

Alcatel-Lucent OmniSwitch 9000E

CHASSIS LAN SWITCH

The Alcatel-Lucent OmniSwitch™ 9000E Chassis LAN Switch family, a complementary product line to the Alcatel-Lucent OmniSwitch product line, consists of high capacity core switches that flexibly address large enterprise network needs for security and high availability. Available in two different capacity options (OmniSwitch 9700E and OmniSwitch 9800E) with an array of interfaces, these switches were designed to offer flexibility in their support of voice, data and video solutions. The OmniSwitch 9000E is also ideal for use in data centers or metro Ethernet environments since it was designed for deployments requiring high capacity, low latency, scalability and virtualization.

The switch family offers enterprises 10 Gigabit interfaces simplifying designs; high availability through in-service software upgrades securing business operations; and several virtualization techniques increasing the efficiency and security of the network and its elements. Virtualization can be established at layer 2 using VLANs or stacked VLAN technologies for layer-3 virtualization, multiple virtual routing and forwarding (multiple VRF). The OmniSwitch 9000E also uses the field proven Alcatel-Lucent Operating System (AOS), which is standard across the OmniSwitch family, providing effortless deployment and extended features to address new customer requirements. Plus, the switch family promotes eco-sustainability by minimizing BTUs/hour thus reducing energy requirements and air-conditioning costs.



Key features

- Hardware based, multiple virtual routing and forwarding table support
- Uses the Alcatel-Lucent Operating System
- In service software upgrade
- Low power consumption

Key benefits

- Enterprise wide cost reduction through hardware consolidation
- Effortless deployment by existing customers
- Enables extended features to address new customer requirements
- 24/7 non-stop system availability – no system reboot required to implement critical software patches
- Promotes eco-sustainability by minimizing BTUs/hours and lowers air conditioning costs

Technical specifications

Network Interface

All modules are hot swappable and can be used in any available NI slot.

- 2-port 10GBaseX (XFP)
- 24-port 1000BaseX (SFP)
- 24-port 10/100/1000BaseT (RJ45)

Dimensions

OmniSwitch 9800

- Height: 29.75 in (75.6 cm – 17 RU)
- Width: 17.4 in (44.2 cm)
- Depth: 17.30 in (44.0 cm)
- Weight (fully loaded chassis): <190 lbs (85 kg)

OmniSwitch 9700

- Height: 19.25 in (48.9 cm – 11 RU)
- Width: 17.4 in (44.2 cm)
- Depth: 17.30 in (44.0 cm)
- Weight (fully loaded chassis): <130 lbs (60 kg)

Power Supply and Power Consumption

600 W AC Power supply

- Input voltage: 100-240 VAC auto-ranging
- Operating frequency: 47-63 Hz
- Maximum input current:
- 7.5A at 110 VAC; 3.65 A at 220 VAC

Power consumption

- OS9700 / OS9800 Chassis and fan trays: <80 W
- OS9700E-CMM: <45W
- OS9800E-CMM: <45W
- OS9-XNI-U2E: <40W
- OS9-GNI C24E : <55W
- OS9-GNI U24E: <60W
- PSU efficiency: > 0.75

Environmental requirements

Operating temperature:

- 32° to 113°F (0° to 45°C)

Storage temperature:

- 14° to 158°F (-10° to 70°C)

Humidity (operating and storage):

- 10% to 90% non-condensing

Heat dissipation (fully loaded with U24E and redundancy):

- OmniSwitch 9700: < 3,000 BTU/hr, max
- OmniSwitch 9800: < 5,150 BTU/hr, max

Emissions / Agency Approvals

- CISPR 22 Class A
- FCC Part 15 Class A
- EN 55022 Class A
- ICES-003 Class A
- AS/NZS 3548 / EN55022 Class A
- EN 61000-3-2, EN 61000-3-3
- VCCI Class A

Immunity

- EN 55024: 1998
- EN 61000-4-2 to 61000-4-6, EN 61000-4-8, EN 61000-4-11

Safety Agency Certifications

- 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 Laser, EN60825-2 Laser
- CDRH Laser

