

ALCATEL-LUCENT OMNISWITCH 6450

STACKABLE GIGABIT ETHERNET LAN SWITCH FAMILY

The Alcatel-Lucent OmniSwitch™ 6450 Stackable Gigabit Ethernet LAN value switch family offers versatile, 24/48 port fixed configuration gigabit switches with optional upgrade paths for 10 Gigabit Ethernet (GigE) stacking, 10 GigE uplinks and metro Ethernet services.

Offering a design optimized for flexibility and scalability as well as low power consumption, the OmniSwitch 6450 is an outstanding edge solution. It uses the field-proven Alcatel-Lucent Operating System (AOS) to deliver highly available, secure, self-protective, easily managed and eco-friendly networks.



24-port



48-port

The Alcatel-Lucent OmniSwitch 6450 family is embedded with the latest technology, AOS innovations and offers maximum investment protection.

Solutions benefiting from the OmniSwitch 6450 switch family are:

- Edge of small-to-mid-sized networks
- Branch office enterprise and campus workgroups
- Residential and commercially managed services applications

FEATURES

- 24 ports and 48 ports, Power over Ethernet (PoE), non-PoE and 24-port fiber models with two fixed Small Form Factor Pluggable (SFP+) 10 Gb ready interfaces
- Scalability from 24 to 384 gigabit ports and 16 10GigE ports
- Optional SFP+ stacking module
- Optional 10GigE uplink license option
- Optional metro services feature license option for service provider deployments
- Support for IEEE 802.3af as well as IEEE 802.3at-compliant PoE
- Internal AC or DC redundant power supplies

MANAGEMENT

- AOS field-proven software with management through web interface (WebView), command line interface (CLI), and Simple Network Management Protocol (SNMP)

- Ethernet operations, administration and management (OA&M) support for service configuration and monitoring
- Support by Alcatel-Lucent OmniVista™ 2500 Network Management System (NMS)
- Alcatel-Lucent 5620 Service Aware Manager (SAM) applications for service providers

SECURITY

- Flexible device and user authentication with Alcatel-Lucent Access Guardian (IEEE 802.1x/MAC/captive portal) with Host Integrity Check (HIC)
- Advanced quality of service (QoS) and Access Control Lists (ACLs) for traffic control, including an embedded denial of service (DoS) engine to filter out unwanted traffic attacks
- Extensive support of AOS user-oriented features such as learned port security (LPS), port mapping, Dynamic Host Configuration Protocol (DHCP) binding tables and User Network Profile (UNP)

PERFORMANCE AND REDUNDANCY

- Advanced Layer 2+ features with basic Layer 3 routing for both IPv4 and IPv6
- Triple speed (10/100/1000) user interfaces and GigE fiber interfaces (SFPs) supporting 100Base-X or 1000Base-X optical transceivers
- 10 Gb uplinks with license installed
- Wire-rate switching and routing performance



- High availability with virtual chassis concept, redundant stacking links, primary/secondary unit failover, hot-swappable power options and configuration rollback

CONVERGENCE

- Enhanced voice over IP (VoIP) and video performance with policy-based QoS
- Future-ready support for multimedia applications with wire-rate multicast
- IEEE 802.3at PoE+ support for IP phones, wireless LAN (WLAN) access points and video cameras)

BENEFITS

- Meets any customer configuration need and offers excellent investment protection and flexibility, as well as ease of deployment, operation and maintenance
- Outstanding performance when supporting real-time voice, data and video applications for converged scalable networks
- Ensures efficient power management, reduces operating expenses (OPEX) and lowers total cost of ownership (TCO) through the low power consumption and dynamic PoE allocation, which delivers only the power needed by the attached device

- A field-upgradeable solution that makes the network highly available and reduces OPEX
- Fully secures the network at the edge at no additional cost
- Enterprise-wide cost reduction through hardware consolidation to achieve network segmentation and security without additional hardware installation
- Supports cost-effective installation and deployment with automated switch setup and configuration and end-to-end virtual LAN (VLAN) provisioning
- Simplifies metro Ethernet network OA&M for service providers

ALCATEL-LUCENT OMNISWITCH 6450 24- AND 48-PORT MODELS

All models ship with two fixed SFSP+ ports that operate at 1Gbps by default. 10Gbps operation requires the installation of the OS6450-SW-PERF license. These models also offer a two port expansion slot for additional gigabit uplinks or 10Gbps stacking modules. Both PoE and non-PoE models are full rack width, power optimized, fixed configuration chassis in a 1U form factor.

