ALCATEL-LUCENT OMNISWITCH 9000E
CHASSIS LAN SWITCH

The Alcatel-Lucent OmniSwitch® 9000E Chassis LAN Switch (CLS) family is a high-capacity core switch that addresses large enterprise network needs for secure and highly available core switches to support voice, data and video solutions. The OmniSwitch 9000E CLS, part of the OmniSwitch portfolio, is also ideal for use in data centers or metro Ethernet environments because it was designed for deployments requiring high capacity, scalability and virtualization.

The OmniSwitch 9000E CLS family offers enterprises and service provider's gigabit and 10 gigabit capacity links, advanced layer-3 switching, high resiliency with Multi Chassis Linkagg (MC-LAG), high availability through in-service software upgrades (ISSUs), layer-2 segregation using VLANs, stacked VLANs and Virtual Private LAN Service (VPLS), as well as layer-3 segregation using multiple virtual routing and forwarding (VRF). The OmniSwitch 9000E CLS also uses the familiar and field-proven Alcatel-Lucent Operating System (AOS), providing effortless deployment and extended features to address new customer requirements.

Finally, the OmniSwitch 9000E CLS family promotes eco-sustainability by using minimal power, thus reducing energy bills and air-conditioning costs.

KEY FEATURES AND BENEFITS

High availability

- Smart continuous switching and ISSU support for non-stop operation in redundant chassis management module (CMM) configuration
- Extensive layer-2 and layer-3 protocols support for spatial resiliency

High performance and scalability

- Wire-rate processing for simultaneous layer-2 and IPv4/IPv6 traffic
- High density Gigabit Ethernet (GigE) (384 ports) and 10GigE (192 ports)
- Extended scalability in network policies, access control lists (ACLs)/quality of service (QoS) and multicast flows for a better VoIP and video experience
- MC-LAG provides system resiliency with node level redundancy while increasing network scalability with multipath active-active dual homing
- Switching performance: 384 Gb/s Full Duplex/ 768Gb/s Aggregate
- Forwarding performance: 1,227 Mp/s
- Up to 64,000 media access control (MAC) addresses per chassis
- Up to 4,094 VLAN IDs
- Jumbo frames up to 9,216 bytes

Comprehensive security

- Flexible device/user authentication with Access Guardian (802.1x/MAC/captive portal), with built-in host integrity check (HIC), intrusion detection system (IDS) and quarantine enforcement mechanism
- Extensive support of Alcatel-Lucent Operating System (AOS) user-oriented features

Large campus and metro network

- Layer-2 deployment using stacked VLANs, including OA&M toolbox and multicast support – Metro Ethernet access-ready
- Layer-3 deployment using multiple-VRF
- IP/MPLS deployment using VPLS

Convergence

- Enhanced VoIP and video perfor-mance with policy-based QoS
- PoE+ support for IP phones, WLAN access points and video cameras with up to 2400 W of power through dedicated power shelves. PoE power negotiation via LLDP MED TLV extensions
- Unified Access for wired and wireless users. Simplifying network architecture with automated controls and enhanced security:
  - ¬ SIP Fluency to monitor and prioritize SIP flows
  - ¬ Airgroup™ Network Services for Bonjour enabled devices
  - ¬ Integrated Policy with User Network Profile
  - ¬ Citrix VDI fluency enables differentiated services for VDI flows
- Advanced, Secure BYOD services in enterprise networks*:
  - ¬ Zero-touch guest management and self registration
  - ¬ Device on-boarding and automated 802.1x provisioning
  - ¬ Device posture/health check, and fingerprinting,
  - ¬ Device Profiling

* Integrated with ClearPass

ALCATEL-LUCENT OMNISWITCH 9000E CLS MODELS

The OmniSwitch 9000E CLS family offers customers an extensive choice of chassis, modules and power options to match their infrastructure requirements.

Chassis models

Several chassis options are offered to meet density requirements.

