Cisco Content Delivery Engines Generation 2

Cisco® Content Delivery Engines (CDEs) are a family of carrier-class appliances that power the Cisco Content Delivery System (CDS), an innovative, network-based, modular platform for video delivery. The Cisco CDS delivers an unprecedented level of scalability and reliability while giving service providers a distinct service-velocity advantage in enabling the next generation of personalized entertainment and interactive media. The Cisco CDS platform combines Cisco CDEs with Content Delivery Applications (CDAs), software elements that provide ingest, storage, caching, personalization, streaming, and other real-time, scalable, and resilient capabilities. Cisco CDEs and CDAs can be flexibly configured to support a host of networked value-added services that service providers can rapidly deploy to attract and retain subscribers.

Networked Cisco CDEs work together to form a scalable, flexible, and highly available system that enables service providers to rapidly deploy high-value services such as video on demand (VoD), time-shift TV, network personal video recording (nPVR), and targeted ad insertion.

Product Overview

Cisco Content Delivery Engines form the hardware foundation of the Cisco Content Delivery System platform, and consist of a number of networked, multifunction server appliances that can be centrally managed as a single "virtual" server. Each Cisco CDE within the virtual server performs one or more functions depending on which of the Content Delivery Applications are installed on it.

The Cisco CDAs can be grouped into the following service types:

- TV streaming: Content delivery to TV sets through cable or IPTV set-top boxes
- Internet streaming: Content delivery to IP devices connected to the Internet
- Cisco Visual Quality Experience (Cisco VQE): Error repair, statistics gathering, and channel change-time acceleration

Table 1 provides a mapping between the Cisco CDAs and the various CDE models. To obtain detailed information on all CDAs, please refer to the CDA product literature.

Table 1.   Cisco CDE Models and supported Content Delivery Applications

Service Type	Content Delivery Application	Entry Level	Dense	High-End
TV streaming	CDS TV Manager	CDE110-2		
	Vault		CDE220-2A	CDE420-4A
	Content Cache			CDE420-4G
	TV Streamer	CDE220-2C1 CDE220-2S1*	CDE220-2C2 CDE220-2S3*	
	Integrated Streamer-Vault	CDE220-2D1		
	Video Navigator	CDE110-2		

Internet streaming	CDS IS Manager	CDE205		
	Internet Streamer	CDE205	CDE220-2G2 CDE220-2S3*	
	Service Router	CDE205	CDE220-2G2	
	Content Acquirer	CDE205	CDE220-2G2	
Cisco VQE	VQE Channel Provisioning Tool	CDE111-2		
	VQE Server	CDE111-2		

*Featuring flash solid state drive (SSD) technology. CDE220-2S3 provides a common platform for both TV and Internet streaming.

Key Features and Benefits

Designed for maximum flexibility, Cisco Content Delivery Engines can be grouped into arrays that operate as a single logical system. Service providers can easily expand capacity by simply attaching additional CDEs to the array, thereby achieving virtually unlimited video storage and streaming capacity. The Cisco Content Delivery System employs a hierarchical storage design that allows service providers to maintain huge content libraries while actually simplifying content storage management. With a logically distributed architecture that can separate ingest and storage from streaming, each function can be scaled independently of the other by simply adding another Cisco CDE, which dynamically increases the pooled ingest, storage, caching, and streaming resources available throughout the network.

Cisco CDEs adapt automatically to unpredictable and rapidly changing traffic patterns. The platform preserves video programming in a common, shared storage array that is instantly accessible for streaming anywhere in the network. Cisco's Intelligent Caching technology automates the distribution of video content between Cisco CDEs by responding dynamically to actual viewer demand and popularity trends. This adaptive content distribution model helps ensure that the content that is most popular at any point in time at each network node is always available in local storage, significantly reducing the bandwidth burden on the network backbone. This flexible architecture and the effectively unlimited scalability of content libraries make the Cisco CDS an attractive solution for efficiently and cost-effectively delivering "long-tail" content, network-based time-shifted programming, and user-generated content. This serves to increase the network's scalability while at the same time minimizing capital expenditures and operating expenses.

