OmniSwitch Lan R6/R8

Campus LAN Portfolio Description

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Enterprise

LAN Omniswitch Family

Edge

Entry level stackable L2+

- Virtual chassis
- 10/100, 1G, 2,5G Copper and Fiber
- POE
- Basic routing
- Green energy

OmniSwitch 6350
AOS L2+ Basic L3 GE

OmniSwitch 6450
AOS L2+ Basic L3 GE - 10G uplinks

OmniSwitch 6560
AOS L2+ Basic L3 1GE/2,5G 10G uplinks

Aggregation

Advanced stackable L2-L3

- Virtual chassis
- 10/100/1000, 10Gig
- IPv4/IPv6
- PoE,
- Copper & fiber
- Advanced routing
- Green energy

OmniSwitch 6865
AOS Advanced L3

OmniSwitch 6860
AOS Advanced L3

Core

High end modular core, aggregation, Data center switches L2-L3

- High Availability
- High Performance
- 10Gig high density
- VRF
- Virtual Chassis
- Green energy
- I.S.S.U

OmniSwitch 6900
AOS Advanced L2-L3 Aggregation/Core DC TOR 10/40 GE

OmniSwitch 9900
Modular Chassis
AOS Advanced L3 10/40GE

OmniSwitch 10K
High end modular
AOS Advanced L2-L3 Core & Aggregation 10/40 GE

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OMNISWITCH 6350

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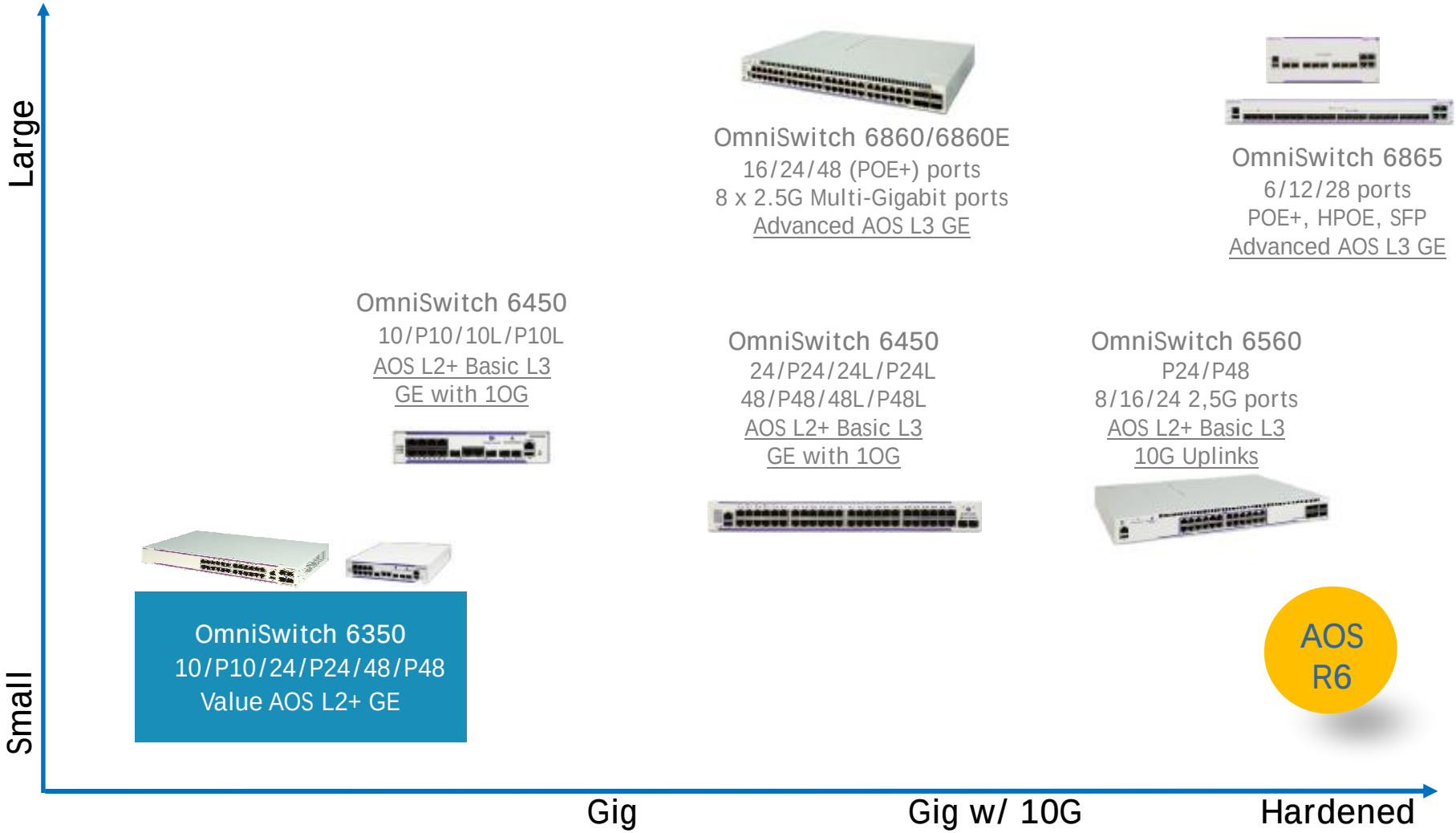
OmniStack 6350
Positioning in the Stackable portfolio



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OmniSwitch 6350
Key Features

- AOS software based
- Full L2 and IPv4/IPv6 Static routing
- AOS Management and OmniVista full support

Small and Medium sized Enterprise (SMB)

- Set of features for the SMB Market:
  - Advanced L2 features with basic L3 routing for both IPv4 and IPv6
  - Simplified VoIP deployments using the advanced Auto-QoS feature
  - Eight hardware-based queues per port for flexible QoS management
  - Edge security with Access Guardian, DHCP snooping, LPS and UNP
  - Auto-configurable via OmniPCX Office
  - LLDP with MED extensions for automated device discovery

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Omniswitch 6350 Gigabit Ethernet Switch

- 24-/48-ports, with/without PoE models
- AOS software based
- Gigabit RJ-45 access ports
- Up to four dedicated Gigabit SFP uplinks
- Fixed internal power supply
- Fanless with non-POE models
- 5 Gbps Stacking ports
- No 10G uplinks
- No Backup PS
- IEEE 802.3af/at compliant PoE models
- Configurable per-port PoE priority and max power
- Efficient power management and low power consumption

OmniSwitch 6350-24/48
OmniSwitch 6350-P24/48

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Omniswitch 6350 Gigabit Ethernet Switch

- 10-ports, with/without PoE models
- AOS software based
- 8 x Gigabit RJ-45 access ports
- 2 x dedicated Gigabit SFP uplinks
- Fixed internal power supply
- Fanless with POE/non-POE model
- No stacking
- No 10G uplinks
- No Backup PS
- IEEE 802.3af/at compliant PoE models
- Configurable per-port PoE priority and max power
- Efficient power management and low power consumption

OmniSwitch 6350-10 / P10

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Omniswitch 6350 Features

- Limited AOS software feature set
  - Limited HW
    - No 10Gbps uplinks
    - No Stacking (10 port model)
    - No Redundant Power Supply (RPS)
- Strategic Software Features
  - IPv6 DHCP Relay and Remote ID option
  - IPv6 DHCP Snooping
  - IPv6 Source Address Guard
  - IPv6 Router Advertisement Guard
- Other Features\Certifications
  - Stacking Interface Statistics
    - Monitoring Interstack Connections
  - Multicast Dynamic Control
    - MC Rate Limit to CPU
    - Prioritization of ERP packets to the CPU
  - Critical Voice VLAN
  - CPE Testhead enhancements
- Limited SW
  - No Unified Access
  - No BYOD
  - No Metro Ethernet
  - No SDN
  - CPE test head
  - Link OAM / Ethernet OAM / Test OAM
  - SAA
  - Loopback detection
  - Vlan stacking/Ethernet Services
  - ERP
  - Ethernet Wire-Rate Loopback Test
  - PPPOE
  - MDNS relay
  - OpenFlow
  - License management
  - GVRP
  - IP RIP/VRRP
  - IPMVLAN (vlan stacking mode)
  - DHL
  - IPMC Receiver vlan

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OS6350 Comparison With OS6450

Feature	OS6350	OS6450L	OS6450
Operating System	ALE OS	ALE OS	ALE OS
10/100 Mbps RJ-45 Access Ports	No	Yes	No
10/100/1000 Mbps Access Ports	Yes	S/W upgrade	Yes
1 Gig Combo Ports (Uplink)	No	No	No
1 Gig SFP Ports (Uplinks/Stacking)	Yes	Yes	Yes
10 Gig SFP+ Ports (Uplinks/Stacking)	No	S/W upgrade	Optional
Stacking	5 Gig E	10 Gig E	10 Gig E
Number of 1 Gig Uplinks	4	4	4
Number of 10 Gig Uplinks/Stacking	No	4/2	4/2
802.3az Energy Efficient Ethernet (EEE)	Yes	Yes	Yes
Redundant or External Power Supply (RPS/EPS)	No	Yes	Yes
Power over Ethernet/Power over Ethernet + (PoE/PoE+)	Yes	Yes	Yes
OmniVista NMS support	Yes	Yes	Yes
MLE requirements: Unified Access/BYOD/Metro Ethernet/SDN	No	Yes	Yes

