

Cisco Enterprise Content Delivery System (ECDS)

Solution Overview

As the demand for enterprise video technologies increases, organizations are facing more demands on their network capacity and complexity in delivering video applications.

The Cisco® Enterprise Content Delivery System (ECDS) is a media delivery system that helps organizations easily scale video and media delivery over their existing WAN infrastructure. For both data and video optimization, Cisco ECDS can be deployed with Cisco WAAS, providing a complete WAN optimization solution.

Cisco ECDS helps customers:

- Scale delivery of applications like e-learning, training, corporate communications, live webcasts, and digital signage, among others, for large audiences and remote sites
- Deliver live and video-on-demand media in various formats to multiple endpoints throughout the enterprise network
- Reduce capital spending in large-scale streaming server and data center infrastructure
- Reduce operational costs through integration with media applications and also optimize storage requirements and bandwidth for streaming
- Extend the reach and quality of the media experience through the enterprise while maintaining a predictable WAN network behavior.

Cisco ECDS consists of a distributed system of components, including the Service Engine, the Content Delivery System Manager (CDS Manager), and the Service Router, to efficiently provide live video streaming scalability, video on demand (VoD), content repositioning, and dynamic caching of video content over the corporate WAN to remote sites.

Cisco ECDS is a versatile media delivery platform with support for Adobe Flash, Windows Media, Apple QuickTime, and the H.264 video compression standard. With support for seamless scalability and resiliency through its service routing capability, Cisco ECDS offers various choices to support a range of sites, from those with fewer than 25 users to large campuses with thousands of users.

Cisco Enterprise Content Delivery System Applications

The Cisco ECDS consists of three main applications.

Service Engine

The Service Engine provides edge content streaming, caching, and download to various endpoint devices such as PCs, Macs, and digital signs, among others. Content streaming support includes live and video on demand (VoD) for Adobe Flash, Windows Media, Apple QuickTime, and H.264 formats. The Service Engine also provides the point of entry into ECDS for ingesting live streams. Through the optional content acquisition subsystem, the platform dynamically fetches content on demand using prefetch and repositioning options.

Service Router

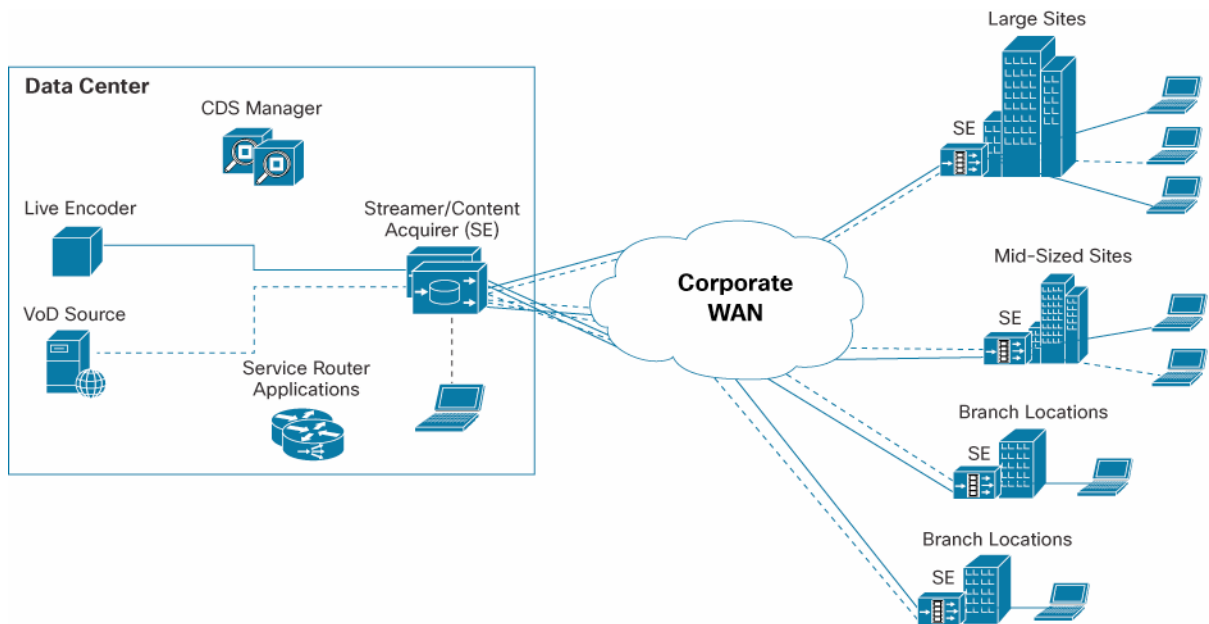
The Service Router mediates requests from the endpoint clients. It is responsible for choosing the most appropriate service engine based on location and load conditions of individual service engines.