	OMNISWITCH 9700E/OMNISWITCH 9702E	OMNISWITCH 9800E
NUMBER OF SLOTS		
Chassis management module (CMM)	2	2
Network interface (NI)	8	16
Power supply (AC/DC)	3	4
PHYSICAL		
Height (19-in. and 23-in. rack mount)	11U	17U
Dimensions (HxWxD)	48.9 cm x 44.2 cm x 44.0 cm (19.25 in x 17.4 in x 17.3 in)	75.6 cm x 44.2 cm x 44.0 cm (29.75 in x 17.4 in x 17.3 in)
Weight (loaded/empty)	60 kg (130 lb)/25 kg (56 lb)	85 kg (190 lb)/36 kg (80 lb)
ENVIRONMENT		
Operating temperature	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
Storage temperature	-20°C to 85°C (-4°F to 185°F)	-20°C to 85°C (-4°F to 185°F)
Operating humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)
Storage Humidity	10% to 95% (non-condensing)	10% to 95% (non-condensing)
Cooling	Front-to-back cooling	Front-to-back cooling
Power (chassis + fan tray)	<80 W	<80 W
Heat dissipation (fully loaded – worst case)	<3485 BTU/hr	<6480 BTU/hr
Altitude	0 to 4 km (13,000 ft)	0 to 4 km (13,000 ft)

Modules

The table below lists the choice of modules available for the OmniSwitch 9000E CLS family.

	DESCRIPTION	POWER
MANAGEMENT MODULES		
OS9700E-CMM	OmniSwitch 9700E Chassis Management Module	<30 W
OS9702E-CMM	OmniSwitch 9702E Chassis Management Module	<30 W
OS9800E-CMM	OmniSwitch 9800E Chassis Management Module	<40 W
NETWORK INTERFACES		
OS9-XNI-U2E	2 unpopulated ports of 10GBase-X (XFP MSA)	<32 W
OS9-XNI-U12E	12 unpopulated ports of 10GBase-X (SFP+ MSA)	<40 W
OS9-GNI-U24E	24 unpopulated ports of 1000Base-X MiniGBIC (SFP MSA)	<40 W
OS9-GNI-P24E	24 ports of 10/100/1000Base-T/TX (RJ-45) up to 30W of PoE per port	<54 W
OS9-GNI-C24E	24 ports of 10/100/1000Base-T/TX (RJ-45)	<55 W

All network interfaces and transceivers are hot-swappable and can be used in any available NI slot of any OmniSwitch 9000E CLS chassis.

Power supplies

All OmniSwitch 9000 CLS models support redundant and hot-swappable AC and DC power supplies.

	OS9-PS-0725A	OS9-PS-0725D
Input voltage	100 V AC to 250 V AC (auto-ranging)	-48 V DC
Input current (max)	7.9 A (110 V)4.0 A (220 V)	17.8 A (-48V)
Operating frequency	47 Hz to 63 Hz	–
Efficiency	83%	85%
Maximum output power	725 W	725 W

PoE shelves

All OmniSwitch 9000E CLS models support an optional power shelf to provide power to PoE+ -capable devices.

IPS 0600	
Power Supply (AC) physical	4
Height (19-in and 23-in rack mount)	2.9RU
Dimensions (HxWxD)	75.6cm x 44.2cm x 44.0cm (29.75in x 17.4in x 17.3in)
Maximum output power	2400W (4x600)
Example of PoE devices count: Class 0&3 (15.4W)/Class 4(30W)	140/72

Compliance and certifications

Emission

- FCC CFR 47 part 15 (Class A)
- ICES-003 (Class A)
- CE marking for European countries (Class A)
- VCCI (Class A)
- AS/NZS 3548 (Class A)
- EN 55022:2006 (Emission Standard)
- EN 61000-3-2:2006
- EN 61000-3-3:1995 +A2:2005

Immunity

- IECEN 55024:1998 +A1:2001 +A2:2003
- EN 61000-4-2:2001
- EN 61000-4-3:2002
- EN 61000-4-4:2004
- EN 61000-4-5:2001
- EN 61000-4-6:2004
- EN 61000-4-8:2001
- EN 61000-4-11:2004

Safety agency certifications

- US UL 60950
- IEC 60950-1:2001; all national deviations
- EN 60950-1:2001; all deviations
- CAN/CSA-C22.2 No. 60950-1-03
- NOM-019 SCFI, Mexico
- AS/NZ TS-001 and 60950:2000, Australia
- UL-AR, Argentina
- UL-GS Mark, Germany
- EN 60825-1:1993 +A1:1997 +A2:2001 Laser,
- EN 60825-2:2004 Laser
- CDRH Laser

