


Cloud Stone CS16909E Core Datacenter Chassis Switch

Product Overview

DCN CS16909E is core chassis switch designed to meet the requirement of mission-critical network with high performance, exceptional availability and outstanding scalability. The CS16909E serves campus and data center networking requirements, supports flexible network policy deployment, and builds business defined tailored network for users

Model and Appearance of CS16909E

Appearance	Description
	<p>Number of Management Engine slots: 2 Number of Switching Fabric slots: 4 Number of Business slots: 9 Port density per chassis: 432 x GE, 432 x 10GE, 144 x 40GE Dimensions (W x D x H): 444mm x 753mm x 620.8mm(14U) Switching Capacity: 10.24Tbps Forwarding performance: 7618Mpps</p>

Blades

Appearance	Description
 <p>M16K-SUP</p>	Management engine blade
 <p>M16K-FC</p>	Switching fabric blade Support maximum 4 M16K-FC blade N+1 redundancy
 <p>M16K-16Q</p>	Business blade for CS16K Series 16*40G (QSFP+) ports
 <p>M16K-24T24S2XS</p>	Business blade for CS16K Series 24*GT + 24*SFP + 2*10G (SFP+) ports
 <p>M16K-48XS2Q</p>	Business blade for CS16K Series 48*10G (SFP+) ports + 2*40G (QSFP+) ports
 <p>M16K-PAC</p>	Power supply module Rated input voltage range: High range 200~240V AC 50/60Hz; Low range 100~127V AC 50/60Hz; Maximum input voltage range: High range 180~264V AC 47/63Hz; Low range 90~140V AC 47/63Hz; Maximum input current: 14A (input voltage: 180V AC)/15 A (input voltage: 90V AC) Maximum output current: 30A (rated input voltage: 220V AC)/22 A (rated input voltage: 110V AC) Rated output voltage: 12V/54V DC Rated output power: 1600W N+M redundancy

Features and Highlights

CLOS Non-blocking Architecture

CS16909E deploys the advanced CLOS multi-plane, multi-stage switching architecture, which achieves complete separation of the forwarding and control planes. With independent fabric engines and control engines, the switching architecture ensures all ports are running at full line rate in a non-blocking manner. The solution continues to strengthen the bandwidth upgrade and business supporting capacities.

Adaptive Campus & IDC network

The Campus network prefers traditional 3-Layer Infrastructure, to connect PC, mobile device, with ‘smaller layer 2 but bigger layer 3’ hardware tables, like IPv6 routing and MPLS tables. But IDC network often prefers 2-Layer Infrastructure, to connect server, storage. It needs ‘bigger layer 2 but smaller layer 3’ hardware tables. CS16909E supports assigning table resources dynamically, with abundant datacenter features, to meet both requirements from Campus and IDC Infrastructure.

Adaptive Traditional business & SDN business network

CS16909E supports OpenFlow1.3 for the SDN network (Software Defined Network), which can make the upgrade smoothly from the traditional network to the SDN network, to reduce the TCO.

14U Compact design

With a 14U compact design, 3 pieces of CS16909E can be installed in one cabinet, delivering a maximum of 432 40GE ports or a maximum of 1296 10GE ports, which makes the highest port density in the industry.

Three separate planes (management, control, and switching)

CS16909E has three separate planes: management plane, control plane, and switching the plane for system robust and high availability. If one of them crashed, it won't impact other businesses.

Dual Power Supply Planes

CS16909E adopts A+B Dual Planes of Power Supply, supporting 1+1 redundancy and N+N redundancy in one single Power Supply.

Specifications

Items	CS16909E
Slot	2 management slots 4 fabric card slots 9 business slots
Business Ports	1GE: MAX 432 10G: MAX 432 40G: MAX 144
Performance	
Switching Capacity	10.24Tbps
Forwarding Rate	7618Mpps
MAC Table	288K-400K
Routing Table	IPv4 8K / IPv6 4K
VLAN Table	4K
Features	
System Architecture	CLOS
Forwarding	Storage and Forwarding

