default) - Allow secure shell connections.  Disable - Disables the listener for the SSH port.
HTTP	Controls HTTP access to the IRD.	TCP port #80 for HTTP.  TCP port #443 for HTTPS.	Disable - Disables the listener for the HTTP port.  Enable (default) - Allow web connections.  Secure - Encrypted access to the webserver (HTTPS). For more information, see <i>Protocol Control Settings</i> (on page 226).
SNMP	Controls SNMP access to the IRD.	UDP port #161	Enable (default) - Allow SNMP connections.  Disable - Disables the listener for the SNMP port.
MPE	Sets whether the MPE data is forwarded to the network.  <b>Note:</b> The transcoder supports up to a maximum of 10 Mbps throughput when forwarding 1500 byte packets.	N/A	Fwd None - The MPE data is not forwarded to the network.  Fwd All - All the MPE data is forwarded to the network.  Fwd Filtered - Only the MPE data from the defined Static Multicast Filtering table is forwarded to the network. For more information on configuring the Static Multicast Filtering table, see <i>To Add a Static Multicast Filtering</i> (on page 233).

Menu Item	Description	Port Number	Parameters
IGMP	Select the Internet Group Management Protocol (IGMP) standard. This is used by the host, for the multicast input, to send join/leave requests to the IGMP server and to establish multicast group memberships.	N/A	Disable, IGMPv3, or IGMPv2  Note: If configured, the source filtering in IP Input applies to IGMPv3. For more information, see <i>IP Input</i> (on page 66).
Syslog	Select the logging protocol to use. The Legacy option is used by Cisco customer support only.  We highly recommend that you use the following syslog servers:  Syslog-ng - Balabit for Linux  Syslog Watcher - SnmpSoft for Windows  For more information, see <i>System Logs</i> (on page 228).	Default port #514 for TCP and UDP	Syslog TCP, Disable, Legacy, Syslog UDP
Syslog Server	If Syslog TCP or Syslog UDP is selected as the Syslog, set the IP address of the server.	N/A	12 digits in length (###.###.###.###)
Port	This sets the TCP or UDP port number of the server.	N/A	1 to 65535

By enabling or disabling the protocols, dynamic hardware and software firewalls are created for the D9824 receiver.

### Accessing TCP and UDP Services

The following describes the commands used to access port information for all the supported protocols. The examples of TCP-based services are: Telnet, SSH, and HTTP. The examples of UDP-based services are: SNTP and SNMP.

Proceed as follows to obtain TCP or UDP information:

- 1 Start a new communication session with the receiver using a utility, such as Tera Term Pro or PuTTY. For more information on starting a new connection, see *Starting a Telnet/SSH Session* (on page 27).
- 2 In the admin command prompt, type `ipal tcp_list` for a list of TCP connections or `ipal udp_list` for a list of UDP connections and press **Enter**.
- 3 All other connections that are not specifically requested by remote access protocol selection or triggered by user actions, such as an FTP transfer, do not have active listeners and the corresponding TCP/UDP ports are closed. To strengthen security, the hardware firewall drops all incoming packets for the closed ports.

**Note:** The hardware firewall may impose different rules for the Management and Data ports. For example, remote access protocols, such as SSH or HTTP, are only enabled on the Management port.

**Redundancy**

Menu Item	Description	Parameters
Mode	Select the redundancy mode for MPEG over IP or MPE data.	<p>Manual Data1/Data2 - Only use Data1 (port 1) or Data2 (port 2) for output data. The remaining redundancy controls below are not applicable.</p> <p>Backup: Primary Data1/Data2 - Use port 1 or port 2 as the primary data port and if a physical connectivity loss occurs, it will failover to port 2 or port 1 (the backup port).</p> <p>Mirroring - Send the same data to both port 1 and port 2. The remaining redundancy controls below are not applicable.</p>
Direction	If Backup: Primary Data1/Data2 is set as the redundancy Mode, set the direction of the redundancy switch.	<p>Revertive - An attempt is made to revert back to the primary port when using the backup port and the primary port is active again.</p> <p>Non-Revertive - Always use the backup port after a direct switchover, regardless of the condition of the primary port.</p>
Delay Forward (ms)	Set the time to switch the data port after the system detects a failure.	0 to 10000 milliseconds
Delay Back (sec)	<p>Set the time to wait when reverting back to the primary port once the primary link is active again.</p> <p><b>Note:</b> If Non-Revertive is set as the direction, this field does not apply.</p>	1 to 120 seconds

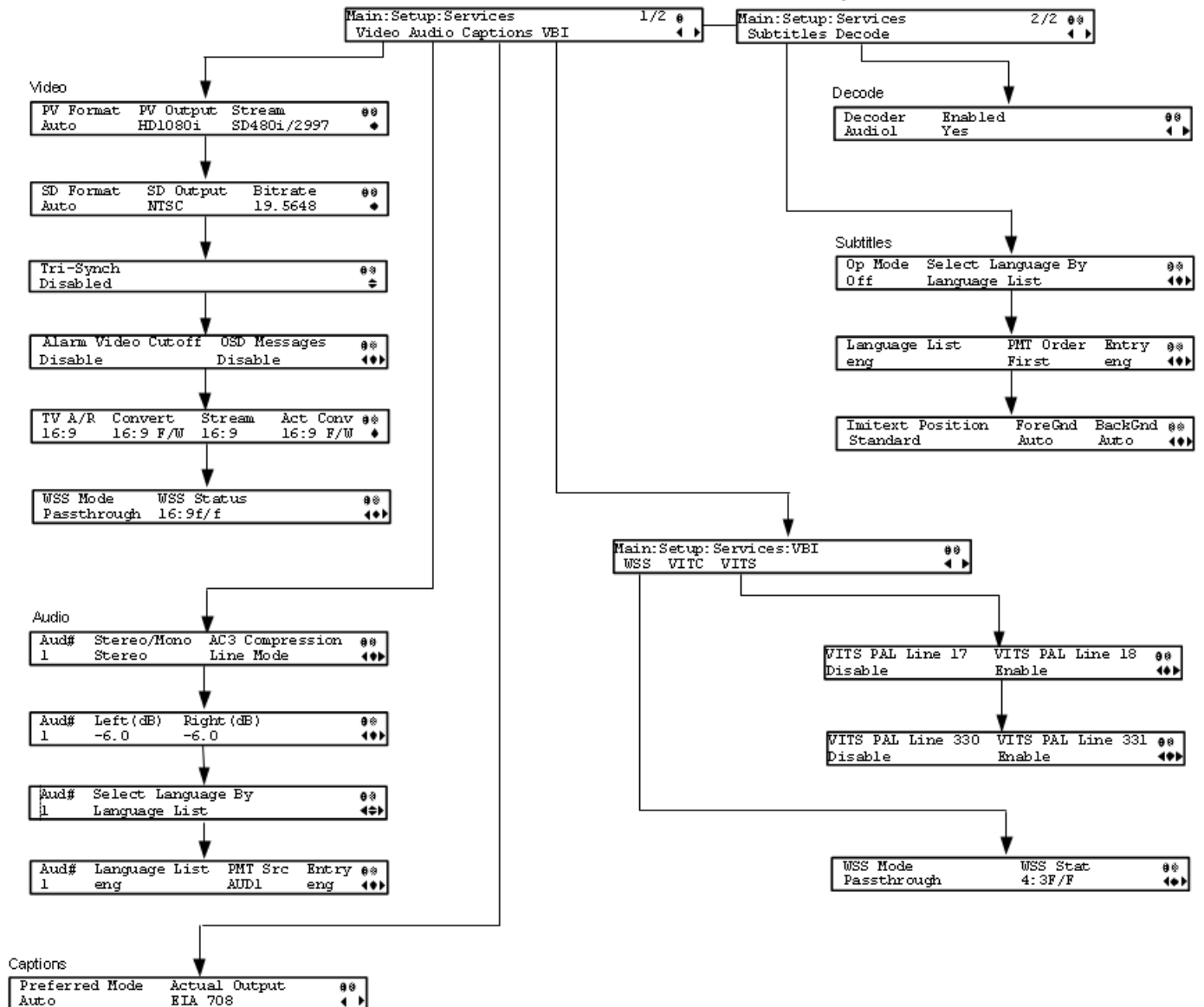


## Setup Menu: Services

To view the Services menu from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key three times and the **SELECT** key to view the Services menu.

The Services menu allows you to set up all the operating parameters associated with audio, video and captions services.

Each parameter is described below. The menu has the following structure:



## Chapter 4 Front Panel Operation

### Video

Menu Item	Description	Parameters
PV Format	Sets the primary video output format for local decoding.	Auto, SD, HD 720p, or HD 1080i
PV Output	Indicates the actual output video format. This value is read-only.	SD, HD 720p, or HD 1080i
Stream	Indicates the video format of the input video stream. This value is read-only.	
SD Format	Selects the standard definition output format to use on the primary video if the PV Output is set to SD.	Auto, NTSC, PAL-N (AR), PAL-M or PAL-B/G/I/D. Use NTSC for 525-line systems and PAL-B/G/I/D for 625-line systems.
SD Output	Indicates the actual standard definition format of the primary video output if the PV Output is set to SD.	NTSC, PAL-N (AR), PAL-M or PAL-B/G/I/D
Bitrate	Indicates the bit rate of the input video stream, in Mbps.	
Tri-Synch	Select whether to use component Tri-Synchronization.	Enabled or Disabled
Alarm Video Cutoff	Sets whether the video output is cut off if any enabled alarm is active on the receiver. When video is cut off, there will be no horizontal or vertical synchronization on the output. This is useful for downstream redundancy switching by detecting a loss of video signal.  <b>Note:</b> This same function also exists under Setup: Alarm/Warning.	Enable or Disable. The default is Disable.
OSD Messages	Sets whether alarms and warnings are to be displayed on the on-screen display (e.g., TV monitor).	Enable or Disable
TV A/R	Select the standard definition aspect ratio of your TV monitor.	4:3 or 16:9
Convert	Select the conversion method that the receiver will perform on the incoming signal for the picture to be displayed correctly on your TV based on the TV A/R setting.	None, Auto, Auto AFD, 16:9 L/B, 4:3 P/B, 14:9, 4:3 CCO, 16:9 SCALE. The default is Auto. For more information, see <i>Aspect Ratio Conversions</i> (on page 81).
Stream	Indicates the aspect ratio of the incoming video stream. This is read-only.	4:3 or 16:9

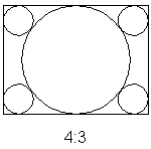
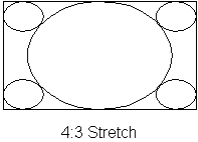
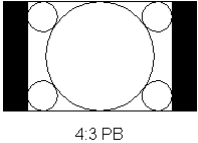
## Setup Menu

Menu Item	Description	Parameters
Act Conv	<p>The actual aspect ratio conversion the receiver will perform based on what you have selected. This is read-only.</p> <p>Refer to the Aspect Ratio Conversions table below for the conversions performed by the receiver based on your selection, and the effect on the picture displayed by the receiver in each case (without Auto AFD)</p>	None, 16:9 L/B, 4:3 P/B, 14:9, 4:3 CCO, 16:9 SCALE
WSS Mode	Select the Wide Screen Signaling output mode. It is used to select how the receiver affects PAL WSS when it is present in the VBI line 23.	<p>Auto:Create - Creates WSS to output the correct aspect ratio when performing aspect ratio conversion.</p> <p>Auto:Modify - If WSS is present in the input stream, it is modified to output the correct aspect ratio when performing aspect ratio conversion. If WSS is not present in the input, no WSS will be present in the output.</p> <p>Suppress - Removes WSS output.</p> <p>Passthrough - Passes WSS unmodified as received by the receiver.</p> <p>The default is Passthrough.</p>
WSS Status	This indicates the current output value of PAL WSS in VBI line 23.	<p>4:3 F/F, 16:9 L/B CEN, 16:9 L/B TOP, &gt;16:9 L/B, 14:9 L/B CEN, 14:9 L/B TOP, 14:9 F/F CEN, 16:9 F/F, or UNDEFINED</p> <p><b>Note:</b> F/F is full format, and L/B is letter box.</p>

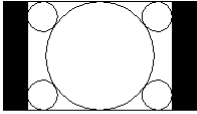
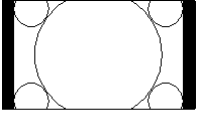

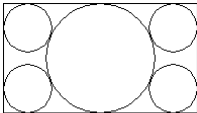
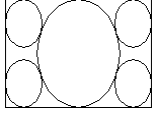
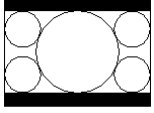
## Chapter 4 Front Panel Operation

### Aspect Ratio Conversions

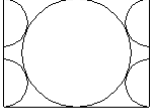
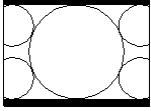
The following table displays the conversions performed by the receiver based on the Act Conv selection:

Stream	TV A/R	Conversion	Act Conv	Description	Image
4:3	4:3	None	None	Normal Picture	
4:3	4:3	Auto	None	No conversion	
4:3	4:3	16:9 L/B	None	Conversion is not possible. Normal picture.	
4:3	4:3	4:3 CCO	None	Conversion is not possible. Normal picture.	
4:3	4:3	4:3 P/B	None	Conversion is not possible. Normal picture.	
4:3	4:3	14:9	None	Conversion is not possible. Normal picture.	
4:3	4:3	16:9 SCALE	None	Conversion is not possible. Normal picture.	
4:3	16:9	None	None	Picture is short and wide.	
4:3	16:9	Auto	4:3 P/B	Uses 4:3 P/B.	
4:3	16:9	16:9 L/B	None	Conversion is not possible. Picture appears short and wide.	
4:3	16:9	4:3 CCO	None	Conversion is not possible. Picture appears short and wide.	

Setup Menu

4:3	16:9	4:3 P/B	4:3 P/B	4:3 picture is centered in a pillar-style box.	 4:3 PB
4:3	16:9	14:9	14:9	Compromises some up-sampling. Some black bars and cropping are visible.	 14:9
4:3	16:9	16:9 SCALE	16:9 SCALE	Vertically up-samples the center of the 4:3 picture and crops the top and bottom of the screen.	 16:9 FH
16:9	16:9	None	None	Normal	 16:9
16:9	16:9	Auto	None	No conversion. Normal picture.	
16:9	16:9	16:9 L/B	None	Conversion is not possible. Normal picture.	
16:9	16:9	4:3 CCO	None	Conversion is not possible. Normal picture.	
16:9	16:9	4:3 P/B	None	Conversion is not possible. Normal picture.	
16:9	16:9	14:9	None	Conversion is not possible. Normal picture.	
16:9	16:9	16:9 SCALE	None	Conversion is not possible. Normal picture.	
16:9	4:3	None	None	Picture appears tall and thin.	 16:9 Compressed
16:9	4:3	16:9 L/B	16:9 L/B	Vertically down-samples the picture and applies black bars at the top and bottom of the screen.	 4:3 LB

## Chapter 4 Front Panel Operation

16:9	4:3	4:3 CCO	4:3 CCO	Horizontally up-samples the center portion of the picture to fill the screen.	 4:3 Crop
16:9	4:3	4:3 P/B	None	Conversion is not possible. Picture appears tall and thin.	
16:9	4:3	14:9	14:9	Compromises some up-sampling. Some black bars and some cropping are visible.	 14:9
16:9	4:3	16:9 SCALE	None	Conversion is not possible. Picture appears tall and thin.	

**Note:** Active Format Descriptor (AFD) - normally it is necessary to set both the TV Aspect Ratio and Conversion to correctly display the video program on the TV system. The Auto AFD option enables the receiver output to automatically match the display format of the video program to the TV system based on specific (uplink) program information carried in the transport stream. In this case, the receiver performs the conversion based on the TV Aspect Ratio setting combined with the program-specific uplink information to provide the “best fit” for display of the program material on the TV. This feature is primarily used in 16:9 and 14:9 (wide screen) applications.

### Audio

Menu Item	Description	Parameters
Aud#	Sets which balanced audio output on the rear panel to configure.	1 or 2
Stereo/Mono	Sets the output mixing.	<p>Stereo - Left and Right are passed directly through to Left and Right</p> <p>R-MONO - Right is passed to both the Left and Right</p> <p>L-MONO - Left is passed to both the Left and Right</p> <p>Mixed - Left is passed to both the Left and Right, and Right is passed to both the Left and Right.</p>
AC3 Compression	Sets the AC3 compression mode to use if the output is compressed Dolby Digital audio.	<p>Line Mode, Custom 1, Custom 0 or RF Mode.</p> <p>RF Mode is recommended for analog cable modulators.</p>

## Setup Menu

Menu Item	Description	Parameters
Left (dB)	Sets the volume adjustment for the Left audio channel, in dB.	-6.0 to +6.0 Any value can be entered with the numeric keypad (in the appropriate range), but the UP and DOWN arrows will increase or decrease in 0.5 dB steps.
Right (dB)	Sets the volume adjustment for the Right audio channel, in dB.	-6.0 to +6.0 Any value can be entered with the numeric keypad (in the appropriate range), but the UP and DOWN arrows will increase or decrease in 0.5 dB steps.
Select Language By	Method of selecting the audio PID for the local audio decoding. This is required if the monitored program contains more than two audio PIDs.	PMT Order (default) - Allows you to select a PMT order. Language List - Allows you to select a language from the available list. Language Entry - Allows you to enter a language code.
Language List	If <b>Select Language By</b> is set to <b>Language List</b> , select the language for the selected audio.	ara (Arabic), btk (Batak (Indonesia), ben (Bengali), bul (Bulgarian), chi (Chinese), cze (Czech), dan (Danish), dut (Dutch), eng (English), fin (Finnish), fre (French), ger (German), gre (Greek), heb (Hebrew), hin (Hindi), hun (Hungarian), ice (Icelandic), ind (Indonesian), ita (Italian), jpn (Japanese), kor (Korean), may (Malay), mul (Multiple Languages), nor (Norwegian), per (Persian), pol (Polish), por (Portuguese), rum (Romanian), rus (Russian), san (Sanskrit), scc (Serbian), sin (Sinhalese), slo (Slovak), som (Somali), spa (Spanish), swe (Swedish), tai (Tai Other), tam (Tamil), tha (Thai), tur (Turkish), ukr (Ukrainian), or vie (Vietnamese)
PMT Src	Selects the PMT source for the audio channel.	None, AUD1 to AUD64

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Entry	If <b>Select Language By</b> is set to <b>Language Entry</b> , select the language entry for the selected audio.	Enter a three-character code provided by your uplink service provider under Entry using the numeric keypad (e.g., eng for English).  The supported languages are according to ISO 639-2 Language Codes.

### Captions

Menu Item	Description	Parameters
Preferred Mode	Selects the type of closed captioning to use if there are multiple available in the stream.	Auto, SA Custom, EIA 708, Type 3, Type 4 SA, DVS 053 Type 4 ATSC, Reserved or DVS 157. The default is Auto.  <b>Note:</b> SA Custom is not supported when telecine video coding is enabled.
Actual Output	Indicates the actual closed caption mode in the output. This is read-only.	Auto, SA Custom, EIA 708, Type 3, Type 4 SA, Type 4 ATSC, Reserved, or DVS 157



## VBI

## WSS

Menu Item	Description	Parameters
WSS Mode	Selects the Wide Screen Signaling output mode. It is used to select how the receiver affects PAL WSS when it is present in the VBI line 23.	<p>Auto:Create - Creates WSS to output the correct aspect ratio, when performing aspect ratio conversion.</p> <p>Auto:Modify - If WSS is present in the input stream, it is modified to output the correct aspect ratio when performing aspect ratio conversion. If WSS is not present in the input, no WSS will be present in the output.</p> <p>Suppress - Removes WSS output.</p> <p>Passthrough - Passes WSS unmodified as received by the receiver.</p> <p>The default is Passthrough.</p>
WSS Stat	This indicates the current output value of PAL WSS in VBI line 23.	<p>4:3 F/F, 16:9 L/B CEN, 16:9 L/B TOP, &gt;16:9 L/B, 14:9 L/B CEN, 14:9 L/B TOP, 14:9 F/F CEN, 16:9 F/F, or UNDEFINED</p> <p><b>Note:</b> F/F is full format, and L/B is letter box.</p>

## VITC

This is not supported.

## VITS

Menu Item	Description	Parameters
VITS PAL Line 17, 18, 330, 331	Select whether to enable or disable Vertical Interval Test Signal on PAL Lines 17, 18, 330, or 331.	Enable or Disable

## Chapter 4 Front Panel Operation

### Subtitles

This menu allows you to configure the type of subtitling (i.e., DVB or Imtext) displayed by the receiver, and how the receiver displays subtitling on the TV.

Menu Item	Description	Parameters
Op Mode	Sets the subtitle mode.	<p>Off - No subtitles are displayed.</p> <p>On - Displays DVB or Imtext subtitles, if available.</p> <p>DVB - Displays only DVB titles, if available. Otherwise, no subtitles are displayed.</p> <p>Imtext - Displays only Imtext subtitles, if available. Otherwise, no subtitles are displayed.</p>
Select Language By	Select the input source for the subtitle language.	<p>Language List - Allows you to select a language from the available list.</p> <p>Language Entry - Allows you to enter a language code.</p> <p>PMT Order - Allows you to select a PMT order.</p> <p>The default setting is Language List. Language Entry and PMT Order are more applicable for advanced applications.</p>
Language List	If Language List was selected in the Select Language By menu, select the MPEG language to display.	<p>ara (Arabic), btk (Batak (Indonesia), ben (Bengali), bul (Bulgarian), chi (Chinese), cze (Czech), dan (Danish), dut (Dutch), eng (English), fin (Finnish), fre (French), ger (German), gre (Greek), heb (Hebrew), hin (Hindi), hun (Hungarian), ice (Icelandic), ind (Indonesian), ita (Italian), jpn (Japanese), kor (Korean), may (Malay), mul (Multiple Languages), nor (Norwegian), per (Persian), pol (Polish), por (Portuguese), rum (Romanian), rus (Russian), san (Sanskrit), scc (Serbian), sin (Sinhalese), slo (Slovak), som (Somali), spa (Spanish), swe (Swedish), tai (Tai Other), tam (Tamil), tha (Thai), tur (Turkish), ukr (Ukrainian), or vie (Vietnamese)</p>

Menu Item	Description	Parameters
PMT Order	If PMT Order was selected in the Select Language By menu, select the subtitle PID entry to display. This information is available from your uplink service provider.	First to Eighth
Entry	If Language Entry was selected in the Select Language By menu, select the subtitle PID entry to display. The information is available from your uplink service provider.	Enter the three-character code provided by your uplink service provider under Entry using the numeric keypad (e.g., eng for English).  The supported languages are according to ISO 639-2 Language Codes.
Imitext Position	Sets the position of the on-screen subtitle text.	Standard or Extended
ForeGnd	Sets the text color for Imitext subtitles.	Auto, Yellow, or White.  Auto displays text in the color transmitted by the subtitling equipment. Yellow and White override the color set by the uplink, and display text in the selected color.
BackGnd	Sets the text background for Imitext subtitles.	Auto - Uses the uplink subtitling equipment setting.  Shadow - Applies an outline to the right side of each text character. No background box is applied to subtitles, i.e., text is visible directly on top of video.  Opaque - Applies a black box to each text character.  Semi - Applies a semi-transparent box to subtitle text.  None - No shadow or outline is applied to subtitle text.

## Chapter 4 Front Panel Operation

### Decode

Menu Item	Description	Parameters
Decoder	Select the local decode service to configure. <b>Note:</b> By default, all the decode services are enabled.	Video, Audio1 to Audio4, VBI (Vertical Blanking Interval) DATA (low speed data), MPE1 to MPE5 (Multiprotocol Encapsulation), STT (Subtitles), or DPI (Digital Program Insertion)
Enabled	Select whether the local decoding of this service is enabled or disabled.	Yes or No

## Setup Menu: Common Interface (CI)

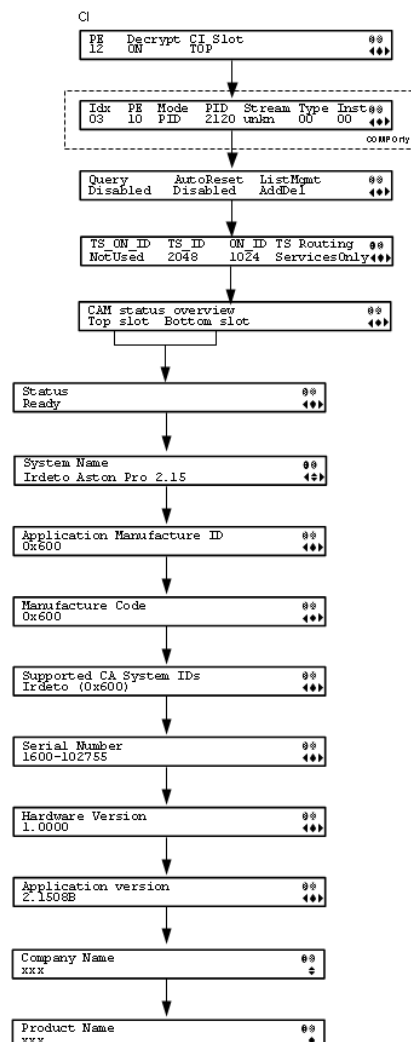
To view the CI menus from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key four times and the **SELECT** key to view the CI menu.

The Common Interface (CI) slots are located under the door on the front panel. They allow use of a CAM (Conditional Access Module) Smart Card to decrypt purchased programming.

You must be authorized to view the programming available via the Smart Card from your service provider.

CAMs must be purchased from Cisco. For a list of the supported CAMs, see *Common Interface Modules* (on page 30).

For instructions on how to select and store settings, see *About the Front Panel* (on page 32). The CI menu has the following structure:



CI

Menu Item	Description	Parameters
PE	Select the Program Entry (PE) to configure the decryption settings.	PE1 to PE32
Decrypt	Determines whether to decrypt the channel or to specify the specific components to decrypt.	<p>ON (default) - Decrypts the entire program entry.</p> <p>OFF - Disables decryption for the current program entry.</p> <p>Comp - Allows specific components to be decrypted, as specified in the component list.</p> <p><b>Note:</b> If the CI Slot is set to Auto for PE1, then Decrypt can only be set to ON.</p>
CI Slot	Select the CAM slot to use for decryption.	<p>TOP, BOTTOM, AUTO</p> <p>AUTO - PE1 only. The software automatically assigns the slot capable of decrypting the stream. If CI Slot is set to AUTO, Decrypt must be set to ON.</p> <p>TOP - The top CAM slot is used for decryption.</p> <p>BOTTOM - The bottom CAM slot is used for decryption.</p>
COMP only	<p>If any program entries have selected Comp for the Decrypt parameter, you can customize the PID or stream type to decrypt the program.</p> <p>To Add a Record, press the ADV button, select Insert and define the appropriate parameters.</p> <p>To delete an existing record, select Delete and confirm your deletion.</p> <p>There are three different methods in setting a customized record:</p> <p>PID - Set <b>Mode</b> to PID and enter <b>PID</b> number.</p> <p>Stream Type - Set <b>Mode</b> to STREAM, select a <b>Stream</b> type (audio, video, subtitle, ttx, or user) and enter <b>Inst</b> (instance) of the stream type. There is an additional configuration if you select user as the Stream type (see below).</p> <p>Stream Type: User - Set <b>Mode</b> to STREAM, <b>Stream</b> type to USER, manually enter the stream code in <b>Type</b>, and then the <b>Inst</b> (instance) of the stream type.</p>	

Menu Item	Description	Parameters
Idx	Select the component record to edit.	1-64 (up to 32 records for each CAM)
PE	Set the Program Entry the component is located.	1 to 32
Mode	Select whether to choose the component by PID or by stream type.	PID or STREAM
PID	If decrypting by PID, set the PID number.	0 to 8192
Stream	If decrypting by stream type and set the stream type.	AUD (audio), VID (video), SUBT (subtitles), TTX (teletext), USER <b>Note:</b> Select USER to manually enter a stream type in the <b>Type</b> parameter.
Type	If decrypting by stream type and the stream category is USER, set the stream type value.	0 to 255
Inst	If decrypting by stream type, set the instance of the current stream type.	1 to 64
Query	Set to Enable to query the CAM prior to decryption to ensure that the program can be decrypted.	Enabled or Disabled (default)
Auto Reset	Set to Enable to automatically reset the card.	Enable or Disabled (default)
List Mgmt	Select whether the Common Interface List Management should add or delete individual programs or update all the programs when the list changes.	AddDel or Update All <b>Note:</b> Updating all the programs will cause a temporary loss of service for all the programs when another is being modified.
TS_ON_ID	Set to Enable if you want to restrict the incoming transport stream.  If the incoming stream does not match the transport stream and original network ID specified (TS_ID and ON_ID), the program will not be decrypted.	Enable or Disable (default)
TS_ID	Specify the Transport ID.	0 to 65535

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
ON_ID	Specify the Transport Original Network ID.	0 to 65535
TS Routing	Select EntireTS to use the CAM to decrypt the entire transport stream, or select ServicesOnly to use the CAM to decrypt only the PIDs being used by the active services.	EntireTS or ServicesOnly

### Top/Bottom Slot

Menu Item	Description	Parameters
Status	Displays the status of the CAM.	Ready or Not Ready
System Name	Indicates the system name of the CAM.	
Application Manufacture ID	Displays the factory loaded application number of the CAM.	
Manufacture Code	Indicates the manufacture's code.	
Supported CA System IDs	Displays the CA system identification name of the CAM. Some CAMs may support multiple CA system IDs.	
Serial Number	Indicates the unique serial number of the CAM.	
Hardware Version	Displays the hardware version number of the CAM.	
Application Version	Displays the software version number of the CAM.	
Company Name	Displays the company name of the CAM.	
Product Name	Displays the product name of the CAM.	



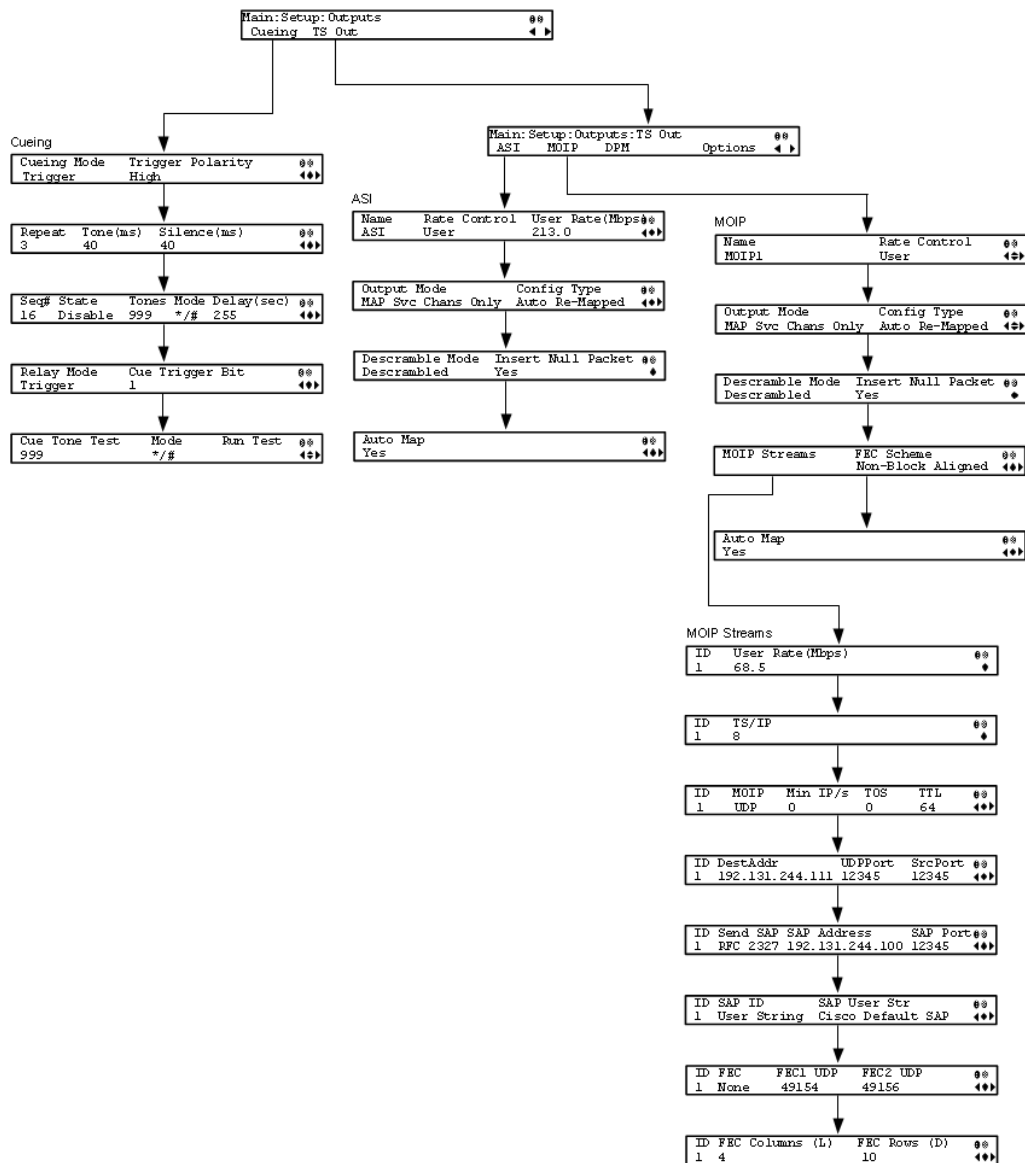
## Setup Menu: Outputs

To view the Outputs menus from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key five times and the **SELECT** key to view the Outputs menu.

The Outputs menu allows you to set up the rear panel control relays for alarms, cue tones and cue triggers, and the transport stream outputs, and Digital Program Mapping (DPM).

For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The Outputs menu has the following structure:



**Cueing**

<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
Cueing Mode	Select whether cueing output should be DTMF tones or trigger pins.	<p>Trigger or Tone</p> <p>Tone - Cue tones are standard Dual-Tone Multi-Frequency (DTMF) tones. The tones are generated at the Cue Tone/Relay output on the rear panel of the receiver.</p> <p>Trigger - Cue trigger refers to open-collector pins which can be toggled at the Cue Tone/Relay output on the rear panel of the receiver.</p>
Trigger Polarity	If the Cueing Mode was set to Trigger, select the pin polarity.	<p>High or Low</p> <p>High - Pins act as open or floating collectors on an active cueing signal and as ground on an inactive signal.</p> <p>Low - Pins act as ground on an active cueing signal and as open or floating collectors on an inactive signal.</p>
Repeat	If the Cueing Mode was set to Tone, set the number of consecutive tone sequences to be generated. Values greater than 1 are provided when a scenario demands repetition to ensure that the ad insertion equipment receives the signal.	1, 2, or 3. The default is 3.
Tone (ms)	If the Cueing Mode was set to Tone, set the duration of each tone, in milliseconds.	0 to 80. The default is 40.
Silence (ms)	If the Cueing Mode was set to Tone, set the duration, in milliseconds, of each silence between tones.	0 to 80. The default is 40.
Seq#	Select the tone sequence to configure.	1 to 16
State	Select whether the current tone sequence is enabled or disabled.	Enabled or Disabled. When disabled, no cue tone is output.
Tones	Sets the three digit tone sequence.	000 to 999

Menu Item	Description	Parameters																							
Mode	Sets the tone sequence mode.	* - Start tone only # - End tone only */# - Start and end tones. The end tone is signaled after waiting the time specified in Delay(sec).																							
Delay(sec)	If the Mode was set to */# (Start/Stop), set the delay, in seconds, between the start and stop sequences.	1 to 255. The default is 30.																							
Relay Mode	The relay can be programmed to respond to an alarm or warning state, or the state of one of the eight cue trigger pins. The response is generated at the Cue Tone/Relay output on the rear panel of the receiver.	Alarm or Trigger The following table displays the possible field settings and their relationship to the receiver output: <table border="1" data-bbox="992 816 1435 1377"> <thead> <tr> <th rowspan="2">Relay Mode</th> <th rowspan="2">Condition</th> <th colspan="2">Relay Contact</th> </tr> <tr> <th>NC-C</th> <th>C-No</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Alarm</td> <td>Unit Power Off</td> <td>Open</td> <td>Close</td> </tr> <tr> <td>Alarm State</td> <td>Open</td> <td>Close</td> </tr> <tr> <td>No Alarm</td> <td>Close</td> <td>Open</td> </tr> <tr> <td rowspan="2">Trigger</td> <td>Active (selected in PNC)</td> <td>Close</td> <td>Open</td> </tr> <tr> <td>Inactive</td> <td>Open</td> <td>Close</td> </tr> </tbody> </table>	Relay Mode	Condition	Relay Contact		NC-C	C-No	Alarm	Unit Power Off	Open	Close	Alarm State	Open	Close	No Alarm	Close	Open	Trigger	Active (selected in PNC)	Close	Open	Inactive	Open	Close
Relay Mode	Condition	Relay Contact																							
		NC-C	C-No																						
Alarm	Unit Power Off	Open	Close																						
	Alarm State	Open	Close																						
	No Alarm	Close	Open																						
Trigger	Active (selected in PNC)	Close	Open																						
	Inactive	Open	Close																						
Cue Trigger Bit	If the Relay Mode was set to Trigger, select the cue trigger bit/pin that will activate the relay.	1 to 8																							
Cue Tone Test	Sets the three digit cueing tone test sequence.	000 to 999																							
Mode	Sets the test sequence mode.	* - Start tone # - End tone																							
Run Test	Select and press continue to run the cue tone test according to the Cue Tone Test and Mode.																								

TS Out - ASI

Menu Item	Description	Parameters
Name	Displays the name assigned to the transport output for ease of reference. This is read-only.	20-character string
Rate Control	Select the output rate control.	<p>Auto - The output rate follows that set by the uplink. This setting can be used if the signal source is ASI. If <b>Insert Null Packet</b> is set to <b>Yes</b>, the output bit rate is the same as the input rate (including all the null packets). If <b>Insert Null Packet</b> is set to <b>No</b>, the output rate is equal to the payload rate of the transport stream to be encapsulated, and in most cases, it will be lower than the overall input rate.</p> <p>User - The output rate is specified by the <b>User Rate (Mbps)</b> parameter. It is determined by the user setting, regardless of the input source. Null packets are always inserted when the configured output bit rate is higher than the payload rate of the transport stream to be encapsulated.</p>
User Rate(Mbps)	<p>If the <b>Rate Control</b> is set to <b>User</b>, set the maximum output bit rate. If null packets are inserted, this will be the output rate.</p> <p>This setting is used when the signal source is RF or ASI and allows you to set the output bit rate to a value expected by equipment connected to the ASI output.</p>	<p>0 to 206 Mbps</p> <p><b>Note:</b> Output data may be lost if this bit rate is set to a value less than the actual signal bit rate.</p>

Menu Item	Description	Parameters
Output Mode	<p>Select the DPM output mode for the current output.</p> <p>With the exception of <b>No Output</b> and <b>Full DPM Control</b>, selecting a mode will configure the DPM settings to achieve the specified behavior. In this way, they act as DPM presets.</p> <p>The <b>Config Type</b> is changed from <b>Unmodified</b> to <b>Edited by User</b>.</p> <p>We highly recommend that you use either one of these basic modes, or, for advanced setup, enter the DPM mapping before setting the <b>Output Mode</b>.</p>	<p>No Output - No ASI output will be generated and the ASI port will be disabled.</p> <p>Passthrough - All PEs will be set to Pass and other DPM settings will also be set.</p> <p>Service Chans Only - This is similar to Passthrough, except that only channels applied to program entries are available on the output.</p> <p>MAP Passthrough - The output will be identical to the input, except that channels assigned to PEs and PIDs will be mapped using the DPM settings. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to Drop. When selecting MAP Passthrough, the option to re-sync will be provided. If you select <b>Yes</b>, it will set the DPM mapping to the last valid (or saved) configuration. If you select <b>No</b>, it will use the existing DPM maps. If the PE is mapped, it uses the last saved output MAP configuration. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.</p> <p>MAP Svc Chans Only - This is similar to MAP Passthrough, except that only channels applied to program entries are available on the output. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to Drop. When selecting MAP Svc Chans Only, the option to re-sync will be provided. If you select <b>Yes</b>, it will set the DPM mapping to match the current input. If you select <b>No</b>, it will use the existing DPM maps. If the PE is mapped, it uses the last valid input. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.</p> <p>Full DPM Control - The output will be generated according to the DPM settings. This is a manual control setting.</p>

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
Config Type	Indicates the current DPM configuration change by a user after changing the <b>Output Mode</b> .	<p>Edited by User - DPM changes were made.</p> <p>Unmodified - No changes were made after setting a new Output Mode.</p> <p>Auto Re-Mapped - Output map changed automatically to fix the output channel or PID conflicts at the time of setup.</p> <p>Changed by Uplink - DPM output changes were initiated by an encoder.</p>
Descramble Mode	Select whether the output will be descrambled if the input is scrambled.	<p>Scrambled - The output channel will remain scrambled even if the PE is authorized and can descramble the channel.</p> <p>Descrambled - Descrambles the output channel, and passes in-the-clear channels.</p> <p>The default is Descrambled.</p>
Insert Null Packet	Select whether to insert null packets into the output to maintain output at a constant bit rate.	Yes or No
Auto Map	Sets whether the DPM resolves the channel and PID collisions automatically on the transport outputs. New values are assigned to the parameters that caused the conflict. The new assigned values are not used by any incoming transport or other PE outputs. If a collision is detected, you can review the new changes before applying the new changes.	Yes or No

### MOIP

Menu Item	Description	Parameters
Name	This is the name assigned to the transport output for ease of reference.	20-character string

Menu Item	Description	Parameters
Rate Control	This is the output rate control.	<p>Auto - The output rate follows that set by the uplink. This setting can be used if the signal source is ASI. If <b>Insert Null Packet</b> is set to <b>Yes</b>, the output bit rate is the same as the input rate (including all the null packets). If <b>Insert Null Packet</b> is set to <b>No</b>, and the Output Mode is set to one of the MPTS modes, the output rate is equal to the payload rate of the transport stream to be encapsulated, and in most cases, it will be lower than the overall input rate.</p> <p>User - The output rate is specified by the <b>User Rate (Mbps)</b> parameter. It is determined by the user setting, regardless of the input source. Null packets are always inserted when the configured output bit rate is higher than the payload rate of the transport stream to be encapsulated.</p>

Menu Item	Description	Parameters
Output Mode	<p>Select the DPM output mode for the current output.</p> <p>With the exception of <b>No Output</b> and <b>Full DPM Control</b>, selecting a mode will configure the DPM settings to achieve the specified behavior. In this way, they act as DPM presets.</p> <p>The <b>Config Type</b> is changed from <b>Unmodified</b> to <b>Edited by User</b>.</p> <p>We highly recommend that you use either one of these basic modes, or, for advanced setup, enter the DPM mapping before setting the <b>Output Mode</b>.</p>	<p>No Output - No MPEGoIP output will be generated.</p> <p>Passthrough - All PEs will be set to Pass and other DPM settings will also be set.</p> <p>Service Chans Only - This is similar to Passthrough, except that only channels applied to program entries are available on the output.</p> <p>MAP Passthrough - The output will be identical to the input, except that channels assigned to PEs and PIDs will be mapped using the DPM settings. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to Drop. When selecting MAP Passthrough, the option to re-sync will be provided. If you select <b>Yes</b>, it will set the DPM mapping to the last valid (or saved) configuration. If you select <b>No</b>, it will use the existing DPM maps. If the PE is mapped, it uses the last saved output MAP configuration. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.</p> <p>MAP Svc Chans Only - This is similar to MAP Passthrough, except that only channels applied to program entries are available on the output. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to Drop. When selecting MAP Svc Chans Only, the option to re-sync will be provided. If you select <b>Yes</b>, it will set the DPM mapping to match the current input. If you select <b>No</b>, it will use the existing DPM maps. If the PE is mapped, it uses the last valid input. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.</p> <p>Full DPM Control - The output will be generated according to the DPM setting.</p> <p>SPTS MAP Svc Chans Only - The service channel is mapped to the preconfigured channel number, PMT, and ES PIDs.</p> <p>SPTS Svc Chans Only - The service channel is passed with the same channel number, PMT PID, and ES PID numbers.</p> <p>SPTS Full DPM Control - The output will be generated according to the DPM settings on the MPEG over IP Digital Program Mapping page. This is a manual control setting.</p>



Menu Item	Description	Parameters
Config Type	Indicates the current DPM configuration change by a user after changing the Output Mode.	<p>Edited by User - DPM changes were made.</p> <p>Unmodified - No changes were made after setting a new Output Mode.</p> <p>Auto Re-Mapped - Output map changed automatically to fix the output channel or PID conflicts at the time of setup.</p> <p>Changed by Uplink - DPM output changes were initiated by an encoder.</p>
Descramble Mode	This parameter selects whether the receiver should scramble the output even if it is authorized to receive the channel.	<p>The default mode is Descrambled.</p> <p>Scrambled - Scrambles the output channel even if the PE is authorized and can descramble the channel.</p> <p>Descrambled - Descrambles the output channel, and passes in-the-clear channels.</p>
Insert Null Packet	<p>This parameter selects whether to insert null packets in the output stream.</p> <p>Null packets are always inserted if the <b>Rate Control</b> is set to <b>User</b>.</p>	Yes or No
FEC Scheme	<p>Select the FEC packet sending arrangement. They are defined in the pro-MPEG FEC and the SMPTE FEC standards.</p> <p>If the <b>FEC</b> for a specific <b>MOIP Stream</b> is set to <b>None</b>, all FEC-related settings for that stream are ignored.</p> <p>For more information, see <i>MOIP Streams</i> (on page 104).</p>	<p>Non-Block Aligned - Each FEC packet receives L packets after the last related data packet.</p> <p>Block Aligned - Column FEC packets are sent by using an interleaver.</p> <p><b>Note:</b> For more information, refer to SMPTE 2002-1-2007.</p>
Auto Map	Sets whether the DPM resolves the channel and PID collisions automatically on the transport outputs. New values are assigned to the parameters that caused the conflict. The new assigned values are not used by any incoming transport or other PE outputs. If a collision is detected, you can review the new changes before applying the new changes.	Yes or No

## MOIP Streams

Menu Item	Description	Parameters
ID	Select the stream to configure.	1 to 32  If <b>SPTS Svc Chans Only</b> , <b>SPTS MAP Svc Chans Only</b> , or <b>SPTS Full DPM Control</b> is selected as the <b>Output Mode</b> , 1 to 32 indicates the SPTS streams.  If <b>No Output</b> , <b>Passthrough</b> , <b>Service Chans Only</b> , <b>MAP Passthrough</b> , <b>Full DPM Control</b> , or <b>MAP Svc Chans Only</b> is selected as the <b>Output Mode</b> , 1 indicates MPTS stream and 2 to 32 are not applicable.
User Rate (Mbps)	This parameter controls the output rate when Rate Control is set to User.  <b>Note:</b> Output data will be partially or completely lost if the payload (bit rate) of the transport to be encapsulated is higher than the user-defined output bit rate.	0 to 206 Mbps
TS/IP	This selects the maximum number of transport packets per IP packet.	1 to 7
MOIP	Selects the transport protocol to be used for the output stream.	RTP or UDP
Min IP/s	This selects the minimum number of IP packets per second.	0, 3 to 99999
TOS (Type Of Service)	This sets the quality of service.	0 to 255
TTL (Time To Live)	This sets the hop limit of the packet's lifespan.	0 to 255
DestAddr	Enter the unicast (valid host IP only) or multicast destination IP address.	Unicast: valid host IP  Multicast: IP in range of 224.0.0.0 to 239.0.0.0  <b>Note:</b> It is not recommended that you use multicast IP addresses reserved by the Internet Assigned Numbers Authority (IANA).

Menu Item	Description	Parameters
UDPPort	This selects the destination port number.	1 to 65534 <b>Note:</b> If you selected RTP for MOIP, you must select an even destination port number. <b>Note:</b> It is not recommended that you use destination UDP ports reserved by the IANA.
SrcPort	This selects the source UDP port number.	0 to 65535 <b>Note:</b> Set the <b>SrcPort</b> to 0 to use the default source UDP port (49162).
Send SAP	This selects whether to send Session Announcement Protocol messages.	None or RFC2327
SAP Multicast Address	This is the IP address where the SAP announcements are sent, if required.	It is not recommended that you change the default IP address (224.2.127.254).
SAP Port	This is the UDP port where the SAP announcements are sent, if required.	1 to 65534 <b>Note:</b> It is not recommended that you change the default SAP port 9875.
SAP ID	Describes the SAP output stream name source.	User String or SDT Channel
SAP User Str	Provides the SAP user string.	Up to 31 characters
FEC	Select the error protection profile.  For more information, see <i>Configuring Forward Error Correction Settings</i> (on page 210).	1D - Requires generation of one FEC protecting stream: columns. 2D - Requires generation of two FEC protecting streams: columns and rows. None - Disables the error protection. <b>Note:</b> For more information, see SMPTE 2022-1-2007.
FEC1 UDP	Enter the destination UDP port number of the columns FEC stream.	2 to 65534, even number only
FEC2 UDP	Enter the destination UDP port number of the rows FEC stream.	2 to 65534, even number only
FEC Columns (L)	Set the spacing between non-consecutive packets used to calculate the FEC packet.	1 to 20

Menu Item	Description	Parameters
FEC Rows (D)	Set the depth of the FEC matrix.	4 to 20

### TS Out - DPM

To view the DPM menu from the TS Out menu, press the **RIGHT** arrow key. The DPM menu provides access to functionality associated with Global, ASI, and MOIP outputs.

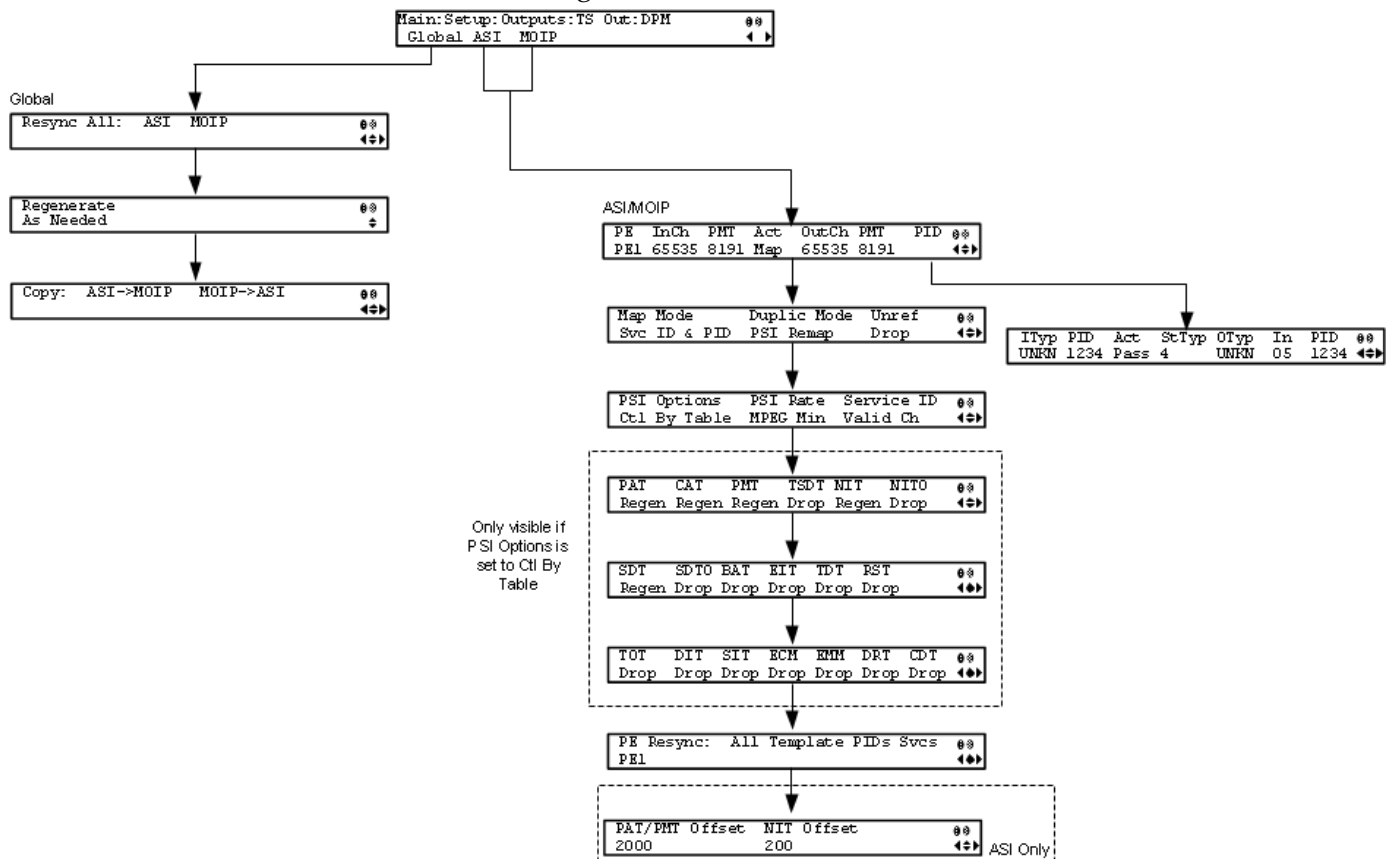
The DPM menu allows you to groom functionality on a program basis where individual service PID modifications are provided on a limited scale.