DETAILED PRODUCT FEATURES

Simplified manageability

Management interfaces

- Dedicated EMP RJ-45 port for management and diagnostics
- Intuitive, familiar CLI reduces training costs
- Easy-to-use, point-and-click, web-based element manager (WebView) with built-in help for easy configuration
- Integrated with Alcatel-Lucent OmniVista® 2500 Network Management System (NMS)
- Full configuration and reporting using Simple Network Management Protocol (SNMP) v1/2/3 across all OmniSwitch families to facilitate third-party NMS integration
- Remote switch access using Telnet or Secure Shell (SSH)
- File upload using USB, TFTP, FTP, SFTP, or SCP for faster configuration
- Human-readable ASCII-based configuration files for off-line editing, bulk configuration and out-of-the-box auto-provisioning
- Onboard flash for, for example, storing switch configuration, monitoring logs and AOS images
- Status LEDs for at-a-glance monitoring of system, power and line card status

Monitoring and troubleshooting

- Local (on the flash) and remote server logging: Syslog and command log
- Port-based mirroring for troubleshooting and lawful interception; supports four sessions with multiple sources-to-one destination
- Policy-based mirroring allows selection of the type of traffic to mirror by using QoS policies
- Remote port mirroring facilitates passing mirrored traffic through the network to a remotely connected device
- Port monitoring feature allows capture of Ethernet packets to a file to assist in troubleshooting
- sFlow v5 and RMON: For advanced monitoring and reporting capabilities for statistics, history, alarms and events
- IP tools: Ping and traceroute
- ITU-T Y.1731 and IEEE 802.1ag Ethernet OA&M: Connectivity Fault Management and performance measurements (layer-2 ping and link trace)
- IEEE 802.3ah Ethernet in the First Mile (EFM) for link monitoring, remote fault detection, and loopback control (layer-1 ping)
- Unidirectional Link Detection (UDLD) detects and disables unidirectional links on fiber optic interfaces
- Digital Diagnostic Monitoring (DDM): Real-time diagnostics of fiber connections for early detection of optical signal deterioration
- Link Monitoring: link flap detection and link error counts to identify bad connections and automatically make adjustments to use the links that are good
- Time Domain Reflectometry (TDR): used for locating break or other discontinuity in copper cable

Network configuration

- Auto-negotiating 10/100/1000 ports automatically configure port speed and duplex setting
- Auto MDI/MDIX automatically configures transmit and receive signals to support straight-through and crossover cabling
- BOOTP/DHCP client with option 60 allows auto-configuration of switch IP information for simplified deployment
- DHCP v4/v6 relay to forward client requests to a DHCP server
- Alcatel-Lucent Mapping Adjacency Protocol (AMAP) for building topology maps
- IEEE 802.1AB LLDP with MED extensions for automated device discovery and IP phone provisioning
- Multiple VLAN Registration Protocol (MVRP) and GARP VLAN Registration Protocol (GVRP) for 802.1Q/1ak-compliant VLAN pruning and dynamic VLAN creation
- Dynamic Virtual Network Profiles (vNP) for automating virtual machine/device attachment to the network with guaranteed SLA
- Auto-QoS for switch management and IP phone traffic
- Network Time Protocol (NTP) for network-wide time synchronization

Resiliency and high availability

- Smart continuous switching technology for instantaneous and transparent CMM failover in redundant CMM configuration
- MC-LAG active-active dual homing over IEEE 802.3ad (LACP) interfaces enabling a highly resilient architecture