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Omniswitch 6350 - Models

Model	10/100/1000 RJ-45 ports	Fixed 1G SFP ports	Power Supply Primary / Backup	Fan (Variable Speed)	System Power Consumption
OS6350-10	8	2	Internal / -	Fanless	15W
OS6350-P10	8	2	Internal / -	Fanless	15W
OS6350-24	24	4	Internal / -	Fanless	24W
OS6350-P24	24	4	Internal / -	3 fans	30W
OS6350-48	48	4	Internal / -	1 fan	50W
OS6350-P48	48	4	Internal / -	4 fans	58W

OmniSwitch 6350 - Power Supply

Model	Nominal Input Voltage	Output Voltage	Wattage	PoE Power Budget	Power Supply Efficiency
OS6350-10	90-220 V AC	12 V DC	15 W	N/A	89%
OS6350-P10	90-220 V AC	12 V DC	15 W	65 W	85%
OS6350-24	90-220 V AC	12 V DC	30 W	N/A	80%
OS6350-P24	90-220 V AC	12 V DC / 54 V DC	525 W	380 W	85%
OS6350-48	90-220 V AC	12 V DC	60 W	N/A	87%
OS6350-P48	90-220 V AC	12 V DC / 53 V DC	900 W	780 W	85%

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Key takeaways

OS6350 is NOT a replacement for the OS6450

OS6350 expands the reach of the OmniSwitch product portfolio into the SMB market

When combined with OXO, the OS6350 can be auto-configured to simplify installation and configuration
IP Telephony solution (OS6350/OXO/IAP's)

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OMNISWITCH 6450

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OmniStack 6450
Positioning in the Stackable portfolio

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OmniSwitch 6450-10 Gigabit Ethernet Switch Overview

- L2+ = Full L2 and Static/RIP routing
- OS6450 - 10
  - 8 - Gigabit RJ45
  - 2 - Gigabit RJ45/SFP combo
  - 2 - SFP GigE uplink ports
- OS6450 - 10L/P10L
  - Lite models software upgradable 10/100 to GigE
  - License OS6450-10L-UPGD
- OS6450 - P10/P10L
  - Delivering 802.3at PoE
  - 80W POE budget
- OS6450 - P10S
  - Delivering
    - 75W POE on 4 ports
    - 802.3at PoE on 4 ports
  - 280W POE budget
- Metro Ethernet features enabled by License
  - License OS6450-SW-ME**
- Stacking up to 4 units
  - Built-in SFP stacking ports
- Internal AC power supply
- No power redundancy
- Fan less
- Auto-configurable via OmniPCX Office
- 1RU x ½ rack width form factor

Classroom and workgroup networks
Small enterprise or branch office networks
Commercial and residential managed services

OmniSwitch 6450-24/48 Gigabit Ethernet Switch Overview

- Stacking from 24 to 384 gigabit ports and 16 10GigE ports
- Optional SFP+ stacking module
- L2+ = Full L2 and Static/RIP routing
- Wire-speed first packet classification and processing
- Optional Metro Services feature license for service provider deployments
  - License ***OS6450-SW-M***
- Support for IEEE 802.3af / IEEE 802.3at-compliant PoE
- Internal AC or DC redundant power supplies
- AOS Management and OmniVista full support

Edge workgroups for Small, Mid-sized business
Business Metro Ethernet CPE
IP convergence in Branch offices

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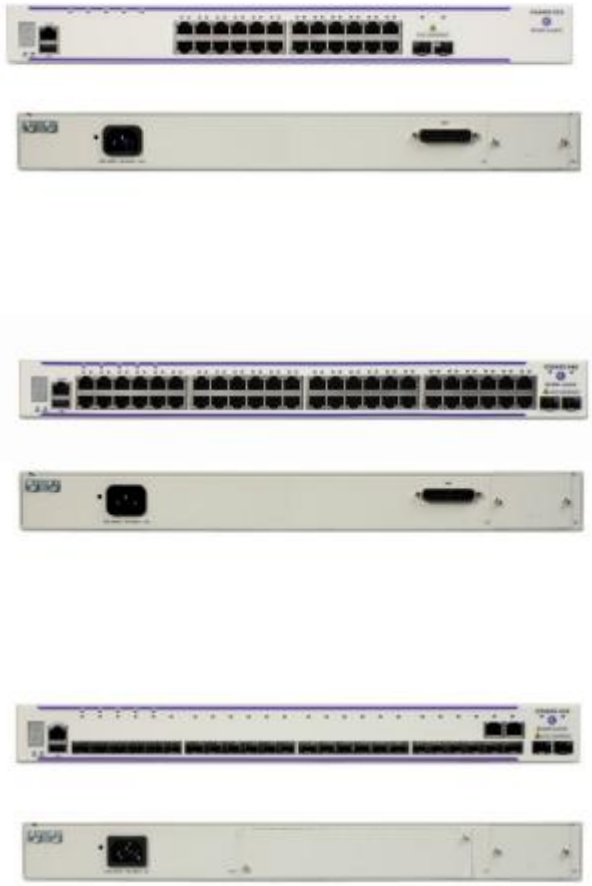
OmniSwitch 6450-24/48 Gigabit Ethernet Switch Models

- OS6450-24/24L/P24/P24L
  - 24 10/100/1000 ports
  - Lite (L) model: 10/100 RJ-45 non-combo ports upgradable to support 10/100/1000 (*)
  - 2 Fix SFP/SFP+ GE ports upgradable to 10G (**)
  - IEEE 802.3at POE ports
  - Expansion module***
- OS6450-48/48L/P48/P48L
  - 48 10/100/1000 ports
  - Lite (L) model: 10/100 RJ-45 non-combo ports upgradable to support 10/100/1000 (*)
  - 2 Fix SFP/SFP+ GE ports upgradable to 10G (**)
  - IEEE 802.3at POE ports
  - Expansion module***
- OS6450-U24
  - 22 100/1000 BaseX ports
  - 2 Combo ports 10/100/1000 BaseT-SFP
  - 2 Fix SFP/SFP+ GE ports upgradable to 10G (*)
  - Expansion module***



*Optional 1G RJ45 ports license option (OS6450-24/48L-UPGD)
Optional 10GigE uplink license option *(OS6450-SW-PERF)***

*** Optional SFP+ stacking module or additional uplink modules

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OmniSwitch 6450 Models

Model	10/100/1000 RJ-45 ports	10/100/1000 & SFP combos	Uplink SFP ports	Module Slot	Stacking 5G	Power Supply Primary / Backup
OS6450-10L	8	2	2	No	SFP	Internal / -
OS6450-P10L	8	2	2	No	SFP	Internal / -
OS6450-10	8	2	2	No	SFP	Internal / -
OS6450-P10	8	2	2	No	SFP	Internal / -
OS6450-P10S	8	-	2	No	SFP	Internal / -
Model	10/100/1000 RJ-45 ports	10/100/1000 & SFP combos	Uplink 1G/10G*) SFP+ ports	Module Slot Options	Stacking	Power Supply
OS6450-24 (L)	24	0	2	Yes	10G SFP+	Internal / Internal
OS6450-P24 (L)	24 802.3at POE	0	2	Yes	10G SFP+	Internal / External
OS6450-48 (L)	48	0	2	Yes	10G SFP+	Internal / Internal
OS6450-P48 (L)	48 802.3at POE	0	2	Yes	10G SFP+	Internal / External
OS6450-U24	22 SFP 100/1000	2	2	Yes	10G SFP+	Internal / Internal
OS6450-U24S	22 SFP 100/1000	2	2	Yes	10G SFP+	Internal / Internal

(*) Requires OS6450-SW-PERF license to enable 10GigE operation
(*) Requires OS6450-SW-ME license to enable Metro Service Features

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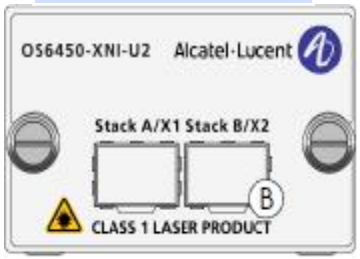
OmniSwitch 6450-(P) 24/48
Expansion module & Backup Power supplies

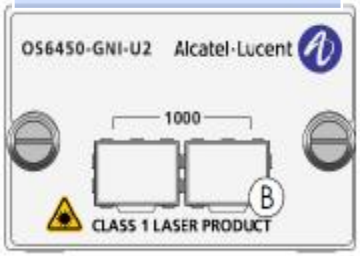
- Optional Expansion module
  - Located on back of unit
    - 2 port 10G SFP+ stacking module
    - 2 port gigabit SFP fiber uplink module
    - 2 port gigabit RJ-45 copper uplink module

