



OmniSwitch 8800

Delivering the Best Availability
for the Enterprise



The OmniSwitch 8800 is a powerful, intelligent multi-layer switch that provides the ultimate solution for network performance and availability. The premier platform in Alcatel's next generation OmniSwitch 6600/7000/8000 product family, the OmniSwitch 8800 delivers industry-best features and functionality with unprecedented port density and throughput for IP Communications, core implementations, and mission-critical environments. It is an industry leading high-density, high-capacity platform that supports up to 384 ports of Gigabit Ethernet in less than 40 inches of rack space. The OmniSwitch 8800 provides non-blocking 10 Gigabit Ethernet connectivity, the highest availability for the enterprise, multi-layer security, and intelligent switching and routing services – all at wire speed.

The OmniSwitch 8800 provides numerous high-speed switching features and seamless connectivity between buildings, campuses, and POPs. The OmniSwitch 8800 is well suited for many environments, including:

- Enterprise core and backbone applications
- High-density Gigabit Ethernet aggregation
- Large data centers and server farms
- Enterprise Gigabit Ethernet MANs

OmniSwitch 8800

The OmniSwitch 8800 is an 18 slot high-density chassis that supports an aggregate switch port capacity of 384 full duplex Gigabit Ethernet. Designed for continuous operation, it has two center slots dedicated to chassis management modules (CMM) for redundant configurations, with the OmniSwitch 8800 providing a fabric capacity of 512 Gbps. The OmniSwitch 8800 is built to handle the toughest traffic requirements and the most demanding applications requiring 10 Gigabit Ethernet, offering:

- High density, high-capacity switching platform
- Wire-speed intelligent switching/routing
- Smart continuous switching
- Wire-speed server load balancing
- Multi-layer security

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Highest Availability for the Enterprise

Today's successful business needs a network that can deliver continuous operation and provide industry-best availability to support the demands of IP Communications and mission-critical applications. The highest availability for the enterprise ensures that users have constant access to resources and services at all times. To ensure the highest levels of reliability, the OmniSwitch 8800 has been designed with a distributed architecture to enable unprecedented availability features, including full redundancy and resiliency.

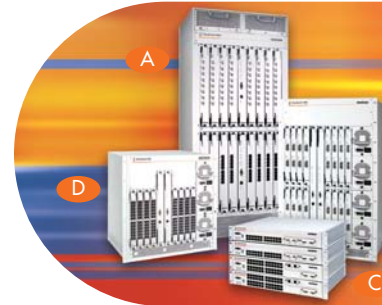
A unique feature of the OmniSwitch 8800 is smart continuous switching, which provides continuous operation in the event of a failure. With smart continuous switching, all source learning, Spanning Tree functions, and established routes are distributed throughout the network interface modules instead of being centralized in a core-processing engine. In the event of a management module failure, the system automatically switches over to the hot standby management module with no loss of connections or fabric capacity. Existing L2/L3 traffic, including voice conversations, will continue seamlessly without interruption. Plus, the Alcatel OmniSwitch 8800 is capable of creating new connections during this failover – an industry first.

Network resiliency is a critical part of network availability. The OmniSwitch 8800 provides extensive support including advanced routing redundancy protocols, load sharing, and mechanisms for fast reconfiguration of links between switches, servers, and other network devices.

The OmniSwitch 8800 provides fully redundant and resilient system components to ensure continuous operation. This includes:

- Redundant chassis subsystems
- Hot swappable modules
- Load-sharing components
- "Hitless loading" of optional advanced security software without re-booting
- Downloadable bootstrap
- Image rollback to automatically re-load previous configurations and software versions

Alcatel's OmniSwitch 8800 system delivers unmatched availability and functionality – all at an enterprise price.



- A OmniSwitch 8800
- B OmniSwitch 7800
- C OmniSwitch 6600 series
- D OmniSwitch 7700



Multi-layer Security

Enterprises are becoming borderless as they open their networks to e-business and external users. This requires a network to provide easy access to users yet implement extensive security that can be managed across a global enterprise. The OmniSwitch 8800 provides multi-layer security with a vast arsenal of security features that can be implemented at the edge, the core, and throughout the network.