- ISSU for non-disruptive maintenance software upgrade in redundant CMM configuration
- ITU-T G.8032 Ethernet Ring Protection (ERPv2) designed for loop protection and fast convergence times (sub 50 ms) in ring topologies
- Ring Rapid Spanning Tree (RRSTP) optimized for ring topology to provide less than 100-ms convergence time
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP): Encompasses IEEE 802.1D Spanning Tree Protocol (STP) and IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- Per-VLAN Spanning Tree (PVST+) and Alcatel-Lucent 1x1 STP mode
- IEEE 802.3ad Link Aggregation Control Protocol (LACP) and static LAG groups across modules are supported
- Dual-home link support for sub-second link protection without STP
- Virtual Router Redundancy Protocol (VRRP) to provide highly available routed environments
- Bidirectional Forwarding Detection (BFD) for fast failure detection and reduced re-convergence times in a routed environment
- Broadcast, unknown unicast and multicast storm control to avoid degradation in overall system performance
- Redundant and hot-swappable power supplies, transceiver modules offering uninterruptible service
- Dual image and dual configuration file storage provides backup
- WCCPv2 for transparent traffic flow redirection and better bandwidth utilization
- Split Stack Protection Helper for OmniSwitch Stackable switches

Advanced security

Access control

- AOS Access Guardian framework for comprehensive user-policy-based network access control (NAC)
- Auto-sensing 802.1X multi-client, multi-VLAN
- MAC-based authentication for non-802.1x hosts
- Web-based authentication (captive portal): A customizable web portal residing on the switch that can be used for authenticating supplicants as well as non-supplicants
- Group mobility rules and "guest" VLAN support
- Authenticated VLAN that challenges users with username and password and supports dynamic VLAN access based on user
- Host integrity check (HIC) agent on each switch makes it an HIC enforcer and facilitates endpoint device control for company policy compliance; quarantine and remediation are supported as required
- User Network Profile (UNP): Simplifies NAC management and control by dynamically providing pre-defined policy configuration to authenticated clients – VLAN, ACL, bandwidth, HIC
- SSH for secure CLI session with public key infrastructure (PKI) support
- Centralized RADIUS and Lightweight Directory Access Protocol (LDAP) user authentication
- TACACS+ client allows for authentication, authorization and accounting (AAA) with a remote TACACS+ server
- Microsoft Active Directory authentication snooping (Kerberos)
- Bring Your Own Device (BYOD)* – Provides on-boarding of Guest, IT / non-IT issued and silent devices. Restriction / Redirection / Remediation of traffic from non-compliant devices. Uses RADIUS CoA to dynamically enforce User Network Profiles based on Authentication, Profiling, and Posture check of devices.

*Requires ClearPass

Containment, monitoring and quarantine

- Support for Alcatel-Lucent OmniVista 2500 NMS Quarantine Manager and quarantine VLAN
- Learned Port Security (LPS) or MAC Address Lockdown: Secures the network access on user or trunk ports based on MAC address
- DHCP snooping, DHCP IP/Address Resolution Protocol (ARP) spoof protection
- Embedded traffic anomaly detection (TAD) monitors traffic patterns typical for worm-like viruses and either shuts down the port or reports to the management system
- ARP poisoning detection
- IP Source Filtering as a protective and effective mechanism against ARP attacks
- Support of Microsoft® Network Access Protection (NAP)
- Bridge Protocol Data Unit (BPDU) blocking automatically shuts down user ports if an STP BPDU packet is seen to prevent topology loops
- STP Root Guard: Prevents edge devices from becoming STP root nodes
- LLDP Security mechanism for rogue device detection and restriction
- Loopback Detection

Traffic filtering

- ACLs to filter out unwanted traffic including denial of service (DoS) attacks; flow based filtering in hardware (layer 1 to layer 4)

Converged networks (QoS)

- Priority queues: Eight hardware-based queues per port for flexible QoS management
- Traffic prioritization: Flow-based QoS with internal and external prioritization (also known as re-marking)
- Bandwidth management: Flow-based bandwidth management, ingress rate limiting and egress rate shaping per port
- Queue management with configurable scheduling algorithm: Strict Priority Queuing (SPQ), Weighted Round Robin (WRR) and Deficit Round Robin (DRR)
- Congestion avoidance: Support for End-to-End Head-of-Line (E2E-HOL) blocking prevention and flow control
- LLDP network polices for dynamic designation of VLAN-ID and layer-2/ layer-3 priority for IP phones
- Auto-QoS for switch management traffic as well as traffic from Alcatel-Lucent IP phones
- Differentiated Services for Virtual Desktop Interface (VDI) flows. One-touch QoS support for Citrix VDI.
- Fluent network for Voice, Video and Data:
  - ¬ Session Initiation Protocol (SIP) detection, monitoring and tracking. SIP profile for QoS, real-time conversation quality information concerning packet loss, jitter, MOS score and R-Factor.
  - ¬ Multicast DNS Relay – Bonjour protocol support for wired Airgroup