Table 1. Available OmniSwitch 6450 models
24/48 port models

| CHASSIS | 10/100/1000 RJ45 PORTS | SFP+ GiGABIT UPLINK SFP+ 10 GIGABIT UPLINK** | 10 GBPS SFP+ STACKING EXPANSION MODULE PORTS | PRIMARY POWER | BACKUP POWER |
|-----------------------|------------------------|--|--|---------------|----------------|
| Non-PoE models | | | | | |
| OS6450-24 | 24 | 2 | 2 | Internal AC | Internal AC/DC |
| OS6450-48 | 48 | 2 | 2 | Internal AC | Internal AC/DC |
| PoE models | | | | | |
| OS6450-P24 | 24 | 2 | 2 | Internal AC | External AC |
| OS6450-P48 | 48 | 2 | 2 | Internal AC | External AC |

** Requires OS6450-SW-PERF license to enable 10 gigabit uplink capability.
OmniSwitch 6450-P24 and OmniSwitch 6450-P48 models comply with both IEEE 802.3af/at standards.

| CHASSIS | 10/100/1000 SFP PORTS | 10/100/1000 COMBO PORTS | SFP+ GiGABIT UPLINK SFP+ 10 GIGABIT UPLINK** | 10 GBPS SFP+ STACKING EXPANSION MODULE PORTS | PRIMARY POWER | BACKUP POWER |
|---------------------|-----------------------|-------------------------|--|--|---------------|----------------|
| Fiber models | | | | | | |
| OS6450-U24 | 22 | 2 | 2 | 2 | Internal AC | Internal AC/DC |

** Requires OS6450-SW-PERF license to enable 10 gigabit uplink capability.
• Combo ports are ports individually configurable to be 10/100/1000Base-T or 100/1000Base-X, which support SFP transceivers for short, long and very long distances.
• SFP ports support 100/1000 Base-X SFP transceivers

Expansion port models

| CHASSIS | GIGABIT RJ45 PORTS | GIGABIT SFP PORTS | 10 GBPS SFP+ STACKING MODULE* |
|---------------|--------------------|-------------------|-------------------------------|
| OS6450-XNI-U2 | 0 | 0 | 2 |
| OS6450-GNI-U2 | 0 | 2 | 0 |
| OS6450-GNI-C2 | 2 | 0 | 0 |

