



APPENDIX **F**

Engineering Access Level Pages

This appendix describes the VVIM or CDSM pages available through the Engineering access level. The Engineering access level provides the following pages:

- [CDSM or VVIM Diagnostics, page F-2](#)
- [CDSM or VVIM Setup, page F-3](#)
- [System Configs, page F-12](#)

The Engineering access level is primarily used for initializing the CDS at the time of installation and for system diagnostics. After your system has been configured, you should not require an engineering access level user for day-to-day operations.

When you log in to the CDSM with a user account that has Engineering access level, the first page that is displayed is the CDSM Setup page. All the other CDSM pages that are available with the Master access level are still available with the Engineering access level.

In an RTSP environment, the **Configure > Server Level > RTSP Setup** page displays four additional fields:

- Database Connect Size
- UDP Packet Size
- Threadpool Size
- Max Sessions

These fields are only for diagnostic purposes, and their values should not be changed.



Note

When you configure the CDSM for Virtual Video Infrastructure (VVI), all references to CDSM are changed to Virtual Video Infrastructure Manager (VVIM) for the Vault and Caching Node manager. For example, the CDSM Audit Logs available through the **Report > System Level** left-panel menu is changed to the VVIM Audit Logs when VVI is configured on the CDSM Setup page, which changes to the VVIM Setup page.

CDSM or VVIM Diagnostics

To access the CDSM or VVIM Diagnostics page, choose **Maintain > Software > CDSM Diagnostics** or **VVIM Diagnostics**. The first section of this page provides configuration information that is useful in diagnosing a problem. The following remaining sections of the CDSM or VVIM Diagnostic page are:

- CIDR Calculator
- Stream Trickmode Debugger
- Unix Timestamp Tool
- Server Diagrams

CIDR Calculator

By entering an IP address and network mask, and clicking **Submit**, the Classless Inter-Domain Routing (CIDR) Calculator provides the following TCP/IP network information:

- Network address
- Broadcast address
- Number of hosts
- Range of IP addresses for the hosts

Stream Trick-Mode Debugger

To view the trick-mode data for a Session ID enter the Session ID and click **Submit**. The CDSM or VVIM Diagnostic page refreshes and a **View Data** button is displayed next to the **Submit** button. Click **View Data** to see the raw trick-mode data. A new window displays the data. Right-click in that window and choose **View Source** in the pop-up menu. A formatted version of the raw data is displayed.

Unix Timestamp Tool

Clicking on a day in the calendar displays the Unix start time and end time. The time is represented in seconds since the start of Unix epoch time, which is 1970-01-01T00:00:00.

Server Diagrams

Choose a server from the Server Diagrams drop-down list and a graphic of the server is displayed.

CDSM or VVIM Setup

The CDSM or VVIM Setup page is used to initially configure the CDS. After you have set the CDSM or VVIM Setup fields for your system, click **Submit**. Configuration and start up messages are displayed in the left panel.

Deployed CServer Version

This field is always set to 2.X.

Stream Failover Support

Stream failover support is available for both the ISA and RTSP environments. If a Streamer fails, another Streamer in the same Stream Group takes over any active stream sessions without loss of state and backoffice independence.

Stream Steering Mode

Stream steering determines which Streamers serve streams to a QAM device. There are two types of stream steering:

- Single site (Silo site steering)
- Multi-site

Single-site steering uses only one Stream Group to serve streams to all QAM devices. Multi-site steering can use more than one Stream Group to serve streams to the QAM devices. The QAM Gateway page reflects whether single-site or multi-site steering is enabled, by the number of preference levels available. Multi-site steering offers four preference levels (high, medium, low, and none). Single-site steering offers two preference levels (high and none).



Note

Multi-site steering is available only for an ISA environment with ASI streaming. See the [“Configuring the Streamer for BMS Connectivity”](#) section on page 4-45 for information about configuring the ASI streaming mode.

Deployment Network Config

Specify whether your CDS network topology is a Layer 2 or Layer 3 network.

Installation Type

The only options are **ISA 2.X** and **RTSP 2.X**.

Stream Destination

The possible settings for Stream Destination are **Cable**, **IPTV**, **Mixed**, and **Auto**.

The **Cable** setting is the existing configuration with the QAM Gateway page and Headend Setup page, which allows you to map Stream Groups to QAM devices and service groups if applicable.

The **IPTV** setting provides the Stream Destination page in place of the QAM Gateway page and Headend Setup page. The Stream Destination page allows you to map the Stream Groups to specified subnets, which is useful in IPTV networks where each end-user has an IP address.