IPv4 routing

- Multiple VRF for network segmentation and Inter-VRF route leaking
- Static routing, Routing Information Protocol (RIP) v1 and v2
- Open Shortest Path First (OSPF) v2, Intermediate System-to-Intermediate System (IS-IS), Border Gateway Protocol (BGP) v4
- Generic Routing Encapsulation (GRE) tunneling
- Graceful restart extensions for OSPF and BGP
- VRRP v2
- DHCP relay (including generic UDP relay)
- ARP
- IP SLA measurement
- IP router port

IPv6 routing

- Static routing
- Routing Information Protocol Next Generation (RIPng)
- OSPF v3
- BGP v4 (with extensions to IPv6 routing)
- Graceful restart extensions for OSPF and BGP
- IS-IS v6
- Multi Topology Routing in IS-IS (M-ISIS)
- VRRP v3
- Neighbor Discovery Protocol (NDP)

IPv4/IPv6 multicast

- Internet Group Management Protocol (IGMP) v1/v2/v3 snooping for optimized multicast traffic
- Protocol Independent Multicast - Sparse-Mode (PIM-SM)/Protocol Independent Multicast - Dense-Mode (PIM-DM)
- Distance Vector Multicast Routing Protocol (DVMRP)
- Multicast Listener Discovery (MLD) v1/v2 snooping for optimized multicast traffic

Metro Ethernet access

- Ethernet services support per IEEE 802.1ad Provider Bridge services (also known as Q-in-Q or VLAN stacking):
  - ¬ Transparent LAN services with service VLAN (SVLAN) and customer VLAN (CVLAN) concept
  - ¬ Ethernet network-to-network interface (NNI) and user-network interface (UNI) services
  - ¬ Service access point (SAP) profile identification
  - ¬ CVLAN-to-SVLAN translation
- Ethernet OA&M compliant with ITU Y.1731 and IEEE 802.1ag version 8.1 for connectivity fault and performance management and IEEE 802.3ah EFM for link OA&M
- Service Assurance Agent (SAA) for SLA compliance validation
- Private VLAN feature for user traffic segregation
- MAC-Forced Forwarding support according to RFC 4562
- DHCP Option 82: Configurable relay agent information
- IP Multicast VLAN (IPMVLAN)
- Optimized Ethernet access services delivery
  - ¬ Network bandwidth protection against overload of video traffic
  - ¬ Multicast streams isolation from multiple content providers over the same interface
- MEF 9 and 14 certified
- Managed by Alcatel-Lucent 5620 Service Aware Manager
- Customer provider edge (CPE) test head traffic generator and analyzer tool to validate customer Service Level Agreements (SLA)
- TR-101 PPPoE Intermediate Agent allowing for the PPPoE network access method

MPLS

- VPLS support to provide transparent LAN services over an IP/MPLS network
- LDP support (including graceful restart) for transport tunnel setup and signaling
- Flexible priority mapping/override on a per-service access point (SAP) basis
- Static fast re-route to allow configuration of backup static label switched path (LSP) tunnels for enhanced resiliency
- LSP ping and LSP traceroute to assist with detection of traffic problems, such as “black holes” or incorrect routing
- Consistent service-based-architecture for smoother integration with our other MPLS-enabled solutions

SUPPORTED STANDARDS

IEEE standards

- IEEE 802.1D (STP)
- IEEE 802.1p (CoS)
- IEEE 802.1Q (VLANs)
- IEEE 802.1ad (Provider Bridges)
- IEEE 802.1ag (Connectivity Fault Management)
- IEEE 802.1ak (Multiple VLAN Registration Protocol)
- IEEE 802.1s (MSTP)
- IEEE 802.1w (RSTP)
- IEEE 802.1X (Port-based Network Access Control)
- IEEE 802.3i (10Base-T)
- IEEE 802.3u (Fast Ethernet)
- IEEE 802.3x (Flow Control)
- IEEE 802.3z (Gigabit Ethernet)
- IEEE 802.3ab (1000Base-T)
- IEEE 802.3ac (VLAN Tagging)
- IEEE 802.3ad (Link Aggregation)
- IEEE 802.3ae (10G Ethernet)

