

Cisco Videoscape Distribution Suite Transparent Caching

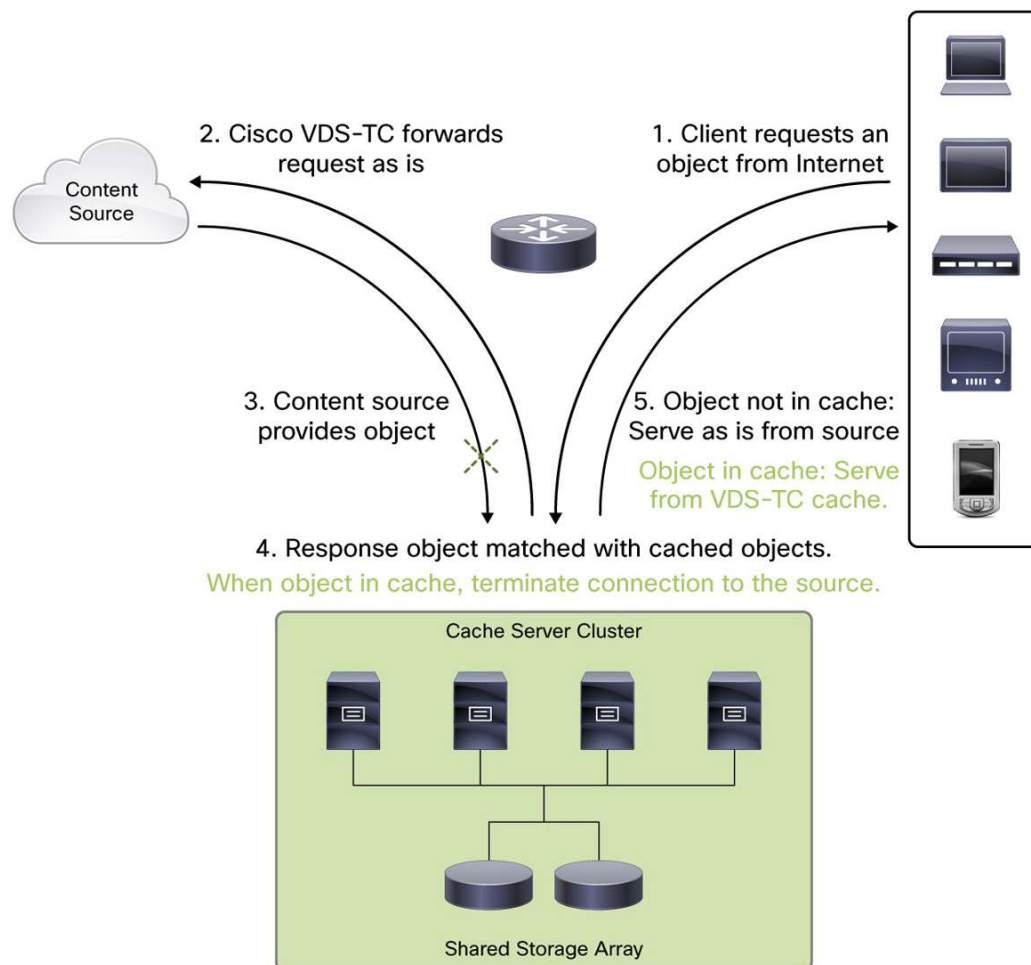
Product Overview

The Cisco Videoscape Distribution Suite Transparent Caching (VDS TC) solution is focused on reducing costs and improving quality of user experience in delivering unmanaged Internet-based content, including Internet video, file sharing, software distribution, mobile app downloads, and web browsing. VDS TC integrates highly scalable caching software with high-performance Cisco Unified Computing System™ (UCS) servers and blades, Cisco® switches, and SAN storage. The VDS TC solution, combined with other Videoscape products like Cisco Videoscape Distribution Suite for Internet Streaming (VDS IS), provides a complete platform for optimizing managed and unmanaged content delivery.

The 2012 Cisco Visual Networking Index (VNI) forecasts that Internet video will account for more than 50 percent of consumer Internet traffic by the end of 2012, and 62 percent by 2015. The sum of all forms of video - linear TV, video on demand (VoD), Internet video, and peer-to-peer - will constitute 90 percent of global consumer data traffic by 2015. For unmanaged content, Cisco VDS TC empowers service providers to alleviate network congestion due to Internet video and other high-bandwidth applications in their networks, while meeting subscribers' demand for the content and improved quality of experience. VDS TC is typically deployed in conjunction with a network element, such as a router or Deep Packet Inspection (DPI) element, which is responsible for classification and redirection of traffic to the cache, based on Layer 4 and Layer 7 criteria.