Content Delivery System Manager

The Content Delivery System Manager is a graphical, browser-based application designed to manage the elements of a Cisco ECDS network. It offers a workflow-based approach, automating and centralizing the major system management functions, including configuration, monitoring, troubleshooting, system reporting, and maintenance.

Figure 1 illustrates how the components of ECDS work together.

Figure 1. Using the Cisco Enterprise Content Delivery System to Stream Content over the Corporate WAN



Technical Benefits

- Scales bandwidth-heavy media applications without the need to upgrade the WAN network
- Scales across the enterprise without the need to turn on multicast
- Provides centralized management and system reporting
- Supports various endpoints and formats through a single-vendor solution
- Provides service-routing-based architecture to support hierarchical deployments, load balancing, and redundancy
- Provides protocol-based redirects without requiring any configuration on routers and end clients
- Minimal operation complexity in scaling number of sites or number of users on a site
- Supports out-of-band access to devices and comes integrated with recovery image

Feature Highlights

- Support for Adobe Flash, Windows Media, Apple QuickTime (live and VoD)
- Support for Real-Time Streaming Protocol (RTSP) over User Datagram Protocol/Transmission Control Protocol (UDP/TCP)
- Live stream splitting for Adobe Flash, Windows Media Video (WMV), Apple QuickTime, MPEG2-Transport Stream/Real-Time Transport Protocol (MPEG2-TS/RTP)
- Unicast-to-multicast streaming conversion and vice versa for Windows Media and QuickTime
- Dynamic pull caching for objects by HTTP and RTSP
- Content prefetch and prepositioning through HTTP, HTTPS, FTP, or Common Internet File System (CIFS)
- Service-routing-based, scalable, hierarchical distribution topology
- Support for Cisco Digital Signs for delivering VoD content
- Support for Cisco Show and Share[®]
- Compatible with other Cisco video solutions

Detailed Features and Benefits

Table 1 summarizes features and benefits.

Table 1. Cisco ECDS Features and Benefits

Feature	Benefits
Content Ingest into the Cisco Enterprise Content Delivery System	
Ingest predefined content	Various digital assets such as long- and short-form video can be acquired from a variety of sources, using different protocols, and placed in local storage. This capability allows the enterprise to put content from various sources into the system and make it available across the enterprise.
Ingest dynamic content	Requests for assets not currently in cache or content storage can be fetched on demand from the content origination source. Dynamic cache requests are sourced from the origin source using HTTP or RTSP for Windows Media, RTSP for QuickTime, and HTTP for Flash.
Content Distribution and Streaming	
Static content download using HTTP, HTTPS, CIFS, and FTP	Enables delivery of long- and short-form content and supports video-on-demand prepositioning.
Flash distribution	Enables content streaming to variety of PCs and mobile devices with Flash, Adobe AIR, and Flash Lite clients. RTMPE enables 128-bit encryption without the use of certificates to help secure streamed media and communication.
Progressive content download using HTTP	Makes it possible to provide video on demand using progressive rendering that reduces download time on web-browser-based clients.
Content streaming using RTSP/RTP/MMS-over-HTTP	Allows streaming of video to commonly deployed PC clients such as Windows Media Player.
Streaming using RTP/RTSP	Allows content streaming using standard RTP and RTSP protocol to clients such as QuickTime.
Live stream splitting	A single stream entering the Cisco ECDS network can be efficiently split to serve multiple users, allowing the administrator to offer live streaming in a manner that scales.
Cisco ECDS Service Router for Load Balancing, Location Independence, and Resiliency	
Load balancing	The Cisco ECDS Service Router supports several routing methods to best determine which Cisco Service Engine should be used to serve content based on dynamic load conditions.
Location independence	Allows serving any content to any place by factoring in the location of the requesting client to determine the choice of Cisco Service Engine.
System resiliency	Provides system resiliency against network and device failures by dynamically detecting and routing requests to alternative ECDS Service Engines.