These include:

- User authentication
- VLANs
- Access control lists (ACLs)
- Authenticated switch access
- Encryption
- NAT/PAT
- Denial of service protection

Multi-layer security enables the building of sophisticated hardware and software-based solutions that can be integrated with policy-based management and other technologies such as smart cards, PKI, and biometrics for enhanced security implementations. For secure management, there are many features integrated into the architecture including authenticated user access, SNMPv3 and SSL for encrypted sessions, and partitioned management for multi-tiered access and granular network administration.

Distributed Intelligence

Distributed intelligence ensures that users and applications get the priority and performance they need with ease-of-use management that extends across the enterprise. The OmniSwitch 8800 features state-of-the-art ASIC-based technology for intelligent, wire-speed everything including switching, routing, ACLs, QoS, and load balancing.

The OmniSwitch 8800 provides application-aware switching for layers 2, 3, and 4 and the most advanced classification, prioritization, and queuing schemes. It also supports industry classification standards including 802.1Q/p, TOS, and DiffServ, and is enhanced with complementary features such as extensive QoS mappings and re-tagging of prioritization. The OmniSwitch 8800 is well adapted to server farm applications with embedded server load balancing. It requires no specialized hardware or software and operates at wire-speed – another industry first.

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OneTouch Manageability

OmniVista, the Alcatel voice and data network management platform, features OneTouch manageability. With OneTouch manageability network managers are able to quickly configure and manage the switches in their network. For example, OneTouch QoS, a feature of the Alcatel policy management software, allows network managers to quickly assign QoS priorities to network traffic based on the characteristics of different applications. With "one-click," every Alcatel switch in the network is automatically configured.

The OmniSwitch 8800 offers service-level and policy-based configurations with support for LDAP directories enabling flexible integration with existing platforms and allowing extended offerings. RMON support is also included with a choice of interfaces for administrators – a command line interface (CLI), SNMPv3, a fully editable text-based configuration file, and WebView, our standard web-browser interface.

Dynamic Mobility

Users are becoming increasingly mobile creating challenges for administrators. The OmniSwitch 8800 features dynamic mobility, which simplifies the task of managing remote and mobile users. Users can move anywhere in the network without having to reconfigure each time. They can change locations, connect to a new network port, and have access to all their resources without administrator intervention. Dynamic mobility can be fully integrated with authentication to provide secure mobility across an entire network. The OmniSwitch 8800 provides the industry's most extensive VLAN capabilities enabling flexible support for mobile user environments.

Features

- 10/100/1000/10 Gigabit Ethernet non-blocking, full-duplex
- Highest availability with smart continuous switching
- Multi-layer security (ACLs, authenticated services, DoS protection, and SSL)
- Authentication services and authenticated VLANs with proprietary extensions and 802.1x standard support
- Enhanced ACLs
- NAT and PAT
- Distributed intelligence
- Wire-speed everything
- Application-aware switching (L2/L3/L4 QoS classification)
- Embedded wire-speed server load balancing
- IP/IPX routing (RIP v1/v2, OSPF, BGP-4, DVMRP, PIM-SM, RIP/SAP)
- IP multicast switching (multicast isolation within VLANs)
- IPv6 support*
- Dynamic mobility with extensive VLAN support

*Contact for availability



Chassis

The OmniSwitch 8800 is a high-density system with an 18-slot chassis. The chassis management module has two interface slots dedicated to it for resiliency. The switch fabric can accommodate up to five fabric modules for complete N+1 resiliency. A minimum of four switch fabric modules is required to operate.

Interface Modules

The OmniSwitch 8800 switches support an extensive array of 10/100 Mbps, Gigabit, and 10 Gigabit Ethernet interface modules and port densities.

