



# CHAPTER 1

## Introduction to Cisco CDS Video Navigator

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This chapter provides an introduction to Cisco CDS Video Navigator, Release 2.2. This release includes the Cisco CDS Poster Art Server application, which supports the storage, management, and delivery of poster art for the end user, while providing an interface that allows third-party applications to access all posters. In addition, a Cisco Content Storage Interface (CSI) application programming interface (API) is provided; this API supports interactions between Video Navigator or Poster Art Server and the video backoffice (VBO) for the management and ingestion of video assets.

The following major topics are presented:

- [Cisco CDS Video Navigator Overview, page 1-1](#)
- [Cisco CDS Poster Art Server Overview, page 1-4](#)
- [Cisco Content Storage Interface Overview, page 1-5](#)
- [Support for Resiliency with Cisco ACE, page 1-6](#)

## Cisco CDS Video Navigator Overview

Cisco CDS Video Navigator is a navigation application server that provides information about available video on demand (VOD) content to the on-demand client application running on a set-top box (STB). A web services application, Video Navigator is required for VOD navigation. Because of resource constraints in the STB, in particular insufficient memory to support a VOD catalog of arbitrary size, the catalog metadata (title, genre, rating, length, description, price, and so forth) must reside on an application server—Video Navigator.



### Note

Beginning with this release, exclusive support is provided for the Cisco Real Time Streaming Protocol (RTSP) network control protocol to communicate with streaming media servers, establishing and controlling media sessions between end points. RTSP enables support for both IP and cable STBs. For the STBs that are supported in this release, see *Release Notes for Cisco CDS Video Navigator 2.2*.

For implementations that require the Interactive Services Architecture (ISA) protocol, Cisco CDS Video Navigator, Release 2.1, is required.

Video Navigator retrieves from the VBO the metadata describing VOD services and offerings, along with subscriber rental history. Because the VBO is not designed to support real-time queries from thousands of STBs simultaneously, Video Navigator caches the metadata and presents the information to the on-demand client application on the STB. The client application uses the metadata and subscriber data to determine which VOD content to display for the subscriber.

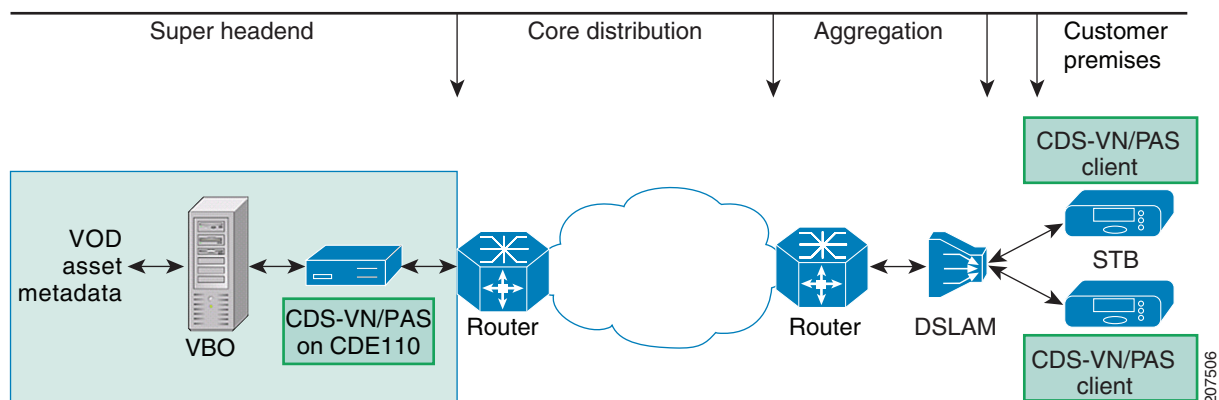
**Note**

Unless each application is addressed explicitly, Video Navigator 2.2 is also used to refer to Cisco Video Navigator with Poster Art Server. Both are shipped preinstalled on the Cisco CDE110. For complete information on the Cisco CDE110, see the [Cisco Content Delivery Engine 110 Hardware Installation Guide](#).

CDS Video Navigator (CDS-VN) is located between the VBO and the STB. The major components related to Video Navigator Release 2.2 are shown in [Figure 1-1](#):

- CDS-VN and CDS Poster Art Server (PAS) applications on the CDE110—Applications on the Cisco Content Delivery Engine 110 (CDE110) respond to client requests that are made as the subscriber navigates the VOD menu.
- Video Navigator and Poster Art Server clients—On-demand applications on the STB request metadata from the Video Navigator or Poster Art Server and display the VOD catalog or poster art to the subscriber.