The **Mixed** option for Stream Destination allows both cable and IPTV configuration. Previously, only one Stream Destination type was allowed. The **Mixed** option makes the QAM Gateway page and associated Headend Setup page available, along with the Stream Destination page.

In ISA environments, the **Mixed** option is only available for gigabit Ethernet streaming. The Streaming Mode is set on the following configuration pages:

- VVI with Content Storage set to Shared—Shared ISA Setup page
- CDS (legacy)—Streamer BMS page
- VVI with centralized management (combined VVIM and Stream Manager)— Streamer BMS page
- VVI with Content Storage set to Distributed—CDSM Setup page under VVI section

The **Auto** option was added for RTSP environments, where it typically is not necessary to explicitly configure QAM gateways or IPTV subnets. The **Auto** option removes these configuration pages from the CDSM GUI. The **Auto** option is not supported for ISA environments.



Note

The Stream Destination feature is available only for single-site steering and in ISA environments that use gigabit Ethernet streaming as the streaming mode.

NAT Support

An option for ISA environments using the **IPTV** setting for the Stream Destination is the **NAT** option. The NAT Traversal feature allows streaming to client devices that are behind a NAT device. All session setup messages go through the backoffice before reaching the RTSP server, while all stream control messages go directly to the RTSP server from the STB for IPTV networks using NAT.

The supported LSCP client protocols for the NAT Traversal feature are the Cisco (RTSP) and TTV (RTSP). The LSCP Client Protocol must be set to one of these two options on the Streamer BMS page. See the [“Configuring the Streamer for BMS Connectivity” section on page 4-45](#).

Parent/Child Service Groups

Parent/Child Service Groups is an optional feature and is only for ISA environments that use ASI streaming. The Parent/Child Service Groups page allows finer granularity of the service groups. For more information, see the [“Configuring Parent/Child Service Groups” section on page 4-19](#).

Bulk Configuration

Bulk Configuration provides a method of configuring common configuration parameters for all the servers at one time by means of an XML file. Following are the CDSM GUI configuration pages that offer bulk configuration:

- QAM Gateway
- Headend Setup (For gigabit Ethernet streaming mode. ASI streaming headend configuration is imported as part of the QAM Gateway page configuration importing)
- Stream Destination
- NTP Server
- Server DNS
- SNMP Agent
- Route Tables

Trick Mode Capture

Trick Mode Capture is an optional feature. When Trick Mode Capture is enabled, the applicable Stream Activity reports can drill down to the Stream Play History Drilldown, which displays the trick modes for a session ID. Additionally, the **Graph Stream** button is displayed on the Stream Monitor page. The Stream Activity reports that can drill down to the Stream Play History Drilldown are the following:

- Stream Play History
- Streams by Array
- Streams per STM-MAC
- Bandwidth per Service Group
- System Failures

When Trick Mode Capture is disabled, the session ID in the Stream Activity reports no longer links to the Stream Play History Drilldown and the **Graph Stream** button is removed from the Stream Monitor page.

Fail Ingest Tuning

The Fail Ingest Tuning setting is enabled by default and is available for the CDSM, VVI with central management, and VVIM; it is not available for the Stream Manager. When enabled, the Fail Ingest Tuning fields are displayed on the **Configure > System Level > Ingest Tuning** page and provides the ability to configure the ingest error detection settings for all Vaults in the CDS.

Vault Groups

When Vault Groups is enabled and at least two Vault Groups are configured and mapped to each other, at least one copy of each content within a group is mirrored to the configured peer group. Content is mirrored among as many as four Vault Groups (one Vault Group ingests the content and up to three Vault

Groups mirror the content), which may be in different geographic regions. The Vault Groups feature adds the Vault Groups, Master Vault Group, and Vault Redundancy Map configuration pages to the Array Level.

**Note**

The maximum number of Vault Groups is 20.

nDVR

This feature is not activated in this release. The network Digital Video Recorder (n-DVR) feature adds monitoring and report pages for accounting and recordings, as well as a Session Gateway page for configuring settings to communicate with the Session Resource Manager (SRM).

Thin Pipe Management

Thin Pipe Management allows you to configure low-bandwidth connections between local and remote sites. A local site consists of groups of servers in the same site, for example, all the Streamers in a Stream Group are considered part of the same site, or local site. A remote site consists of groups of servers in other Stream Groups, Cache Groups, and Vault Groups. Use the Thin Pipe Map page to configure this feature.