Cisco CDEs are also designed for fault-tolerant operation. They can share state and work together as a single logical pool of resources that can be dynamically reallocated across the network's available hardware capacity in response to service requests. In the event of hardware failure, the Cisco CDS immediately delegates the functions being performed by the failed device to other Cisco CDEs in the network. Furthermore, the system automatically discovers the addition or removal of a Cisco CDE and reconfigures itself without service disruption or manual intervention, vastly simplifying maintenance and upgrade operations.

A network populated with Cisco CDEs becomes a platform upon which new services and applications can be layered over time and deployed much more quickly than was possible in the past. The platform unleashes the power of IP networking technology by creating a video infrastructure capable of delivering nonstop availability, great scalability, and low total cost of ownership. Taking advantage of the extensible architecture of the Cisco CDS, operators can deploy on-demand video services today with the knowledge that they can expand their services to support real-time applications and multiple forms of rich-media content delivered to many types of devices.

Features and benefits of the Cisco Content Delivery Engines are summarized in Table 2.

Table 2. Cisco CDE Features and Benefits

Feature	Benefit
Industry-leading stream density	With up to 2,500 MPEG2 SD streams in a 2 rack unit form factor, the CDE220 Dense TV Streamer offers industry-leading video streaming density (1250 SD streams/RU). This translates to over 56,000 MPEG2 SD streams served with a single rack, optimizing space requirements and reducing total ownership costs.
High-density resilient persistent storage	The CDE420 high-end vault is capable of reliably storing up to 12,000 hours of SD MPEG2 content, providing service providers the ability to expand their content library with a small number of library servers.
High performance content acquisition	Cisco CDEs are capable of simultaneously ingesting up to 200 MPEG2 SD streams, providing highly scalable content acquisition of real-time live channels for time-shift TV services.
High performance processing	Eight CPU1 cores guarantee high performance for computationally intensive tasks such as sustained video streaming operations or per-stream targeted ad insertion.
Flash SSD technology	Flash SSD technology complements hard disk drive options for certain CDE configurations. The technology is used for video cache and transaction logging to lower operational costs and lay the foundation for even higher performance and scale.
Solid state boot device	8 GB compact flash guarantees reliable boot-up operations with ample capacity to spare.
Dual port management access	Two dedicated management ports are available, in addition to the ingest/fill/streaming ports to simplify connectivity and manageability.
High-efficiency redundant power supply	The CDE220 and CDE420 base systems support either AC or DC dual high-efficiency power supplies, for lower power consumption while simplifying sparing strategy.
Nonstop service availability	Unique failover and resiliency features help ensure that hardware failures don't bring down the network and cause service outages.
Logic server arrays	Resource pooling and load balancing enable Cisco CDEs to be networked into logic server arrays that can provide virtually unlimited amounts of content storage (vault array), content cache (caching node array) and streaming capacity (streamer array) throughout the network.
	Additional streams or storage capacity can be added to the array without outages or service interruption. The Cisco CDS detects when new CDEs are added or removed from the logic array and optimally load-balances the entire resource pool.
	Independent scaling of content library size and stream count allows flexibility in capital expenditures.
Multifunction capabilities	Cisco CDE models are built on a few select base systems with minor differences among the available configurations, simplifying personnel training and equipment sparing strategies.

Cisco Content Delivery Engine Models

The latest generation of Cisco Content Delivery Engines offers higher scalability and performance in a dense design. There are four products in this new generation: CDE110, CDE205, CDE220, and CDE420. Each CDE is optimized for the Cisco Content Delivery applications that are supported on it, as shown in Table 1. Table 3 shows a high-level summary of all Cisco CDEs.

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[1] On all models except CDE205, which has four CPU cores.