Use the digital program mapping features to:

- configure the transport output bit rate
- configure the output mode for a program entry
- configure the service and PID output settings in a program entry

**Note:** Any changes made to the ASI/MOIP DPM values will automatically change the **Config Type** to **Edited by User**.

The DPM menu has the following structure:



## DPM - Global

Menu Item	Description	Parameters
Resync All:	Select to resynchronize all DPM output with the PMT data for all program entries on the selected output.	ASI
Regenerate	Selects whether to regenerate the PSI tables in the output.	Always or As Needed Always - All tables are regenerated. As Needed - Only regenerate the tables if the content has changed.
Copy:	This copies all DPM data from either the ASI output to the MOIP output (MPEG over IP) or from the MOIP output to the ASI output depending on your selection.	ASI->MOIP or MOIP->ASI

## DPM - ASI/MOIP

Menu Item	Description	Parameters
PE	Select the Program Entry to configure.	1 to 32
InCh	Displays the channel number to which the PE is tuned. This is read-only.	1 to 65535
PMT	Indicates the input PID value of the Program Map Table for the current channel. This is read-only.	2 to 8190

Menu Item	Description	Parameters
Act	<p>Selects the action to perform on the current program entry.</p> <p>This setting controls the overall DPM behavior of the PE and will affect how the PID mapping operates.</p>	<p>Pass (default) - Output channel is the same as the input channel. The OutCh, and PMT settings are ignored. All PID map entries are ignored except for entries that explicitly drop a service.</p> <p>Map - The output channel is mapped to the OutCh and PMT settings. Only services which have entries in the PID map are available on the output. These services will appear in the PMT even if the stream is not present.</p> <p><b>Note:</b> If the PE is mapped, it uses the last valid input. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.</p> <p>Drop - The current channel is not sent to the output and its PMT is removed from the output. The OutCh, PMT, and PID map entries are ignored.</p>
OutCh	<p>If mapping the current PE (Act was set to Map), set the output channel number for the current program.</p>	<p>1 to 65535</p>
PMT	<p>If mapping the current PE (Act is set to Map), set the output PID of the PMT.</p>	<p>2 to 8190</p>
PID	<p>Press Select to view and configure the PID map. The PID map is used to map input services to output PIDs. For more information, see <i>PID Map Menu</i> (on page 111).</p>	
Map Mode	<p>Select the DPM mapping mode for the current output.</p>	<p>Svc ID - The elementary PIDs are not changed. Channels are remapped by changing their PSI references. When this mode is selected, PID mapping in the PID Map menu is ignored.</p> <p>Svc ID &amp; PID - Channels and the elementary service PIDs can be mapped using the PID Map menu.</p>

Menu Item	Description	Parameters
Duplic Mode	Select how to handle duplicate programs. This setting is only used if the Map Mode menu is set to Svc ID & PID.	<p>PSI Remap - Every input PID can be mapped to only one output PID. If PID mapping conflicts exist, DPM will use the Precedence Rule to decide which output PID to use. All PMTs using the input PID will be updated to reference the output PID specified by the winner.</p> <p>Pkt Copy - An input PID can be mapped to multiple output PIDs. The PID will be duplicated as many times as needed (up to a certain hardware limitation).</p> <p><b>Note:</b> This may increase the output bandwidth of the stream.</p> <p>Pkt Copy is recommended for most applications.</p>
Unref	Select the action to use for unreferenced content. Unreferenced content is the remainder of the transport stream that is not filtered by the program entries.	<p>Drop, Pass, or Mode-i</p> <p>Drop - All unreferenced content is dropped.</p> <p>Pass - All unreferenced content is passed to the output unchanged.</p> <p>Mode-i - This is a customer-specific mode, only to be used if directed by Cisco. For more information, contact Cisco customer support.</p>
PSI Options	<p>Select the action to perform on the PSI tables for the output stream.</p> <p><b>Note:</b> The table menus (PAT, CAT, PMT, TSDT, NIT, NITO, SDT, SDTO, BAT, EIT, TDT, RST, TOT, DIT, SIT, ECM, EMM, DRT, CDT) will only appear if you select Ctl by Table.</p>	<p>Pass All - Transmits the incoming PSI Tables as is; does not modify the content and rate. The PSI Rate and table settings are ignored.</p> <p>Drop All - Does not transmit any PSI Tables. The PSI Rate and table settings are ignored.</p> <p>Ctl by Table - Configure the table specific output mode for each table.</p>

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
PSI Rate	If the PSI Options was set to Ctrl by Table, select the regeneration rate for those PSI tables being regenerated.	<p>Auto - Matches the generated PSI tables' output rate to the incoming rate.</p> <p>MPEG Min - Transmits the generated PSI tables on the longest intervals that are allowed by MPEG standard.</p> <p>SA Std - Transmits the generated PSI tables based on PowerVu standard intervals.</p>
Service ID	Select whether the receiver should always generate PSI tables for the Mapped PE even if the selected input channel is not available, or for only valid service channels/IDs.	<p>Valid Ch - Only transmits the PSI tables for the mapped program if the program exists on the input stream.</p> <p>All Ch - Transmits the PSI tables for the mapped program even if the program does not exist in the input stream.</p> <p>All Ch is only valid if the PAT, NIT, SDT and PMT are set to Regenerate.</p>
PAT, CAT, PMT, TSDT, NIT, NITO, SDT, SDTO, BAT, EIT, TDT, RST, TOT, DIT, SIT, ECM, EMM, DRT, CDT	<p>Selects the tables which will be passed, dropped, regenerated, or passed with rate control (PwRC) from the output. For more information, see <i>PSI Table Settings</i> (on page 112).</p> <p><b>Note:</b> The table settings are only available if you selected Ctrl by Table in the PSI Options menu.</p>	
PE Resync: All, Template, PIDs, Svcs	Each PE output can be synchronized to its input according to one of four output modes. For information on synchronizing output services, see <i>Synchronizing Output Services</i> (on page 115).	<p>Svcs - Map the input to the output based on the services only.</p> <p>PIDS - Map the input to the output based on the PIDs only.</p> <p>All - Map the input to the output based on the PIDs and services</p> <p>Template - Map the input to a fixed template output.</p>
PAT/PMT Offset	This is a customer-specific mode, only to be used if directed by Cisco. For more information, contact Cisco customer support.	



Menu Item	Description	Parameters
NIT Offset	This is a customer-specific mode, only to be used if directed by Cisco. For more information, contact Cisco customer support.	

### PID Map Menu

This menu allows the PID Map to be configured. The PID map is used to map input services to output PIDs.

If the PE action is Pass, or PE action is Map and Map Mode is Svc ID, only entries which drop a service are applied and all other services are passed through. If the PE action is Map and Map Mode is Svc ID & PID, all entries are applied. Any services not mapped by an entry will be dropped.

Press up and down to scroll through the PID map entries. Press **ADV** to insert or delete entries from the PID map. After inserting an entry, specify the service using OutType and In, and set the desired Action. If the action is Map, select the output PID value as well. Then press **APPLY** and save the settings to see the selected input service that will follow that mapping.

Menu Item	Description	Parameters
ITyp	Displays the input service that will be mapped by the current entry. This value is read-only and for reference purposes.	
PID	Displays the input PID that will be mapped by the current entry. This value is read-only and for reference purposes.	1 to 8190
Act	Select the action to perform on the current PID.  The Drop action is always performed, but the Map option is only applied if the PE action is Map and the Map Mode is Svc ID & PID.	Map - The service selected by the OutType and Instance will be mapped to the specified PID. This is only applied if the PE action is Map and the Map Mode is Svc ID & PID.  Drop - The service selected by the OutType and Instance will be removed from the PMT and the output stream.
StTyp	Enter the stream type to map within a PE to a specified PID.	0 to 255

## Chapter 4 Front Panel Operation

Menu Item	Description	Parameters
OTyp	Select the service to configure. If an input service matches this type and instance specified by In, then the Action will be applied.	UNKN, ETV, CDT, LSDT, DATA, TTX, MPE, DPI, VBI, SUBT, AUD, VID, PCR or INVL
In	Select the instance of the service specified by OutType to configure. If an input service matches this type and instance, then the Action will be applied.	1 to 64
PID	If mapping this PID (Act is set to Map), select the output PID number.	1 to 8190

### PSI Table Settings

**Note:** The table settings are only available if you selected Ctl by Table in the PSI Options menu.

Setting	Mode Options	Description	Default
PAT	Pass, Drop, Regen	Program Association Table	Pass
CAT	Pass, Drop, Regen	Conditional Access Table	Pass
PMT	Pass, Drop, Regen	Program Map Table	Pass
TSDT	Pass, Drop	Transport Stream Description Table	Pass
NIT	Pass, Drop, Regen, PwRC	Network Information Table	Pass
NITO	Pass, Drop, PwRC	Network Information Table - Other	Pass
SDT	Pass, Drop, Regen, PwRC	Service Description Table	Pass
SDTO	Pass, Drop, PwRC	Service Description Table - Other	Pass
BAT	Pass, Drop, PwRC	Bouquet Association Table	Pass
EIT	Pass, Drop	Event Information Table	Pass
TDT	Pass, Drop	Time and Date Table	Pass
RST	Pass, Drop	Running Status Table	Pass
TOT	Pass, Drop	Time Offset Table	Pass

Setting	Mode Options	Description	Default
DIT	Pass, Drop	Discontinuity Information Table	Pass
SIT	Pass, Drop	Selection Information Table	Pass
ECM	Pass, Drop	Entitlement Control Message	Pass
EMM	Pass, Drop	Entitlement Management Message	Pass
DRT	Pass, Drop	Disaster Recovery Table	Pass
CDT	Pass, Drop	Code Download Table	Pass

**Note:** The CDT is different from the other tables listed because the CDT is referred to within the PMT, rather than outside the PMT. Select **Pass** to permit the output of CDTs following the configured DPM PID map configuration and all other DPM constraints. If a DPM PID map has not been configured for the CDT PID and the PE Act is set to Map, the CDT will still not output. Select **Drop** to override the DPM PID map configuration for CDT PIDs and to always drop all CDTs.

#### Setting Up Digital Program Mapping (DPM)

- 1 Verify that you are receiving a valid signal and that you have set up the channels that you want to pass, drop or map.
- 2 Go to the Setup: Outputs, TS Out: DPM: Global menu and select **Resync All** for the selected ASI output. This copies the input services PIDs to the remapped output service PIDs.
- 3 Go to Setup: Outputs: TS Out: DPM: ASI, and select the PE containing the channel you want to configure.
- 4 Set the **Act** for the selected PMT to either **Pass**, **Drop**, or **Map** depending on the action desired.

A program can be set to one of three output modes, either Drop, Pass or Map.

LCD Setting	Description
Drop	Removes the service and its associated PMT reference from the transport output.
Pass	Permits the source content and PMT reference to appear in the transport output with the same references.
Map	Provides the flexibility to define all the outgoing PID numbers for the PE, including those not currently on transmission.

- 5 Use the **RIGHT** arrow key to move to the right and select PID to display the detailed menu level.

## Chapter 4 Front Panel Operation

- Configure the input to output channel mapping. Video and PCR (Program Clock Reference) can be output on the same PID or different PIDs. If output on the same PID, they will appear identical to the input.

**Note:** If the parameters cannot be saved, the problem may be that the incorrect Map Mode has been selected. Ensure that Svc ID & PID is selected when remapping PIDs, otherwise a message such as “Bad configuration data” will be displayed and you will need to change the parameters to obtain the correct output.

- Go to Setup: Outputs, TS Out: ASI, and set the **Output Mode** to **Full DPM Control**. Also, if necessary set the Descramble Mode according to whether the program is to be Scrambled or Descrambled for downstream viewing/monitoring.
- On the same menu, set the following parameters:

Parameter	Description
Map Mode	Svc ID & PID
Duplic Mode	Pkt Copy
Unref	Drop
PSI Options	Ctl By Table
PSI Rate	Any
Svc ID	Any

- Set the table parameters as follows:

Parameter	Description
PAT	Regen
CAT	Regen
PMT	Regen
TSDT	Drop
NIT	Regen or Drop
NITO	Drop
SDT	Regen
SDTO	Drop
BAT	Drop
EIT	Drop
TDT	Pass
RST	Pass
TOT	Pass
DIT	Pass

Parameter	Description
SIT	Pass
ECM	Drop
EMM	Drop
DRT	Drop
CDT	Drop

- 10** Press **MENU** three times to exit the TS Out menu and save the data. If the changes cannot be saved/made, a message will be displayed indicating "Bad configuration data". The following options are available: Abandon, Exit or Return. Select Return to re-enter the parameter.

**Note:** When remapping an input program channel to an output channel, ensure that the PIDs are mapped to different PIDs to avoid PID collisions.

#### Synchronizing Output Services

To synchronize the output to the input Services Only:

This operation synchronizes the inputs to the outputs according to the service assignments only. This is useful when you already have PID assignments set for the services but want to ensure that the services are mapped correctly.

- 1 On the DPM menu, map the output services as desired.
- 2 Select PE Resync: Svcs. The receiver will synchronize the PE output according to the available input services only, and ignore the input to output service PID mapping.

To synchronize the output to the input PIDs only:

This operation synchronizes the inputs to the outputs according to the PID assignments only. This is useful when you already have the services set up but want to synchronize to the incoming PIDs.

- 1 On the DPM menu, map the output services as desired.
- 2 Select PE Resync: PIDs. The receiver will synchronize the PE output according to the input PIDs only, and ignore the service assignment categories/names.

To synchronize the output to All (Services and PIDs):

This operation synchronizes the inputs to the outputs of the current PMT according to the service assignments and then the PID assignments. This is similar to a sample and hold function.

- 1 On the Detailed Program Mapping Active menu, map the outputs services as desired.
- 2 Select PE Resync: All. The receiver will synchronize the PE output according to the services and then the PIDs assigned to each service.

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To synchronize the output to a Template:

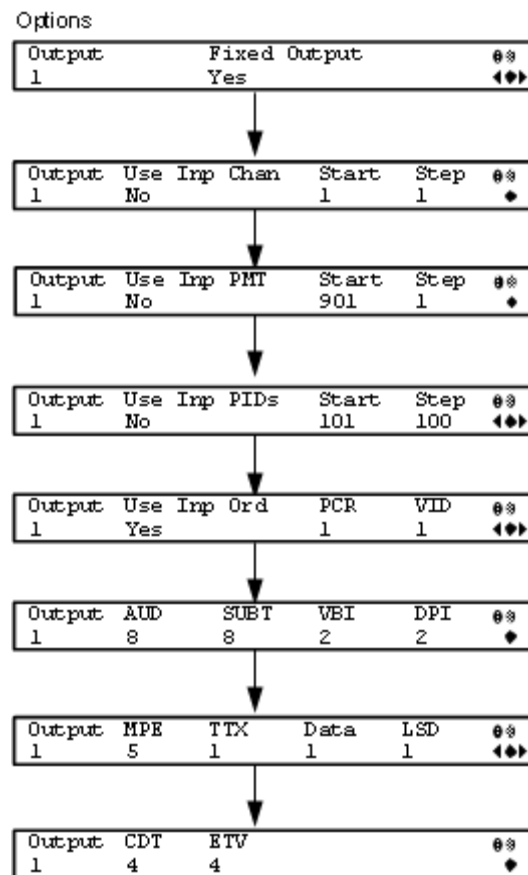
Using a template allows you to preset the input to output mapping of a PE according to the preset template. This is helpful in pre-configuring any number of PEs for future use.

### TS Out - Options

To view the **Options** menu from the TS Out menu, press the **RIGHT** arrow key four times.

The **Options** menu allows you to configure auto synchronization and fixed output options for the MPEG over IP and ASI outputs.

The Options menu has the following structure:



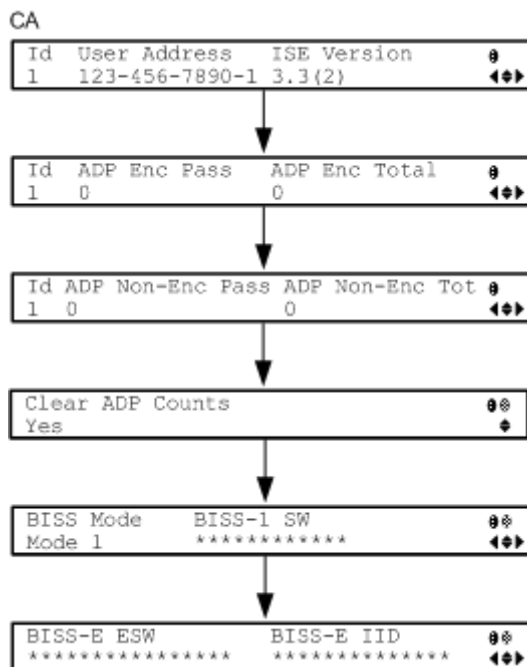
Menu Item	Description	Parameters
Output	Select 1 to configure the ASI output or select 2 to configure the MPEG over IP output.	1 or 2

Menu Item	Description	Parameters
Fixed Output	Sets whether the DPM assigns new values for all the output channels and PIDs according to the options below when you Resynchronize All.	Yes or No
Use Inp Chan/PMT/PIDs	Set to <b>Yes</b> to use the input channel numbers, PMT PID numbers, and/or ES PID numbers. Otherwise, set to <b>No</b> to use the <b>Start</b> channel and channel <b>Step</b> assigned below.	Yes or No
Start	First PE channel to use if the Use Inp Chan/PMT/PIDs is set to <b>No</b> .	1 to 65535 for Use Inp Chan 1 to 8192 for Use Inp PMT/PIDs
Step	Offset of the subsequent PE channel, PE PMT PID, or first ES PID of subsequent channel numbers.	1 to 65535 for Use Inp Chan 1 to 8192 for Use Inp PMT/PIDs
Use Inp Ord	Set to <b>Yes</b> to assign the ES PID according to the incoming PMT order. Otherwise, set to No to use reserved PIDs defined below.	Yes or No
PCR, VID, AUD, SUBT, VBI, DPI, MPE, TTX, Data, LSD, CDT, ETV	Set the number of PIDs for the specified streams in one channel.	1 to 64

## Setup Menu: CA

To view the CA menu from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key six times and the **SELECT** key to view the CA menu.

The CA menu provides information about the ISE, the status of the ADP transmission, and allows you to set the BISS mode and session words available from your service provider. The CA menu has the following structure:



Menu Item	Description	Parameters
Id	Select the ISE to configure.	1 to 32
User Address	Indicates the ISE User Address.	11 digit address in the following format: ###-###-####-#
ISE Version	Indicates the ISE version number.	7 characters
ADP Enc Pass	Indicates the number of encrypted Addressable Data Packets successfully processed. Ideally, the ADP Enc Pass and ADP Enc Total numbers should be identical.	



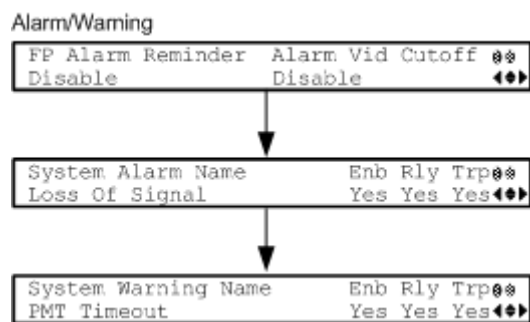
Menu Item	Description	Parameters
ADP Enc Tot	Indicates the total number of encrypted Addressable Data Packets received. Ideally, the ADP Enc Pass and ADP Enc Total numbers should be identical.	
ADP Non-Enc Pass	Indicates the number of non-encrypted Addressable Data Packets successfully processed. Ideally, the ADP Non-Enc Pass and ADP Non-Enc Total numbers should be identical.	
ADP Non-Enc Total	Indicates the total number of non-encrypted Addressable Data Packets received. Ideally, the ADP Non-Enc Pass and ADP Non-Enc Total numbers should be identical.	
Clear ADP Counts	Select to clear the Addressable Data Packet counters: ADP Enc Pass, ADP Enc Total, ADP Non- Enc Pass and ADP Non-Enc Total. These values are also reset whenever the receiver is turned on, reset or power-cycled.	
BISS Mode	Sets the Basic Interoperable Scrambling System (BISS) mode for the receiver. All channels assigned to a PE identified as BISS CA-controlled in the PMT will be decrypted.	Mode 1 or Mode E
BISS-1 SW	If BISS Mode is Mode 1, enter the session word.	12-character password. Once entered, it cannot be viewed and it is only displayed as asterisks (*). Contact your program provider for the session word.
BISS-E ESW	If BISS Mode is Mode E, enter the encrypted session word.	16-character password. Once entered, it cannot be viewed and it is only displayed as asterisks (*). Contact your program provider for the session word.

Menu Item	Description	Parameters
BISS-E IID	If BISS Mode is Mode E, enter the injected ID.	14-character password. Once entered, it cannot be viewed and it is only displayed as asterisks (*).  Contact your program provider for the session word.

## Setup Menu: Alarm/Warning

To view the Alarm/Warning menu from the Main menu, press the **RIGHT** arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key seven times and the **SELECT** key to view the Alarm/Warning menu.

The Alarm/Warning menu allows you to browse the active alarms and warnings, and set whether the output will be disabled in the event of an alarm. This menu has the following structure:



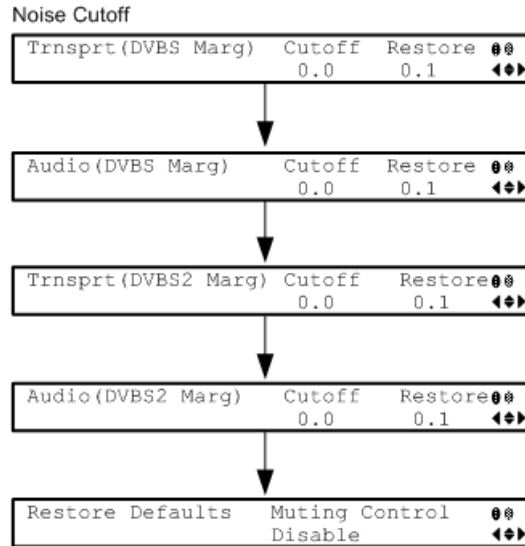
Menu Item	Description	Parameters
FP Alarm Reminder	Select whether to display alarms and warnings on the front panel. The alarm indicator will intermittently flash in the lower line, if enabled.	Enable or Disable
Alarm Vid Cutoff	Select whether the video output is cut off if any enabled alarm is active on the receiver. When video is cut off, there will be no horizontal or vertical synchronization on the output. This is useful for downstream redundancy switching by detecting a loss of video signal.  <b>Note:</b> This function also exists under Setup: Services: Video.	Enable or Disable  The default is Disable.

Menu Item	Description	Parameters
System Alarm/Warning Name	Displays the alarm or warning to configure.	
Enb	Select whether the current alarm is enabled or disabled. If the alarm is disabled, the Rly and Trp settings are ignored	Yes or No
Rly	If the current alarm or warning is enabled (Enb is set to Yes), select whether it will trigger the rear panel relay when the alarm is set or cleared.	Yes or No <b>Note:</b> No is a read only value that indicates the setting is Yes, but is currently being suppressed because the alarm or warning is disabled (Enb is set to No).
Trp	If the current alarm or warning is enabled (Enb is set to Yes), select whether it will send SNMP trap messages when the alarm is set or cleared.	Yes or No <b>Note:</b> No is a read only value that indicates the setting is Yes, but is currently being suppressed because the alarm or warning is disabled (Enb is set to No).

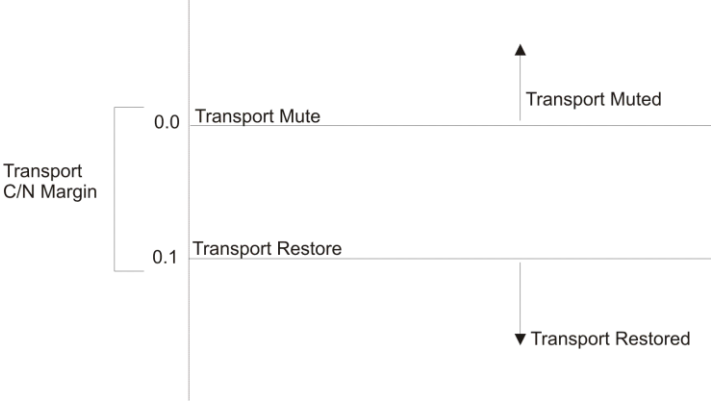

## Setup Menu: Noise Cutoffs

To view the Noise Cutoffs menu from the Main menu, press the **RIGHT** Arrow key once and then the **SELECT** key to reach the Setup menu. Then press the **RIGHT** arrow key eight times and the **SELECT** key to view the Noise Cutoffs menu.

The Noise Cutoffs menu allows you to set the muting thresholds for both audio and video in the event of a noisy signal. This menu has the following structure:



Menu Item	Description	Parameters
Trnsprt(DVBS Marg) Cutoff Trnsprt(DVBS2 Marg) Cutoff	Sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, below the transport outputs that will be muted.  The receiver uses these thresholds to determine when to mute the transport in the event of a noisy signal, poor, or loss of signal condition.	-30.0 to 30.0  This setting must be below the respective Restore value.  The default is 0.0.  <b>Note:</b> Muting Control must be set to Enable for these settings to be active.
Trnsprt(DVBS Marg) Restore Trnsprt(DVBS2 Marg) Restore	Sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, above the transport outputs that will be muted.  The receiver uses these thresholds to determine when to restore the transport after it has been muted.	-30.0 to 30.0  This setting must be above the respective Cutoff value.  The default is 0.1.  <b>Note:</b> Muting Control must be set to Enable for these settings to be active.

Menu Item	Description	Parameters
	<p>The following displays the Transport Default C/N Margin Relationship</p> 	
<p>Audio(DVBS Marg) Cutoff Audio(DVBS2 Marg) Cutoff</p>	<p>Sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, below the audio outputs that will be muted.</p> <p>The receiver uses these thresholds to determine when to mute the audio in the event of a noisy, poor, or loss of signal condition.</p>	<p>-30.0 to 30.0</p> <p>This setting must be below the respective Restore value.</p> <p>The default is 0.0.</p> <p><b>Note:</b> Muting Control must be set to Enable for these settings to be active.</p>
<p>Audio(DVBS Marg) Restore Audio(DVBS2 Marg) Restore</p>	<p>Sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, above the audio outputs that will be restored.</p> <p>The receiver uses these thresholds to determine when to restore the audio after it has been muted.</p>	<p>-30.0 to 30.0</p> <p>This setting must be below the respective Cutoff value.</p> <p>The default is 0.1.</p> <p><b>Note:</b> Muting Control must be set to Enable for these settings to be active.</p>
	<p>The following displays the Audio Default C/N Margin Relationship</p> 	

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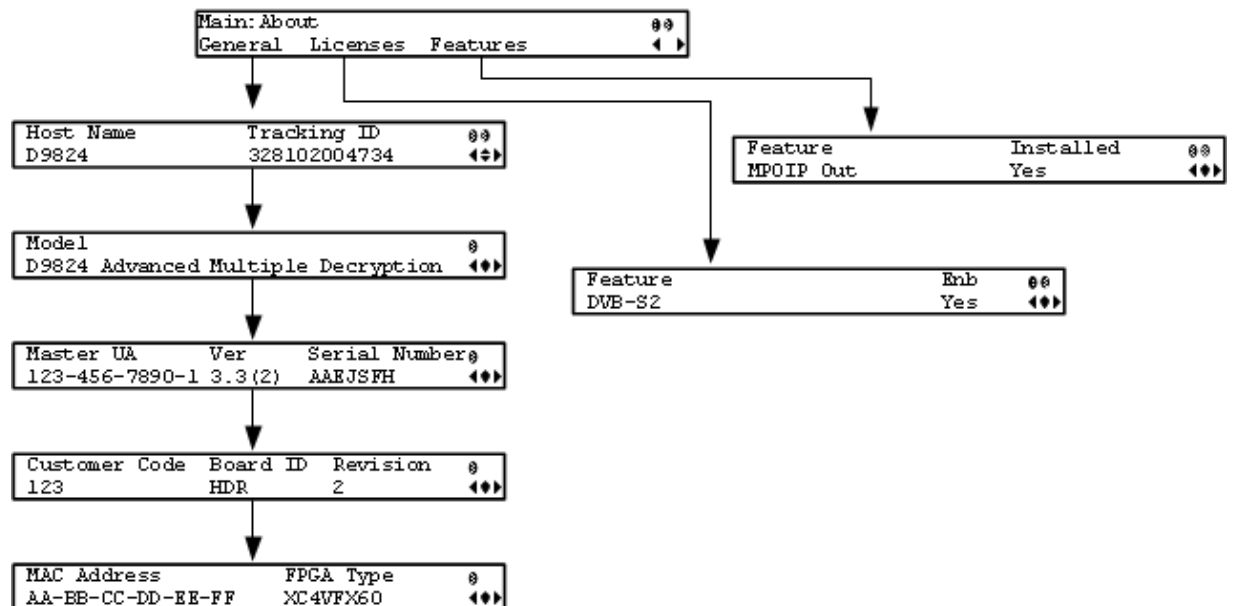
<b>Menu Item</b>	<b>Description</b>	<b>Parameters</b>
Restore Defaults	Select to restore the default muting thresholds.	
Muting Control	Select whether to enable or disable muting cutoffs.  If disabled, all the other settings are ignored.	Enable or Disable.  The default is Enable.

## About Menu

To view the About menu from the Main menu press the **RIGHT** arrow key two times and then the **SELECT** key.

The About menu provides basic hardware information that is useful when requesting customer support from Cisco.

Each parameter is described below. The About menu has the following structure:



### General

Menu Item	Description
Host Name	Sets the host name of the current unit. It is a user configurable name that appears on the Web Interface title to identify the receiver.
Tracking ID	Displays the unique Tracking ID number that identifies the product version. This is read-only.
Model	Indicates the model number and name of the receiver. This is read-only.
Master UA	Indicates the Master User Address (UA), which is required to request program authorization from the uplink. This is read-only.
Ver	Indicates the version number of the ISE.
Serial Number	Indicates the unique device serial number.
Customer Code	Indicates the unique Customer Code assigned to an organization by Cisco.
Board ID	Indicates the hardware board design identification.

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Menu Item	Description
Revision	Indicates the revision number of the board design.
MAC Address	Indicates the MAC address of the Control Port Ethernet interface.
FPGA Type	Indicates the FPGA type and number information.

### Licenses

Menu Item	Description	Parameters
Feature	Displays a list of software licenses for the D9824 Advanced Multi Decryption Receiver. Press up and down to scroll through the list of features.	HD Decode, H.264 Decode, DVB-S2, or MPEGoIP Out
Enb	Indicates whether the selected software feature is licensed and enabled.	Yes or No

### Features

Menu Item	Description	Parameters
Feature	Displays a list of hardware options for the D9824 Advanced Multi Decryption Receiver. Press up and down to scroll through the list of options.	MPOIP In, MPOIP Out, MPOIP SPTS, MPOIP FEC, or Firewall Ver
Installed	Indicates whether the selected hardware option is installed.	Yes or No

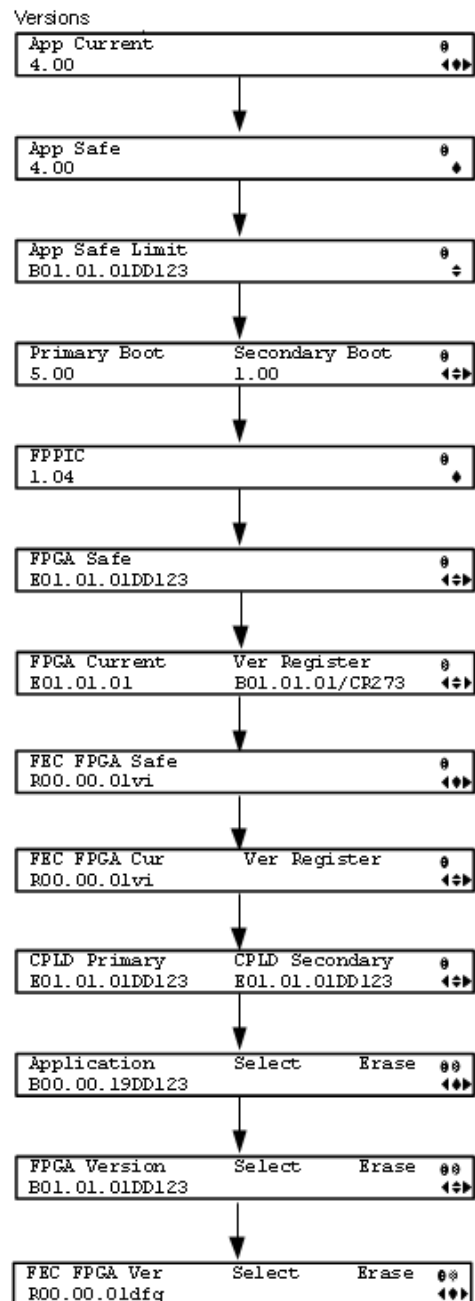


## Versions Menu

To view the Versions menu from the Main menu, press the **RIGHT** arrow key three times and then the **SELECT** key.

The Versions menu provides basic software information that is useful when requesting customer support from Cisco.

The menu has the following structure:



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Menu Item	Description
App Current	Indicates the version of the current application.
App Safe	Indicates the version of the factory loaded safe application.
App Safe Limit	Indicates the version of the oldest application that can be installed on the current unit. If this value is zero, the oldest application limit is the App Safe version. If this is greater than zero, the shown value or older and the App Safe version is the limit. Older applications will not be installed.
Primary Boot/Secondary Boot	Indicates the versions of the primary and secondary processors' boot code.
FPPIC	Indicates the version of the front panel PIC microcontroller.
FPGA Safe	Indicates the version of the factory loaded safe Field Programmable Gate Array (FPGA) code.
FPGA Current	Indicates the version of the current Field Programmable Gate Array (FPGA) code.
Ver Register	Indicates the version of FPGA code read from the FPGA.
FEC FPGA Safe	Indicates the version of the factory loaded safe FEC FPGA code.
FEC FPGA Cur	Indicates the version of the current loaded safe FEC FPGA code.
Ver Register	This is not supported in the current release.
CPLD Primary, CPLD Secondary	Indicates the versions of the current primary and secondary Complex Programmable Logic Device (CPLD).
Application, Select, Erase	<p>Application - Select between all versions of the application loaded on the current unit.</p> <p>Select - Select and then scroll to Yes to reboot the unit and load the selected application. You will be prompted to continue or abort this operation.</p> <p><b>Note:</b> Selecting an application will cause the unit to reboot and interrupt service.</p> <p>Erase - Select to erase the selected application. You will be prompted to continue or abort this operation. You cannot erase the safe application or the current application. While an application is being erased, the busy indicator will appear. You cannot erase another application until it is complete.</p>

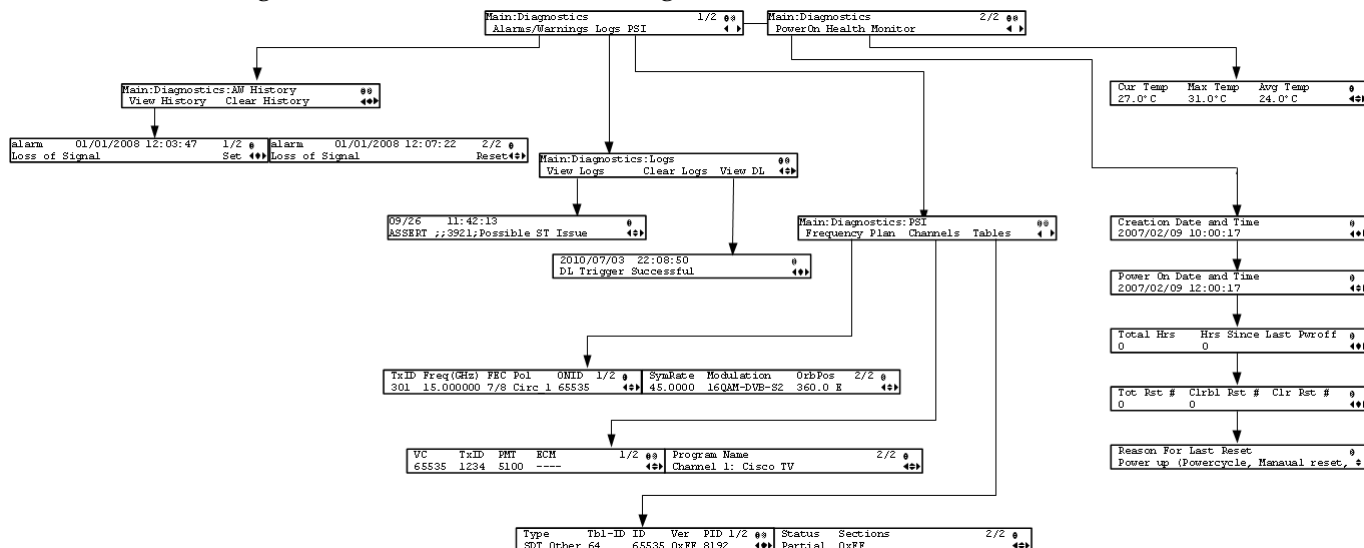
Menu Item	Description
FPGA Version, Select, Erase	<p>FPGA Version - Select between all versions of the FPGA code loaded on the current unit.</p> <p>Select - Select and then scroll to Yes to reboot the unit and load the selected FPGA code. You will be prompted to continue or abort this operation.</p> <p><b>Note:</b> Selecting an FPGA code will cause the unit to reboot and interrupt service.</p> <p>Erase - Select to erase the selected FPGA code. You will be prompted to continue or abort this operation. You cannot erase the safe FPGA code or the current FPGA code. While an FPGA code is being erased, the busy indicator will appear. You cannot erase another FPGA code until it is complete.</p>
FEC FPGA Ver	<p>FEC FPGA Ver - Select between all the versions of the FEC FPGA code loaded on the current unit.</p> <p>Select - Select and then scroll to Yes to reboot the unit and load the selected FEC FPGA code. You will be prompted to continue or abort this operation.</p> <p><b>Note:</b> Selecting an FEC FPGA code will cause the unit to reboot and interrupt service.</p> <p>Erase - Select to erase the selected FEC FPGA code. You will be prompted to continue or abort this operation. You cannot erase the safe FEC FPGA code or the current FEC FPGA code. While an FEC FPGA code is being erased, the busy indicator will appear. You cannot erase another FEC FPGA code until it is complete.</p>

## Diagnostics Menu

To view the Diagnostics menus from the Main menu, press the **RIGHT** arrow key four times and then the **SELECT** key.

For instructions on how to select and store settings, see *About the Front Panel* (on page 32).

The Diagnostics menu has the following structure:



## Alarms/Warnings

Menu Item	Description
View History	Select to view the system event messages. Press the UP and DOWN arrow keys to scroll through the list of alarms and warnings. Press the LEFT and RIGHT arrow keys to view the set and reset times. Press the INFO key to view the detailed message.
Clear History	Select to clear any existing history information.

## Logs

Menu Item	Description
View Logs	Select to view the system log messages. Press the UP and DOWN arrow keys to scroll through the list of log messages. Press the INFO key and then UP and DOWN arrow keys to view the complete message text.
Clear Logs	Select to clear any existing log history information.

Menu Item	Description
View DL	Select to view the system download history messages. Press the <b>UP</b> and <b>DOWN</b> arrow keys to scroll through the list of downloaded messages. Press the <b>INFO</b> key and then <b>UP</b> and <b>DOWN</b> arrow keys to view the complete message text.

## PSI - Frequency Plan

This is the Frequency Plan sub-menu. You cannot make any changes here, but you can view the available frequency plans stored in the receiver. Press the **UP** and **DOWN** arrow keys to scroll through the list of available transports.

Menu Item	Description	Parameters
TxID	Transport ID	
Freq(GHz)	Downlink Frequency (GHz)	0.0 to 15.0 GHz
FEC	Forward Error Correction inner code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8, 8/9, or 9/10
Pol	Polarity of the received signal (H, V, or Off)	Horiz (Horizontal), Vert (Vertical), Circ_l (Left Circular), or Circ_r (Right Circular).
ONID	Original Network ID	
SymRate	Symbol Rate, in Mbps	
Modulation	Modulation of the signal	QPSK DVB-S, QPSK DVB-S2, 8PSK DVB-S2 or 16QAM DVB-S2
OrbPos	Orbital Position of the satellite (in degrees)	East or West

## PSI - Channels

This is the Virtual Channel sub-menu. You cannot make any changes here, but you can view the available channels and their settings. Press the **UP** and **DOWN** arrow keys to scroll through the list of channels.

Menu Item	Description
VC	Virtual channel number.
TxID	Identification number of the transport on which the channel is available. For more information on the transport streams, see <i>PSI - Frequency Plan</i> (on page 131).
PMT	PID of the channel's Program Map Table. It is displayed as ---- if unavailable.

## Chapter 4 Front Panel Operation

ECM	PID of the channel's Entitlement Control Message stream. It is displayed as ---- if unavailable or not scrambled.
Program Name	Name of the channel.

## PSI - Tables

This is the Tables received sub-menu. You cannot make any changes here, but you can view the PSI tables received and their settings. Press the **UP** and **DOWN** arrow keys to scroll through the list of tables.

Menu Item	Description	Parameters
Type	The MPEG table acronym.	PAT, CAT, PMT, TSDT, NIT, NIT Other, SDT, SDT Other, BAT, AEIT P/F, OEIT P/F, TDT, RST, ST, TOT, DIT, SIT, ECM Odd, ECM Even, EMM, MPE, DPI, DRI, CDT, MCT, MIT, MAT, ECT, or Invalid Table ID
Tbl-ID	Unique Table ID.	
ID	MPEG/DVB Table ID.	
Ver	Table Version number.	
PID	Value of the PID on which the table is present.	
Status	Reception status of the table.	None, Partial, Full, Update, Timeout, or Lost
Sections	Number of sections in the table.	

## Power On

Menu Item	Description
Creation Date and Time	Displays the date and time the current unit was manufactured.
Power On Date and Time	Displays the date and time the current unit was last powered up, in relation to the current local time.
Total Hrs	Displays the total number of hours the current unit has been running since being manufactured.
Hrs Since Last Pwroff	Displays the number of hours the current unit has been running since the last power up.

## Diagnostics Menu

Menu Item	Description
Tot Rst #,	Displays the total number of times the current unit has been reset since it was manufactured.
Clrbl Rst #	Displays the number of times the unit has been reset since the clearable reset counter was last cleared.
Clr Rst #	Select this option to clear/reset the Clrbl Rst # counter to 0.
Reason For Last Reset	Displays the reason for the last reset.

## Health Monitor

Menu Item	Description	Parameters
Cur Temp, Max Temp, Avg Temp	Displays the current (Cur Temp), maximum (Max Temp) and the average (Avg Temp) operating temperature.	Degrees Celsius





# 5

## Web GUI Setup and Monitoring

### Introduction

This chapter describes how to set up the D9824 Advanced Multi Decryption Receiver using the Web GUI.

### In This Chapter

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■ D9824 Menus .....	140
■ D9824 Web GUI Environment .....	142
■ Setting up Input Information .....	143
■ Setting up Audio and Video Information .....	176
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## Logging On to the Web Interface

- 1 Open a web browser.
- 2 Type the IP address of the D9824 Advanced Multi Decryption Receiver in the Address bar and press **Enter**.



- 3 In the **Username** and **Password** fields, enter the username and password.  
**Note:** The username and password are case-sensitive. The default username is **admin** and the default password is **localadmin**. If you have forgotten your username and password, you can reset them from the front panel menu of the D9824 Advanced Multi Decryption Receiver. For more information, see *Resetting the Login Credentials* (on page 29).  
**Important:** The password and user name will be remembered for the whole of the web session. Close the web browser if you want to prevent others from accessing the settings of the D9824 Advanced Multi Decryption Receiver.  
If your session expires, you must refresh the browser and log back in.
- 4 Click **Log In**.  
**Note:** If you check the **Remember username** check box, the user name will be remembered the next time you log into the web GUI.

## D9824 Summary Overview

Proceed as follows to access an overview of the main D9824 Advanced Multiple Decryption Receiver settings:

From the user interface of the D9824, click **Summary**. The Summary Dashboard page is displayed.

The screenshot shows the D9824 Summary Dashboard with the following data:

Parameter	Value
Channel Name	
Channel Number	2
PMT	8192
PCR	8192
PVBER	N/A

Parameter	Value
Video	Unknown
Bit Rate(Mbps)	0.0
3:2 Pulldown	Yes
FPS	0.025
Primary Out	HD1080i
Composite	NTSC
Aspect Ratio	4:3 -> 4:3 using None

Audio	PID	Language	Format	Bit Rate (Kbps)	SFR	B
1			None	0	0.0	0
2			None	0	0.0	0

PE Index	Channel	Channel Name	Conditional Access System ID
PE1	2		Unknown
PE2	2		Unknown
PE3	5		Unknown
PE4	6		Unknown
PE5	7		Unknown
PE6	9		Unknown

Parameter	Value
Downlink Frequency (GHz)	12.25
I/Q	Opposite
L band Frequency(MHz)	1500.0
Signal Status	No Lock
Symbol Rate(Msym)	28.3465
TS ID	

PE Index	Type	Detail	Language	PID	Pr
No data available					

Shortcuts - click to open the specific setup pages

Displays the number of alarms, warnings, and clear messages

1 Alarms 2 Warnings 249 Clear

The Summary Dashboard page displays the main settings of the D9824 Advanced Multi Decryption Receiver.

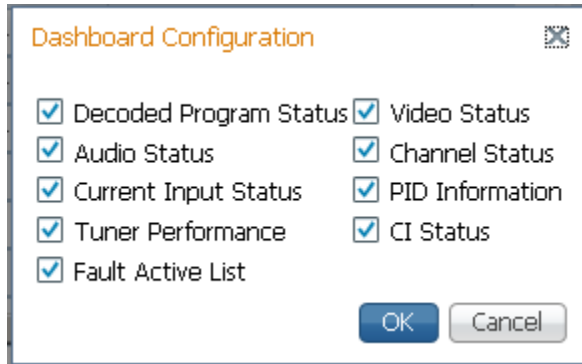
## Shortcuts

The shortcuts above the modules in the Summary Dashboard page are shortcuts to the various setup pages. For example, click **Video Setup** to open the Video Setup page.

## Modules

You can customize the Summary Dashboard by temporarily minimizing or removing the modules displayed. Each module has a maximize and minimize button, allowing you to view or hide various modules. The default view is displayed when you refresh the Summary Dashboard page.

You can also customize the Dashboard by clicking on **Add/Remove Module**. The Dashboard Configuration window is displayed.



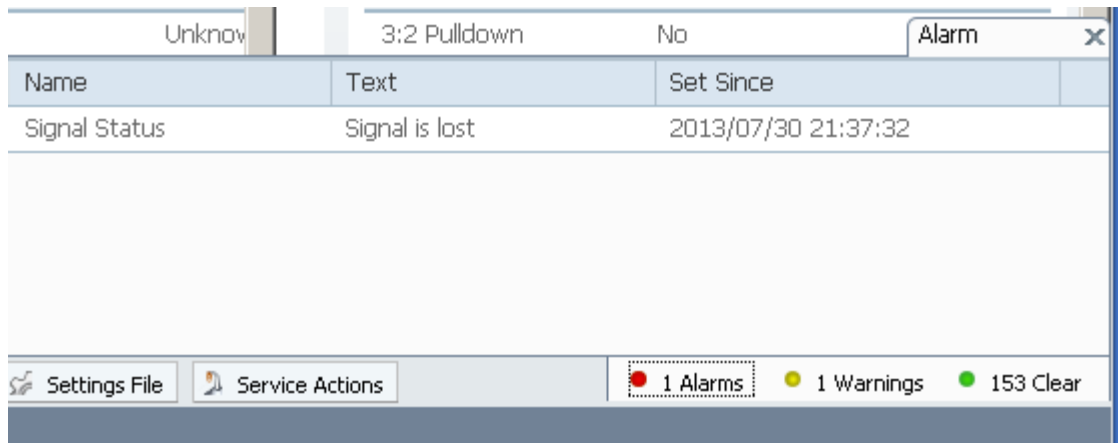
The following table describes all the available modules:

Module	Description
Decoded Program Status	Displays channel and service information.
Audio Status	Displays the current audio status information, such as the audio format and sampling frequency.
Current Input Status	Displays the current RF Tuning Status information, including the downlink frequency and signal status.
Tuner Performance	Displays the satellite dish status, such as the C/N Margin and Signal Level.
Video Status	Displays the current video information.
Channel Status	Displays the channel status information, such as the type of CA used and whether the receiver is authorized to receive the signal.
PID Information	Displays the PIDs associated with the channels.
CI Status	Displays the CAM card information.
Fault Active List	Displays the currently active alarms and warnings.

## Alarms/Warnings

The bottom right corner of the **Summary Dashboard** page displays the total number of active alarms, active warnings, and clear messages. Clear messages is calculated as follows: total number of alarms + total number of warnings - total number of active alarms - total number of active warnings.

To view a detailed list of alarms and warnings, click the **Alarms** or **Warnings** link and a pop-up window is displayed with a list of all the active alarms or active warnings. The following is an example:



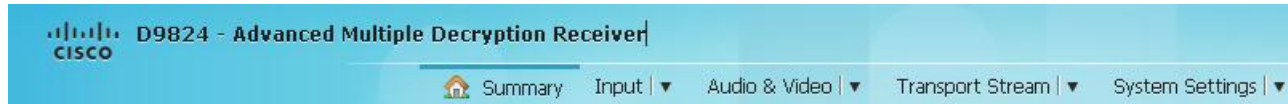
Name	Text	Set Since
Signal Status	Signal is lost	2013/07/30 21:37:32

Settings File   Service Actions   1 Alarms   1 Warnings   153 Clear

Click an alarm or warning to open the **Status** page for more information. For more information on the **Status** page, see *Viewing the Alarm/Warning Status* (on page 237).

## D9824 Menus

The D9824 web GUI has menus at the top of the page.



The functions for the menus are as follows:

- **Summary**  
From this menu, you can obtain an overview of the D9824 operation.
- **Input**  
From this menu, you can:
  - set up RF, ASI, and IP inputs,
  - configure muting thresholds,
  - view input status,
  - configure channels,
  - configure CI (Common Interface) settings,
  - view PSI, Frequency, and Channel tables.
- **Audio & Video**  
From this menu, you can:
  - configure video settings,
  - set up closed caption and subtitles,
  - configure audio settings,
  - view current audio status,
  - set the cueing parameters.
- **Transport Stream**  
From this menu, you can:
  - configure ASI and MPEGoIP outputs,
  - configure receiver settings.
- **System Settings**  
From this menu, you can:
  - view alarm and warning status information
  - configure ethernet ports,

- set date and time formats,
- configure lock levels.