VOD Error Repair

The VOD Error Repair is a licensed feature and requires a software activation key to enable it. For more information about activating the VOD Error Repair, see the [“Initializing the CDS and Activating the Optional Features” section on page 3-3](#).

The VOD Error Repair feature retransmits lost packets to improve the quality of the end-user video experience. The VOD Error Repair feature uses negative acknowledgement (NACK) retransmission methods to implement retransmission-based error repair.

The VOD Error Repair settings can be configured on the System Level, Array Level, and the Server Level. Error Repair and RTP Encapsulation can only be enabled at the System Level and Array Level.

Setting the Client Protocol to Cisco RTSP

The client must be set to Cisco RTSP.

For RTSP environments, log in as a user with Engineering access. The CDSM Setup page is displayed. In the **RTSP Deployment Type** section set the Deployment Type to **Cisco**.

For ISA environments, on the Streamer BMS page (**Configure > Array Level > Streamer BMS**), in the LSCP Services section, set the **LSCP Client Protocol to Cisco (RTSP)**, and click **Submit**.

For ISA environments with VVIs and Shared Content Store or Virtual Content Store, the LSCP Services section is on the **Configure > Array Level > VHO ISA Settings**.

Error Repair Client on STB

VOD Error Repair feature requires that the STB have the Cisco Visual Quality Experience Client (VQE-C) software running on it. The VQE-C is the error-repair client software, which has the following capabilities:

- Receives RTP video packets
- Detects missing packets
- Requests retransmission of missing packets
- Merges retransmitted packets with original stream
- Collects statistics and counters for monitoring
- Complies with the Cisco RTSP syntax for VOD Error Repair

The VQE-C is a software development kit (SDK) that is available for download through the open-source program.

Virtual Video Infrastructure

The Virtual Video Infrastructure (VVI) provides management of the Caching Nodes in a central management configuration or a split-domain management configuration.

When you enable VVI, you need to choose the **Management System Role** of the CDSM. The **Management System Role** has the following options:

- VVI and Stream Manager—Central management of all Vaults, Caching Nodes, and Streamers
- VVI (Vault/Cache) Manager—Management of only the Vaults and Caching Nodes
- Stream Manager—Management of only the Streamers

The **Cache Fill Protocol** options are for selecting the type of data communication that is used between Caching Nodes and Streamers. Cache Control Protocol (CCP) is used for communication among the Vaults, Caching Nodes, and Streamers in an ISA environment with Shared Content Store. For more information about CCP Streamers and HTTP Streamers, see the [“Caching Node Workflow” section on page 2-10](#).

**Note**

ISA environments only support CCP, while RTSP environments only support HTTP for VVI.

The split-domain management is made up of the VVI (Vault/Cache) Manager and the Stream Manager. For the Stream Manager to be able to communicate with the VVI Manager, you need to enter the IP address of the VVI Manager in the **VVI (Vault/Cache) Manager VVIM IP** field.

If CCP is used as the cache-fill protocol, you must provide a name for the Stream Manager in the **Stream Domain Name** field so that the VVIM can identify it from other Stream Managers. Communication between the VVI Manager and the Stream Manager is accomplished through database replication when using CCP.

**Note**

When you configure the CDSM for Virtual Video Infrastructure (VVI), all references to CDSM are changed to Virtual Video Infrastructure Manager (VVIM) for the Vault and Caching Node manager.

The VVIM and Stream Managers display different configuration, monitoring, reports, and maintenance pages based on the servers they manage. For example, when CCP is the cache-fill protocol, the VVIM displays the Configuration Generator page in the **Maintenance > Software** left-panel menu. The Configuration Generator page is used to generate the group IDs and server IDs for the Stream Managers to use in their domains.

Configuring Split-Domain Management

To configure a VVIM that uses split-domain management, set the VVI fields as follows:

- **VVI Options**—Enabled
- **Management System Role**—VVI (Vault/Cache) Manager
- **Cache Fill Protocol**—CCP



Note

Content Storage must be enabled to use VVI with split-domain management.