10 Gigabit Ethernet network interface module (10GNI)

One port 10 Gigabit Ethernet module with pluggable Optical Module (Xenpak) for 10GBASE-X applications

- Compliant with IEEE 802.3ae standard
- Optional optical resiliency for automatic link recovery in case of fiber integrity incident
- Can accommodate various Optical Modules (Xenpak) for different connectivity options and fiber infrastructure

Gigabit network interface modules (GNI)

Eight port 1000BaseX Ethernet module with eight Mini-GBIC ports

24 port 1000BaseX Ethernet module with 24 Mini-GBIC ports

Both modules support Mini-GBIC connectivity with

- SX – 1000BaseSX over multimode fiber
- LX – 1000BaseLX over single mode fiber
- LH – 1000BaseLH Long reach over single mode fiber up to a maximum distance of 70 km

Eight port 1000BaseT Ethernet module with RJ-45 connectors

- 1000BaseT supported
- 24 port 10/100/1000BaseT Ethernet module with RJ-45 connectors
- Supports auto-negotiation and auto-sensing on 10/100/1000 Mbps
 - Requires four pairs of Cat5/Cat5e grade cabling minimum, for 1000BaseT

Ethernet Network Interface module (ENI)

- 24 port 10/100 Mbps RJ-45 Ethernet module

Technical Summary

OmniSwitch 8800 Switch Architecture

Fabric capacity: 512 Gbps

Aggregate switch port capacity: 384 full duplex Gigabit Ethernet

Number of slots

- Interface module: 18 slots; two for management modules and 16 for interface modules
- Switch fabric: five slots with N+1 resiliency, requires a minimum of 4

Redundant, hot-swappable/hot insertable

- Chassis management module (CMM)
- Fan tray
- Power supplies
- Switching fabric module

Hot-swappable/hot insertable

- Network interface (NI) modules

Passive midplane

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OmniSwitch 8800 interface modules	Module Port Count	OS 8800 Port Capacity (max)
10 Gigabit Ethernet with flexible Optical Module - Xenpak optic (10GBASE-SR,LR,ER)	1	16
Wire speed Gigabit Ethernet with Mini-GBIC (1000BASE-SX, LX, LH)	8	128
Wire speed Gigabit Ethernet over twisted pairs with RJ-45 connector	8	128
High-density Gigabit Ethernet with Mini-GBIC (1000BASE-SX, LX, LH)	24	384
High-density Gigabit Ethernet over twisted pairs with 10/100/1000BaseT support over RJ-45 connector	24	384
10/100 Mbps Ethernet over twisted pairs with RJ-45 connector	24	384

Number of power supplies supported

- OmniSwitch 8800 – up to four; three minimum required for power; one optional for N+1 resiliency in some configurations

Input voltage and current ratings

- 180-270 VAC input voltage
- 7.3 amps at 220 VAC
- 47-63 Hz
- -48 VDC input power

System Features

- Distributed layer 2 and layer 3 services and processing
- Provides non-blocking store-and-forward switching fabric
- Wire speed layer 2
- Wire speed layer 3 IP and IPX
- Wire speed ACL (access control lists)
- Multicast multi-layer switching
- Wire-speed server load balancing

Hardware Features

- 10 Gigabit Ethernet 802.3ae standard compliant
- 10/100/1000 Ethernet auto-sensing and auto-negotiation
- Multi-port port mirroring with reverse-path data
- 802.3ad and Alcatel's OmniChannel port aggregation with port failure recovery and load balancing based on MAC addresses
- Up to 16 aggregates per switch
- Up to 16 links per aggregate
- Per-port flood limiting
- Provides hardware support for IP multicast switching



VLAN Support

- Up to 4,096 802.1Q tag value support
- Configuration per port, MAC address, layer 3-based, port binding, protocol type, DHCP, and custom
- Authenticated and policy-based VLANs
- Hardware support for 802.1p-tagged frames, including "hybrid" and "transparent" ports

Advanced QoS Features

- Hardware priority queuing with four priority levels per port
- Up to 2,048 queues per interface module
- Setting of 802.1p, IP TOS, and/or DiffServ control points on output
- Classification based upon MAC DA, IP protocol, IP SA/DA, TCP/UDP SA/DA, destination slot/interface, destination interface type, destination VLAN, multicast
- Output bandwidth shaping using hardware-controlled queue scheduling based on deficit round robin
- Trusted and not trusted ports
- WRED

QoS mapping and prioritization re-tagging for:

