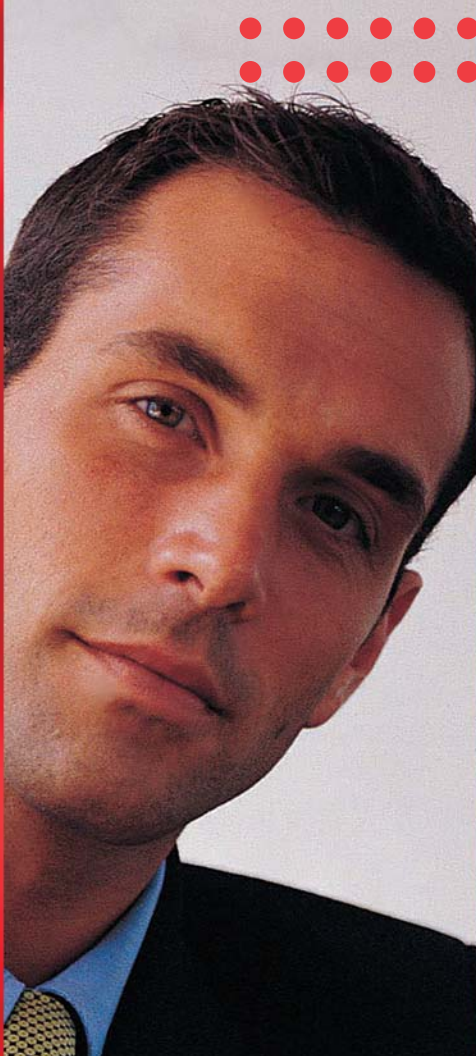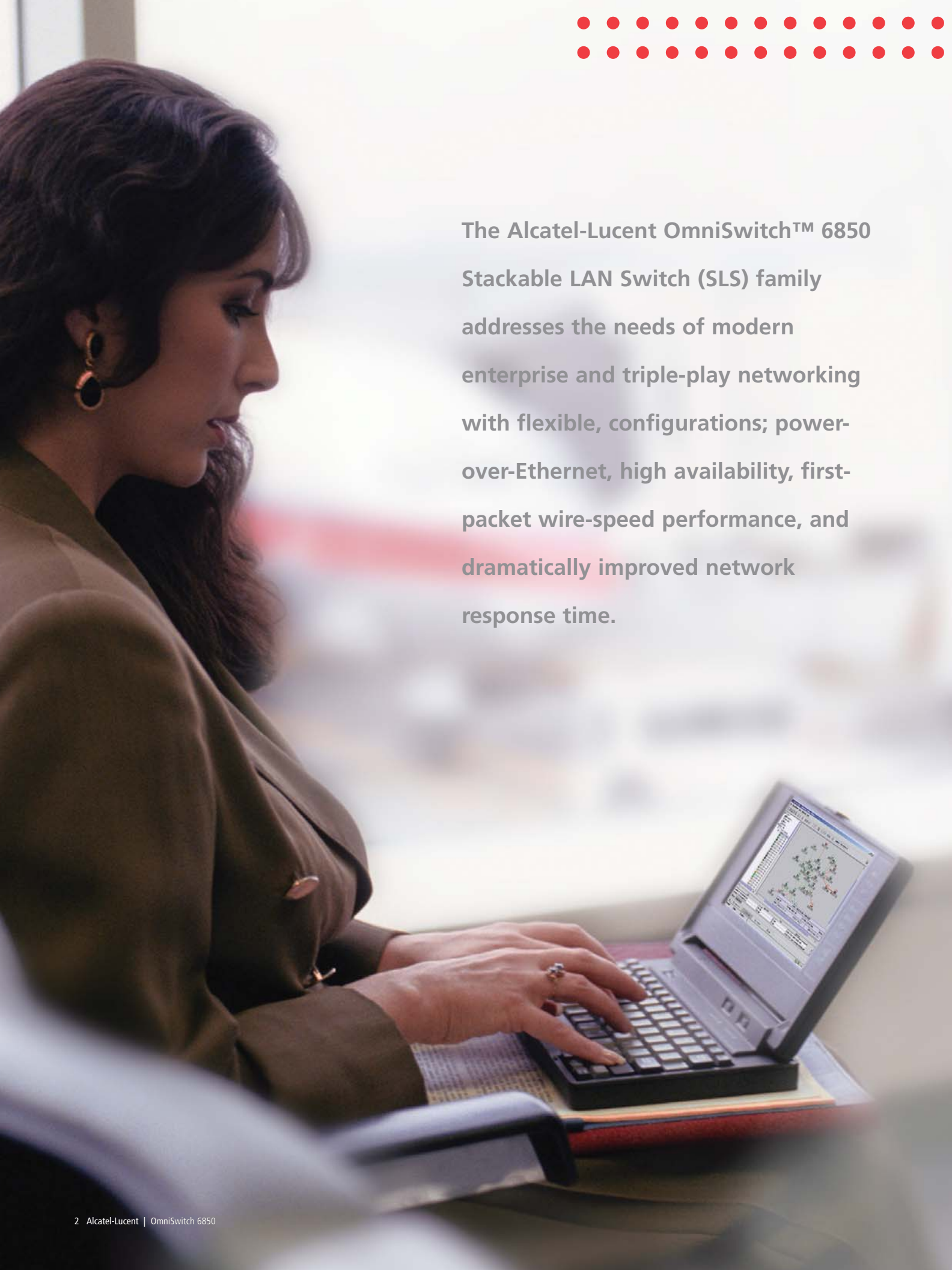Alcatel·Lucent

Alcatel-Lucent OmniSwitch 6850

Stackable Gigabit LAN Switch Family

The Alcatel-Lucent OmniSwitch™ 6850 Stackable LAN Switch (SLS) family addresses the needs of modern enterprise and triple-play networking with flexible, configurations; power-over-Ethernet, high availability, first-packet wire-speed performance, and dramatically improved network response time.

Today's enterprise networks require Gigabit Ethernet switches that are feature-rich, reliable, and capable of supporting converged applications at low cost of ownership.