Table 3.   High-Level Cisco CDE Summary

	Rack Units	Processor	Model Name	Storage Capacity (GB)	Memory	I/O
CDE110	1 RU	2 quad-core	CDE111-2	146 GB (1 x 146-GB SAS)	8 GB	6 TX GE
			CDE110-2	438 GB (3 x 146-GB SAS)	8 GB	4 TX GE
CDE205	2 RU	1 quad-core		1500 GB (3 x 500-GB SATA)	8 GB	2 TX GE
CDE220	2 RU	2 quad-core	CDE220-2A	12,000 GB (12 x 1-TB SATA)	32 GB	TX models: 8 GE copper SX models: 8 GE fiber All models: 2 GE copper management ports
			CDE220-2C1	292 GB (4 x 73-GB SAS)	16 GB	TX models: 4 GE copper SX models: 4 GE fiber All models: 2 GE copper management ports
			CDE220-2S1	512 GB (4 x 160-GB SSD)**	16 GB	TX models: 4 GE copper SX models: 4 GE fiber All models: 2 GE copper management ports
			CDE220-2C2	876 GB (12 x 73-GB SAS)	32 GB	TX models: 12 GE copper SX models: 8 GE fiber All models: 2 GE copper management ports
			CDE220-2S3	1536 GB (12 x 160-GB SSD)**	32 GB	TX models: 12 GE copper SX models: 8 GE fiber All models: 2 GE copper management ports
			CDE220-2D1	6000 GB (6 x 1-TB SATA)	16 GB	TX models: 4 GE copper SX models: 4 GE fiber All models: 2 GE copper management ports
			CDE220-2G2	6000 GB (12 x 500-GB SATA)	16 GB	TX models: 8 GE copper SX models: 8 GE fiber All models: 2 GE copper management ports
CDE420	4 RU	2 quad-core	CDE420-4A	24,000 GB (24 x 1-TB SATA)	32 GB	TX models: 8 GE copper SX models: 8 GE fiber All models: 2 GE copper management ports
			CDE420-4G	10,800 GB (24 x 450-GB SAS)	32 GB	TX models: 12 GE copper SX models: 12 GE fiber All models: 2 GE copper management ports

**20% of drive capacity reserved for administrative functions

Cisco CDE110

Figure 1.   Cisco CDE110

The Cisco CDE110 (Figure 1) is available in two hardware configurations.

- The Cisco CDE111-2 model currently supports Cisco VQE Server and Cisco VQE Channel Provisioning Tool.
- The Cisco CDE110-2 model supports Cisco Video Navigator and Cisco CDS-TV Manager (CDSM).

Both configurations are available with AC or DC power, optionally configurable with a redundant power supply. See Table 4 for specifications.

Table 4.   Technical Specifications for Cisco CDE110

	Cisco CDE110-2	Cisco CDE111-2
Rack units	1	1
Storage	438 GB SAS (3 x 146 GB SAS)	146 GB SAS (1 x 146 GB SAS)
Memory	8 GB DRAM	8 GB DRAM
Network interfaces	Four 10/100/1000BASE-T (copper)	Six 10/100/1000BASE-T (copper)
Other interfaces	Two RJ-45 console interfaces	Two RJ-45 console interfaces
Compact flash memory	4 GB	4 GB
Hardware RAID	Standard	None
Optical drive	CD/DVD-ROM	CD/DVD-ROM
Power	115–240 VAC or –48 VDC; Optional redundant power supply	115–240 VAC or –48 VDC; Optional redundant power supply
Power rating	450W	450W
Humidity	5 to 90% non-condensing	5 to 90% non-condensing
Operating temperature	5 to 40℃ (41 to 104℉)	5 to 40℃ (41 to 104℉)
Altitude	0 to 4000 m	0 to 4000 m
Dimensions (H x W x D)	1.70 x 17 x 20 in. (4.45 x 43.2 x 50.8 cm)	1.70 x 17 x 20 in. (4.45 x 43.2 x 50.8 cm)
Weight (fully configured)	28 lb (12.7 kg)	28 lb (12.7 kg)
Approvals: Safety	UL60950-1, 1st Edition/CSA 22.2 60950-1, Low Voltage Directive	UL60950-1, 1st Edition/CSA 22.2 60950-1, Low Voltage Directive
Approvals: EMC	FCC 47 CFR Parts 2 and 15, Verified Class A Limit	FCC 47 CFR Parts 2 and 15, Verified Class A Limit