To configure a Stream Manager that uses split-domain management, set the VVI fields as follows:

- **VVI Options**—Enabled
- **Management System Role**—Stream Manager
- **Cache Fill Protocol**—CCP
- **VVI (Vault/Cache) Manager VVIM IP**—IP address of the VVIM
- **Stream Domain Name**—Domain name for the Stream Domain
- **Streaming Mode**—ASI or gigE (Must be set to gigE for the Content Storage feature)

Configuring ISA Regionalization

To configure ISA Regionalization on a Stream Manager, set the CDSM Setup fields as follows:

- Vault Group—**Enabled**
- Content Storage—**Distributed**
- VVI—Configure with the following settings:
 - VVI: **Enabled**
 - Management System Role: **Stream Manager**
 - Cache Fill Protocols: **CCP**
 - VVIM IP: IP address of the VVIM
 - Stream Domain Name: name of the Stream Manager
 - Streaming Mode: **Gige**

To configure ISA Regionalization on a VVIM, set the VVIM Setup fields as follows:

- Vault Group—**Enabled**
- Content Storage—**Distributed**
- VVI—Configure with the following settings:
 - VVI: **Enabled**
 - Management System Role: **VVI (Vault/Cache) Manager**

- Cache Fill Protocols: **CCP**

For more information on configuring ISA Regionalization, see the [“ISA Regionalization Configuration Workflow” section on page 3-9](#).

Configuring Virtual Content Store

To configure Virtual Content Store on a Stream Manager, set the CDSM Setup fields as follows:

- Vault Group—**Disabled**
- Content Storage—**Distributed**
- VVI—Configure with the following settings:
 - VVI: **Enabled**
 - Management System Role: **Stream Manager**
 - Cache Fill Protocols: **CCP**
 - VVIM IP: IP address of the VVIM
 - Stream Domain Name: name of the Stream Manager
 - Streaming Mode: **Gige**

To configure Virtual Content Store on a VVIM, set the VVIM Setup fields as follows:

- Vault Group—**Enabled**
- Content Storage—**Distributed**
- VVI—Configure with the following settings:
 - VVI: **Enabled**
 - Management System Role: **VVI (Vault/Cache) Manager**
 - Cache Fill Protocols: **CCP**

For more information on configuring Virtual Content Store, see the [“Virtual Content Store Configuration Workflow” section on page 3-10](#).

Content Storage

The Content Storage feature applies to ISA environments and has the following options:

- [Shared](#)
- [Distributed](#)



Note

Content Storage is required for VVI with split-domain management in an ISA environment.

Shared

The Shared Content Storage, also known as Shared Content Store (SCS) allows one instance of a Content Store to be shared with many instances of Stream Services, each located in its own video hub office (VHO) with its own video backoffice (VBO). When SCS is enabled, the Shared ISA Setup page is added to the **Configure > System Level** pages in the VVIM, and the VHO ISA Setup page is added to the

Configure > Array Level in the CDSM. The Shared ISA Setup page has all the Content Store information configured on the Vaults that is shared with all the VBOs. The VHO ISA Setup page has the Stream Services information for similar groups of Stream Groups in the same VHO.

Distributed

The Distributed Content Storage option allows for two configurations:

- **ISA Regionalization**—Allows the use of a centralized storage facility containing both Vaults and Caching Nodes in a Virtual Video Infrastructure (VVI), while maintaining a localized or remote CDS at each headend. For more information, see the [“ISA Regionalization” section on page 2-12](#). ISA Regionalization requires that Vault Groups be enabled on the Stream Manager CDSM.
- **Vault Virtualization**—Replaces the SCS with the Virtual Content Store (VCS). No content is ingested at the local VHO. All ingests and deletions of content occur at the central location, and both ingests and deletions are initiated by the local BMS at each local VHO, just as they were in the SCS. However, the VHOs do not need to communicate with the super headend (SHE) as they did with the SCS feature. With VCS, communication of ingestions and deletions is handled by the Ingest Driver client residing on the master Streamer in each VHO and the Ingest Driver server residing on the master Vault in the SHE. Vault Virtualization requires that Vault Groups be disabled on the Stream Manager CDSM. For more information, see the [“Virtual Content Store” section on page 2-16](#).

VVI

When **Distributed** is selected as the Content Storage type, Streaming Mode (ASI or Gige) option is added under VVI. Streaming Mode must be set to **Gige** for the Content Storage feature, whether Shared or Distributed is selected. For Shared, the streaming mode is configured on the VHO ISA Setup page. For Distributed, the streaming mode is selected on the CDSM Setup page.

Change Notifications

When VVIM or Stream Manager is the role for a Distributed Content Storage, then the **Change Notification** option is available. When Change Notifications is enabled, notifications are sent and received between the Stream Manager and the VVIM when changes are made to the Vault Groups and Cache Groups.

Media Scheduler

The Media Scheduler is an optional feature and requires a software activation key to enable it. For more information about activating the Media Scheduler, see the [“Initializing the CDS and Activating the Optional Features” section on page 3-3](#). The Media Scheduler allows live ingests from multicast IP addresses and uses the Input Channels page to map multicast IP addresses to channels. You can enable either Media Scheduler or Real-Time Capture Type, but not both.