The OmniSwitch 6850 series, similar to the existing Alcatel-Lucent OmniSwitch products, uses the Alcatel-Lucent Operating System (AOS), which ensures an easy and economical way to upgrade or deploy a new Ethernet network. The flexible configuration options offered by the OmniSwitch 6850 family makes it suitable for a small/medium network in the core or at the edge of a large network. Also, the OmniSwitch 6850 protects your investment with native support of IPv4 and IPv6 switching.

THE SWITCHES PROVIDE:

- Choice of PoE (Power-over-Ethernet) and non-PoE models
- Triple-speed 10/100/1000 interfaces and 10Gig uplinks
- Fast Ethernet interfaces upgradeable to Gigabit via a software license key without any network reconfiguration
- Gigabit fiber interfaces (SFP) supporting 100BaseX, dual-speed and 1000BaseX optical transceivers
- Stacking capability for virtual chassis redundancy
- Power supply choice (AC, DC, PoE) for flexible deployment
- IPv4 and IPv6 layer-2 and layer-3 switching for future-proof investment
- Advanced quality of service (QoS) to support mission-critical and triple-play applications

This family takes advantage of the extensive security and network management features provided by the Alcatel-Lucent OmniVista Network Management System (NMS).

THE TARGET APPLICATIONS FOR THESE VERSATILE LAN SWITCHES ARE:

- Enterprise workgroups for edge deployments / LAN wiring closets
- L3 aggregation / distribution layer switches in three-tier networks
- Small enterprise core switching
- Ethernet access and aggregation for residential / metro triple-play applications
- Converged data / voice / video networks

Alcatel-Lucent OmniSwitch 6850 Family

The Alcatel-Lucent OmniSwitch 6850 Stackable LAN switch family offers a variety of PoE and non-PoE Gigabit and Fast Ethernet models.

The Alcatel-Lucent OmniSwitch 6850Ls, also referred to as the "light" models, are the only switches on the market that offer the best layer-2/layer-3 features for 10/100 applications that can be upgraded to Gigabit. They are stackable 10/100 Ethernet workgroup switches built on the same hardware platform as the OS6850 models. By purchasing and installing an inexpensive software license key, these switches turn into fully featured 10/100/1000 models.

All models in the Alcatel-Lucent OmniSwitch 6850 family are stackable, fixed configuration chassis in a 1U form factor. They can be optionally equipped with pluggable SFP and XFP transceivers (depending on the model) that support short, long and very long distances.

DIFFERENCES IN THE OMNISWITCH 6850 MODELS

Chassis	10/100/1000 or Gig	Combo Port*	10 Gig Stacking Ports	10 Gig Uplinks	Power Supplies Supported
Non-PoE Models					
OS6850-24	20 10/100/1000	4	2	-	126W AC or 120W DC
OS6850-24X	20 10/100/1000	4	2	2	126W AC or 120W DC
OS6850-48	44 10/100/1000	4	2	-	126W AC or 120W DC
OS6850-48X	48 10/100/1000	-	2	2	126W AC or 120W DC
OS6850-U24X	22 Gig SFP **	2	2	2	126W AC or 120W DC
OS6850-24L	20 10/100 ***	4	2	-	126W AC or 120W DC
OS6850-48L	44 10/100 ***	4	2	-	126W AC or 120W DC
PoE Models					
OS6850-P24	20 10/100/1000	4	2	-	360W AC or 510W AC
OS6850-P24X	20 10/100/1000	4	2	2	360W AC or 510W AC
OS6850-P48	44 10/100/1000	4	2	-	360W AC or 510W AC
OS6850-P48X	48 10/100/1000	-	2	2	360W AC or 510W AC
OS6850-P24L	20 10/100 ***	4	2	-	360W AC or 510W AC
OS6850-P48L	44 10/100 ***	4	2	-	360W AC or 510W AC

* Combo ports are ports individually configurable to be 10/100/1000BaseT or 1000BaseX that can support SFP transceivers for short, long and very long distances.

** Gig fiber interfaces support Gig SFP, dual-speed SFP or 100BaseX SFP optical transceivers.

*** The 10/100 RJ-45 ports can be upgraded to 10/100/1000 speed by purchasing the OS6850-24L-UPGD or OS6850-48L-UPGD software license for 24-port and 48-port models respectively.

Power Options

The OmniSwitch 6850 family offers customers a vast selection of switches and power options so that they can prevent over or under provisioning power to their switches and save money by not having to purchase more than they need. All of the OmniSwitch 6850 chassis support redundant, dual hot-swappable AC, DC or PoE power supplies.

The primary as well as the backup power supplies for the OmniSwitch 6850 models are external and connect to the rear of the unit. A power shelf provided with the unit, can slide into the rear of the chassis and is used to hold either two 360W PoE, 126W AC or 120W DC power supplies or one 510W power supply. For dual 510W configurations, the backup power supply has to be remotely mounted.

Any power supply can be remotely connected using a cable enabling rack mounting in the rack using ears provided with the unit. This feature allows the OmniSwitch 6850 to be used in areas with reduced-depth (e.g., a wall-mounted cabinet).

Non-PoE Models
OS6850-24
OS6850-24X
OS6850-48
OS6850-48X

PoE Models
OS6850-P24
OS6850-P24X
OS6850-P48
OS6850-P48X

Fiber Model
OS6850-U24X

Product features and benefits

ONETOUCH NETWORK MANAGEMENT

The OmniSwitch 6850s are part of Alcatel-Lucent's OmniSwitch family – which includes core, stackable / modular edge, and wireless LAN (WLAN) switches - that uses the AOS and are managed by the Alcatel-Lucent OmniVista Network Management System for simplified OneTouch manageability. By offering the same operating system and network management system (NMS) across all Alcatel-Lucent platforms, an existing user is familiar with the product's management from the very first day, reducing the cost of ownership by eliminating the time needed for training on a different operating system or management solution.