ITU-T recommendations

- ITU-T G.8032v2 (Ethernet Ring Protection)
- ITU-T Y.1731 OA&M fault and performance management

IETF standards

IPv4

- RFC 2003 IP/IP Tunneling
- RFC 2784 GRE Tunneling
- RFC 5880, 5881, 5882 BFD

OSPF

- RFC 1253/1850/2328 OSPFv2 and MIB
- RFC 1587/3101 OSPF NSSA Option
- RFC 1765 OSPF Database Overflow
- RFC 2154 OSPF MD5 Signature
- RFC 2370/3630 OSPF Opaque LSA
- RFC 3623 OSPF Graceful Restart

RIP

- RFC 1058 RIP v1
- RFC 1722/1723/1724/2453/1724 RIP v2 and MIB
- RFC 1812/2644 IPv4 Router Requirements
- RFC 2080 RIPng for IPv6

BGP

- RFC 1269/1657 BGP v3 and v4 MIB
- RFC 1403/1745 BGP/OSPF Interaction
- RFC 1771-1774/2842/2918/3392 BGP v4
- RFC 1965 BGP AS Confederations
- RFC 1966 BGP Route Reflection
- RFC 1997/1998 BGP Communities Attribute
- RFC 2042 BGP New Attribute
- RFC 2385 BGP MD5 Signature
- RFC 2439 BGP Route Flap Damping
- RFC 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC 2796 BGP Route Reflection
- RFC 2858 Multiprotocol Extensions for BGP-4
- RFC 3065 BGP AS Confederations

IS-IS

- RFC 1142 OSI IS-IS for Intra-domain Routing Protocol
- RFC 1195 OSI IS-IS for Routing
- RFC 2763 Dynamic Host Name
- RFC 2966 Route Leaking
- RFC 3719 Interoperable Networks
- RFC 3787 Interoperable IP Networks using IS-IS
- RFC 5308 Routing IPv6 with IS-IS
- RFC 5120 Multi Topology Routing in IS-IS

IP Multicast

- RFC 1075 DVMRP
- RFC 1112 IGMP v1
- RFC 2236/2933 IGMP v2 and MIB
- RFC 2362/4601/5059 PIM-SM
- RFC 2365 Multicast
- RFC 2710 Multicast Listener Discovery for IPv6

- RFC 2715/2932 Multicast Routing MIB
- RFC 2934 PIM MIB for IPv4
- RFC 3376 IGMPv3
- RFC 4541 Considerations for IGMP and MLD snooping
- RFC 5060 Protocol Independent Multicast MIB
- RFC 5132 IP Multicast MIB
- RFC 5240 PIM Bootstrap Router MIB

IPv6

- RFC 1886/3596 DNS for IPv6
- RFC 2292/2553/3493/3542 IPv6 Sockets
- RFC 2373/2374/3513/3587 IPv6 Addressing
- RFC 2452/2454 IPv6 TCP/UDP MIB
- RFC 2460/2461/2462/2464 Core IPv6
- RFC 2461 NDP
- RFC 2463/2466/4443 ICMP v6 and MIB
- RFC 2893/4213 IPv6 Transition Mechanisms
- RFC 3056 IPv6 Tunneling
- RFC 3595 TC for Flow Label
- RFC 4007 IPv6 Scoped Address Architecture
- RFC 4193 Unique Local IPv6 Unicast Addresses