The Media Scheduler has the option to set the **Importer/Transformer Type** to either **OCN** or **SA Tribune**. This setting is determined by your deployment.

The **Start Day of Year for Asset ID Generation** is either **0** or **1**. The setting is determined by what Cisco TV CDS software release you initially started using Media Scheduler in. In Release 2.1 and before, the Asset ID starts with 0 per design. In Release 2.2 and Release 2.3, the Asset ID starts with 1 per design.

Real-Time Capture Type

Real-Time Capture allows live ingests from multicast IP addresses and uses the CallSign Setup page to map the multicast IP addresses to call signs. You can enable either Media Scheduler or Real-Time Capture Type, but not both.

Playout Scheduler

Playout Scheduler is only available in an ISA environment on a VVI with central management or a legacy CDSM.

The TV Playout features incorporates the TV Playout functionality from a previous release and adds enhancements to these features. The TV Playout feature includes Public, Education, and Government (PEG) channels and Barker Streams. PEG channels differ from traditional broadcast channels in that the service provider itself must ingest and stream the content rather than receiving and forwarding a satellite feed.

The Playout Scheduler has the following options

- Playout Scheduler—On/Off
- Localized EPG Extension—On/Off

For information on the configuration workflow of the Playout Scheduler and the associated CDSM GUI pages, see the [“TV Playout Configuration Workflow” section on page 3-12](#).

Localized EPG Extensions

To enable Localized EPG Extensions, the Playout Scheduler must be enabled.

Localized EPG Extensions adds the **Configure > Array Level > EPG Exporter** page. The EPG Exporter allows you to create an XML file that contains information from the Playout Scheduler for viewing, saving, and importing into a system to create program listings.

When content is selected for ingest on the **Configure > Array Level > Manual Ingest** page, there are two additional fields for Localized EPG Extensions:

- Localized Name
- Localized Description

The **Monitor > System Level > Completed Ingest** page displays the Localized Name and Localized Description fields and allows them to be edited.

The **Configure > Array Level > Barker/Stream Playlist** displays the Localized Name in the content selection field.

The **Configure > Array Level > Playout Scheduler** displays the original ingest name of the content object, not the Localized Name.

Ingest Manager

The Ingest Manager is an optional feature and requires a software activation key to enable it. For more information about activating the Ingest Manager, see [“Initializing the CDS and Activating the Optional Features” section on page 3-3](#). The Ingest Manager takes care of provisioned content objects by collecting the metadata, sending messages to the appropriate subsystem to ingest the content, and sending messages to expire the content when the expiration period has passed.

Ingest Steering

The Ingest Steering feature works with the VVI and Vault Groups features. When Ingest Steering is enabled (along with VVI central management and Vault Groups), the Ingest Steering configuration page displays at the Array Level, and the Vault Group Setup page offers the ability to assign a Vault Group to either a local or national location. The Ingest Steering page offers the ability to map the product ID of the content to a Vault Group that ingests the content.

CDSM or VVIM NAV Setup

The CDSM NAV Setup changes what displays in the CDSM GUI.

CDSM or VVIM Health Monitoring

The CDSM Health Monitoring optional feature displays the Server Level monitor page, Server Vitals page and a Vitals column in the System Health Monitor page. The Server Vitals page displays the current values of the server, as well as thresholds, for monitored system components. Server components are monitored and when a threshold is exceeded, the System Health Monitor page and Server Vitals page report the event and an SNMP trap is sent.

System Configs

The System Configs page contains critical CDS parameters that are set at the time of the initial installation of the CDS. Generally, the default settings are appropriate for all environments.



Caution

If these parameters are changed after the CDS is in service, your CDS may not function properly.

Group Map 0

Specifies whether the Group Map 0 parameter is for an ISA or RTSP environment.

Servers Group Map

Specifies whether the Servers Map 0 parameter is for an ISA or RTSP environment.

Popularity Based Caching

In most cases the default setting (12 hours) of the **Popularity Half Life** field is sufficient, but in cases where a significant fraction of viewed content has a “flash” popularity pattern shorter than the popularity half-life value, changing the setting may result in a better cache-hit rate overall.

Add New Server

Should you experience problems adding a new server into the CDS, and you have tried the solutions covered in the [“CDSM GUI Does Not Register the Vaults and Streamers”](#) section on page A-25, you can use the Add New Server section.