Cisco CDE205

Figure 2.   Cisco CDE205

The Cisco CDE205 (Figure 2) is a fixed-configuration appliance designed as an entry-level platform for Cisco Internet streaming applications. It is available with AC or DC power and can be optionally configured with a redundant power supply. See Table 5 for specifications.

Table 5.   Technical Specifications for Cisco CDE205

	Cisco CDE205
Rack units	2
Storage	1.5 TB SATA (3 x 500 GB SATA)
Memory	8 GB DRAM
Network interfaces	Two 10/100/1000BASE-T (copper)
Other interfaces	Console port; Two USB ports
Compact flash memory	8 GB

Hardware RAID	None
Optical drive	None
Power	100-240 VAC or -48 VDC single power supply; Optional redundant power supply available
Power rating	800W peak
Operating Humidity range	8 to 90% non-condensing
Non-operating Humidity range	5 to 95% non-condensing
Operating temperature	5 to 40°C (41°to 104°F)
Non-operating temperature	-40 to 70°C (-40°to 158°F)
Altitude	0 to 4000 m
Dimensions (H x W x D)	3.5 x 17.2 x 25.5 in. (8.9 x 43.7 x 64.8 cm)
Weight (fully configured)	52 lbs
Approvals: Safety	UL/CSA 60950-1
Approvals: EMC	FCC Part 15 (CFR 47) Class A EMC Directive 89/336/EEC EMC Directive 2004/108/EC EN55022: 2006 EN55024: 1998, A1:2001, A2:2003 EN61000-3-2: 2006 EN61000-3-3: 1995, A1;2001, A2:2005
ETSI – Operational Power and Environmental Standards	ETSI EN300 019-2-3 Temperature Controlled Location – Normal Operating Conditions (T 3.1) Temperature Controlled Location – Exceptional Operating Conditions (T 3.1E)

Cisco CDE220

Figure 3.   Cisco CDE220

The Cisco CDE220 (Figure 3) is a versatile platform that is available in the following five models, each optimized for a particular content delivery application:

- Model 2A: Dense Cisco Vault
- Model 2C1: Entry-level Cisco TV Streamer
- Model 2S1: Entry-level Cisco TV Streamer with Flash SSD technology
- Model 2C2: Dense Cisco TV Streamer
- Model 2S3: Dense Cisco TV Streamer with Flash SSD technology*
- Model 2D1: Entry-level Cisco Integrated TV Streamer-Vault (ISV)
- Model 2G2: Cisco Internet Streamer, Content Acquirer, and Service Router Applications

* Provides a common platform for CDS-TV and CDS-IS streaming applications

All configurations are available with AC or DC redundant power supplies, as well as in copper or fiber interface connector types. See Table 6 for specifications.