Cisco VDS TC is multi-protocol, supporting HTTP for download, progressive download, and adaptive bit rate (ABR) streaming, as well as multiple peer-to-peer (P2P) protocols. The solution automatically adapts to content popularity once installed, and is access-network-agnostic (see Figure 1). The system automatically adjusts to traffic mix changes during the day and week.

Figure 1. Cisco VDS Transparent Caching Basic Traffic Flow



Some transparent caching solutions create two separate transmission control protocol (TCP) sessions - one between the client and cache, and a second between cache and origin server or content delivery network (CDN). These solutions are not IP-transparent to the client and origin. The Cisco VDS TC solution uniquely bridges the existing TCP session at Layer 2. As a result, IP addresses between the client and origin are maintained; thus the solution is transparent in the IP layer. The Cisco solution does not require any modifications to DNS, origin server, or client. This transparency insures that portal application server logic functions normally; including geo-control, client-authorization, viewership analytics, advertisement metrics, and CDN request routing.

Features and Benefits

One of the benefits of Cisco VDS TC is that it can enable service providers to offload significant amount of content traffic by serving the popular content from locally cached copy, within the access network. As a result, service providers can experience a rapid return on investment (ROI) by reducing their operational network costs, and defer capital investments into their network infrastructures.

The other main benefit of Cisco VDS TC is the improvement of the quality of experience (QoE) for service providers' subscribers. By serving popular content from locally deployed cache, the content is better positioned to provide a better user experience than if the content were served from the original content server.

The Cisco VDS TC solution can enable service providers to:

- Lower core and edge network bandwidth
- Manage infrastructure costs for over-the-top (OTT) content in a cost-efficient manner
- Improve subscriber QoE for popular content
- Deploy OTT caching without impacting the client or origin CDN, or application behavior

Product Architecture

The Cisco VDS TC architecture is a carrier-grade solution that supports a cluster of multiple cache servers represented as a single system. Cache servers utilize high-performance Cisco caching software running on Cisco UCS® rack mount servers and blade systems. For high-volume traffic delivery, caches are deployed in highly scalable server clusters having access to content cached on shared SAN-based arrays.

Utilizing a high-throughput cost-effective SAN which is shared by clustered cache servers results in a cost-effective system architecture. Every cache server can write and read data from the shared storage, thus yielding high cache hit rates while allowing storage and caching to scale efficiently and independently. And the architecture utilizes cost-effective switches without requiring any of the expensive load balancers. This leads to reduced total cost of ownership (TCO). In addition, this carrier-grade solution is designed with no single point of failure with various options for redundancy.

VDS TC is accompanied by an analytics server to help network providers with detailed monitoring information of the network. Figures 2 and 3 display how VDS TC runs with Cisco UCS rack mount servers and blade servers, respectively.