OmniSwitch administrators have three types of management method interfaces to choose from – a command line interface (CLI), Alcatel-Lucent WebView for web-based management, or Alcatel-Lucent OmniVista 2500 and 2700 network management applications that offer "one touch" point-and-click technology. Regardless of the interface selected, each is easy to use and offers a common look and feel for every device.

PERFORMANCE

The OmniSwitch 6850 family supports real-time voice, data, and video applications. The switches provide first packet wire-speed classification and processing for all packets – giving a noticeable performance boost to converged enterprise networks. The OS6850s support advanced services such as 10GigE, PoE and IPv6, future proofing today's investment to support the demands of tomorrow.

SECURITY

Alcatel-Lucent's Access Guardian and OmniVista 2770 Quarantine Manager are components of Alcatel-Lucent's CrystalSec security framework that supports all of Alcatel-Lucent's enterprise networking devices. This framework offers proactive and reactive security solutions comprised of comprehensive switch-based security capabilities as well as integration with security applications and appliances from industry leaders.

ALCATEL-LUCENT ACCESS GUARDIAN

Alcatel-Lucent's Access Guardian is a security framework that enables network-wide and user-based security by automatically detecting and authenticating the 802.1X and non-802.1X supplicants connected to a single port, in any combination.

This provides users proactive security by preventing unauthorized network access or restricted access for remediation. In addition to improved network security, Alcatel-Lucent's Access Guardian reduces to zero the time a network administrator spends for adding or moving users.

TRAFFIC ANOMALY DETECTION

Traffic anomaly detection (TAD) is one component of the network security provided by the AOS, which detects network traffic anomalies and distinguishes malware traffic.

Network traffic anomalies are when traffic patterns in a network do not meet expectations. TAD detects traffic anomalies by monitoring discrepancies in rates of a user-port's ingress and egress packets that match specific traffic patterns.

With an embedded traffic anomaly detection component, the OmniSwitch 6850 can now:

- monitor network traffic in real time
- detect anomalies
- report anomalies or dynamically quarantine the offending ports

This comes at low computational and deployment costs, since it does not require additional software or hardware to be installed. TAD prevents the meltdown of the network by detecting and eliminating the impact of worms and other malicious code at the edge of the network.

ALCATEL-LUCENT OMNIVISTA 2770 QUARANTINE MANAGER

In addition to proactive security provided by Alcatel-Lucent's Access Guardian, the Alcatel-Lucent OmniVista 2770 Quarantine Manager provides reactive security by using alerts from Alcatel-Lucent OmniSwitch and third-party intrusion detection and prevention systems to identify malicious attacks and then swiftly handling them through automatic containment and remediation.

Product features and benefits

HIGH AVAILABILITY

The OmniSwitch 6850s virtual chassis minimizes network downtime, reduces operational complexity and cost and increases availability for mission-critical applications by removing single points of failure.

The OS6850s resiliency is provided through a superior architecture offering physical and functional redundancy everywhere:

- Virtual chassis that provides management functionality and automatic election of primary and secondary managers
- Redundant backup power supplies
- Fault tolerant loop stacking
- Hot swappable chassis, power supplies, SFPs and XFPs
- Image rollback to automatically re-load previous configurations and software versions
- Hitless loading of optional advanced routing software without re-booting

IPV6 SUPPORT

Leading industry analysts, such as Gartner Group and Burton, have indicated that IPv6 will be a requirement for enterprise networks in the near future. By including it now, a network manager extends the life of existing equipment and prevents future expenses from upgrading to IPv6.

The OmniSwitch 6850 family provides full IPv6 support with hardware-based forwarding for wire-rate speeds, classification and tunneling to address various corporate and U.S. federal government Department of Defense (DoD) requirements for IPv6.

Flexibility is provided through a choice of deploying IPv4, IPv6, or IPv4/IPv6 without compromising switch performance. The OS6850s offer both native IPv6 routing and extensive support of IPv6 tunneling mechanisms, including configured, 6-in-4, and ISATAP tunneling.

IPv6 will eventually be a requirement for enterprise networks. By including it in current purchases, a network manager extends the life of existing equipment and prevents future expenses.
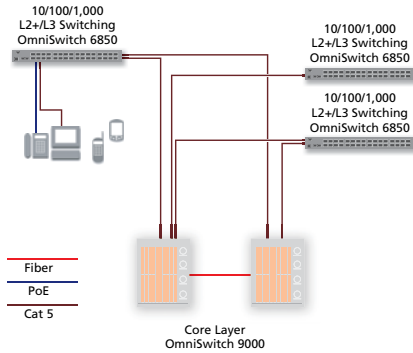
Deployment options

GIGABIT AT THE EDGE

The OmniSwitch 6850 series of switches provide a migration path to Gigabit on the LAN edge where high speed and extensive features are needed. The OmniSwitch 6850s have the features necessary to provide intelligent, secure, and available networking for the most demanding applications and user requirements.


10/100/1,000
L2+/L3 Switching
OmniSwitch 6850

10/100/1,000
L2+/L3 Switching
OmniSwitch 6850

10/100/1,000
L2+/L3 Switching
OmniSwitch 6850

Fiber
PoE
Cat 5

Core Layer
OmniSwitch 9000

Desktop to Gigabit migration
Supports triple-play application's
high bandwidth requirements

The OmniSwitch 6850s are ideal for use at the edge because of their compact fixed form factor design suitable for closets. Their modular expandability, flexible configuration provides an easy path to scale any workgroup up to 384 10/100/1000 ports and 16 10GigE ports in a single stack to support campus wiring closet requirements.

