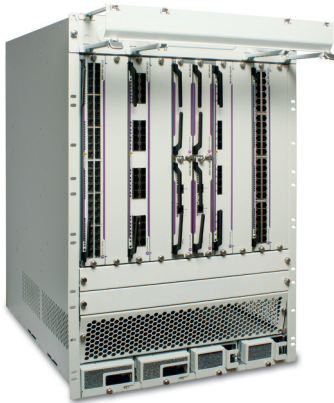


# Alcatel-Lucent OmniSwitch 10K

MODULAR LAN CHASSIS | AOS RELEASE 7.1.1

The Alcatel-Lucent OmniSwitch™ 10K Modular LAN Chassis platform is a high-capacity, high-performance modular Ethernet LAN switch based on our state-of-the-art Alcatel-Lucent Operating System (AOS) that is field proven in enterprise, service provider, and data center environments. The OmniSwitch 10K delivers uninterrupted network uptime with non-stop Layer 2 and Layer 3 forwarding and in-service software upgrades. Deep packet buffers, a lossless virtual output queuing (VOQ) fabric, and extensive traffic management capabilities improve application performance and user experience. Its scalability — beyond 5.12 terabits — will meet your bandwidth requirements for today and tomorrow. OmniSwitch 10K Multi-Chassis Link Aggregation (MC-LAG) and Ethernet Ring Protection (ERP) simplifies Layer 2 network deployments and provides better performance and resiliency.

The OmniSwitch 10K class leading low-power consumption, front-to-back cooling, compact form factor, and all front accessible components make it a perfect fit for data center applications and as a long-term upgrade to any network.



FEATURES	BENEFITS
High-density, non-blocking 10GigE ports with large per-port packet buffers	Maximum network performance delivers quality bandwidth for improved application and user experience. Reduces network layers and investment/operation costs
Multi-Chassis Link Aggregation (MC-LAG)	Optimizes/simplifies layer 2 network designs, reduces administration overhead while increasing network resiliency. Works with any Ethernet device that supports 802.3ad standard. Provides interoperability, investment protection, and flexibility
Scalable multi-use capable system architecture	MPLS and data center ready architecture expands deployment capabilities, reduces vendor sprawl and lowers operating costs
Compact optimized form factor	Chassis size, component accessibility, and compatibility with existing platforms provide a painless replacement upgrade. Front to back cooling and dense 10GigE ports (256 ports per chassis) meet stringent data center application needs
High reliability	OmniSwitch 10K increased system redundancy and resiliency provide maximum uptime in the network core

## Detailed product features

### Simplified manageability

- Intuitive Alcatel-Lucent command line interface (CLI) in a BASH environment
- Simple Network Management Protocol (SNMP) v1/2/3
- Local and remote server logging
- Policy and Port-based mirroring
- Remote port mirroring
- Local port monitoring
- sFlow v5 and RMON
- UDLD and DDM
- File upload using USB, TFTP, FTP, SFTP, or SCP
- Auto-negotiating 10/100/1000 ports
- Auto MDI/MDIX
- BOOTP/DHCP client with option 60
- DHCP relay
- IEEE 802.1AB LLDP with MED extensions
- NTP

### Resiliency and high availability

- Smart continuous switching technology
- ISSU
- Multi-Chassis Link Aggregation (MC-LAG)
- ITU-T G.8032 Ethernet Ring Protection
- VRRP
- BFD
- Ring Rapid Spanning Tree (RRSTP)
- IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
- Per-VLAN Spanning Tree (PVST+) and Alcatel-Lucent 1x1 STP mode
- IEEE 802.3ad Link Aggregation Control Protocol (LACP) and static LAG groups

### Advanced security

- SSH with public key infrastructure (PKI) support
- Centralized RADIUS and Lightweight Directory Access Protocol (LDAP) user authentication
- TACACS+ client
- Learned Port Security (LPS) or MAC Address Lockdown
- DHCP snooping, DHCP IP/Address Resolution Protocol (ARP) spoof protection
- BPDU blocking and STP root guard
- Traffic filtering ACLs; flow-based filtering in hardware (Layer 1 to Layer 4)

### Converged networks (QoS)

- Priority queues: Minimum of 8 hardware-based queues per port
- Traffic prioritization: Flow-based QoS
- Flow-based bandwidth management
- Queue management with configurable scheduling algorithm
- WRED
- DiffServ Architecture