**Figure 1-1 Video Navigator Release 2.2 Components**



Using the Cisco Content Storage Interface (CSI) to support the ingestion, removal, and management of poster data by the VBO (see [Cisco Content Storage Interface Overview, page 1-5](#)), Video Navigator retrieves the catalog data from the VBO. It creates and stores an XML data structure representing the hierarchy of the VOD content menu in a format optimized for fast access by the STB client. To minimize the need for the dynamic processing of catalog data requested by the client, Video Navigator pregenerates and caches various lists of sorted and filtered offerings. The pregenerated lists may include such items as Titles (A–M), Titles (N–Z), Titles by Genre, and Titles by Studio/Network.

As the subscriber navigates the VOD program guide on the STB by browsing and selecting shows and movies to view, Video Navigator presents the STB client with XML data describing each currently displayed part of the guide. When the subscriber session initiates a request for noncatalog data, such as poster art or trailers, Video Navigator redirects the request to the URL or URI specified in the metadata.

A subscriber may purchase new services or cancel existing ones, either by calling the service operator (who manually provisions them), or by ordering the services directly (by interacting with the Video Navigator client on the STB). The Video Navigator client transacts all purchases directly through the VBO server, which interfaces with the subscriber management, traffic, and billing systems of the operator. Video Navigator has no direct role in the purchase of any VOD service or offering.

The VBO stores subscriber purchases for billing purposes. Video Navigator also caches the history about subscriber purchases and bookmarks that occur during each VOD navigation session, so that the transaction state can be reflected in the guide on the STB. Service listings are correlated with the status

of the subscriber's account and are flagged in the XML data structure, allowing the STB client to differentiate those services to which the user has subscribed from those to which the user has not subscribed. This differentiation enables the promotion and upselling of additional services.

A single Video Navigator server is expected to support a population of 75,000 STBs with an assumed concurrency rate of 2 percent (that is, 1500 simultaneous sessions with Video Navigator clients where users are engaged in any arbitrary combination of actions, such as catalog browsing, checking of rental history, and so forth). The actual capacity of a Video Navigator server may vary, depending on the VOD consumption patterns of the subscriber base. For example, how frequently the VOD guide is accessed and how long the average subscriber stays within the guide are affected by how compelling an operator's VOD service is and how aggressively it is marketed.

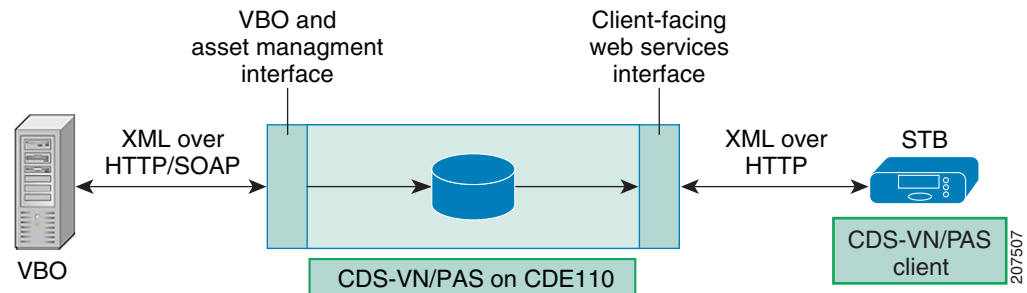
## Video Navigator Logical Interfaces

Video Navigator is a web services application that acts similar to a web proxy between the metadata sources for VOD services (the VBO) and the metadata consumers (the Video Navigator clients on the STBs). Cisco Video Navigator Release 2.2 supports two major logical interfaces:

- VBO and asset management interface
- Client-facing web services interface

Figure 1-2 shows these two interfaces and their associated data flows.

**Figure 1-2 Video Navigator Logical Interfaces and Data Flows**



## VBO and Asset Management Interface

The VBO and asset management interface (AMI) is responsible for extracting asset metadata and subscriber data from the VBO. The Video Navigator local cache of VOD catalog offerings, subscriber services, and rental history is automatically synchronized with the VBO database by means of a VBO interface.

## Client-Facing Web Services Interface

The client-facing web services interface is the interface to the Video Navigator client application running on the STB. In Video Navigator Release 2.2, this interface provides the Video Navigator client application with a set of APIs so that the client can do the following:

- Browse the VOD catalog navigation tree
- Execute queries related to rental history and purchased services
- Search for electronic program guide (EPG) and VOD assets
- Post purchase and bookmark information

For browsing the VOD catalog, the client-facing web services interface uses XML over HTTP to provide a paging mechanism for efficient navigation.