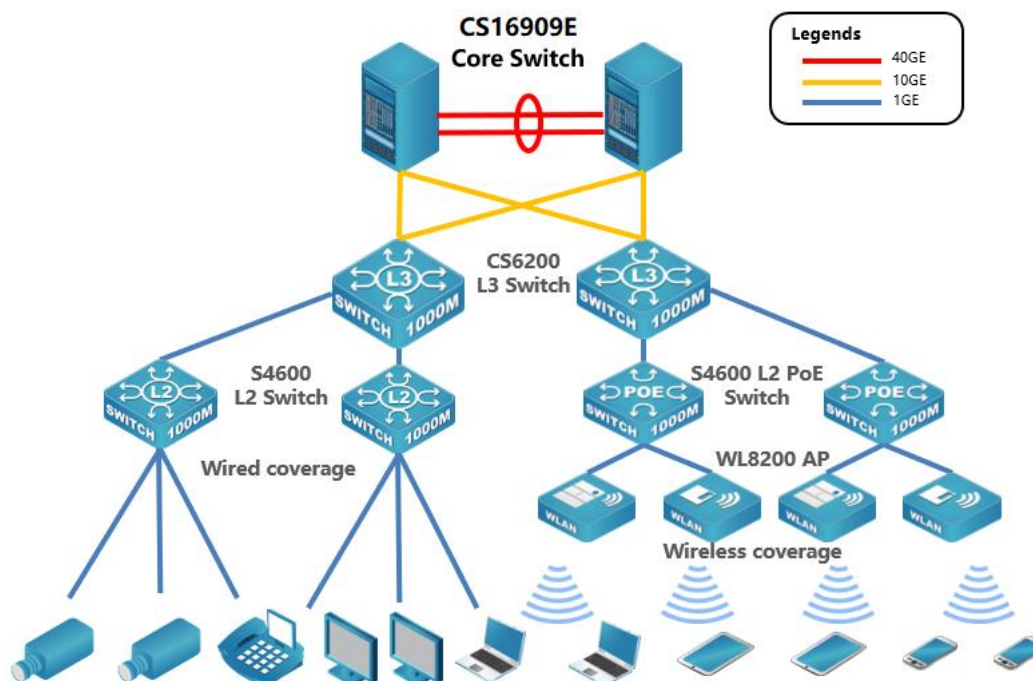
L2 Features	IEEE802.3(10Base-T) IEEE802.3u(100Base-TX) IEEE802.3z(1000BASE-X) IEEE802.3ab(1000Base-T) IEEE802.3ae(10GBase) Loopback Interface 9k Jumbo Frame Port Loopback Detection LLDP and LLDP-MED UDLD	
	LACP 802.3ad, max 128 group trunks with max 8 ports for each trunk Link Aggregation by manual	
	IEEE802.1d(STP) IEEE802.1w(RSTP) IEEE802.1s(MSTP) Max 48 instances Root Guard BPDU Guard BPDU Forwarding	
	One to one or any to one mirror Mirror cross-business cards RSPAN	
	IGMP v1/v2/v3, IGMP v1/v2/v3 Snooping, IGMP Proxy ICMPv6, ND, ND Snooping, MLDv1/v2, MLDv1/v2 Snooping	
	GVRP Port/ MAC/ IP Segment/ Portocol/ Voice/ Private/ VLAN support Multicast VLAN Register/MVR for IPv4 and IPv6	
	Port-based 802.1Q, 4K VLAN QinQ and Selective QinQ	
	DFI/Broadcast/Multicast Storm control	
	Binding(IPv4/IPv6), IP Source Guard MAC Filter, MAC Limit	
	IP Source Guard	
	Port Binding(IPv4/IPv6)	
	Support Smart Link (or named Flexible Link)	
	L3 Features	IP Protocol(IP support both IPv4 and IPv6) Default Routing, Static Routing, Blackhole Route, VLSM and CIDR, RIPv1/V2, OSPFv2, BGP4, support MD5 Authentication LPM Routing OSPFv3, BGP4+ support
		Policy-based Routing(PBR) for IPv4 and IPv6
		Support 4 byte BGP AS number
Support GR for OSPF and BGP		
VRRP, VRRP v3		
DVMRP, PIM-DM, PIM-SM, PIM-SSM MSDP(Multicast Source Discovery Protocol) Static Multicast Route Multicast Edge Configure Anycast RP for IPv4 and IPv6 PIM-SM/DM/SSM for IPv6, 6 to 4 Tunnels, configured Tunnels, ISATAP Multicast Receive Control Illegal Multicast Source Detection		
URPF for IPv4 and IPv6		
BFD		
ECMP(Equal Cost Multi-Path)with maxim 8 groups		