The OmniSwitch 6850s support of high power as well as standard powered PoE ports, copper non-PoE and fiber ports in any combination in a stack provides exceptional flexibility in customizing the closet/small core deployment to support applications ranging from just data to triple-play converged applications.
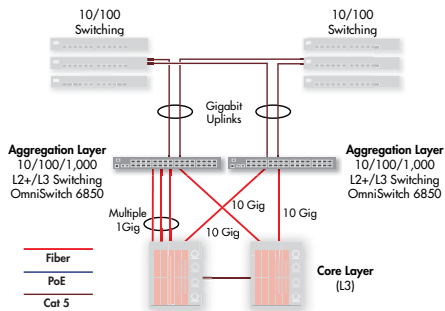
L3 Aggregation/Distribution

Provides fiber or copper configuration options

L3 AGGREGATION / DISTRIBUTION

The OmniSwitch 6850 placed in the distribution layer of three-tier networks provides high capacity, wire speed L2 and L3 switching and intelligent services near the edge of the network. In addition, some models of the OmniSwitch 6850 family have four combo ports that are individually configurable to provide users the choice of copper or fiber.
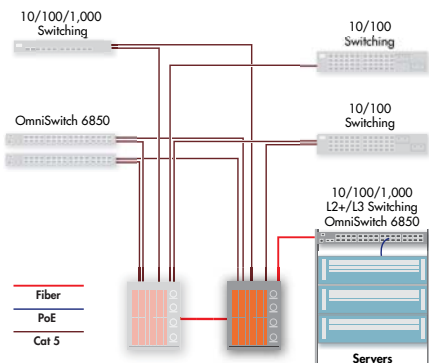
Server aggregation

Features high performance in limited space

SERVER AGGREGATION

OS6850's small form factor, high performance and rich features set make it a great server aggregation switch, especially for space constrained data centers where the switch can be installed in the same rack as the servers.

Deployment options

SMALL ENTERPRISE CORE

The OmniSwitch 6850's high switching capacity makes it a very capable and cost-effective core switch solution because of its:

Small enterprise core

Provides first packet, wire-rate performance
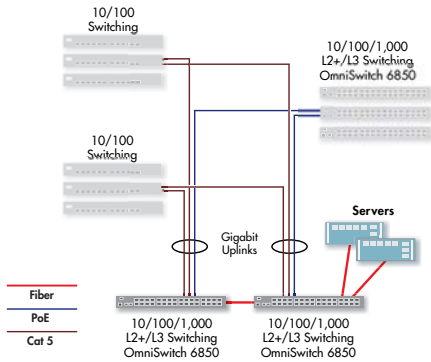
- High-port density
- Wire rate at first packet
- 10GigE performance providing high throughput for backbone connections
- Full support of IPv4/IPv6

- Wire-rate multicast for media and backup applications
- 16 10GigE ports per full stacked chassis
- Extensive QoS classification marking queuing and queue service capabilities

RESIDENTIAL / METRO TRIPLE-PLAY ETHERNET ACCESS
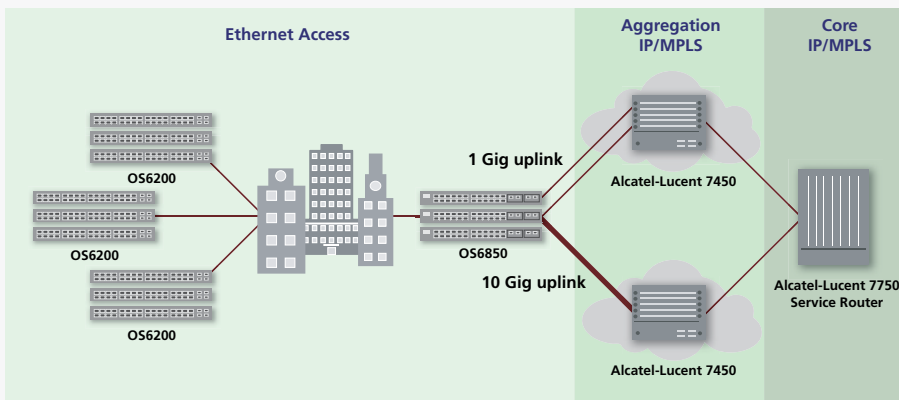
The OmniSwitch 6850s are well suited for residential or metro Ethernet triple-play access networks, which demand user-differentiated, high-speed Internet, voice and video services support. In addition to OmniSwitch 6850 resiliency and high performance, the AOS offers a number of features to provide secure access and traffic control for residential deployments.

Also, the OmniSwitch 6850 family is now Metro Ethernet Forum (MEF) 9 and 14 certified meaning that they are ideal for Metro Access residential and business Ethernet deployments where the OmniSwitch 6850s are used as customer premises equipment (CPE) in single or multi-tenant unit (STU/MTU) installations.

Compliancy

1 RoHS-Alcatel-Lucent's OmniSwitch 6850 family was among the first hardware devices to be in compliance with the new European Community's directive – Restriction on Hazardous Substances in Electrical and Electronic Equipment (RoHS)

2 WEEE (Waste Electrical and Electronic Equipment)

3 NEBS Level 3 Certified for all of the non-PoE models

Service & Support

WARRANTY

Limited lifetime hardware warranty: Limited to the original owner, and will be provided for up to five years after the product's End-of-Sales announcement. Faulty parts will be replaced via a five (5)-business day AVR (Advance Replacement) RMA.

SUPPORT BASIC

One year – 7x24 phone. Includes e-service Web access, software releases, 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.

SUPPORT TOTAL (AVAILABLE ONLY IN N. AMERICA)

One year – 7x24 phone. Includes eService Web access, software releases, same day 4-hour on site hardware replacement (labor and parts) 7 days a week, 24 hours a day. Excludes NMS and Authentication Services software.