Module
OS6450-XNI-U2

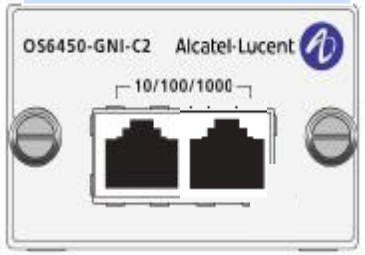


- OS6450-CBL-xM
  - Direct SFP+ Stacking copper cable: x=1m/3m/7m

Module
OS6450-GNI-U2



Module
OS6450-GNI-C2



- Backup Power Supplies

Model		
OS6450-BP	90W power AC backup power supply	OS6450 Non-POE
OS6450-BP-D	90W power DC backup power supply	OS6450 Non-POE
OS6450-BP-PH	550W AC backup power supply	OS6450-P24
OS6450-BP-PX	900W AC backup power supply	OS6450-P48

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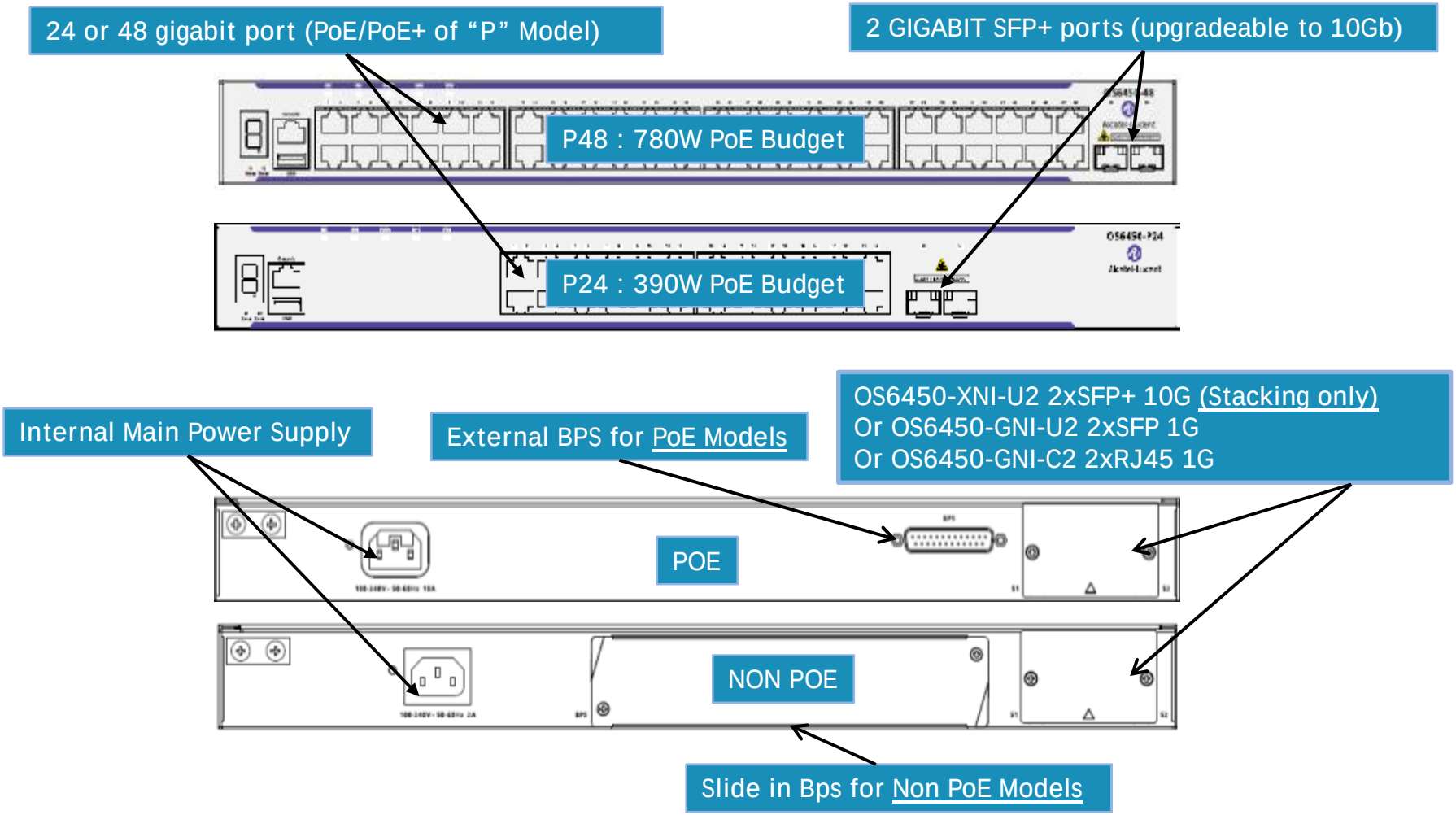
OmniSwitch 6450-(P) 24/48
Hardware overview



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OMNISWITCH 6560

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Large

Medium

Small

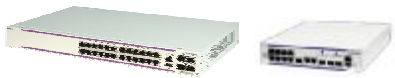
OmniSwitch 6860/6860E
16/24/48 (POE+) ports
8 x 2.5G Multi-Gigabit ports
Advanced AOS L3 GE

OmniSwitch 6865
6/12/28 ports
POE+, HPOE, SFP
Advanced AOS L3 GE

OmniSwitch 6450
10/P10/10L/P10L
AOS L2+ Basic L3
GE with 1OG

OmniSwitch 6450
24/P24/24L/P24L
48/P48/48L/P48L
AOS L2+ Basic L3
GE with 1OG

OmniSwitch 6560
P24/P48
8/16/24 2,5G ports
AOS L2+ Basic L3
10G Uplinks



OmniSwitch 6350
10/P10/24/P24/48/P48
Value AOS L2+ GE

AOS R8

Gig

Gig w/ 10G

Hardened

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Multi-Gig OmniSwitch 6560

- AOS release 8 based software
- 24/48 port models
- PoE supporting .at and .bt standards
- 10G, 10G remote, and 20G stacking options
- Wire speed performance and throughput
- Powered by internal modular primary/backup supply option (300W, 600W or 900W), power supply load sharing
  - Same AC power supplies as OS6860 PoE
- 17.2”W x 13.2”D x 1RU form factor, 2x variable speed fans
- Estimated system power consumption: 85W
- Shortest Path Bridging support

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Multi-Gig OmniSwitch 6560

OS 6560-P48Z16

- 32 RJ-45 PoE 802.3af/at ports
  - Configurable to 10/100/1000 Base-T
  - Up to 30W on a port
- 16 Multi-Gig RJ-45 PoE 802.3af/at/bt
  - Ports configurable to 1G or 2,5G Base-T
  - Up to 95W on a port
- 4 SFP+ 10 Gigabit
  - Uplink/stacking
  - Remote stacking
- 2 QSFP 20 Gigabit dedicated stacking ports
- Internal PS + backup PS

OS 6560-P24Z24

- 24 Multi-Gig RJ-45 PoE 802.3af/at/bt
  - Ports configurable to 1G or 2,5G Base-T
  - Up to 95W on a port
- 4 SFP+ 10 Gigabit
  - Uplink/stacking
  - Remote stacking
- 2 QSFP 20 Gigabit dedicated stacking ports
- Internal PS + backup PS

OS 6560-P24Z8

- 16 RJ-45 PoE 802.3af/at ports
  - Configurable to 10/100/1000 Base-T
  - Up to 30W on a port
- 8 Multi-Gig RJ-45 PoE 802.3af/at/bt
  - Ports configurable to 1G or 2,5G Base-T
  - Up to 95W on a port
- 2 SFP+ 10 Gigabit
  - Uplink/stacking
  - Remote stacking
  - Internal PS + backup PS