Figure 2. Example of Cisco VDS TC Solution Using Cisco UCS Rack Mount Servers

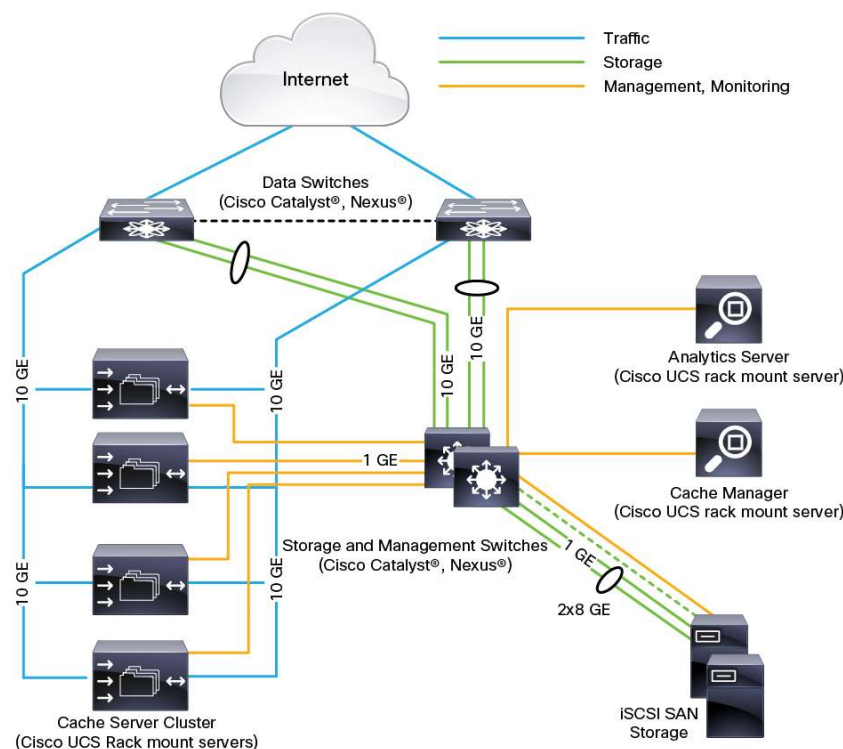
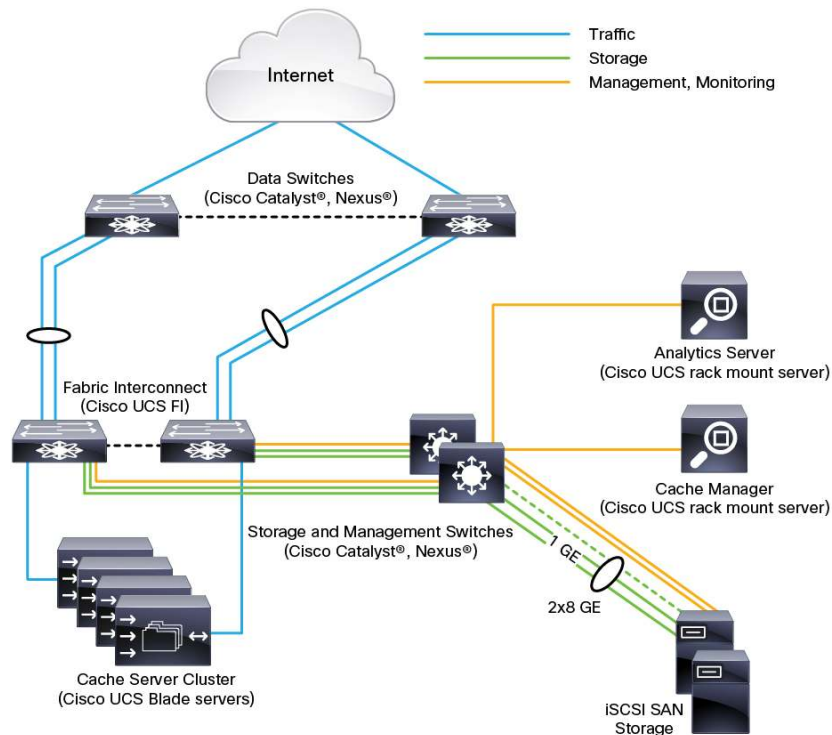


Figure 3. Example of Cisco VDS TC Solution Using Cisco UCS Blade Servers



Platform Support and Compatibility

Cisco VDS TC is optimized for use on Cisco Unified Computing System (Cisco UCS), such as on the [Cisco UCS C220 Rack Server or B200 Blade Server](#). These platforms provide customers with systems that encompass:

Blade Server

- Network: Unified fabric
- Compute: Industry-standard x86
- Storage: Access options
- Unified management model
- Dynamic resource provisioning
- Efficient scale
- Lower cost with fewer servers, switches, adapters, and cables
- Lower power consumption
- Fewer points of management

Rack Server

- Form-factor-agnostic entry point into Cisco UCS
- Simplification and fast deployment of applications
- Unified Computing innovations and benefits extended to rack servers
- Greater customer choice with unique benefits in a familiar rack package
- Reduced total cost of ownership (TCO) and increased business agility

Product Specifications

Table 1 lists product specifications for Cisco VDS Transparent Caching.