Feature	Benefits
Cisco CDS Manager as a Single Point of Management	
Management as a single system	Management is simple, with a single, easy-to-use GUI to configure, monitor, and troubleshoot the Cisco ECDS applications throughout the entire system. Management simplicity contributes to reduction in operational costs. The Cisco Content Delivery System Manager provides an interface to third-party applications through APIs.

Product Specifications

Table 2 lists product specifications.

Table 2. Cisco ECDS Product Specifications

Feature	Specification
Protocols	<p>Content acquisition:</p> <ul style="list-style-type: none"> • HTTP/HTTPS • FTP • CIFS • RTSP/RTP <p>Content delivery:</p> <ul style="list-style-type: none"> • Web content via HTTP • Adobe Flash streaming via RTMP (E) • Windows Media VC-1 via RTP/RTSP, via MMS over HTTP, or via HTTP Progressive Download • Streaming MP3, MP4 (H.264), MOV and M4V, content via RTP/RTSP
Components	<p>Cisco ECDS components involved in a minimal setup:</p> <ul style="list-style-type: none"> • CDSM • Service Router • Service Engine with or without Content Acquirer <p>Optional components include:</p> <ul style="list-style-type: none"> • Standby CDSM • Additional Cisco Service Routers for load balancing and failover • Additional Cisco Content Acquirer or Service Engines for load balancing and failover
MIBS	<ul style="list-style-type: none"> • Supports SNMP v1, v2, v3 • Supports ENTITY-MIB, CISCO-ENTITY-ASSET-MIB, CISCO-CONFIG-MAN-MIB, EVENT-MIB, HOST-RESOURCES-MIB, CISCO-SMI & v2-SMI, SNMP-FRAMEWORK-MIB, MIB-II, sr-tc, v2-TC, SR-COMM, v2-ADM, v2-MIB, v2-ARCH, v2-tm, Coex, v3-ACM, V3-MPD, V3-proxy
Network management	<p>Cisco CDS Manager, which supports:</p> <ul style="list-style-type: none"> • Secure GUI over HTTPS • Configuration of ECDS component applications and devices • Provisioning of delivery services • Provisioning of managed live programs • Traffic statistics and system health monitoring • Authentication, authorization, and accounting (AAA) and role-based management • Management failover using a warm standby • Device group for easy management of thousands of Cisco Service Engines • Centralized system upgrade manager for easy upgrading of thousands of Service Engines • Out of band platform access and integrated remote system recovery
Integration	<ul style="list-style-type: none"> • Supports integration using XML-based "Manifest" files that describe content ingest tasks • APIs are provided to: <ul style="list-style-type: none"> ◦ Check the content replication and listing status ◦ Provision the delivery system ◦ Obtain statistics • Protocol: HTTPS • Input: URL and XML body • Output: XML response