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OMNISWITCH 6860/6860E

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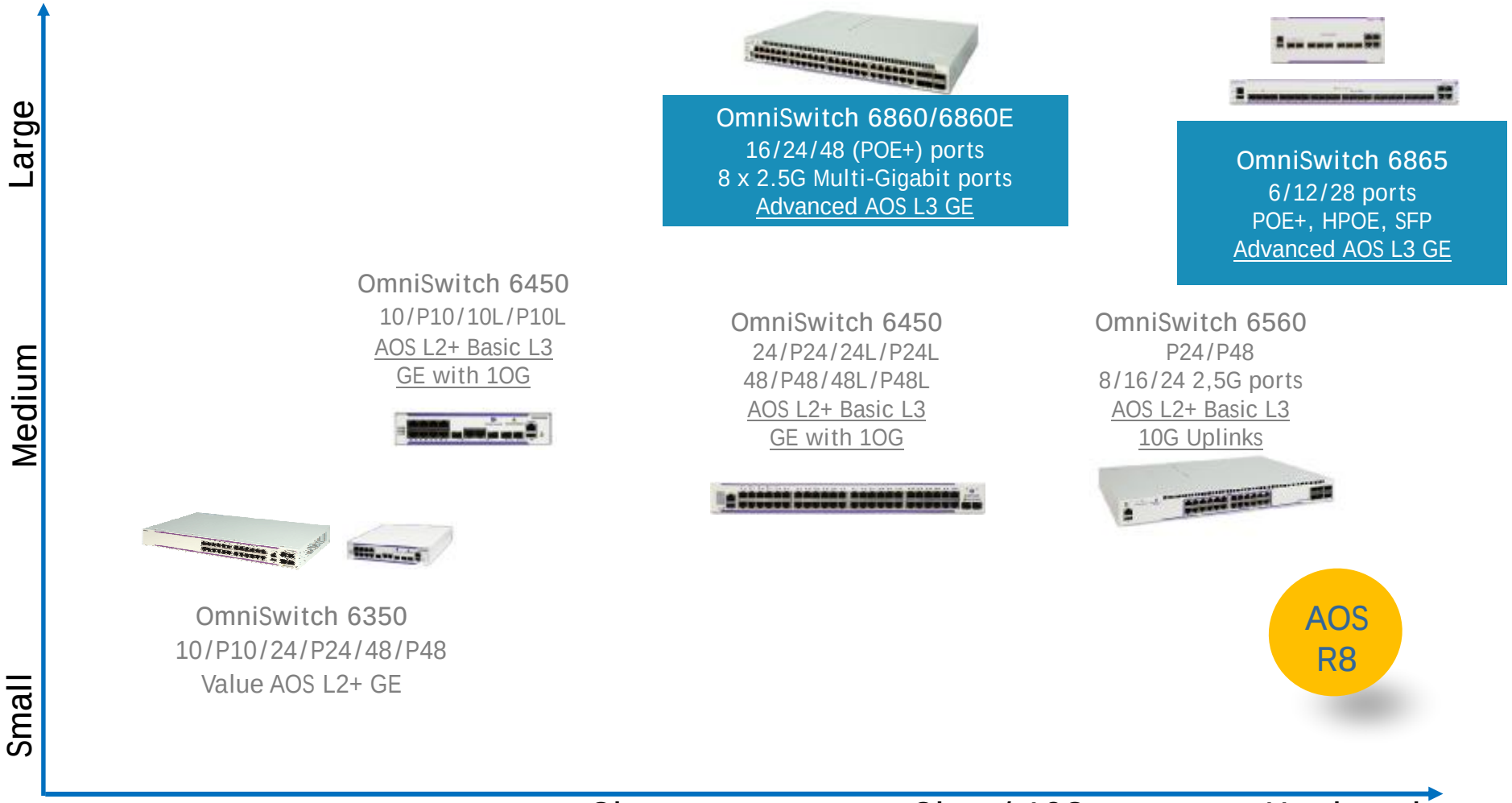
OmniStack 6860
Positioning in the Stackable portfolio



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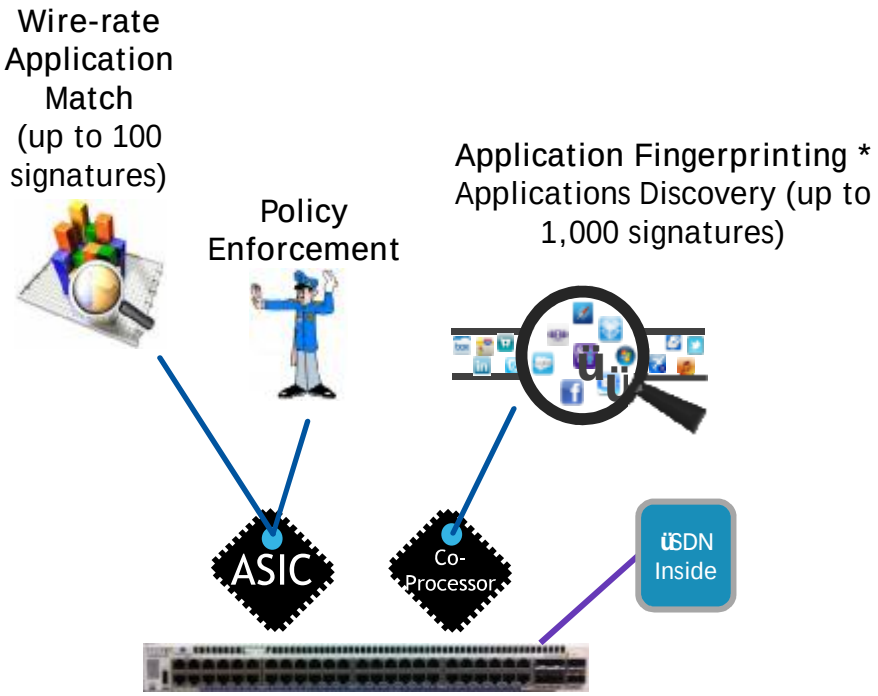
OmniSwitch 6860

- 256G wire rate engine
- Deep Packet Inspection and Application Monitoring
- Coprocessor for enhanced network services
  - (OS6860E model only)
- Virtual Chassis support
  - Up to each switches
  - Dedicated 20G QSFP+ ports
    - DAC stacking cables (40cm, 1m or 3 m)
  - Remote stacking
    - Optical SFP+ or QSFP+ connections
- PoE+ on all ports
  - Up to 60W PoE (First 4 ports on OS6860E)
  - Up to 75W POE (8 multi-giga ports) (OS6860E-P24Z8)
- Wireless forwarding capability
- User/device authentication and access control
- Deployment of advanced and secure BYOD services
- Shortest Path Bridging support
- Energy Efficient Ethernet (EEE)
- SDN ready
- Data center/IT friendly
  - All ports, including stack in the front
  - Front to back cooling
  - Bluetooth management port



OmniSwitch 6860/E

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OmniSwitch 6860 Models

OS6860-24

- 24 x 10/100/1000 BaseT port,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- AC and DC power supply

OS6860-48

- 48 x 10/100/1000 BaseT port,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- AC and DC power supply

OS6860-P24

- 24 x 10/100/1000 BaseT POE port,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- 600W AC power supply

OS6860-P48

- 48 x 10/100/1000 BaseT POE port,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- 920W AC power supply

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OmniSwitch 6860E Enhanced Models

OS6860E-24

- 24 RJ-45 10/100/1000 BaseT ports,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- AC and DC power supply

OS6860E-48

- 48 x 10/100/1000 BaseT ports
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- AC and DC power supply

OS6860E-U28

- 28 x 100/1000 Base-X SFP ports
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- AC and DC power supply

OS6860E-P24

- 24 x 10/100/1000 BaseT POE ports,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- 600W AC power supply

OS6860E-P48

- 48 x 10/100/1000 BaseT POE ports,
- 4 fixed SFP+ (1G/10G)
- 2 VFL QSFP+ ports (20G each)
- 920W AC power supply

OS6860E-P24Z8

- 16 x 100/1000 Base-T POE+ ports
- 8 x 2.5G Multi-Gigabit HPoE ports
- 4 fixed SFP+ (1G/10G) ports
- 2 VFL QSFP+ ports (20G each)
- AC and DC power supply

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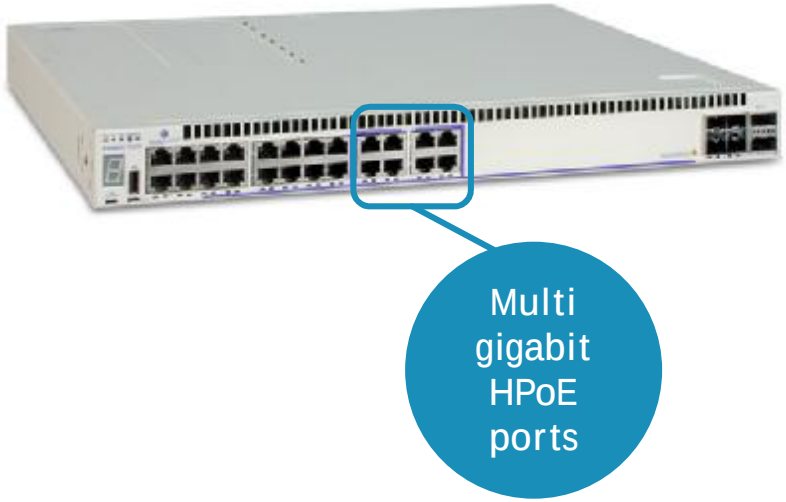
OS6860E-P24Z8

- Multi-gig Ethernet switch
- Stackable with OS6860/E models
- 75W HPoE support on Multi-gig ports
- 100M/1G/2.5G on last eight user ports
- Same PS as OS6860E family
- Support for both 600W & 920W PSU
- MACSec HW Support on 1G/10G ports
- 1588v2 Support on all user ports
- Single Multicolor LED for Multi-gig port to indicate speed/ PoE/Activity

User Ports	10/100/1000	16
	100M/1G/2.5G	8
SFP+ Uplinks		4
PoE+ Ports		16
75 W HPoE ports		8
20G Stacking Ports		2
Remote Stacking		Yes