* Only stacking mode supported

Technical specification - 24/48 port models

| | OS6450-24 | OS6450-P24 | OS6450-48 | OS6450-P48 | OS6450-U24 |
|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Port | | | | | |
| RJ-45 10/100/1000 ports | 24 | 24 | 48 | 48 | 0 |
| RJ-45/SFP 10/100/1000 combo ports | 0 | 0 | 0 | 0 | 2 |
| SFP 100/1000 ports | 0 | 0 | 0 | 0 | 22 |
| SFP+ Gigabit/10 Gigabit uplink ports | 2 | 2 | 2 | 2 | 2 |
| Ports per expansion module | 2 | 2 | 2 | 2 | 2 |
| PoE ports | 0 | 24 | 0 | 48 | 0 |
| Max 24/48 port models in a stack | 8 | 8 | 8 | 8 | 8 |
| Dimensions | | | | | |
| Switch width | 17.32 in. (44.0 cm) | 17.32 in. (44.0 cm) | 17.32 in. (44.0 cm) | 17.32 in. (44.0 cm) | 17.32 in. (44.0 cm) |
| Switch height | 1.73 in. (4.4 cm) | 1.73 in. (4.4 cm) | 1.73 in. (4.4 cm) | 1.73 in. (4.4 cm) | 1.73 in. (4.4 cm) |
| Switch depth | 12.3 in. (31.24 cm) | 12.3 in. (31.24 cm) | 15.4 in. (39.1 cm) | 15.4 in. (39.1 cm) | 12.3 in. (31.24 cm) |
| Switch weight | 9 lb. (4.08 kg) | 11 lb. (5.05 kg) | 12 lb. (5.44 kg) | 15 lb. (6.8 kg) | 9 lb. (4.08 kg) |
| Performance | | | | | |
| Switch throughput with 2x10G ports | 65.5 Mpps | 65.5 Mpps | 101.2 Mpps | 101.2 Mpps | 65.5 Mpps |
| Stacking capacity (full duplex/aggregated) | 20 Gbps/ 40 Gbps | 20 Gbps/ 40 Gbps | 20 Gbps/ 40 Gbps | 20 Gbps/ 40 Gbps | 20 Gbps/ 40 Gbps |
| Operating conditions | | | | | |
| Operating temperature | 0°C to +45°C 32°F to 113°F | 0°C to +45°C 32°F to 113°F | 0°C to +45°C 32°F to 113°F | 0°C to +45°C 32°F to 113°F | 0°C to +45°C 32°F to 113°F |
| Storage temperature | -40°C to +75°C -40°F to +167°F | -40°C to +75°C -40°F to +167°F | -40°C to +75°C -40°F to +167°F | -40°C to +75°C -40°F to +167°F | -40°C to +75°C -40°F to +167°F |
| Humidity (operating and storage) | 5% - 95% | 5% - 95% | 5% - 95% | 5% - 95% | 5% - 95% |
| Fan (variable speed)* | Fan less | 4 fan | 3 fan | 4 fan | 3 fan |
| Acoustic (dB) | 0 db(A) | <40dB(A) | <40dB(A) | <40dB(A) | <40dB(A) |
| System power consumption (watts)** | <50W | <60W | <65W | <75W | <65W |
| Heat dissipation (BTU) | <170 | <204 | <221 | <256 | <221 |

* Acoustic levels measured with a single power supply at room temperature

** Power consumption measured under fully loaded traffic conditions

OmniSwitch 6450 backup supplies and specifications

The OmniSwitch 6450 24/U24/48 port models offer a 1RU internal backup supply configuration where the redundant supply is installed in a power supply bay at the back of the unit.

The OmniSwitch 6450 P24/48 port models offer a 2RU external backup supply configuration where the redundant supply/tray combination mounts above the switch and uses a remote cable for the switch/supply connection. All parts and accessories are included with the backup supply kit.

| SPECIFICATION | BACKUP POWER SUPPLY MODEL | | | |
|-------------------------|---------------------------|--------------------|--------------------|--------------------|
| | OS6450-BP | OS6450-BP-PH | OS6450-BP-PX | OS6450-BP-D |
| Style | Framed | Framed | Framed | Framed |
| Internal/external | Internal | External | External | Internal |
| Input voltage | 90-220V AC | 90-220V AC | 90-220V AC | 36-72V DC |
| Output voltage | 12V DC | 12V DC/54V DC | 12V DC/54.5V DC | 12V DC |
| Wattage | 90W | 530W | 900W | 90W |
| PoE power budget | N/A | 390W | 780W | N/A |
| Power supply efficiency | 85% | 85% | 80% | 85% |
| Weight | 2.45 lbs (1.11 kg) | 5.75 lbs (2.59 kg) | 6.02 lbs (2.73 kg) | 2.45 lbs (1.11 kg) |
| Total RU with BPS | 1 RU | 2 RU | 2 RU | 1 RU |
| Models supported | OS6450-24/48/U24 | OS6450-P24 | OS6450-P48 | OS6450-24/48/U24 |

INDICATORS

System LEDs

- System (OK) (chassis HW/SW status)
- PWR (primary power supply status)
- PRI (virtual chassis primary)
- BPS (backup power status)
- LED segment display indicates the stack ID of the unit in the stack: 1 to 8 (24/48 port models)