Feature	Specification
Service routing	<p>Service Router supports the following routing methods:</p> <ul style="list-style-type: none"> • Load-based routing (least loaded) • Service-aware routing • Content-aware routing • Last resort (when all eligible streamers are overloaded or for requests from outside the defined coverage zone) <p>Service Router avoids routing to Service Engines with:</p> <ul style="list-style-type: none"> • Disk failure • Application failure • CPU, memory, and disk overload <p>Service Router supports multiple redirection methods based on the protocol and the user-agent of the client:</p> <ul style="list-style-type: none"> • HTTP ASX Redirection • HTTP 302 Redirection • RTSP 302 Redirection • RTSP REDIRECT Redirection • RTMP Redirection
Web engine	<ul style="list-style-type: none"> • Progressive rendering of MPEG, Advanced Systems Format (ASF), and QuickTime movie format files • Wi-Fi streaming via HTTP Progress Download • Option to support pre-ingested content delivery and dynamic caching • Flexible rules template for cache policies and rules • Service rules • Option to support hierarchical caching
Flash streaming	<ul style="list-style-type: none"> • Adobe Flash streaming • Precreated application for VoD • Multiple bit-rate streaming over RTMP for live streaming and VoD • H.264 VoD and live streaming • Content authorization using URL Signing • HTTP-based hierarchical caching • Support for RTMP, RTPME, • Formats: Sorenson Spark, On2 VP, Nellymoser, MP3, AMF0, AMF3 • Client-side playlist
Cisco Movie Streamer	<ul style="list-style-type: none"> • Support for content delivery using RTP/RTSP • Clients: QuickTime, 3GPP-compatible, VLC • Codecs: MPEG1/2, H.264, H.263, AMR, AAC, MP3 • Container files: MOV, MP4, 3GPP • Support for live streaming application • Managed live events and rebroadcast of scheduled events • Encoder failover • SMIL-based client-side playlists • Live-stream splitting, including: <ul style="list-style-type: none"> ◦ Multicast in and multicast out ◦ Multicast in and unicast out ◦ Unicast in and multicast out ◦ Unicast in and unicast out • Hierarchical caching proxy

Feature	Specification
Windows Media	<ul style="list-style-type: none"> • Windows Media Technology (WMT) server and proxy: <ul style="list-style-type: none"> ◦ Codec WM 7, WM 8, WM 9, VC-1 • Protocols: <ul style="list-style-type: none"> ◦ RTP/RTSP UDP ◦ RTP/RTSP TCP ◦ MMS over HTTP, or HTTP progressive download • Container files: ASF, WMV, WMA • Client-side playlist • Fast start and fast cache • Managed live events • Live channel priming • Live channel fast start • Live-stream splitting, including: <ul style="list-style-type: none"> ◦ Multicast in and unicast out ◦ Unicast in and multicast out ◦ Unicast in and unicast out • Option to support hierarchical caching • Encoder failover • Pass-through authentication • Wi-Fi streaming of VC-1
Content acquisition and storage	<p>Acquisition modes supported:</p> <ul style="list-style-type: none"> • Pre-ingest of content ahead of the delivery time • Dynamic ingest of content the end-user requests • Pre-ingest via HTTP, HTTPS, FTP, CIFS • Dynamic ingest via HTTP and RTSP <p>Centralized content removal Distribution modes supported:</p> <ul style="list-style-type: none"> • Hierarchical live streaming routing within Cisco ECDS • Option for caching proxy from the origin server • Option of hierarchical caching within Cisco ECDS

The ECDS solution is currently available in an appliance form factor called the Cisco Media Delivery Engine (MDE) in the following models:

- Cisco Media Delivery Engine 50 WVB
- Cisco Media Delivery Engine 1100
- Cisco Media Delivery Engine 3100

Solution Requirements

At a minimum, a Cisco ECDS deployment requires the following:

- Service Engine
- Content Delivery System Manager
- Service Router

The MDEs may be used to run any of the above three main applications. Please note that Content Acquisition is an additional license that is required for using a Service Engine as a Content Acquirer.

Ordering Information

Ordering information for the Media Delivery Engine can be found on the respective data sheet.

Service and Support

Cisco and our partners provide a broad portfolio of smart, personalized services and support that can help you realize the full value of your video investment, and increase business agility and network availability. This portfolio of services drives business transformation through a network-based collaboration platform that enables business to collaborate anywhere, anytime.

Cisco SMARTnet[®] Service, an award-winning technical support service, is available for Cisco MDE appliances and the ECDS solution. Cisco SMARTnet Service offers direct, anytime access to Cisco engineers and an extensive range of technical resources. Cisco SMARTnet delivers rapid issue resolution, flexible device-by-device coverage, and premium service options to help maximize operational efficiency.

For more information about these services, visit:

www.cisco.com/go/services/digitalmedia

For More Information

For more information about the Cisco Enterprise Content Delivery System, contact your local Cisco account representative.



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