- 802.1p to 802.1p, TOS and DiffServ
- TOS to TOS, 802.1p and DiffServ
- DiffServ to DiffServ, 802.1p and TOS

Layer 3 Server Load Balancing

- Supports any combination of servers, up to a total of 75 servers per system
- Wire rate on all network interfaces

Routing Protocol Support

- RIP v1/v2
- OSPFv2
- OSPF ECMP
- OSPF Graceful Restart
- BGP-4
- DVMRP
- PIM-SM
- IGMP v1/v2/v3
- VRRP
- RDP

Physical Dimensions

Width: 17.40" (44 cm)

Height: 38.40" (97 cm)

Depth: 17.30" (44 cm)

Weight: 220 lbs (100 kg) fully loaded

Total slots: 18

Can be rack mounted in 19" and 23" racks

Operating Environment

Storage temperature: 14 ~ 158 F (-10 ~ 70 C)

Operating temperature: 32 ~ 113 F (0 ~ 45 C)

Humidity: 0% to 95% (non-condensing)

Operating altitude: Sea level to 10,000 feet (3 km)

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Standards and Certifications

Standards (abridged)

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1D-1998 Priority and Dynamic Multicast Filtering
- IEEE 802.1p
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1s Multiple Spanning Tree*
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree
- IEEE 802.1x Port based Network Access Control and 802.1X-PAE-MIB
- Extended 802.1x Authenticated VLAN (multiple MAC, multiple VLANs per port)
- IEEE 802.3 10BaseT Ethernet
- IEEE 802.3ad Link Aggregation
- IEEE 802.3ae 10 Gigabit Ethernet standard
- IEEE 802.3u 100BaseTX, 100BaseFX Fast Ethernet
- IEEE 802.3x FullDuplex with Flow Control
- IEEE 802.3z 1000BaseX Gigabit Ethernet
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 Telnet
- RFC 855 Telnet Option
- RFC 896 Congestion control in IP/TCP network
- RFC 903 Reverse ARP
- RFC 925 Multi-LAN ARP/Proxy ARP
- RFC 951 BOOTP*
- RFC 1027 Proxy ARP
- RFC 1058 RIPv1
- RFC 1075 DVMRPv2
- RFC 1112 IGMP- Hosts extensions for IP Multicasting
- RFC 1122 Requirements for Internet Hosts
- RFC 1155 SMIv1
- RFC 1156 TCP/IP MIB
- RFC 1191 Path MTU Discovery
- RFC 1195 Use of OSI ISIS Routing in TCP/IP*
- RFC 1212 Concise MIB definitions
- RFC 1213 MIB for Network Management of TCP/IP based internets (MIB II)
- RFC 1215 Convention for defining traps
- RFC 1256 ICMP Router Discovery messages
- RFC 1269 Definitions of Managed Objects for BGP(3)
- RFC 1305 Network Time Protocol (v3)
- RFC 1403 BGP OSPF interaction
- RFC 1493 Bridge MIB
- RFC 1541 Dynamic Host Configuration Protocol
- RFC 1519 Classless Inter-Domain Routing (CIDR)
- RFC 1542 BOOTP
- RFC 1587 OSPF NSSA Option
- RFC 1643 Ethernet-like MIB
- RFC 1657 BGP-4 MIB
- RFC 1722 RIPv2 Protocol Applicability Statement
- RFC 1723 RIPv2 Carrying Additional information
- RFC 1724 RIPv2 MIB
- RFC 1745 BGP/OSPF interactions*
- RFC 1757 RMON (groups 1, 2, 3, and 9)
- RFC 1765 OSPF Database Overflow
- RFC 1771 BGP-4
- RFC 1773 Experience with BGP-4 Protocol
- RFC 1774 BGP-4 Protocol Analysis
- RFC 1812 IP Router requirements
- RFC 1850 OSPFv2 MIB
- RFC 1901 Community based SNMPv2
- RFC 1905 Protocol Operations for SNMPv2
- RFC 1907 MIB-II
- RFC 1908 Coexistence between V1 and V2
- RFC 1965 Autonomous System Confederations for BGP
- RFC 1966 BGP Route Reflection an alternative to full Mesh IBGP
- RFC 1997 BGP Communities Attribute
- RFC 2011 SNMPv2 MIB for the IP using SMIv2