Table 6. Technical Specifications for Cisco CDE220

	Cisco CDE220
Rack units	2
Storage	Refer to the model-specific details below
Memory	Refer to the model-specific details below
Network interfaces	Refer to the model-specific details below
Other interfaces	Console port; two USB ports
Compact flash memory	8 GB
Hardware RAID	Yes
Internal log drives	Dual 146 GB SAS unless otherwise stated in model-specific details below
Optical drive	None
Power	100–240 VAC or –48 VDC redundant power supplies included in all models
Power rating	800W peak
Power consumption	427W idle; 485W spin-up Unless otherwise stated in model-specific details below
Operating humidity range	8 to 90% non-condensing
Non-operating humidity range	5 to 95% non-condensing
Operating temperature	5 to 40°C (41 to 104°F)
Non-operating temperature	–40 to 70°C (–40 to 158°F)
Altitude	0 to 4000 m
Dimensions (H x W x D)	3.5 x 17.2 x 25.5 in. (8.9 x 43.7 x 64.8 cm)
Weight (fully configured)	52 lbs
Approvals: Safety	UL/CSA 60950-1
Approvals: EMC	FCC Part 15 (CFR 47) Class A EMC Directive 89/336/EEC EMC Directive 2004/108/EC EN55022: 2006 EN55024: 1998, A1:2001, A2:2003 EN61000-3-2: 2006 EN61000-3-3: 1995, A1;2001, A2:2005
ETSI – Operational Power and Environmental Standards	ETSI EN300 019-2-3 Temperature Controlled Location – Normal Operating Conditions (T 3.1) Temperature Controlled Location – Exceptional Operating Conditions (T 3.1E)

Dense Vault (CDE220, Model 2A)

The Cisco CDE220, Model 2A is designed for a dense Cisco Vault Application. It can be purchased with either eight 10/100/1000BASE-T interfaces or eight 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Table 7 shows the hardware bundle contained in Model 2A.

Table 7.   Cisco CDE220, Model 2A Configuration

	Cisco CDE220 2A
Storage	12 TB (12 x 1 TB SATA)
Memory	32 GB DRAM
Network interfaces, copper model	Eight 10/100/1000BASE-T
Network interfaces, fiber model	Eight 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Entry-Level Cisco TV Streamer (CDE220, Model 2C1)

The Cisco CDE220, Model 2C1 is designed for an entry-level Cisco TV Streamer Application. It can be purchased with either four 10/100/1000BASE-T interfaces or four 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Model 2C1 is available with a base of 500 streaming licenses and supports a maximum of 750 streams. Table 8 shows the hardware bundle contained in Model 2C1.

Table 8.   Cisco CDE220, Model 2C1 Configuration

	Cisco CDE220 2C1
Storage	292 GB (4 x 73GB SAS)
Memory	16 GB DRAM
Network interfaces, copper model	Four 10/100/1000BASE-T
Network interfaces, fiber model	Four 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Entry-Level Cisco TV Streamer (CDE220, Model 2S1)

The Cisco CDE220, Model 2S1 is designed for an entry-level Cisco TV Streamer Application. It uses flash SSD technology for internal log drives and video storage. It can be purchased with either four 10/100/1000BASE-T interfaces or four 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Model 2S1 is available with a base of 500 streaming licenses and supports a maximum of 750 streams. Table 9 shows the hardware bundle contained in Model 2C1.

Table 9.   Cisco CDE220, Model 2S1 Configuration

	Cisco CDE220 2S1
Storage	512 GB (4 x 160GB** SSD)
Memory	16 GB DRAM
Network interfaces, copper model	Four 10/100/1000BASE-T
Network interfaces, fiber model	Four 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T
Power consumption	300W peak

**20% of drive capacity reserved for administrative functions

Dense Cisco TV Streamer (CDE220, Model 2C2)

The Cisco CDE220, Model 2C2 is designed for a dense Cisco TV Streamer Application. It can be purchased with either twelve 10/100/1000BASE-T interfaces or eight 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Model 2C2 is available with a base of 1000 streaming licenses and supports a maximum of 2500 streams. Table 10 shows the hardware bundle contained in Model 2C2.

Table 10.   Cisco CDE220, Model 2C2 Configuration

	Cisco CDE220 2C2
Storage	876 GB (12 x 73GB SAS)
Memory	32 GB DRAM
Network interfaces, copper model	Twelve 10/100/1000BASE-T
Network interfaces, fiber model	Eight 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Dense Cisco TV Streamer (CDE220, Model 2S3)

The Cisco CDE220, Model 2S3 is designed for a dense Cisco TV Streamer Application. It uses flash SSD technology for internal log drives and video storage. It can be purchased with either twelve 10/100/1000BASE-T interfaces or eight 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Model 2S3 is available with a base of 1000 streaming licenses and supports a maximum of 2500 streams. Table 11 shows the hardware bundle contained in Model 2S3.