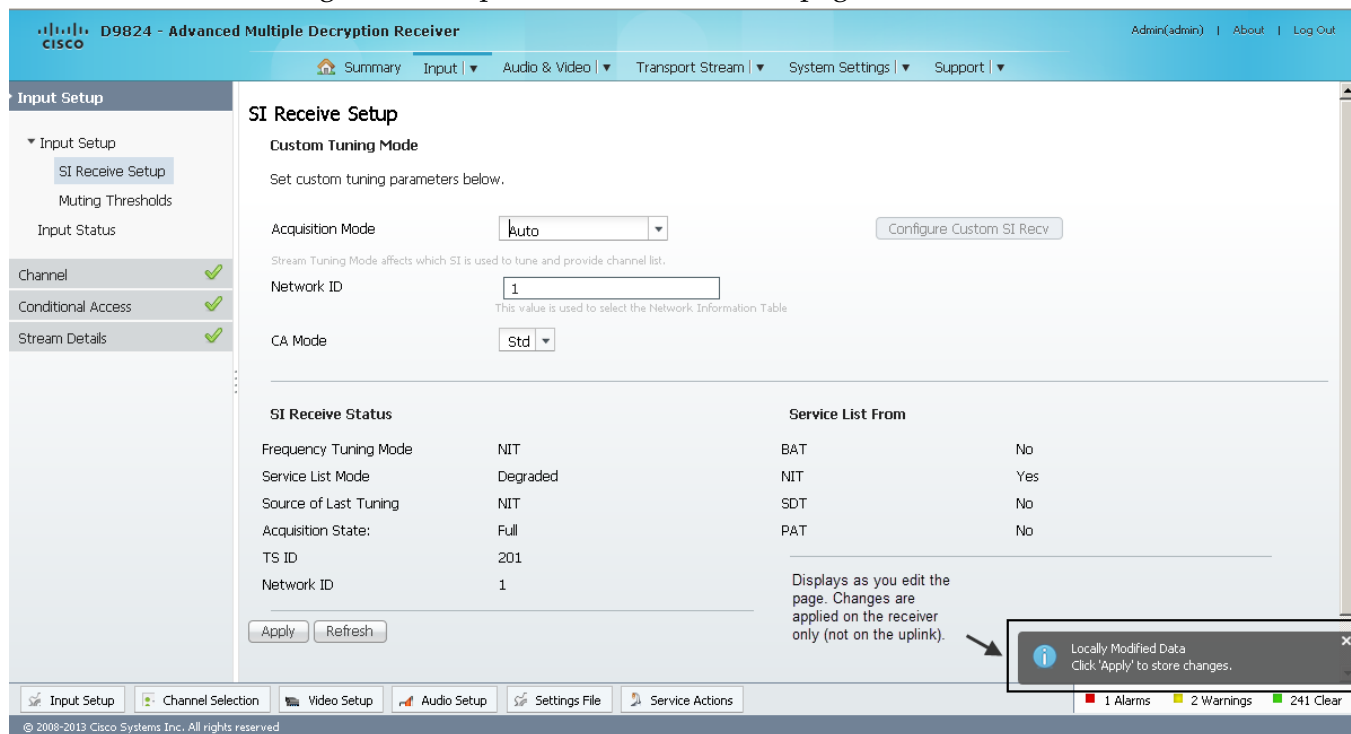
■ Support

From this menu, you can:

- view logs,
- view contact information,
- view and upgrade software version.

## D9824 Web GUI Environment

The following is an example of a D9824 Web GUI page:



### Window Buttons

The GUI of the D9824 has the following general buttons:

Button	Description
Apply	Saves and applies the settings to the receiver.
Refresh	Reads existing data from the D9824. If edits were made in a setup page, then unsaved changes are discarded.
Reset Defaults	Discards any changes made and sets data to default values.
Clear Counters	Resets counters on the displayed page.



# Setting up Input Information

## Setting up the RF Input

- 1 From the user interface of the D9824, choose **Input > Input Setup**. The Input Setup page is displayed.

The screenshot displays the 'Input Setup' page for the Cisco D9824. The page is organized into several sections:

- RF Input Selection:** Includes a 'Use RF Input' checkbox (checked), an 'Input Selection' dropdown menu (set to 'UserCfg'), and four radio buttons for 'Use RF 1', 'Use RF 2', 'Use RF 3', and 'Use RF 4'.
- Tuning:** A table of parameters including Downlink Frequency (12.31 GHz), Symbol Rate (30.0 MS/s), FEC (Auto), Modulation (DVB-S2), Roll Off (.35), I/Q (Auto), RF 1 22 KHz (Off), and RF1 Power (Off).
- RF Input LNB Configuration:** A table with columns for Input, LO1 (Ghz), LO2 (Ghz), Crossover (Ghz), Polarisation, Orbital Posn, and East/West Flag. It lists configurations for RF1 through RF4.
- RF Tuning Status:** A summary of current settings: Frequency (12.25 GHz), L band Freq (1500.0 MHz), Symbol Rate (28.3465 MS/s), FEC Rate (N/A), Signal Status (No Lock), AFC (0.0 MHz), Acquisition State (Full), Orbital Validation Status (None), and Orbital Validation Date (1901/01/01 00:00:00).

At the bottom of the page, there are buttons for 'Apply', 'Refresh', 'Validate Orbital Position', and 'Reacquire'.

- 2 In the **RF Input Selection** area, check the **Use RF Input** check box to activate an RF input. You can select RF 1 to RF 4 below.
- 3 Choose **UserCfg** from the **Input Selection** drop-down list to lock to the RF input set by the user. Choose **SW Map** to use the orbital position settings to select the RF input. We recommend that you validate the orbital position for **SW Map** option.
- 4 Click the **Use RF 1**, **Use RF 2**, **Use RF 3**, or **Use RF 4** radio button to activate an RF input.

- 5 In the **Tuning** area, enter the current operating downlink frequency used by the receiver for tuning the received digital signal in the **Downlink Frequency** field. You can enter a value in the range from 0.0 to 15.0 GHz.
- 6 In the **Symbol Rate field**, enter the symbol rate that matches the transmitted signal. You can enter a value in the range from 1.0 to 45.0 Ms/s for DVB-S, 1.0 to 30.0 for DVB-S2 if Pilot Present is set to Yes on the Front Panel, or 5.0 to 30.0 for DVB-S2 if Pilot Present is set to No on the Front Panel.
- 7 From the **FEC** drop-down list, choose the Forward Error Correction inner code rate. The FEC rate must match the FEC of the transmitted signal. You can choose 1/2, 2/3, 3/4, 5/6, 7/8, or Auto.
- 8 Choose the modulation type for the received signal (DVB-S or DVB-S2) from the **Modulation** drop-down list.
- 9 Choose the **Roll Off** factor of the incoming signal (.20, .25, .35) from the **Roll Off** drop-down list. Set the value to .20 or .35 when DVB-S modulation is used, and either of the three when DVB-S2 is used. Use a small number to reject or filter carriers close to the same frequency.
- 10 From the **IQ** drop-down list, choose the input signal spectrum inversion setting, which allows the operator to track and select inverted and non-inverted digital signals. This is normally used to automatically reject or filter out unwanted signals.  

When set to Auto, signal is tracked and inverted for correct selection, as required. When set to Opposite, the signal is always inverted. Conversely, when set to Normal, the signal is not inverted.
- 11 The **RF1 22KHz** is only applicable for dual band applications. Choose whether to transmit the 22 kHz tone Local Oscillator control signal of RF1. The selections are On, Off, or Auto. Choose Auto to use the crossover frequency to determine if the tone is transmitted.
- 12 From the **RF1 Power** drop-down list, choose the power output of RF1 to the external Low Noise Block (LNB).  

You can set the RF1 Power to Off, 13V, 18V, V-NIT or H-NIT. When RF1 Power is set to V-NIT or H-NIT, it will use vertical and horizontal polarity until it is automatically read from the NIT.

**Note:** Power will not be applied to the LNB when set to Off.
- 13 In the **RF Input LNB Configuration** area, for **RF1, RF2, RF3,** and/or **RF4,** set the lower local oscillator frequency, in GHz, of the LNB in the **LO1 (Ghz)** column. If it is a single band oscillator, set its frequency, in GHz. You can enter a value in a range from 0.0 to 15.0 GHz. This value must be lower than the value for LO2.
- 14 For RF1, RF2, RF3, and/or RF4, set the higher oscillator frequency, in GHz, of the LNB in the **LO2 (Ghz)** column. If it is a single band oscillator, set this value to 0.0. You can enter a value in a range from 0.0 to 15.0 GHz. This value must be higher than the value for LO1. In single-band LNB applications, set this value to 0.0.

- 15 In the **Crossover** field, enter the crossover frequency for RF1, RF2, RF3, and/or RF4. This is an internal threshold frequency used for selecting the LO1 or LO2 frequency, depending on the current downlink frequency settings. This option is only used in dual-band LNB applications.

You can enter a value in a range from 0.0 to 15.0 GHz. In single-band LNB applications, set this value to 0.0.

- 16 Choose the signal polarisation setting (Horizontal, Vertical, or Automatic) from the **Polarisation** drop-down list. This setting is only applicable when the LNB Power is set to H-NIT or V-NIT. It marks the polarity of the signal connected to the current RF input.
- 17 Enter the Orbital Position (**Orbital Posn**) for RF1, RF2, RF3, and/or RF4, in degrees. This is the location in orbit of the satellite currently being used. The satellite position (in degrees) in combination with the direction (either E (East) or W (West)) denotes the satellite position the dish connected to the current RF Input should point. This is used when the satellite is not available in the look-up menu list.

For manual configuration, enter the location of the satellite using the numerical keypad. The receiver will not recognize the satellite name and identify it as Unknown. This setting is required to resolve any ambiguity between RF inputs during automatic disaster recovery.

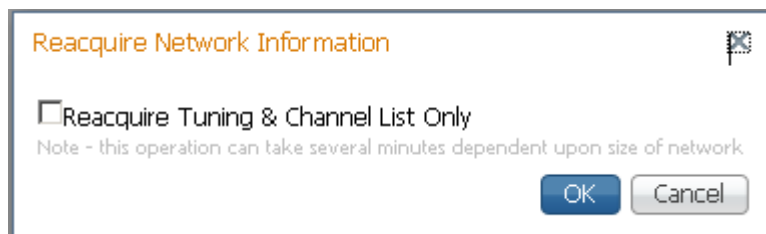
- 18 Choose the east/west flag for RF1, RF2, RF3, or RF4 from the **East/West Flag** drop-down list. This is the satellite position the dish connected to the current RF Input should point. The options are East, West, or N/A (Not Applicable).
- 19 Click **Apply**.

### Validating the Orbital Position

Click **Validate Orbital Position** to validate the RF inputs to match those expected by the network. The receiver will check to see if all frequencies in the Network Information Table (NIT) can be tuned to. The Date is displayed as the last date that the Validate operation was performed.

### Reacquiring the Network Information

Click **Reacquire** to re-acquire the signal using the tuning parameters from user settings. The Reacquire Network Information window is displayed.



Check the **Reacquire Tuning & Channel List Only** check box for the decoder to tune back to the user configured input and frequency and re-acquire the PSI/SI information back to the selected channel. Click **OK**.

**Note:** This operation can take several minutes, depending on the size of the network.

### Viewing the Current Input Status

The **Current Input Status** section displays the current RF status.

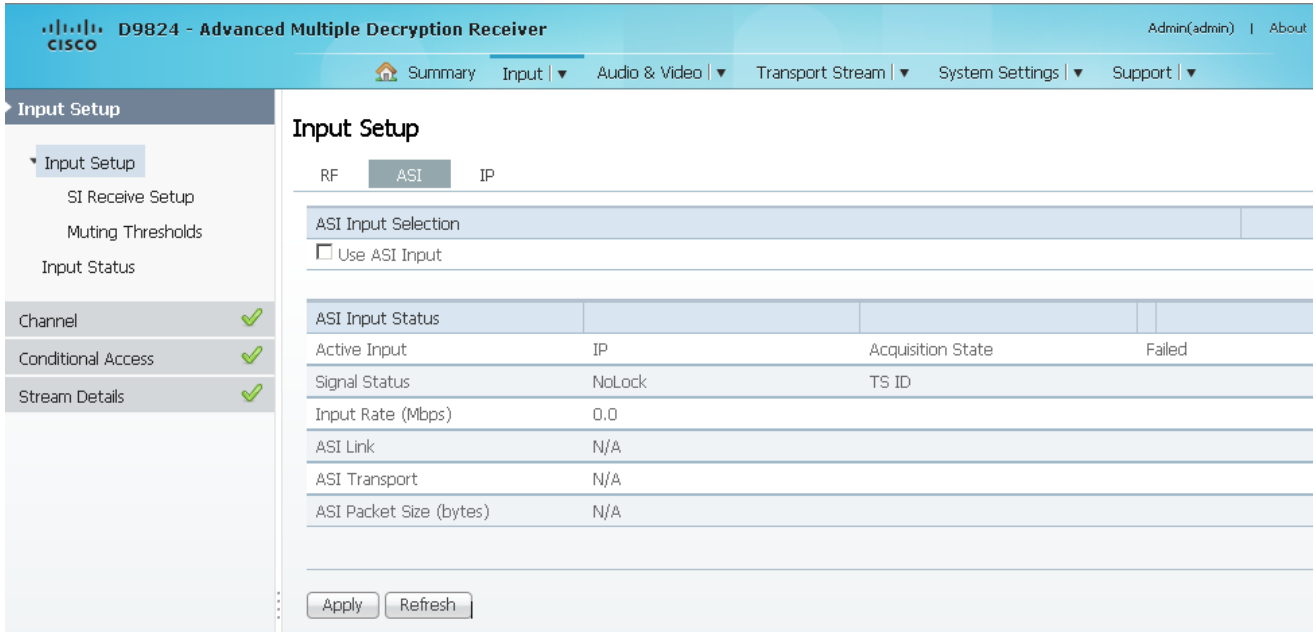
RF Tuning Status			
Frequency (GHz)	12.25	Signal Status	Lock+Sig
L band Freq. (MHz)	1500.0	AFC (MHz)	0.0
Symbol Rate (MS/s)	28.3465	Acquisition State	Full
FEC Rate	7/8	Orbital Validation Status	None
		Orbital Validation Date	1901/01/01 00:00:00

The following table describes the Current Input Status information displayed:

Parameter	Description
Frequency (GHz)	The current downlink frequency, in GHz.
L band Frequency (MHz)	The current L-Band frequency, in MHz.
Symbol Rate (Msym)	Symbol rate of the received signal, in Msymbols/second.
FEC Rate	The FEC (Forward Error Correction) rate of the received signal (N/A, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8, 8/9 or 9/10).
Signal Status	Indicates whether the input signal is locked. <ul style="list-style-type: none"> <li>■ Locked - Indicates the receiver is locked to a carrier with no valid content.</li> <li>■ Lock+Sig - Indicates the receiver is locked to a carrier with valid content.</li> <li>■ No Lock - Indicates the receiver is not locked to a carrier.</li> </ul>
AFC (MHz)	Indicates the current Automatic Frequency Control count, in MHz.
Acquisition State	Displays Full if the SI and PSI tables have all been found. Otherwise, it will display Degraded if there are missing tables or None if no SI or PSI tables have been found.
Orbital Validation Status	Displays the status of the last user orbital validation performed. It displays Passed if the last orbital validation was successful or None if a orbital validation was never performed. Otherwise, it will display a reason for the failed validation.
Orbital Validation Date	Displays the last date and time that the user orbital validation was performed, if applicable.

## Setting up the ASI Input

- 1 From the user interface of the D9824, choose **Input > Input Setup**. The Input Setup page is displayed.
- 2 Click on the **ASI** tab.



- 3 Check the **Use ASI Input** check box to tune to the ASI input.  
**Note:** Setting a new input to be active will deactivate the currently active input.
- 4 Click **Apply**.

The **ASI Input Status** area displays the current ASI status. The following table describes the ASI Input Status information displayed:

Parameter	Description
Active Input	Indicates the currently selected input source (RF1, RF2, RF3, RF4, ASI, or IP).
Signal Status	Indicates whether the input signal is locked. <ul style="list-style-type: none"> <li>■ Locked - Indicates the receiver is locked to a carrier with no valid content.</li> <li>■ Lock+Sig - Indicates the receiver is locked to a carrier with valid content.</li> <li>■ No Lock - Indicates the receiver is not locked to a carrier.</li> </ul>
Input Rate (Mbps)	Displays the bit rate of the input transport stream, in Mbps.

## Chapter 5 Web GUI Setup and Monitoring

<b>Parameter</b>	<b>Description</b>
ASI Link	Indicates whether there is a transport stream link error (Error, Ok, or N/A).
ASI Transport	Indicates the current transport synchronization status (Error, Ok, or N/A).
ASI Packet Size (bytes)	Indicates the packet size (in bytes) for the ASI input (188, 204, or N/A).
Acquisition State	Displays Full if the ASI and PSI tables have all been found. Otherwise, it will display Degraded if there are missing tables or None if no ASI or PSI tables have been found.
TS ID	The Transport ID (in the range from 1 to 65535).

## Configuring the IP Input

- 1 From the user interface of the D9824, choose **Input > Input Setup**. The Input Setup page is displayed.
- 2 Click the **IP** tab.

The screenshot displays the Cisco D9824 web interface for configuring the IP input. The main content area is titled "Input Setup" and has tabs for RF, ASI, and IP. The IP tab is selected.

**MOIP Input Selection**

- Use MOIP Input
- Source IP Selection Mode: SW Map

**MOIP Flow Configuration**

- Multicast Multicast Address: 225.1.1.1
- FEC Mode: 2D
- TS Destination Port: 49152
- FEC Columns Port: 49154
- FEC Rows Port: 49156
- Source Filtering: None

**De-Jitter Configuration**

- Algorithm: VBR
- Latency: 110

**Redundancy Configuration**

- Mode: Backup: Primary Data1
- Type: Revertive
- Direct Delay (msec): 0
- Revertive Delay (sec): 1
- Trigger:  AV Loss,  PMT Loss
- PCR Loss,  Link Loss,  TS Loss

**Current Input Status**

Active Input	IP	Transport Stream	201	PCR Lock	Yes
Signal Status	NoLock			De-jitter Latency (...)	99 msec
Input Rate (Mbps)	119.997392	Locked Data1 Source	192.131.244.20 ...	FEC Bitrate (Mbps)	119.631296
Aquisition State	Full	Locked Data2 Source	0.0.0.0 Unk	FEC CEC	0
Link Status	Up	Switchover Reason	Setup	FEC PER	0.00e-0
Port In Use	DATA1	Switchover Date/Ti...	2013/09/27 02:1...		

- 3 In the **MOIP Input Selection** area, check the **Use MOIP Input** check box to tune to the MPEG over IP Input.

**Note:** Setting a new input to be active will deactivate the currently active input.

- 4 Choose **UserCfg** from the **Source IP Selection Mode** drop-down list to lock to the source IP input set by the user, or choose **SW Map** to automatically detect and select which stream to tune to.

- 5 If **UserCfg** is selected as the **Source IP Selection Mode**, click **User Selected Source IP** to select the **DATA1** or **DATA2** ports.

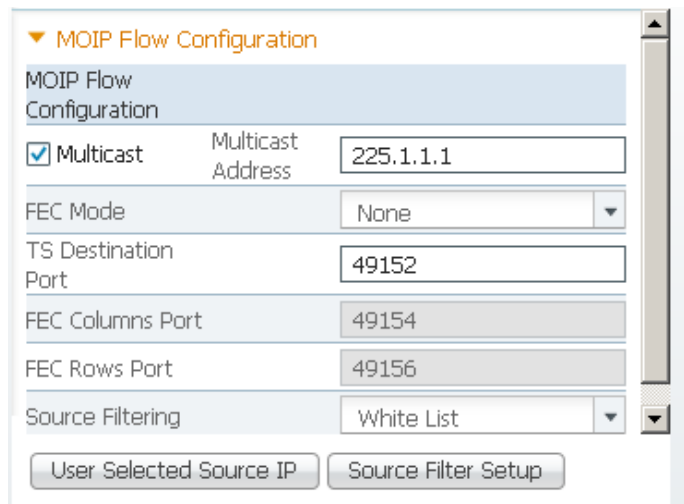


- a Click the **DATA1** or **DATA2** radio button. The **Source IP Address** displays the host (originator) IP address of the incoming stream. The **Present** columns display whether the stream is present on the **Data1** and **Data2** ports.
 

**Note:** If the stream is not present on the specific port, it cannot be selected.
  - b Click **OK**.
- 6 Click **Apply**.

#### Configuring MPEG over IP Flow

- 1 In the Input Setup page (**Input > Input Setup**), click the **IP** tab. Refer to the **MOIP Flow Configuration** area.



- 2 Check the **Multicast** check box to use multicast streaming. Otherwise, uncheck the **Multicast** check box to listen to the unicast streams that are sent to the IP addresses of the **DATA1** and **DATA2** ports.
- 3 If **Multicast** is selected, enter the multicast destination IP address in the **Multicast Address** field.
- 4 From the **FEC Mode** drop-down list, choose the type of expected FEC streams for the decoder to analyze and use. Choose **1D** if the FEC columns stream is expected or **2D** if FEC columns stream and rows stream are expected. Otherwise, choose **None** to drop all the FEC streams.



- 5 In the **TS Destination Port** field, enter the destination port number (1 to 65534). If you are expecting a transport stream with RTP encapsulation only, you must enter an even port number. For UDP encapsulated input streams, you can enter an even or odd port number.

**Note:** FEC is only supported for RTP transport streams.

- 6 If **FEC Mode** is set to **1D** or **2D**, enter the FEC destination UDP port number of the column FEC stream (2 to 65534, even only) in the **FEC Columns Port** field. The recommended columns port number is the TS Destination Port + 2.

If the **FEC Mode** is set to **2D**, in addition to entering the FEC columns port number, enter the FEC destination UDP port number of the row FEC stream in the **FEC Rows Port** field (2 to 65534, even only). The recommended rows port number is the TS Destination Port + 4.

- 7 From the **Source Filter** drop-down list, choose the source (host) filtering mode (None, White List, or Black List).

**Note:** Source filtering also applies to **IGMP** (v3 only). For more information, see *Protocol Control Settings* (on page 226).

The incoming streams are always filtered based on user-configured destination information (destination IP address and UDP ports). In addition, they can be filtered based on selected Source Filter mode.

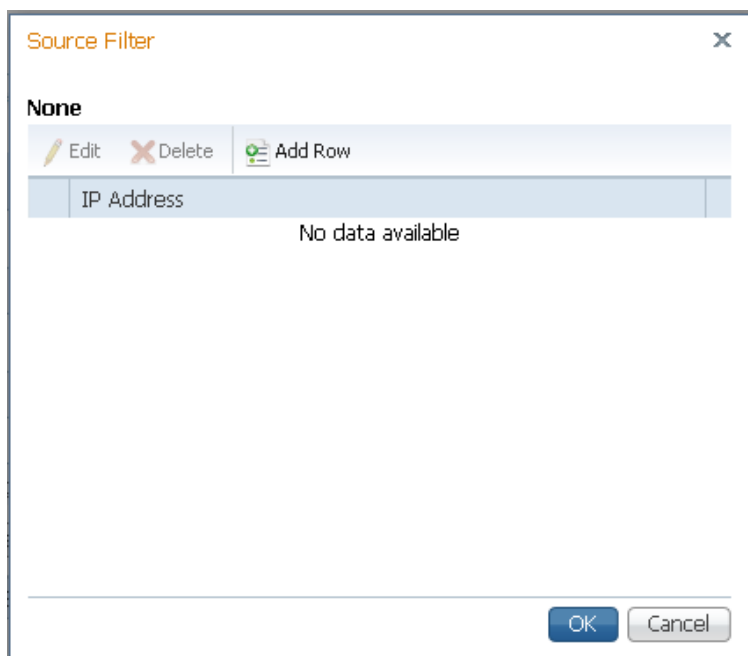
Choose **None** to receive streams without source restrictions.

Choose **White List** to only allow streams from the defined list of hosts/servers.

Choose **Black List** to allow streams from any host/server, except for the ones defined in the list of hosts/servers.

The list of hosts/servers are defined in the Source Filter Setup window. To define the hosts/servers:

- a Click **Source Filter Setup**. The Source Filter window opens.

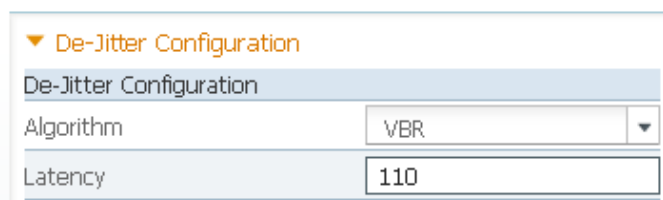


- b Click **Add Row**.
  - c If **White List** is selected as the **Source Filter**, enter the IP address of a trusted server the unit is allowed to receive streams. The unit is allowed to receive streams from servers with IP addresses listed here.  
If **Black List** is selected as the **Source Filter**, enter the IP address of a server that is not trusted. The unit is allowed to receive streams from any server, except for the servers with IP addresses listed here.
  - d Click **Save**.
  - e Click **OK**. You can add up to 8 IP addresses.
- 8 Click **Apply**.

### Configuring IP De-Jittering

The de-jittering engine has the ability to de-jitter two streams simultaneously (from Data1 and Data2 ports), based on the selected PCR PID for each stream.

- 1 In the Input Setup page (**Input > Input Setup**), click the **IP** tab. Refer to the **De-Jitter Configuration** area.



- 2 From the **Algorithm** drop-down list, choose the de-jittering algorithm (VBR or CBR).

- 3 Set the de-jittering buffer **Latency** (delay), in milliseconds. If **VBR** is selected, you can enter a range from 110 to 150 milliseconds to set a high buffer latency. If **CBR** is selected, you can enter a range from 40 to 150 milliseconds, to set a lower latency for CBR streams.

### Setting Up Redundancy Controls for MPEG over IP Input

The **Redundancy Configuration** area allows you to configure redundancy for MPEG over IP input when an active port fails due to one of the monitored error conditions (triggers). The data port 1 is labeled as TS 2 and data port 2 is labeled as TS 3 on the rear connector panel. For more information, see *D9824 Receiver Rear Connector Panel* (on page 19).

- 1 In the Input Setup page (**Input > Input Setup**), click the **IP** tab. Refer to the **Redundancy Configuration** area.

The screenshot shows the 'Redundancy Configuration' section of a web interface. It contains the following fields and options:

- Mode:** A drop-down menu currently set to 'Backup: Primary Data1'.
- Type:** A drop-down menu currently set to 'Revertive'.
- Direct Delay (msec):** A text input field containing the value '0'.
- Revertive Delay (sec):** A text input field containing the value '1'.
- Trigger:** A group of six checkboxes, all of which are checked:
  - AV Loss
  - PMT Loss
  - PCR Loss
  - Link Loss
  - TS Loss

- 2 From the **Mode** drop-down list, choose the redundancy mode for MPEG over IP input data.

Choose **Manual Data1** or **Manual Data2** to only use Data1 or Data2 port for input data. The remaining redundancy controls below are not applicable.

Choose **Backup: Primary Data1** (default) or **Backup: Primary Data2** to use DATA1 port or DATA2 port as the primary data port and if one or more of the selected triggers occur, it will failover to DATA2 or DATA1 port (the backup port). The triggers are selected in the **Trigger** check boxes below.

**Note:** If the backup port is in a failed state, a failover will not occur.

- 3 If **Backup: Primary Data1/Data2** is selected as the **Mode**, choose the redundancy direction in the **Type** drop-down list. Choose **Revertive** to attempt to revert back to the primary port when using the backup port and the primary port is active again. Choose **Non-Revertive** to use the backup port (if active) when the primary port fails, without reverting back to the primary port under any circumstances.
- 4 In the **Direct Delay** field, set the time to switch from primary to backup data port after the system detects a failure, in a range from 0 to 10000 milliseconds.

- In the **Revertive Delay** field, set the time to wait when reverting back to the primary port once all the triggers for the primary port are back to normal again, in a range from 0 to 30 seconds.

**Note:** If **Non-Revertive** is selected as the **Type**, this field does not apply.

- For the **Trigger**, select the program-related conditions that will trigger the MPEG over IP input redundancy switchover to the backup port. check the **AV Loss**, **PMT Loss**, or **PCR Loss** check box to detect the status of the audio/video, PMT, or PCR loss for the program entry being decoded.

The **Link Loss** and **TS Loss** fields are non-editable. By default, Ethernet (Link) loss and transport stream loss will always trigger a redundancy switchover to the backup port.

**Note:** If **Revertive** is selected as the **Type**, and all the triggers are selected, it will fail over to the backup port when any of the triggers occur and the backup port has valid content. However, it will not attempt to revert back to the primary port when the primary port is available again. It will remain on the backup port. This avoids the constant switching between the two ports since the incoming packet streams cannot be validated until the switch is made.

- Click **Apply**.

### Viewing the Current IP Input Status

The **Current Input Status** area displays the current IP status.

Current Input Status					
Active Input	IP	Transport Stream	201	PCR Lock	Yes
Signal Status	NoLock			De-jitter Latency (...)	99 msec
Input Rate (Mbps)	119.997392	Locked Data1 Source	192.131.244.20 ...	FEC Bitrate (Mbps)	119.631296
Aquisition State	Full	Locked Data2 Source	0.0.0.0 Unk	FEC CEC	0
Link Status	Up	Switchover Reason	Setup	FEC PER	0.00e-0
Port In Use	DATA1	Switchover Date/Ti...	2013/09/27 02:1...		

The following table describes the Current Input Status information displayed:

Parameter	Description
Active Input	Indicates the currently selected input source (RF1, RF2, RF3, RF4, ASI, or IP).
Signal Status	Indicates whether the input signal is locked. <ul style="list-style-type: none"> <li>■ Locked - Indicates the receiver is locked to a carrier with no valid content.</li> <li>■ Lock+Sig - Indicates the receiver is locked to a carrier with valid content.</li> <li>■ No Lock - Indicates the receiver is not locked to a carrier.</li> </ul>

## Setting up Input Information

Parameter	Description
Input Rate (Mbps)	Displays the bit rate of the input transport stream, in Mbps.
Acquisition State	Displays Full if the SI and PSI tables have all been found. Otherwise, it will display Degraded if there are missing tables or None if no SI or PSI tables have been found.
Link Status	Displays the link status of the active data port (Up or Down).
Port In Use	Displays the current input port in use (Data1 or Data2).
Transport Stream	The Transport ID (in the range from 1 to 65535).
Locked Data1/Data2 Source	When locked, this displays the source/host IP address of the originator. If the signal is not locked, it will display N/A.
Switchover Reason	Displays a description of the reason for the last redundancy switchover (AV Loss, Program Loss, PCR Loss, Link Loss, TS Loss, or None).
Switchover Date/Time	Displays the last date and time for the last redundancy switchover.
PCR Lock	Indicates whether the system is locked to the required PCR PID (Yes or No).
De-jitter Latency (msec)	Displays the overall transport stream buffer latency, in milliseconds.
FEC Bitrate (Mbps)	Displays the input stream bit rate reported by the FEC decoder.
FEC CEC	Indicates the current Corrected Error Count for the received stream.
FEC PER	Indicates the current Packet Error Rate of the received stream.

## Setting up SI Receive Parameters

- 1 From the user interface of the D9824, choose **Input > SI Receive Setup**. The SI Receive Setup page is displayed.

The screenshot shows the web GUI for the D9824 - Advanced Multiple Decryption Receiver. The page title is "SI Receive Setup". The navigation menu includes Summary, Input, Audio & Video, Transport Stream, System Settings, and Support. The sidebar shows the following menu items: Input Setup (expanded), SI Receive Setup (selected), Muting Thresholds, and Input Status. The main content area is titled "SI Receive Setup" and contains the following sections:

**Custom Tuning Mode**  
Set custom tuning parameters below.

Acquisition Mode:

Stream Tuning Mode affects which SI is used to tune and provide channel list.

Network ID:   
This value is used to select the Network Information Table

CA Mode:

---

**SI Receive Status**

SI Receive Status		Service List From	
Frequency Tuning Mode	NIT	BAT	No
Service List Mode	Degraded	NIT	Yes
Source of Last Tuning	NIT	SDT	No
Acquisition State:	Full	PAT	No
TS ID	201		
Network ID	1		

Buttons:

- 2 In the **Custom Tuning Mode** area, from the **Acquisition Mode** drop-down list, choose the tables required for the service list creation and signal acquisition. The selections are Auto, Basic, or Custom. The default is Basic. If you select Basic, it requires NIT to be present. If you select Auto, it uses all the available service list tables and it will acquire if any table is present.

If you select Custom, click **Configure Custom SI Recv** and the Configure Custom SI Recv dialog box opens:

- a Choose the frequency tuning mode from the **Frequency Tuning Mode** drop-down list, which determines whether to use the NIT to tune to other transports, or to force the tuning to user configuration settings. Choose NIT and the receiver can change tuning parameters to use all transports available in the NIT. Choose User Cfg to force the receiver to use the user selected tuning parameters.
  - b The **Service List mode** determines which tables are required for tuning.
  - c Rigorous requires all service list tables to be present to acquire the signal.
  - d Degraded requires any service list table to be present to acquire the signal.
  - e From the **Network Information Table** (NIT) drop-down list, choose Yes to use the NIT when creating the service list.
  - f From the **Service Description Table** (SDT) drop-down list, choose Yes to use the SDT when creating the service list.
  - g From the **Program Association Table** (PAT) drop-down list, choose Yes to use the PAT when creating the service list.
  - h **Note:** You cannot change the Bouquet Association Table value. It is not supported in the current release.
  - i Click **OK**.
- 3 From the **Network ID** field, enter the network ID of the uplink signal the receiver is to receive when using the selected preset. The receiver's network ID must match the network ID associated with the transmitted signal that identifies the NIT to be used. You can enter a value in the range from 1 to 65535. The default is 1.
  - 4 Choose how the conditional access will attempt to descramble the scrambled programs from the **CA Mode** drop-down list. The behavior of this setting is different between PowerVu streams and those that require a CAM.

## Chapter 5 Web GUI Setup and Monitoring

For PowerVu Streams:

- Std - In standard mode, if a program is not authorized, even if some services are not scrambled, the whole program will not be authorized.
- Open - In open mode, if a program is not authorized, any services in the program that are not scrambled will still be available.

For Non-PowerVu (CAM) streams:

- Std - In standard mode, if a program's CA system is not supported by the CAM, the channel is not authorized.
- Open - In open mode, all the program's CA systems are validated by the CAM. The channel is always authorized.

5 Click **Apply**.

### Viewing the SI Receive Status

The **SI Receive Status** area displays all the current SI Receive settings. It also displays the source of last tuning and the last Preset Number activated. The **Service List From** area displays the current settings of the allowed services (BAT, NIT, SDT, PAT).



## Setting up Muting Threshold Controls

- 1 From the user interface of the D9824, choose **Input > Muting Thresholds**. The Muting Thresholds page is displayed.

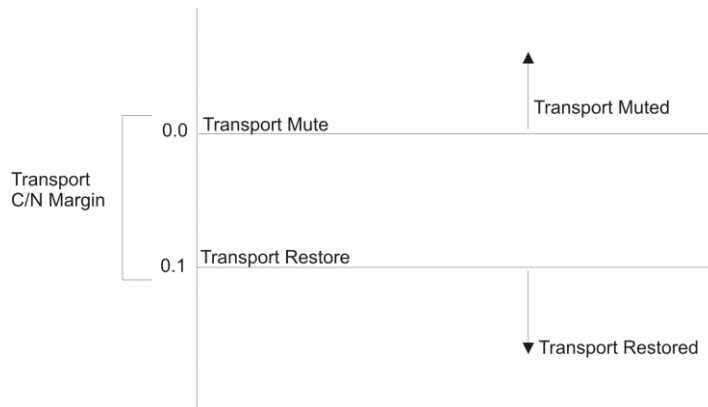
The screenshot shows the Cisco D9824 web interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'Input Setup' with sub-items: 'SI Receive Setup', 'Muting Thresholds' (highlighted), and 'Input Status'. Below these are 'Channel', 'Conditional Access', and 'Stream Details', each with a green checkmark. The main content area is titled 'Muting Thresholds' and contains a table with the following data:

Parameters	DVB-S C/N Margin (dB)	RF Modulation DVB-S2 C/N Margin (dB)
Transport Mute	0.0	0.0
Transport Restore	0.1	0.1
Audio Mute	0.0	0.0
Audio Restore	0.1	0.1

Below the table are three buttons: 'Apply', 'Refresh', and 'Reset Defaults'. A checkbox labeled 'Enable Threshold Muting' is checked.

- 2 Check the **Enable Threshold Muting** check box to mute the transport stream and audio in the event of an unstable, poor, or loss of signal condition. The default is selected.
- 3 The **Transport Mute** for both **DVB-S C/N Margin (dB)** and **DVB-S2 C/N Margin (dB)** sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, below the transport outputs that will be muted. The receiver uses these thresholds to determine when to mute the transport in the event of a noisy, poor, or loss of signal condition. The adjustable operating range is from -30.0 to 30.0 dB. This setting must be below the respective Restore value. The default setting is 0.0.  
**Note:** The **Enable Threshold Muting** check box must be selected for these settings to be active.
- 4 The **Transport Restore** for both **DVB-S C/N Margin (dB)** and **DVB-S2 C/N Margin (dB)** sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, above the transport outputs that will be muted. The receiver uses these thresholds to determine when to restore the transport after it has been muted. The adjustable operating range is from -30.0 to 30.0 dB. This setting must be above the respective Mute value. The default setting is 0.1.  
**Note:** The **Enable Threshold Muting** check box must be selected for these settings to be active.

The following displays the Transport Default C/N Margin Relationship:



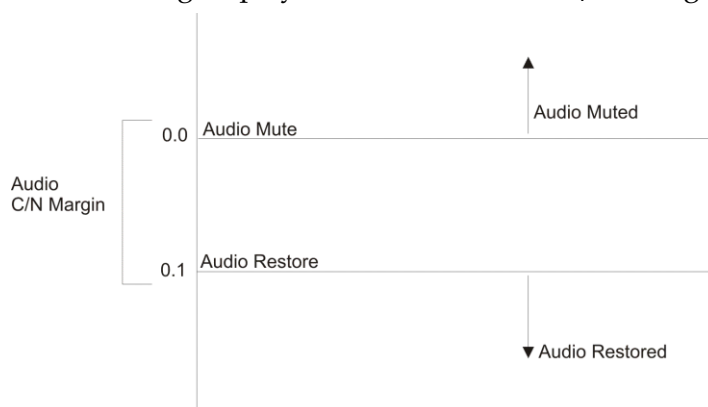
- 5 The **Audio Mute** for both **DVB-S C/N Margin (dB)** and **DVB-S2 C/N Margin (dB)** sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, below the audio outputs that will be muted. The receiver uses these thresholds to determine when to mute the audio in the event of a noisy, poor, or loss of signal condition. The adjustable operating range is -30.0 to 30.0 dB. This setting must be below the respective Restore value. The default setting is 0.0.

**Note:** The **Enable Threshold Muting** check box must be selected for these settings to be active.

- 6 The **Audio Restore** for both **DVB-S C/N Margin (dB)** and **DVB-S2 C/N Margin (dB)** sets the DVB-S and DVB-S2 Carrier to Noise margins, in dB, above the audio outputs that will be restored. The receiver uses these thresholds to determine when to restore the audio after it has been muted. The adjustable operating range is from -30.0 to 30.0 dB. This setting must be below the respective Mute value. The default setting is 0.1.

**Note:** The **Enable Threshold Muting** check box must be selected for these settings to be active.

The following displays the Audio Default C/N Margin Relationship:



- 7 Click **Apply**.

## Viewing the Input Status

- 1 From the user interface of the D9824, choose **Input > Input Status**. The Input Status page is displayed.

**Current Input Status**

Downlink Frequency (GHz)	12.25	I/Q	Opposite
L band Frequency (MHz)	1500.0	Signal Status	No Lock
Symbol Rate (MS/s)	28.3465	FEC	N/A
TS ID		Input	ASI
Modulation Type	N/A	Pilots	N/A
Acquisition State	Full	Orbital Validation Status	None
		Orbital Validation Date	1901/01/01 00:00:00

**Tuner Performance**

C/N Margin (dB) dB

Signal Level (dBm) dBm

RF Lock	NoLock	PV BER	N/A
AFC (MHz)	0.0	RF(1) Power	Off
LDPC ER	N/A	LNB Status	N/A
Packet ER			

Net ID	1	Network Name	
Input Rate (Mbps)	0.0	Scrambling Mode	Unk

The **Current Input Status** area displays the same information shown in the Input Setup page. For more information on the parameters displayed, see *Setting up the RF Input* (on page 143).

The **Tuner Performance** area displays the satellite dish information, such as the C/N Margin and Signal Level.



## Viewing the Channel Status

From the user interface of the D9824, choose **Input > Channel Status**. The Channel Status page is displayed.

PE Index	Channel	Channel ...	Conditio...	Channel ...	Channel ...	Channel ...	SR Status	SR Type	SR Start ...	SR End Ti
PE1	801	MMX2P2...	SA	Yes	Yes	Yes	Primary	None	2007/09...	2007/C
PE2	802	MMX2P2...	SA	Yes	Yes	Yes	Primary	None	2007/09...	2007/C
PE3	803	MMX2P4...	SA	Yes	Yes	Yes	Primary	None	2007/09...	2007/C
PE4	6		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE5	3		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE6	814		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE7	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE8	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE9	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE10	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE11	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE12	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE13	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE14	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE15	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE16	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C
PE17	17		Unknown	No	No	No	Primary	None	2007/09...	2007/C

The following table describes the channel information displayed:

Parameter	Description
PE Index	Indicates the Program Entry number (PE1 to PE32).
Channel	Displays the input channel of the current PE. The channel is displayed in a range from 1 to 65535.
Channel Name	Displays the channel name of the current PE.
Conditional Access System ID	Indicates the type of Conditional Access (CA) system used by the program (SA, BISS, or FTA).
Channel Authorised	Indicates whether the receiver is authorized to receive the program (Yes or No).
Channel Encrypted	Indicates whether the received program is encrypted (Yes or No).
Channel Scrambled	Indicates whether the received program is scrambled (Yes or No).

Parameter	Description
SR Status	<p>Displays the status of an alternate authorized program/service from the same transport stream when the receiver is not authorized to view the primary program. This is an uplink initiated function that maps the alternate service to the original (primary) service PIDs, replacing the original service with the alternate service at the digital transport output. No local intervention is required by the receiver operator for provision of this service replacement feature. The statuses are Not Started, Primary, or Alternate.</p> <p>Not Started - Indicates that an event has not started.</p> <p>Primary - Indicates that a service replacement event is active, but the primary program is being displayed.</p> <p>Alternate - Indicates that a service replacement event is active, and that the receiver has tuned to and is displaying the alternate program/event as it is not authorized to view the scheduled event.</p>
SR Type	<p>Displays the type of service replacement event scheduled.</p> <p>None - Indicates that no service replacement event is scheduled.</p> <p>Scheduled - Indicates that all receivers will tune to the alternate program at the scheduled time. This status applies to PE1 to PE32 programs.</p> <p>CA - Indicates that only receivers unauthorized to view the scheduled program will tune to the alternate program according to the selected authorization tier bits. This status applies to PE1 to PE32 programs.</p> <p>Cue Trigger - Indicates that only receivers authorized by the Cue Trigger mask will tune to the scheduled program/event.</p> <p><b>Note:</b> The Cue Trigger service replacement event type is not supported in the current release.</p>
SR Start/End Time	<p>Displays the start/end time of the service replacement event when one is scheduled; otherwise, the default start/end time is displayed. The default start/end time is 2007/09/01 00:00:00.</p>

## Configuring the Common Interface (CI) Information

- 1 From the user interface of the D9824, choose **Input > CI Setup**. The CI Setup page is displayed.

The screenshot shows the Cisco D9824 Advanced Multiple Decryption Receiver web interface. The page title is "D9824 - Advanced Multiple Decryption Receiver" and the user is logged in as "Admin(admin)". The navigation menu on the left includes "Input Setup", "Channel", "Conditional Access", "CI Setup", "CI Status", "CA Status", "BISS", and "Stream Details". The main content area is titled "CI Setup" and contains the following configuration options:

- CI CAM QUERY Support: Disable
- CI CAM Auto Reset: Enable
- CA List Management Type: AddDel
- TS/ONID Check: Disable
- Transport ID: 0
- Original Network ID: 0
- CAM TS Handling: EntireTS

Below the configuration options is the "Common Interface Program Description" table:

PE	CI Slot	Decryption Mode
1	AUTO	ON
2	BOTTOM	ON
3	BOTTOM	ON
4	BOTTOM	ON
5	TOP	ON
6	TOP	ON
7	TOP	ON
8	TOP	ON
9	TOP	ON

Below the table is the "CI Component Setup" section, which includes a table with the following data:

PE ID	Mode	PID	Stream Category	Stream Type Value	Stream In...
1	PID	8192	USER	0	1
2	PID	8192	USER	0	1
3	PID	8192	USER	0	1
4	PID	8192	USER	0	1
5	PID	8192	USER	0	1

- 2 Choose Enable from the **CI CAM QUERY Support** drop-down list to query the CAM prior to decryption to ensure that the card can be decrypted. The default is Disable.
- 3 Choose Enable from the **CI CAM Auto Reset** drop-down list to automatically reset the card. The default is Disable.
- 4 From the **CA List Management Type** drop-down list, choose whether the Common Interface List Management should add and delete (AddDel) individual programs or update all (UpdateAll) the programs when the list changes.

**Note:** Updating all the programs will cause temporary loss of service for all the programs when another is being modified.

- 5 Choose Enable from the **TS/ONID Check** drop-down if you want to restrict the incoming transport stream to the transport ID and transport original network ID listed below. If the incoming stream does not match the specified transport stream, the CAM will not decrypt. The default is Disable.
- 6 If you set the **TS/ONID Check** to Enable, you must define the **Transport ID** and **Original Network ID**. If the incoming stream does not match the specified IDs here, the CAM will not decrypt. You can enter a value in a range from 0 to 65535.
- 7 From the **CAM TS Handling** drop-down list, choose EntireTS to use the CAM to decrypt the entire transport stream, or choose ServicesOnly to use the CAM to decrypt only the PIDs being used by the active services.
- 8 Click **Apply**.

**Setting up the Common Interface Program Description**

- 1 From the **CI Slot** drop-down lists, choose the CAM slot to use for decryption. If you set the **CI Slot** to **AUTO** for PE1, the software automatically assigns the slot capable of decrypting the stream.

**Note:** If **CI Slot** is set to **AUTO**, the **Decryption Mode** must be set to **ON**.

Choose **TOP** to use the top CAM slot for decryption or choose **BOTTOM** to use the bottom CAM slot for decryption.

- 2 The **Decryption Mode** determines whether to decrypt the channel or to specify the specific components to decrypt (ON, OFF, Comp). Choose **ON** (default) to decrypt the entire program entry. Choose **Comp** to decrypt specific components, as specified in the **CI Component Setup** list below.

**Note:** If the **CI Slot** is set to **Auto** for PE1, then **Decryption Mode** can only be set to **ON**.

- 3 Click **Apply**.

**Configuring the CI Component**

The **CI Component Setup** area allows you to insert and maintain customized records:

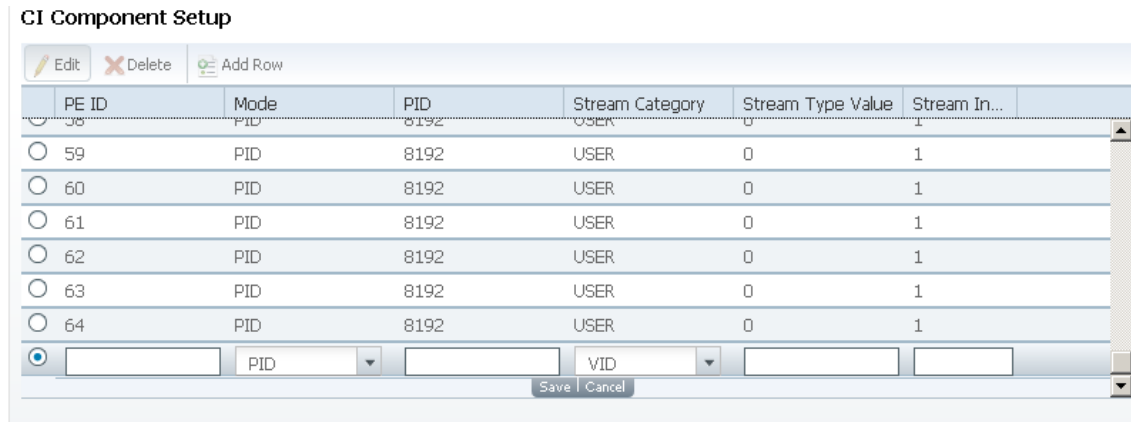
**CI Component Setup**

<input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Add Row"/>						
	PE ID	Mode	PID	Stream Category	Stream Type Value	Stream In...
<input type="radio"/>	1	PID	8192	USER	0	1
<input type="radio"/>	2	PID	8192	USER	0	1
<input type="radio"/>	3	PID	8192	USER	0	1
<input type="radio"/>	4	PID	8192	USER	0	1
<input type="radio"/>	5	PID	8192	USER	0	1
<input type="radio"/>	6	PID	8192	USER	0	1
<input type="radio"/>	7	PID	8192	USER	0	1
<input type="radio"/>	8	PID	8192	USER	0	1



Each record customizes the PID or stream type to decrypt. The Index number is a read only field that indicates the record number. You can maintain up to 64 records, 32 records for each CAM.

To insert a new record, click **Add Row**. A new row appears at the top of the table (see below).



There are various configurations when creating a new record. The following table summarizes the various methods:

If you set by	Parameter Settings
PID ID	Set <b>Mode</b> to PID and enter PID number.
Stream Type	Set <b>Mode</b> to Stream, select <b>Stream Category</b> (AUD, VID, SUBT, TTX, or USER) and enter <b>Stream Instance</b> of the stream type.  There is an additional configuration if you select user as the Stream Category (see below).
Stream Type: User	Set <b>Mode</b> to Stream, <b>Stream Category</b> to User, manually enter the stream code in <b>Stream Type Value</b> , and then the <b>Stream Instance</b> of the stream type.

If you know the PID number, ensure that PID is selected under **Mode** and enter the appropriate PID number. Click **Save**.

To enter the stream type, choose Stream from the **Mode** drop-down list, choose the stream type from the **Stream Category** (VID, AUD, SUBT, USER, or TTX) and enter the instance of the stream type in **Stream Instance** field. You can enter a range from 1 to 64. Click **Save**.

If you do not know the stream type, you can specify a specific hex value as the stream type. Choose Stream from the **Mode** drop-down list, choose User from the **Stream Category** drop-down list, enter the hex value of the stream in the **Stream Type Value** field and the instance of the customized stream type in **Stream Instance** field. You can enter a two digit hexadecimal value for the Stream Type and a range from 1 to 64 for the Stream Instance. Click **Add**.

## Chapter 5 Web GUI Setup and Monitoring

To delete a record, select the record you want to remove and click **Delete**.

### Viewing the CAM Information

The **System ID** area displays the system name and ID number of the CAM for the top/bottom slots.

## Viewing the Common Interface (CI) Status

From the user interface of the D9824, choose **Input > CI Setup > CI Status**. The CI Status page is displayed.

The screenshot shows the Cisco D9824 web interface. The breadcrumb path is **Input > CI Setup > CI Status**. The main content area displays the following table:

CI Slot	CAM Status	Sys Name	Comp Name	Manufactu...	Manufactu...	Serial Num...	Hardware ...	Application Version
TOP	Not Ready			0	0			
BOTTOM	Not Ready			0	0			

A 'Refresh' button is located below the table.

The following table describes the CI Status:

CI Status	Description
CI Slot	Indicates whether it is the top slot (TOP) or the bottom slot (BOTTOM).
CAM Status	Status of the CAM (Ready or Not Ready).
Sys Name	System name of the CAM.
Comp Name	Displays the company name of the CAM.
Manufacturer Code	The manufacturer's code.
Manufacturer ID	The factory loaded application number of the CAM.
Serial Number	The unique serial number of the CAM.
Hardware Version	The hardware version number of the CAM.
Application Version	The software version number of the CAM.

## Viewing the CA Status

From the user interface of the D9824, choose **Input > CA Status**. The CA Status page is displayed.

Index	ISE User ...	ISE versio...	Enc Data ...	Enc Data ...	Non-Enc ...	Non-Enc Data pkts recvd
1	000-568-0...	3.3(2)	6990	6990	6985	6985
2	000-568-0...	3.3(2)	6980	6980	6985	6985
3	000-568-0...	3.3(2)	6985	6985	7010	7010
4	000-568-0...	3.3(2)	7005	7005	7005	7005

The following describes the columns in the CA Status table:

Status	Description
Index	The ISE number.
ISE User Address	The ISE User Address. It is a 11 digit address in the following format: ###-###-####-#.
ISE Version Number	The ISE version number. It consists of 7 characters.
Enc Data pkts passed	Indicates the number of encrypted Addressable Data Packets successfully processed. Ideally, the ADP Enc Pass and ADP Enc Total numbers should be identical.
Enc Data pkts recvd	Indicates the number of encrypted Addressable Data Packets received. Ideally, the ADP Enc Pass and ADP Enc Total numbers should be identical.
Non-Enc Data pkts passed	Indicates the number of non-encrypted Addressed Data Packets successfully processed. Ideally, the ADP Enc Pass and ADP Enc Total numbers should be identical.
Non-Enc Data pkts recvd	Indicates the total number of non-encrypted Addressable Data Packets received. Ideally, the ADP Non-Enc Pass and ADP Non-Enc Total numbers should be identical.

## Setting up the BISS Mode

- 1 From the user interface of the D9824, choose **Input > BISS**. The BISS page is displayed.

The screenshot shows the Cisco D9824 Advanced Multiple Decryption Receiver web interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', and 'System'. The left sidebar shows a tree view with 'Input Setup', 'Channel', 'Conditional Access', and 'Stream Details'. Under 'Conditional Access', 'BISS' is selected. The main content area is titled 'BISS' and contains the following fields:

- BISS Mode:** A dropdown menu currently set to 'Mode E'.
- BISS Mode-1 Session Word:** A text input field containing 12 asterisks.
- BISS Mode-E Encrypted Session Word:** A text input field containing 16 asterisks.
- BISS Mode-E Injected ID:** A text input field containing 14 asterisks.