- RFC 2012 SNMPv2 MIB for the TCP using SMIv2
- RFC 2013 SNMPv3 MIB for the UDP using SMIv2
- RFC 2030 SNMP Simple Network Time Protocol (SNTP) v4
- RFC 2042 Registering New BGP Attributes
- RFC 2096 IP Forwarding MIB (obsoletes 1354)
- RFC 2104 HMAC Keyed-Hashing for Message Authentication*
- RFC 2131 DHCP (relay)
- RFC 2138 Radius
- RFC 2154 OSPF Digital Signatures, MD5
- RFC 2228 SFTP
- RFC 2236 IGMPv2
- RFC 2251 Lightweight Directory Access Protocol (v3)
- RFC 2284 PPP Extensible Authentication Protocol (EAP)
- RFC 2328 OSPFv2
- RFC 2338 VRRP
- RFC 2362 PIM – SM
- RFC 2365 Administratively scoped IP Multicast
- RFC 2370 The OSPF Opaque LSA option*
- RFC 2385 Protection of BGP Sessions via the TCP MD-5 Signature Option
- RFC 2439 BGP Route Flap Damping
- RFC 2453 RIPv2
- RFC 2474 Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers (partial support)
- RFC 2475 An Architecture for Differentiated Services (partial support)
- RFC 2570 Introduction to SNMPv3 (Epilogue Envoy 9.0)
- RFC 2571 Architecture for Describing SNMP Management Frameworks
- RFC 2572 Message Processing and Dispatching for SNMP
- RFC 2573 SNMPv3 Applications
- RFC 2574 User based Security Model for SNMPv3 (Get only, no set)
- RFC 2575 View Based Access Control Model for SNMP (Get only, no set)
- RFC 2576 Coexistence between SNMP V1, V2, V3
- RFC 2578 SMIv2
- RFC 2579 Textual Conventions for SMIv2
- RFC 2580 Conformance statements for SMIv2
- RFC 2597 Assured Forwarding PHB group (partial support)
- RFC 2616 HTTP
- RFC 2618 Radius Authentication Client MIB
- RFC 2620 Radius Accounting MIB
- RFC 2644 IP Router requirements
- RFC 2665 Ethernet MIB (obsoletes RFC 2358 & 1650)
- RFC 2667 IP Tunnel MIB.
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674 Definitions of Managed Objects for Bridges
- RFC 2715 Interoperability Rules for Multicast Routing Protocols*
- RFC 2737 Entity MIB (Version 2)
- RFC 2766 NAT
- RFC 2787 VRRP MIB
- RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
- RFC 2819 Remote Network Monitoring MIB (group 1,2,3,9)
- RFC 2842 Capabilities Advertisement with BGP-4
- RFC 2854 HTML
- RFC 2863 Interfaces Group MIB (obsoletes 2233, 1573)
- RFC 2865 Remote Authentication Dial In User Service
- RFC 2866 – RADIUS Accounting
- RFC 2867 – RADIUS Accounting Modifications for Tunnel Protocol Support
- RFC 2868 – RADIUS Attributes for Tunnel Protocol Support
- RFC 2869 – RADIUS Extensions
- RFC 2869bis Radius Support for Extensible Authentication Protocol (EAP)
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 2932IP Multicast Routing MIB
- RFC 2933 IGMP v2 MIB
- RFC 2934 Protocol Independent Multicast MIB for IPv4.
- RFC 3046 DHCP/BootP Relay
- RFC 3060 Policy Core Information Model – Version 1
- RFC 3065 Autonomous System Confederations for BGP
- RFC 3152 (INAT)
- RFC 3246 An Expedited forwarding PHB (partial support)
- RFC 3376 IGMPv3
- RFC 3623 Graceful OSPF restart

*Contact for availability



Certifications/Safety

EMC Compliance: EN55024: 1998; EN55022 Class A/B; FCC Part 15, Subpart B, Class A/B; VCCI-V3/97.04 Class A/B; EN61000-3-2; EN61000-3-3; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6; EN61000-4-8; EN61000-4-11; AS/NZS 3548, Class A/B; CE Marking per EMC Directive