Manageability

- RFC 854/855 Telnet and Telnet Options
- RFC 959/2640 FTP
- RFC 1350 TFTP Protocol
- RFC 1155/2578-2580 SMI v1 and SMI v2
- RFC 1157/2271 SNMP
- RFC 1212/2737 MIB and MIB-II
- RFC 1213/2011-2013 SNMP v2 MIB
- RFC 1215 Convention for SNMP Traps
- RFC 1573/2233/2863 Private Interface MIB
- RFC 1643/2665 Ethernet MIB
- RFC 1901-1908/3416-3418 SNMP v2c
- RFC 2096 IP MIB
- RFC 2131 DHCP
- RFC 2570-2576/3410-3415 SNMP v3
- RFC 2616/2854 HTTP and HTML
- RFC 2667 IP Tunneling MIB
- RFC 2668/3636 IEEE 802.3 MAU MIB
- RFC 2674 VLAN MIB
- RFC 3414 User-based Security Model
- RFC 4251 Secure Shell Protocol Architecture
- RFC 4252 The Secure Shell (SSH) Authentication Protocol
- RFC 4878 OA&M Functions on Ethernet-Like Interfaces

Security

- RFC 1321 MD5
- RFC 2104 HMAC Message Authentication
- RFC 2138/2865/2868/3575/2618 RADIUS Authentication and Client MIB
- RFC 2139/2866/2867/2620 RADIUS Accounting and Client MIB
- RFC 2228 FTP Security Extensions
- RFC 2267 Network Ingress Filtering
- RFC 2284 PPP EAP
- RFC 2869/2869bis RADIUS Extension
- RFC 3576 Dynamic Authorization Extensions to RADIUS

QoS

- RFC 896 Congestion Control
- RFC 1122 Internet Hosts
- RFC 2474/2475/2597/3168/3246 DiffServ
- RFC 2697 srTCM
- RFC 2698 trTCM
- RFC 3635 Pause Control

Others

- RFC 768 UDP
- RFC 791/894/1024/1349 IP and IP/Ethernet
- RFC 792 ICMP
- RFC 793/1156 TCP/IP and MIB
- RFC 826/903 ARP and Reverse ARP
- RFC 919/922 Broadcasting Internet Datagram
- RFC 925/1027 Multi LAN ARP/Proxy ARP
- RFC 950 Subnetting
- RFC 951 BOOTP
- RFC 1151 RDP
- RFC 1191/1981 Path MTU Discovery
- RFC 1256 ICMP Router Discovery
- RFC 1305/2030 NTP v3 and Simple NTP
- RFC 1493 Bridge MIB
- RFC 1518/1519 CIDR
- RFC 1541/1542/2131/3396/3442 DHCP
- RFC 1757/2819 RMON and MIB
- RFC 2131/3046/3315/4649/6221 DHCP/BOOTP Relay
- RFC 2132 DHCP Options
- RFC 2251 LDAP v3
- RFC 2338/3768/2787 VRRP and MIB
- RFC 3021 Using 31-bit Prefixes on IPv4 Point-to-Point Links

MPLS

- RFC 3031/3032/3343/4182 MPLS
- RFC 3035/3036/3037/5036 LDP
- RFC 3060 Policy Core
- RFC 3176 sFlow
- RFC 3478 LDP Graceful Restart
- RFC 4379 LSP Ping
- RFC 4562 MAC-Forced Forwarding
- RFC 4762 VPLS using LDP

OMNISWITCH 9000E ORDERING

PART NUMBER	DESCRIPTION
BUNDLES	
OS9700E-CB-A	OmniSwitch 9700E Base Bundle (1 chassis, 2 PSUs and 1 CMM) for AC power
OS9702E-CB-A	OmniSwitch 9702E Base Bundle (1 chassis, 2 PSUs and 1 CMM) for AC power, NEBS ready
OS9800E-CB-A	OmniSwitch 9800E Base Bundle (1 chassis, 3 PSUs and 1 CMM) for AC power
OS9700E-RCB-A	OmniSwitch 9700E Redundant Bundle (1 chassis, 3 PSUs and 2 CMMs) for AC power
OS9702E-RCB-A	OmniSwitch 9702E Redundant Bundle (1 chassis, 3 PSUs and 2 CMMs) for AC power, NEBS ready
OS9800E-RCB-A	OmniSwitch 9800E Redundant Bundle (1 chassis, 4 PSUs and 2 CMMs) for AC power
CHASSIS AND POWER SUPPLIES	
OS9700-CHASSIS	10-slot chassis – 8 dedicated slots for any OmniSwitch 9000E NIs, 2 dedicated slots for OS9700E-CMM or OS9702E-CMM (management and switching fabric)
OS9702-CHASSIS	10-slot chassis – 8 dedicated slots for any OmniSwitch 9000E NIs, 2 dedicated slots for OS9700E-CMM or OS9702E-CMM (management and switching fabric) , NEBS ready