At the bottom of the configuration area are 'Apply' and 'Refresh' buttons.

- 2 Choose the Basic Interoperable Scrambling System for the receiver (Mode 1 or Mode E) from the **BISS Mode** drop-down list. All channels assigned to the PE identified as BISS CA-controlled in the PMT will be decrypted.
- 3 If you chose BISS Mode 1, enter a fixed 12-character BISS Mode-1 session word in the **BISS Mode-1 Session Word** field. Once entered it cannot be viewed and it is only displayed as asterisks (\*). Contact your program provider for the session word.
- 4 If you chose BISS Mode E, enter the 16-character BISS Mode-E encrypted session word in the **BISS Mode-E Encrypted Session Word** field and the 14-character BISS Mode-E injected ID in the **BISS Mode-E Injected ID** field. Once entered, neither of these values can be viewed and it is only displayed as asterisks. Contact your program provider for the respective session word and/or injected ID.
- 5 Click **Apply**.

## Viewing the PSI Tables

From the user interface of the D9824, choose **Input > PSI Tables**. The PSI Tables page is displayed.

Table Type	Table ID Extension	Status	Version	PID	Number of Sections
PAT	201	Full	7	0	1
CAT	65535	Full	1	1	1
PMT	3	None	0	8192	0
PMT	6	None	0	8192	0
PMT	17	None	0	8192	0
PMT	20	None	0	8192	0
PMT	21	None	0	8192	0
PMT	22	None	0	8192	0
PMT	23	None	0	8192	0
PMT	24	None	0	8192	0
PMT	25	None	0	8192	0
PMT	26	None	0	8192	0
PMT	27	None	0	8192	0
PMT	28	None	0	8192	0
PMT	29	None	0	8192	0
PMT	31	None	0	8192	0
PMT	32	None	0	8192	0

You cannot make any changes in the PSI table and can only view the PSI tables received and their settings. The following is a list of the various columns:

Abbreviation	Description
Table Type	Indicates the MPEG table acronym. PAT, CAT, PMT, TSDT, NIT, NIT Other, SDT, SDT Other, BAT, AEIT P/F, OEIT P/F, TDT, RST, ST, TOT, DIT, SIT, ECM Odd, ECM Even, EMM, MPE, DPI, DRT, CDT, MCT, MIT, MAT, ECT, or Invalid Table ID
Table ID Extension	Displays the MPEG/DVB Table ID.
Status	Indicates the reception status of the table. None, Partial, Full, Update, Timeout, or Lost
Version	Indicates the table version number.
PID	Indicates the value of the PID on which the table is present.
Number of Sections	Indicates the number of sections in the table.

## Viewing PSI Frequency Information

From the user interface of the D9824, choose **Input > PSI Frequency**. The PSI Frequency page is displayed.

The screenshot shows the web interface for the D9824 receiver. The navigation menu includes Summary, Input, Audio & Video, Transport Stream, System Settings, and Support. The left sidebar shows a tree view with 'Stream Details' expanded, containing 'PSI Tables', 'PSI Frequency', 'PSI Channel', and 'PID Input Status'. The main content area is titled 'PSI Frequency' and shows a table of PSI Frequency Information.

Transport ...	Frequency ...	Symbol Ra...	Orbital Po...	Polarization	Flag	FEC	RF Modulati...	Network ID
101	12.25	30.8	20.0	Horiz	East	7/8	QPSK DVB-S	1
201	12.31	30.0	60.0	Vert	West	9/10	8PSK DVB-S2	1
301	12.38	30.8	50.0	Vert	West	3/4	QPSK DVB-S	1

You cannot make any changes in the PSI Frequency table and can only view the available frequency plans stored in the receiver. The following is a list of the various columns:

Abbreviation	Description
Transport Stream ID	Displays the transport ID.
Frequency (GHz)	Displays the downlink frequency, in GHz (0.0 to 15.0 GHz).
Symbol Rate (MSym)	Displays the symbol rate, in Mbps.
Orbital Position	Displays the orbital position of the satellite, in degrees (East of West).
Polarization	Displays the polarity of the received signal (H,V, or Off).
Flag	Displays the satellite position (in degrees), in combination with the direction (East or West).
FEC	Indicates the Forward Error Correction inner code rate (1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 7/8, 8/9, or 9/10).
RF Modulation	Indicates the modulation of the signal (QPSK DVB-S, QPSK DVB-S2, 8PSK DVB-S2 or 16QAM DVB-S2).
Network ID	Displays the original network ID.

## Viewing the PSI Channels

From the user interface of the D9824, choose **Input > PSI Channel**. The PSI Channel page is displayed.

Service ID	TS ID	Program Name	PMT PID	ECM PID
601	101		----	----
602	101		----	----
801	201	MMX2P2 D9054 ENC2 - 1080i ...	39	6801
802	201	MMX2P2 D9054 ENC2 - 1080i ...	5802	6802
803	201	MMX2P4 D9054 ENC3 - 1080i ...	5803	6803
804	201	MMX2P4 D9034 ENC4	5804	----
806	201	ENC2P1 - D9050 ENC	5806	----
807	201	SD PAL MPEG-2 VID & AUD	5807	----
808	201	SD NTSC MPEG-2 VID & AUD	5808	----
810	201	Stability DL Test Channel	5810	----
812	201	MMX2P2 D9054 ENC2 - 1080i ...	5812	----
813	201	MMX2P4 D9054 ENC3 - 1080i ...	5813	----
816	201	DPM TEST	5816	----
891	201	MMX2P4 D9034 ENC4	5891	----
892	201	MMX2P4 D9034 ENC4	5892	----
899	201	DPI Test Channel	5899	----
901	201	D9858 DL Ch.1 + MPEG Audio	5901	----
902	201	D9858 DL Ch.2 + AAC Audio	5902	----

You cannot make any changes in the PSI Channel table and can only view the available channels and their settings. The following is a list of the various columns:

Abbreviation	Description
Service ID	Indicates the virtual channel number.
TS ID	Displays the identification number of the transport on which the channel is available. For more information on the transport streams, see <i>Viewing PSI Frequency Information</i> (on page 173).
Program Name	Indicates the name of the channel.
PMT PID	Indicates the PID of the channel's Program Map Table.
ECM PID	Indicates the PID of the channel's Entitlement Control Message stream.



## Viewing the PID Input Status

From the user interface of the D9824, choose **Input > PID Input Status**. The PID Input Status page is displayed.

The screenshot shows the Cisco D9824 web interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar has 'Input Setup', 'Channel', 'Conditional Access', and 'Stream Details' sections. The 'PID Input Status' table is displayed with the following data:

PE Index	Type	Detail	Language	PID	Present
PE1	PMT	PMT		39	✓
PE1	ECM1	ECM		6801	✓
PE1	PCR	PCR		2248	✓
PE1	SUB1	SA SUBT		612	✗
PE1	VID1	H264 VID		2248	✓
PE1	DAT1	SA UTLD		3340	✓
PE1	AUD1	MPG4 AUD	eng	6001	✓
PE2	PMT	PMT		5802	✓
PE2	ECM1	ECM		6802	✓
PE2	PCR	PCR		2248	✓
PE2	SUB1	DVB SUBT	eng	610	✓
PE2	VID1	H264 VID		2248	✓
PE2	DAT1	SA UTLD		3340	✓
PE2	AUD1	MPG4 AUD	eng	6001	✓
PE3	PMT	PMT		5803	✓
PE3	ECM1	ECM		6803	✓
PE3	PCR	PCR		2348	✓
PE3	VID1	SA VBI		25	✓

You cannot make any changes in the PID Input Status table and can only view the available channels and their settings. The following is a list of the various columns:

Abbreviation	Description
PE Index	Indicates the Program Entry number (PE1 or PE32).
Type	Name assigned to the Program Entry, up to 4 alphanumeric characters.
Detail	Displays any detail associated with the program PID (e.g., MPG2 PID). The parameters are: MPG1 VID, MPG2 VID, 422 VID, H264 VID, HD VID, MPG4 VID, MPG AUD, MPG2 AUD, DVB AC3, DVB DDP, AAC AUD, HEAAC, AUD, MPG4 AUD, DBE AUD, DTS AUD, DVB TXT, DVB VBI, DVB SUBT, DVB ASYN, DVB SYNS, DVB SYND, DVB MPE, DVB DCAR, DVB OCAR, SA VBI, ATSC AC3, ATSC DDP, SA UTLD, SCTE DPI, SA HSD, SA CDDL, SA WBD, SA SUBT, ECM, EMM, PCR, or UNKNOWN.
Language	Displays the language code carried in the PMT for the current PID, if applicable.
PID	The program PID number, in the range from 1 to 8192.
Present	Indicates whether the PID is present in the incoming stream (Yes or No).

## Setting up Audio and Video Information

### Setting up the Video Parameters

- 1 From the user interface of the D9824, choose **Audio & Video > Video Decoding**. The Video Setup page is displayed.

**Video Setup**

Primary Video Output: Auto

Component Tri-Synch: Disabled

Standard Definition Output: Auto  Enable Banner Display

Standard Definition Aspect Ratio: 16:9

Selected Aspect Ratio Conversion: Auto AFD

Wide Screen Signalling: Auto:Create

Video Status			
Primary Video Output	HD1080i	Video Input Format	HD1080i/2500
Standard Definition Output	PAL-B/G/I/D	Encoding Format	H264
		Bit Rate(Mbps)	25.059144
Aspect Ratio	16:9 -> 16:9 using None	Frame Rate(fps)	25.0
Wide Screen Signalling		3:2 Pulldown	No

Apply Refresh

- 2 From the **Primary Video Output** drop-down list, choose the format for local decoding. The options are Auto, HD 720p, HD 1080i, or SD.
- 3 Choose whether to enable or disable the component tri-synchronization from the **Component Tri-Synch** drop-down list.
- 4 From the **Standard Definition Output** drop-down list, choose the actual standard definition output format of the primary video if the PV Output is set to SD. The options are Auto, NTSC, PAL-N (AR), PAL-M, or PAL-B/G/I/D. You must use NTSC for 525-line systems and PAL-B/G/I/D for 625-line systems.
- 5 Choose the Standard Definition aspect ratio of your TV monitor (4:3 or 16:9) from the **Standard Definition Aspect Ratio** drop-down list. The default is 4:3. Set it to the corresponding value.
- 6 From the **Selected Aspect Ratio Conversion** drop-down list, select the aspect ratio conversion that the receiver will perform on the incoming signal for the picture to be displayed correctly on your TV, based on the **Standard Definition Aspect Ratio** selection.

The options are None, Auto, Auto AFD, 16:9 L/B, 4:3 P/B, 14:9, 4:3 CCO, and 16:9 Scale. The default is Auto.

- From the **Wide Screen Signalling** drop-down list, choose the output mode used to select how the receiver affects PAL WSS when it is present in the VBI line 23. The table below describes each of the options. The default is Auto.

WSS Mode	Description
Passthrough	Passes WSS unmodified as received by the receiver.
Auto:Create	Creates WSS to output the correct aspect ratio when performing aspect ratio conversion.
Auto:Modify	If WSS is present in the input stream, it is modified to output the correct aspect ratio when performing aspect ratio conversion. If WSS is not present in the input, no WSS will be present in the output.
Suppress	Removes WSS output.

- Check the **Enable Banner Display** check box to display alarms and warnings on the on-screen display (for example, TV monitor).
- Click **Apply**.

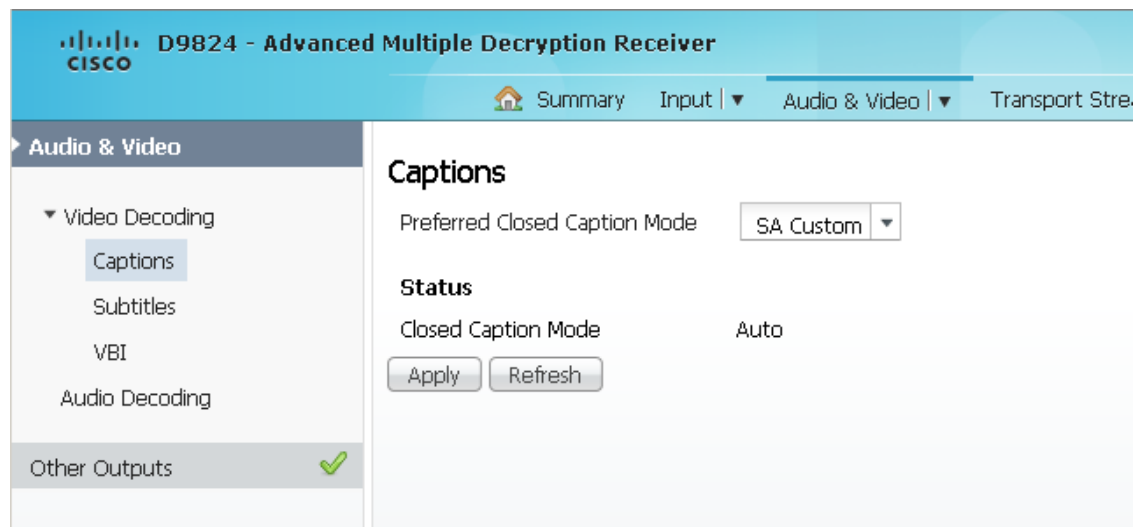
### Viewing the Video Status

The **Video Status** area displays the current video settings, and the encoding, bit rate, FPS and aspect ratio of the incoming signal. The fields are read-only. The following table describes the video status information displayed:

Video Status	Description
Primary Video Output	Indicates the actual output video format (Auto, HD 720p, HD 1080i, or SD).
Standard Definition Output	Displays the actual standard definition format of the primary video output if the PV Output is set to SD.
Aspect Ratio	Displays the standard definition aspect ratio of your TV monitor.
Wide Screen Signalling	Displays the Wide Screen Signaling output mode.
Encoding Format	The input stream type of the received signal/program.
Bit Rate (Mbps)	Indicates the bit rate of the input video stream, in Mbps.
Frame Rate (fps)	Indicates the frame rate of the input video stream.
3:2 Pulldown	Indicates whether 3:2 pulldown is detected, was recently detected, or not detected in the input video stream (Yes, Recent, or No).

## Setting up Closed Caption Mode

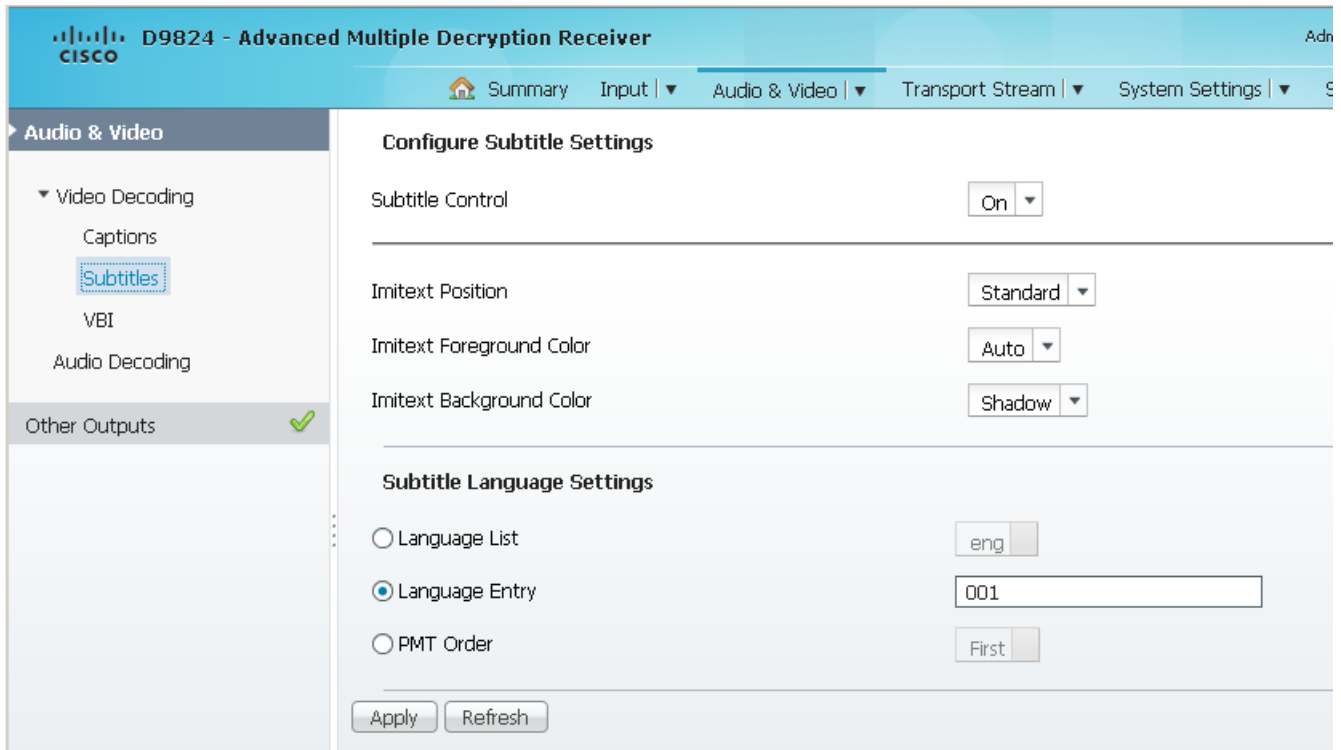
- 1 From the user interface of the D9824, choose **Audio & Video > Captions**. The Captions page is displayed.



- 2 From the **Preferred Closed Caption Mode** drop-down list, choose the type of closed captioning to use if there are multiple available in the stream. The default is Auto.  
**Note:** SA Custom is not supported when telecine video coding is enabled.
- 3 The **Closed Caption Mode** field displays the actual closed caption mode in the output. This is read-only.
- 4 Click **Apply**.

## Setting up Subtitles

- 1 From the user interface of the D9824, choose **Audio & Video > Subtitles**. The Subtitles page is displayed.



- 2 From the **Subtitle Control** drop-down list, choose the control to use to display the program subtitles. The following table describes each of the available options:

Op Mode Selection	Description
Off	No subtitles are displayed.
On	Displays DVB or Imitext subtitles, if available.
DVB	Displays only DVB titles, if available. Otherwise, no subtitles are displayed.
Imitext	Displays only Imitext subtitles, if available. Otherwise, no subtitles are displayed.

- 3 Choose the position of the on-screen subtitle text (Standard or Extended) from the **Imitext Position** drop-down list.
- 4 From the **Imitext Foreground Color** drop-down list, choose the color for Imitext subtitles. Auto displays text in the color transmitted by the subtitling equipment. Yellow and White overrides the color set by the uplink and display text in the selected color.

- 5 From the **Imitext Background Color** drop-down list, choose the text background for Imitext subtitles. The following table identifies the affect each setting has on the displayed subtitle text:

BackGnd Option	Description
Auto	Uses the uplink subtitling equipment setting.
Shadow	Applies an outline to the right side of each text character. No background box is applied to subtitles, i.e., text is visible directly on top of video.
Opaque	Applies a black box to each text character.
Semi	Applies a semi-transparent box to subtitle text.
None	No shadow or outline is applied to subtitle text.

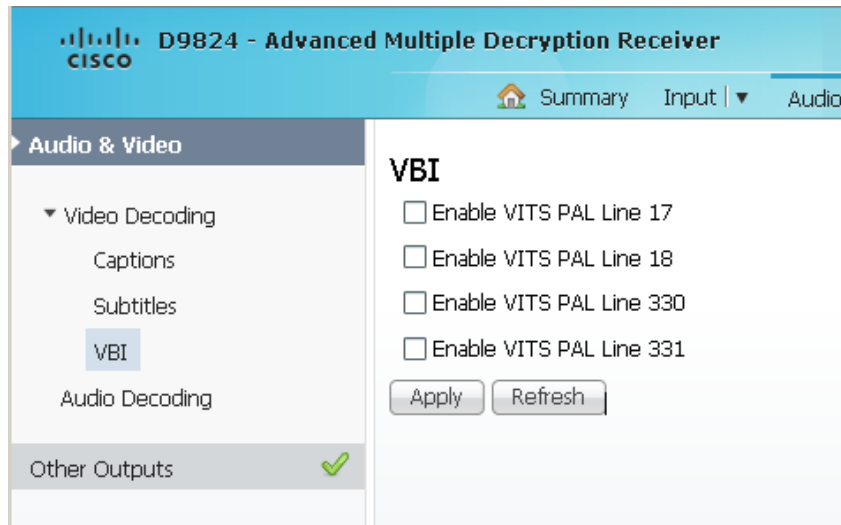
- 6 In the **Subtitle Language Settings** area, click the **Language List**, **Language Entry**, or **PMT Order** radio button to set the input source for the subtitle language. The default is Language List. Language Entry and PMT Order are more applicable for advanced applications. The following table describes each of the available options and how to set them:

Select Language By Option	Description
Language List	Choose the MPEG language to display from the available list. The following are the available options: ara (Arabic), btk (Batak (Indonesia), ben (Bengali), bul (Bulgarian), chi (Chinese), cze (Czech), dan (Danish), dut (Dutch), eng (English), fin (Finnish), fre (French), ger (German), gre (Greek), heb (Hebrew), hin (Hindi), hun (Hungarian), ice (Icelandic), ind (Indonesian), ita (Italian), jpn (Japanese), kor (Korean), may (Malay), mul (Multiple Languages), nor (Norwegian), per (Persian), pol (Polish), por (Portuguese), rum (Romanian), rus (Russian), san (Sanskrit), scc (Serbian), sin (Sinhalese), slo (Slovak), som (Somali), spa (Spanish), swe (Swedish), tai (Tai Other), tam (Tamil), tha (Thai), tur (Turkish), ukr (Ukrainian), or vie (Vietnamese)
Language Entry	Enter the three-character code provided by your uplink service provider (e.g., eng for English).  The supported languages are according to ISO 639-2 Language Codes.
PMT Order	Choose the subtitle PID entry to display (First to Eighth). This information is available from your uplink provider.

- 7 Click **Apply**.

## Setting up VBI

- 1 From the user interface of the D9824, choose **Audio & Video > VBI**. The VBI page is displayed.



- 2 Check the **Enable VITS PAL Line 17, 18, 330, or 331** check box to enable Vertical Interval Test Signal (VITS) on PAL Lines 17, 18, 330, or 331.
- 3 Click **Apply**.

## Setting up Audio Parameters

- 1 From the user interface of the D9824, choose **Audio & Video > Audio Decoding**. The Audio Decoding page is displayed.

**Audio Decoding**

**Audio Selection**

Audio Decode	Select By	PMT Source	Language List	Manual Entry
1	PMT Order	AUD1	eng	eng
2	PMT Order	AUD2	eng	eng

**Audio Setup**

Audio Decode	Audio Mode	AC3 Compr...	Left Attenu...	Right Attenu...
1	Stereo	RF Mode	0.0	0.0
2	Stereo	RF Mode	0.0	0.0

**Audio Status**

Audio	PID	Language	Format	Bit Rate (Kb...)	SFR	Buffer	DDP Mode	Dualmono Mode
1			None	0	0.0	0	OFF	OFF
2			None	0	0.0	0	OFF	OFF

Apply Refresh List Audio PIDs

- 2 The **Audio Selection** area allows you to select the audio PID for audio decoding. The D9824 supports two local audio devices.
  - a From the **Select By** drop-down list, choose the input source for Audio 1 or Audio 2.
 

**Note:** You cannot select PMT order for one audio and Language List or Language Entry for the other audio. For example, you cannot select PMT Order for Audio 1 and Language List for Audio 2.
  - b If **Language List** is selected, you must choose a language from the **Language List** drop-down list. If **Language Entry** is selected, you must enter a language code in the **Manual Entry** field. If the languages selected are different, the first PID with the matching language will play on the appropriate audio device (Audio 1 or Audio 2). If you select the same language for both Audio 1 and Audio 2, the PIDs are mapped as follows: the first matching language PID to Audio 1 and the second matching PID to Audio 2.
  - c If **PMT Order** is selected, you must choose the PMT order for each audio (None, AUD1 to AUD64) in the **PMT Source** drop-down list. You cannot choose the same PID for both audio devices. If you choose the same instance of an audio PID for one of the audio devices, the other audio device PID instance will automatically increment by one. For example, Audio 1 is set to AUD1 and Audio 2 is set to AUD2. If you change Audio 1 source to AUD2, the Audio 2 source will automatically change to AUD3 to resolve the conflict.



- 3 There are two audio settings. The **Audio Settings** area allows you to configure the two balanced audio outputs on the rear panel (Audio 1 and Audio 2), known in the Web GUI as 1 and 2, respectively.
  - a Choose the audio mode that sets the output mixing from the **Audio Mode** drop-down list.  
 Choose Stereo (Left and Right are passed directly through to Left and Right), R-Mono (Right is passed to both the Left and Right), L-MONO (Left is passed to both the Left and Right), or Mixed (Left is passed to both the Left and Right, and Right is passed to both the Left and Right).
  - b Choose the AC3 compression mode to use if the output is compressed Dolby Digital audio from the **AC3 Compression** drop-down list. The selections are Line Mode, Custom 1, Custom 0 or RF Mode. RF Mode is recommended for analog cable modulators.
  - c **Left Attenuation** is the volume adjustment for the Left audio channel. You can choose a value in the range from -6.0 dB to +6.0 dB, in increments of 0.5 dB.
  - d **Right Attenuation** is the volume adjustment for the Right audio channel. You can choose a value in the range from -6.0 dB to +6.0 dB, in increments of 0.5 dB.
- 4 Click **Apply**.

**Viewing the Audio Status and Audio PIDs**

The **Audio Status** area displays the current audio settings. The following table describes the audio status information:

Audio Status	Description
Audio	Displays the current audio decoder status.
PID	Indicates the program PID number (1 to 8191).
Language	Indicates the language code.
Format	Indicates the format of the audio input stream.
Bit Rate (kbps)	Displays the bit rate of the audio input stream, in kbps.
SFR	Displays the sample rate of the input audio stream, in kHz (32, 44.1, or 48 KHz).
Buffer	Indicates the buffer level of the input audio stream, in bytes.
DDP Mode	Displays the presence of Dolby Digital Plus frames within a Dolby Digital audio stream (ON or OFF).
Dualmono Mode	Indicates the presence of dual mono audio outputs in the audio stream (ON or OFF).

Click **List Audio PIDs** to view a list of all the current audio PIDs.

## Setting up Cueing Parameters

- 1 From the user interface of the D9824, choose **Audio & Video > Cueing**. The Cueing page is displayed.

The screenshot shows the Cisco D9824 Web GUI. The page title is "D9824 - Advanced Multiple Decryption Receiver". The breadcrumb navigation is "Home > Summary > Input > Audio & Video > Transport Stream". The left sidebar shows "Audio & Video" with a green checkmark, and "Other Outputs" with a sub-menu for "Cueing". The main content area is titled "Cueing" and contains the following fields:

- Cueing Mode: Trigger
- Trigger polarity: High
- Cueing Tone Repeat Count: 3
- Tone Duration (ms): 40
- Silence Duration (ms): 40
- Relay Mode: Trigger
- Relay Trigger Bit: 5

There are "Apply" and "Refresh" buttons at the bottom.

- 2 From the **Cueing Mode** drop-down list, choose whether cueing output should be DTMF tones or trigger pins.

Tones are standard Dual-Tone Multi-Frequency (DTMF) tones. The tones are generated at the Cue Tone/Relay output on the rear panel of the receiver.

Trigger refers to open-collector pins which can be generated at the Cue Tone/Relay output on the rear panel of the receiver.

- 3 If Trigger is selected as the **Cueing Mode**, choose the pin polarity from the **Trigger Polarity** drop-down list. Choose High for the pins to act as open or floating collectors on an active cueing signal and as ground on an inactive signal. Choose Low for the pins to act as ground on an active cueing signal and as open or floating collectors on an inactive signal.
- 4 If the **Cueing Mode** was set to Tone, enter the number of consecutive tone sequences to be generated in the **Cueing Tone Repeat Count** field. Values greater than 1 are provided when a scenario demands repetition to ensure that the ad insertion equipment receives the signal. You can enter 1, 2, or 3. The default is 3.
- 5 If the **Cueing Mode** is set to Tone, enter the tone duration for each tone in the **Tone Duration** field, in milliseconds, in the range from 0 to 80. The default is 40.
- 6 If the **Cueing Mode** is set to Tone, enter the silence duration of each silence between tones in the **Silence Duration** field, in milliseconds. The duration is in the range from 0 to 80. The default is 40.

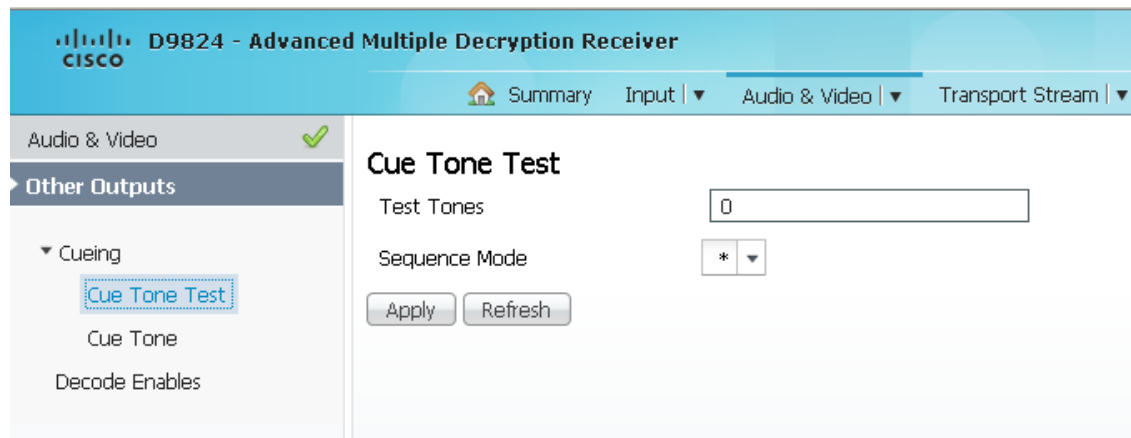
- 7 From the **Relay Mode** drop-down list, choose the relay mode that can be programmed to respond to an Alarm state, Warning status, or the state of one of the eight cue trigger pins. The response is generated at the Cue Tone/Relay output on the rear panel of the receiver. The following table shows what the possible field settings are and their relationship to the receiver output:

Relay Mode	Condition	Relay Contact	
		NC - C	C-NO
Alarm	Unit Power Off	Open	Close
	Alarm State	Open	Close
	No Alarm	Close	Open
Trigger	Active (selected in PNC)	Close	Open
	Inactive	Open	Close

- 8 If the **Relay Mode** is set to Trigger, choose the cue trigger bit/ pin that will activate the relay from the **Relay Trigger Bit** drop-down list (1 to 8).
- 9 Click **Apply**.

## Setting up Cue Tone Test

- 1 From the user interface of the D9824, choose **Audio & Video > Cueing > Cue Tone Test**. The Cue Tone Test page is displayed.



- 2 In the **Test Tones** field, enter the three digit tone sequence. You can enter a value between 000 and 999.
- 3 From the **Sequence Mode** drop-down list, choose the tone sequence mode. The following describes the available options:
  - \* - Start tone only
  - # - End tone only
  - \*/# - Start and end tones. The end tone is signaled after waiting the time specified in Delay(sec).
- 4 Click **Apply**.

## Setting up Cue Tones

- 1 From the user interface of the D9824, choose **Audio & Video > Cueing > Cue Tone**. The Cue Tone page is displayed.

The screenshot shows the Cisco D9824 web interface for configuring cue tones. The main content area is titled "Cue Tone" and contains an "Audio Selection" table. The table has four columns: "Sequence...", "Sequence State", "Sequence Tones", "Sequence Mode", and "Sequence Delay". There are 16 rows, numbered 1 through 16. Each row contains a "Disable" dropdown for the state, a text box with "0" for the tones, a "\*" dropdown for the mode, and a text box with "1" for the delay. The left sidebar shows the navigation menu with "Cueing" expanded and "Cue Tone" selected.

Sequence...	Sequence State	Sequence Tones	Sequence Mode	Sequence Delay
1	Disable	0	*	1
2	Disable	0	*	1
3	Disable	0	*	1
4	Disable	0	*	1
5	Disable	0	*	1
6	Disable	0	*	1
7	Disable	0	*	1
8	Disable	0	*	1
9	Disable	0	*	1
10	Disable	0	*	1
11	Disable	0	*	1
12	Disable	0	*	1
13	Disable	0	*	1
14	Disable	0	*	1
15	Disable	0	*	1
16	Disable	0	*	1

- 2 The **Sequence Number** lists the tone sequences. The receiver supports up to 16 tone sequences. You can configure the state, tones, mode, and delay for each tone sequence.
- 3 Choose the current state of the tone sequence from the **Sequence State** drop-down list (Enabled or Disabled). If disabled, no cue tone is output.
- 4 In the **Sequence Tones** field, set the three digit tone sequence (1 to 999).
- 5 Choose the tone from the **Sequence Mode** drop-down list.  
Choose \* for start tone, # for the end tone, and \*/# for the start and end tones. The end tone is signaled after waiting the time specified in **Sequence Delay**.
- 6 If the **Sequence Mode** was set to \*/# (Start/Stop), enter the sequence delay, in seconds, between the start and stop sequences in the **Sequence Delay** field. You can enter a value in the range from 1 to 255. The default is 30.
- 7 Click **Apply**.

## Setting up Services to be Decoded by the D9824 Receiver

- 1 From the user interface of the D9824, choose **Audio & Video > Decode Enables**. The Decode Enables page is displayed.



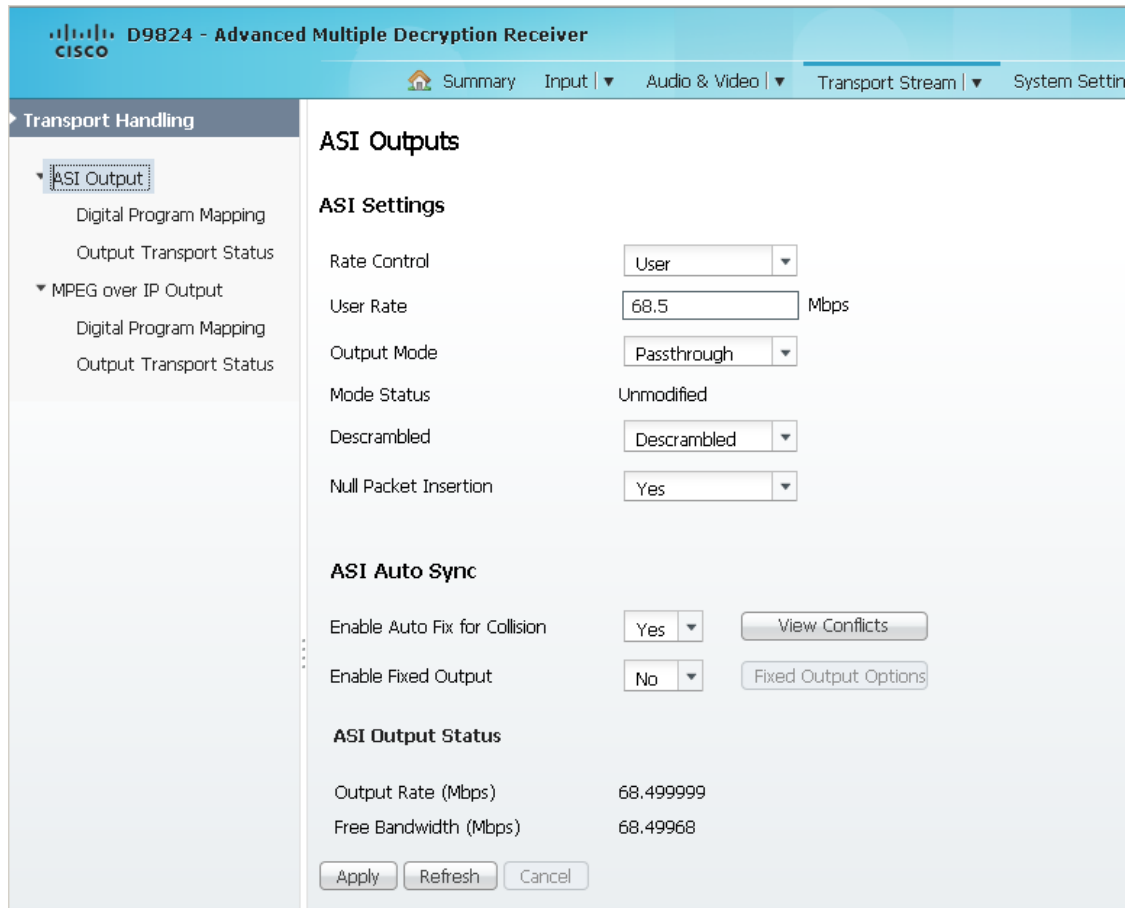
- 2 Check the services check boxes to be decoded by the receiver. Check the **Enable Decode Engine** check box to enable all the services in the list.
- 3 Click **Apply**.

# Configuring Transport Stream Information

## Configuring the ASI Output

- 1 From the user interface of the D9824, choose **Transport Stream > ASI Output**. The ASI Output page is displayed.

**Note:** After you make any changes, a successfully updated (session open) message appears. The changes are displayed, but not saved. You must click **Apply** to save and apply the changes.



**Note:** Any changes made to the ASI DPM values will automatically change the **Mode Status** to **Edited by User**.

- 2 Choose the output rate control from the **Rate Control** drop-down list. The following table describes the affect each of the settings has on the output bit rate:

Rate Control	Description
Auto	The output rate follows that set by the uplink. The output rate will be the same as the input rate (including all null packets). This means the output bit rate is determined automatically based on the input source symbol rate and FEC value.
User	The output rate is specified by the <b>User Rate</b> field. It is determined by the user setting regardless of the input source.

- 3 If the **Rate Control** is set to **User**, enter the maximum output bit rate in the **User Rate** field. This setting is used when the signal source is RF or ASI and allows you to set the output bit rate to a value expected by equipment connected to the ASI output.

You can enter a range from 0 to 206 Mbps.

**Note:** Output data may be lost if this bit rate is set to a value less than the actual signal bit rate.

- 4 Choose the DPM current output from the **Output Mode** drop-down list. With the exception of **No Output** and **Full DPM Control**, choosing a mode will configure the DPM settings to achieve the specified behavior. In this way, they act as DPM presets. The **Mode Status** is changed from **Unmodified** to **Edited by User**. We highly recommend that you use either one of these basic modes, or, for advanced setup, enter the DPM mapping before setting the **Output Mode**. The following table describes each mode:

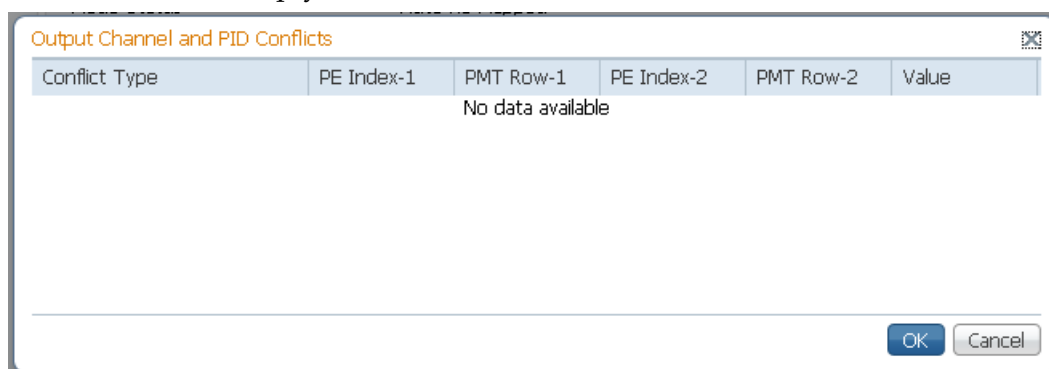
Output Mode	Description
No Output	No ASI output will be generated and the ASI port will be disabled.
Passthrough	All PEs will be set to Pass and other DPM settings will also be set.
Service Channels Only	This is similar to Passthrough, except that only channels applied to program entries are available on the output.
MAP Passthrough	The output will be identical to the input, except that channels assigned to PEs and PIDs will be mapped using the DPM settings. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to <b>Drop</b> .  <b>Note:</b> If the PE is mapped, it uses the last saved output MAP configuration. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.
MAP Service Channels Only	This is similar to MAP Passthrough, except that only channels applied to program entries are available on the output. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to <b>Drop</b> .  <b>Note:</b> If the PE is mapped, it uses the last valid input. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.



Output Mode	Description
Full DPM Control	The output will be generated according to the DPM settings on the ASI Digital Program Mapping page. This is a manual control setting.

A message appears to confirm that you want to resynchronize the output changes and PIDs to match the selected input programs. Click **Yes**.

If a conflict occurs and **Enable Auto Map for Collision** is set to **No**, a detailed list of all the conflicts is displayed in the **Output Channel and PID Conflicts** table when you click **View Conflicts**. You can then resolve the conflicts manually. If a conflict occurs and **Enable Auto Map for Collision** is set to **Yes**, a message that the conflicts will be fixed automatically and the **Output Channel and PID Conflicts** table is empty.



- For channel conflicts, the system will only automatically change the duplicated output channel numbers. If both PE actions are set to **Map**, the output channel number of the higher PE is changed. Otherwise, the output channel number of the mapped PE is changed. The new channel number selected is the next channel number that does not appear in the current PAT or belong to any other PEs.
- For PID conflicts, the system will only automatically change the duplicated output PID numbers. If both PE actions are set to **Map**, the output PID number of the higher PE is changed. Otherwise, the output PID number of the mapped PE is changed. For example, if the PMT PID of PE1 matches the ES PID of PE2, the ES PID of PE2 is changed. The new PID number selected is the next number that does not appear in the output of any PE and it is not in the current transport input.

Click **Apply** to save the resolved conflict changes.

- 5 The **Mode Status** indicates the current DPM configuration change by a user after changing the **Output Mode**. The following is a list of possible statuses:

Mode Status	Description
Unmodified	No changes were made after setting a new Output Mode.
Edited by User	DPM changes were made.

Mode Status	Description
Auto Re-Mapped	The output map changed automatically to fix the output channel or PID conflicts at the time of setup.
Changed by Uplink	DPM output changes were initiated by an encoder.

- 6 From the **Descrambled** drop-down list, choose whether the output will be descrambled if the input is scrambled. The following table describes the available options:

Descramble	Description
Scrambled	The output channel will remain scrambled even if the PE is authorized and can descramble the channel.
Descrambled	Descrambles the output channel, and passes in-the-clear channels.

- 7 Choose **Yes** to insert null packets into the output to maintain output at a constant bit rate from the **Null Packet Insertion** drop-down list. Otherwise, choose **No**.  
**Note:** We recommend that you set the **Null Packet Insertion** to **Yes**.
- 8 Click **Apply**.

#### Setting Up the ASI Auto Synchronization Options

The **ASI Auto Sync** area allows you to configure the DPM without editing each output channel and PID separately.

- 1 In the ASI Outputs page (**Transport Stream > ASI Output**), refer to the **ASI Auto Sync** area.
- 2 Choose **Yes** from the **Enable Auto Fix for Collision** drop-down list for the DPM to resolve channel and PID collisions automatically on the transport outputs. New values are assigned to the parameters that caused the conflict. The new assigned values are not used by any incoming transport or other PE outputs. If a collision is detected, you can review the new changes and click **Apply** to accept the new changes.

Choose **No** and a detailed list of all the conflicts is displayed in the **Output Channel and PID Conflicts** table (click **View Conflicts**) when a conflict occurs. You can then resolve the conflicts manually.

- 3 From the **Enable Fixed Output** drop-down list, choose **Yes** for the DPM to assign new values for all the output channels and PIDs according to the Fixed Output Options table when you Resynchronize All. Click **Fixed Output Options** to configure the ASI Fixed Output Options:

- a Choose **Yes** from the **Use Input Channel Numbers** drop-down list to use the output channel. Otherwise, choose **No** (default) to use the first channel and channel offset assigned below.
  - i In the **First Channel Number** field, enter the first PE channel number to use. By default, the channel is set to 1.
  - ii In the **Channel Numbers Offset** field, enter the subsequent PE channel numbers. For example, if the First Channel Number is set to 100 and the Channel Numbers Offset is set to 10, then the first channel number is 100, and the second channel number is 110.
- b From the **Use Input PMT PID Numbers** drop-down list, choose **Yes** to use the input PMT PID number. Otherwise, choose **No** (default) to use the first PE PID number and PID offset number assigned below.
  - i In the **First Channel First ES PID Number** field, enter the first PE PMT PID number. The default is 1701.
  - ii In the **PMT PID Numbers Offset** field, enter the offset of the subsequent PE PMT PID numbers. For example, if the First Channel First ES PID Number is set to 1701 and the PMT PID Numbers Offset is set to 1, then the first PMT PID number is 1701, and the second PMT PID number is 1702.
- c From the **Use Input ES PID Numbers** drop-down list, choose **Yes** to use the input ES PID number. Otherwise, choose **No** (default) to use the first ES PID number and the ES PID offset number assigned below.

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- i In the **First Channel First ES PID Number** field, enter the first ES PID number. The default is 101.
  - ii In the **First ES PID Numbers Offset** field, enter the offset of the first ES PID of subsequent channel numbers. For example, if the First ES PID Number is set to 101 and the ES PID Numbers Offset is set to 100, then the first ES PID number is 101, and the second ES PID number is 201.
  - d From the **Use Input PMT ES Stream Order** drop-down list, choose **Yes** to assign the ES PID according to the incoming PMT order. Otherwise, choose **No** to use the reserved PIDs defined below.
    - i In the **PCR, VID, AUD, SUBT, VBI, DPI, MPE, TTX, DATA, LSD, CDT, ETV** fields, enter the number of PIDs for the specified streams (PCR, VID, AUD, SUBT, VBI, DPI, MPE, TTX, DATA, LSD, CDT, ETV) in one channel.
  - e Click **OK**.
- 4 Click **Apply**.

### Viewing the ASI Output Status

The **ASI Output Status** area displays the current **Output Rate** (0 to 213 Mbps) and the available bit bandwidth (**Free Bandwidth**), in Mbps.

## Configuring the DPM ASI Details

**Note:** The following procedure defines all the available fields. For a typical setup of the DPM, see *Typical set up for Digital Program Mapping (DPM)* (on page 221).

**Note:** After you make any changes, a successfully updated (session open) message appears. The changes are displayed, but not saved. You must click **Apply** to save and apply the changes.

- 1 From the user interface of the D9824, choose **Transport Stream > Digital Program Mapping** under **ASI Output**. The ASI Digital Program Mapping page is displayed.

The screenshot shows the Cisco D9824 web interface for configuring the ASI Digital Program Mapping. The page title is "ASI Digital Program Mapping". On the left, there is a navigation menu with "ASI Output" expanded, showing "Digital Program Mapping" selected. The main content area is divided into two sections: "DPM Program Entry Setup" and "DPM General Settings".

**DPM Program Entry Setup**

Program E...	Chl #	Name	Action	Output Chl#	PMT PID
<input type="radio"/> PE1	601		Pass	0	8191
<input type="radio"/> PE2	0	UNKN	Pass	0	8191
<input type="radio"/> PE3	0	UNKN	Pass	0	8191
<input type="radio"/> PE4	0	UNKN	Pass	0	8191
<input type="radio"/> PE5	0	UNKN	Pass	0	8191
<input type="radio"/> PE6	0	UNKN	Pass	0	8191
<input type="radio"/> PE7	0	UNKN	Pass	0	8191
<input type="radio"/> PE8	0	UNKN	Pass	0	8191
<input type="radio"/> PE9	0	UNKN	Pass	0	8191

Buttons below the table: Edit, Resynchronize, Resynchronize All, View Conflicts.

**DPM General Settings**

Remapping Mode: Svc ID  
 Duplication Method: PSI Remap  
 Unreferenced Content: Pass (Mode-i Options)  
 Service ID Output: Valid Ch  
 SI Regeneration Option: SA Std  
 PSI Table Output Option: Ctl By Table (Table Options)  
 PSI Regeneration Option: Always  
This item affects all Transport outputs.  
 Buttons: Apply, Refresh, Cancel, Copy to MOIP

- 2 For each DPM **Program Entry**, it displays the input channel number (**Chl #**) and channel name (**Name**). There are 32 channels (PE1 to PE32).

**Note:** Any changes made to the ASI DPM values will automatically change the **Mode Status** to **Edited by User** in the ASI Outputs page.

- 3 In the table, select a program entry row you want to edit.

From the **Action** drop-down list, choose the DPM program action for the PE (Pass, Map, or Drop).

Click **Save**.

- 4 Click **PE1** to **PE32** radio button to edit the program entry.
- 5 Click **Edit**. The DPM PE PID MAP dialog box opens.

**DPM PE PID MAP**

Input Channel# 801 Output Channel # 801  
 Input PMT PID 39 Output PMT PID 34

Edit Delete Add Row

<input type="radio"/>	Input Stream	Input PID	Action	Stream Type	Category	Instance	Output PID
<input type="radio"/>	PCR	2248	Map	0	PCR	1	2248
<input type="radio"/>	SUBT	612	Map	139	SUBT	1	612
<input type="radio"/>	LSD	3340	Map	133	LSDT	1	2064
<input type="radio"/>	VID	2248	Map	27	VID	1	2248
<input type="radio"/>			Map	13	MPE	1	4001
<input type="radio"/>			Map	13	MPE	2	4002
<input type="radio"/>			Map	13	MPE	3	4003
<input type="radio"/>			Map	13	MPE	4	4004
<input type="radio"/>			Map	13	MPE	5	4005
<input type="radio"/>	AUD	6001	Map	17	AUD	1	6001

OK Cancel

- 6 Enter the **Output Channel #** you want to map to the input channel (**Input Channel #**). This value is only used if the PE **Action** was set to **Map**. You can enter a range from 1 to 65535.
- 7 Enter the **Output PMT PID** you want to map to the Input PMT PID.
- 8 In the **PE PID MAP** area, you can select an existing PID mapping entry you want to modify or click **Add Row** to create a new entry.
- 9 The **Input Stream** indicates the input service that will be mapped by the current entry. The **Input PID** displays the input PID (1 to 8190) that will be mapped by the current entry. This is only used if the **Action** is set to Map.
- 10 From the **Action** drop-down list, choose the action to perform on the current PID. The **Drop** action is always performed, but the **Map** option is only applied if the PE **Action** is **Map** and the **Remapping Mode** is **Svc ID & PID** in the **DPM General Settings** section.

Action	Description
Drop	The service selected by the Category and Instance will be mapped to the specified PID. This is only applied if the PE action is Map and the Remapping Mode is Svc ID & PID.
Map	The service selected by the Category and Instance will be removed from the PMT and the output stream.

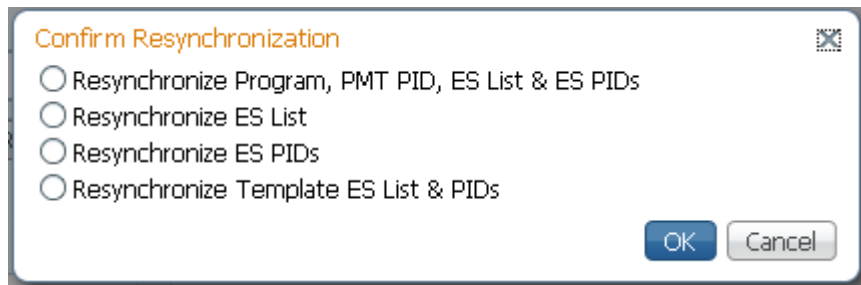
- 11 In the **Stream Type** field, enter a stream type to map within a PE to a specified PID (0 to 255).
- 12 From the **Category** drop-down list, choose the category or service to configure. If an input service matches this type and Instance, then the Action will be applied. This value is only used if the Action is set to Map. The categories are: UNKN, CDT, LSDT, DATA, TTX, MPE, DPI, VBI, SUBT, AUD, VID, PCR or INVL.

- 13 In the **Instance field**, enter the instance (1 to 64) of the service specified by **Category** to configure. If an input service matches this type and instance, then the **Action** will be applied.
- 14 If **Action** is set to **Map**, enter the **Output PID** number (0 to 8192) in the **Output PID** field.
- 15 Click **Save**.
- 16 Click **OK**.

To remove a PID mapping, click the radio button of the entry you want to remove and click **Delete**.

### Synchronizing the Inputs

- 1 In the **DPM Program Entry Setup** table, each PE output can be synchronized to its input according to one of the four output modes. Select the program entry you want to synchronize and then click **Resynchronize** or click **Resynchronize All** to synchronize the inputs to the outputs according to the service assignments only. The Confirm Resynchronization window is displayed.