IEEE Standards

- IEEE 802.1ad (VLAN Stacking)
- IEEE 802.1D (STP)
- IEEE 802.1p (CoS)
- IEEE 802.1Q (VLANs)
- IEEE 802.1s (MSTP)
- IEEE 802.1w (RSTP)
- IEEE 802.1X (Port-based NAC)
- IEEE 802.3i (10BaseT)
- IEEE 802.3u (Fast Ethernet)
- IEEE 802.3x (Flow Control)
- IEEE 802.3z (Gigabit Ethernet)
- IEEE 802.3ab (1000BaseT)
- IEEE 802.3ac (VLAN Tagging)
- IEEE 802.3ad (Link Aggregation)
- IEEE 802.3af (Power-over-Ethernet)

IETF Standards

Manageability

- RFC 854/855 Telnet and Telnet options
- RFC 1215 Convention for SNMP Traps
- RFC 2616 /2854 HTTP and HTML
- RFC 2096 IP MIB
- RFC 1212/2737 MIB and MIB-II
- RFC 1643/2665 Ethernet MIB
- RFC 2668/3636 IEEE 802.3 MAU MIB
- RFC 1573/2233/2863 Private Interface MIB
- RFC 1155/2578-2580 SMI v1 and SMI v2
- RFC 1157/2271 SNMP
- RFC 1213/2011-2013 SNMP v2 MIB
- RFC 1901-1908/3416-3418 SNMP v2c
- RFC 2570-2576/3411-3415 SNMP v3
- RFC 2667 IP Tunneling MIB
- RFC 2674 VLAN MIB

Security

- RFC 2104 HMAC Message Authentication
- RFC 1321 MD5
- RFC 2284 PPP EAP
- RFC 2139/2866/2867/2620 RADIUS

Accounting and client MIB

- RFC 2138/2865/2868/3575/2618 RADIUS

Authentication and client MIB

- RFC 2869/2869bis RADIUS Extension
- RFC 2228 sFTP
- RFC 959/2640 FTP

IP and routing

BGP

- RFC 1771-1774/2842/2918/3392/4271 BGP v4
- RFC 1269/1657 BGP v3 and v4 MIB
- RFC 3065 BGP AS Confederations
- RFC 2385 BGP MD5 Signature
- RFC 2042 BGP New Attribute
- RFC 2439 BGP Route Flap Damping
- RFC 2796 BGP Route Reflection
- RFC 1965 BGP AS Confederations
- RFC 1997/1998 BGP Communities Attribute
- RFC 1966 BGP Route Reflection
- RFC 1403/1745 BGP/OSPF Interaction

OSPF

- RFC 1253/1850/2328 OSPF v2 and MIB
- RFC 1765 OSPF Database Overflow
- RFC 3623 OSPF Graceful Restart
- RFC 2154 OSPF MD5 Signature
- RFC 1587/3101 OSPF NSSA Option
- RFC 2370/3630 OSPF Opaque LSA

RIP

- RFC 1058 RIP v1
- RFC 1722/1723/2453/1724 RIP v2 and MIB
- RFC 1812/2644 IPv4 Router Requirement
- RFC 2080 RIP ng

IP multicast

- RFC 1112 IGMP v1
- RFC 2236/2933 IGMP v2 and MIB
- RFC 3376 IGMPv3
- RFC 1075 DVMRP
- RFC 2934 PIM MIB for IPv4
- RFC 2362 PIM-SM
- RFC 2365 Multicast
- RFC 2715/2932 Multicast Routing MIB

IPv6

- RFC 2292/2373/2374/2460/2462 IPv6
- RFC 2464/2553/3493/3513 IPv6
- RFC 3542/3587/4213/4291 IPv6
- RFC 2461 NDP
- RFC 2463/2466/4443 ICMP v6 and MIB
- RFC 1886/3596 DNS for IPv6
- RFC 2452/2454 IPv6 TCP/UDP MIB
- RFC 2740 OSPF for IPv6
- RFC 2545/2858 MP Extensions for BGP-4
- RFC 2893/3056 IPv6 Tunneling

Quality of service

- RFC 896 Congestion control
- RFC 3635 Pause Control
- RFC 1122 Internet Hosts
- RFC 2474/2475/2597/3168/3246 DiffServ

Others

- RFC 3176 sFlow
- RFC 826/903 ARP and Reverse ARP
- RFC 925/1027 Multi LAN ARP / Proxy ARP
- RFC 951 Bootp
- RFC 1493 Bridge MIB
- RFC 919/922 Broadcasting internet datagram