Safety Compliance: 21 CFR 1040; AS/NZS 3260; CB with all national deviations (IEC 950); CE Marking per Low Voltage Directive; CSA-C22.2 no.60950; TS 001; UL 60950; EN60825-1; EN60825-2; TUV GS Mark (EN60950); UL-AR: Argentina Certification

Ordering Information

Model Number	Description
OS8800-CB-A	OmniSwitch 8800 Chassis Bundle; (OS8800 chassis, one OS8800-CMM, four switch fabric modules, three AC power supplies, chassis and fabric fan trays) with Advanced Routing Software
OS8800-CB-D	OmniSwitch 8800 Chassis Bundle; (OS8800 chassis, one OS8800-CMM, four switch fabric modules, three -48V DC power supplies, chassis and fabric fan trays) with Advanced Routing Software
OS8800-RCB-A	OmniSwitch 8800 Redundant Chassis Bundle; (OS8800 chassis, two OS8800-CMM, five switch fabric modules, three AC power supplies, chassis and fabric fan trays) with Advanced Routing Software
OS8800-RCB-D	OmniSwitch 8800 Redundant Chassis Bundle; (OS8800 chassis, two OS8800-CMM, five switch fabric modules, three - 48V DC power supplies, chassis and fabric fan trays) with Advanced Routing Software
OS8-ENI-C24	24 port 10/100BaseT Ethernet Module with RJ-45 connectors - Supports auto-negotiation and auto-sensing on 10/100Mbps
OS8-GNI-U8	Eight port Gigabit Ethernet Module with eight unpopulated 1000BaseX Mini-GBIC ports
OS8-GNI-C8	Eight port 1000BaseT Gigabit Ethernet Module with eight RJ-45 connectors – Supports only 1,000 Mbps
OS8-GNI2-C24	24 port 1000BaseT High Density Gigabit Ethernet Module with 24 RJ-45 connectors - Supports auto-negotiation & auto-sensing 10/100/1000Mbps
OS8-GNI2-U24	24 port High Density Gigabit Ethernet Module with 24 unpopulated 1000BaseX Mini-GBIC ports
OS8-10GNI-UR1	One Port 10 Gigabit Ethernet Module with optional optical resiliency. Requires Optical Module (Xenpak)

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Ordering Information (continued)

Model Number	Description
MiniGBIC-SX	1000BaseSX Mini-GBIC (SFP MSA) for multi-mode fiber support for distances of up to 550 meters – LC connector
MiniGBIC-LX	1000BaseLX Mini-GBIC (SFP MSA) for single mode fiber support for distances of up to 10 Km – LC connector
MiniGBIC-LH-70	1000BaseLH Mini-GBIC (SFP MSA) for single mode fiber support for long reach distances of up to 70 km – LC connector
OM-10GBASE-SR	Pluggable Optical Module (Xenpak) for OS8-10GNI-UR1, supporting 10GBASE-SR (850nm Serial) over a maximum distance of 300m over multi mode fiber -SC connector
OM-10GBASE-LR	Pluggable Optical Module (Xenpak) for OS8-10GNI-UR1, supporting 10GBASE-LR (1310nm Serial) over a maximum distance of 10km over single mode fiber -SC connector
OM-10GBASE-ER	Pluggable Optical Module (Xenpak) for OS8-10GNI-UR1, supporting 10GBASE-ER (1550 nm Serial) over a maximum distance of 40km over single mode fiber SC connector
OS8-SW-AS	Optional Advanced Security Software
OS8-PS-1375A	OmniSwitch 8800 1375 Watt AC Power Supply - 180-270 VAC input voltage only
OS8-PS-1375D	OmniSwitch 8800 1375 Watt 48V DC Power Supply
OS8800-RP	OmniSwitch 8800 Redundancy Package; (one OS8800-CMM, one OS8800-SFM)
OS8800-CMM	OmniSwitch 8800 Chassis Management Module
OS8800-SFM	OmniSwitch 8800 Switch Fabric Module

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