Table 1. Product Specifications

Supported Protocols (Representative Examples)	<ul style="list-style-type: none">• ABR streaming: Netflix, Microsoft Silverlight• HTTP progressive download video and audio services: YouTube, DailyMotion, Google Video, Todou, Youku, MSN Movies, Veoh, Yahoo Video, Metacafe, AOL Video, DivX, Pandora• HTTP software update services: Microsoft Windows updates, Adobe Acrobat updates, Apple updates (Mac OS, iTunes, Safari), antivirus and gaming updates• Web services: Google Maps, Google Earth, webmail applications, user-generated content sites• Web-based file sharing services: RapidShare, Badongo, zShare, DL Free• Generic HTTP file downloads• HTML 5.0 content with video tag supporting both the h.264 and WebM formats• P2P (TCP): BitTorrent, E-Donkey, Gnutella/Gnutella2, Ares• Mobile: app store downloads (iPhone, Android), ringtones, mobile games
Scalability	<ul style="list-style-type: none">• Up to 16 caching engines in a cluster• Up to 5 storage enclosures with up to 72 TB storage• Up to 8 million simultaneous sessions• Multiple cluster deployments per site
Configurable Cache	<ul style="list-style-type: none">• Configurable downstream caching• Complete control over applied links• Control over cache output rate• Integration with DPI and other efficiency solutions
Availability	<ul style="list-style-type: none">• Hot-swappable power supplies and disks• Software and hardware watchdogs• Graceful in-service software upgrades
Management	<ul style="list-style-type: none">• Web-based reporting and element management• SNMP v.2 monitoring• Command Line Interface (CLI)-based XML configuration• Serial over LAN (SOL)
Security	<ul style="list-style-type: none">• Management security: HTTPS-based web access, SSHv2-based CLI• RFC 1918 (192.168.x.x) private IP address scheme used for devices within grid. Only one routable external (ISP network) used in management server• IP-based access control list (ACL) for CLI and web management• Two-level CLI authentication
Regulatory Compliance	<ul style="list-style-type: none">• US DMCA (1998)• EU E-commerce directive (2000)

System Requirements

Table 2 lists system requirements for Cisco VDS TC. It is recommended that Cisco VDS TC run on [Cisco UCS](#) blade or server hardware.

Table 2. System Requirements

VDS TC Cache Server	Cisco UCS B200 Blade or C220 Rack Mount Server with the following: <ul style="list-style-type: none">• 2 x 2.40 GHz E5-2665, 115W 8C, 20 MB Cache, DDR3 1600 MHz• 32 GB DDR3-1333-MHz RDIMM, PC3-10600, 2R, 1.35v• 2 x 300 GB 6 Gb SAS 10K RPM SFF HDD, hot plug, drive sled mounted
VDS TC Cache Manager	Cisco UCS B200 Blade or C220 Rack Mount Server with the following: <ul style="list-style-type: none">• 2 x 2.4 GHz E5-2609/80W 4C, 10 MB Cache, DDR3 1066 MHz• 16 GB DDR3-1333-MHz RDIMM/PC3-10600, 2R, 1.35v• 2 x 300 GB 6 Gb SAS 10K RPM SFF HDD, hot plug, drive sled mounted
VDS TC SAN Storage	Dual controller, 24 x 600G SAS 10K RPM, 2.5 in. small form factor (SFF)
VDS TC Integrated Cache Server, Manager, and Storage	Cisco UCS C240 Rack Mount Server with the following: <ul style="list-style-type: none">• 2 x 2.40 GHz E5-2665, 115W 8C, 20 MB Cache, DDR3 1600 MHz• 32 GB DDR3-1333-MHz RDIMM, PC3-10600, 2R, 1.35v• 2 x 300 GB 6 Gb SAS 10K RPM SFF HDD, hot plug, drive sled mounted• 12 x 1T B 6 Gb SATA 7.2K RPM SFF HDD, hot plug, drive sled mounted
VDS TC Analytics Server	Cisco UCS C240 Rack Mount Server with the following: <ul style="list-style-type: none">• 2 x 2.40 GHz E5-2665, 115W 8C, 20 MB Cache, DDR3 1600 MHz• 48 GB DDR3-1333-MHz RDIMM, PC3-10600, 2R, 1.35v• 2 x 300 GB 6 Gb SAS 10K RPM SFF HDD, hot plug, drive sled mounted• 10 or 22 x 900 GB 6 Gb SAS 10K RPM SFF HDD, hot plug, drive sled mounted

Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed, by technology and by network complexity, to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

For More Information

For more information about the Cisco Videoscape Distribution Suite Transparent Caching solution, visit <http://www.cisco.com/en/US/products/ps12654/index.html>, or contact your local account representative.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)