Product Specifications

Features

SIMPLIFIED MANAGEABILITY

- Dual image and dual configuration file storage provides backup
- Intuitive Alcatel-Lucent CLI with familiar interface reducing training costs
- Extensive user manuals with examples
- Easy to use, point-and-click web based element manager (WebView) with built-in help for easy configuration of new technology features
- Remote telnet management or secure shell access using SSH over IPv4 and IPv6
- Secured file upload using SFTP, or SCP
- Human readable ASCII based config files for offline editing and bulk configuration
- IGMPv1/v2/v3 snooping to optimize multicast traffic
- BootP/DHCP client allows auto-config of switch IP information to simplify deployment
- DHCP relay to forward client requests to a DHCP server
- 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
- SNMPv1/v2/v3
- Integration with SNMP manager Alcatel-Lucent OmniVista for network wide management
- Supports RFC 2819 RMON group (1-Statistics, 2-History, 3-Alarm & 9-Events)
- Network Time Protocol (NTP) for network wide time synchronization
- Alcatel-Lucent Mapping Adjacency Protocol (AMAP) for building topology maps within OmniVista
- 802.1AB – Link Layer Discovery Protocol with MED extentions
- Port based mirroring for troubleshooting and lawful interception, supports four sessions with multiple sources-to-one destination configuration
- Policy based mirroring – Allows selection of the type of traffic to mirror by using QoS policies
- Remote port mirroring
- Port monitoring feature that allows capture of Ethernet packets to a file, or for on-screen display to assist in troubleshooting
- sFlow v5 support to monitor and effectively control and manage the network usage
- Local (on the flash) and remote logging (Syslog)
- 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
- UDLD for detecting one way connections

HIGH AVAILABILITY

- Ring Rapid Spanning Tree optimized for ring topology to provide less than 100ms convergence time
- 802.1w rapid recovery spanning tree allows subsecond failover to redundant link

- Alcatel-Lucent per-VLAN spanning tree (1x1)
- 802.1D spanning tree for loop free topology and link redundancy
- 802.1s multiple spanning tree
- Fast forwarding mode on user ports to bypass 30-second delay for spanning tree
- Static and 802.3ad dynamic link aggregation that supports automatic configuration of link aggregates with other switches
- Broadcast storm control
- Redundant 1:1 power provided by the OS6850-BPS
- BPDU blocking – automatically shuts down switch ports being used as user ports if a spanning tree BPDU packet is seen. Prevents unauthorized spanning-tree enabled attached bridges from operating.
- Priority queues: eight hardware-based queues per port

CONVERGENCE/ TRIPLE PLAY

- Traffic prioritization: Flow-based QoS with internal and external (a.k.a., remarking) prioritization
- Bandwidth management: flow based bandwidth management, ingress policing/egress shaping and port based egress shaping
- Queue management: Random Early Detect/Discard (RED), configurable de-queuing algorithm; Strict Priority, Weighted and Deficit Round Robin
- Power-over-Ethernet: IEEE 802.3af – maximum total power of 380W for PoE

ADVANCED SECURITY

- 802.1X multi-client, multi-VLAN support for perclient authentication and VLAN assignment
- IEEE 802.1X with group mobility
- IEEE 802.1X with MAC based authentication, group mobility or "guest" VLAN support
- MAC-based authentication for non-802.1X host
- Authenticated VLAN that challenges users with username and password and supports dynamic VLAN access based on user
- Captive Portal – A new Access Guardian Policy that uses embedded web portal for user authentication.*
- PKI authentication for SSH access
- Support for host integrity check and remediation VLAN
- Support for Alcatel-Lucent Quarantine Manager and quarantine VLAN
- Learned Port Security (LPS) or MAC address lockdown allows only known devices to have network access preventing unauthorized network device access
- RADIUS and LDAP admin authentication prevents unauthorized switch management
- TACACS+ client allows for authentication authorization and accounting with a remote TACACS+ server
- Secure Shell (SSH), Secure Socket Layer (SSL) for HTTPS access and SNMPv3 for encrypted remote management communication
- Access control lists to filter out unwanted traffic including denial of service attacks; Flow based filtering in hardware (L1-L4)
- Support of Microsoft Network Access Protection (NAP)**

- Switch protocol security
  - MD5 for RIPv2, OSPFv2 and SNMPv3
  - SSH for secure CLI session with PKI support
  - SSL for secure HTTP session
- DHCP Snooping, DHCP IP Spoof protection
- Enmbedded traffic anomaly detection
- ARP poisoning detection

RESIDENTIAL METRO TRIPLE-PLAY ETHERNET ACCESS

- DHCP Option 82 – configurable relay agent information
- QinQ (Vlan stacking)
- Ethernet OAM compliant with 802.1ag version 7.0

L3 ROUTING PROTOCOLS (IPV4)

IP Routing
- Static routing
- RIP v1 & v2
- OSPF v2
- BGP v4
- ISIS

Multicast
- IGMP v1, v2 & v3 snooping
- PIM-SM
- PIM-DM
- DVMRP

Network Protocol
- TCP/IP stack
- ARP
- DHCP relay
- Generic UDP relay per VLAN

Resilience
- VRRP v2

L3 ROUTING PROTOCOLS (IPV6)

IP Routing
Static routing
- RIP ng
- OSPF v3
  Multicast
- MLD snooping
- PIM-SM
- PIM-DM
  Network protocol
- TCP/IP stack
- DHCP relay (including generic UDP relay)
- ARP
  Resilience
- VRRP v3

LAYER-3 ROUTING (IPX)

IP Routing
- Static routing
- RIP/SAP

POWER OVER ETHERNET

- IEEE 802.3af (supported on all POE chassis)

STACKING

- Two built-in stacking ports to provide fault tolerant looped stacking configuration
- 10 Gbps full-duplex bandwidth per stacking port

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*   Contact for avaliabliity

** NAP will be supported when available.

COMBO PORTS

- OS6850-24, -24X, -P24, -P24X, - 48, -P48
Four Gigabit Ethernet SFP combo ports

- OS6850-24L, -P24L, - 48L, -P48L
Four Gigabit Ethernet SFP combo ports

- OS6850-U24X
Two Gigabit Ethernet SFP combo ports

10GIGE UPLINKS

OS6850-24X, -P24X, -48X, -P48X and -U24X

- Two built-in XFP ports that support industry standard XFP-based 10GigE optical transceivers

POWER SUPPLIES AND POWER CONSUMPTION

- Main and backup power supplies are external either directly connected to the rear of the unit or remotely mounted

- Supports redundant dual hot swappable power supplies

- Power shelf that holds one 510W AC or two 360W AC, 126W AC or120W DC power supplies

- 126W (AC) and 120W (DC) power supplies only used with non-PoE models.

- 360W (AC) and 510W (DC) power supplies only used with PoE models.