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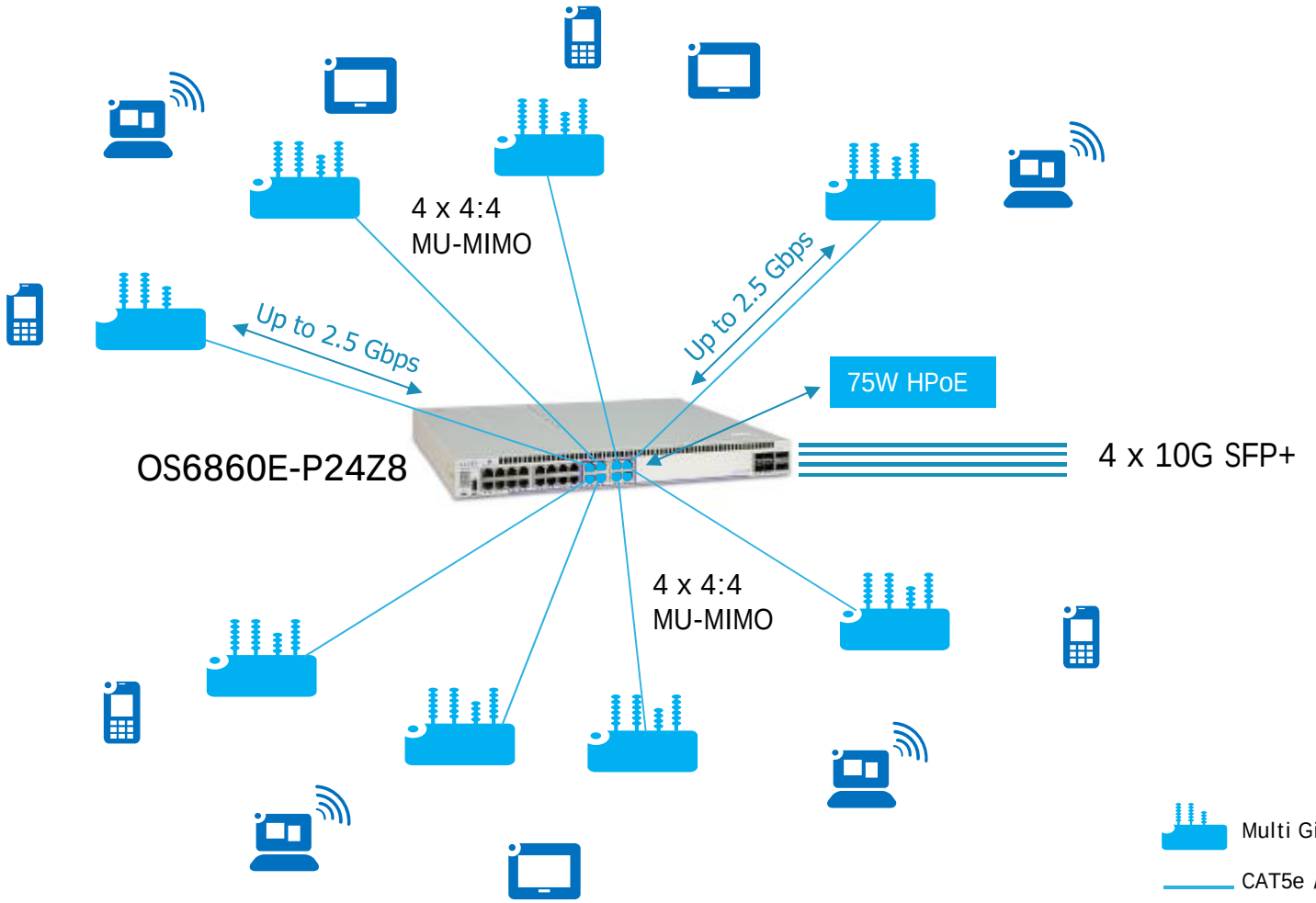
OS6860E-P24Z8
Use case



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OmniSwitch 6860 and 6860E Differences

- Features only available on the enhanced models
  - Specialized built-in co-processor board
    - Used for running additional applications
    - Application Visibility (Deep Packet Inspection DPI)
    - A separate LED (OK2) on the front of the chassis indicates the status of the co-processor board
  - The first 4 ports on OS6860E only can deliver up to for 60W of PoE per port
  - The 8 last ports (17 to 24) on OS6860E-P24Z8 only can deliver up to for 75W of PoE per port
  - Only the enhanced models have EMP port at the back

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OmniSwitch 6860
Product Family Overview

	User ports	SFP+ uplinks	20G Stack	DPI HW	App. Monitoring	MAC Sec (HW support)	60W PoE	75W PoE	EMP
OS6860-24	24	4	Yes	Yes	No	Yes	n/a	n/a	No
OS6860-P24	24 PoE	4	Yes	Yes	No	Yes	No	No	No
OS6860-48	48	4	Yes	Yes	No	Yes	n/a	n/a	No
OS6860-P48	48 PoE	4	Yes	Yes	No	Yes	No	No	No
OS6860E-P24Z8	24	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OS6860E-24	24	4	Yes	Yes	Yes	Yes	n/a	n/a	Yes
OS6860E-P24	24 PoE	4	Yes	Yes	Yes	Yes	Yes	No	Yes
OS6860E-48	48	4	Yes	Yes	Yes	Yes	n/a	n/a	Yes
OS6860E-P48	48 PoE	4	Yes	Yes	Yes	Yes	Yes	No	Yes
OS6860E-U28	28 SFP	4	Yes	Yes	Yes	Yes	n/a	n/a	Yes

Virtual Chassis between base models and “E” models

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OS6860
Power supplies

PS MODELS	OS6860-BP	OS6860-BP-D	OS6860-BPPH	OS6860-BPPX
Description	AC power supply. Provides 150 W system power to one OS6860 non-PoE switch.	DC power supply (48V DC). Provides 150 W system power to one OS6860 non-PoE switch.	600W AC PoE power supply. Provides system and PoE power to one 24 port PoE switch.	920W AC PoE power supply. Provides system and PoE power to one 48 port PoE switch.
Model Name	PS-150AC	PS-150W-DC	PS-600W-AC-P	PS-920W-AC-P
OS6860 Models supported	OS6860-24 OS6860-48 OS6860E-24 OS6860E-48 OS6860-U28	OS6860-24 OS6860-48 OS6860E-24 OS6860E-48 OS6860-U28	OS6860-P24 OS6860E-P24 OS6860E-P24Z8	OS6860-P48 OS6860E-P48 OS6860E-P24Z8
Max PoE budget with 1 PSU	N/A	N/A	450W of PoE	750E of PoE
Max PoE budget with 2 PSU	N/A	N/A	900W of PoE	1500W of PoE
Valid Backup Configurations	OS6860-BP OmniSwitch BPS	OS6860-BP-D OmniSwitch BPS	OS6860-BPPH OmniSwitch BPS	OS6860-BP-BPPX OmniSwitch BPS

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Enterprise

ADVANCED RUGGEDIZED ETHERNET SWITCH

Alcatel·Lucent
Enterprise

OmniSwitch 6865

- Industrial, ruggedized L2/L3 GigE
  - Designed for Harsh Environment Operations
- High hardened flexible port density
  - 12, 16 or 28 ports
- High performance – full forwarding rate on all ports
- L3 features set with IPv4 and IPv6
- HPOE power
- Fully integrated into OmniVista
- Designed with redundancy and availability
  - External, hot-swappable, redundant AC and DC power supplies

Defense, Energy, Utilities, Transportation
Industrial environment
At the edge of a small-to-mid size access network
At the aggregation layer

Operational Temperature	IEC 60870-2-2: -40°C to +75°C. IEC 60068-2-1: -40°C, 16hrs. IEC 60068-2-2: +80°C, 16hrs.
Storage Temperature	IEC 60721-3-1: Class 1K5: -40°C to +85°C.
Humidity	IEC-68-2-30: 95% (non-condensing), +55°C, 6 cycles.