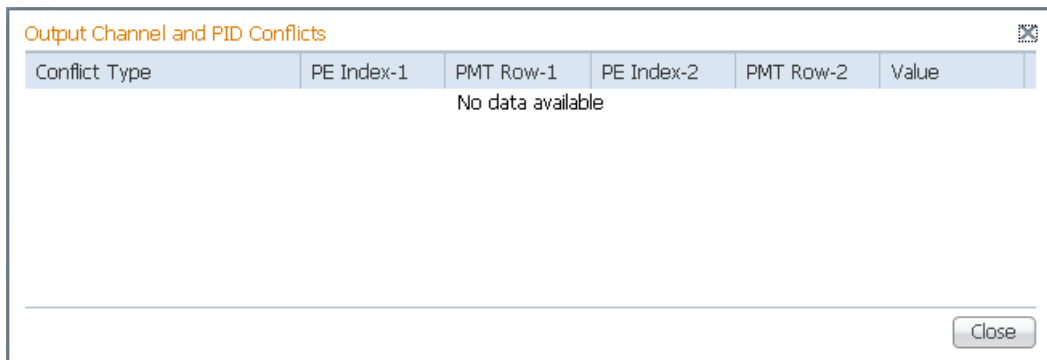


- 2 Select whether you want to synchronize the PE output according to the services and then the PIDs assigned to each service, services only, PIDs only, or to synchronize using a template.

Map Mode	Description
Resynchronize Program, PMT PID, ES List & ES PIDs	The receiver will synchronize the PE output according to the services and then the PIDs assigned to each service.
Resynchronize ES List	The receiver will synchronize the PE output according to the available input services only, and ignore the input to output service PID mapping.
Resynchronize ES PIDs	The receiver will synchronize the PE output according to the input PIDs only, and ignore the service assignment categories/names.
Resynchronize Template ES List & PIDs	Allows you to preset the input to output mapping of a PE according to the preset template. This is helpful in pre-configuring any number of PEs for future use.

- 3 Click **OK**.

If a conflict occurs, a message that the conflicts will be fixed automatically and to preview the changes prior to saving is displayed. Click **View Conflicts** to view a detailed list of all the conflicts in the **Output Channel and PID Conflicts** window.



- For channel conflicts, the system will only automatically change the duplicated output channel numbers. If both PE actions are set to **Map**, the output channel number of the higher PE is changed. Otherwise, the output channel number of the mapped PE is changed. The new channel number selected is the next channel number that does not appear in the current PAT or belong to any other PEs.
- For PID conflicts, the system will only automatically change the duplicated output PID numbers. If both PE actions are set to **Map**, the output PID number of the higher PE is changed. Otherwise, the output PID number of the mapped PE is changed. For example, if the PMT PID of PE1 matches the ES PID of PE2, the ES PID of PE2 is changed. The new PID number selected is the next number that does not appear in the output of any PE and it is not in the current transport input.

Click **Apply** to save the resolved conflict changes.

### Configuring DPM General Settings

- 1 In the **DPM General Settings** section, you can configure ASI DPM transport stream settings.
- 2 In the **Remapping Mode** drop-down, select the DPM mapping mode for this output. The following table describes each mode:

Map Mode	Description
Svc ID	The elementary PIDs are not changed. Channels are remapped by changing their PSI references. When this mode is selected, PE detailed PID mapping in the PID menu are ignored.
Svc ID & PID	Channels and the elementary service PIDs can be mapped in the DPM PE PID MAP window.

- 3 Select the **Duplication Method** for how to handle duplicate programs. This setting is only used if **Remapping Mode** is set to **Svc ID & PID**. The following table describes the each duplication method:



Duplic Mode	Description
PSI Remap	Every input PID can be mapped to only one output PID. If PID mapping conflicts exist, DPM will use the Precedence Rule to decide which output PID to use. All PMTs using the input PID will be updated to reference the output PID specified by the winner.
Pkt Copy	An input PID can be mapped to multiple output PIDs. The PID will be duplicated as many times as needed (up to a certain hardware limitation).  <b>Note:</b> This may increase the output bandwidth of the stream.

**Pkt Copy** is recommended for most applications.

- Select the action to use for **Unreferenced Content**. Unreferenced content is the remainder of the transport stream that is not filtered by the program entries. Select **Drop** (default) to drop all unreferenced content. Select **Pass** to pass all unreferenced content to the output unchanged.
- In the **Service ID Output** drop-down, select whether the transcoder should always generate PSI tables for the Mapped PE even if the selected input channel is not available, or for only valid service channels/IDs. The following table describes each service ID:

Svc ID	Description
Valid Ch	Only transmits the PSI tables for the mapped program if the program exists on the input stream.
All Ch	Transmits the PSI tables for the mapped program even if the program does not exist in the input stream.  All Ch is only valid if the PAT, NIT, SDT and PMT are set to Regenerate.

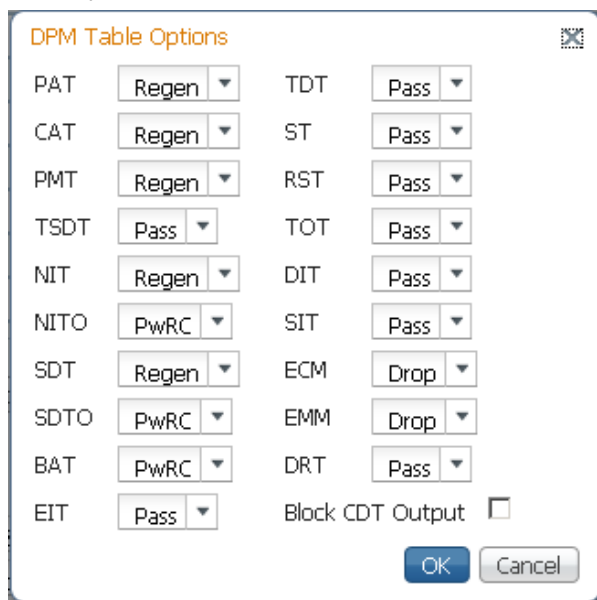
- If PSI Table Output Option is set to Ctrl by Table, select the regeneration rate for those PSI tables being regenerated in the **SI Regeneration Option** drop-down menu. This parameter is only used if Remapping Control is set to None. The following table describes each PSI rate:

PSI Rate	Description
Auto	Matches the generated PSI tables' output rate to the incoming rate.
MPEG Min	Transmits the generated PSI tables on the longest intervals that are allowed by MPEG standard.
SA Std	Transmits the generated PSI tables based on PowerVu standard intervals.

- In the **PSI Table Output Option** drop-down menu, select the action to perform on the PSI tables for the output stream. The following table describes each option:

PSI Options	Description
Pass All	Transmits the incoming PSI Tables as is; does not modify the content and rate. The SI Regeneration Option and table settings are ignored.
Drop All	Does not transmit any PSI Tables. The SI Regeneration Option and table settings are ignored.
Ctl By Table	The operator can click <b>Table Options</b> to select the table specific output mode for each table.

- If **Ctl By Table** is selected as the **PSI Table Output Option**, click **Table Options** to configure the DPM table options. The DPM Table Options (ASI) window is displayed.



Select the tables which will be passed, dropped, regenerated or passed with rate control (PwRC) from the ASI Output. For more information on the table options, see *PSI Table Settings* (on page 112).

The CDT is different from the other tables listed because the CDT is referred to within the PMT, rather than outside the PMT. Select **Block CDT Output** to override the DPM PID map configuration for CDT PIDs and to always drop all CDTs. Otherwise, clear the **Block CDT Output** to permit the output of CDTs following the configured DPM PID map configuration and all other DPM constraints.

- In the **PSI Regeneration Option** drop-down, select whether to regenerate the PSI tables to the output. You can select **Always** to regenerate all the tables or **As Needed** to only regenerate the tables if the content has changed.
- Click **OK**.
- Click **Apply**.
- Click **Copy To MOIP** to copy all the DPM data from the ASI output to the MPEG over IP output.

## Viewing the ASI Output Transport Status

From the user interface of the D9824, choose **Transport Stream > Output Transport Status** under **ASI Output**. The PID Output Status page is displayed.

The screenshot shows the web interface for the D9824 Advanced Multiple Decryption Receiver. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'Transport Handling' with 'ASI Output' expanded to 'Output Transport Status'. The main content area is titled 'ASI Output Status' and contains the following sections:

**PID Output Status**

**Program Entry - Referenced PIDs**

PE Index	Type	Input PID	Output PID	PCR	Output Scrambled	Input Recieved
1	SUBT	612	612	No	No	No
1	LSDT	3340	2064	No	No	Yes
1	VID	2248	2248	Yes	No	Yes
1	MPE	0	4001	No	No	No
1	MPE	0	4002	No	No	No
1	MPE	0	4003	No	No	No
1	MPE	0	4004	No	No	No

**Current DPM Collisions**

**Output Channel and PID Conflicts**

Conflict Type	PE Index-1	PMT Row-1	PE Index-2	PMT Row-2	Value
No data available					

A 'Refresh' button is located at the bottom of the page.

The **Program Entry - Referenced PIDs** table displays the specified PE ES PIDs information on the output.

The **Output Channel and PID Conflicts** table displays a list of conflicts when the DPM alarm is active.

## Configuring the MPEGoIP Output

- From the user interface of the D9824, choose **Transport Stream > MPEG over IP Output**. The MPEG over IP Output page is displayed.

The screenshot shows the Cisco D9824 Web GUI for the 'MPEG over IP Output' configuration. The page is titled 'MPEG over IP Output' and has tabs for 'Main' and 'Stream'. Under 'MPEG Over IP Settings', there are fields for Rate Control (User), User Rate (25.0 Mbps), Output Mode (Full DPM Control), Mode Status (Unmodified), Descrambled (Descrambled), and Null Packet Insertion (Yes). On the right, there are fields for SAP Multicast IP Address (224.2.127.254), SAP Destination UDP Port (9875), FEC Scheme (Non-Block Aligned), MoIP Auto Sync (Yes), and Limits (Maximum Transport Packets / Ethernet Frame: 7, Minimum Packets / Second: 0). At the bottom, there is a MoIP Output Status table and buttons for Apply, Refresh, and Cancel.

Rate Control	Description
Auto	The output rate follows that set by the uplink. This setting can be used if the signal source is ASI. If <b>Null Packet Insertion</b> is set to <b>Yes</b> , the output bit rate is the same as the input rate (including all the null packets). If <b>Null Packet Insertion</b> is set to <b>No</b> and the <b>Output Mode</b> is set to one of the MPTS modes, the output rate is equal to the payload rate of the transport stream to be encapsulated, and in most cases, it will be lower than the overall input rate.

**Note:** Any changes made to the MOIP DPM values will automatically change the **Mode Status** to **Edited by User**.

- Choose the MOIP output rate control from the **Rate Control** drop-down list. The following table describes the affect each of the settings has on the output bit rate:

Rate Control	Description
Auto	The output rate follows that set by the uplink. This setting can be used if the signal source is ASI. If <b>Null Packet Insertion</b> is set to <b>Yes</b> , the output bit rate is the same as the input rate (including all the null packets). If <b>Null Packet Insertion</b> is set to <b>No</b> and the <b>Output Mode</b> is set to one of the MPTS modes, the output rate is equal to the payload rate of the transport stream to be encapsulated, and in most cases, it will be lower than the overall input rate.

## Configuring Transport Stream Information

Rate Control	Description
User	The output rate is specified by the <b>User Rate</b> field. It is determined by the user setting regardless of the input source. Null packets are always inserted when the configured output bit rate is higher than the payload rate of the transport stream to be encapsulated.

- 3 Enter the output user rate in the **User Rate** field, which is only used if **Rate Control** is set to **User**. You can enter a range from 0 to 206 Mbps.

**Note:** Output data will be partially or completely lost if the payload (bit rate) of the transport to be encapsulated is higher than the user-defined output bit rate.

- 4 From the **Output Mode** drop-down list, choose the DPM output mode. With the exception of **No Output** and **Full DPM Control**, selecting a mode will configure the DPM settings to achieve the specified behavior. In this way, they act as DPM presets. The **Mode Status** is changed from **Unmodified** to **Edited by User**. It is highly recommended to use either one of these basic modes, or, for advanced setup, enter the DPM mapping before setting the **Output Mode**.

Each PE in the Single Program Transport Stream (SPTS) creates its own transport stream, which includes PAT, CAT, SDT, and PMT tables for one service channel only, as well as ES PIDs for the PE.

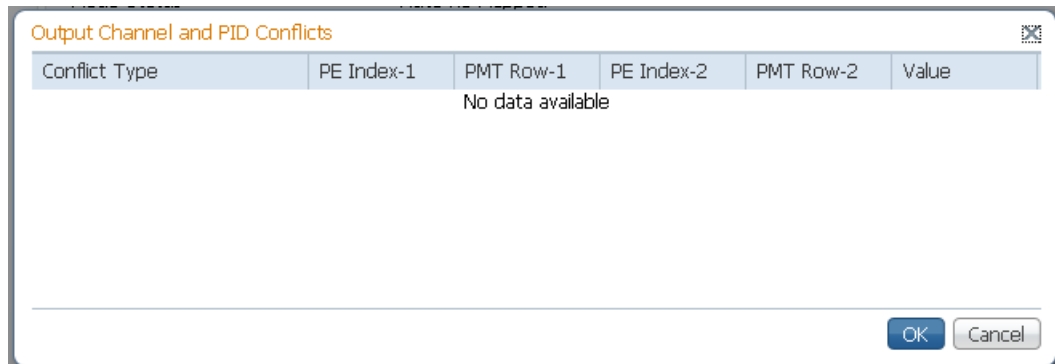
The following table describes each mode:

Output Mode	Description
No Output	No MPEGoIP output will be generated.
Passthrough	All PEs will be set to Pass and other DPM settings will also be set.
Service Channels Only	Only service channels will be output.
MAP Passthrough	The output will be identical to the input, except that channels assigned to PEs and PIDs will be mapped using the DPM settings. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to <b>Drop</b> .  <b>Note:</b> If the PE is mapped, it uses the last saved output MAP configuration. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.
MAP Service Channels Only	This is similar to MAP Passthrough, except that only channels applied to program entries are available on the output. If the input is tuned to a valid channel, the PEs are automatically set to Map. Otherwise, the PEs are automatically set to <b>Drop</b> .  <b>Note:</b> If the PE is mapped, it uses the last valid input. The output map (for example, output channel PMT) does not change automatically if the input or channel number is changed.

Output Mode	Description
Full DPM Control	The output will be generated according to the DPM settings on the MPEG over IP Digital Program Mapping page. This is a manual control setting.
SPTS Service Channels Only	The service channel is passed with the same channel number, PMT PID, and ES PID numbers.
SPTS MAP Service Channels Only	The service channel is mapped to the preconfigured channel number, PMT, and ES PIDs.
SPTS Full DPM Control	The output will be generated according to the DPM settings on the MPEG over IP Digital Program Mapping page. This is a manual control setting.

A message appears to confirm that you want to resynchronize the output changes and PIDs to match the selected input programs. Click **Yes**.

If a conflict occurs and **Enable Auto Map for Collision** is set to **No**, a detailed list of all the conflicts is displayed in the **Output Channel and PID Conflicts** table when you click **View Conflicts**. You can then resolve the conflicts manually. If a conflict occurs and **Enable Auto Map for Collision** is set to **Yes**, a message that the conflicts will be fixed automatically and the **Output Channel and PID Conflicts** table is empty.



- For channel conflicts, the system will only automatically change the duplicated output channel numbers. If both PE actions are set to **Map**, the output channel number of the higher PE is changed. Otherwise, the output channel number of the mapped PE is changed. The new channel number selected is the next channel number that does not appear in the current PAT or belong to any other PEs.
- For PID conflicts, the system will only automatically change the duplicated output PID numbers. If both PE actions are set to **Map**, the output PID number of the higher PE is changed. Otherwise, the output PID number of the mapped PE is changed. For example, if the PMT PID of PE1 matches the ES PID of PE2, the ES PID of PE2 is changed. The new PID number selected is the next number that does not appear in the output of any PE and it is not in the current transport input.

Click **Apply** to save the resolved conflict changes

- 5 The **Mode Status** indicates the current DPM configuration change by a user after changing the **Output Mode**. The following is a list of possible statuses:

Mode Status	Description
Unmodified	No changes were made after setting a new Output Mode.
Edited by User	DPM changes were.
Auto Re-Mapped	Output map changed automatically to fix the output channel or PID conflicts at the time of setup.
Changed by Uplink	DPM output changes were initiated by an encoder.

- 6 From the **Descrambled** drop-down list, choose whether the receiver should scramble the output even if it is authorized to receive the channel. The default is Descrambled.

Descramble Mode	Description
Scrambled	Scrambles the output channel even if the PE is authorized and can descramble the channel.
Descrambled	Descrambles the output channel, and passes in-the-clear channels.

- 7 Choose **Yes** to insert null packets in the output stream from the **Null Packet Insertion** drop-down list. Otherwise, choose **No**. Null packets are always inserted if the **Rate Control** is set to **User** and the configured output bit rate is higher than the payload rate of the transport stream to be encapsulated.

**Note:** We recommend that the **Null Packet Insertion** is set to **Yes**.

- 8 In the **SAP Multicast IP Address** field, enter the Session Announcement Protocol destination IP address. This is the IP address where the SAP announcements are sent, if required.

**Note:** It is not recommended to change the default IP address (224.2.127.254).

- 9 In the **SAP Destination UDP Port** field, enter the SAP destination port number (1 to 65534). This is the UDP port where the SAP announcements are sent, if required.

**Note:** It is not recommended to change the default SAP port 9875.

- 10 From the **FEC Scheme** drop-down list, choose the FEC packet sending arrangement (Block Aligned or Non-Block Aligned). They are defined in the pro-MPEG FEC and SMPTE-2022 standards.

**Note:** If **FEC Mode** is set to **None**, the **FEC Scheme** is ignored. For more information on the **FEC Mode**, see *Configuring Forward Error Correction Settings* (on page 210).

FEC Scheme	Description
Block Aligned	Column FEC packets are set by using an interleaver.

FEC Scheme	Description
Non-Block Aligned	Each FEC packet receives L packets after the last related data packet.

11 Click **Apply**.

### Setting Up the MPEG over IP Auto Synchronization Options

The MoIP Auto Sync section allows you to configure the DPM without editing each output channel and PID separately.

- 1 In the MPEG over IP Output page (**Transport Stream > MPEG over IP Output**), refer to the **MoIP Auto Sync** section.
- 2 From the **Enable Auto Fix for Collision** drop-down list, choose **Yes** for the DPM to resolve channel and PID collisions automatically on the transport outputs. New values are assigned to the parameters that caused the conflict. The new assigned values are not used by any incoming transport or other PE outputs. If a collision is detected, you can review the new changes and click **Apply** to accept the new changes.

Choose **No** and a detailed list of all the conflicts is displayed in the **Output Channel and PID Conflicts** table (click **View Conflicts**) when a conflict occurs. You can then resolve the conflicts manually.

- 3 From the **Enable Fixed Output** drop-down list, choose **Yes** for the DPM to assign new values for all the output channels and PIDs according to the Fixed Output Options table when you Resynchronize All. Click **Fixed Output Options** to configure the MoIP Fixed Output Options:

- a From the **Use Input Channel Numbers** drop-down list, choose **Yes** to use the input channel numbers. Otherwise, choose **No** (default) to use the first channel and channel offset assigned below.



- i In the **First Channel Number** field, enter the first PE channel number to use. By default, the channel is set to 1.
  - ii In the **Channel Numbers Offset** field, enter the subsequent PE channel numbers. For example, if the First Channel Number is set to 100 and the Channel Numbers Offset is set to 10, then the first channel number is 100, and the second channel number is 110.
  - b From the **Use Input PMT PID Numbers** drop-down list, choose **Yes** to use the input PMT PID number. Otherwise, choose **No** (default) to use the first PE PID number and PID offset number assigned below.
    - i In the **First Channel First ES PID Number** field, enter the first PE PMT PID number. The default is 1701.
    - ii In the **PMT PID Numbers Offset** field, enter the offset of the subsequent PE PMT PID numbers. For example, if the First Channel First ES PID Number is set to 1701 and the PMT PID Numbers Offset is set to 1, then the first PMT PID number is 1701, and the second PMT PID number is 1702.
  - c From the **Use Input ES PID Numbers** drop-down list, choose **Yes** to use the input ES PID number. Otherwise, choose **No** (default) to use the first ES PID number and the ES PID offset number assigned below.
    - i In the **First Channel First ES PID Number** field, enter the first ES PID number. The default is 101.
    - ii In the **First ES PID Numbers Offset** field, enter the offset of the subsequent ES PID numbers. For example, if the First ES PID Number is set to 101 and the ES PID Numbers Offset is set to 100, then the first ES PID number is 101, and the second ES PID number is 201.
  - d From the **Use Input PMT ES Stream Order** choose **Yes** to assign the ES PID according to the incoming PMT order. Otherwise, choose **No** to use the reserved PIDs defined below.
    - i In the **PCR, VID, AUD, SUBT, VBI, DPI, MPE, TTX, DATA, LSD, CDT, ETV** fields, enter the number of PIDs for the specified streams (PCR, VID, AUD, SUBT, VBI, DPI, MPE, TTX, DATA, LSD, CDT, ETV) in one channel.
  - e Click **OK**.
- 4 Click **Apply**.

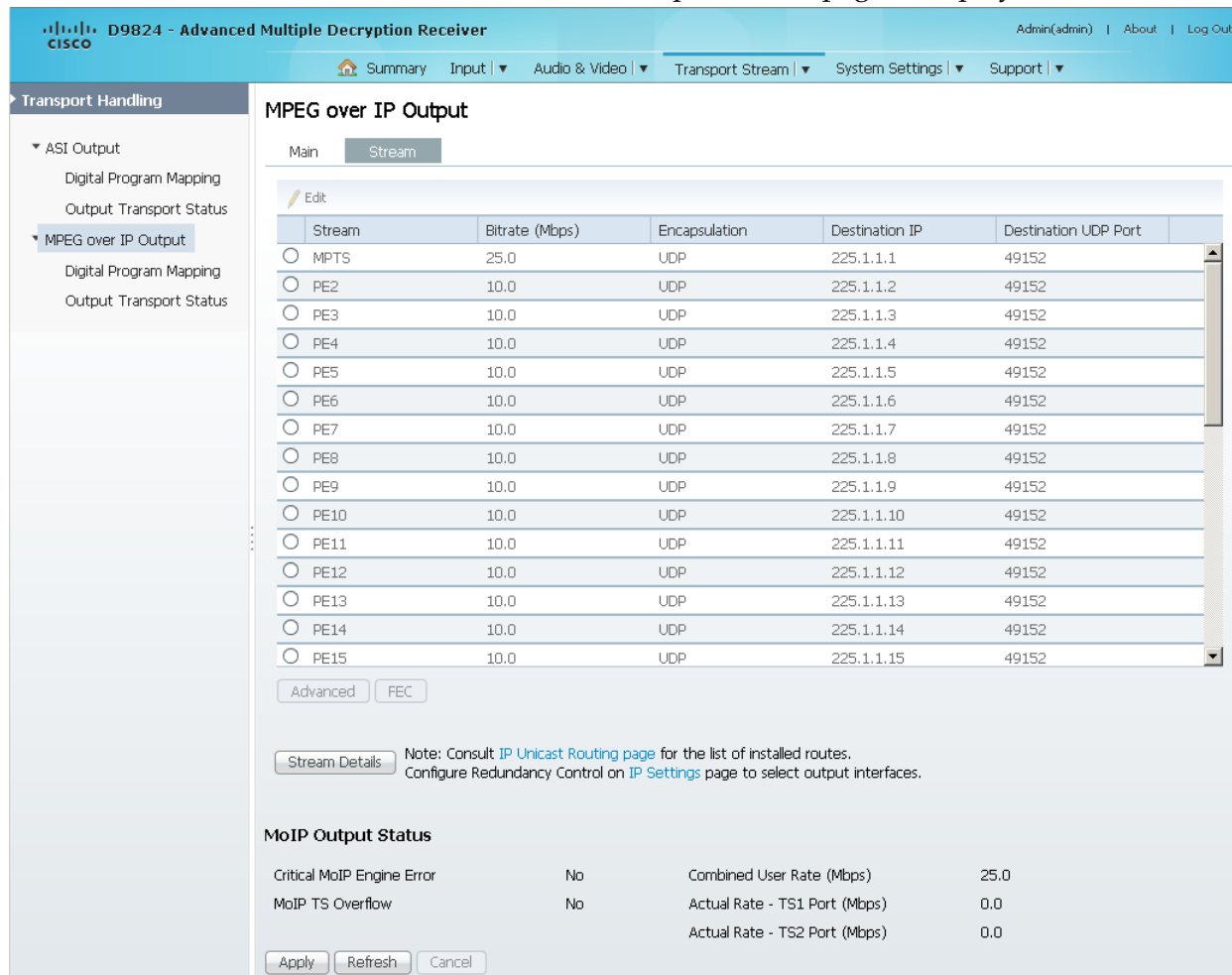
#### Setting the Maximum and Minimum Transport Packets

The maximum and minimum transport packets are set in the **Limits** section of the MPEG over IP Output page.

- 1 In the **Maximum Transport Packets/Ethernet Frame** field, enter the maximum number of transport packets per IP packet (1 to 7).
- 2 In the **Minimum number Packets/Second** field, enter the minimum number of transport packets per IP packet. You can enter 0 or 3 to 99999.

### Configuring MPEG over IP Streams

- 1 In the MPEG over IP Output page (**Transport Stream > MPEG over IP Output**), click **Stream**. The MPEG over IP Output Stream page is displayed.



The following table describes the stream information:

Stream Details	Description
Stream	Type of stream.  If <b>No Output, Passthrough, Service Channels Only, MAP Passthrough, MAP Service Channels Only, or Full DPM Control</b> is selected as the <b>Output Mode</b> , you can configure the Multi Program Transport Stream (MPTS). PE2 to PE32 are not applicable.  If <b>SPTS Service Channels Only, SPTS MAP Service Channels Only, or SPTS Full DPM Control</b> is selected as the <b>Output Mode</b> , you can configure PE1 to PE32 streams. Each PE creates its own transport stream for the assigned service channel and ES PIDs.
Bitrate (Mbps)	This is the output bit rate of the transport stream, in Mbps.

## Configuring Transport Stream Information

Stream Details	Description
Encapsulation	Selects the transport protocol to use for the output stream (UDP or RTP).
Destination IP	Enter the unicast (valid host IP only) or multicast destination IP address.
Destination UDP Port	This selects the destination port number (1 to 65534). <b>Note:</b> If you selected <b>RTP</b> for <b>Encapsulation</b> , you must select an even destination port number.

- To modify the stream information, click the radio button of a stream and click **Edit**.
- Make the necessary changes and click **Save**.
- To configure advanced stream settings, click the radio button of a stream and click **Advanced**.

The following table describes the advanced settings:

Advanced Settings	Description
Traffic Class	Sets the quality of service (0 to 255).
Time to Live (Max #hops)	This sets the hop limit of the packet's lifespan (0 to 255).
Source UDP Port	This sets the source UDP port number (0 to 65535). <b>Note:</b> Set the <b>Source UDP Port</b> to 0 to use the default UDP port (49162).
Announce Type	Choose <b>RFC 2327</b> to send the Session Announcement Protocol (SAP) messages according to the RFC 2327 standard. Otherwise, choose <b>None</b> to not send SAP messages.
Announce Title Source	Choose <b>User String</b> to use the SAP string as the channel name, defined in the Announce User's Title below. Otherwise, choose <b>SDT channel</b> to use the SDT string as the channel name.

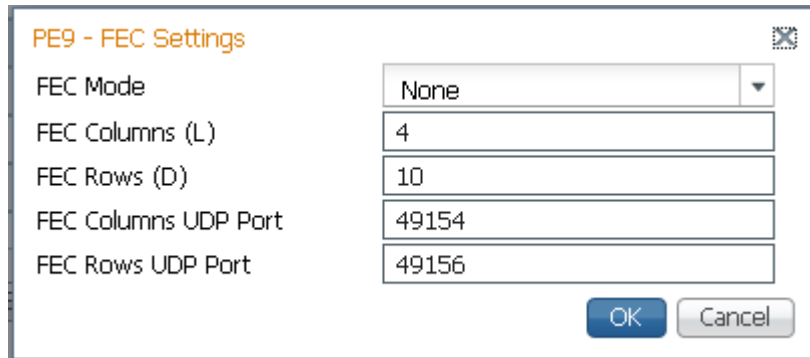
Advanced Settings	Description
Announce User's Title	If <b>User String</b> is selected as the <b>Announce Title Source</b> , enter the SAP identifier (ID)/string, up to 31 characters.

- 5 Click **OK**.

### Configuring Forward Error Correction Settings

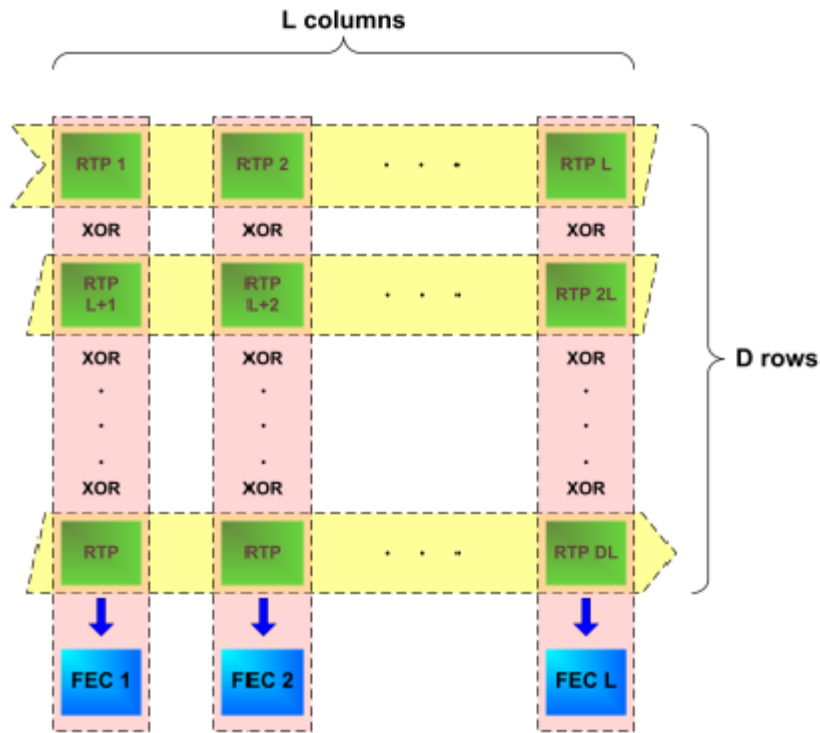
Due to its nature (occasionally packet loss, packet reordering, and/or stream jitter) a traditional IP network is not the perfect channel for transmitting broadcast-quality compressed video content. Forward Error Correction (FEC) developed by the Pro-MPEG forum is a unique technology to enhance the robustness of video traffic over IP networks. The D9824 supports Pro-MPEG FEC Code of Practice (COP) #3 release2 and SMPTE-2022, which is based on the exclusive or (XOR) boolean operator applied to a number of data packets. When a FEC packet is created by performing the XOR boolean operation on a number of RTP packets, a missing RTP packet can always be reconstructed by performing the XOR operation on the FEC packet and the remaining RTP packets.

- FEC = RTP1 XOR RTP2
  - RTP1 = FEC XOR RTP2
  - RTP2 = FEC XOR RTP1
- 1 In the MPEG over IP Output Stream page, select the stream you want to configure FEC settings.
  - 2 Click **FEC**. The FEC Settings dialog box is displayed.

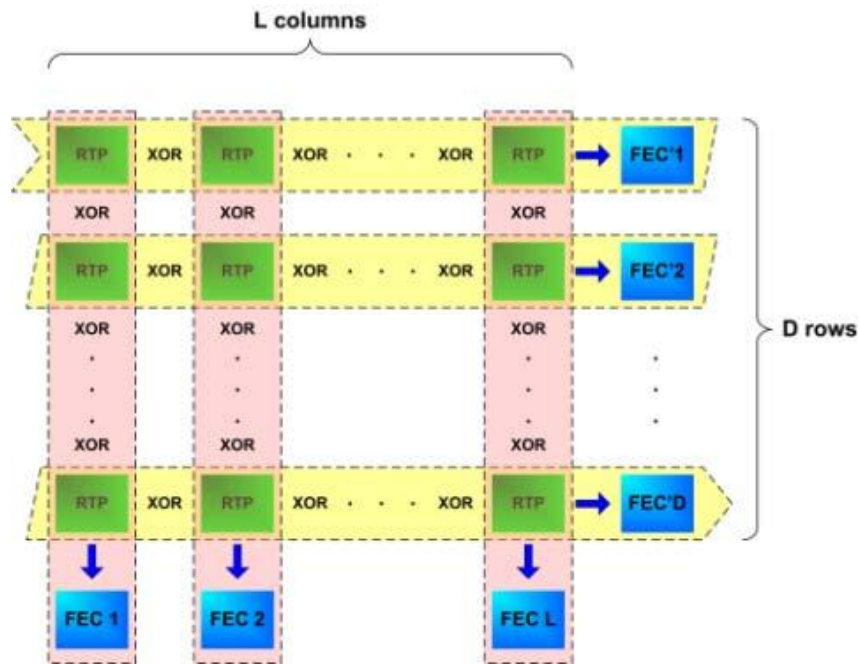


- 3 From the **FEC Mode** drop-down list, choose an error protection profile.

Choose **1D** to use the 1D FEC profile. The 1D FEC profile maps the RTP packet stream across columns (matrix of data packets). The following is an example:



Choose **2D** to use the 2D FEC profile. The 2D FEC profile maps the RTP packet stream across both the column packets and row packets. In the following example, an FEC packet is created for each row and each column:



Choose **None** to disable the error protection for the selected MPEGoIP stream.

- 4 The generation of the FEC packets is based on the use of a matrix. The matrix size is defined by the Length (L) and Depth (D) parameters. In the **FEC Columns (L)** field, set the spacing between non-consecutive packets used to calculate the FEC packet (1 to 20).

If the **FEC Mode** is set to **2D**, set the depth of the matrix in the **FEC Rows (D)** field (4 to 20).

**Note:** For additional restrictions on L and D values (depending on the **FEC Scheme** and **FEC Mode**), refer to Pro-MPEG FEC COP#3 and SMPTE-2022.

- 5 In the **FEC Columns UDP Port** field, enter the UDP port number for the FEC Columns stream (2 to 65534, even number only).

**Note:** We recommend that you set the **FEC Columns UDP Port** number to TS UDP port + 2.

If the **FEC Mode** is set to **2D**, enter the destination UDP port number for the FEC Rows stream in the **FEC Rows UDP Port** field (2 to 65534, even number only).

**Note:** We recommend that you set the **FEC Rows UDP Port** number to TS UDP port +4.

- 6 Click **OK**.

### Viewing Stream Details

To view the stream details, click **Stream Details** in the MPEG over IP Output **Main** or **Stream** page. The following Stream Status table is displayed.

PE	TS1 Port	TS2 Port	Content Overflow	Link Overflow	FEC Encoder Overhead (%)	FEC Encoder Latency (ms)
1	Suspended	Suspended	No	No	0	0
2	Stopped	Stopped	No	No	0	0
3	Stopped	Stopped	No	No	0	0
4	Stopped	Stopped	No	No	0	0
5	Stopped	Stopped	No	No	0	0
6	Stopped	Stopped	No	No	0	0
7	Stopped	Stopped	No	No	0	0
8	Stopped	Stopped	No	No	0	0
9	Stopped	Stopped	No	No	0	0
10	Stopped	Stopped	No	No	0	0

The **Stream Status** table displays the status of the streams for the data port, including the content overflow and link overflow statuses. The **FEC Encoder Overhead** displays the FEC overhead, compared to the transport stream bit rate, in percentage. The **FEC Latency** column displays the transport stream delay introduced by the FEC encoder, in milliseconds.

**Viewing the MPEG over IP Output Status**

The **MOIP Output Status** area (MPEG over IP Output Main and Stream pages) displays the actual output bit rates (including FEC) for each data port, the combined user rate for all the configured streams (including FEC), MPEG over IP TS overflow status, and whether there are critical MPEG over IP engine errors.

**MoIP Output Status**

Critical MoIP Engine Error	No	Combined User Rate (Mbps)	68.5
MoIP TS Overflow	No	Actual Rate - TS1 Port (Mbps)	68.480992
		Actual Rate - TS2 Port (Mbps)	0.0

## Configuring the DPM MPEGoIP Output Details

The following procedure defines all the available fields. For a typical setup of the DPM, see *Typical set up for Digital Program Mapping (DPM)* (on page 221).

**Note:** After you make any changes, a successfully updated (session open) message appears. The changes are displayed, but not saved. You must click **Apply** to save and apply the changes.

- 1 From the user interface of the D9824, choose **Transport Stream > Digital Program Mapping** under **MPEG over IP Output**. The Digital Program Mapping page is displayed.

The screenshot shows the Cisco D9824 Web GUI interface for configuring Digital Program Mapping (DPM) over IP. The page title is "Mpeg over IP Digital Program Mapping". On the left, there is a navigation menu with "Digital Program Mapping" selected under "MPEG over IP Output". The main content area is divided into two sections: "DPM Program Entry Setup" and "DPM General Settings".

**DPM Program Entry Setup**

Program En...	Chl #	Name	Action	Output Chl#	PMT PID
<input type="radio"/> PE1	601		Pass	0	8191
<input type="radio"/> PE2	0	UNKN	Pass	0	8191
<input type="radio"/> PE3	0	UNKN	Pass	0	8191
<input type="radio"/> PE4	0	UNKN	Pass	0	8191
<input type="radio"/> PE5	0	UNKN	Pass	0	8191
<input type="radio"/> PE6	0	UNKN	Pass	0	8191
<input type="radio"/> PE7	0	UNKN	Pass	0	8191
<input type="radio"/> PE8	0	UNKN	Pass	0	8191
<input type="radio"/> PE9	0	UNKN	Pass	0	8191

Buttons: Edit, Resynchronize, Resynchronize All, View Conflicts

**DPM General Settings**

- Remapping Mode: Svc ID & PID
- Duplication Method: PSI Remap
- Unreferenced Content: Drop (Mode-I Options)
- Service ID Output: Valid Ch
- SI Regeneration Option: SA Std
- PSI Table Output Option: Ctl By Table (Table Options)
- PSI Regeneration Option: Always

Buttons: Apply, Refresh, Cancel, Copy To ASI

- 2 For each DPM **Program Entry**, it displays the input channel number (**Chl #**) and channel name (**Name**), whether the PE is passed, dropped, or mapped (**Action**), the output channel (**Output Ch#**), and the PMT PID (**PMT PID**).

**Note:** Any changes made to the MOIP DPM values automatically changes the **Mode Status** to **Edited by User** in the MPEG over IP Output page.

- 3 Click the **PE1** to **PE32** program entry radio button you want to edit.



## Configuring Transport Stream Information

- 4 Click **Edit**. The DPM PE PID MAP dialog box opens.

DPM PE PID MAP

Input Channel# 801 Output Channel # 801  
 Input PMT PID 39 Output PMT PID 34

Edit Delete Add Row

Input Stream	Input PID	Action	Stream Type	Category	Instance	Output PID
<input type="radio"/> PCR	2248	Map	0	PCR	1	2248
<input type="radio"/> SUBT	612	Map	139	SUBT	1	612
<input type="radio"/> LSD	3340	Map	133	LSDT	1	2064
<input type="radio"/> VID	2248	Map	27	VID	1	2248
<input type="radio"/>		Map	13	MPE	1	4001
<input type="radio"/>		Map	13	MPE	2	4002
<input type="radio"/>		Map	13	MPE	3	4003
<input type="radio"/>		Map	13	MPE	4	4004
<input type="radio"/>		Map	13	MPE	5	4005
<input type="radio"/> AUD	6001	Map	17	AUD	1	6001

OK Cancel

- 5 In the **Output Channel #** field, enter the output channel number you want to map to the input channel (**Input Channel #**). This value is only used if the PE **Action** was set to **Map**. You can enter a range from 1 to 65535.
- 6 In the **Output PMT PID** field, enter the output MPT PID you want to map to the Input PMT PID.
- 7 In the **PE PID MAP** area, you can select an existing PID mapping entry you want to modify or click **Add Row** to create a new entry.
- 8 The **Input Stream** indicates the input service that will be mapped by the current entry. The **Input PID** displays the input PID (1 to 8190) that will be mapped by the current entry. This is only used if the **Action** is set to Map.
- 9 From the **Action** drop-down list, choose the action to perform on the current PID. The **Drop** action is always performed, but the **Map** option is only applied if the PE **Action** is **Map** and the **Remapping Mode** is **Svc ID & PID** in the **DPM General Settings** section.

Action	Description
Drop	The service selected by the Category and Instance will be mapped to the specified PID. This is only applied if the PE action is Map and the Remapping Mode is Svc ID & PID.
Map	The service selected by the Category and Instance will be removed from the PMT and the output stream.

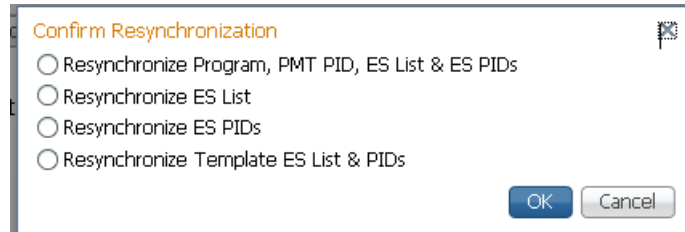
- 10 Choose a stream type to map within a PE to a specified PID (0 to 255) from the **Stream Type** drop-down list. Choose the category or service to configure from the **Category** drop-down list. If an input service matches this type and Instance, then the **Action** will be applied. This value is only used if the **Action** is set to Map. The categories are: UNKN, CDT, LSDT, DATA, TTX, MPE, DPI, VBI, SUBT, AUD, VID, PCR or INVL.

- 11 In the **Instance** field, enter the instance (1 to 64) of the service specified by **Category** to configure. If an input service matches this type and instance, then the **Action** will be applied.
- 12 If **Action** is set to **Map**, enter the output PID number (0 to 8192) in the **Output PID** field.
- 13 Click **Save**.
- 14 Click **OK**.

To remove a PID mapping, select the entry you want to remove and click **Delete**.

### Synchronizing the Inputs

- 1 In the **DPM Program Entry Setup** table, each PE output can be synchronized to its input according to one of the four output modes. Select the program entry you want to synchronize and then click **Resynchronize** or click **Resynchronize All** to synchronize the inputs to the outputs according to the service assignments only. The Confirm Resynchronization window is displayed.

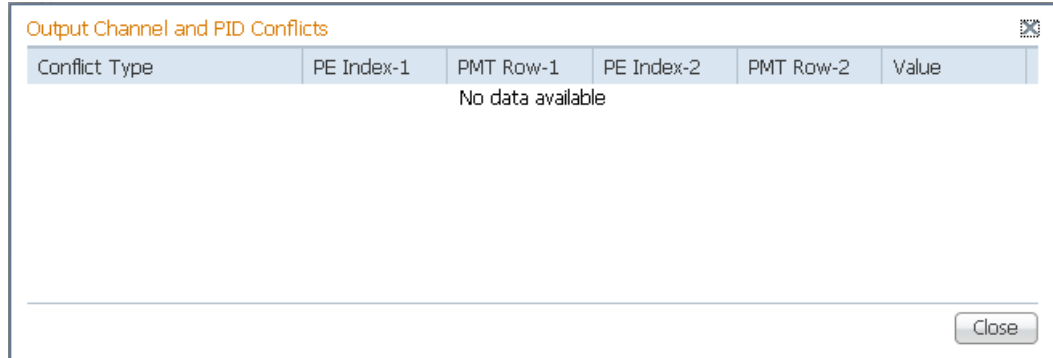


- 2 Click the radio button of a resynchronization mode that determines whether you want to synchronize the PE output according to the services and then the PIDs assigned to each service, services only, PIDs only, or to synchronize using a template.

Resynchronization Mode	Description
Resynchronize Program, PMT PID, ES List & ES PIDs	The receiver will synchronize the PE output according to the services and then the PIDs assigned to each service.
Resynchronize ES List	The receiver will synchronize the PE output according to the available input services only, and ignore the input to output service PID mapping.
Resynchronize ES PIDs	The receiver will synchronize the PE output according to the input PIDs only, and ignore the service assignment categories/names.
Resynchronize Template ES List & PIDs	Allows you to preset the input to output mapping of a PE according to the preset template. This is helpful in pre-configuring any number of PEs for future use.

- 3 Click **OK**.

If a conflict occurs, a message that the conflicts will be fixed automatically and to preview the changes prior to saving is displayed. Click **View Conflicts** to view a detailed list of all the conflicts in the **Output Channel and PID Conflicts** window.



- For channel conflicts, the system will only automatically change the duplicated output channel numbers. If both PE actions are set to **Map**, the output channel number of the higher PE is changed. Otherwise, the output channel number of the mapped PE is changed. The new channel number selected is the next channel number that does not appear in the current PAT or belong to any other PEs.
- For PID conflicts, the system will only automatically change the duplicated output PID numbers. If both PE actions are set to **Map**, the output PID number of the higher PE is changed. Otherwise, the output PID number of the mapped PE is changed. For example, if the PMT PID of PE1 matches the ES PID of PE2, the ES PID of PE2 is changed. The new PID number selected is the next number that does not appear in the output of any PE and it is not in the current transport input.

Click **Apply** to save the resolved conflict changes.

### Configuring DPM General Settings

- 1 In the **DPM General Settings** area, you can configure MPEGoIP DPM transport stream settings.
- 2 From the **Remapping Mode** drop-down list, choose the DPM map mode. The following table describes each mode:

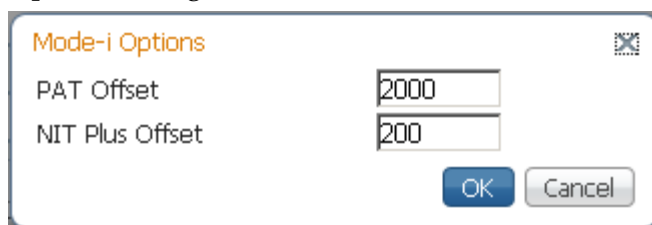
Map Mode	Description
Svc ID	The elementary PIDs are not changed. Channels are remapped by changing their PSI references. When this mode is selected, PE detailed PID mapping cannot be edited.
Svc ID & PID	Channels and the elementary service PIDs can be mapped.

- 3 From the **Duplication Method** drop-down list, choose the duplication method of the DPM program, which modifies the PSI to duplicate a program and its content. This parameter is only used if Remapping Mode is set to Svc ID & PID. The following table describes the each duplication method:

Duplic Mode	Description
PSI Remap	Every input PID can be mapped to one output PID. If PID mapping conflicts exist, DPM will use the Precedence Rule to decide which output PID to use. All PMTs using the input PID will be updated to reference the output PID specified by the winner.
Pkt Copy	An input PID can be mapped to multiple output PIDs. The PID will be duplicated as many times as needed (up to a certain hardware limitation).

Pkt Copy is recommended for most applications.

- Choose the action to use for unreferenced content from the **Unreferenced Content** drop-down list. Unreferenced content is the remainder of the transport that is not filtered by the program entries. Choose Drop (default) to drop all unreferenced content. Choose Pass to pass all unreferenced content to the output unchanged. Choose **Mode-i** and then click **Mode-i Options** to open the Mode-i Options dialog box.



Mode-i is a customer-specific mode, only to be used if directed by Cisco. For more information, contact Cisco customer support.

- From the **Service ID Output** drop-down list, choose whether the receiver should always generate PSI tables for the Mapped PE even if the selected input channel is not available, or for only valid service channels/IDs. The following table describes each service ID:

Svc ID	Description
Valid Ch	Only transmits the PSI tables for the mapped program if the program exists on the input stream.
All Ch	Transmits the PSI tables for the mapped program even if the program does not exist in the input stream.  All Ch is only valid if the PAT, NIT, SDT and PMT are set to Regenerate.

- Choose the SI regeneration option from the SI Regeneration Option drop-down list. This applies the PowerVu rates (consistent with the uplink). This parameter is only used if **Remapping Mode** is set to None. The following table describes each PSI rate:

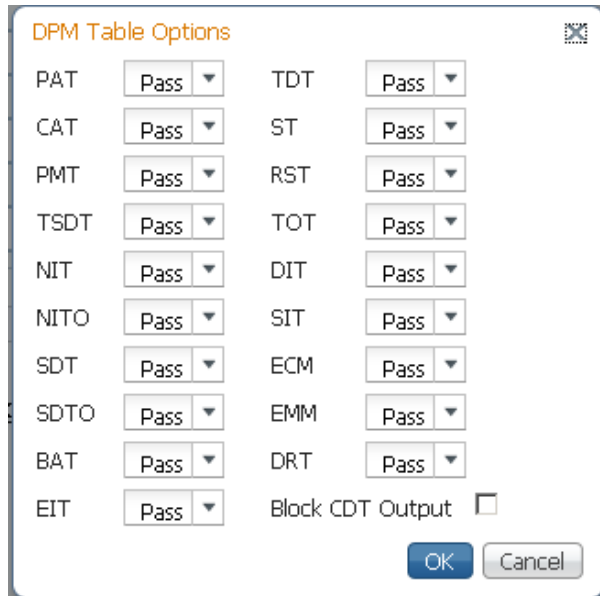
PSI Rate	Description
Auto	Matches the generated PSI tables' output rate as the incoming rate.

PSI Rate	Description
MPEG Min	Transmits the generated PSI tables on the longest intervals that are allowed by MPEG standard.
SA Std	Transmits the generated PSI tables based on PowerVu standard intervals.

- The **PSI Table Output Option** drop-down list allows the operator to specify which PSI tables to include in the program/output stream. The following table describes each option:

PSI Options	Description
Pass All	Transmits the incoming PSI Tables as is; does not modify the content and rate.
Drop All	Does not transmit any PSI Tables.
Ctl By Table	The operator can click Table Options to select the output mode for each table. The default table selections will be all pass, and only with CDT dropped.

- From the **PSI Regeneration Option** drop-down list, choose whether to regenerate the PSI tables. You can select Always or As Needed (only if the content has changed).
- If Ctl By Table is set as the **PSI Table Output Option**, click **Table Options** to configure the DPM table options. The DPM Table Options (MOIP) dialog box is displayed.



- Choose the tables which will be passed, dropped, regenerated or passed with rate control (PwRC) from the MPEGoIP Output. For more information on the table options, see *PSI Table Settings* (on page 112).

The CDT is different from the other tables listed because the CDT is referred to within the PMT, rather than outside the PMT. Check the **Block CDT Output** check box to override the DPM PID map configuration for CDT PIDs and to always drop all CDTs. Otherwise, uncheck the **Block CDT Output** check box to permit the output of CDTs following the configured DPM PID map configuration and all other DPM constraints.

- 11 Click **OK**.
- 12 Click **Apply**.
- 13 Click **Copy to ASI** to copy all the DPM data from the MPEG over IP output to the ASI output.

## Viewing the MPEG Output Transport Status

From the user interface of the D9824, choose **Transport Stream > Output Transport Status** under **MPEG over IP Output**. The PID Output Status page is displayed.

The screenshot shows the Cisco D9824 Web GUI interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'Transport Handling' with sub-items for 'ASI Output' and 'MPEG over IP Output'. The main content area is titled 'MPEG Over IP Output Status' and contains the following sections:

**PID Output Status**

**Program Entry - Referenced PIDs**

PE Index	Type	Input PID	Output PID	PCR	Output Scrambled	Input Recieved
1	SUBT	612	612	No	No	Yes
1	VID	2348	2348	Yes	No	Yes
1	LSDT	3340	3340	No	No	No
1	MPE	4006	4001	No	No	No
1	MPE	4002	4002	No	No	No
1	MPE	4003	4003	No	No	No
1	MPE	4004	4004	No	No	No

**Current DPM Collisions**

**Output Channel and PID Conflicts**

Conflict Ty...	PE Index-1	PMT Row-1	PE Index-2	PMT Row-2	Value
No data available					

A 'Refresh' button is located at the bottom left of the main content area.

The **Program Entry - Referenced PIDs** table displays the specified PE ES PIDs information on the output.

The **Output Channel and PID Conflicts** table displays a list of conflicts when the DPM alarm is active.