- Maximum power for PoE with 360W power supply: 230W

- Maximum power for PoE with 510W power supply: 380W

Indicators

PER PORT LEDS

- 10/100/1000: PoE, link/activity

- SFP: link/activity

- XFP: link/activity

SYSTEM LEDS

- Switch ID (indicates the stack ID of the unit in the stack: 1 to 7)

- System (OK) (chassis HW/SW status)

- PWR (primary power supply status)

- PRI (virtual chassis primary)

- BPS (backup power status)

Physical Dimensions (WxDxH)

CHASSIS SIZE (WITHOUT POWER SUPPLY OR PS SHELF)

- 17.32 x 10.63 x 1.73 in (44.0 x 27.0 x 4.4 cm)

TOTAL SIZE INCLUDING POWER SUPPLY'S SHELF AND MOUNTING EARS

- 19.00 x 17.56 x 1.73 in (48.2 x 44.6 x 4.4 cm)

CHASSIS SIZE (WITH MOUNTING EARS,WITHOUT POWER SUPPLY OR PS SHELF)

- 19 x 10.63 x 1.73 in (48.2 x 27.0 x 4.4 cm)

Weight

CHASSIS WITHOUT THE POWER SUPPLY

- OS6850-P24 and -P24L   8.62 lb (3.91kg)
- OS6850-P24X   8.86 lb (4.02 kg)
- OS6850-P48and -P48L   9.39 lb (4.26kg)
- OS6850-P48X   9.59 lb (4.35kg)
- OS6850-24 and 24L   8.36 lb (3.79kg)

POWER SUPPLIES

- 510W AC   5.71 lb (2.59kg)
- 360W AC   3.22 lb (1.46kg)
- 126W AC   2.45 lb (1.11kg)
- 120W DC   2.09 lb (0.95kg)
- Power supply tray   1.26 lb (0.57kg)

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: 1995 (Emission Standard)

- EN 61000-3-3: 1995

- EN 61000-3-2: 2000

- 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 VDC 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, EN60825-2 Laser

- CDRH Laser

- China CCC

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):

- 5% to 95% non-condensing

Product	MTFB (hours)	Power Consumption*	Heat Dissapation under full load (Btu/hour)	Acoustic Level (dB)***
PoE Models				
OS6850-P24	153,497	324	279	under 44dB
OS6850-P24X	148,929	327	289	under 44dB
OS6850-P48	128,390	367	517	under 44dB
OS6850-P48X	119,750	387	584	under 44dB
Non-PoE Models				
OS6850-24	200,421	55	188	under 44dB
OS6850-24X	191,695	58	198	under 44dB
OS6850-48	162,844	97	331	under 44dB
OS6850-48X	149,608	117	399	under 44dB
OS6850-U24X	207,199	119	406	under 44dB

*Power Consumption for PoE models with 360W Power supply
*** Acoustic Levels measured with a single power supply at room temperature

IEEE Standards

- IEEE 802.1D (STP)
- IEEE 802.1p (CoS)
- IEEE 802.1Q (VLANs)
- IEEE 802.1QinQ(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 (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)
- IEEE 802.3ae (10G Ethernet)

IETF Standards

IPV4
- RFC 2003 IP/IP tunneling
- RFC 2784 GRE tunneling

BGP
- RFC 1269/1657 BGP v3 & 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

OSPF
- RFC 1253/1850/2328 OSPF v2 & 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 & MIB
- RFC 1812/2644 IPv4 Router Requirement
- RFC 2080 RIPS ng

IS-IS
- RFC 1142 OSI IS-IS Intra-domain Routing Protocol
- RFC 1195 Use of OSI IS-IS for routing in TCP/IP & dual environments
- RFC 2763 Dynamic Hostname Exchange
- RFC 2966 Domain-wide prefix distribution with two-level IS-IS
- RFC 3787 Interoperable IP networks using IS-IS

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

IPV6
- RFC 3596 DNS for IPv6
- RFC 2292/2373/2374/2460/2462 IPv6
- RFC 2461 NDP
- RFC 2463/2466 ICMP v6 & MIB
- RFC 2452/2454 IPv6 TCP/UDP MIB
- RFC 2464/2553/2893/3493/3513 IPv6
- RFC 3056 IPv6 Tunneling
- RFC 3542/3587 IPv6

MANAGEABILITY
- RFC 854/855 Telnet & Telnet options
- RFC 1155/2578-2580 SMI v1 & SMI v2
- RFC 1157/2271 SNMP
- RFC 1212/2737 MIB & 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 & 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

SECURITY
- RFC 959/2640 FTP
- RFC 1321 MD5
- RFC 2104 HMAC Message Authentication
- RFC 2138/2865/2868/3575/2618 RADIUSAuthentication & Client MIB
- RFC 2139/2866/2867/2620 RADIUS Accounting & Client MIB
- RFC 2228 step
- RFC 2284 PPP EAP
- RFC 2869/2869bis RADIUS Extension

QUALITY OF SERVICES
- 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 & IP / Ethernet
- RFC 792 ICMP
- RFC 768 UDP
- RFC 793/1156 TCP/IP & MIB
- RFC 826/903 ARP & 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 Path MTU Discovery
- RFC 1256 ICMP Router Discovery
- RFC 1305/2030 NTP v3 & Simple NTP
- RFC 1493 Bridge MIB
- RFC 1518/1519 CIDR
- RFC 1541/1542/2131/3396/3442 DHCP
- RFC 1757/2819 RMON & MIB
- RFC 2131/3046 DHCP/BootP Relay
- RFC 2132 DHCP Options
- RFC 2251 LDAP v3
- RFC 2338/3768/2787 VRRP & MIB
- RFC 3060 Policy Core
- RFC 3176 sFlow
- RFC 3021 Using 31-bit prefixes