- RFC 1518/1519 CIDR
- RFC 1541/1542/2131/3396/3442 DHCP
- RFC 2132 DHCP Options
- RFC 2131/3046 DHCP/BootP Relay
- RFC 792 ICMP
- RFC 791/894/1024/1349 IP and IP / Ethernet
- RFC 2251 LDAP v3
- RFC 1305/2030 NTP v3 and Simple NTP
- RFC 1191 Path MTU Discovery
- RFC 3060 Policy Core
- RFC 1151 RDP
- RFC 1757/2819 RMON and MIB
- RFC 950 Subnetting
- RFC 793/1156 TCP/IP and MIB
- RFC 768 UDP
- RFC 2338/3768/2787 VRRP and MIB
- RFC 1256 ICMP Router Discovery

Warranty

1 year on hardware, 90 days on software
Additional and optional support available

Layer-2 Switching

VLAN

- Port based, IEEE 802.1Q VLANs
- Advanced VLAN Classification: MAC, protocol, IP subnet
- IEEE 802.1ad VLAN Stacking (a.k.a. QinQ)

Spanning tree

- IEEE 802.1D Spanning Tree Protocol (STP) – 1998 / 2004 edition
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) – 2001 edition
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) – 2002 / 2005 edition
- Support of single and multiple instances for STP and RSTP
- BPDU Watch Guard, Root Guard
- PVST+

Link aggregation

- Support for static aggregate (a.k.a., OmniChannel)
- Support for dynamic aggregate (IEEE 802.3ad)

Auto-negotiation

- Speed (10, 100 and 1000 Mbps) and duplex mode (half or full)
- Auto MDIX on 10/100/1000 port (for straight through or crossover cables)

Traffic control

- IEEE 802.3x

DHCP

- DHCP Relay, Option 82 and Snooping (including port-MAC-IP binding)

Layer-3 Routing (IPv4)

IP routing

- Static routing, RIP (v1, v2), OSPF (v2) and BGP (v4, including graceful restart)
- Multiple-VRF
- Graceful Restart extensions for OSPF and BGP
- GRE Tunneling

Multicast

- IGMP (v1, v2 and v3) and IGMP snooping
- PIM-SM, PIM-DM and DVMRP

Network protocol

- Generic UDP relay (including DHCP Relay)
- TCP/IP stack
- ARP

Resilience

- VRRP (v2)

Layer-3 Routing (IPv6)

IP routing

- Static routing, RIP (ng), OSPF (v3) and Multiprotocol Extensions for BGP
- Graceful Restart extensions for OSPF and BGP

Multicast

- MLD snooping
- PIM-SM, PIM-DM¹

Network protocol

- Generic UDP relay (including DHCP Relay)
- TCP/IP stack
- NDP

Resilience

- VRRP (v3)

Convergence

Priority queues

- Eight hardware based queues per port

Traffic prioritization

- Flow-based QoS in hardware (L1-L4)
- Internal and external (a.k.a., remarking) prioritization
- Auto-QoS for Alcatel-Lucent IP phones & NMS

Traffic redirection/mirroring

- Policy-based routing (redirection)
- Policy-based mirroring
- Server load balancing (including health monitoring of servers)

Bandwidth management

- Flow based bandwidth management, ingress policing / egress shaping
- Port-based egress shaping

Convergence

Queue management

- Configurable de-queuing algorithm
- Strict Priority
- Weighted Round Robin
- Deficient Round Robin

Security

Traffic filtering

- Traffic Anomaly Detection
- Flow-based filtering in hardware (L1-L4)

User authentication

- IEEE 802.1X, with Group Mobility and Guest VLAN support
- MAC Based Authentication for non 802.1X host

Switch protocol security

- MD5 for RIPv2, OSPFv2 and SNMPv3
- SSHv2 for secure CLI session (including Secure Copy)
- SSL for secure HTTP session

Switch management

- Local authentication database
- Remote authentication RADIUS, TACACS+, LDAP and ACE servers

Management

Configuration mode

- Command Line Interface
- Telnet/SSH for remote CLI access
- Web-base (HTTP / HTTPS)
- SNMP v1/v2c/v3 for complete NMS integration

Management access type

- Serial console port for local and remote (modem dial up) access (RJ45)
- Out-of-band Ethernet access (10/100/1000 RJ45)
- In-band Ethernet access

System maintenance

- In service software upgrade
- Port mirroring (one-to-one, many-to-one)
- RMON (Remote Monitoring): statistics, history, alarm and events
- sFlow™
- Local and remote logging (Syslog)
- Detailed statistics / alarm/debug information per process
- Ethernet OAM (802.1ag)
- IP OAM (ICMP Ping and Traceroute)
- NTP (Network Time Protocol)
- Internal flash (Compact Flash) to feature:
 - working directory
 - certified directory

System file transfer

- Xmodem
- FTP (File Transfer Protocol)

Service and support

Default warranty

- 1 year on hardware, 90 days on software

Support basic

- One year – 7x24 phone. Includes e-service web access, software releases and repair and return of hardware to be completed in 10 business days from receipt.