Table 11.   Cisco CDE220, Model 2S3 Configuration

	Cisco CDE220 2S3
Storage	1546 GB (12 x 160GB** SSD)
Memory	32 GB DRAM
Network interfaces, copper model	Twelve 10/100/1000BASE-T
Network interfaces, fiber model	Eight 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T
Power consumption	325W peak

**20% of drive capacity reserved for administrative functions

Entry-level Cisco Integrated TV Streamer-Vault (CDE220, Model 2D1)

The Cisco CDE220, Model 2D1 is designed for an entry-level Cisco Integrated Streamer-Vault (ISV) Application. It is available with a base of 300 streaming licenses and 2000 hours of storage. Additional licenses can be purchased for a maximum of 750 streams and 3000 hours of storage. Model 2D1 can be purchased with either four 10/100/1000BASE-T interfaces or four 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Table 12 shows the hardware bundle contained in Model 2D1.

Table 12.   Cisco CDE220, Model 2D1 Configuration

	Cisco CDE220 2D1
Storage	6 TB (6 x 1TB SATA)
Memory	16 GB DRAM
Network interfaces, copper model	Four 10/100/1000BASE-T
Network interfaces, fiber model	Four 1000BASE-SX

	LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Cisco Internet Streamer and Service Router (CDE220, Model 2G2)

The Cisco CDE220, Model 2G2 is designed for Cisco Internet Streamer Applications. It can be purchased with either eight 10/100/1000BASE-T interfaces or eight 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Table 13 shows the hardware bundle contained in Model 2G2.

Table 13.   Cisco CDE220, Model 2G2 Configuration

	Cisco CDE220 2G2
Storage	6 TB (12 x 500GB SATA)
Memory	16 GB DRAM
Network interfaces, copper model	Eight 10/100/1000BASE-T
Network interfaces, fiber model	Eight 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Cisco CDE420

Figure 4.   Cisco CDE420

The Cisco CDE420 (Figure 4) is a high-end appliance that is available in two models:

- Model 4A: High-end Cisco Vault Application
- Model 4G: Cisco Content Cache Application

The Cisco CDE420 is available with redundant AC or DC power supplies, as well as with a choice of copper or fiber interfaces. See Table 14 for specifications.

Table 14.   Technical Specifications for Cisco CDE420

	Cisco CDE420
Rack units	4
Storage	Refer to the model-specific details below
Memory	Refer to the model-specific details below
Network interfaces	Refer to the model-specific details below
Other interfaces	Console port; two USB ports
Compact flash memory	8 GB
Hardware RAID	Yes

Internal log drives	Dual 146 GB SAS
Optical drive	None
Power	100–240 VAC or –48 VDC redundant power supplies included in all models
Power rating	900W peak
Power consumption	560W idle 900W spin-up
Operating humidity range	8 to 90% non-condensing
Non-operating humidity range	5 to 95% non-condensing
Operating temperature	10 to 35°C (50 to 95°F)
Non-operating temperature	–40 to 70°C (–40 to 158°F)
Altitude	0 to 4000 m
Dimensions (H x W x D)	7.0 x 17.2 x 26 in. (17.8 x 43.7 x 66.0 cm)
Weight (fully configured)	96 lbs
Approvals: Safety	UL/CSA 60950-1
Approvals: EMC	FCC Part 15 (CFR 47) Class A

High-End Cisco Vault (CDE420, Model 4A)

The Cisco CDE420, Model 4A is designed for the high-end Cisco Vault Application. It can be purchased with either eight 10/100/1000BASE-T interfaces or eight 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Table 15 shows the hardware bundle contained in Model 4A.