## Typical set up for Digital Program Mapping (DPM)

- 1 Verify that you are receiving a valid signal and that you have set up the channels that you want to pass, drop, or map.
- 2 From the user interface of the D9824, choose **Transport Stream > ASI Output** or **MPEG over IP Output**.
- 3 From the **Output Mode** drop-down list, choose **Full DPM Control**.
- 4 If necessary, from the **Descrambled** drop-down list, choose whether the program is to be scrambled or descrambled for downstream viewing or monitoring.
- 5 Click **Apply**.
- 6 Choose **Transport Stream > Digital Program Mapping** for **ASI Output** or **MPEG over IP Output**. The ASI or MPEGoIP Digital Program Mapping page is displayed.
- 7 In the DPM Program Entry Setup table, click **Resynchronize All** and click the **Resynchronize Program, PMT PID, ES List & ES PIDs** radio button and click **OK**. This copies the input services PIDs to the remapped output service PIDs.
- 8 In the DPM Program Entry Setup table, choose the PE containing the channel you want to configure and click **Edit**. The DPM PE PID MAP window is displayed.
- 9 Click **Add Row**.
- 10 From the **Action** drop-down list, choose Pass, Drop, or Map.
- 11 Choose the input to output channel mapping from the **Category** drop-down list. Video and PCR can be output on the same PID or different PIDs. If output on the same PID, they will appear identical to the input.
- 12 Click **Save**.
- 13 Click **OK**.
- 14 In the **DPM General Setting** area, choose the following parameters:

Setting	Parameter
Remapping Mode	Svc ID & PID
Duplication Method	Pkt Copy
Unreferenced Content	Drop
Service ID Output	Valid Ch/ All Ch
PSI Table Output Option	Ctl By Table
PSI Regeneration Option	Always/ As Needed

- 15 Click **Table Options**. The DPM Table Options window is displayed.
- 16 Set the following parameters:

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Parameter	Description
PAT	Regen
CAT	Regen
PMT	Regen
TSDT	Drop
NIT	Regen or Drop
NITO	Drop
SDT	Regen
SDTO	Drop
BAT	Drop
EIT	Drop
TDT	Pass
RST	Pass
TOT	Pass
DIT	Pass
SIT	Pass
ECM	Drop
EMM	Drop
DRT	Drop

- 17 Select **Block CDT Output**.
- 18 Click **OK**.
- 19 Click **Apply**.



# Configuring System Settings

## Viewing the System Identification

- 1 From the user interface of the D9824, choose **System Settings > Identification**.  
The Identification page is displayed.

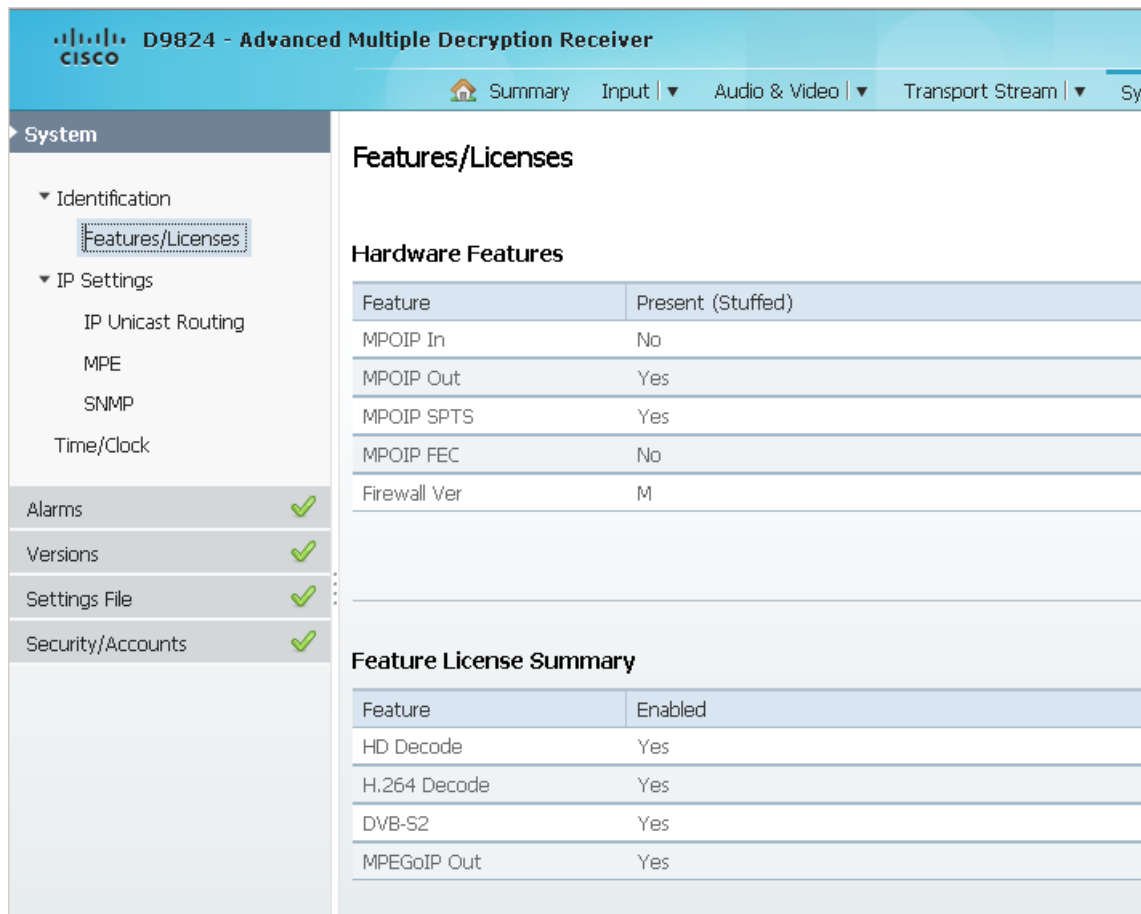
Identity Information	
Hostname	User cfg name
Model Number	D9824
Model Name	Advanced Multiple Decryption Receiver
Catalogue Number	D9824_4x0_403827400150101
Customer Code	UUU
Board ID	HDR2
Board Revision	A
Serial Number	AANMMVW
Tracking ID	161341000500
User Address	

Apply Refresh

- 2 The System page displays the parameters associated with the D9824 system, such as serial number, model number, and user addresses.
- 3 You may optionally change the Hostname (device name) and click **Apply**.

## Viewing Hardware Features and Software License Information

From the user interface of the D9824, choose **System Settings > Identification > Features/Licenses**. The Features/Licenses page is displayed.



The screenshot shows the Cisco D9824 Web GUI. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', and 'System'. The left sidebar shows a tree view under 'System' with 'Identification > Features/Licenses' selected. The main content area displays the 'Features/Licenses' page, which is divided into two sections:

### Hardware Features

Feature	Present (Stuffed)
MPOIP In	No
MPOIP Out	Yes
MPOIP SPTS	Yes
MPOIP FEC	No
Firewall Ver	M

### Feature License Summary

Feature	Enabled
HD Decode	Yes
H.264 Decode	Yes
DVB-S2	Yes
MPEGoIP Out	Yes

The **Hardware Features** area displays the hardware options installed in the current D9824 Advanced Multi Decryption Receiver.

The **Feature License Summary** area displays a list of software licenses for the D9824 Advanced Multi Decryption Receiver and whether each of the software licenses are enabled or disabled.

## Setting up IP Information

- 1 From the user interface of the D9824, choose **System Settings > IP Settings**. The IP Settings page is displayed.

The screenshot shows the 'IP Settings' configuration page for a Cisco D9824 Advanced Multiple Decryption Receiver. The page is divided into several sections:

- IP Settings Table:**

Port ID	Destination IP Address	Mask	Gateway Address	PHY Mode
<input type="radio"/> control		24	192.131.244.254	Auto
<input type="radio"/> data1		24	192.131.244.254	Auto
<input type="radio"/> data2		24	192.131.244.254	Auto
- Protocol Control:**
  - Telnet:
  - SSH:
  - HTTP:
  - Syslog:
  - Syslog Server IP Address:
  - Syslog Server Port:
- Redundancy Control:**
  - Mode:
  - Direction:
  - Delay Forward (ms):
  - Delay Back (seconds):
- Redundancy Status Table:**

Ports In Use	Change Reason	Change Date & Time
None	Setup+Link	2007/02/09 10:00:...
- Link Status Table:**

Port ID	Link Status	Link Speed	Link Duplex	Link Crossover
1	Link Up	1 Gbps	Full	MDIX
2	Link Down	N/A	N/A	N/A
3	Link Down	N/A	N/A	N/A

- 2 In the IP Settings table, you can set the parameters for communicating with other equipment via the Ethernet Data and Management ports for IP applications and upgrading application software.
- 3 Click the **control**, **data1**, or **data2** row to edit the parameters in the row.

The close-up shows the 'data1' row selected in the IP Settings table. The 'Destination IP Address' field is currently empty and highlighted. The 'Mask' field is set to 16. The 'Gateway Address' is 10.85.149.194 and the 'PHY Mode' is set to Auto.

- a In the **Destination IP Address** field, enter the IPv4 destination IP address for the interface.
- b Set the number of CIDR (Classless Inter-Domain Routing) bits in the network **Mask** field (8 to 30).

- c In the **Gateway Address** field, enter the gateway address on the Network, used to expose the receiver to a WAN. The IP Address, IP Mask, and Gateway Address should be changed together, that is, as a group. The following table shows the most commonly used Subnet mask values to enter for a chosen IP address mask, which will depend on the size of your network.

Mask	Subnet Mask
8	255.0.0.0
16	255.255.0.0
24	255.255.255.0

- d From the **PHY Mode** drop-down list, choose the speed and duplex type of the interface. Choose Auto for PHY to negotiate speed and duplex with other devices on the network, or choose 10 HD (half-duplex), 10 FD (full-duplex), 100 HD, 100 FD, or 1000 FD to lock into a fixed mode. Otherwise, choose N/A. The default is Auto.
- e Click **Save**.

### Protocol Control Settings

The **Protocol Control** area allows you to control remote access protocols to the IRD (Telnet, SSH, HTTP, HTTPS (via HTTP secure setting, and SNMP).

- 1 From the **Telnet**, **SSH**, **HTTP**, and **SNMP** drop-down list, choose **Enable** (default) to allow Telnet, Secure Shell, HTTP, and/or SNMP connections. Otherwise, choose **Disable**.

The following lists the associated port numbers for each protocol:

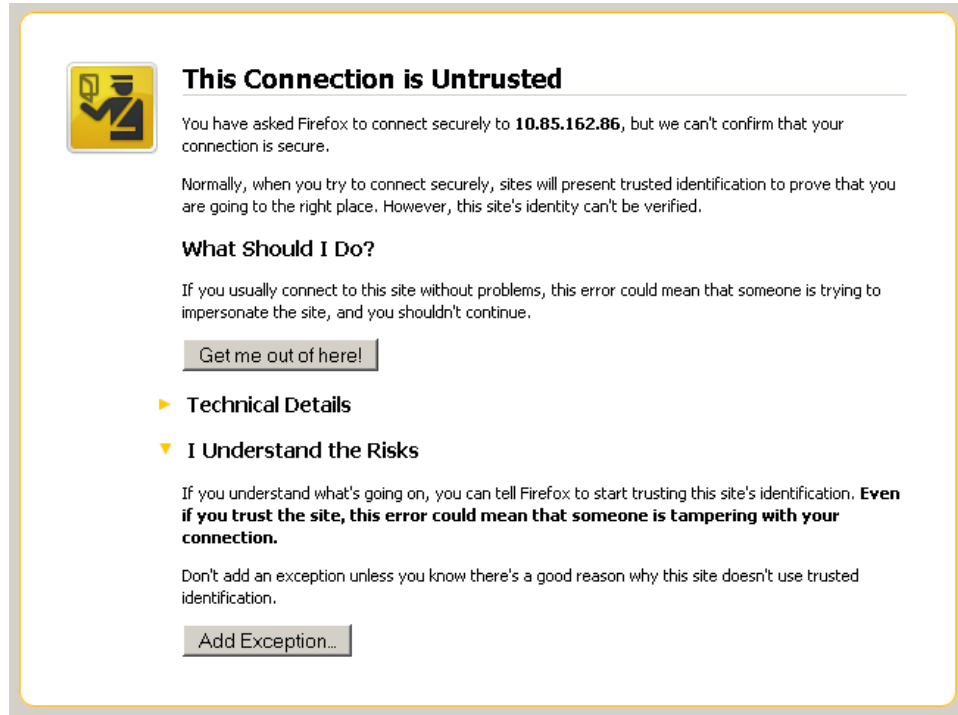
Protocol	Port Number
Telnet	TCP port #23
SSH	TCP port #22
HTTP	TCP port #80
HTTPS (via HTTP secure setting)	TCP port #443
SNMP	UDP port #161

For information on accessing TCP/IP services, see *Accessing TCP and UDP Services* (on page 77).

The **HTTP** field has an additional **Secure** setting for an encrypted access to the webserver (HTTPS).

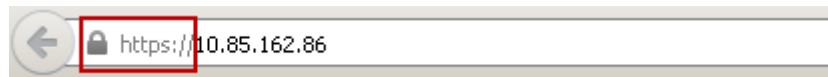
- a From the **HTTP** drop-down list, choose **Secure**. A confirmation message that you will be logged out automatically is displayed.

- b Click **OK** to confirm. It will reconfigure the device and the next time you log in, you will be accessing the encrypted version (HTTPS). A untrusted connection warning message is displayed (first time only). The following is an example:



- c Add the current address as an exception and you can access the D9824 web GUI.

**Note:** The HTTPS is displayed in the IP address to denote that it is a secure access. The following is an example:



- 2 From the **IGMP** drop-down list, choose the Internet Group Management Protocol standard (**IGMPv3** or **IGMPv2**). This is used by the host, for the multicast input, to send join/leave requests to the IGMP server and to establish multicast group memberships. Choose **Disable** to disable IGMP.

**Note:** If configured, the source filtering in MPEGoIP Flow Configuration applies to IGMPv3. For more information, see *Configuring MPEG over IP Flow* (on page 150).

- 3 In the **Idle Timeout (seconds)** field, enter the number of seconds before the session for all the enabled protocols will timeout due to inactivity, in a range from 30 to 1209600 seconds. Enter zero to never timeout.
- 4 Click **Apply**.



- 2 From the **Mode** drop-down list, choose the redundancy mode for MPEG over IP and MPE data.  
Choose **Manual Data1** or **Manual Data2** to only use DATA1 (port 1) or DATA2 (port 2) for output data. The remaining redundancy controls below are not applicable.  
Choose **Backup: Primary Data1** (default) or **Backup: Primary Data2** to use port 1 or port 2 as the primary data port and if a physical connectivity loss occurs, it will failover to port 2 or port 1 (the backup port).  
Choose **Mirroring** to send the same data to both port 1 and port 2. The remaining redundancy controls below are not applicable.
- 3 If **Backup: Primary Data1/Data2** is selected as the **Mode**, choose the redundancy **Direction**. Select **Revertive** to attempt to revert back to the primary port when using the backup port and the primary port is active again. Choose **Non-Revertive** to always use the backup port, regardless of the condition of the primary port.
- 4 In the **Delay Forward** field, set the time to switch the data port after the system detects a failure, in a range from 0 to 10000 milliseconds.
- 5 In the **Delay Back** field, set the time to wait when reverting back to the primary port once the primary link is active again, in a range from 1 to 120 seconds.  
**Note:** If **Non-Revertive** is selected as the **Direction**, this field does not apply.
- 6 Click **Apply**.

### Viewing the Redundancy Status

The **Redundancy Status** table displays the latest redundancy status change.

The **Ports In Use** column displays the current output port in use (Data1 or Data2), the **Change Reason** column displays a description of the reason for the last redundancy status change (Link or Setup+Link), and the **Change Date & Time** column displays the last date and time the redundancy status changed.

### Viewing the Link Status

The **Link Status** table displays the port information, such as the status speed, duplex, and crossover. Port 1 is the management port and port 2 is the data port.

## Setting up IP Unicast Routing Information

- 1 From the user interface of the D9824, choose **System Settings > IP Settings > IP Unicast Routing**. The IP Routing page is displayed.

The screenshot shows the Cisco D9824 Web GUI. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'System' settings, with 'IP Unicast Routing' selected under 'IP Settings'. The main content area displays the 'IP Unicast Routing' configuration, including a 'RIP' dropdown set to 'Disable'. Below this is the 'Static Unicast Routing' table, which is currently empty with the message 'No data available'. At the bottom, the 'Installed Unicast Routes' table shows three entries:

Port ID	Destination IP Ad...	Mask	Gateway Address	MTU	Hops	TTL (ms)
1		0	10.85.149.194	1500	255	0
1		16	10.85.162.99	1500	0	0
3		0		1500	255	0

- 2 From the **RIP** drop-down list, choose **Enable** to enable the Routing Information Protocol (RIP). Otherwise, choose **Disable**. This is a standard protocol for automatic unicast route discovery. If enabled, the routing information is displayed in the **Installed Unicast Routes** table.
- 3 Click **Apply**.
- 4 In the **Static Unicast Routing** table, you can set the static unicast routing information used to by MPEGoIP and MPE outputs to send data packets. It can also be used to find hosts behind a router (for example, an FTP server, a syslog server, or an NTP server).

To add a unicast route:

- a Click **Add Row**.
- b In the **Destination IP Address** field, enter the destination IP address that sets the destination for the unicast route.
- c In the **Mask** field, enter the number of CIDR (Classless Inter-Domain Routing) bits in the network mask (8 to 30).
- d In the **Gateway Address** field, enter the gateway address on the network, used to expose the receiver to a WAN. The following table shows the most commonly used Subnet mask values to enter for a chosen IP address mask, which will depend on the size of your network.



Mask	Subnet Mask
8	255.0.0.0
16	255.255.0.0
24	255.255.255.0

- e Check the **Port 1** or **Port 2** check box. The management port is port 1 and the data port is port 2.
- 5 Click **Save**. The routing information is displayed in the **Installed Unicast Routes** table. If the configured routing information has an inactive port, then the routing information is not displayed in the **Installed Unicast Routes** table.

## Configuring the MPE Settings

- 1 From the user interface of the D9824, choose **System Settings > IP Settings > MPE**. The MPE page is displayed.

The screenshot displays the Cisco D9824 Web GUI for configuring MPE settings. The breadcrumb navigation is **System Settings > IP Settings > MPE**. The left sidebar shows the navigation menu with **MPE** selected. The main content area shows the **MPE** configuration. Under **MPE Data Filter Mode**, there is a dropdown menu set to **Fwd All**. Below this is the **Static Multicast Filtering** section, which includes a table with three rows of multicast filter addresses: 224.1.1.1, 225.3.3.3, and 224.254.245.233. At the bottom of the page, there is a note and two buttons: **Apply** and **Refresh**.

- 2 From the **MPE Data Filter Mode** drop-down list, choose whether the MPE data is forwarded to the network (Forward None, Forward All, or Forward Filtered). Choose **Forward None** to not forward MPE data to the network. Choose **Forward All** to forward all the MPE data to the network. Choose **Forward Filtered** to only forward the MPE data from the defined Static Multicast Filtering table below to the network. For more information on configuring the Static Multicast Filtering table, see *To Add a Static Multicast Filtering* (on page 233).  
**Note:** The receiver supports up to a maximum of 10 Mbps throughput when forwarding 1500 byte packets.
- 3 Click **Apply**.

### To Add a Static Multicast Filtering

- 1 Click **Add Row** in the Static Multicast Filtering table.

**Static Multicast Filtering**

Edit Delete Add Row

Multicast Filter Addresses
<input type="radio"/> 225.1.1.1
<input type="radio"/> 225.2.2.2
<input type="radio"/> 225.3.3.3
<input type="radio"/> 225.4.4.4
<input checked="" type="radio"/> <input type="text"/>

Save Cancel

Note: Consult [IP Unicast Routing page](#) for the list of installed routes.

- 2 Type the IP Address that sets the destination for multicast MPE data, in the range from 224.0.0.0 to 239.0.0.0.

**Note:** If **MPE Data Filter Mode** is set to **Forward All** or **Forward Filtered**, all the unicast MPE data will be forwarded, regardless of the Static Multicast Filtering table.

- 3 Click **Save**.

To edit/delete an existing multicast filter address, select the address entry by clicking on the radio button. Click **Edit** and make the necessary changes, or click **Delete** to remove the address from the Static Multicast Filtering list.

## Setting up SNMP Information and Trap Destinations

Proceed as follows to set up SNMP information:

- 1 From the user interface of the D9824, choose **System Settings > IP Settings > SNMP**. The SNMP page is displayed.

The screenshot shows the Cisco D9824 Web GUI. The breadcrumb navigation is **System Settings > IP Settings > SNMP**. The left sidebar shows the following menu items: System (expanded), Identification, Features/Licenses, IP Settings (expanded), IP Unicast Routing, MPE, **SNMP** (selected), Time/Clock, Alarms (with a green checkmark), Versions (with a green checkmark), Settings File (with a green checkmark), and Security/Accounts (with a green checkmark). The main content area is titled 'SNMP' and contains the following fields:

- Read Only Community String: public
- Read Write Community String: public
- System Name: sysname
- System Location: Toronto
- System Contact: 416-321-xxxx

Below these fields is the 'Trap Destination Configuration' section, which includes a table with the following data:

Trap Destination	IP Address	Community String
<input type="radio"/>	192.131.244.2	public

At the bottom of the page, there are 'Apply' and 'Refresh' buttons.

- 2 In the **Read Only Community String** and the **Read Write Community String** fields, enter public (default) or custom string. Set the password to read/write data from a device and to display diagnostic traps/alarms. This is used when communicating with a device within an SNMP environment. To set a custom community string, enter an alphanumeric character string up to 31 alphanumeric characters in length identifying the password for the device.

**Note:** The community string is case-sensitive.

- 3 In the **System Name**, **System Location**, and **System Contact** fields, enter the system name, location, and contact information of the D9824 receiver. The system information is sent to the MIB browser, if applicable. The MIB Browser is a third party software used to manage SNMP requests. For more information, contact Cisco customer support.
- 4 Click **Apply**.

### Adding a Trap Destination

- 1 Click **Add** in the Trap Destination Configuration area.

**Trap Destination Configuration**

	Trap Destination IP Address	Community String
<input type="radio"/>	192.131.244.2	public
<input checked="" type="radio"/>	<input type="text"/>	<input type="text"/>

- 2 In the **Trap Destination IP Address** field, enter the IP address that sets the destination for SNMP trap messages for system events (for example, fault messages).
- 3 In the **Community String** field, enter the community string for the trap destination (IP address entered above).  
Enter public or custom string. The default is public. You can enter a string up to 35 characters.
- 4 Click **Apply**.

To edit/delete an existing trap destination, select the trap destination entry by clicking on the radio button. Click **Edit** and make the necessary changes, or click **Delete** to remove the address from the Trap Destination Configuration list.

## Configuring Time/Clock Information

- 1 From the user interface of the D9824, choose **System Settings > Time/Clock**. The Time/Clock page is displayed.

- 2 From the **Date Format** drop-down list, choose the date format of the receiver. The following formats are supported: YYYY\_MM\_DD, DD\_MM\_YYYY, MM\_DD\_YYYY.
- 3 From the **Time Format** drop-down list, choose the time format of the receiver. Current time information is normally broadcast as part of the transmitted digital signal. It is broadcast as GMT (Greenwich Mean Time) with date information in Modified Julian Date format. The following formats are supported: 24Hr, 24 Hr SuspendZero (the leading zero is dropped from the time), 12Hr, 12Hr SuspendZero (the leading zero is dropped from the time).
- 4 From the **GMT Time Offset** drop-down list, choose the GMT offset. The local time is displayed using a time zone (GMT offset). If your local time is not GMT, you must set this time setting in the range from -12.0 to +12.0 hours in 0.5 hour increments.
- 5 The **Current TDT Time/Date** field displays the current TDT (Time and Date Table) date and time received from the DVB stream. This is displayed as local time.
- 6 Check the **Enable NTP Time Service** check box to periodically request NTP (Network Time Protocol) timestamps from the NTP server (NTP server address set below) and to synchronize its system (for example, non-DVB related) time with the NTP server. This is displayed as local time.
- 7 In the **NTP Server Address** field, enter the IP address of the NTP server. If the NTP server address is not set (0.0.0.0), the unit will not attempt to connect to the server.
- 8 The **Current NTP Time/Date** field displays the current time if the unit receives a valid reply from the NTP server, adjusted for local time zone.
- 9 Click **Apply**.

## Viewing the Alarm/Warning Status

From the user interface of the D9824, choose **System Settings > Status**. The Status page is displayed.

The screenshot shows the 'Status' page of the D9824. The left sidebar has 'System' selected. The main content area is titled 'Status' and contains a 'Fault Summary' table and an 'Alarm / Warning Status' table. The 'Fault Summary' table shows 0 Alarms and 1 Warning. The 'Alarm / Warning Status' table shows one warning: 'Warning' type, 'Ethernet P...' name, 'Link is down.' text, and '2013/08/07 15:02:56' set since. There are 'Clear Alarms/Warnings' and 'Refresh' buttons at the bottom.

Type	Number Active
Alarms	0
Warnings	1

Type	Name	Text	Set Since
Warning	Ethernet P...	Link is down.	2013/08/07 15:02:56

The Status page displays all the active event messages for the D9824 system. The **Fault Summary** area displays the **Type** of message (alarm or warning) and the number of alarms and warnings that have an active status (**Number Active**).

The following table shows the Alarm/Warning Status table information:

Status	Description
Type	Shows whether it is an alarm or a warning message.
Name	Name of the alarm or warning. For more information on alarm messages, refer to <i>D9824 Alarm Messages</i> (on page 264).
Text	Content of the message.
Set Since	Date and time of the alarm or warning.

Click **Clear Alarms/Warnings** to clear all the messages in the Alarm/Warning Status table.

## Setting up Alarms and Warnings

### To Set Up Alarms

- 1 From the user interface of the D9824, choose **System Settings > Setup**. The Alarm Setup page is displayed.

The screenshot shows the 'Alarm Setup' page in the D9824 Web GUI. The page title is 'D9824 - Advanced Multiple Decryption Receiver'. The navigation menu on the left includes 'System', 'Alarms', 'Status', 'Setup', 'History', 'Versions', 'Settings File', and 'Security/Accounts'. The 'Alarms' section is active, and the 'Setup' sub-section is selected. The main content area is titled 'Alarm Setup' and contains two checked checkboxes: 'Enable Alarm/Warning Front Panel Reminder' and 'Enable Video Cutoff on Alarm Condition'. Below these is a table with columns for Alarm Name, Enable/Disable, Trap, and Relay. The table lists various system alarms, all with 'Yes' selected in the Enable/Disable, Trap, and Relay columns. At the bottom of the table are 'Apply' and 'Refresh' buttons, and a link to 'Warning Setup'.

Alarm Name	Enable/Disa...	Trap	Relay
ASI Out Muted	Yes	Yes	Yes
BOOT PRI	Yes	Yes	Yes
BOOT SEC	Yes	Yes	Yes
CI1 status	Yes	Yes	Yes
CI2 status	Yes	Yes	Yes
DB Corrupted	Yes	Yes	Yes
DB NVS	Yes	Yes	Yes
DL Version Mismatch	Yes	Yes	Yes
DL Write/Erase Fault	Yes	Yes	Yes
Decoder Processor Start	Yes	Yes	Yes
Digital Program Mapping	Yes	Yes	Yes
ECCFPGA TempAlm	Yes	Yes	Yes
ECCFan	Yes	Yes	Yes
ECCTempAlm	Yes	Yes	Yes
FEC FPGA Status	Yes	Yes	Yes
FEC USB Flash	Yes	Yes	Yes
FPGA status	Yes	Yes	Yes
IP FEC Failure	Yes	Yes	Yes
LEC Timeout	Yes	Yes	Yes
LMI setup	Yes	Yes	Yes

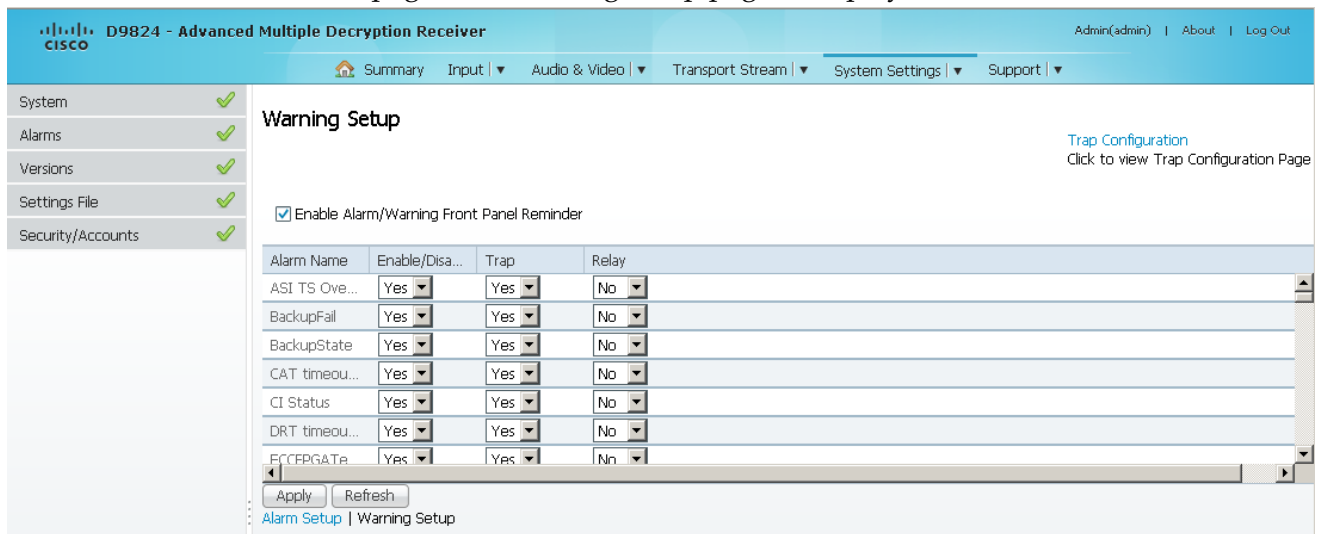
- 2 Check the **Enable Alarm/Warning Front Panel Reminder** check box for the highest priority alarm to flash on the LCD display for a two-second interval every 10 seconds. The alarm will continue to flash periodically until it is either cleared or the **Enable Alarm/Warning Front Panel Reminder** check box is unchecked.
- 3 Check the **Enable Video Cutoff on Alarm Condition** check box to cut off the video output if any enabled alarm is active on the receiver. When video is cut off, there will be no horizontal or vertical synchronization on the output. This is useful for downstream redundancy switching by detecting a loss of video signal.
- 4 Click the **Trap Configuration** link to view and/or modify SNMP trap destinations. The link will open the SNMP page. For more information, see *Setting up SNMP Information and Trap Destinations* (on page 234).



- 5 The **Alarm Setup** area displays a list of the alarm/fault messages. For more information on alarm messages, refer to *D9824 Alarm Messages* (on page 264).
- 6 From the **Enable/Disable** drop-down list, choose Yes to report the alarm message. Choose No to disable the alarm and the **Relay** and **Trap** settings are ignored.  
**Note:** Enable/Disable must be set to Yes for the Relay and Trap settings to be functional.
- 7 If current alarm is enabled, from the **Trap** drop-down list, choose Yes to send the SNMP trap message when the alarm is set or cleared.  
**Note:** No is a read only value that indicates the setting is Yes, but is currently being suppressed because the alarm is disabled (Enb is set to No).
- 8 If current alarm is enabled, from the **Relay** drop-down list, choose Yes to trigger the rear panel alarm when the alarm is set or cleared.  
**Note:** No is a read only value that indicates the setting is Yes, but is currently being suppressed because the alarm is disabled (Enb is set to No).
- 9 Click **Apply**.

**To Set Up Warnings**

- 1 From the Alarm Setup page, click the **Warning Setup** link at the bottom left hand corner of the page. The Warning Setup page is displayed.



- 2 Check the **Enable Alarm/Warning Front Panel Reminder** check box for the warning to flash on the LCD display for a two-second interval every 10 seconds. The warning will continue to flash periodically until it is either cleared or the **Enable Alarm/Warning Front Panel Reminder** is de-selected.
- 3 The **Warning Setup** area displays a list of the warning messages. For more information on warning messages, refer to *D9824 Alarm Messages* (on page 264).

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- 4 From the **Enable/Disable** drop-down list, choose Yes to report the warning message. Choose No to disable the warning and the **Relay** and **Trap** settings are ignored.

**Note:** Enable/Disable must be set to Yes for the Relay and Trap settings to be functional.

- 5 If current warning is enabled, from the **Trap** drop-down list, choose Yes to send the SNMP trap message when the warning is set or cleared.

**Note:** No is a read only value that indicates the setting is Yes, but is currently being suppressed because the warning is disabled (Enb is set to No).

- 6 If current warning is enabled, from the **Relay** drop-down list, choose Yes to trigger the rear panel alarm relay when the warning is set or cleared.

**Note:** No is a read only value that indicates the setting is Yes, but is currently being suppressed because the warning is disabled (Enb is set to No).

- 7 Click **Apply**.

## Viewing Alarm/Warning History

From the user interface of the D9824, choose **System Settings > History**. The History page is displayed.

The screenshot shows the 'Alarm History' page in the D9824 user interface. The page title is 'Alarm History' and it includes a 'Fault History' toggle. The main content is a table with the following columns: Type, Name, Text, Set Date & Time, and Cleared Date & Time. The table lists 20 events, including multiple 'Signal Quality' alarms and 'Transport' warnings. At the bottom of the table are three buttons: 'Refresh', 'Clear Alarm/Warning History', and 'Export'.

Type	Name	Text	Set Date & Time	Cleared Date & Time
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:07:14
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:07:14
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:08:51
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:10:00
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:12:52
Alarm	Signal Status	Signal is loc...	2013/07/2...	2013/07/25 16:13:23
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:13:00
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:13:03
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:13:09
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:13:12
Warning	Transport ...	Transport ...	2013/07/2...	2013/07/25 16:20:54
Alarm	Signal Status	Signal is loc...	2013/07/2...	2013/07/25 16:18:44
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:18:31
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:18:33
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:20:29
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:20:30
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:20:42
Alarm	Signal Quality	Signal Quali...	2013/07/2...	2013/07/25 16:20:42
Warning	Transport ...	Transport ...	2013/07/2...	2013/07/25 16:24:36
Warning	Transport ...	Transport ...	2013/07/2...	2013/07/25 16:25:33

The Alarm and Warning History page displays all the past system event messages and their set and cleared dates and times. For more information on the alarm messages, refer to *D9824 Alarm Messages* (on page 264).

Click **Clear Alarms/Warnings History** to clear all existing history information.

Click **Export** to save the history information to your local hard drive as a .csv file.

## Viewing Version Information

From the user interface of the D9824, choose **System Settings > Versions**. The Versions page is displayed.

The screenshot shows the Cisco D9824 Web GUI. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'System', 'Alarms', 'Versions', 'Settings File', and 'Security/Accounts'. The main content area is titled 'Versions' and contains several sections:

- Current Versions:** A table with columns 'Item' and 'Version'.
 

Item	Version
SW Version	B03.96.22DD
FPGA	R00.00.01az
HDR Version	B03.96.22DD
- Version Controls:** A table with columns 'Item' and 'Version'.
 

Item	Version
SW Version	3.72
FPGA	R00.00.01az
- Main Board - Firmware Versions:** A table with columns 'Item' and 'Version'.
 

Item	Version
Boot5514	5.00
Boot7109	1.00
CPLD-5514	E00.02.00
CPLD-7109	E00.05.00
FP-PIC	1.04
FPGA Type	XC5VLX110T
FPGA ID	FPGA ID 1
- HW Board Versions:** A table with columns 'Board', 'Rev', 'Option Bits', and 'Serial Nr'.
 

Board	Rev	Option Bits	Serial Nr
HDR2	A		AANMMVW
- APP / FPGA Downloads:** Includes an 'Upgrade File' section with a 'Browse...' button and a 'Download' button. A note states: 'NOTE: Device will not reboot automatically following a FPGA download. Device will reboot automatically following an APP download.'
- Download Status:** A table with columns 'Triggered', 'Received', 'Rejected', 'Total CDT', and 'State'. A 'History' button is located to the right.

The **Current Versions** area displays the currently running loaded application version and the current limit for the Field Programmable Gate Array (FPGA) version number. In the **Version Controls** area, from the **SW Version** drop-down list, you can choose a different application version number to load. From the **FPGA** drop-down list, you can choose a different FPGA version number to load. The Selected Version window is displayed. Click **Select & Reboot** to load the selected application and reboot the receiver. Click **Erase** to remove the selected application version. You will be prompted to continue or not. Click **OK** to continue the deletion.

The **Main Board - Firmware Versions** area displays the following version information:

Firmware Version	Description
Boot5514/Boot7109	Software boot-loader version that initializes and configures the STi5514/STi7109 device on the HDR2 (main) board. This is the master controller for the D9824 receiver.
CPLD-5514/CPLD-7109	Software Configurable Programmable Logic Device version attached to the STi5514/STi7109.
FP-PIC	Front panel controller version for the D9824 receiver.
FPGA Type	The manufacturer's designation for the FPGA device on the HDR2 (main) board.
FPGA ID	This value is used by the decoder software to determine the features available in the FPGA.
Safe SW Version	Version of the installed safe application, which cannot be overwritten by another downloaded application.
Safe FPGA Version	Version of the installed safe FPGA image, which cannot be overwritten by another downloaded FPGA image.
App Safe Limit	Indicates the version of the oldest application that can be installed on the current unit. If this value is zero, the oldest application limit is the Safe SW Version. If this is greater than zero, the shown value or older and the Safe SW Version is the limit. Older applications will not be installed.

The **HW Board Versions** table displays the revisions, option bits, and serial numbers of the HRD2 (main) board.

In the **APP/FPGA Downloads** area, click **Browse** to select the new version of FPGA or the D9824 Advanced Multi Decryption Receiver software application. The Open dialog opens. Choose the upgrade file and click **Open**. Click **Download** to download the selected upgrade file. File formats that can be downloaded include application CDTs and FPGA CDTs. The **State** field in the **Download Status** area displays the progress of the download. When the download is complete, a Successfully Completed message is displayed at the top of the Versions page.

**Note:** For application downloads, once the download is complete, the D9824 receiver will reboot automatically. For FPGA downloads, you must click **Reboot Receiver** in the Service Actions page (**Support > Service Actions**) to manually reboot the D9824 receiver and complete the download. This is to facilitate the typical case in which the user intends to flash the FPGA file (no auto reboot) followed by an APP download (auto reboot).

The **Download Status** area displays the current status of the downloads. Click **History** and the Download History dialog box is displayed.

Date and Time	Message
2012/05/10 17:39:36	APP5514 Erase Successful
2012/05/10 17:39:49	APP7109 Flash Write Successful
2012/05/10 17:40:07	APP5514 Flash Write Successful
2012/05/10 17:40:13	Forced DL, Swap App
2012/09/28 18:30:31	Trigger Download
2012/09/28 18:30:31	DL Trigger Successful
2012/09/28 18:33:39	RAM Copy Successful
2012/09/28 18:34:00	APP7109 Erase Successful
2012/09/28 18:34:24	APP5514 Erase Successful
2012/09/28 18:34:39	APP7109 Flash Write Successful
2012/09/28 18:35:00	APP5514 Flash Write Successful
2012/09/28 18:35:06	Forced DL, Swap App
2012/10/02 14:58:04	Trigger Download
2012/10/02 14:58:04	DL Trigger Successful
2012/10/02 15:00:22	RAM Copy Successful
2012/10/02 15:00:42	APP7109 Erase Successful
2012/10/02 15:01:07	APP5514 Erase Successful
2012/10/02 15:01:23	APP7109 Flash Write Successful
2012/10/02 15:01:43	APP5514 Flash Write Successful
2012/10/02 15:01:48	Forced DL, Swap App

OK Cancel

### Verifying Software and FPGA Integrity Hash Digest

You can generate the hash digest to verify the integrity of the software and FPGA versions running on the D9824 receiver. The current and official Cisco D9824 receiver hash values are published in the D9824 release note. For more information, see *Cisco D9824 Advanced Multi Decryption Receiver Release Note*. If the generated hash digest values do not match the official list, contact Cisco customer support.

To start a communication session with the receiver, use a utility such as Tera Term Pro or PuTTY. For more information on starting a Telnet or SSH session, see *Starting a Telnet/SSH Session* (on page 27).

- 1 At the admin prompt, type `hash` and press **Enter**. The hash digest for the D9824 is listed. The following is an example:

```
admin>hash
Calculating SHA-1 Hash, Please wait...
D9824:
App5514:  b96e8dde ee07d013 1c05560b b6d24cec d8d56686 Version: B03.96.11DD
App7109:  480caabf 575466e7 46bdadd1 c72c9711 f772f7c3 Version: B03.96.11DD
Fpga7109:  fcec8f7e d5b255b7 ab210abf 91d93852 b8779360 Version: R00.00.01az

RC=CMD_OK, OK
CS=OK
admin>
```

- 2 Verify the hash digest values with the values listed in the appropriate D9824 release note. If the values do not match, contact Cisco customer support.

## Setting up Import/Export File Information

- 1 From the user interface of the D9824, choose **System Settings > Import/Export File**. The Import/Export page is displayed.

The screenshot shows the Cisco D9824 Web GUI. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar has a tree view with 'Settings File' selected. The main content area is titled 'Import / Export File' and contains the following sections:

- Device Settings File Transfer:** Two radio buttons: 'Export Device Settings & Transport Network Information' (unselected) and 'Export User Device Settings Only' (selected). An 'Export' button is next to the second option.
- Settings File:** A 'Browse...' button with the text 'No file selected.' and an 'Import' button below it.
- Settings File Backup History:** A table with columns 'Last Backup File Name' and 'Backup Time Stamp'. The row shows 'file name' and '2013/06/24 14:36:20'.
- Settings File Restore History:** A table with columns 'Last Restored File Name' and 'Restore Time Stamp'. The row shows 'restore file name' and '2007/09/01 00:00:00'.
- Settings File Operation History:** A table with columns 'Operation Status' and 'Detailed Operation Status'. The row shows 'Pass' and 'Idle'. Below the table is a 'Percent Completed' progress bar at 0%.

In the **Device Settings File Transfer** area, you can export and/or import device settings and transport network information.

- 2 Click the **Export Device Settings & Transport Network Information** radio button and click **Export** to download device settings and transport network information as a file to the designated file folder.
- 3 Click the **Export User Device Settings only** radio button and click **Export** to download user settings as a file to the designated file folder.
- 4 In the **Settings File** area, click **Browse**. The Choose File dialog opens. Navigate to the appropriate folder and select the file with a **.bkp** file extension and click **Open**. Click **Import**.

### Viewing the Backup/Restore Status

The following table displays the Settings File Backup/Restore/Operation History information:

Status	Description
Last Backup File Name	Name of the file to use.
Backup Time Stamp	Date and time of the last successful backup file saved.



Status	Description
Last Restored File Name	Name of the last file that was restored.
Restore Time Stamp	Date and time of the last successful restore.
Operation Status	Status of the current backup operation (Inprogress, Pass, or Fail).
Detailed Operation Status	Detailed processing step for tracking backup progress.
Percentage Complete	Percentage of backup function completed.

## Setting up Import/Export FTP Information

- From the user interface of the D9824, choose **System Settings > Import/Export FTP**. The Import/Export FTP page is displayed.

The screenshot shows the Cisco D9824 web interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'Settings File' selected, with sub-items 'Import/Export File' and 'Import/Export FTP'. The main content area is titled 'Import / Export FTP' and contains the following configuration fields:

- Settings Filename: file name
- FTP Server IP Address: 192.168.0.100
- FTP User Name: [empty]
- FTP Password: [masked]
- FTP Port Number: 21

Below the fields are two radio buttons: 'Export Device Settings & Transport Network Information' (unselected) and 'Export User Device Settings Only' (selected). There are also 'Apply', 'Refresh', 'Export', and 'Import' buttons.

The 'Settings File Backup History' section shows:

Last Backup File Name	file name
Backup Time Stamp	2013/06/24 14:36:20

The 'Settings File Restore History' section shows:

Last Restored File Name	restore file name
Restore Time Stamp	2007/09/01 00:00:00

The 'Settings File Operation History' section shows:

Operation Status	Pass
Detailed Operation Status	Idle
Percent Completed	0%

- The **Configure Offline FTP Settings File Transfer** area has backup and restore controls.

**Note:** You must have access to an FTP Server (e.g. WinFTP) on a network or a local PC before you can setup backup/restore controls.

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- 3 In the **Settings Filename** field, enter the file name of the backup/restore file. You can enter up to 119 characters.
- 4 In the **FTP Server IP Address** field, enter the IP address of the FTP server used to restore the backup/restore file.
- 5 In the **FTP User Name** and **FTP Password** fields, enter the user name and password to access the FTP server.  
**Note:** The FTP Password is not retained in the receiver. You must re-enter the password before initiating the backup or restore operation.
- 6 In the **FTP Port Number** field, enter the port number of the FTP server used to store the backup/restore file. You can enter a port number in the range from 1 to 65535.
- 7 Click the **Export Device Settings & Transport Network Information** radio button to save user settings and tuning information to the backup file. Click the **Export User Device Settings Only** radio button to save user settings to the backup file.
- 8 Click **Export** to save the settings to a backup file. Click **Import** to retrieve the last backed up file.

For information on the **Settings File Back/Restore/Operation History** areas, see *Viewing the Backup/Restore Status* (on page 246).

## Managing D9824 Web GUI Accounts

You can define up to 10 usernames/passwords for login use via web GUI session on the D9824 receiver.

When a user tries to login, the user is required to provide a username and a password. The user is granted access only if this username/password pair exists in the authentication table.

The factory preset "Admin" account has Admin privileges and is allowed to add new users, delete users, change usernames, and modify its own password. Users with non-Admin privileges (for example, User and Guest) are only allowed to modify their own passwords.

### To Change the User Login Passwords

- 1 From the user interface of the D9824, choose **System Settings > Account Management**. The Account Management page is displayed.



To configure the password complexity for all users:

**Note:** This feature is only available to a user with Admin privileges only.

- 2 From the **Password Complexity** drop-down list, choose the level of the password complexity. Any changes take effect immediately, and do not require you to click **Apply**.

The following describes the rules for each level:

Password Complexity	Description
No Checking	There are no restrictions on passwords. <b>Note:</b> A minimum of one character is required.

Password Complexity	Description
Minimal Checking	<p>A password must comply with the following requirements:</p> <ul style="list-style-type: none"> <li>■ It cannot contain username or reversed username.</li> <li>■ It cannot contain any of the following strings: cisco, sciatl, ocsic, ltaics, atlsci, icslta, or any string achieved by full or partial capitalization of letters.</li> <li>■ No letter is repeated more than three times in a row.</li> <li>■ Must contain a minimum of four characters.</li> </ul>
Full Complexity Checking	<p>A password must comply with the following requirements:</p> <ul style="list-style-type: none"> <li>■ It cannot contain username or reversed username.</li> <li>■ It cannot contain any of the following strings: cisco, sciatl, ocsic, ltaics, atlsci, icslta, or any string achieved by full or partial capitalization of letters.</li> <li>■ No letter is repeated more than three times in a row.</li> <li>■ Must contain a minimum of eight characters.</li> <li>■ Must contain a minimum of three of the following types of characters: capital letters, small letters, digits, and special characters.</li> </ul>

**Note:** The complexity level changes will only affect the new user accounts and password changes. It will not affect existing passwords. Any changes take effect immediately, and do not require the use of the **Apply** button.

To change your login password:

**Note:** You are allowed to only modify your own password.

- 1 The **Change Password for User** field displays the password for the current login.
- 2 In the **Enter Current Password** field, enter the current login password.
- 3 In the **Enter New Password** field, enter the new login password.
- 4 In the **Re-enter New Password** field, type the new login password again to confirm. Once the password change is successful, the user will be directed to the login screen to re-enter their username and password.

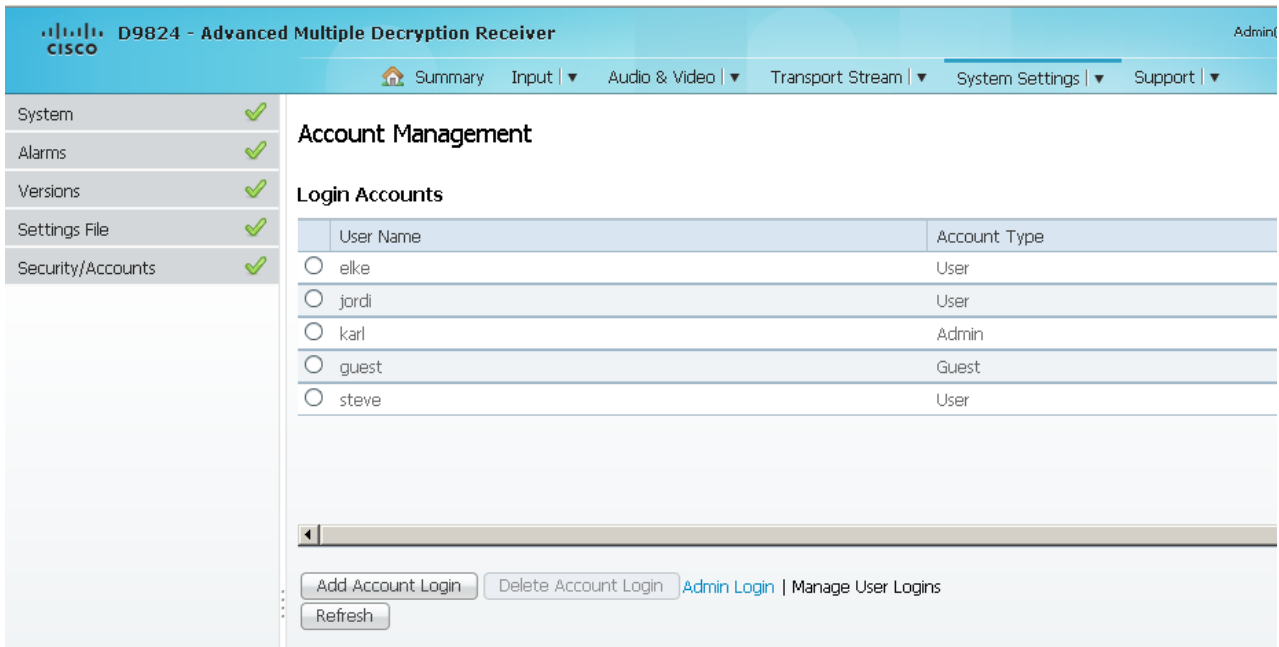
**Note:** The **Enter New Password** and **Re-enter New Password** fields should be identical. Each user, including the admin user, can only modify their own password.

- 5 Click **Apply**.

**To Add a User Account**

**Note:** This feature is available to a user with Admin privileges only.

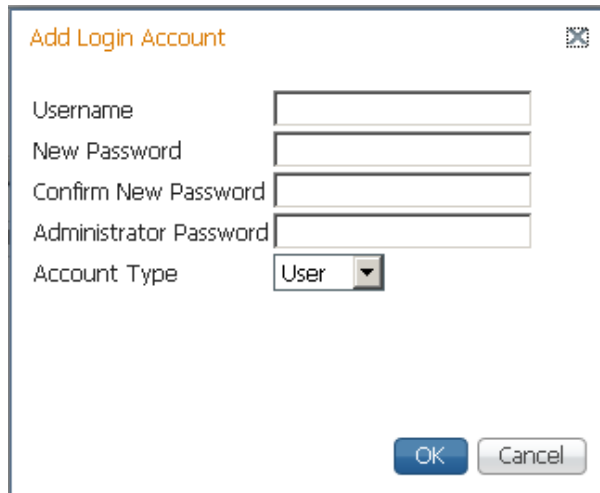
- 1 From the Account Management page, click the **Manage User Logins** link. The Login Accounts page is displayed.



- 2 Click **Add Account Login** to create a new login account.

**Note:** You can create a maximum of 10 user accounts.

The Add Login Account window is displayed.



- 3 In the **Username** field, enter a user ID. The new username should not match any of the usernames already defined in the Logins Accounts table.
- 4 In the **New Password** field, enter a password to assign the user ID. The password must follow the rules configured in the **Set Password Complexity for All Users** parameter. For more information, see *To Change the User Login Passwords* (on page 249).
- 5 Enter the new password again to confirm in the **Confirm New Password** field.  
**Note:** The New Password and Confirm New Password should be identical.
- 6 In the **Administrator Password** field, enter your Administrator password used to log on to the D9824 web GUI.
- 7 From the **Account Type** drop-down list, choose User, Admin, or Guest. The following table illustrates the different login types:

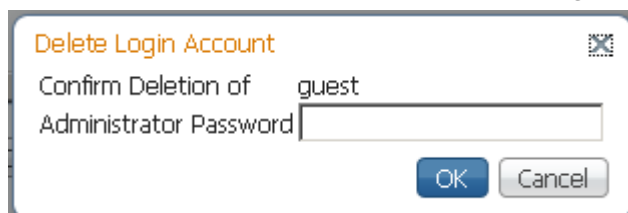
Account Type	Access
Guest	View settings only.
User	View and edit settings.
Admin	View, edit settings, and add/delete user accounts.