Ordering information

OMNISWITCH 6850 CHASSIS

OS6850-24 OS6850-24D	OS6850-24 chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 20 RJ-45 ports individually configurable to 10/100/1000 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. A 126W AC or 120W DC power supply respectively is included in the bundle.
OS6850-24X OS6850-24XD	OS6850-24X chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 20 RJ-45 ports individually configurable to 10/100/1000 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, two 10 Gigabit ports, and two dedicated stacking ports. A 126W AC or 120W DC power supply respectively is included in the bundle.
OS6850-48 OS6850-48D	OS6850-48 chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 44 RJ-45 ports individually configurable to 10/100/1000 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. A 126W AC or 120W DC power supply respectively is included in the bundle.
OS6850-48X OS6850-48XD	OS6850-48XD chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 48 RJ-45 ports individually configurable to 10/100/1000 BaseT, two 10 Gigabit ports, and two dedicated stacking ports. A 126W AC or 120W DC power supply respectively is included in the bundle.
OS6850-U24X	OS6850-U24X chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 22 1000 Base-X SFP ports, 2 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, two 10 Gigabit ports, and two dedicated stacking ports. A 126W AC or 120W DC power supply respectively is included in the bundle.

OMNISWITCH POE 6850 CHASSIS

OS6850-P24 OS6850-P24H	OS6850-P24 PoE chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A]. L3 Gigabit Ethernet chassis in a 1U form factor with 20 RJ-45 PoE ports individually configurable to 10/100/1000 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. A 360W AC or 510W AC power supply respectively is included in the bundle.
OS6850-P24X OS6850-P24XH	OS6850-P24X PoE chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 20 RJ-45 PoE ports individually configurable to 10/100/1000 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, two 10 Gigabit ports, and two dedicated stacking ports. A 360W AC or 510W AC power supply respectively is included in the bundle.
OS6850-P48 OS6850-P48H	OS6850-P48 PoE chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 44 RJ-45 PoE ports individually configurable to 10/100/1000 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. A 360W AC or 510W AC power supply respectively is included in the bundle.
OS6850-P48X OS6850-P48XH	OS6850-P48X PoE chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Gigabit Ethernet chassis in a 1U form factor with 48 RJ-45 PoE ports individually configurable to 10/100/1000 BaseT, two 10 Gigabit ports, and two dedicated stacking ports. A 360W AC or 510W AC power supply respectively is included in the bundle. A 360W AC or 510W AC power supply respectively is included in the bundle.

OMNISWITCH 6850L CHASSIS

OS6850-24L OS6850-24LD	OS6850-24L chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Ethernet chassis in a 1U form factor with 20 RJ-45 ports individually configurable to 10/100 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. The 20 10/100 RJ-45 ports can also operate at Gigabit speed by purchasing the OS6850-24L-UPGD software license. A 126W AC or 120W DC power supply respectively is included in the bundle
OS6850-48L OS6850-48LD	OS6850-48L chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Ethernet chassis in a 1U form factor with 44 RJ-45 ports individually configurable to 10/100 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. The 44 10/100 RJ-45 ports can also operate at Gigabit speed by purchasing the OS6850-48L-UPGD software license. A 126W AC or 120W DC power supply respectively is included in the bundle.

OMNISWITCH 6850L POE CHASSIS

OS6850-P24L OS6850-P24LH	OS6850-P24L PoE chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A]. L3 Ethernet chassis in a 1U formfactor with 20 RJ-45 PoE ports individually configurable to 10/100 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. The 20 10/100 PoE RJ-45 ports can also operate at Gigabit speed by purchasing the OS6850-24L-UPGD software license. A 360W AC or 510W AC power supply respectively is included in the bundle.
OS6850-P48L OS6850-P48LH	OS6850-P48L PoE chassis w/SSL (DES, 3DES, RC2, RC4) [ECCN 5A002A] L3 Ethernet chassis in a 1U form factor with 44 RJ-45 PoE ports individually configurable to 10/100 BaseT, 4 combo ports configurable to be 10/100/1000 BaseT or 1000 BaseX, and two dedicated stacking ports. The 44 10/100 PoE RJ-45 ports can also operate at Gigabit speed by purchasing the OS6850-48L-UPGD software license. A 360W AC or 510W AC power supply respectively is included in the bundle.

Ordering information

POWER SUPPLIES

OS6850-BP-P	OS6850-BP-P modular 360W AC backup power supply. Provides backup power to one PoE switch. Ships with chassis connection cable, country specific power cord, power shelf and connecting ears.
OS6850-BP-PH	OS6850-BP-PH modular 510W AC backup power supply. Provides backup power to one PoE switch. Ships with chassis connection cable, country specific power cord, power shelf and connecting ears.
OS6850-BP	OS6850-BP modular 126W AC backup power supply. Provides backup power to one non-PoE switch. Ships with chassis connection cable, country specific power cord, power shelf and connecting ears.
OS6850-BP-D	OS6850-BP-D modular 120W DC backup power supply. Provides backup power to one non-PoE switch. Ships with chassis connection cable, power shelf and connecting ears.

10 GIGABIT ETHERNET TRANSCEIVERS (XFP MSA)

XFP-10G-LR	10 Ethernet optical transceiver (XFP MSA). Supports single mode fiber over 1310nm wavelength (nominal) with an LC connector. Typical reach of 10 Km on 9/125 µm SMF
XFP-10G-SR	10 Gigabit Ethernet optical transceiver (XFP MSA). Supports multimode fiber over 850nm wavelength (nominal) with an LC connector. Typical reach of 300m on 50/125 µm MMF.
XFP-10G-ER40	Gigabit Ethernet optical transceiver (XFP MSA). Supports single mode fiber over 1550nm wavelength (nominal) with an LC connector. Typical reach of 40 Km on 9/125 µm SMF.
XFP-10G-ZR80	10 Gigabit Ethernet optical transceiver (XFP MSA). Supports single mode fiber over 1550nm wavelength (nominal) with an LC connector. Typical reach of 80 Km on 9/125 µm SMF.