Table 15.   Cisco CDE420, Model 4A Configuration

	Cisco CDE420 4A
Storage	24 TB (24 x 1 TB SATA)
Memory	32 GB DRAM
Network interfaces, copper model	Eight 10/100/1000BASE-T
Network interfaces, fiber model	Eight 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Cisco Caching Node (CDE420, Model 4G)

The Cisco CDE420, Model 4G is designed for the Cisco Content Cache Application. It can be purchased with either twelve 10/100/1000BASE-T interfaces or twelve 1000BASE-SX interfaces. In both cases two 10/100/1000BASE-T interfaces are available for management functions. Table 16 shows the hardware bundle contained in Model 4G.

Table 16.   Cisco CDE420, Model 4G Configuration

	Cisco CDE420 4G
Storage	10 TB (24 x 450 GB SAS)
Memory	32 GB DRAM
Network interfaces, copper model	Twelve 10/100/1000BASE-T
Network interfaces, fiber model	Twelve 1000BASE-SX LC connectors
Management interfaces, all models	Two 10/100/100BASE-T

Ordering Information

Table 17 lists the Cisco CDE product descriptions and part numbers required to place an order. Before you place an order, please check the availability of the part number by checking the Cisco Global Price List. To place an order, visit the Cisco Ordering Home Page and refer to Table 17.

Table 17.   Ordering Information

Product	Model Number	Part Number	Product Description
CDE111		CDE111-2-146TXA-K9	1RU Engine, 1x 146G HDD GE TX, AC, 1 Content Del. Appl
		CDE111-2-146TXD-K9	1RU Engine, 1x 146G HDD GE TX, DC, 1 Content Del. Appl
CDE110-2		CDE110-2-146TXA-K9	1RU Engine, 3x146G HDD GE TX, AC, 1 Content Del. Appl
		CDE110-2-146TXD-K9	1RU Engine, 3x146G HDD GE TX, DC, 1 Content Del. Appl
CDE205		CDE205-2-500TX-K9	2RU Engine, 8GB RAM, 3x 500GB 3.5" SATA HDD, incl. 1 CDA
CDE220	(2RU Base System)	CDE220-K9	2RU Content Delivery Engine base system, 8GB Boot Flash
	CDE220-2A-C	CB-32-12A1T-2QTX	CDE Bundle, 32GB, 12x 1TB SATA, 2x Quad Copper, 1 CDA
	CDE220-2C1-C	CB-16-4S73-1QTX	CDE Bundle, 16GB, 4x 73GB 2.5" SAS, 1x Quad Copper, 1 CDA
	CDE220-2S1-C	CB-16-4F160-1QTX	CDE Bundle, 16GB, 4x 160GB 2.5" SSD, 1x Quad Copper, 1 CDA
	CDE220-2C2-C	CB-32-12S73-3QTX	CDE Bundle, 32GB, 12x 73GB 2.5" SAS, 3x Quad Copper, 1 CDA
	CDE220-2S3-C	CB-32-12F160-3QTX	CDE Bundle, 32GB, 12x 160GB 2.5" SSD, 3x Quad Copper, 1 CDA
	CDE220-2D1-C	CB-16-6A1T-1QTX	CDE Bundle, 16GB, 6x 1TB SATA, 1x Quad Copper, 1 CDA
	CDE220-2G2-C	CB-16-12A500-2QTX	CDE Bundle, 16GB, 12x 500GB SATA, 2x Quad Copper, 1 CDA
	CDE220-2A-F	CB-32-12A1T-4DSX	CDE Bundle, 32GB, 12x 1TB SATA, 4x Dual Fiber, 1 CDA
	CDE220-2C1-F	CB-16-4S73-2DSX	CDE Bundle, 16GB, 4x 73GB 2.5" SAS, 2x Dual Fiber, 1 CDA
	CDE220-2S1-F	CB-16-4F160-2DSX	CDE Bundle, 16GB, 4x 160GB 2.5" SSD, 2x Dual Fiber, 1 CDA
	CDE220-2C2-F	CB-32-12S73-4DSX	CDE Bundle, 32GB, 12x 73GB 2.5" SAS, 4x Dual Fiber, 1 CDA
	CDE220-2S3-F	CB-32-12F160-4DSX	CDE Bundle, 32GB, 12x 160GB 2.5" SSD, 4x Dual Fiber, 1 CDA
	CDE220-2D1-F	CB-16-6A1T-2DSX	CDE Bundle, 16GB, 6x 1TB SATA, 2x Dual Fiber, 1 CDA
	CDE220-2G2-F	CB-16-12A500-4DSX	CDE Bundle, 16GB, 12x 500GB SATA, 4x Dual Fiber, 1 CDA
CDE420	(4RU Base System)	CDE420-K9	4RU Content Delivery Engine base system, 8GB Boot Flash
	CDE420-4A-C	CB-32-24A1T-2QTX	CDE Bundle, 32GB, 24x 1TB SATA, 2x Quad Copper, 1 CDA
	CDE420-4G-C	CB-32-24S450-3QTX	CDE Bundle, 32GB, 24x 450GB SAS, 3x Quad Copper, 1 CDA
	CDE420-4A-F	CB-32-24A1T-2QSX	CDE Bundle, 32GB, 24x 1TB SATA, 2x Quad Fiber, 1 CDA
	CDE420-4G-F	CB-32-24S450-3QSX	CDE Bundle, 32GB, 24x 450GB SAS, 3x Quad Fiber, 1 CDA