OS9800-CHASSIS	18-slot chassis – 16 dedicated slots for any OmniSwitch 9000E NIs, 2 dedicated slots for OS9800E-CMM (management and switching fabric)
OS9-PS-0725A	725 W AC power supply for OmniSwitch 9000/9000E
OS9-PS-0600D	600 W DC power supply for OmniSwitch 9000/9000E
OS9-IP-SHELF	PoE rack (4-slot) for OmniSwitch 9000 chassis. Rack to include a 600 W AC PSU (OS9-IPS-0600A)
OS9-IPS-0600A	600 W AC PoE PSU (100 V to 240 V) for use within OS9-IP-SHELF only
MANAGEMENT AND SWITCHING FABRIC MODULES	
OS9700E-CMM	OmniSwitch 9700E Chassis Management Module for use in the OmniSwitch 9700E/9702E chassis
OS9702E-CMM	OmniSwitch 9702E Chassis Management Module for use in the OmniSwitch 9700E/9702E chassis
OS9800E-CMM	OmniSwitch 9800E Chassis Management Module for use in the OmniSwitch 9800E chassis
PART NUMBER	**DESCRIPTION**
NETWORK INTERFACE CARDS	
OS9-XNI-U2E	OmniSwitch 9000E Network Interface with 2 unpopulated ports of 10GBase-X (XFP MSA)
OS9-XNI-U12E	OmniSwitch 9000E Network Interface with 12 unpopulated ports of 10GBase-X (SFP+)
OS9-GNI-U24E	OmniSwitch 9000E Network Interface with 24 unpopulated ports of 1000Base-X MiniGBIC (SFP MSA)
OS9-GNI-C24E	OmniSwitch 9000E Network Interface with 24 ports of 10/100/1000Base-T/TX (R-J45)
OS9-GNI-P24E	OmniSwitch 9000 Network Interface with 24 ports of 10/100/1000Base-T/TX (RJ-45), PoE+ -capable
ADVANCED SOFTWARE	
OS9-SW-IPSEC	IPSec software license for OmniSwitch 9000E to enable support of IPSec for IPv6 routing protocols (RIPng/OSPFv3)
OS9-SW-MPLS	MPLS software license for OmniSwitch 9000E to enable support of VPLS, LDP, advanced OA&M (LSP ping/traceroute) and static Fast Reroute
ACCESSORIES	
OS9000-FTTC	Low noise fan tray for the OmniSwitch 9700E/9702E/9800E chassis

Contact your reseller of Alcatel-Lucent Enterprise solutions for additional information on country-specific power cords and a complete list of our SFP and XFP transceivers and MRJ21 cables.

SERVICE AND SUPPORT

Warranty

Limited warranty to the original owner of one year on hardware and 90 days on software.

ABOUT LGS INNOVATIONS

LGS Innovations delivers next-generation solutions addressing the most complex networking and communications challenges facing the U.S. federal government, state and local governments, critical infrastructure operators, and commercial enterprises worldwide. LGS offers groundbreaking research, development, and solutions in wireless communications, radio frequency (RF) spectrum analysis, cybersecurity, fiber optic and free-space optical communications, and mobile broadband. We integrate our solutions into communications, sensing, and analytical systems that provide our customers with a critical information advantage.

LGS Innovations is a U.S.-owned company headquartered in Herndon, Virginia, with offices in Arizona, Colorado, Florida, Georgia, Illinois, Maryland, New Jersey, New Mexico, North Carolina, and overseas locations. Formerly a subsidiary of Alcatel-Lucent, LGS is the exclusive reseller of Alcatel-Lucent products and services to the U.S. federal government, both directly and through any indirect supplier. LGS maintains strong ties to our Bell Labs heritage, leveraging a 75-year legacy of innovation to create best-in-class communications solutions. We employ more than 1,000 associates around the world, including 600 scientists and engineers—over 250 of whom are former Bell Labs employees. To learn more about LGS Innovations, visit www.lgsinnovations.com.

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