Per-port LEDs

- 10/100/1000: PoE, link/activity
- SFP: Link/activity
- Stacking: Link/activity

Compliance and certifications

Commercial

EMI/EMC

- FCC CRF Title 47 Subpart B (Class A limits. Note: Class A with UTP cables)
- VCCI (Class A limits. Note: Class A with UTP cables)
- AS/NZS 3548 (Class A limits. Note: Class A with UTP cables)
- CE marking for European countries (Class A Note: Class A with UTP cables)
- EN 55022: 2006 (Emission Standard)
- EN 61000-3-3: 1995
- EN 61000-3-2: 2006
- EN 55024: 1998 (Immunity standards)
 - EN 61000-4-2: 1995+A1: 1998
 - EN 61000-4-3: 1996+A1: 1998
 - EN 61000-4-4: 1995
 - EN 61000-4-5: 1995
 - EN 61000-4-6: 1996
 - EN 61000-4-8: 1994
 - EN 61000-4-11: 1994
- IEEE802.3: Hi-Pot Test (2250 V DC on all Ethernet ports)

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 Laser, EN 60825-2 Laser
- CDRH Laser

DETAILED PRODUCT FEATURES

Simplified management

Configuration management interfaces

- Intuitive Alcatel-Lucent CLI with familiar

interface reducing training costs

- Easy-to-use, point-and-click web based element manager (WebView) with built-in help for easy configuration
- Integration with Alcatel-Lucent OmniVista for network management
- Full configuration and reporting using SNMPv1/2/3 across all OmniSwitch families to facilitate third party NMS integration
- Remote Telnet management or Secure Shell access using SSH
- File upload using USB, TFTP, FTP, SFTP, or SCP for faster configuration
- Human-readable ASCII-based config files for off-line editing and bulk configuration
- Managed by Alcatel-Lucent 5620 Service Aware Manager

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 that facilitates passing mirrored traffic through the network to a remotely connected device.
- Port monitoring feature that allows capture of Ethernet packets to a file, or for on-screen display to assist in troubleshooting
- sFlow v5 and RMON: For advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- IP tools: ping and trace route

Network configuration

- Auto remote configuration download feature
- 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 allows auto-config of switch IP information for simplified deployment
- DHCP relay to forward client requests to a DHCP server
- Alcatel-Lucent Mapping Adjacency Protocol (AMAP) for building topology maps
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP) with MED extensions for automated device discovery
- GARP VLAN Registration Protocol (GVRP)

for 802.1Q-compliant VLAN pruning and dynamic VLAN creation

- Auto QoS for switch management traffic as well as traffic from Alcatel-Lucent IP phones
- Network Time Protocol (NTP) for network wide time synchronization
- Stackable to eight units

Resiliency and high availability

- Ring Rapid Spanning Tree (RRSTP) optimized for ring topology to provide less than 100ms convergence time
- IEEE 802.1s Multiple Spanning Tree Protocol: encompasses IEEE 802.1D STP and IEEE 802.1w Rapid Spanning Tree Protocol
- 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 is supported
- Dual-home link (DHL) support for sub second link protection without STP
- Virtual Router Redundancy Protocol (VRRP) to provide highly available routed environments
- Broadcast and multicast storm control to avoid degradation in overall system performance
- Uni-Directional Link Detection (UDLD): Detects and disables unidirectional links on fiber optic interfaces.
- Layer 2 port loopback detection for preventing customer loops on Ethernet access ports.
- Redundant and hot-swappable power supplies, transceivers modules offering uninterruptible service
- Dual image and dual configuration files storage provides backup

Advanced security

Access control

- AOS Access Guardian framework for comprehensive user policy based network access control (NAC)*
- Autosensing 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
- The 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) – Simplify NAC management and control by dynamically providing pre-defined policy configuration to authenticated clients–VLAN, ACL, BW, HIC
- SSH for secure CLI session with PKI support
- Centralized RADIUS and LDAP user authentication