AOS R8

Alcatel·Lucent Enterprise

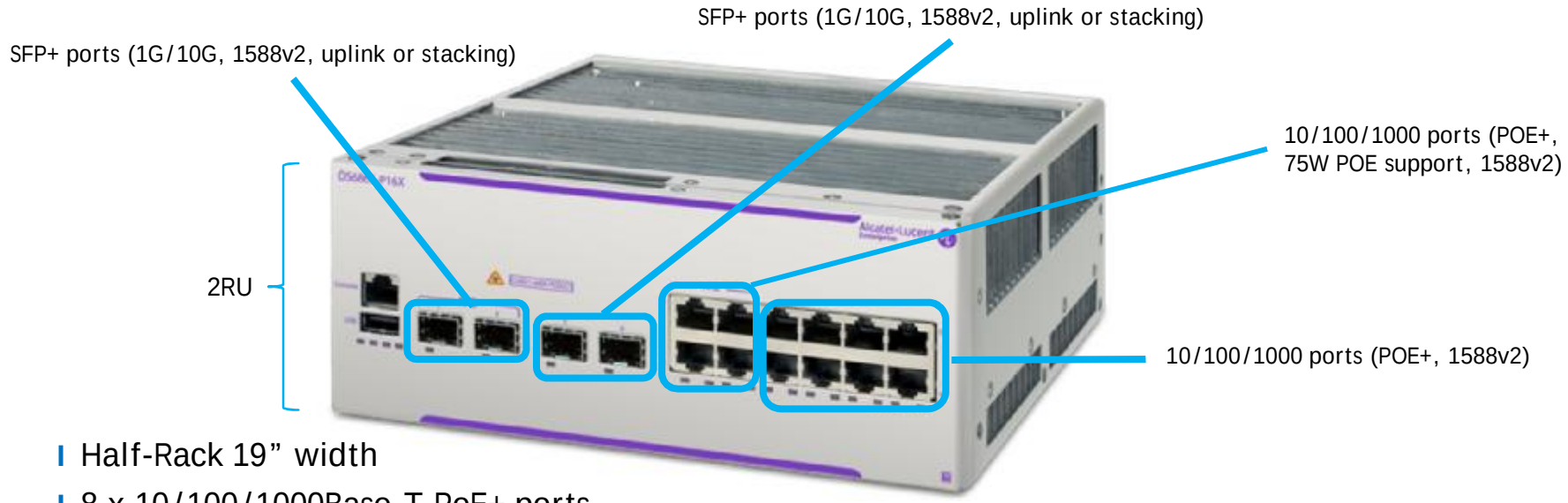
OmniSwitch 6865

- Highlights

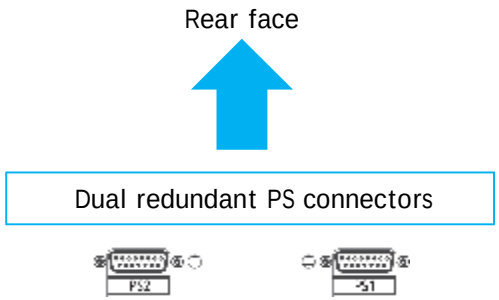
  - Optional backup power
  - Advanced L3 routing license included
  - Universal Network Profiles: Policy based access
  - Network Analytics and Control with signature based traffic inspection
  - SPB-M capabilities
  - Metro Ethernet Features
  - IEEE 1588v2: Precision Time Protocol (PTP)
  - Pre-defined role templates in AG for IEDs, Cameras
  - Multicast Over SPB Optimization
  - RESTful API and OpenFlow for SDN

Alcatel·Lucent
Enterprise

OmniSwitch 6865-P16X
Model description

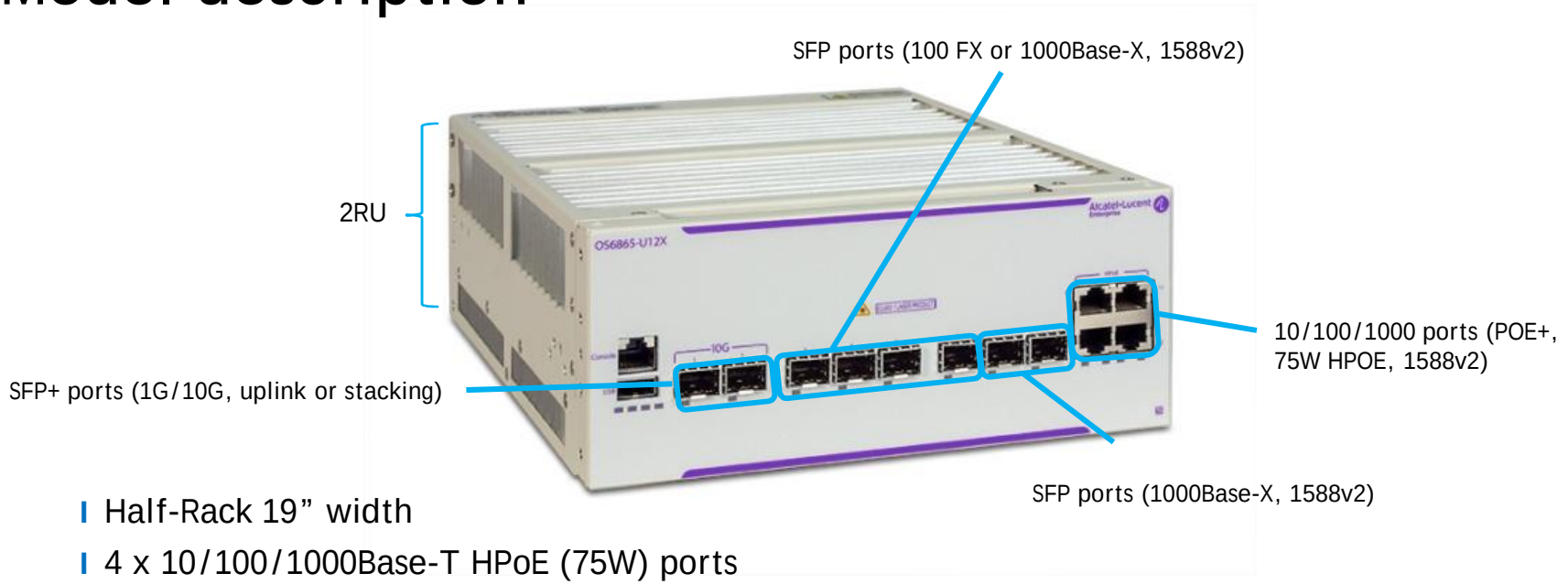


- Half-Rack 19” width
- 8 x 10/100/1000Base-T PoE+ ports
- 4 x 10/100/1000BaseT HPoE (75W) ports
- 2 x 100Base-FX/1000Base-X SFP ports
- 2 x fixed 1/10GigE SFP+ ports for VFL or Uplink
- External power supplies
- PoE Power Budget up to 300W
- Fanless (convection cooling)

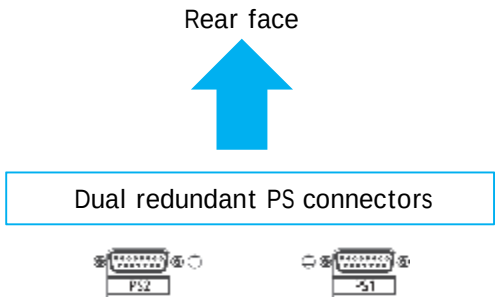


Alcatel·Lucent Enterprise

OmniSwitch 6865-U12X
Model description

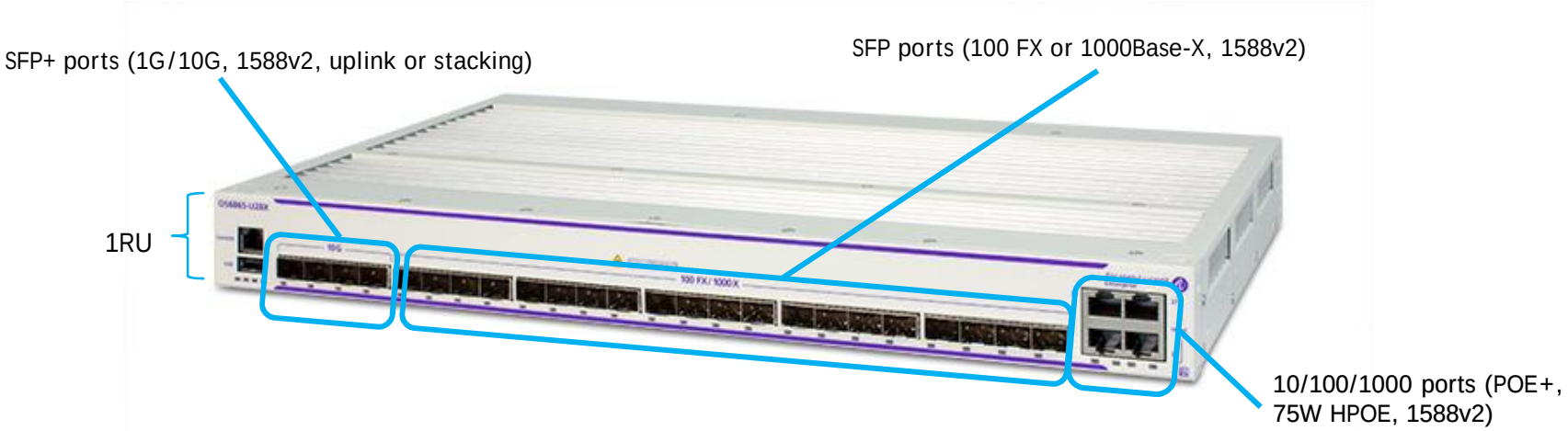


- Half-Rack 19” width
- 4 x 10/100/1000Base-T HPoE (75W) ports
- 4 x SFP ports (100 FX or 1000Base-X)
- 2 x 1000Base-X SFP ports
- 2 x fixed 1/10GigE SFP+ ports
- External power supplies
- PoE Power Budget up to 300W
- Fanless (convection cooling)

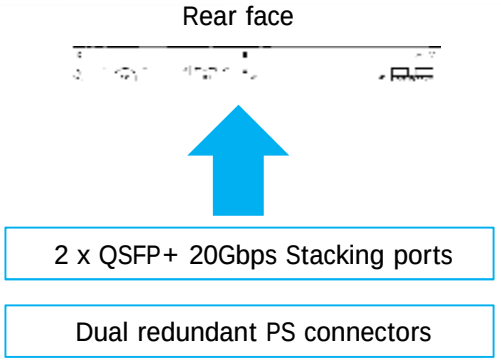


Alcatel·Lucent Enterprise

OmniSwitch 6865-U28X
Model description



- Half-Rack 19” width
- 20 x SFP ports (100 FX or 1000Base-X) ports
- 4 x 10/100/1000BaseT HPoE (75W) ports
- 4 x fixed 1/10GigE SFP+ ports
- External power supplies
- PoE Power Budget up to 280W
- Fanless (convection cooling)
- Virtual chassis technology *