GIGABIT ETHERNET TRANSCEIVERS (SFP MSA)

SFP-GIG-EXTND	Extended 1000BaseSX Gigabit Ethernet optical transceiver (SFP MSA). Supports multimode fiber over 850nm wavelength (nominal) with an LC connector. Reach of up to 2 km (based on grade and condition of fiber) on 62.5/125 µm MMF or 550m on 62.5/125 µm MMF. Requires SFP-GIG-EXTND or GBIC-GIG-EXTND at the remote termination.
SFP-GIG-LH40	1000BaseLH Gigabit Ethernet optical transceiver (SFP MSA). Supports single mode fiber over 1310 nm wavelength (nominal) with an LC connector. Typical reach of 40 Km on 9/125 µm SMF.
SFP-GIG-LH70	1000BaseLH Gigabit Ethernet optical transceiver (SFP MSA). Supports single mode fiber over 1550 nm wavelength (nominal) with an LC connector. Typical reach of 70 Km on 9/125 µm SMF.
SFP-GIG-LX	1000BaseLX Gigabit Ethernet optical transceiver (SFP MSA). Supports single mode fiber over 1310nm wavelength (nominal) with an LC connector. Typical reach of 10 Km on 9/125 µm SMF.
SFP-GIG-SX	1000BaseSX Gigabit Ethernet optical transceiver (SFP MSA). Supports multimode fiber over 850nm wavelength (nominal) with an LC connector. Typical reach of 300m on 62.5/125 µm MMF or 550m on 50/125 µm MMF.
SFP-GIG-BX-D	1000BaseBX SFP transceiver with an LC type of interface. This bi-directional transceiver is designed for use over single mode fiber optic on a single strand link up to 10 km. Transmits 1490 nm and receives 1310 nm optical signal.
SFP-GIG-BX-U	1000BaseBX SFP transceiver with an LC type of interface. This bi-directional transceiver is designed for use over single mode fiber optic on a single strand link up to 10 km. Transmits 1310 nm and receives 1490 nm optical signal.

DUAL SPEED TRANSCEIVERS (SFP MSA)

SFP-DUAL-MM	Dual Speed 100BaseFX or 1000BaseX Ethernet optical transceiver (SFP MSA). Supports multimode fiber over 1310nm wavelength (nominal) with an LC connector. Typical reach of 550m at Gigabit speed and 2km at 100Mb speed. Note: at 100Mb speed, this SFP can interoperate with SFP-100-LC-MM or similar transceiver on the other end. At Gigabit speed, this SFP cannot interoperate with SFP-GIG-SX or similar transceiver on the other end as it runs over 850nm wavelength).
SFP-DUAL-SM10	Dual Speed 100BaseFX or 1000BaseX Ethernet optical transceiver (SFP MSA). Supports single mode fiber over 1310nm wavelength (nominal) with an LC connector. Typical reach of 10km at Gigabit speed and 100Mbit speed. Note: at 100Mbit speed, this SFP can interoperate with SFP-100-LC-SM15 or similar transceiver. At Gigabit speed, this SFP can interoperate with SFP-GIG-LX or similar transceiver.

Ordering information

100FX TRANSCEIVERS (FOR OS6850-U24X SFP PORTS ONLY)

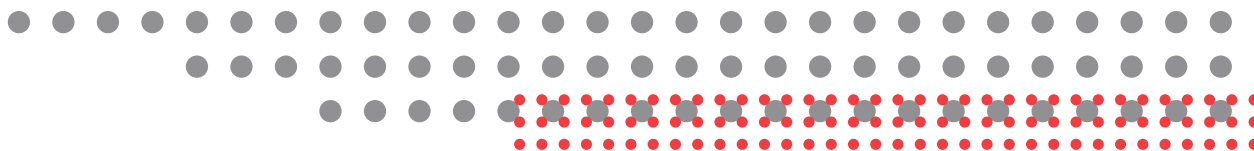|	
SFP-100-LC-MM	100BaseFX SFP transceiver with an LC type interface. This transceiver is designed for use over multimode fiber optic cable.
SFP-100-LC-SM15	100BaseFX SFP transceiver with an LC type interface. This transceiver is designed for use over single mode fiber optic cable up to 15KM.
SFP-100-LC-SM40	100BaseFX SFP transceiver with an LC type interface. This transceiver is designed for use over single mode fiber optic cable up to 40KM.
SFP-100-BX20LT	100BaseBX SFP transceiver with an SC type interface. This bi-directional transceiver is designed for use over single mode fiber optic on a single strand link up to 20KM point-to-point. This transceiver is normally used in the central office (OLT) transmits 1550nm and receives 1310nm optical signal.
SFP-100-BX20NU	100BaseBX SFP transceiver with an SC type interface. This bi-directional transceiver is designed for use over single mode fiber optic on a single strand link up to 20KM point-to-point. This transceiver is normally used in the client (ONU) transmits 1310nm and receives 1550nm optical signal.

AUTHENTICATED SERVICES SOFTWARE

OS-SW-SBR-N	[ECCN 5D992] Authentication bundle for Windows w/MD5, RC4, MD4, DES. This bundle provides Funk Software's Steel-Belted Radius Enterprise Edition for Microsoft Windows and includes an one-year maintenance contract (maintenance releases, 7X24 phone support and e-service web access).
OS-SW-SBR-S	[ECCN 5D992] Authentication Bundle for Solaris w/MD5, RC4, MD4, DES. This bundle provides Funk Software's Steel-Belted Radius Enterprise Edition for Sun Solaris and includes a one-year maintenance contract (maintenance releases, 7X24 phone support and e-service web access).

ADVANCED ROUTING SOFTWARE

OS6850-SW-AR	OS6850 Advanced Routing software. Includes support for OSPF, BGP, PIM-SM and DVMRP.

UPGRADE SOFTWARE

OS6850-24L-UPGD	Software license that allows 10/100 RJ45 ports of OS6850-24L and OS6850-P24L chassis to operate also at Gigabit speed.
OS6850-48L-UPGD	Software license that allows 10/100 RJ45 ports of OS6850-48L and OS6850-P48L chassis to operate also at Gigabit speed.

Alcatel-Lucent OmniSwitch 6850

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