Containment, monitoring and quarantine

- Support for Alcatel-Lucent Quarantine Manager and quarantine VLAN*
- Learned Port Security (LPS) or MAC address lockdown - Secures network access on user or trunk ports based on a MAC address
- DHCP Snooping, DHCP IP spoof protection
- TACACS+ client allows for authentication authorization and accounting with a remote TACACS+ server
- Dynamic ARP protection and ARP poisoning detection
- Access control lists to filter out unwanted traffic including denial of service attacks; Flow-based filtering in hardware (L1-L4)
- 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 Spanning Tree Protocol root node

Converged networks

PoE

- The PoE models support Alcatel-Lucent IP phones and WLAN access points, as well as any IEEE 802.3af or IEEE 802.3at compliant end device.
- Configurable per port PoE priority and max power for power allocation
- Dynamic PoE allocation, delivers only the power needed by the Powered Devices (PD) up to the total power budget for most efficient power consumption.

QoS

- Priority queues: eight hardware-based queues per port for flexible QoS management
- Traffic prioritization: Flow-based QoS with internal and external (a.k.a., remarking) prioritization
- Bandwidth management: flow based bandwidth management, ingress rate limiting; egress rate shaping per port
- Queue management: configurable scheduling algorithm: Strict Priority (SQP),

Weighted Round Robin (WRR) and Deficit Round Robin (DRR)

- Congestion avoidance: Support for End to End Head-Of-Line (E2E-HOL) Blocking Protection
- Auto QoS for switch management traffic as well as traffic from Alcatel-Lucent IP phones
- Three color marker - Single/Dual Rate – policing with Commit BW, Excess BW, Burst size

Layer-2, Layer-3 Routing and Multicast

Layer-2 switching

- Up to 16,000 MACs
- Up to 4000 VLANs
- Up to 2k ACLs
- Latency: < 4 µseconds

IPv4 and IPv6

- Static routing for IPv4 and IPv6
- RIP v1 and v2 for IPv4, RIPng for IPv6
- Up to 256 IPv4/ 128 IPv6 static and RIP routes.
- Up to 128 IPv4 and 16 IPv6 interfaces

Multicast

- IGMPv1/v2/v3 snooping to optimize multicast traffic
- MLD snooping
- Up to 1000 multicast groups/stack
- IP Multicast VLAN (IPMVLAN) for optimized multicast replication at the edge saving network core resources

Network protocols

- DHCP relay (including generic UDP relay)
- ARP
- Dynamic Host Configuration Protocol (DHCP) relay
- DHCP relay to forward client requests to a DHCP server
- Generic User Datagram Protocol (UDP) relay per VLAN
- DHCP Option 82 – configurable relay agent information

Metro Ethernet access (features available through Metro license upgrade)

- Ethernet services support per IEEE 802.1ad Provider Bridge
 - 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 and mapping

- IEEE 802.1ag Ethernet OAM: Connectivity Fault Management (L2 ping and link trace)
- Ethernet OAM compliant with IEEE 802.3ah
- ITU-T G.8032 Ethernet Ring Protection designed for loop protection and fast convergence times (sub 50 ms) in ring topologies.
- Private VLAN feature for user traffic segregation
- Service Assurance Agent (SAA) for proactively measuring network health, reliability and performance. Four SAA tests including L2-MAC, IP, ETH-LB and ETH-DMM depending on your network requirements.
- Customer provider edge (CPE) test head traffic generator and analyzer tool used in the metro Ethernet network to validate customer Service Level Agreements (SLA)
- IP Multicast VLAN (IPMVLAN) for optimized multicast replication at the edge saving network core resources
- Layer 2 Multicast VLAN Replication (MVR) – Allows users from different multicast VLANs to subscribe to a multicast group from an upstream trunk interface
- Three color marker - Single/dual rate – Policing with commit BW, excess BW, burst size
- TR-101 PPOE Intermediate Agent allowing for the PPOE network access method
- MAC-Forced forwarding support according to RFC 4562
- L2CP – Layer 2 Control Protocol for tunneling a customer's L2CP frames, via well known address, on a given UNI for the EPL and EVPL services
- Dying Gasp via SNMP and Ethernet OAM delivery
- MEF 9 and 14 certified
- Managed by Alcatel-Lucent 5620 Service Aware Manager