* Future release

Alcatel·Lucent Enterprise

OmniSwitch 6865
Models summary

OmniSwitch 6865	10/100/1000Base-T RJ-45 PoE	10/100/1000Base-T RJ-45 HPoE (75W)	1000BaseX SFP	100FX/1000Base-X SFP	1GigE/10GigE SFP+	20GigE QSFP+ VFL
OS6865-P16X	8	4	2	0	2	0
OS6865-U12X	0	4	2	4	2	0
OS6865-U28X	0	4	0	20	4	2

Alcatel·Lucent Enterprise

OmniSwitch 6865
Power Supplies

Max Power over Ethernet Budget			
OmmnSwitch Model/ Power Supply	OS6865-P16X	OS6865-U12X	OS6865-U28X
(1) OS6865-BP or (1) OS6865-BP-D @48V	140W	140W	100W
(2) OS6865-BP or (2) OS6865-BP-D @48V or (1) OS6865-BP and (1) OS6865-BP-D @ 48V	300W	300W	280W
(1) OS6865-BP-D @24V	100W	100W	80W
(1) OS6865-BP-D @24V or (1) OS6865-BP and (1) OS6865-BP-D @24V	240W	240W	200W

Power Supply
OS6865-BP :180W (System and PoE power)
OS6865-BP-D :180W (System and PoE power)

Alcatel·Lucent
Enterprise

OmniSwitch 6350, 6450, 6560, 6860/6860E Comparison

	Alcatel-Lucent OmniSwitch 6350	Alcatel-Lucent OmniSwitch 6450	Alcatel-Lucent OmniSwitch 6560	Alcatel-Lucent OmniSwitch 6860/6860E
Software	AOS software base	AOS software base	AOS software base	AOS software base + Optional Advanced Routing code
Features	AOS L2+ Non Stackable	AOS L2 & Basic L3 Stackable	AOS L2 & Basic L3 Stackable	AOS L2 & Adv. L3 Virtual Chassis, SPB-M
Routing	Basic static and RIP/RIPng	Basic static and RIP/RIPng	Static and RIP/RIPng	Full, advanced IP Routing
User ports	10M/100M/1Gbps IEEE 802.3at support	10M/100M/1Gbps IEEE 802.3at support	10M/100M/1G/2,5Gbps 802.3at/bt 95W POE (1 port)	10M/100M/1G/2,5Gbps 802.3at 60W POE+ on 4 ports (6860E) 75W HPOE on 8 ports (6860E-P24Z8) 75W HPOE on 4 ports (OS6865)
Uplinks	1 Gbps	10 Gbps	10 Gbps	10 Gbps
Stacking	NA	20 Gbps links	10/20 Gbps links	80 Gbps links
Switching	77,38 Mpps	131 Mpps		190,6 Mpps
Fabric Capacity	104 Gb/s	176 Gb/s	152Gb/s	264 Gb/s
Traffic Analysis				DPI, AppMon
Security	AG, UNP, CP	AG, UNP, CP, BYOD	AG, UNP, CP, BYOD	AG, UNP, CP, BYOD
Management	OmniVista™ 2500 NMS	OmniVista™ 2500 NMS	OmniVista™ 2500 NMS	OmniVista™ 2500 NMS
Mac Table	16K	16K	16K	48K
Routing Table	16,000-entry routing table	16,000-entry routing table	16,000-entry routing table	64,000-entry routing table
Multicast	IP multicast IGMP / Switching	IP multicast IGMP / Switching	IP multicast IGMP / Switching	Full IP Multicast routing and membership

Alcatel·Lucent Enterprise

L3 MODULAR SWITCH
OMNISWITCH 9900

Alcatel·Lucent
Enterprise

OmniSwitch 9907

- A new 7-Slot low latency chassis for Campus LAN
  - Core/Distribution
  - Edge
- Best-of-the-breed high-throughput Campus LAN chassis
  - 5.12Tbps Fabric capacity
  - 1/10/40/100G Ready
- Virtual Chassis Support (2 Chassis)*
- Built-in redundancy (MGMT/Fabric/PS/Fans)
- All Modules hot-swappable
- Internal POE supply/ HPoE up to 75W & 802.3at support
- MACSEC, 1588v2 & MPLS ready hardware
- SDN Ready – OpenFlow/VXLAN/OpenStack/REST APIs

AOS R8

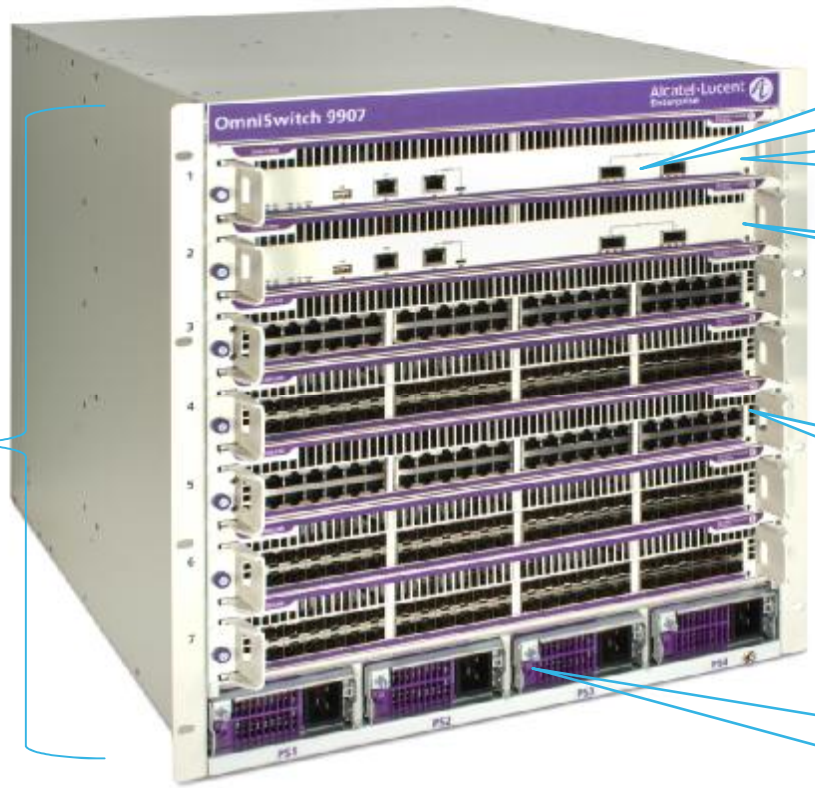
* AOS 8.3.1.R02

Alcatel·Lucent Enterprise

OmniSwitch 9907 - Overview

11 RU

7 Slots

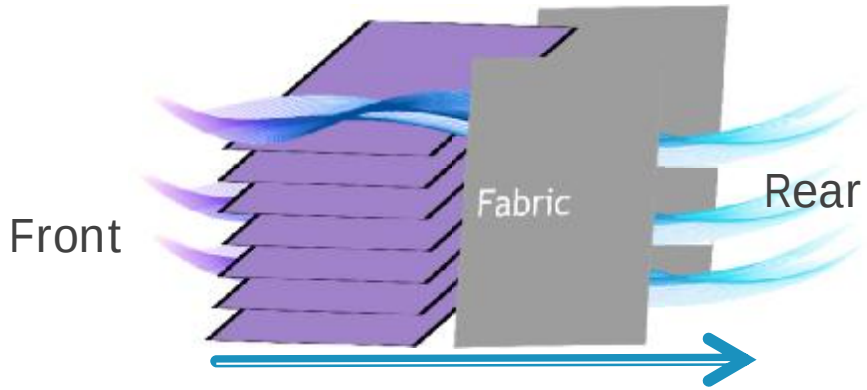


- 2x40G QSFP+ ports per CMM for uplink or VFL connectivity
  - Up to 4x40G ports in redundant system
  - Each 40G can be divided into 4x10G
- Dedicated CMM Slot (80Gbps Full Duplex bandwidth)
- Universal CMM/NI Slot (80Gbps Full Duplex bandwidth)
- 5 Dedicated NI Slots
  - 480Gbps Full Duplex bandwidth per slot
- Front accessible redundant PS
  - Scalable up to 10800W internal POE power