Support plus

- One year – 7x24 phone. Includes e-service web access, software releases and advanced shipment for next business day arrival of replacement hardware.

Ordering information

Bundles

PART NUMBER	DESCRIPTION
OS9700E-CB-A	OS9700E Base Bundle (chassis, 2 PSUs and 1 CMM) for AC power. Requires E-series modules ¹
OS9700E-RCB-A	OS9700E Redundant Bundle (chassis, 3 PSUs and 2 CMMs) for AC power. Requires E-series modules ¹
OS9800E-CB-A	OS9800E Base Bundle (chassis, 3 PSUs and 1 CMM) for AC power. Requires E-series modules ¹
OS9800E-RCB-A	OS9800E Redundant Bundle (chassis, 4 PSUs and 2 CMMs) for AC power. Requires E-series modules ¹

Chassis and power supplies

PART NUMBER	DESCRIPTION
OS9700-CHASSIS	10-slot chassis - 8 dedicated slots for any OS9 network interfaces, 2 dedicated slots for CMMs (management and switching fabric)
OS9800-CHASSIS	18-slot chassis - 16 dedicated slots for any OS9 network interfaces, 2 dedicated slots for CMMs (management & switching fabric)
OS9-PS-0600A	600W AC power supply for OS9000/OS9000E systems ¹
OS9-PS-0600D	600W DC power supply for OS9000/OS9000E systems

Management and fabric modules

PART NUMBER	DESCRIPTION
OS9700E-CMM	OS9700E Chassis Management Module for use in the OmniSwitch 9700 chassis. Requires E-series modules
OS9800E-CMM	OS9800E Chassis Management Module for use in the OmniSwitch 9800 chassis. Requires E-series modules

Network interface cards

PART NUMBER	DESCRIPTION
OS9-XNI-U2E	OS9000E Network interface with two unpopulated ports of 10GBaseX (XFP MSA). Requires E-series CMMs
OS9-GNI-U24E	OS9000E Network interface with 24 unpopulated ports of 1000BASEX MiniGBIC (SFP MSA). Requires E-series CMMs
OS9-GNI-C24E	OS9000E Network interface with 24 ports of 10/100/1000BaseT/TX (RJ45). Requires E-series CMMs

Transceivers and cables

PART NUMBER	DESCRIPTION
XFP-10G-SR	10 Gigabit Ethernet optical transceiver (XFP MSA – up to 300m)
XFP-10G-LR	10 Gigabit Ethernet optical transceiver (XFP MSA – up to 10km)
XFP-10G-ER40	10 Gigabit Ethernet optical transceiver (XFP MSA – up to 40km)
XFP-10G-ZR80	10 Gigabit Ethernet optical transceiver (XFP MSA – up to 80km)
SFP-GIG-SX	Gigabit Ethernet optical transceiver (SFP MSA – up to 550m)
SFP-GIG-LX	Gigabit Ethernet optical transceiver (SFP MSA – up to 10km)
SFP-GIG-LH40	Gigabit Ethernet optical transceiver (SFP MSA – up to 40km)
SFP-GIG-LH70	Gigabit Ethernet optical transceiver (SFP MSA – up to 70km)
SFP-GIG-xxCWD60	Gigabit Ethernet CWDM optical transceiver (SFP MSA – up to 60km – 8 wavelengths)
SFP-GIG-EXTND	Gigabit Ethernet optical transceiver (SFP MSA – Gigabit extender up to 2km)
SFP-DUAL-MM	Dual Speed (100FX – 1000LX) optical transceiver (SFP MSA – up to 2km (FX) / 550m (LX))
SFP-DUAL-SM10	Dual Speed (100FX – 1000LX) optical transceiver (SFP MSA – up to 10km (FX and LX))

¹Country specific power cords required (“-xx” suffix to the p/n where xx is the country code). Example: OS9700E-CB-A-EU

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