Supported standards

IEEE standards

- IEEE 802.1D (STP)
- IEEE 802.1p (CoS)
- IEEE 802.1Q (VLANs)
- IEEE 802.1ad (Provider Bridge)
- Q-in-Q (VLAN stacking)
- IEEE 802.1ag (Connectivity Fault Management)
- IEEE 802.1s (MSTP)
- IEEE 802.1w (RSTP)

- IEEE 802.1X (Port Based Network Access Protocol)
- 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 802.3af (Power-over-Ethernet)
- IEEE 802.3at (Power-over-Ethernet)
- IEEE 802.ah (Ethernet first mile)

ITU-T standards

- ITU-T G.8032: Draft (June 2007) Ethernet Ring Protection

IETF standards

RIP

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

IP Multicast

- RFC 1112 IGMP v1
- RFC 2236/2933 IGMP v2 and MIB
- RFC 2365 Multicast
- RFC 3376 IGMPv3 for IPv6

IPv6

- RFC 1886 DNS for IPv6
- RFC 2292/2373/2374/2460/2462
- RFC 2461 NDP
- RFC 2463/2466 ICMP v6 and MIB
- RFC 2452/2454 IPv6 TCP/UDP MIB
- RFC 2464/2553/2893/3493/3513
- RFC 3056 IPv6 Tunneling

- RFC 3542/3587 IPv6
- RFC 4007 IPv6 Scoped Address Architecture
- RFC 4193 Unique Local IPv6 Unicast Addresses

Manageability

- RFC 1350 TFTP Protocol
- 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
- RFC3414 User based security model
- RFC 2616 /2854 HTTP and HTML
- RFC 2667 IP Tunneling MIB
- RFC 2668/3636 IEEE 802.3 MAU MIB
- RFC 2674 VLAN MIB
- 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 step

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

Quality of service

- RFC 896 Congestion control
- 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 Sub-netting
- RFC 951 Bootp
- RFC 1151 RDP
- RFC 1191 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 DHCP/BootP Relay
- RFC 2132 DHCP Options
- RFC 2251 LDAP v3
- RFC 3060 Policy Core
- RFC 3176 sFlow
- RFC 3021 Using 31-bit prefixes

OMNISWITCH 6450 ORDERING

| PART NUMBER | DESCRIPTION |
|---------------------------|---|
| OS6450-24 | Gigabit Ethernet chassis in a 1U form factor with 24 10/100/1000 BaseT ports, 2 fixed SFP+ (1G/10G*) ports and one expansion slot for optional stacking or uplink modules. |
| OS6450-P24 | Gigabit Ethernet chassis in a 1U form factor with 24 PoE 10/100/1000 BaseT ports, 2 fixed SFP+ (1G/10G*) ports and one expansion slot for optional stacking or uplink modules. |
| OS6450-U24 | Gigabit Ethernet chassis in a 1U form factor with 22 100/1000 Base-X SFP ports, 2 combo ports configurable to be 10/100/1000 BaseT or 100/1000 Base-X, 2 fixed SFP+ (1G/10G*) ports and one expansion slot for optional stacking or uplink modules. |
| OS6450-48 | Gigabit Ethernet chassis in a 1U form factor with 48 10/100/1000 BaseT ports, 2 fixed SFP+ (1G/10G*) ports and one expansion slot for optional stacking or uplink modules. |
| OS6450-P48 | Gigabit Ethernet chassis in a 1U form factor with 48 PoE 10/100/1000 BaseT ports, 2 fixed SFP+ (1G/10G*) ports and one expansion slot for optional stacking or uplink modules. |
| The above bundles contain | All models above includes an internal AC power supply with a country specific power cord, user manuals access card, hardware for mounting in a 19" rack and RJ-45 to DB-9 adaptor. Ethernet SFP optical transceivers, stacking module and cables may be ordered separately. |
| License options | All models above support the below license options |
| OS6450-SW-PERF | OS6450 Performance software license for enables 10 gigabit speeds on the two fixed SFP+ ports of the 24 or 48 port models. |
| OS6450-SW-ME | OS6450 Software license enables the Metro Software features outlined in the Metro Ethernet Access section of this datasheet. |