- 8 Click **OK**.

#### To Delete a User Account

**Note:** This feature is available to a user with Admin privileges only.

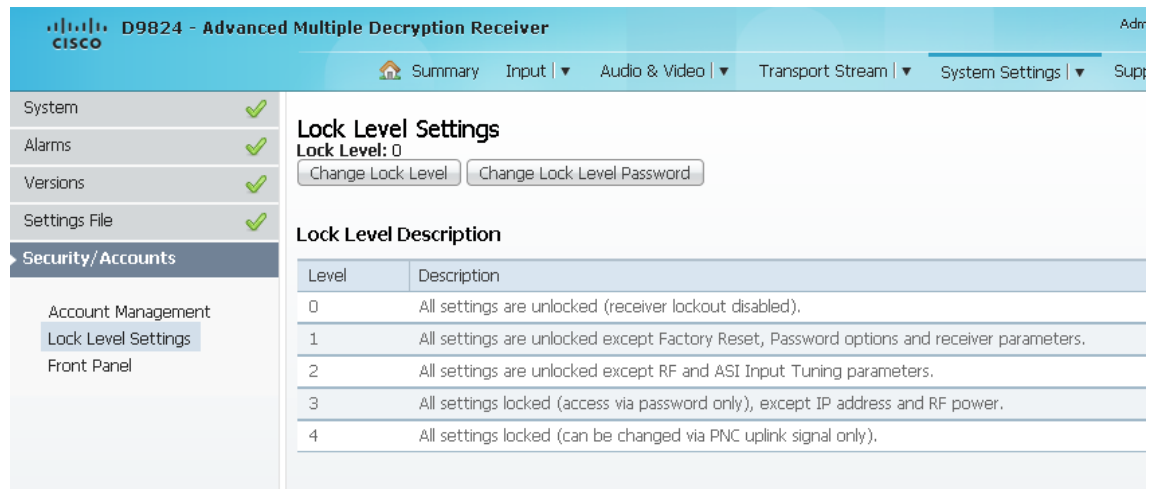
- 1 In the Login Accounts table, select the user you want to remove.  
**Note:** if you do not have Admin privileges, NOT ALLOWED is displayed in the Login Accounts table.
- 2 Click **Delete Account Login**. The Delete Login Account dialog box is displayed.



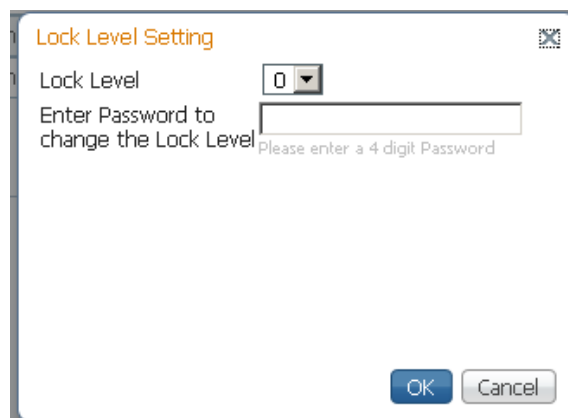
- 3 In the **Administrator Password** field, enter the administrator password to confirm the deletion.
- 4 Click **OK**. The selected user account is deleted.

## Configuring Lock Level Settings

- 1 From the user interface of the D9824, choose **System Settings > Lock Level Settings**. The Lock Level Settings page is displayed.



- 2 Click **Change Lock Level** and the Lock Level Setting dialog box is displayed.



- 3 From the **Lock Level** drop-down list, choose the lock level, which restricts access and prevents unauthorized changes to the receiver settings (0, 1, 2, or 3). The default setting is 0.

**Note:** For details on the four lock levels, see D9824 Receiver Lock Levels.

- 4 In the **Enter Password to change the lock level** field, enter the password to change the lock level. Depending on the unit, the default password is 1234. For more information on the default password, contact Cisco customer support.
- 5 Click **OK**.

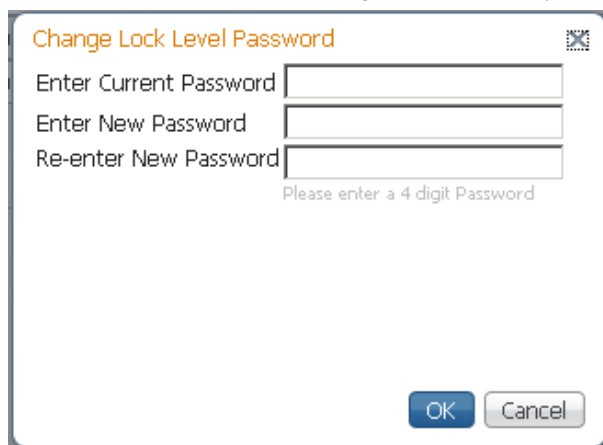
If the incorrect lock level or password is entered, an error message appears at the top of the page.

### Changing the Lock Level Password

A unique lock level password (4-digit password) protects the current receiver settings against unauthorized changes. When changing the password, record and keep this number in a secure location. Depending on the unit, the default password is 1234. For more information on the default password, contact Cisco customer support.

**Important:** Proceed with caution when changing the password as this operation cannot be undone. If the password is lost or is unavailable, contact Cisco customer support.

- 1 In the Lock Level Settings page, click **Change Lock Level Password**. The Change Lock Level Password dialog box is displayed.



The image shows a dialog box titled "Change Lock Level Password". It contains three input fields: "Enter Current Password", "Enter New Password", and "Re-enter New Password". Below the fields is a note: "Please enter a 4 digit Password". At the bottom of the dialog box are two buttons: "OK" and "Cancel".

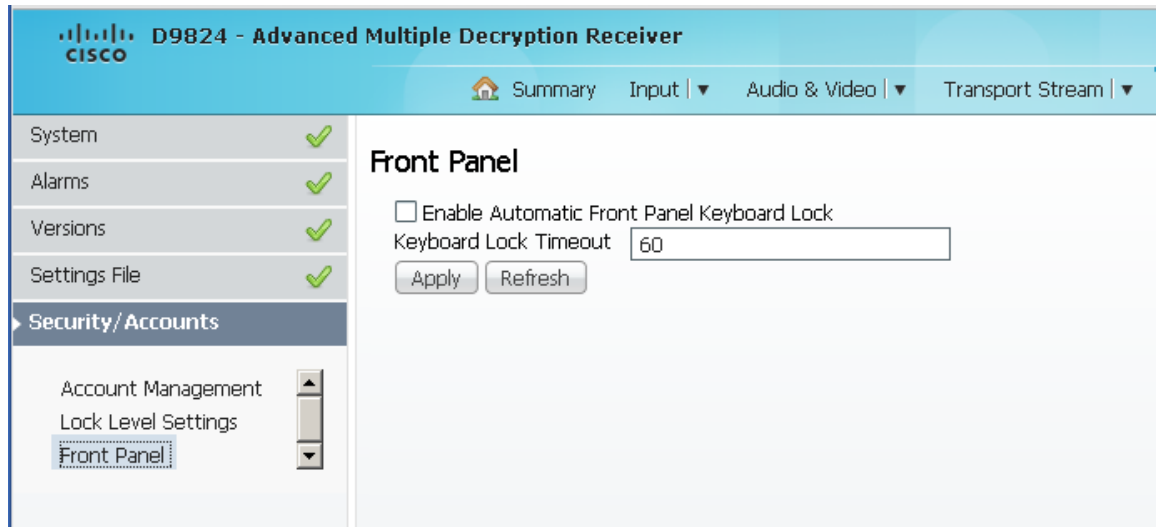
- 2 In the **Enter Current Password** field, enter the current lock level password.
- 3 In the **Enter New Password** field, enter the new password, any number from 0 to 9.
- 4 Re-enter the **New Password** and click **Yes**. A message appears informing you that the password was changed successfully.

**Note:** If the password is lost or is unavailable, contact Cisco customer support.



## Configuring Front Panel Settings

- 1 From the user interface of the D9824, click **System Settings > Front Panel**. The Front Panel page is displayed.

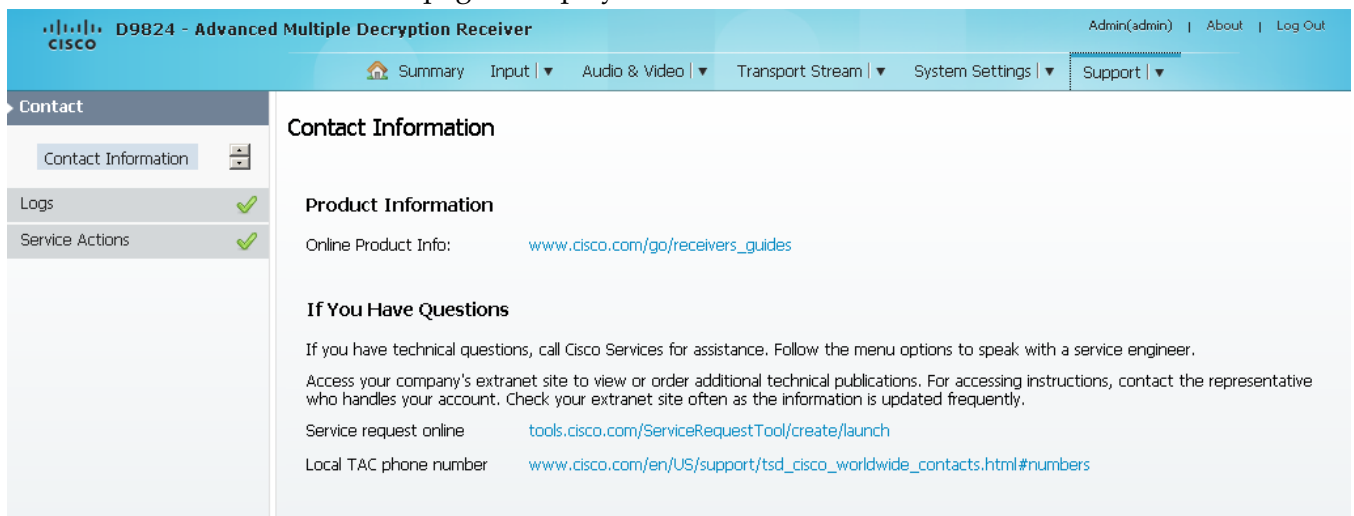


- 2 Check the **Enable Automatic Front Panel Keyboard Lock** check box to enable the front panel keypad lock state.
- 3 In the **Keyboard Lock Timeout** field, set the keypad lock timeout period. The lock timeout period takes effect when the keypad has not been touched (i.e., a key has not been pressed) when on the Main Menu for the set period. Avoid setting the period to a short duration when the keypad is used often. Enter a value in the range from 5 to 1800 seconds. The default is 60 seconds.
- 4 Click **Apply**.

## Viewing Support Information

### Viewing Contact Information

From the user interface of the D9824, choose **Support > Contact Information**. The Contact Information page is displayed.



The Contact Information page displays all the Cisco customer support information.

## Viewing Diagnostic Logs

From the user interface of the D9824, choose **Support > Diagnostic Logs**. The Diagnostic Logs page is displayed.

The screenshot shows the Cisco D9824 Advanced Multiple Decryption Receiver interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar has 'Logs' selected, with sub-items: 'Diagnostic Logs', 'Usage Counters', 'Fans & Temperatures', and 'Alarm History'. The main content area is titled 'Diagnostic Logs' and contains a table of log messages.

Set Date	Message
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [PRGMSTATUS], Index FrameworkI...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [PRGMSTATUS], Index FrameworkI...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [PRGMSTATUS], Index FrameworkI...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [PRGMSTATUS], Index FrameworkI...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [PRGMSTATUS], Index FrameworkI...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [PRGMSTATUS], Index FrameworkI...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	HTTP ;ASSERT ;;5012;uic_GetTextValueByPositionInList() - FAILED; filename [VCInfo], Index FrameworkID = 0x2...
2013/08/...	LOG ;WARNING;;3628;558 messages were lost due to log buffer overflow.
2013/08/...	HTTP ;ASSERT ;;7967;Context Semaphore Wait failed
2013/08/...	HTTP ;ASSERT ;;8001;Context Semaphore Signal failed
2013/08/...	HTTP ;ASSERT ;;7967;Context Semaphore Wait failed
2013/08/...	HTTP ;ASSERT ;;8001;Context Semaphore Signal failed
2013/08/...	LOG ;WARNING;;3628;170 messages were lost due to log buffer overflow.
2013/08/...	LOG ;WARNING;;3628;67 messages were lost due to log buffer overflow.
2013/08/...	LOG ;WARNING;;3628;88 messages were lost due to log buffer overflow.
2013/08/...	LOG ;WARNING;;3628;90 messages were lost due to log buffer overflow.

At the bottom of the log table, there are 'Clear' and 'Export' buttons.

The Diagnostic Logs page displays all the system log messages with their dates and times.

Click on the arrow next to **Set Date and Time** column to sort by date and time.

Click **Export** to export the log history to a .csv file. The File Download dialog is displayed. Click **Save** to save the file to your local drive.

Click **Clear** to clear the log history.

## Viewing the Usage Counters

From the user interface of the D9824, choose **Support > Logs > Usage Counters**. The Usage Counters page is displayed.

The screenshot shows the Cisco D9824 web interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar shows 'Logs' selected, with sub-items 'Diagnostic Logs', 'Usage Counters', 'Fans & Temperatures', and 'Alarm History'. The main content area is titled 'Usage Counters' and contains a table of 'Usage Counter Information'.

Usage Counter Information	
Production Date and Time	2011/04/28 09:39:38
Last Power On Date and Time	2013/08/09 09:52:13
Lifetime Hours Powered	13626
Lifetime Reset Counter	151
Clearable Reset Counter	151
Hours Since Last Power-On/Reset	0
Last Reset Reason	SW reset: 1, rc: 0x00000001, info: DL APP REBOOT, source: 5514

Below the table is a 'Clear Reset Counter' button.

The following table describes the Usage Counter Information:

Device Status Information	Description
Production Date & Time	Displays the date and time when the receiver was manufactured.
Last Power On Date and Time	Displays the date and time when the receiver was powered up.
Lifetime Hours Powered	Displays the number of hours since the last power-on.
Lifetime Reset Counter	Displays the total number of times the receiver has been restarted.
Clearable Reset Counter	Displays the number of restarts since the last time the restart counter was cleared.  To clear or reset the Clearable Reset Count, click <b>Clear Reset Counter</b> .
Hours Since Last Powered-On/Reset	Displays the total number of hours that the receiver has been operating since the last power-on or restart.
Last Reset Reason	Displays the reason for the last restart, i.e., power cycle or manual reset.

Click **Clear Reset Counter** to clear the **Clearable Reset Counter** field and it resets the counter back to 0.

## Viewing Temperatures

From the user interface of the D9824, choose **Support > Fans & Temperatures**. The Fans & Temperatures page is displayed.

The screenshot shows the Cisco D9824 Advanced Multiple Decryption Receiver web interface. The top navigation bar includes 'Summary', 'Input', 'Audio & Video', 'Transport Stream', 'System Settings', and 'Support'. The left sidebar contains 'Contact', 'Logs', 'Diagnostic Logs', 'Usage Counters', 'Fans & Temperatures', 'Alarm History', and 'Service Actions'. The main content area displays the 'Fans & Temperature' page with a table of system metrics.

Current	Maxim...	Average	Intake1	Intake2	FPGA ...	FPGA	PHY	VCCINT	VCCAUX	FAN1	FAN2	FAN5
26.0	37.0	21.0	28.0°C	25.0°C	38.0°C	53.0°C	60.0°C	1016mV	2504mV	OK	OK	OK

The **Current** column displays the current operating temperature. The **Maximum** column displays the maximum operating temperature that has been reached. The **Average** column displays the average operating temperature. The values are displayed in Degrees Celsius.

The **FAN1**, **FAN2**, **FAN5**, and **FAN6** columns display the current speed of the four fans in the D9824 receiver.

## Viewing Alarm/Warning History

From the user interface of the D9824, choose **Support > Alarm History**. The Alarm History page is displayed.

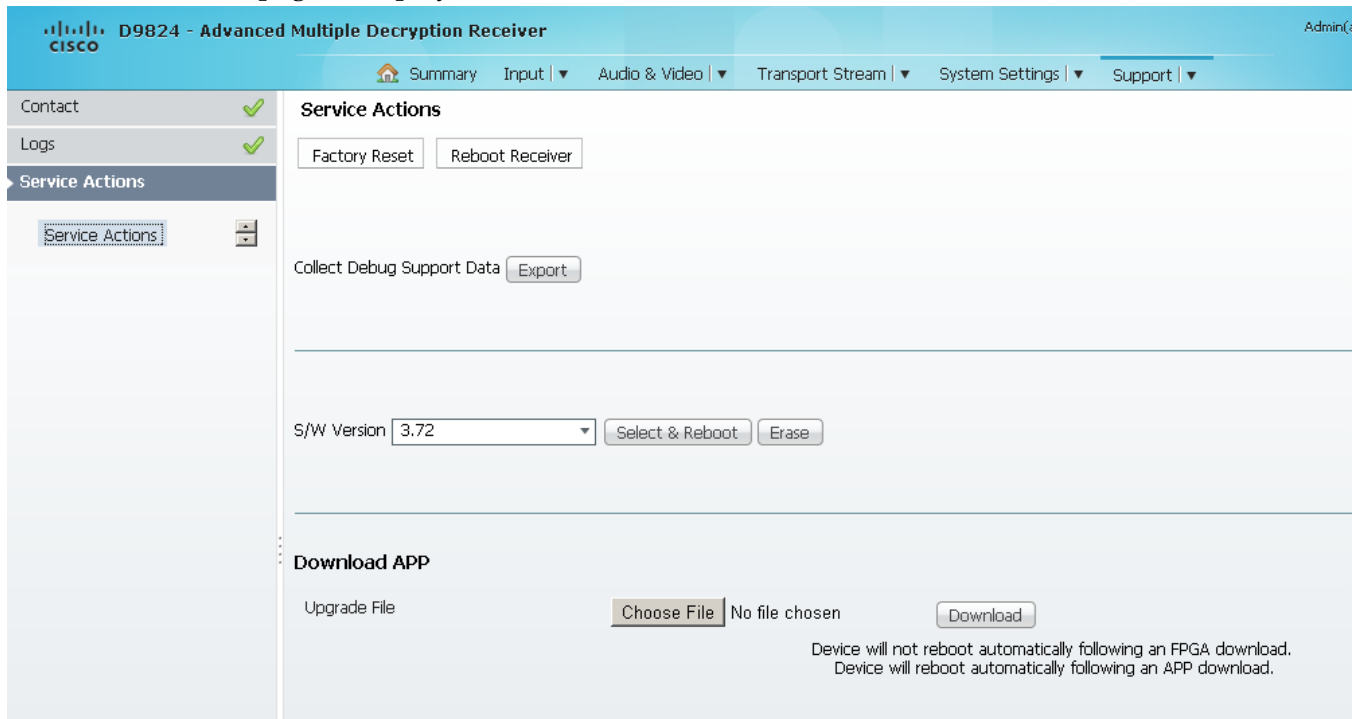
Type	Name	Text	Set Date & ...	Cleared Date & Time
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:12:52
Alarm	Signal Status	Signal is locked	2013/07/25 ...	2013/07/25 16:13:23
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:13:00
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:13:03
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:13:09
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:13:12
Warning	Transport Error	Transport Err...	2013/07/25 ...	2013/07/25 16:20:54
Alarm	Signal Status	Signal is locked	2013/07/25 ...	2013/07/25 16:18:44
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:18:31
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:18:33
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:20:29
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:20:30
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:20:42
Alarm	Signal Quality	Signal Quality...	2013/07/25 ...	2013/07/25 16:20:42
Warning	Transport Error	Transport Err...	2013/07/25 ...	2013/07/25 16:24:36

The Alarm History page displays all the past system event messages and their set and cleared dates and times. For more information on the alarm messages, refer to *D9824 Alarm Messages* (on page 264).

Click **Clear Alarms/Warnings History** to clear all the messages in the Fault History table. Click **Export** to export the alarm history to a .csv file. The File Download dialog is displayed. Click **Save** to save the file to your local drive.

## Loading a Software Version

From the user interface of the D9824, choose **Support > Service Actions**. The Service Actions page is displayed.



The **Collect Debug Support Data Export** field is used by Cisco customer support only. Click **Export** to create and save a diagnostics file.

**Note:** It is recommended that you collect the debug support data prior to contacting Cisco customer support for any D9824 issues.

The **S/W Version** drop-down list allows you to choose and load a different application version to your receiver. Click **Select & Reboot** to load the selected application version and reboot the receiver. Click **Erase** to remove the selected application version. You will be prompted to continue or not. Press **OK** to continue the deletion.

Click **Factory Reset** to perform a reset of receiver settings back to the factory set (default) values. A warning message prompts you to confirm the operation. Click **OK** to continue or **No** to cancel the operation.

Click **Reboot Receiver** to reboot the receiver. You will be prompted to verify the operation. Click **Yes** to reboot the receiver or **No** to cancel the operation.

### Downloading the Software Application

In the **Download APP** area, click **Choose File** to select the new version of FPGA or the D9824 Advanced Multi Decryption Receiver's software application. The Open dialog opens. Select the upgrade file and click **Open**. Click **Download** to download the selected upgrade file. File formats that can be downloaded include Application CDTs and FPGA CDTs.

During the upgrade, click **Return to Browser** (not recommended) to return to the web browser. The application download continues. It is not recommended to interrupt the upgrade during the application download. Click **Download Status Toggle** to toggle the download data update between the web GUI and an external device.

**Note:** For application downloads, once the download is complete, the D9824 receiver will reboot automatically. For FPGA downloads, you must click **Reboot Receiver** to manually reboot the D9824 receiver and complete the download. This is to facilitate the typical case in which the user intends to flash the FPGA file (no auto reboot) followed by an APP download (auto reboot).

**Note:** If you are downloading an older version of the software application, it is recommended that you clear the browser cache prior to logging back in to the D9824 web GUI.



# 6

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## Service and Maintenance

### Overview

This chapter gives information to assist you in upgrading firmware to the D9824 Advanced Multi Decryption Receiver. It also describes how the status of the D9824 receiver is communicated via front panel LEDs.

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## D9824 Alarm Messages

The Alarm LED on the front panel indicates whether the unit has triggered an alarm or warning. A solid red signal for five seconds indicates a warning, and a flashing red signal indicates an alarm. For more information, see *About the Front Panel* (on page 32).

The status of the D9824 receiver and its immediate surroundings is reported to the front panel in the form of messages and alarms. You can enable or disable messages in the Alarm/Warning settings.

The following table shows an alphabetical list of the available messages and their default alarm status. The Set Messages and Clear Messages are displayed in the Warning History when the messages are set or cleared respectively.

**Note:** Only alarm conditions can be used to trigger rear panel relays to control external alarm equipment. Warnings are not associated with relay operation.

It is recommended that you collect the debug support data prior to contacting Cisco customer support for any D9824 issues.

### Alarms

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PSB non-compliant	Set	PROD incomplete or PSB non-compliant	<p>Cause: Production Access Reset command was not issued after production programming was completed.</p> <p>Remedy: The Access Reset command should be issued by the user with PROD credentials if the device has not yet been shipped to the customer. Otherwise, the customer must reset credentials using the Front Panel.</p>	Device is in the WEAK state after production programming is complete.	Major	900

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PSB non-compliant	Clear	PSB compliant	-	-	Major	900
Pri Flash Fail	Set	Contact Customer Service (%s fail at %d)	Cause: FLASH driver operation %s (one of ERASE, WRITE, BLANK_CHECK or READ_WRITE) failed on Primary (5514) FLASH offset %d.  Remedy: Contact Cisco customer support.	The FLASH device hardware failed.	Major	910
Sec Flash Fail	Set	Contact Customer Service (%s fail at %d)	Cause: FLASH driver operation %s (one of ERASE, WRITE, BLANK_CHECK or READ_WRITE) failed on Secondary (7109) FLASH offset %d.  Remedy: Contact Cisco customer support.	The FLASH device hardware failed.	Major	920
Settings Lost	Set	Stored configuration incomplete. Contact Customer Service	Cause: Corrupted database record was found while populating the DBR partition.  Remedy: Contact Cisco customer support.	The settings database detects corruption.		950
Signal Status	Set	ASI Signal - No Content	Cause: Loss of ASI/RF lock. Loss of Transport data. Invalid frequency parameters. External to IRD.  Remedy: Check tuning parameters and ASI/RF cables.	ASI Link Locked, but no TS content.	Minor	1000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Signal Status	Set	RF Signal - No Content	Cause: Loss of ASI/RF lock. Loss of Transport data. Invalid frequency parameters. External to IRD.  Remedy: Check tuning parameters and ASI/RF cables.	RF Tuner locked, but no TS content.	Minor	1000
Signal Status	Set	Signal is lost	Cause: Loss of ASI/RF lock. Loss of Transport data. Invalid frequency parameters. External to IRD.  Remedy: Check tuning parameters and ASI/RF cables.	Loss of signal.	Minor	1000
Signal Status	Set	Tuning Parameters Invalid	Cause: Loss of ASI/RF lock. Loss of Transport data. Invalid frequency parameters. External to IRD.  Remedy: Check tuning parameters and ASI/RF cables.	One of the tuning parameters is invalid.	Minor	1000
Signal Status	Clear	Signal is locked	-	Signal OK	Minor	1000
Signal Status	Clear	Tuning Parameters Valid	-	Tuning parameters are valid	Minor	1000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n: ISE Not Auth	Set	Channel is not authorized	<p>Cause: The channel is unauthorized for the current program.</p> <p>Remedy: Contact your (uplink) service provider to determine whether you are authorized to receive the current program.</p>	Program unauthorized because the tier bits do not match.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Set	Channel requires an authorization key	<p>Cause: The channel is unauthorized for the current program.</p> <p>Remedy: Contact your (uplink) service provider to determine whether you are authorized to receive the current program.</p>	Program is unauthorized because the unit does not have an authorization key.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Set	Channel is blacked out	<p>Cause: The channel is unauthorized for the current program.</p> <p>Remedy: Contact your (uplink) service provider to determine whether you are authorized to receive the current program.</p>	Program is unauthorized because at a minimum, it needs to match one blackout code.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n: ISE Not Auth	Set	Channel uses an unknown CA system	<p>Cause: Conditional access not supported.</p> <p>Remedy: Contact your (uplink) service provider to determine whether you are authorized to receive the current program at this time.</p>	Non-SA conditional access system.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Set	Channel authorization refused	<p>Cause: Conditional access not supported.</p> <p>Remedy: Contact your (uplink) service provider to determine whether you are authorized to receive the current program at this time.</p>	There is mismatch in the Conditional access.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Set	Channel requires an IRD with CA support	<p>Cause: Conditional access not supported.</p> <p>Remedy: Contact your (uplink) service provider to determine whether you are authorized to receive the current program at this time.</p>	Conditional access is not supported.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Set	Channel requires the PE to have an ISE	<p>Cause: Hardware issue.</p> <p>Remedy: Clear alarms, reset unit, and notify Cisco customer support if problem persists.</p>	Hardware issue.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n: ISE Not Auth	Set	Channel Unavailable - LEC timeout	Cause: Uplink configuration issue.  Remedy: Contact your (uplink) service provider to determine whether the LEC GDS data is being provided in the stream.	Uplink configuration issue.	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Clear	Fault Reset	-	-	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
PE n: ISE Not Auth	Clear	Channel is authorized	-	-	Minor	3000 4000 5000 6000 7000 8000 9000 10000 10009-10032
CI Top Slot Status	Set	Initialization Fail	Cause: CAM is damaged or not fully inserted, hardware issue, CAM software crash or you don't have subscription rights for the card.  Remedy: Re-insert the CAM.	Initialization of CAM in top slot failed.	Major	10100

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
CI Top Slot Status	Set	No Descrambling	Cause: CAM is damaged or not fully inserted, hardware issue, CAM software crash or you don't have subscription rights for the card.  Remedy: Re-insert the CAM.	All elementary streams of all selected programs are not descrambled.	Major	10100
CI Top Slot Status	Clear	CAM Operation OK	-	-	Major	10100
CI Bottom Slot Status	Set	Initialization Fail	Cause: CAM is damaged or not fully inserted, hardware issue, CAM software crash or you don't have subscription rights for the smart card.  Remedy: Re-insert the CAM, and/or check your rights for the smart card.	Initialization of CAM in bottom slot failed.	Major	10200
CI Bottom Slot Status	Set	No Descrambling	Cause: CAM is damaged or not fully inserted, hardware issue, CAM software crash or you don't have subscription rights for the smart card.  Remedy: Re-insert the CAM, and/or check your rights for the smart card.	All elementary streams of all selected programs are not descrambled.	Major	10200
CI Bottom Slot Status	Clear	CAM Operation OK	-	-	Major	10200



Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n CI Status	Set	Program Not Descrambled	<p>Cause: Hardware issue, CAM software crash or you don't have subscription rights for the smart card.</p> <p>Remedy: Reinsert the CAM and/or check your rights for the smart card.</p>	All elementary streams for this service selected for descrambling were not descrambled by the CAM.	Major	10510 10520 10530 10540 10550 10560 10570 10580 10590 10600 10610 10620 10630 10640 10650 10660 10670 10680 10690 10700 10710 10720 10730 10740 10750 10760 10770 10780 10790 10800 10810 10820

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n CI Status	Set	1 or more ES Not Descrambled	<p>Cause: Hardware issue, CAM software crash or you don't have subscription rights for the smart card.</p> <p>Remedy: Reinsert the CAM and/or check your rights for the smart card.</p>	At least 1 elementary stream is not descrambled, but the CAM is still descrambling other elementary streams for this service.	Major	10510 10520 10530 10540 10550 10560 10570 10580 10590 10600 10610 10620 10630 10640 10650 10660 10670 10680 10690 10700 10710 10720 10730 10740 10750 10760 10770 10780 10790 10800 10810 10820

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n CI Status	Clear	Descrambling OK	-	-	Major	10510 10520 10530 10540 10550 10560 10570 10580 10590 10600 10610 10620 10630 10640 10650 10660 10670 10680 10690 10700 10710 10720 10730 10740 10750 10760 10770 10780 10790 10800 10810 10820
PE n: Loss of Input	Set	Loss of input detected	Cause: Loss of input.  Remedy: Ensure input has a valid stream.	Loss of input.	Minor	11000 12000 13000 14000 15000 16000 17000 18000 18009-18032

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
PE n: Loss of Input	Clear	Fault reset	-	-	Minor	11000 12000 13000 14000 15000 16000 17000 18000 18009-18032
Digital Program Mapping	Set	PID Collision	<p>Cause: Uplink settings may have changed since setting up the unit. Please check your DPM settings.</p> <p>Remedy: Correct the DPM settings. Check the uplink to find the appropriate system settings.</p>	Two source service PIDs are being mapped to the same output PID. This will cause data corruption in the stream.	Minor	19000
Digital Program Mapping	Set	Program Collision	<p>Cause: Uplink settings may have changed since setting up the unit. Please check your DPM settings.</p> <p>Remedy: Correct the DPM settings. Check the uplink to find the appropriate system settings.</p>	Two source channel numbers are being mapped/ passed to the same channel number in the output.	Minor	19000
Digital Program Mapping	Set	Mode-i PMT out of range	<p>Cause: Uplink settings may have changed since setting up the unit. Please check your DPM settings.</p> <p>Remedy: Correct the DPM settings. Check the uplink to find the appropriate system settings.</p>	PMT PID to be used for Mode-i is outside of valid MPEG PID range.	Major	19000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Digital Program Mapping	Clear	Digital Program Mapping - OK	-	-	Major	19000
Shutdown Event	Set	DL APP REBOOT	Cause: User request requires reboot or internal system error. Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.	New application downloaded, system requires reboot.	Major	20000
Shutdown Event	Set	User requested FPGA change	Cause: User request requires reboot or internal system error. Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.	Runnable FPGA change requires reboot.	Major	20000
Shutdown Event	Set	User requested APP change	Cause: User request requires reboot or internal system error. Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.	Runnable application change requires reboot.	Major	20000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	User requested factory reset	<p>Cause: User request requires reboot or internal system error.</p> <p>Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.</p>	Factory reset requires reboot.	Major	20000
Shutdown Event	Set	User requested reboot	<p>Cause: User request requires reboot or internal system error.</p> <p>Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.</p>	User reboot request.	Major	20000
Shutdown Event	Set	User requested service restore	<p>Cause: User request requires reboot or internal system error.</p> <p>Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.</p>	Restore operation required restart	Major	20000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	PRODUCTION - Protect Flash	<p>Cause: User request requires reboot or internal system error.</p> <p>Remedy: If it is an internal system error fault, clear alarms, reset the unit, notify Cisco customer support if the problem persists.</p>	Reboot after production tables removed.	Major	20000
Shutdown Event	Set	I2C Failure	<p>Cause: Possible software/hardware issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Internal system error.	Major	20000
Shutdown Event	Set	WDOG: FPGA not loaded	<p>Cause: Possible software/hardware issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	FPGA has not been loaded.	Major	20000
Shutdown Event	Set	osal_SetDataForAllTasks	<p>Cause: Possible software issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Application initialization error.	Major	20000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	aw_LoadFaultList	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	osal_Init	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	NVS FLASH mounted	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	DB_Table_Cl::populateNvsRecords	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	STAPI_Init	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000



Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	dprm startup	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	dprm clear startup	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	DB_Array32_CI init failed	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	DB_FlagArray32_CI init failed	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	Wrong DB Item detected: item = AAA, table = BBB	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000

## Chapter 6 Service and Maintenance

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	DB_Item_Cl::addItem() failed	<p>Cause: Possible software issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Application initialization error.	Major	20000
Shutdown Event	Set	Memory allocation error on DB table construction	<p>Cause: Possible software issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Application initialization error.	Major	20000
Shutdown Event	Set	DB_Table_Cl::addTable() failed	<p>Cause: Possible software issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Application initialization error.	Major	20000
Shutdown Event	Set	DB_Table_Cl::addItem() failed: too many DB Items	<p>Cause: Possible software issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Application initialization error.	Major	20000
Shutdown Event	Set	DBT Init Failed: AAA	<p>Cause: Possible software issue.</p> <p>Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.</p>	Application initialization error.	Major	20000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	Framework Registration Error	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	7109 exception! Code = X, Address = Y, Task = Z	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	Memory Error: AAA, Phase X	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	Time Control object creation failed	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	Wrong UIC Item detected: item = AAA, table BBB	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	Memory allocation error on UIC table construction	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	Error adding UIC table(AAA)	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	HTTP - http_init4() FAILED to create partition	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	http_init4: FAILED to allocate scratch buffer	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	HTTP - http_init4() FAILED to allocate memory from AVMEM Partition	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	UD - ud_init_phase_4() FAILED to allocate memory from System Partition	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	UD - ud_init_phase_4() FAILED to create partition	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	'--- COMPONENT 'AAA' FAILED TO INIT IN PHASE X, rc=NNN	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	VBI DB creation failed	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	VBI DB allocation failed	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Shutdown Event	Set	VBI Status DB creation failed	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	VBI Status DB allocation failed	Cause: Possible software issue.	Application initialization error.	Major	20000
Shutdown Event	Set	UIC_ENUM_CL given invalid ENUM_ST: item = AAA, table = BBB, problem with primary: X	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Application initialization error.	Major	20000
Shutdown Event	Set	FW: Memory or List Full	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Internal system error.	Major	20000
Shutdown Event	Set	Framework Registration Error	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Internal system error.	Major	20000
Shutdown Event	Set	Watchdog 'AAA' has expired	Cause: Possible software issue. Remedy: Clear alarms, reset unit, notify Cisco customer support if the problem persists.	Software detected an error in operation.	Major	20000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
System Startup	Set	System Startup	<p>Cause: The unit has started up and it indicates an expected or unexpected reset.</p> <p>Remedy: If a startup was unexpected, check for last reset cause. Notify Cisco customer support if the problem persists.</p>	Indicates that the decoder has started up. This alarm will clear itself after one second.	Major	20100
SMI Setup	Set	Phase lock error on SMI SDRAM	<p>Cause: Hardware Issue.</p> <p>Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.</p>	SDRAM on SMI bus not working.	Major	21000
SMI Setup	Set	SMI SDRAM exhaust test failed	<p>Cause: Hardware Issue.</p> <p>Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.</p>	SDRAM on SMI bus not working.	Major	21000
SMI Setup	Clear	SMI SDRAM setup successful	-	SDRAM on SMI Bus OK.	Major	21000
SMI Setup	Clear	SMI SDRAM exhaust test passed	-	SDRAM on SMI Bus OK.	Major	21000
LMI setup	Set	LMI SDRAM exhaust test failed	<p>Cause: Hardware issue.</p> <p>Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.</p>	DDR RAM on LMI bus not working.	Major	22000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
LMI setup	Clear	LMI Video SDRAM exhaust test passed	-	DDR RAM on LMI bus OK.	Major	22000
Param Storage	Set	DB NVS flushing ignored	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system failed to update fully.	Major	23000
Param Storage	Set	RAM flush to NVS failed	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system failed to update fully.	Major	23000
Param Storage	Set	DB Factory Reset in progress	Cause: Standard operation. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system operation in progress.	Major	23000
Param Storage	Set	DB Total Reset in progress	Cause: Standard operation. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system operation in progress.	Major	23000
Param Storage	Set	DB NVS flush in progress	Cause: Standard operation. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system operation in progress.	Major	23000



Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Param Storage	Set	DB Populate in progress	Cause: Standard operation.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system operation in progress.	Major	23000
Param Storage	Set	DB Factory Reset failed	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system failed during operation.	Major	23000
Param Storage	Set	DB Total Reset failed	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system failed during operation.	Major	23000
Param Storage	Set	DB Populate failed	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system failed during operation.	Major	23000
Param Storage	Set	DB NVS flush failed	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system failed during operation.	Major	23000
Param Storage	Clear	DB flushing completed	-	Successful NVS update.	Major	23000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Param Storage	Clear	DB Factory Reset completed	-	Non-volatile storage system operation successful	Major	23000
Param Storage	Clear	DB Total Reset completed	-	Non-volatile storage system operation successful	Major	23000
Param Storage	Clear	DB NVS flush completed	-	Non-volatile storage system operation successful	Major	23000
Param Storage	Clear	DB Populate completed	-	Non-volatile storage system operation successful	Major	23000
Flash STORAGE	Set	RECORD: init failed	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Non-volatile storage system corrupted. Possible loss of configuration.	Major	24000
Flash STORAGE	Set	RECORD MANAGER: Record contents check error, erasing all	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	NVS Corruption, and loss of configuration data	Major	24000
Flash STORAGE	Set	RECORD: sector setup check error, erasing sector	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	NVS Corruption, and loss of sector data	Major	24000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Flash STORAGE	Clear	RECORD: init done	-	-	Major	24000
LNB PS	Set	LNBPS: No Load	Cause: Possible wiring or hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	LNB power overload	Minor	25000
LNB PS	Set	LNBPS: Over Temperature	Cause: Possible wiring or hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	LNB power overload	Minor	25000
LNB PS	Set	LNBPS: Over Loaded	Cause: Possible wiring or hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	LNB power overload	Minor	25000
LNB PS	Set	LNBPS: Short Circuit	Cause: Possible wiring or hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	LNB power overload	Minor	25000
LNB PS	Clear	LNBPS: Normal	-	LNB power OK	Minor	25000
LNB PS	Clear	LNBPS: Disabled	-	-	Minor	25000
LNB PS	Clear	LNBPS: Off	-	-	Minor	25000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Flash Sector Error	Set	Check setting. Counted <number> events on <device>.	<p>Cause: A sector on FLASH on &lt;device&gt; (Pri, Sec, Trans 1, or Trans 2) was found corrupted on power-up, which was not a result of an interrupted erase. The problem happened &lt;number&gt; of times on this FLASH during a lifetime.</p> <p>Remedy: Check if the desired application is running and if the settings are valid.</p>	FLASH recovered after unexpected corruption.	Minor	25500
Signal Quality	Set	Audio Muted due to RF noise	<p>Cause: RF Signal quality is poor due to interference or signal level issues.</p> <p>Remedy: Check RF settings, re-aim dish, and add signal amplifier.</p>	Signal is locked but BER is beyond Audio muting threshold.	Minor	26000
Signal Quality	Set	Unstable RF Signal	<p>Cause: RF Signal quality is poor due to interference or signal level issues.</p> <p>Remedy: Check RF settings, re-aim dish, and add signal amplifier.</p>	Signal lock status is toggling frequently.	Minor	26000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Signal Quality	Set	Poor Quality RF Signal	Cause: RF Signal quality is poor due to interference or signal level issues.  Remedy: Check RF settings, re-aim dish, and add signal amplifier.	Signal is locked but BER is beyond muting threshold.	Minor	26000
Signal Quality	Clear	Signal Quality Fault Cleared	-	-	Minor	26000
Signal Quality	Clear	Audio Unmuted	-	-	Minor	26000
Transport Processing	Set	PTI lockup	Cause: Possible software issue.  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Programmable transport input module stopped processing any data packet.	Minor	27000
Transport Processing	Clear	PTI running	-	-	Minor	27000
Version Mismatch	Set	Version Mismatch between 5514/7109	Cause: The App5514 version does not match App7109 version.  Remedy: Download code with identical App5514 and App7109 versions.	Version mismatch between code running 5514 and 7109 processors.	Major	27400
DL:NVS Flash Failure	Set	APP5514 Flash Write Failed	Cause: Possible hardware or software issue.  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Failed to read or write flash memory	Major	27600

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
DL:NVS Flash Failure	Set	APP/SAT7109/PPC CRC/Write has Failed	Cause: Possible hardware or software issue.  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Failed to read or write flash memory	Major	27600
DL:NVS Flash Failure	Set	TEB Flash Write Failed	Cause: Possible hardware or software issue.  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Failed to read or write flash memory	Major	27600
Temperature Alarm	Set	Temperature over Alarm threshold	Cause: Room temperature too high, or air flow is blocked.  Remedy: Check openings on front and rear panels for blockage. Lower room temperature or improve air flow to device.	Temperature is above safe operating range.	Major	28000
Temperature Alarm	Clear	Temperature normal	-	-	Major	28000
Fan	Set	Fan RPM Alarm	Cause: Hardware issue.  Remedy: Unit should be returned to Cisco customer support as soon as possible.	Fan RPM out of normal operating range.	Major	29000
Fan	Clear	Fans Operational	-	-	Major	29000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
FPGA Temperature Alarm	Set	Temperature over Alarm threshold	<p>Cause: Room temperature too high, or air flow is blocked.</p> <p>Remedy: Check openings on front and rear panels for blockage. Lower room temperature or improve air flow to device.</p>	FPGA temperature is above safe operating range.	Major	30000
FPGA Temperature Alarm	Clear	Temperature normal	-	-	Major	30000
ASI Out Status	Set	ASI Overflow. Output Muted. Reduce content.	<p>Cause: Uplink settings may have changed since setup of the unit. Variable Bit Rate/Statmuxed streams may be in use.</p> <p>Remedy: Increase the output rate, drop unreferenced content in DPM Options, and/or drop programs not needed for downstream devices. Contact your (uplink) service provider to verify the expected bit rate settings.</p>	Current transport rate exceeds configured rate for ASI output. Output has been muted to protect downstream devices.	Minor	34000
ASI Out Status	Clear	ASI Output Restored	-	-	Minor	34000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
MPoIP Status	Set	MPEGoIP Overflow. Output Muted. Reduce content.	<p>Cause: Uplink settings may have changed since setup of the unit. Variable Bit Rate/Statmuxed streams may be in use.</p> <p>Remedy: Increase output rate, drop unreferenced content in DPM Options, drop programs not needed for downstream devices. Contact the (uplink) service provider to verify expected bit rate settings.</p>	Current transport rate exceeds configured rate for MPEG over IP output. Output has been muted to protect downstream devices.	Minor	35000
MPoIP Status	Clear	MPEGoIP Output Restored	-	-	Minor	35000
Boot Host	Set	KB not accessible	<p>Cause: Hardware issue</p> <p>Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.</p>	KB is not detected by Boot code.	Major	36000
Boot Host	Set	LCD not connected	<p>Cause: Hardware issue</p> <p>Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.</p>	LCD is not detected by Boot code.	Major	36000



Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Boot Host	Set	FLASH Not Found	Cause: Hardware issue  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Flash memory not detected.	Major	36000
Boot Host	Set	EMI SDRAM Test Failed	Cause: Hardware issue  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	RAM Failure - memory testing failed.	Major	36000
Boot Host	Set	BOOT Invalid	Cause: Hardware issue  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Boot SW cannot be read from memory correctly.	Major	36000
Boot Host	Set	APP Invalid	Cause: Hardware issue  Remedy: Clear alarms, reset unit, and notify Cisco customer support if the problem persists.	Application SW cannot be read from memory correctly.	Major	36000
Boot Host	Clear	BOOT passed	-	-	Major	36000
Boot Secondary	Set	BOOT Invalid	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Boot SW cannot be read from memory correctly.	Major	37000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Boot Secondary	Set	FPGA Invalid	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	FPGA Image cannot be read from memory correctly.	Major	37000
Boot Secondary	Set	APP Invalid	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Application SW cannot be read from memory correctly.	Major	37000
Boot Secondary	Clear	BOOT passed			Major	37000
Decoder Processor Start	Set	DB Startup failed	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Transfer of operational parameters to secondary processor failed.	Major	38000
Decoder Processor Start	Set	App Transfer Fail	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Transfer of Application software to second processor was not correctly completed	Major	38000
Decoder Processor Start	Set	No Response	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Secondary processor not responding.	Major	38000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
Decoder Processor Start	Set	Synchronization Failure	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, and notify Cisco customer support if the problem persists.	Communication with secondary processor failing.	Major	38000
Decoder Processor Start	Clear	Boot passed	-	-	Major	38000
LEC Timeout	Set	LEC Table Missing/timeout: channels currently unavailable	Cause: Possible LEC Server or Uplink issue.  Remedy: Check LEC Server setup and uplink configuration for the GDS PID setup. Clear alarm and notify Cisco customer support if the problem persists.	ECT Table is not received in the GDS stream.	Major	38500
LEC Timeout	Clear	LEC received	-	-	Major	38500
FPGA status	Set	FPGA Init failed to go high	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000
FPGA status	Set	FPGA Init and Done failed to go low	Cause: Hardware issue.  Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
FPGA status	Set	FPGA Init went LOW (CRC error)	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000
FPGA status	Set	FPGA Done failed to go high	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000
FPGA status	Set	SW ver outside upper or lower limit	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000
FPGA status	Set	FPGA ID does not match FPGA DESIGNATION	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000
FPGA status	Set	FPGA ID does not match HW FPGA ID	Cause: Hardware issue. Remedy: Clear alarms, reset the unit, notify Cisco customer support if the problem persists.	FPGA setup failure or the FPGA binary identity does not match the FPGA registers.	Major	39000
FPGA status	Clear	FPGA loaded successfully and reset	-	-	Major	39000

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
MPoIP Engine Failure	Set	Critical MPoIP engine failure, all active streams must be restarted	Cause: MPEG over IP engine failure. Remedy: Restart all the streams.	Indicates that MPoIP delay FIFO is overflowing. This is a critical error.	Major	92200
MPoIP Engine Failure	Clear	Error cleared	-	-	Major	92200
FEC USB Flash	Set	FEC USB Option not installed	Cause: FEC USB connector not installed. Remedy: Ensure that the FEC USB connector and FLASH module are installed.	FEC USB option not detected.	Major	92300
FEC USB Flash	Set	FEC USB Flash not found	Cause: FEC USB FLASH not installed. This may occur in Production if the USB module is not inserted before the first power on the board. Remedy: Ensure that the FEC USB connector and FLASH module are installed.	FEC USB FLASH mount failed.	Major	92300
FEC USB Flash	Clear	FEC USB Flash OK	-	-	Major	92300

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
FEC FPGA Status	Set	Failed to find or load FEC FPGA binary	<p>Cause: Cannot find the FEC FPGA file in the USB FLASH, or it failed to open, read, or load the file to the FEC FPGA.</p> <p>Remedy: Ensure that the USB FLASH is installed, formatted, and the image is loaded. Also, ensure that the FEC FPGA is installed and the CPLD is properly programmed.</p>	The FEC FPGA image is not found in the USB FLASH, or the file cannot be loaded to the FEC FPGA for any reason. This will occur in production until the USB FLASH is installed, formatted, and the image is loaded.	Major	92400
FEC FPGA Status	Set	FEC FPGA failed to start	<p>Cause: Hardware issue.</p> <p>Remedy: Ensure that the USB Flash is installed, formatted, and the image is loaded. Also, ensure that the FEC FPGA is installed and the CPLD is properly programmed.</p>	FEC FPGA is loaded, but failed to start (not ready).	Major	92400
FEC FPGA Status	Set	FEC FPGA access failed	<p>Cause: Hardware issue.</p> <p>Remedy: Ensure that the USB Flash is installed, formatted, and the image is loaded. Also, ensure that the FEC FPGA is installed and the CPLD is properly programmed.</p>	FEC FPGA is loaded and started, but attempt to read configuration registers failed.	Major	92400

Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
FEC FPGA Status	Set	FEC FPGA initialization failed	<p>Cause: Hardware issue.</p> <p>Remedy: Ensure that the USB Flash is installed, formatted, and the image is loaded. Also, ensure that the FEC FPGA is installed and the CPLD is properly programmed.</p>	FEC FPGA is loaded and started, but initial parameter setup failed.	Major	92400
FEC FPGA Status	Clear	FEC FPGA is running OK	-	FEC FPGA is loaded, started, initialized, and is fully operational.	Major	92400
PE <n>: CA System Error	Set	No PowerVU support	<p>Cause: Selected program cannot be descrambled.</p> <p>Remedy: Check the Installation and Configuration Guide for PowerVu descrambling support. Ensure that the appropriate CAM is inserted and that the PE CAM slot is assigned correctly.</p>	CA System present in the currently selected channel cannot be descrambled due to no PowerVu ISE or CAM support.	Minor	93000-93031
PE <n>: CA System Error	Set	No Matching CAM	-	-	Minor	93000-93031
PE <n>: CA System Error	Clear	Fault cleared	-	-	Minor	93000-93031

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Alarm	Message Type	Message	Cause/Remedy	Description	Severity	ID
IP FEC Failure	Set	FEC Encoder Failure : FEC bypassed	Cause: FEC FPGA malfunction.  Remedy: Reboot the system if FEC is needed, otherwise the system will continue to operate bypassing FEC.	This fault is raised when the FEC Encoder or the FEC Decoder Lockup is detected.	Major	95000
IP FEC Failure	Set	FEC Decoder Failure : FEC bypassed	Cause: FEC FPGA malfunction.  Remedy: Reboot the system if FEC is needed, otherwise the system will continue to operate bypassing FEC.	This fault is raised when the FEC Encoder or the FEC Decoder Lockup is detected.	Major	95000
IP FEC Failure	Clear	Fault Cleared	-	The fault is cleared if the FPGA recovers from lockup.	Major	95000
ETH Stack Filters	Set	HW Error Detected	Cause: Incoming traffic causes ETH Stack Filters to malfunction.  Remedy: If the hardware supports stack filters reset, normal operations continue. Otherwise, the unit will reboot.	This alarm is triggered when the ETH Stack Filters hardware detects an internal error.	Major	97000
ETH Stack Filters	Clear	Fault Cleared	-	The fault is cleared when the detected hardware error is resolved.	Major	97000



## Warnings

Warning	Message Type	Message	Cause/Remedy	Description	ID
ASI TS Overflow	Set	ASI Output Overflow	<p>Cause: Uplink settings may have changed since setting up the unit.</p> <p>Remedy: Increase the output rate, drop unreferenced content in DPM Options, and drop the programs that are not needed for downstream devices. Contact your (uplink) service provider to verify the expected bit rate settings.</p>	The output rate is higher than level set by the user.	40000
ASI TS Overflow	Clear	ASI Output Overflow Cleared	-	-	40000
MPoIP TS Overflow	Set	MPEGoIP Output Overflow	<p>Cause: Uplink settings may have changed since setup of the unit. Variable Bit Rate/Statmuxed streams may be in use.</p> <p>Remedy: Increase output rate, drop unreferenced content in DPM Options, and drop programs not needed for downstream devices. Contact the (uplink) service provider to verify the expected bit rate settings.</p>	The output rate is higher than level set by the user.	41000
MPoIP TS Overflow	Clear	MPEGoIP Output Overflow Cleared	-	-	41000
Transport Error	Set	Continuity Count Error	<p>Cause: Possible uplink or signal issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	Transport packet continuity count jumped. Possible packet loss.	42000