### IPv4 routing

- Multiple virtual routing and forwarding (VRF)
- Static routing, Routing Information Protocol (RIP) v1 and v2
- Open Shortest Path First (OSPF) v2 with graceful restart
- Border Gateway Protocol (BGP) v4 with graceful restart
- (GRE) tunneling
- VRRP v2

### IPv6 routing

- Multiple virtual routing and forwarding (VRF)
- Static routing
- Routing Information Protocol Next Generation (RIPng)
- OSPF v3
- BGP v4 (with extensions to IPv6 routing)
- Graceful restart extensions for OSPF and BGP
- VRRP v3
- NDP

### Chassis model

OMNISWITCH 10K	
Number of slots	12, 8 NI slots, 4 half-slots for CMM/CFM
Management module (CMM)	2
Fabric module (CFM)	2
Network interface (NI)	8
Power supply (AC/DC)	4
PHYSICAL	
Height (19-in. and 23-in. rack mount)	16U
Dimensions (HxWxD)	71.2 x 44.2 x 58.5 cm (28 x 17.4 x 23 in.)
Weight (loaded)	89.8 kg (198 lb)
ENVIRONMENT	
Operating temperature	0°C to 45°C (32°F to 113°F)
Storage temperature	10°C to 70°C (14°F to 158°F)
Operating and storage humidity	10% to 90% (non-condensing)
Heat dissipation (fully loaded - worst case)	14572 BTU/hr

### IPv4/IPv6 Multicast

- Internet Group Management Protocol (IGMP) v1/v2/v3 snooping
- Protocol Independent Multicast – Sparse-Mode (PIM-SM), Source Specific Multicast (PIM-SSM)/Protocol Independent Multicast – Dense-Mode (PIM-DM)
- Distance Vector Multicast Routing Protocol (DVMRP)

### Metro Ethernet access

- Ethernet services support per IEEE 802.1ad (QinQ VLAN stacking) Provider Bridge services
- 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
- Private VLAN feature
- DHCP Option 82: Configurable relay agent information

## Network interface modules

	OS10K-CMM	OS10K-CFM	OS10K-GNI-C48E	OS10K-GNI-U48E	OS10K-XNI-U32S	OS10K-XNI-U16E (ROADMAP)
<b>CPU</b>	1.5 GHz dual-core	N/A	1.2 GHz dual-core	1.2 GHz dual-core	1.2 GHz dual-core	1.2 GHz dual-core
<b>Memory</b>	4Gb SDRAM, 2Gb CF	N/A	208 Mb packet buffer per port	208 Mb packet buffer per port	1.25Gb packet buffer per port	1.25Gb packet buffer per port
<b>Interface type</b>	USB, Console, 10/100/1000Base-Tx	N/A	10/100/1000Base-Tx	SFP	SFP+, SFP 1GigE	SFP+, SFP 1GigE
<b>L2 table</b>	N/A	N/A	256K*/512K	256K*/512K	32K	512K
<b>L3 table IPv4</b> (IPv6 is 1/2 of IPv4 capacity)	N/A	N/A	256K*/512K	256K*/512K	16K	512K
<b>Policy table</b>	N/A	N/A	128K*/256K	128K*/256K	8K	256K
<b>VRF support</b>	N/A	N/A	Yes	Yes	Yes	Yes
<b>MPLS ready</b>	N/A	N/A	Yes	Yes	No	Yes

\*18Mb TCAM

## Technical specifications

### Supported standards

#### IEEE standards

- IEEE 802.1D (STP)
- IEEE 802.1p (CoS)
- IEEE 802.1Q (VLANs)
- IEEE 802.1ak (Multiple VLAN Registration Protocol)-(roadmap)
- IEEE 802.1ad (Provider bridge QinQ VLAN stacking)
- IEEE 802.1s (MSTP)
- IEEE 802.1w (RSTP)
- 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.8032, June 2007 draft (Ethernet Ring Protection)

#### IETF standards

##### IPv4

- RFC 2003 IP/IP Tunneling
- RFC 2784 GRE Tunneling

##### OSPF

- RFC 1253/1850/2328 OSPF v2 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 1722/1723/2453/1724 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 3065 BGP AS Confederations
- RFC 2763 Dynamic Host Name
- RFC 2966 Route Leaking
- RFC 3719 Interoperable Networks