| EXPANSION MODULES | DESCRIPTION |
|-----------------------|---|
| OS6450-XNI-U2 | Optional 10 Gigabit SFP+ stacking module. Supports 2xSFP+ 10 Gigabit ports. Inserts into the 6450 expansion slot at the rear of the OS6450 chassis. Order stacking cables separately. Uplink mode not supported. |
| OS6450-GNI-U2 | Optional SFP Gigabit uplink module. Supports 2xSFP Gigabit ports. Inserts in the 6450 expansion slot at the rear of the OS6450 chassis. Order SFPs separately. |
| OS6450-GNI-C2 | Optional RJ45 Gigabit uplink module. Supports 2xRJ45 Gigabit ports. Inserts in the 6450 expansion slot at the rear of the OS6450 chassis. |
| Power supplies | |
| OS6450-BP | 90W power AC backup power supply. Provides backup power to one non-PoE switch. Inserts into the backup power supply bay at the rear of the chassis. Ships with country specific power cord. |
| OS6450-BP-PH | 550W AC backup power supply. Provides backup PoE power (390W) to one 24 port PoE switch. Ships with remote power connection cable, country specific power cord, power shelf and rack mounts for a 2 RU configuration. |
| OS6450-BP-PX | 900W AC backup power supply. Provides backup PoE power (780W) to one 48 port PoE switch. Ships with remote power connection cable, country specific power cord, power shelf and rack mounts for a 2 RU configuration. |
| OS6450-BP-D | 90W power DC backup power supply. Provides backup power to one non-PoE switch. Inserts into the backup power supply bay at the rear of the chassis. |
| Cables | All models above support the below license options |
| OS6450S-CBL-60 | OS6450 60 centimeters long SFP+ direct stacking cable for OS6450 24 and 48 port models |
| OS6450S-CBL-1M | OS6450 100 centimeters long SFP+ direct stacking cable for OS6450 24 and 48 port models |

| EXPANSION MODULES | DESCRIPTION |
|---------------------------------|---|
| Gigabit transceivers | |
| SFP-GIG-LH70 | 1000Base-LH transceiver with an LC interface for single mode fiber over 1550nm wavelength. Typical reach of 70 km |
| SFP-GIG-LH40 | 1000Base-LH transceiver with an LC interface for single mode fiber over 1310nm wavelength. Typical reach of 40 km |
| SFP-GIG-LX | 1000Base-LX transceiver with an LC interface for single mode fiber over 1310nm wavelength. Typical reach of 10 km |
| SFP-GIG-SX | 1000Base-SX transceiver with an LC interface for multimode fiber over 850 nm wavelength. Typical reach of 300 m. |
| SFP-GIG-BX-D | 1000Base-BX bi-directional transceiver with an LC type interface for use over single mode fiber optic on a single strand link up to 10 km point to point. Transmits 1490 nm and receives 1310 nm optical signal. |
| SFP-GIG-BX-U | 1000Base-BX bi-directional transceiver with an LC type interface for use over single mode fiber optic on a single strand link up to 10 km point to point. Transmits 1310 nm and receives 1490 nm optical signal. |
| 100 Megabit transceivers | |
| SFP-100-MM | 100Base-FX transceiver with an LC interface for multimode fiber optic cable |
| SFP-100-SM15 | 100Base-FX transceiver with an LC type interface for single mode fiber optic cable up to 15 km |
| SFP-100-SM40 | 100Base-FX transceiver with an LC type interface for single mode fiber optic cable up to 40 km |
| SFP-100-BX-U | 100Base-BX bi-directional transceiver with an SC type interface for use over single mode fiber optic on a single strand link up to 20KM point-to-point, where the client (ONU) transmits 1310nm and receives 1550nm optical signal. |
| SFP-100-BX-D | 100Base-BX bi-directional transceiver with an SC type interface for use over single mode fiber optic on a single strand link up to 20KM point-to-point, where the client (OLT) transmits 1550nm and receives 1310nm optical signal. |