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Warning	Message Type	Message	Cause/Remedy	Description	ID
Transport Error	Set	Buffer Overflow	<p>Cause: Possible uplink or signal issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	The transport stream is faster than the maximum buffer or the decode engines are having difficulty handling the data sent to them.	42000
Transport Error	Set	Transport Error Indicator	<p>Cause: Possible uplink or signal issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	Transport packets are marked as "errored" upstream of the decoder.	42000
Transport Error	Set	Transport Rate Error: FPGA Overflow	<p>Cause: Uplink settings may have changed since setting up the unit.</p> <p>Remedy: Increase the output rate, drop unreferenced content in DPM Options, and/or drop programs not needed for downstream devices. Contact your (uplink) service provider to verify the expected bit rate settings.</p>	The output rate is higher than level set by the user.	42000
Transport Error	Clear	Continuity Count Error Cleared	-	Trap expires after 30 seconds.	42000
Transport Error	Clear	Buffer Overflow Cleared	-	Trap expires after 30 seconds.	42000
Transport Error	Clear	Transport Error Indicator Cleared	-	Trap expires after 30 seconds.	42000
Transport Error	Clear	Transport Rate Error: FPGA Overflow Cleared	-	Trap expires after 30 seconds.	42000

Warning	Message Type	Message	Cause/Remedy	Description	ID
CI Status	Set	Different CA Systems in Top/Bottom Slots	Cause: Different CA systems are used in the slots.  Remedy: Replace the CA cards to use the same CA system.	Different CA Systems in Top/Bottom slots.	42500
CI Status	Clear	OK	-	-	42500
Video Format Mismatch	Set	Video format mismatch	-	Video Format Mismatch.	43000
Video Format Mismatch	Clear	Video format match	-	-	43000
Temperature Warning	Set	Temperature over Warning threshold	Cause: Room temperature too high, or air flow is blocked.  Remedy: Check openings on front and rear panels for blockage. Lower the room temperature or improve air flow to the device.	Temperature is above normal operating range.	44000
Temperature Warning	Clear	Temperature normal	-	Temperature is within the normal operating range.	44000
FPGA Temperature Warning	Set	Temperature over Warning threshold	Cause: Room temperature is too high, or air flow is blocked.  Remedy: Check the openings on front and rear panels for blockage. Lower the room temperature or improve air flow to the device.	FPGA temperature is above normal operating range.	45000
FPGA Temperature Warning	Clear	Temperature normal	-	FPGA temperature is within the normal operating range.	45000
VBI Data	Set	2nd VBI PID attempt to write same line	Cause: Uplink configuration issue.  Remedy: Contact uplink to verify expected VBI settings.	Conflicting VBI data on second VBI PID.	49000

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Warning	Message Type	Message	Cause/Remedy	Description	ID
VBI Data	Clear	Line Collision Cleared	-	-	49000
TDT timeout #	Set	TDT timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Time Date Table was never received.	50000
TDT timeout #	Set	TDT is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Time Date.	50000
TDT timeout #	Clear	TDT fault cleared	-	-	50000
SDT timeout #	Set	SDT # timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Service Description Table was never received.	51000 52000 53000 54000 55000 56000 57000 58000
SDT timeout #	Set	SDT # is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Service Description.	51000 52000 53000 54000 55000 56000 57000 58000

Warning	Message Type	Message	Cause/Remedy	Description	ID
SDT timeout #	Clear	SDT fault cleared	-	-	51000 52000 53000 54000 55000 56000 57000 58000
PMT timeout #	Set	PMT # timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Program Mapping Table was never received.	59000 60000 61000 62000 63000 64000 65000 66000 66009-66032
PMT timeout #	Set	PMT # is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Program Mapping Table.	59000 60000 61000 62000 63000 64000 65000 66000 66009-66032
PMT timeout #	Clear	PMT fault cleared	-	-	59000 60000 61000 62000 63000 64000 65000 66000 66009-66032

Chapter 6 Service and Maintenance

Warning	Message Type	Message	Cause/Remedy	Description	ID
PAT timeout #	Set	PAT # timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Program Association Table was never received.	67000 68000 69000 70000 71000 72000 73000 74000
PAT timeout #	Set	PAT # is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Program Association Table.	67000 68000 69000 70000 71000 72000 73000 74000
PAT timeout #	Clear	PAT fault cleared	-	-	67000 68000 69000 70000 71000 72000 73000 74000
NIT timeout #	Set	NIT timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Network Information Table was never received.	75000

Warning	Message Type	Message	Cause/Remedy	Description	ID
NIT timeout #	Set	NIT is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Network Information Table.	75000
NIT timeout #	Clear	NIT fault cleared	-	-	75000
CAT timeout #	Set	CAT timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Conditional Access Table was never received.	76000
CAT timeout #	Set	CAT is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Conditional Access Table.	76000
CAT timeout #	Clear	CAT fault cleared	-	-	76000
DRT timeout #	Set	DRT # timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Disaster Recovery Table was never received.	77000

Chapter 6 Service and Maintenance

Warning	Message Type	Message	Cause/Remedy	Description	ID
DRT timeout #	Set	DRT # is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Disaster Recovery Table.	77000
DRT timeout #	Clear	DRT fault cleared	-	-	77000
MCT Timeout #	Set	MCT # timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Inband Control Table was never received.	77100
MCT Timeout #	Set	MCT # is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Inband Control Table.	
MCT Timeout #	Clear	MCT fault cleared	-	-	77100
ECT Timeout #	Set	ECT # timed out	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	Event Control Table was never received.	77200



Warning	Message Type	Message	Cause/Remedy	Description	ID
ECT Timeout #	Set	ECT # is lost	<p>Cause: Uplink is not sending or is sending intermittently.</p> <p>Remedy: Clear warning. If the problem persists, determine if uplink is sending the current SI information table. Disable the warning if not using the table.</p>	No longer receiving Event Control Table.	77200
ECT Timeout #	Clear	ECT fault cleared	-	-	77200
Memory Usage Host	Set	Excessive (stack/partition) memory usage	<p>Cause: Possible software issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	SW exceeding allowable memory usage.	78000
Memory Usage Host	Clear	Normal (stack/partition) memory usage	-	-	78000
Memory Usage Secondary	Set	Excessive (stack/partition) memory usage	<p>Cause: Possible software issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	Software exceeding allowable memory usage.	79000
Memory Usage Secondary	Clear	Normal (stack/partition) memory usage	-	-	79000
FPGA Code Version	Set	FPGA newer than SW, Supported=AAA, Running=BBB	<p>Cause: FPGA version is incompatible with the software.</p> <p>Remedy: Select alternate FPGA, software versions, reset unit, notify Cisco customer support if problem persists.</p>	FPGA version is incompatible with currently operating software. You may encounter operational difficulties	80000
FPGA Code Version	Clear	FPGA code ver OK	-	-	80000

Chapter 6 Service and Maintenance

Warning	Message Type	Message	Cause/Remedy	Description	ID
Ethernet Port <n>	Set	Link is down	<p>Cause: No ethernet cable connected, faulty cabling, multiple devices sharing MAC address on same IP segment, or possible HW issue.</p> <p>Remedy: Check cabling, check the MAC addresses, clear the warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	Ethernet MAC PHY device is attempting to reconnect to external devices.	81000 82000 83000
Ethernet Port <n>	Clear	Connection OK	-	-	81000 82000 83000
FW: Resource Use Host	Set	Memory or List Near Full	<p>Cause: Possible software issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	Software exceeding allowable usage of internal constructs.	86000
FW: Resource Use Host	Clear	Normal Level	-	-	86000
FW: Resource Use Second	Set	Memory or List Near Full	<p>Cause: Possible software issue.</p> <p>Remedy: Clear warnings, reset the unit, and notify Cisco customer support if the problem persists.</p>	Software exceeding allowable usage of internal constructs.	87000
FW: Resource Use Second	Clear	Normal Level	-	-	87000

Warning	Message Type	Message	Cause/Remedy	Description	ID
Backup Failure Reason	Set	FTP Failed	<p>Cause: FTP settings or the server may not be configured correctly.</p> <p>Remedy: Verify the FTP server configuration and permissions, the FTP settings on the unit, and that the server is reachable from the client (such as configuring firewalls or network settings). Retry the Backup operation.</p>	FTP failed to connect to server or transfer file.	89000
Backup Failure Reason	Set	Internal Error	<p>Cause: Possible software issue.</p> <p>Remedy: Clear warnings, reset unit, notify Cisco customer support if the problem persists</p>	Backup ran out of memory or other internal error	89000
Restore Failure Reason	Set	FTP Failed	<p>Cause: FTP settings or the server may not be configured correctly.</p> <p>Remedy: Verify the FTP server configuration and permissions, the FTP settings on the unit, and that the server is reachable from the client (such as configuring firewalls or network settings). Retry the Import operation.</p>	FTP failed to connect to server or transfer file	89100

Chapter 6 Service and Maintenance

Warning	Message Type	Message	Cause/Remedy	Description	ID
Restore Failure Reason	Set	Not Accepted	<p>Cause: Import file is either for a different product or the structure was not compatible with this unit.</p> <p>Remedy: Verify that the correct import file is being used and was created by this product, and that the file structure has not been corrupted. If the problem persists, notify Cisco customer support.</p>	Import file was rejected and import did not occur	89100
Restore Failure Reason	Set	Bad Content	<p>Cause: Import file may be corrupted, or from a different version of application software.</p> <p>Remedy: Verify that the correct import file is being used and was created by this product, and that the file structure has not been corrupted. If the problem persists, notify Cisco customer support.</p>	Item in import file is not valid for this software and import did not occur	89100
SDI Aud SFR Data	Set	SDI Audio sampling frequency mismatch	<p>Cause: The SDI audio groups are not configured correctly, or the transport stream has changed the sampling rate of one of the audio streams.</p> <p>Remedy: Configure the SDI audio groups to ensure that all audio channels in a group have the same sampling frequency rate.</p>	All audio channels in a given audio group within an SDI do not have identical sampling rate.	90000
SDI Aud SFR Data	Clear	SDI Audio SFR Mismatch Cleared	-	-	90000

Warning	Message Type	Message	Cause/Remedy	Description	ID
SDI CC VANC	Set	CC (SMPTE-334): configured line collides with VII, service will be dropped	Cause: User selection. Remedy: Change offset for the CC VANC service.	CC VANC service is configured on the line overlapping with PAL or NTSC VII line.	90010
SDI CC VANC	Clear	Line collision with VII cleared	-	-	90010
SDI CC VANC	Clear	Service disabled	-	-	90010
SDI AFD VANC	Set	AFD (SMPTE-2016-3): configured line collides with VII, service will be dropped	Cause: User selection. Remedy: Change offset for the AFD VANC service.	AFD VANC service is configured on the line overlapping with PAL or NTSC VII line.	90020
SDI AFD VANC	Clear	Line collision with VII cleared	-	-	90020
SDI AFD VANC	Clear	Service disabled	-	-	90020
SDI DPI VANC	Set	DPI (RP2010): configured line collides with VII, service will be dropped	Cause: User selection. Remedy: Change offset for the DPI VANC service.	DPI VANC service is configured on the line overlapping with PAL or NTSC VII line.	90030
SDI DPI VANC	Clear	Line collision with VII cleared	-	-	90030
SDI DPI VANC	Clear	Service disabled	-	-	90030
SDI VBI VANC	Set	VBI (SMPTE-2031): configured line collides with VII, service will be dropped	Cause: User selection. Remedy: Change offset for the VBI VANC service.	VBI VANC service is configured on the line overlapping with PAL or NTSC VII line.	90040
SDI VBI VANC	Clear	Line collision with VII cleared	-	-	90040
SDI VBI VANC	Clear	Service disabled	-	-	90040
SDI VBI (OP47 SDP)	Set	VBI (OP47SDP): configured line collides with VII, service will be dropped	Cause: User selection. Remedy: Change offset for VBI OP47-SDP VANC service.	VBI OP47-SDP VANC service is configured on the line overlapping with PAL or NTSC VII line.	90050
SDI VBI (OP47 SDP)	Clear	Line collision with VII cleared	-	-	90050

Chapter 6 Service and Maintenance

Warning	Message Type	Message	Cause/Remedy	Description	ID
SDI VBI (OP47 SDP)	Clear	Service disabled	-	-	90050
SDI VBI (OP47 MDP)	Set	VBI (OP47MDP): configured line collides with VII, service will be dropped	Cause: User selection. Remedy: Change offset for VBI OP47-MDP VANC service.	VBI OP47-MDP VANC service is configured on the line overlapping with PAL or NTSC VII line.	90060
SDI VBI (OP47 MDP)	Clear	Line collision with VII cleared	-	-	90060
SDI VBI (OP47 MDP)	Clear	Service disabled	-	-	90060
ETH REDN: Link Speed	Set	Links speed mismatch detected	Cause: Manual configuration or auto-negotiated speed is different. Remedy: Make sure link speed on paired ETH ports are identical.	Link speed is different for two paired Eth ports. In case of REDN-controlled switch this might trigger overflow on port with lower link speed. The condition for this fault is only monitored for "auto" REDN modes.	91000
ETH REDN: Link Speed	Clear	Link speeds are identical (or not resolved)	-	-	91000
ETH REDN: Link Speed	Clear	Link speed is not resolved	-	-	91000
ETH REDN: Link Speed	Clear	Links speed is not monitored in manual modes	-	-	91000
MPoIP Bitrate Port #<n>	Set	Total configured output is marginal or too high	Cause: Aggregated MPoIP bandwidth on Port <n> is too high. Remedy: Re-configure the stream's output rate to be within 90% of the link speed on ETH port <n>.	The configured MPEG over IP bandwidth is close or higher than ETH port <n> link speed. This condition can trigger the actual MPoIP overflow.	92000 92100
MPoIP Bitrate Port #<n>	Clear	Total configured output is normal	-	-	92000 92100

Warning	Message Type	Message	Cause/Remedy	Description	ID
MPoIP Bitrate Port #<n>	Clear	Inactive port, monitoring stopped	-	-	92000 92100
MPoIP Bitrate Port #<n>	Clear	No active stream[s], monitoring stopped	-	-	92000 92100
MolPI Port<n>: FEC1 Loss (only available for D9824 with LX155 FPGA)	Set	FEC COL: configured stream not present	Cause: The FEC Column stream is configured, but not present at the input.  Remedy: Verify the Flow Configuration to ensure that the ETH Port and Destination IP and UDP addresses are correct. Contact the source provider to confirm that the transmission is on and the configured FEC streams are present.	UDP Stream Loss condition is detected for FEC Columns stream on port Data<n>.	93100 93102
MolPI Port<n>: FEC1 Loss (only available for D9824 with LX155 FPGA)	Clear	FEC COL: stream not configured	-	-	93100 93102
MolPI Port<n>: FEC1 Loss (only available for D9824 with LX155 FPGA)	Clear	FEC COL: configured stream present	-	-	93100 93102
MolPI Port<n>: FEC2 Loss (only available for D9824 with LX155 FPGA)	Set	FEC ROW: configured stream not present	Cause: The FEC Row stream is configured, but not present at the input.  Remedy: Verify the Flow Configuration to ensure that the ETH Port and Destination IP and UDP addresses are correct. Contact the source provider to confirm that the transmission is on and the configured FEC streams are present.	The UDP Stream Loss condition is detected for FEC Rows stream on port Data<n>.	93101 93103

## Chapter 6 Service and Maintenance

Warning	Message Type	Message	Cause/Remedy	Description	ID
MoIPI Port<n>: FEC2 Loss (only available for D9824 with LX155 FPGA)	Clear	FEC ROW: stream not configured	-	-	93101 93103
MoIPI Port<n>: FEC2 Loss (only available for D9824 with LX155 FPGA)	Clear	FEC ROW: configured stream present	-	-	93101 93103
MPoIPI: DJ HW failure (only available for D9824 with LX155 FPGA)	Set	De-jittering Engine failure (overflow, underflow or HW error)	Cause: De-jittering hardware failure.  Remedy: Software-controlled reset of de-jittering block may help. But in most cases, the problem is triggered by the stream originator or the network conditions and cannot be fixed in the decoder.	The de-jittering block has an overflow, underflow, or other hardware problems.	93104
MPoIPI: DJ HW failure (only available for D9824 with LX155 FPGA)	Clear	Need two active TS streams for proper error detection	-	-	93104
MPoIPI: DJ HW failure (only available for D9824 with LX155 FPGA)	Clear	Fault Cleared: No errors	-	-	93104
Hardware Platform	Set	Non-matching HW Platform. APP: <D9859   D9854/58/24>, HW: <TMB2   HDR/TMB/HDR 2>	Cause: A non-matching application is loaded through CDT download or FLASH programming.  Remedy: Replace the non-matching application and then reboot the IRD.	The D9859 application is running on the D9854/D9858/D9824 platform or the D9854/D9858/D9824 application is running on the D9859 application.	94000
Hardware Platform	Clear	-	Matching Hardware Platform detected.	-	94000







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## Customer Information

### **If You Have Questions**

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.



# A

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## Technical Specifications

### Introduction

This appendix contains the technical specifications for the D9824 Advanced Multi Decryption Receiver.

**Note:** The technical specifications are subject to change without prior notice.

### In This Appendix

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## L-Band Input and Processing

### General

Parameter	Specification
System	MPEG-2/DVB Compatible DVB-S EN 300 421, EN 300 468
Demodulation	DVB-S QPSK, DVB-S2 QPSK and 8PSK
Number of RF Inputs	4 (only one active at a time)

### LNB LO Stability

#### DVB-S and DVB-S2

Symbol Rate	Stability
1 to 4.99 MSymbols/s	$\leq \pm 125$ kHz
5.0 to 9.99 MSymbols/s	$\leq \pm 1.0$ MHz
10.0 to 45 MSymbols/s	$\leq \pm 3.0$ MHz

Parameter	Specification
LNB Phase Noise Requirement	-35 dBc/Hz at dF = 100 Hz -53 dBc/Hz at dF = 1 kHz -76 dBc/Hz at dF = 10 kHz -96 dBc/Hz at dF = 100 kHz -106 dBc/Hz at dF = 1 MHz -117 dBc/Hz at dF = 10 MHz

## LNB Power and Control

Parameter	Specification
Voltage (RF1 only, RF2 to RF4 do not have LNB supply)	13 V Vertical/circular right, 18 V Horizontal/circular left Off
Current	350 mA maximum  LNB Alarms: No load - 6 mA Overload - 360 mA minimum

## DVB-S/DVB-S2

### DVB-S/DVB-S2 Satellite Receiver

Parameter	Specification
<b>L-Band Input</b>	
Number of Inputs	4 (one active at a time)
Input Connector Type	F-type, female, 75 ohms
Input Impedance	75 ohms
Return Loss	> 10 dB
Isolation Between Inputs	> 40 dB
L-band Frequency	950 to 2150 MHz
Tuning Step Size	1 MHz
Receive Spectrum Sense	Normal and Inverted
<b>L-Band Power</b>	
Input Power Level per Carrier	-25 to -65 dBm (full transponder power)
<b>DVB-S Modulation (EN 300 421)</b>	
Modulation	QPSK
Convolutional FEC Rates	1/2, 2/3, 3/4, 5/6, 7/8
Symbol Rate Range	1 to 45 Ms/s

**Appendix A  
Technical Specifications**

Parameter	Specification
Eb/No (C/N) Ratio	See DVB-S2 Satellite Receiver Input, DVB-S Eb/No (C/N) Ratio Table
<b>DVB-S2 Modulation (EN 302 307)</b>	
Modulation	QPSK, 8PSK
Pilots On/Off	Pilots On
QPSK LDPC FEC Rates	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
8PSK LDPC FEC Rates	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LDPC FEC Frame Length	Normal
Symbol Rate Range	1 to 30 Ms/s
Maximum Channel Bit Rate	90 Mb/s
Maximum User Bit Rate	78.55 Mb/s

**DVB-S Eb/No (C/N) Ratio**

Convolutional FEC Rate	Eb/No Ratio (dB) in Linear Channel and IF Loop configuration	C/N at DVB Threshold (BW = Symbol Rate)
1/2	4.5	4.1
2/3	5.0	5.9
3/4	5.5	6.9
5/6	6.0	7.9
7/8	6.4	8.5

$$C/N = Eb/No + 10 \log (2 \times FEC \times 188/204)$$

The D9824 receiver displays the C/N Ratio.

**DVB-S2 Error Rate Performance Es/No (C/N) Ratio**

Mode	Simulated Es/No (dB) for FEC Frame length = 64,800	Typical Performance (dB) in Linear Channel and IF Loop configuration
QPSK 1/2	1.00	1.2
QPSK 3/5	2.23	2.4
QPSK 2/3	3.10	3.2
QPSK 3/4	4.03	4.2



**L-Band Input and Processing**

<b>Mode</b>	<b>Simulated Es/No (dB) for FEC Frame length = 64,800</b>	<b>Typical Performance (dB) in Linear Channel and IF Loop configuration</b>
QPSK 4/5	4.68	4.8
QPSK 5/6	5.18	5.3
QPSK 8/9	6.20	6.4
QPSK 9/10	6.42	6.6
8PSK 3/5	5.50	5.8
8PSK 2/3	6.62	6.8
8PSK 3/4	7.91	8.1
8PSK 5/6	9.35	9.6
8PSK 8/9	10.69	10.9
8PSK 9/10	10.98	11.3

## Video Inputs/Outputs and Processing

### General

Parameter	Specification
System	MPEG-2/DVB Compatible EN 300 421, EN 300 468

### Video Outputs

#### Analog SD Video Output

Item	Test Signal	Specification CVBS1	Specification CVBS2
Number of Channels		One SD source program	One SD source program
Video Decompression		MPEG-2 4:2:0	MPEG-2 4:2:0
Output Impedance		75 $\Omega$	75 $\Omega$
<b>525 Line</b>			
Bar level	NTC-7 comp	700 mV $\pm$ 7 mV ( $\pm$ 1%)	700 mV $\pm$ 35 mV ( $\pm$ 5%)
Line Time Distortion	VITS17	$\leq$ 1%	$\leq$ 1%
Bar Tilt	NTC-7 comp	< 0.5%	< 0.5%
Sync Level	NTC-7 comp	40 IRE $\pm$ 0.5 IRE	40 IRE $\pm$ 2.0 IRE
DC Offset	NTC-7 comp	$\pm$ 100 mV	$\pm$ 100 mV
Chrominance-to-Luminance Gain Inequality	NTC-7 comp	100 $\pm$ 5%	100 $\pm$ 5%
Chrominance-to-Luminance Phase Inequality	NTC-7 comp	< 20 ns	< 20 ns
K factor K 2T	NTC-7 comp	< 1%	< 1%
Jitter		< 5 ns	< 5 ns

## Video Inputs/Outputs and Processing

Item	Test Signal	Specification CVBS1	Specification CVBS2
Frequency Response	FCC multi-burst	0.5 MHz, 0 dB 1.25 MHz, 0 dB $\pm$ 0.2 dB 2 MHz, 0 dB $\pm$ 0.2 dB 3 MHz, 0 dB $\pm$ 0.3 dB 3.58 MHz, 0 dB $\pm$ 0.3 dB 4.1 MHz, 0 dB $\pm$ 0.3 dB	0.5 MHz, 0 dB 1.25 MHz, 0 dB $\pm$ 0.2 dB 2 MHz, 0 dB $\pm$ 0.2 dB 3 MHz, 0 dB $\pm$ 0.3 dB 3.58 MHz, 0 dB $\pm$ 0.3 dB 4.1 MHz, 0 dB $\pm$ 0.3 dB
Differential Gain	NTC-7 comp	< 3.0%	< 3.0%
Differential Phase	NTC-7 comp	< 4°	< 4°
Luminance Non-linearity		< 5%	< 5%
Line Time Distortion	NTC-7 comp	$\leq$ 1%	$\leq$ 1%
Weighted Signal Video-to-Noise	50% Grey Field	$\leq$ -70 dB rms	$\leq$ -70 dB rms
Weighted Signal Video-to-Noise	Luminance Ramp	$\leq$ -55 dB rms	$\leq$ -55 dB rms
Return Loss		DC to 10 MHz, > 30 dB	DC to 10 MHz, > 30 dB
<b>625 Line</b>			
Bar level	VITS17	700 mV $\pm$ 7 mV ( $\pm$ 1%)	700 mV $\pm$ 35 mV ( $\pm$ 5%)
Line Time Distortion	VITS17	$\leq$ 1%	$\leq$ 1%
Bar Tilt	VITS17	< 0.5%	< 0.5%
Sync Level	VITS17	300 mV $\pm$ 3 mV	300 mV $\pm$ 15 mV
DC Offset	VITS17	$\pm$ 100 mV	$\pm$ 100 mV
Chrominance-to-Luminance Gain Inequality	Colour Bars	100 $\pm$ 5%	100 $\pm$ 5%
Chrominance-to-Luminance Phase Inequality	Colour Bars	< 20 ns	< 20 ns
K factor K 2T	VITS17	< 1%	< 1%
Jitter		< 5 ns	< 5 ns

**Appendix A  
Technical Specifications**

Item	Test Signal	Specification CVBS1	Specification CVBS2
Frequency Response	VITS18	0.5 MHz, 0 dB 1 MHz, 0 dB $\pm$ 0.2 dB 2 MHz, 0 dB $\pm$ 0.3 dB 4 MHz, 0 dB $\pm$ 0.3 dB 4.8 MHz, +0 dB, -0.5 dB	0.5 MHz, 0 dB 1 MHz, 0 dB $\pm$ 0.2 dB 2 MHz, 0 dB $\pm$ 0.2 dB 4 MHz, 0 dB $\pm$ 0.3 dB 4.8 MHz, +0 dB, -0.5 dB
Differential Gain	VITS330	< 3.0%	< 3.0%
Differential Phase	VITS330	< 3°	< 3°
Luminance Non-linearity	VITS17	< 5%	< 5%
Weighted Signal Video-to-Noise	50% Grey Field	$\leq$ -70 dB rms	$\leq$ -70 dB rms
Weighted Signal Video-to-Noise	Luminance Ramp	$\leq$ -55 dB rms	$\leq$ -55 dB rms
Return Loss		DC to 10 MHz, > 30 dB	DC to 10 MHz, > 30 dB

**Analog SD Video Output, CVBS1 and CVBS2 for monitoring**

Item	Specification
Number of Channels	One down-converted source HD program
Video Decompression Type	MPEG-2 4:2:0
Output Level	1.0 Vpp $\pm$ 5%
Output Impedance	75 ohms

**HD Component Video Output (Monitoring Output)**

Item	Test Signal	Typical Performance Values	
		Y	Pb, Pr
Amplitude	100% Color Bars	700 mV $\pm$ 5%	700 mV $\pm$ 5%
Sync Amplitude	100% Color Bars	300 mV $\pm$ 5%	300 mV $\pm$ 5%
Bandwidth	Multi-burst	DC to 30 MHz, $\pm$ 0.6 dB	DC to 15 MHz, $\pm$ 0.6 dB
Noise, Unified Weighting	Flat Field	-70 dB	-70 dB

## Video Inputs/Outputs and Processing

Linearity	5-step	3%	3%
Interchannel Delay	100% Color Bars	2 ns	2 ns
DC Offset		± 50 mV	± 50 mV
Return Loss		DC to 30 MHz, -20 dB	DC to 30 MHz, -20 dB

## Aspect Ratio

Item		Specification	
<b>Aspect Ratio Conversions for Down-Conversion</b>		<b>Aspect Ratio Conversions for SD Programs</b>	
<b>4:3</b>	<b>16:9</b>	<b>4:3</b>	<b>16:9</b>
16:9 Letterbox 14:9 Letterbox Center	Center Cutout	16:9 Letterbox 14:9 Letterbox Center Cutout	Scale to 16:9

## Audio Outputs

### Analog Audio Outputs

Item	Specification
Number of Channels	2 stereo pairs/4 mono channels, 5.1 channel downmix Audio decompression: MPEG or Dolby Digital. HE-AAC single stereo pair or Dolby Digital Plus single stereo pair available as software download.
Frequency Response	±0.5 dB, 20 Hz to 20 kHz (ref., 100 kilohms)
Total Harmonic Distortion	< 0.3% at 1 kHz (ref. 100 kilohms)
Dynamic Range	85 dB (CCIR/Arm weighting)
Crosstalk	80 dB at 1 kHz (typical)

## Conditional Access

Item	Specification
PowerVu CA	DES or DVB
DVB Scrambling	BISS Mode 1, BISS Mode E
DVB-CI	Interface: 2 CI slots - EN 50221 For a list of all the supported CAMs, see <i>Common Interface Modules</i> (on page 30).

## Transport Stream Inputs/Outputs

### ASI Output

Item	Specification
Number of outputs	1
Type of connector	75 ohms BNC
Output impedance	75 ohms according to EN 50083-9
Data amplitude	800 mV peak-peak $\pm$ 10% according to EN 50083-9
Return loss	>17 dB, 27 to 270 MHz
Transport stream data rate	1 to 120 Mbit/s
ASI Transmission Rate	270 MBaud $\pm$ 100 ppm
Transport stream formats	According to EN 50083-9 188 bytes structure Burst or packet format

### MPEGoIP Output

Item	Specification
Number of outputs	2
Type of connector	RJ-45, 100/1000BASE-T
Output modes	UDP or RTP
Redundancy modes	Manual, Auto, or Mirroring
IP Addressing	Multicast or Unicast
TS Streaming	1 MPIS or up to 32 SPTS
TS Bit Rate	1 to 120 Mbps
MPEGoIP bit rate	Up to 206 Mbps
FEC Support	Yes (according to pro-MPEG FEC COP#3 and SMPTE-2022)

## MPE Output

Item	Specification
Number of Outputs	2
Type of connector	RJ-45, 100/1000BASE-T
Output modes	IPv4 datagrams
IP Addressing	Multicast or Unicast
TS Input	up to 5 PIDs
Bit Rate	up to 10 Mbps (for 1500 byte packets)

## MPEGoIP Input

Item	Specification
Number of inputs	2
Type of connector	RJ-45, 100/1000BASE-T
Redundancy modes	Manual or Auto
IP Addressing	Multicast or Unicast
TS Streaming	1 MPTS or SPTS
TS Bit Rate	1 to 120 Mbps
MPEGoIP bit rate	Up to 206 Mbps
FEC Support	Yes (according to pro-MPEG FEC COP #3 and SMPTE-2022)



## Control, Management and Data Interfaces

### Ethernet Management Interface

Item	Specification
Number of connectors	1
Type of connector	RJ-45
Ethernet type	100/1000BASE-T
Required setup	IP address, default gateway and subnet mask

### Ethernet Data Interface

Item	Specification
Number of connectors	2
Type of connector	Eight-pin RJ-45
Ethernet type	100/1000BASE-T
Required setup	IP address, default gateway, and subnet mask

### Alarm Interface

Item	Specification
Number of outputs	1, with one set of contacts closed and one set open during normal operation.
Type of connector	15-pin sub-D female
Max. voltage	40 V peak
Max. current	0.5A

## Contact Closure Interface

Item	Specification
Connector type	15-pin sub-D female
Minimum duration of event guaranteed to be detected	250 ms, 1 frame period, e.g., for 1080i/25 Hz 40 ms for DPI applications
Max. on generator impedance	100 ohms
Min. off generator impedance	100 kilohms

## Power and General Specifications

### General

Item	Specification
LCD	2 lines of 40 characters, backlit LCD.
Keypad	Arrow keys, 0 to 9, SELECT, MENU, INFO, ADV, MAP, APPLY and NAV keys.
LEDs	Green LED for Signal status. Red LED for Alarm indication.

### Power

#### AC Power Connector

Item	Specification
Type of connector	IEC 320 style C14 appliance receptacle
AC input	100 to 240 VAC, 50/60 Hz
Power (without LNB)	50W typ
Current (without LNB)	0.45A @ 240 VAC typical, 0.7A @ 120 VAC typical
Power Quality	ANSI/IEEE Std C62.41.1-2002

#### Power

To operate the receiver, you must connect it to an AC power source.



**WARNING:**

Make sure that at least one end of the power cable(s) remains easily accessible for unplugging, if you need to switch off the unit. For example: Ensure that the socket outlet is installed near the product.



**WARNING:**

To avoid electrical shock, connect the three-prong plug on this product to an earth-grounded three-pin socket outlet only.

## Mechanical

Item	Specification
Height	1 U (4.37 cm) (1.72")
Width	44.07 cm (17.35")
Depth	35.0 cm (13.78")
Weight	4.5 kg (10 lb.)

## Environment

Item	Specification
<b>Storage</b>	
General	The product is within the original packaging.
Humidity	5 - 95% non-condensing
Temperature	-20 - +70°C (-4 to 158°F)
<b>Operation</b>	
Humidity (non-condensing)	95% humidity is valid up to 40°C 91% humidity is valid up to 45°C 70% humidity is valid up to 50°C
Temperature	0°C - +50°C (32°F to 122°F) <b>Note:</b> Maximum operational temperature lowers with altitude down to +45°C at 10,000 ft.
<b>Altitude</b>	
Operating	10,000 ft. (3048 m) max.
Non-operating	30,000 ft. (9144 m ) max.

# B

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## Default Settings and Lock Levels

### Introduction

This appendix lists the factory default settings and the lock levels for the D9824 receiver.

### In This Appendix

- Factory Default Settings and Lock Levels ..... 340
- DPM Default Settings for Different Output Modes ..... 352

## Factory Default Settings and Lock Levels

The D9824 Advanced Multi Decryption Receiver is factory configured with default settings, unless you have requested a custom factory configuration.

The following table lists the lock levels available for protecting your receiver and its settings against unauthorized use or modification:

Level	Description
0	All settings are unlocked (receiver lockout disabled)
1	All settings are unlocked except Factory Reset, Password options and receiver parameters.
2	All settings are unlocked except RF and ASI Input Tuning parameters.
3	All settings locked (access via password only), except IP address and RF power.
4	All settings locked (can be changed via PNC uplink signal only)

If a change made to the current Lock Level setting is not saved, the previously saved setting is restored.

## Administration

Parameter	Default Setting	Default Lock Level
Lock Level	0	3
Password	1234	3
Old Pwd, New Pwd, Confirm Pwd	N/A	0
Factory Reset	N/A	0
Clear FWD Tables	N/A	0
KB Lock	Disable	2
KB Lock Timeout	60	2
LCD Contrast	30	2
DL Mode	Always	2
Type	None	N/A
Bank	App 5514	N/A
Date Format	YYY_MM_DD	2

## Factory Default Settings and Lock Levels

Parameter	Default Setting	Default Lock Level
Time Format	24 Hr	2
GMT Off	+05.30	2
Reboot	N/A	2

### ASI Input

Parameter	Default Setting	Default Lock Level
ASI Active	No	1
Tune Mode	Basic	1
CA Ctl	STD	1
Select	UserCfg	1

### RF Input

Parameter	Default Setting	Default Lock Level
RFx Active	RF1 is Act, RF2 to RF4 is No	1
Tune Mode	Basic	1
CA Ctl	Std	1
Select	UserCfg	1
LO1 (GHz)	5.15	1
LO2 (GHz)	0.0	1
Crossover (GHz)	0.0	1
OrbPos	0.0	1
E/W	NA	1
Pol	H (horizontal)	1
Freq (GHz)	3.449	1
Sym Rate	28.3465 MS/s	1
FEC	Auto	1
LNB Type	C-Band	1
Modulation	DVB-S	1
Roll-off	.35	1

**Appendix B**  
**Default Settings and Lock Levels**

Parameter	Default Setting	Default Lock Level
InputIQ	Auto	1
NetID	1	1
LNB Power	Off	3
22kHz	Off	1

**IP Input**

Parameter	Default Setting	Default Lock Level
IP1 Active	No	1
Tune Mode	Basic	1
CA Ctl	Std	1
Select	SW Map	1
isMulticast	Yes	1
IP Address	225.1.1.1	1
FEC	None	1
Src Filter	None	1
TS UDP	49152	1
FEC1/FEC2 UDP	49154 or 49156	1
Source IP Select	0.0.0.0	1
DATA1/DATA2	No	1
Algorithm	VBR	1
Latency (ms)	110	1
Redundancy Mode	Backup: Primary Data1	1
Type	Revertive	1
Direct Delay	0	1
Revertive Delay	1	1
A/V Trigger	Yes	1
PCR Trigger	Yes	1
Prog Trigger	Yes	1
Idx	N/A	1
IP Address	N/A	1



## Tune Mode

Parameter	Default Setting	Default Lock Level
Service List Mode	Rigorous	1
Frequency Tuning	NIT	1
BAT	No	1
NIT	Yes	1
SDT	Yes	1
PAT	Yes	1

## IP

**Note:** A factory reset does not change the IP settings.

Parameter	Default Setting	Default Lock Level
Port ID	1	3
V4/V6	IPv4	N/A
IP Address	192.131.244.6	3
Mask	24	3
Gateway	192.131.244.254	3
Phy Mode	Auto	3
MAC Address	00:00:00:00:00:00	N/A
SNMP Read Community String	public	3
SNMP Write Community String	public	3
SNTP Server	0.0.0.0	3
SNTP Enable	No	3
Password Complexity	Full Complexity Checking	N/A
Reset Credentials	N/A	0

**Appendix B**  
**Default Settings and Lock Levels**

## Trap Destinations

Parameter	Default Setting	Default Lock Level
Trap IP Address	0:0:0:0	2
Trap Community String	public	2

## Protocols

Parameter	Default Setting	Default Lock Level
Telnet	Disable	3
SSH	Disable	3
HTTP	Enable	3
SNMP	Disable	3
MPE	Fwd All	3
IGMP	Disable	3
Syslog	Disable	3
Syslog Server	0.0.0.0	3
Port	514	3

## Video

Parameter	Default Setting	Default Lock Level
PV Format	SD	2
SD Format	Auto	2
Tri-Synch (Front Panel only)	Disabled	2
Alarm Video Cutoff	Disable	2
OSD Messages	Enable	2
TV A/R	4:3	2
Convert	None	2
WSS Mode	Passthrough	2

## Audio

Parameter	Default Setting	Default Lock Level
Stereo/Mono	Stereo	2
AC3 Compression	RF Mode	2
Left (dB)	0	2
Right (dB)	0	2
Select Language By	PMT Order	2
Language List	eng	2
PMT Source	AUD1 for Audio 1 and AUD2 for Audio 2	2
Entry	eng	2

## VBI

Parameter	Default Setting	Default Lock Level
WSS Mode	Passthrough	2
WSS Stat	Undefined	N/A
VITS PAL Line 17, 18, 330, 331	Disable	2

## Subtitles

Parameter	Default Setting	Default Lock Level
Op Mode	Off	2
Select Language By	Language Entry	2
Language List	eng	2
PMT Order	First	2
Entry	eng	2
Imitext Position	Standard	2
ForeGnd	Auto	2
BackGnd	Auto	2

**Appendix B**  
**Default Settings and Lock Levels**

## Decode

Parameter	Default Setting	Default Lock Level
Decoder	N/A	2
Enabled	Yes	2

## CI

Parameter	Default Setting	Default Lock Level
Decrypt	ON	2
CI Slot	Top	2
Query	Disabled	2
Auto Reset	Disabled	2
List Mgmt	AddDel	2
TS_ON_ID	Disable	2

## Cueing

Parameter	Default Setting	Default Lock Level
Cueing Mode	Trigger	4
Trigger Polarity	High	4
Repeat	3	4
Tone (ms)	40	4
Silence (ms)	40	4
Seq#	1	4
State	Disable	4
Tones	0	4
Mode	*	4
Delay (sec)	1	4
Relay Mode	Alarm	4
Cue Trigger Bit	1	4

### TS Out - ASI

Parameter	Default Setting	Default Lock Level
Name	ASI	N/A
Rate Control	User	2
User Rate	68.5 Mbps	2
Output Mode	No Output	2
Config Type	Unmodified	2
Descramble Mode	Descrambled	2
Insert Null Packet	Yes	2
Auto Map	Yes	N/A

### TS Out - MOIP

Parameter	Default Setting	Default Lock Level
Name	MOIP	N/A
Rate Control	User	2
Output Mode	No Output	2
Config Type	Unmodified	2
Descramble Mode	Descrambled	2
Insert Null Packet	Yes	2
FEC Scheme	Non-Block Aligned	2
Auto Map	Yes	N/A

### MOIP Streams

Parameter	Default Setting	Default Lock Level
User Rate	68.5 Mbps for Stream 1 10 Mbps for Streams 2 to 32	2
TS/IP	7	2
MOIP	UDP	2
Min IP/s	0	2

**Appendix B**  
**Default Settings and Lock Levels**

Parameter	Default Setting	Default Lock Level
TOS	0	2
TTL	64	2
DestAddr	225.1.1.1	2
UDPPort	49152	2
SrcPort	0	2
Send SAP	None	2
SAP Address	224.2.127.254	2
SAP Port	9875	2
SAP ID	User String	2
SAP User Str	Cisco Default SAP1	2
FEC	None	2
FEC1/FEC2 UDP	49154 or 49156	1
FEC Columns (L)	4	2
FEC Rows (D)	10	2
FEC Scheme	Non-Block Aligned	2

**DPM - ASI/MOIP**

Parameter	Default Setting	Default Lock Level
PE	PE1	N/A
Act	Drop	2
StType	N/A	2
OutCh	0	2
PMT	8191	2
OType	UNKN	2
In	N/A	2
PID	0	2
Map Mode	SVC ID & PID	2
Duplic Mode	Pkt Copy	2
Unref	Drop	2
PSI Options	Drop All	2

## Factory Default Settings and Lock Levels

Parameter	Default Setting	Default Lock Level
PSI Rate	SA Std	2
Service ID	Valid Ch	2
PAT	Pass	2
CAT	Pass	2
PMT	Pass	2
TSDT	Pass	2
NIT	Pass	2
NITO	Pass	2
SDT	Pass	2
SDTO	Pass	2
BAT	Pass	2
EIT	Pass	2
TDT	Pass	2
RST	Pass	2
TOT	Pass	2
DIT	Pass	2
SIT	Pass	2
ECM	Pass	2
EMM	Pass	2
DRT	Pass	2
CDT	Pass	2

## Options

Parameter	Default Setting	Default Lock Level
Output	1	N/A
Fixed Output	No	N/A
Use Inp Chan	No	N/A
Start	1	N/A
Step	1	N/A
Use Inp PMT	No	N/A

**Appendix B**  
**Default Settings and Lock Levels**

<b>Parameter</b>	<b>Default Setting</b>	<b>Default Lock Level</b>
Start	1701	N/A
Step	1	N/A
Use Inp PIDs	No	N/A
Start	101	N/A
Step	100	N/A
Use Inp Ord	Yes	N/A
PCR	1	N/A
VID	1	N/A
AUD	8	N/A
SUBT	8	N/A
VBI	2	N/A
DPI	2	N/A
MPE	5	N/A
TTX	1	N/A
DATA	1	N/A
LSD	1	N/A
CDT	4	N/A
ETV	4	N/A

**Alarm/Warning**

<b>Parameter</b>	<b>Default Setting</b>	<b>Default Lock Level</b>
FP Alarm Reminder	Enable	2
Alarm Vid Cutoff	Disable	2
Enb	N/A	2
Rly	N/A	2
Trp	N/A	2



## Noise Cutoff

Parameter	Default Setting	Default Lock Level
Trnsprt (DVB-S/DVB-S2 Marg) Cutoff	0.0	2
Trnsprt (DVB-S/DVB-S2 Marg) Restore	0.1	2
Audio (DVB-S/DVB-S2 Marg) Cutoff	0.0	2
Audio (DVB-S/DVB-S2 Marg) Restore	0.1	2
Muting Control	Enable	2
Restore Defaults	N/A	2

## DPM Default Settings for Different Output Modes

The DPM parameters are preset to default settings for each DPM Output Mode.

The default settings for particular Output modes have been preset to optimize the output when PID mapping is required. If the DPM parameters are changed to values which switch the receiver to Full DPM Control, the receiver may enter a condition where conflicts in the settings may occur, which may require manual manipulation of the DPM or output parameters to obtain the desired output.

The fields labeled “Any” in the table below are not used, in which case, the Output Mode will not change if the parameter is changed. However, if you change any of the other parameters listed in the table for the MAP output modes, the Output Mode will change to Full DPM Control.

Output Mode	No Output	Passthrough	Service Chans Only	MAP Passthrough	MAP Svc Chans Only	Full DPM Control
Rate Control	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)
User Rate	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)
Descramble Mode	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)
Regenerate	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)
Insert Null Packet	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)	Any (unchanged)
Map Mode	Any (not used)	Svc ID	Svc ID	Svc Id & PID	Svc ID & PID	Actual Value
Duplic Mode	Any (not used)	PSI Remap	PSI Remap	Pkt Copy	Pkt Copy	Actual Value
Unref	Drop	Pass	Drop	Pass	Drop	Actual Value
PSI Options	Drop	Ctl By Table	Ctl By Table	Ctl By Table	Ctl By Table	Actual Value
PSI Rate	Any (not used)	SA Std	SA Std	SA Std	SA Std	Actual Value
Svc ID	Any (not used)	Valid Ch	Valid Ch	Valid Ch	Valid Ch	Actual Value
PAT	Not Displayed	Pass	Regen	Regen	Regen	Actual Value

**DPM Default Settings for Different Output Modes**

<b>Output Mode</b>	<b>No Output</b>	<b>Passthrough</b>	<b>Service Chans Only</b>	<b>MAP Passthrough</b>	<b>MAP Svc Chans Only</b>	<b>Full DPM Control</b>
CAT	Not Displayed	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	Actual Value
PMT	Not Displayed	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	Regen	Regen	Actual Value
TSDT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
NIT	Not Displayed	Pass	Regen	Regen	Regen	Actual Value
NITO	Not Displayed	Pass	PwRc	PwRc	PwRc	Actual Value
SDT	Not Displayed	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	Regen	Regen	Regen	Actual Value
SDTO	Not Displayed	If Descramble Mode is set to Descrambled, it is set to Regen; otherwise, it is set to Pass	PwRc	PwRc	PwRc	Actual Value
BAT	Not Displayed	If Descramble Mode is set to Descrambled, it is set to PwRC; otherwise, it is set to Pass	PwRC	PwRC	PwRC	Actual Value
EIT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value

**Appendix B**  
**Default Settings and Lock Levels**

<b>Output Mode</b>	<b>No Output</b>	<b>Passthrough</b>	<b>Service Chans Only</b>	<b>MAP Passthrough</b>	<b>MAP Svc Chans Only</b>	<b>Full DPM Control</b>
TDT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
RST	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
TOT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
DIT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
SIT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
ECM	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
EMM	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
DRT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
CDT	Not Displayed	Pass	Pass	Pass	Pass	Actual Value
PE Action (all PEs)	Drop	Pass	Pass	Map	Map	Actual Value

The following table contains values passed to the DPM for the D9824 MOIP only:

<b>Output Mode</b>	<b>SPTS Service Chans Only</b>	<b>SPTS MAP Svc Chans Only</b>	<b>SPTS Full DPM Control</b>
Map Mode	Svc ID & PID	Svc ID & PID	Actual Value
Duplic Mode	Pkt Copy	Pkt Copy	Pkt Copy
Unref	Drop	Drop	Drop
PSI Options	Ctl By Table	Ctl By Table	Actual Value
PSI Rate	SA Std	SA Std	Actual Value
Svc ID	Valid Ch	Valid Ch	Actual Value
PAT	Regen	Regen	Actual Value
CAT	Regen	Regen	Actual Value
PMT	Regen	Regen	Actual Value
TSDT	Drop	Drop	Actual Value
NIT	Drop	Drop	Actual Value

**DPM Default Settings for Different Output Modes**

<b>Output Mode</b>	<b>SPTS Service Chans Only</b>	<b>SPTS MAP Svc Chans Only</b>	<b>SPTS Full DPM Control</b>
NITO	Drop	Drop	Actual Value
SDT	Regen	Regen	Actual Value
SDTO	Drop	Drop	Actual Value
BAT	Drop	Drop	Actual Value
EIT	Pass	Pass	Actual Value
TDT	Pass	Drop	Actual Value
RST	Drop	Drop	Actual Value
TOT	Pass	Pass	Actual Value
DIT	Drop	Drop	Actual Value
SIT	Drop	Drop	Actual Value
ECM	If Descramble Mode is set to Descrambled, it is set to Drop; otherwise, it is set to Pass	If Descramble Mode is set to Descrambled, it is set to Drop; otherwise, it is set to Pass	Actual Value
EMM	Drop	Drop	Actual Value
DRT	Drop	Drop	Actual Value
CDT	Drop	Drop	Actual Value
PE Action (all PEs)	Pass	Map	Actual Value



# C

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## Compliance

### Introduction

This appendix contains the compliance information for the D9824 Advanced Multi Decryption Receiver.

### In This Appendix

- Applicable Standards and Notices ..... 358
- Declaration of Conformity ..... 360

## Applicable Standards and Notices

### Safety

The D9824 Advanced Multi Decryption Receiver has been approved for safety by the Standards Council of Canada and the OHSA (NRTL) Accredited Testing Laboratory to the following standards:

CAN/CSA C22.2 No. 60065-03 Incl. AM1 - Audio, Video and Similar Electronic Apparatus - Safety Requirements

UL Std. No. 60065-2007 - Audio, Video and Similar Electronic Apparatus - Safety Requirements

Also, this product is being evaluated under the IECEE CB scheme to the following international standard:

IEC 60065 Edition 7 (2001) included Amendment 1

For the CB report and Certificate, the product is evaluated for the country differences outlined in CB Bulletin 110A:

National Differences: AR, AT, AU, BE, CA, CH, CS, DE, DK, ES, FI, FR, GB, GR, HU, IE, IL, IT, MY, NL, NO, PL, PO, SE, SG, SI, SK, UA, US, YU and Group Differences. In addition, JP, KR & CN National Differences of CB Bulletin

### ESD

Electrostatic Discharge (ESD) results from the static electricity buildup on the human body and other objects. This static discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge.

Use an anti-static bench mat and a wrist strap or ankle strap designed to safely ground ESD potentials through a resistive element.

Keep components in their anti-static packaging until installed.

Avoid touching electronic components when installing a module.

### Electromagnetic Compatibility Regulatory Requirements

Ethernet cables should be of single-shielded or double-shielded type. Coaxial cables should be of the double-braided shielded type. Where this equipment is subject to USA FCC and/or Industry Canada rules, the following statements apply:



## FCC Notices

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions supplied in this manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (which can be determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- 1 Reorient or relocate the television receiving antenna.
- 2 Increase the separation between the equipment and the receiver.
- 3 Connect the equipment to an AC outlet on a circuit different from that to which the receiver is connected.
- 4 Contact your dealer/ reseller or an experienced radio/ TV technician for help.

The user may find the booklet "Interference handbook" prepared by the Federal Communications Commission helpful. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, stock no. 004-000-00450-7.

Shielded cables should be used to interconnect this device with any other/peripheral equipment (i.e., data sources, terminals, monitors, etc.) to ensure compliance with Class B limits. Failure to do so may result in radio or TV interference. Cables should be of braided shield construction with metal end shells.

## Industry Canada Notice

This digital apparatus does not exceed the limits for Class B radio noise emissions from digital apparatus as set out in the radio interference regulations of the Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques qui dépassent les limites applicables aux appareils numériques de Class B prescrites dans le règlement sur le brouillage radioélectrique édicté par Industrie Canada.

## Unauthorized Modifications

The manufacturer is not responsible for any radio or TV interference resulting from unauthorized modifications made to this equipment. It is the responsibility of the user to correct such interference at his own expense.

## Declaration of Conformity



### DECLARATION OF CONFORMITY

with regard to the Directives 2006/95/EC (LVD), 2004/108/EC (EMC) and  
2011/65/EU (RoHS)

Cisco Systems Inc & all its affiliates

Headquarters:

170 West Tasman Drive  
San Jose, CA 95134 - USA

Declare under our sole responsibility that the product,

**Brand name:** Cisco  
**Model number:** D9824  
**Model name:** Advanced Multi Decryption Receiver

Fulfills the essential requirements of the Directives 2006/95/EC, 2004/108/EC and 2011/65/EU.

With regard to the Directives 2006/95/EC and 2004/108/EC, and 2011/65/EU the following standards were applied:

Number and Date of Issue	Title of Standard
EN 60065:2002/A11:2008	- Audio, video and similar electronic apparatus – Safety requirements
EN 55022:2006 +A1:2007, Class B	- Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Devices
EN 55013:2001/A2:2006	- Electromagnetic Compatibility Requirements - Sound and Television Broadcast Receivers and Associated Equipment
EN 55024:1998 +A1:2001 & +A2:2003	- Information technology equipment - Immunity characteristics - Limits and methods of measurement
EN 61000-3-2:2006/ +A1+A2	- Electromagnetic Compatibility - Part 3: Limits Section 2: Limits for Harmonic Current Emissions (Equipment Input Current less than 16A per phase)
EN 50581: 2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The product carries the CE Mark, which was first affixed in 2011:



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