## Video Navigator Client on the STB

The Video Navigator client on the STB is the on-demand menu application, the end node that consumes and uses the metadata. The Cisco IPTV Service Delivery Server (ISDS) application provides the Video Navigator client with the address of the Video Navigator server. When the subscriber signs on and selects the VOD service, the Video Navigator client queries Video Navigator for the list of services to which the client is entitled. Video Navigator then synchronizes its subscriber database for that STB with the VBO, to make sure that the Video Navigator cache is up-to-date.

Each page of the VOD menu is an STB-resident HTML template. In response to queries from the Video Navigator client, Video Navigator returns the XML data used to fill out the template (title, genre, rating, and so forth), and sends information to create the link for each actionable button that appears on the VOD menu.

The STB software includes middleware for manipulating digital media, as well as a web browser engine optimized for user interfaces.

## Cisco CDS Poster Art Server Overview

Cisco CDS Poster Art Server (preinstalled with Video Navigator on the CDE110) is an application server that stores and provides poster art to the on-demand client application running on an STB. It also provides an interface to allow third-party applications to access all posters. It implements the following:

- The Cisco Content Storage Interface (CSI), for the ingestion, removal, and management of poster data by the VBO (see the [“Cisco Content Storage Interface Overview”](#) section on page 1-5)
- The poster art client-facing API, for the retrieval of image files by the STB through a standard HTTP interface and GET requests

The following additional features are provided:

- Scaling of images in the  $x$  and  $y$  dimensions
- Resizing of JPEG image formats
- Caching of resized images to improve performance
- Removal of all resized images when original poster images are removed

For details, see [Chapter 3, “Understanding and Using the Cisco CDS Poster Art Server.”](#)

# Cisco Content Storage Interface Overview

The Cisco Content Storage Interface (CSI) defines the XML APIs for the interactions between a Cisco CDS component (such as Video Navigator and Poster Art Server) and the VBO for the management and ingestion of metadata or poster art. CSI supports the following:

- Getting a description or status of an asset
- Getting an inventory list of the appropriate asset type from the CDS component, including asset information such as its ID, current state, version, and size
- Adding assets
- Deleting assets
- Updating assets to synchronize them with the VBO

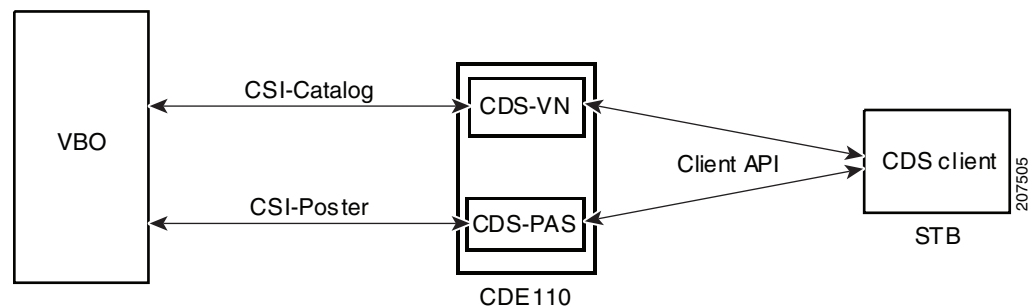
The CSI APIs use the HTTP protocol with an XML-based payload. The CDS component that interacts with the CSI acts as an HTTP server. It accepts HTTP requests from clients and returns HTTP responses to clients. The APIs employ HTTP/1.1 and a bidirectional semipersistent TCP/IP socket connection that opens and closes for each request/response pair. All requests are sent by means of an HTTP POST, as follows:

- The entity-body contains XML data.
- The entity-header includes the following:
  - content-length: *xxxxxx*, where *xxxxxx* is the length of XML data
  - content-type: text/xml

The request and response headers are the same except for HTTP errors, such as a bad handler (404 error—document not found).

[Figure 1-3](#) illustrates the role of Cisco CSI, showing the system components that use the CSI API, along with their interfaces.

**Figure 1-3**      *Role of Cisco CSI*



For more details, see [Chapter 4, “Using the Cisco Content Storage Interface.”](#)

## Support for Resiliency with Cisco ACE

Cisco Video Navigator and Poster Art Server both support resiliency by means of the Cisco Application Control Engine (ACE) module. See the “[Configuring for Resiliency with Cisco ACE \(Optional\)](#)” section on page 2-9.

For information about Cisco ACE, see “Cisco Application Control Engine Module” at the following URL:

[http://www.cisco.com/en/US/prod/collateral/modules/ps2706/ps6906/product\\_data\\_sheet0900aecd8045861b.html](http://www.cisco.com/en/US/prod/collateral/modules/ps2706/ps6906/product_data_sheet0900aecd8045861b.html)

Also, visit <http://www.cisco.com/go/ace>.