Table 18.   Hardware Options and Spares

Product	Part Number	Product Description
CDE110/CDE111	CDE-PWR-11X-A	AC Power Supply for CDE110
	CDE-PWR-11X-D	DC Power Supply for CDE110
	CDE-PWR-11X-A=	AC Power Supply for CDE110
	CDE-PWR-11X-D=	DC Power Supply for CDE110
	CDE-RCK-EIA19=	Spare rack mount kit, EIA 19 inch for the Cisco CDE110
	CDE-RCK-EIA23ETSI=	Spare rack mount kit, EIA 23 inch and ETSI for the Cisco CDE110
	CDE-HDD-SAS-146=	Spare 146GB SAS Disk Drive for CDE110
CDE205/CDE220	CDE2-PWR-2U-AC	AC Power Supply for Gen 2 2RU Content Delivery Engine
	CDE2-PWR-2U-DC	DC Power Supply for Gen 2 2RU Content Delivery Engine
	CDE2-PWR-2U-AC=	Spare AC Power Supply for Gen 2 2RU Content Delivery Engine

	CDE2-PWR-2U-DC=	Spare DC Power Supply for Gen 2 2RU Content Delivery Engine
CDE420	CDE2-PWR-4U-AC	AC Power Supply for Gen 2 4RU Content Delivery Engine
	CDE2-PWR-4U-DC	DC Power Supply for Gen 2 4RU Content Delivery Engine
	CDE2-PWR-4U-AC=	Spare AC Power Supply for Gen 2 4RU Content Delivery Engine
	CDE2-PWR-4U-DC=	Spare DC Power Supply for Gen 2 4RU Content Delivery Engine
	CDE2-HDD-SAS-450=	Spare 450GB SAS Drive for Gen 2 Content Delivery Engine
CDE205/CDE220/CDE420	CDE2-HDD-SATA-1T=	Spare 1TB SATA Drive for Gen 2 Content Delivery Engine
	CDE2-HDD-SATA-500=	Spare 500GB SATA Drive for Gen 2 Content Delivery Engine
	CDE2-HDD-SAS-73=	Spare 73GB SAS Drive for Gen 2 Content Delivery Engine
	CDE2-SSD-MLC-160=	Spare 160GB SSD for Gen 2 Content Delivery Engine

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, refer to Cisco Technical Support Services or Cisco Advanced Services.

For More Information

For more information about the Cisco Content Delivery System or the Cisco Content Delivery Engines, visit: www.cisco.com/go/cds.

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