##### IP multicast

- RFC 1075 DVMRP
- RFC 1112 IGMP v1
- RFC 2236/2933 IGMP v2 and MIB
- RFC 2362 PIM-SM
- RFC 2365 Multicast
- RFC 2715/2932 Multicast Routing MIB
- RFC 2934 PIM MIB for IPv4
- RFC 3376 IGMPv3
- RFC 5060 Protocol Independent Multicast MIB
- RFC 5132 IP Multicast MIB
- RFC 5240 PIM Bootstrap Router MIB

##### IPv6

- RFC 2292/2553/3493/3542 IPv6 Sockets
- RFC 2373/2374/3513/3587 IPv6 Addressing
- RFC 4007 IPv6 Scoped Address Architecture
- RFC 4193 Unique Local IPv6 Unicast Addresses
- RFC 2460/2461/2462/2464 Core 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 2893/4213 IPv6 Transition Mechanisms
- RFC 3056 IPv6 Tunneling
- RFC 3595 TC for Flow Label

##### Manageability

- RFC 1350 TFTP Protocol
- RFC 2131 DHCP server/client
- RFC 854/855 Telnet and Telnet Options
- 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 2570-2576/3411-3415 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 959/2640 FTP

##### 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 2284 PPP EAP
- RFC 2869/2869bis RADIUS Extension

##### Quality of service

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

##### Others

- RFC 791/894/1024/1349 IP and IP/Ethernet
- RFC 792 ICMP
- RFC 768 UDP
- 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 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 DHCP/BootP Relay
- RFC 2132 DHCP Options
- RFC 2251 LDAP v3
- RFC 2338/3768/2787 VRRP and MIB
- RFC 3060 Policy Core
- RFC 3176 sFlow
- RFC 3021 Using 31-bit Prefix

## 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

## Ordering information

### Chassis and power supplies

PART NUMBER	DESCRIPTION
OS10K8-CB-X-XX	OS10K base bundle includes 1 x OS10K chassis, 2 x fan trays, 2 x power supplies, 1 x OS10K-CMM chassis management module, 1 x OS10K-CFM chassis fabric module and fully featured AOS software with advanced IP routing SW (IPv4/IPv6). X-XX denotes power supply type and country specific power cord
OS10K8-RCB-X-XX	OS10K redundant bundle includes 1 x OS10K chassis, 2 x fan trays, 4 x power supplies, 2 x OS10K-CMM chassis management module, 2 x OS10K-CFM chassis fabric module and fully featured AOS software with advanced IP routing SW (IPv4/IPv6). X-XX denotes power supply type and country specific power cord
OS10K-FAN-TRAY	OS10K fan tray. Spare
OS10K-PS-25A-XX	OS10K AC power supply. Provides up to 2.5 kW of power, auto-ranging 110VAC-240VAC. -XX country power cord designator
OS10K-PS-24D	OS10K DC power supply. Provides up to 2.4 kW of power. 36v-72v DC input power

### Management and switching fabric modules

PART NUMBER	DESCRIPTION
OS10K-CMM	OS10K Chassis Management Module with SSL (DES, 3DES, RC2, RC4). The OS10K-CMM Chassis Management Module includes a processor module, a fabric module, and AOS software with advanced IP routing SW (IPv4/IPv6)
OS10K-CFM	OS10K Chassis Fabric Module. OS10K-CFM provides additional switch capacity and increased fabric redundancy

### Network interface cards

PART NUMBER	DESCRIPTION
OS10K-XNI-U32S	OS10K network interface card includes 32 unpopulated 10G SFP+ ports. Supports standard tables for L2, L3 and ACL policies
OS10K-GNI-U48E	OS10K Gigabit network interface card includes 48 unpopulated wire rate 1000BaseX SFP ports. This Enhanced linecard is MPLS ready, and provides large table support for L2, L3, and ACL policies
OS10K-GNI-C48E	OS10K Gigabit network interface card offers 48 wire rate RJ-45 1000Base-T ports. This Enhanced linecard is MPLS ready, and provides large table support for L2, L3, and ACL policies

Contact your Alcatel-Lucent reseller for additional information on country specific power cords and a complete list of Alcatel-Lucent SFP+ and SFP transceivers.

### Service and support

#### Warranty

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

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