	ARP Guard, Local ARP Proxy, Proxy ARP, ARP Binding, Gratuitous ARP, ARP Limit
Data Center features	VSF SDN OpenFlow1.0/1.3* (support open controller Opendaylight, Floodlight, Ryu, Pox, etc.)
Tunnel Technical	Manual Configure IPv4/IPv6 tunnel 6to4 Tunnel ISATAP Tunnel GRE Tunnel
MPLS	255 VRF/VFI LDP L3 MPLS VPN L2 VLL/VPLS MPLS/VPLS Proxy Cross-Domain MPLS VPN MPLS QoS
QoS	8 Hardware Queues per port
	Traffic Classification based on IEEE 802.1p, ToS, port, and DiffServ
	SP, WRR, SWRR
	Traffic Shaping
	Rate Limit for Import and Export
	PRI Mark/Remark
	WRED
2 buckets with dual-rate and triply color mark	
ACL	Standard and Expanded ACL
	IP ACL and MAC ACL,
	ACL based on source/definition IP, MAC, L3 protocol, TCP/UDP port number, IP PRI(DSCP, ToS, Precedence), Time
	Ingress and Egress ACL
ACL-X	Time-Based Security Auto-negotiation
	ACL rules can be configured to port, VLAN
	Can be used for QoS Classification
Anti-attack and Security	S-ARP: ARP Inspection, defense ARP-DOS Attack, and Address Clone
	Anti-Sweep: prevent Ping Sweep
	S-ICMP: resist PING-DOS attack, ICMP unreachable attack
	S-Buffer: prevent DDOS attack
	Switch engine CPU protection
	Key message priority: secure processing of key legal messages
	Port credit: inspect illegal DHCP Server, Radius Server. Connection via credit port only
	Support URPF, avoid IP address clone
	All the above technologies efficiently prevent various DOS attack (e.g. ARP, Synflood, Smurf, ICMP attack), support ARP monitoring, defense Worm, Bluster, check sweep and raise alarm
DHCP	Support DHCP Client, Relay, Snooping, Option 82
	DHCP Server for IPv4 and IPv6
	DHCP v6 and DHCP Snooping v6
DNS	DNS Client
	DNS Proxy
Ring Protocol	MRPP (Multi-Ring Protect Protocol)

Access security	802.1X Port, MAC, username based Account based on time length and traffic Guest VLAN and Auto VLAN Work with a private client can manage P2P traffic MAC Based AAA(Client free access) PPPOE/PPPOE+ forwarding
AAA	RADIUS AAA for IPV4 and IPv6 TACACS+ AAA
Configuration and Management	CLI, Telnet, WEB, SSH and SSL
	SNMPv1/v2c/v3
	MIB
	RMON 1, 2, 3, 9
Power Saving Technology	Reduce power consumption, improve cooling and reliability Flexible fan and port management to save power consumption
Syslog	Save Syslog and Trap to local device or server Max. 8 servers for Syslog or Trap receive
User Management	Strict Access Control by ACL and QoS
	Access the switch through AAA or Local Authentication
Time Setting	SNTP and NTP
	Setup Time Zone and Summer Time
Supervision and Trouble Shooting	Supervise abnormality of task, memory, CPU, stack, switch chip, temperature and raise alarm Sflow Ping and Traceroute command
Configuration Management	Configuration file storage Command operation log Dual Images and files startup FTP/TFTP server or client upgrade
OAM	802.3ah
	802.1ag
Physical	
Dimension(W x D x H)	444mm×753mm ×620.8mm (14U)
Relative Humidity	10%~90%, non-condensing
Storage Temperature	-40°C~70°C
Operating Temperature	0°C~45°C
Power supply	AC: Input 90~264V, 50~60 Hz:

Typical Application

Cloud Stone CS16909E switch could be deployed on the core layer of the campus network, education network, and enterprise data center network. The typical application scenario is shown below.



Order Information

Product	Description
CS16909E	CS16909E dual-stack backbone routing switch chassis (2 management slots, 4 fabric card slots, and 9 business slots), standard with 4 fan trays. Default chassis has no fabric, management blade, and power module.
M16K-SUP	CS16909E management blade. Minimum one fabric card to operate CS16909E.
M16K-FC	CS16909E switch fabric blade; supports up to 4 switch fabric blades. Minimum 1 fabric blade needs to be installed.
M16K-16Q	CS16909E blade with 16*40GbE (QSFP+) ports
M16K-48XS2Q	CS16909E blade with 48*10GbE (SFP+) and 2*40GbE (QSFP+) ports
M16K-24T24S2XS	CS16909E blade with 24*10/100/1000Base-T, 24*GbE (SFP) and 2*10GbE (SFP+) ports
M16K-PAC	CS16909E AC power supply module (1600w). Minimum 1 power supply needs to be installed.