Alcatel·Lucent Enterprise

OmniSwitch 9907 – Future Proof Architecture

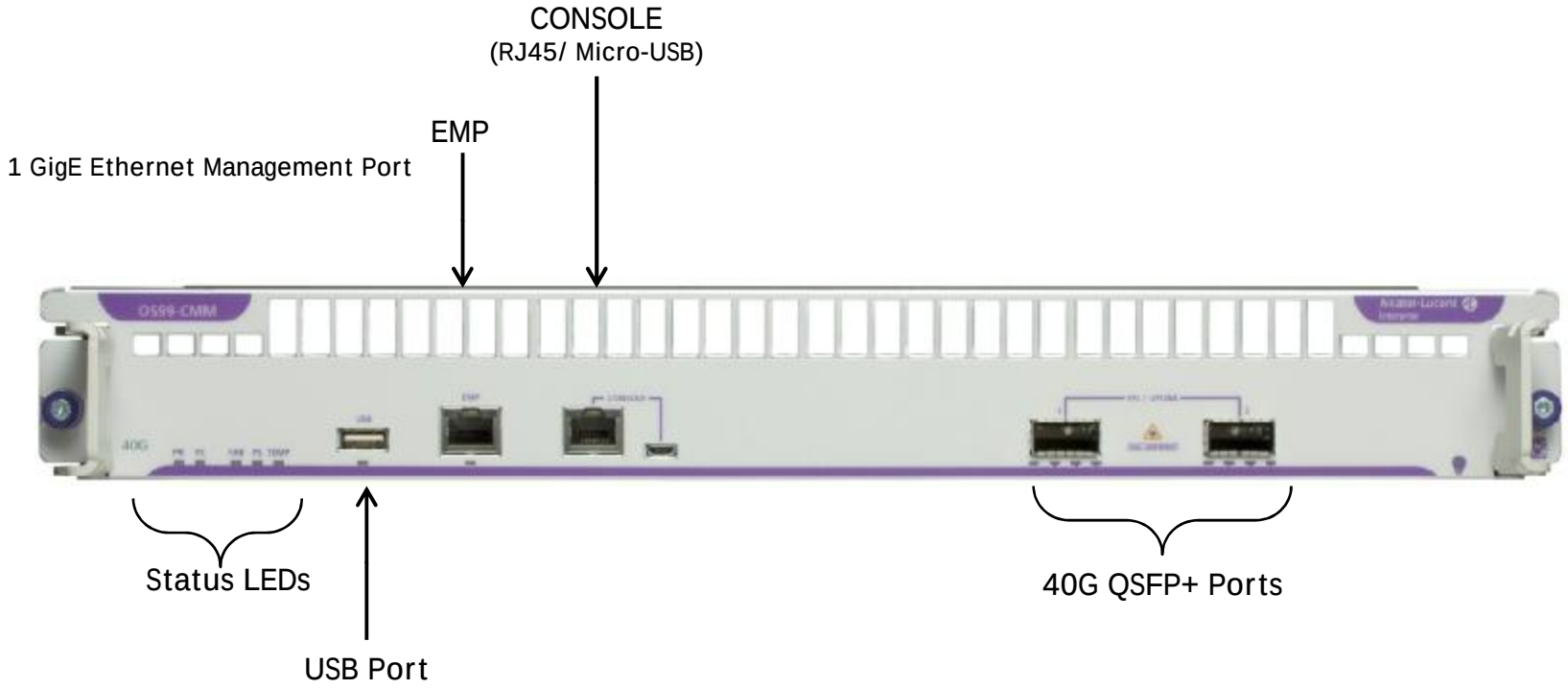
- Innovative direct-connect architecture
  - Backplane less
  - Each slot connects to the fabric directly
- Future-proof for hardware evolution
  - Two fabrics for full capacity in phase 1
  - Ready to support four fabrics to double the capacity in the future
  - Newer fabrics & NI possible without chassis swap out
- Fabrics & fans reside at the rear
- Front to back airflow for cooling



Conceptual Side View

Alcatel·Lucent Enterprise

OmniSwitch 9907
CMM



Alcatel·Lucent
Enterprise

OmniSwitch 9907
NIs

NI Cards		Connectors	Port Speeds	Maximum Port Density
OS9900-GNI-48		RJ45	10/100/1000BaseT	288 1)
OS9900-GNI-P48		RJ45	10/100/1000BaseT (PoE)	288 (802.3.at) 1) 48 (HPoE)
OS9900-GNI-U48		SFP	1G/10G, MACSec on all ports	256 (100FX, 1G)
OS9900-XNI-48		RJ45	1G/10GBaseT	256 (10G) 2)
OS9900-XNI-U48		SFP+	1G/10G	256 (10G) 2)
OS9900-CMM		QSFP+	40G	***4*** ***3***)

1) Slot 2 populated with NI

2) 40G Ports on CMM split into 10G

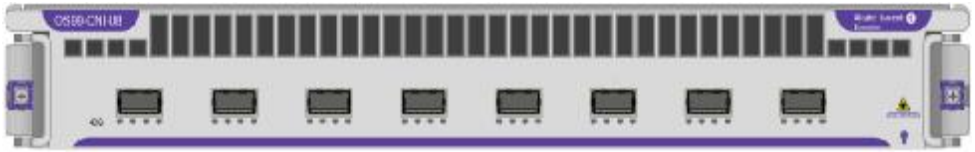
Alcatel·Lucent Enterprise

OmniSwitch 9900 – new NI modules

- MultiGE module

OSS99-XNI-P48Z16

- Physical: 16 2.5/10G-Base-T + 32 10G-Base-T ports
- Ports 1-16 Speeds:
  - 10/100/1000/2500/5000/10000 Mbps
- Ports 17-48 Speeds:
  - 10/100/1000/10000 Mbps
- PoE:
  - 1-8 ports up to 75W (HPoE) or
  - 9-48 ports up to 30W (at)



- 100GE Fiber module

OS99-CNI-U8

- Physical: 8 100G-Base-X QSFP28 ports
- Speeds: 10/25/40/100Gbps
- Max ports: 32 10/25GE with splitter and 8 40/100GE

Increase product competitiveness and completes portfolio

Alcatel·Lucent Enterprise

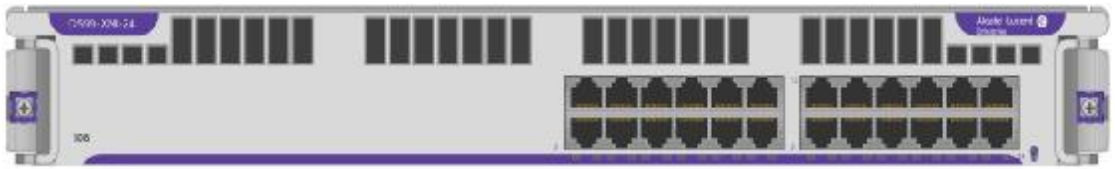
OmniSwitch 9900 – new NI modules in 2018

OS99-XNI-U24

- Physical: 24 10G SFP+

OSS99-XNI-P24Z8

- Physical: 8 2.5/5/10G-Base-T
- + 16 10G-Base-T ports



OSS99-XNI-24

- Physical: 24 10G-Base-T ports

OS99-XNI-U12Q

- Physical: 12 10G SFP+ + 1 40G-Base-X QSFP ports

OS99-XNI-P12Q

- Physical: 12 10GBaseT + 1 40G-Base-X QSFP ports

Increase product competitiveness and completes portfolio

Alcatel·Lucent Enterprise

OmniSwitch 9907
Fabric/ Fan-Tray Modules (Rear)

§ OS9900-CFM *)

§ OS9900-fan tray

§ 3 Slots for fan trays

§ 4 Slots for CFM behind fan trays

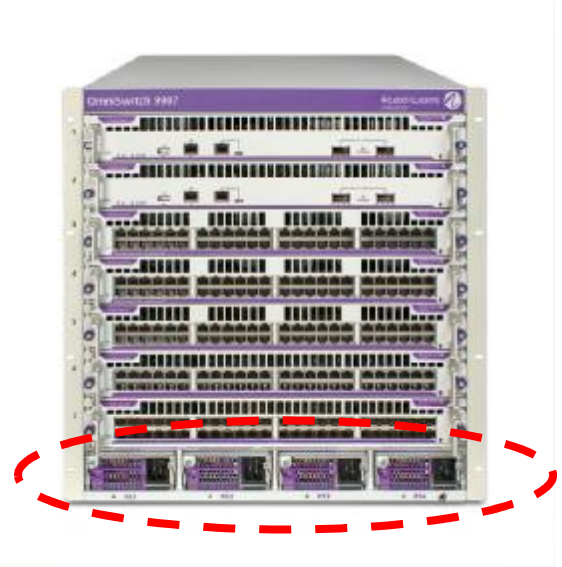
(2 slots currently used)

*) Chassis Fabric Module (CFM)

Alcatel·Lucent Enterprise

OmniSwitch 9907
System and PoE Power

- Common Power for System and PoE
- No external Power Shelf/ PSU needed for PoE
- Total power budget depends on the number and type (DC, AC) of power supplies and input voltage (highline, lowline)
- System power for board bring up takes priority
- After system bring up all remaining power is available for PoE!
- System power can be configured to operate in N+1 redundancy mode



4 slots for power supplies

Power Supply	Available Power per PS
AC at 240V (highline)	3000 W
AC at 120V (lowline)	1200 W
DC	2500 W

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OmniSwitch 9907
PoE-Power

- Provides up to 75 W per port
- HPoE
  - GNI-P48 supports maximum of 75 watts for ports 1-8 and up to 30 watts for the remaining 40 ports
  - For a chassis with single CMM, dual Fabrics, 4x PSU @ 3KW each can provide up to 10,800W of PoE to 6x GNI-P48)

Standard	Max. PoE power per port
IEEE 802.3af	15.4/12.95 watts
IEEE 802.3at	30/25.5 watts
HPoE (first 8 Ports)	75 watts

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OMNISWITCH 10K

Alcatel·Lucent
Enterprise

OmniSwitch 10K
12 slots Chassis

- 19” Rack-mount
- Resilient and redundant hardware system architecture
- Non-stop forwarding
- 256 x 10 GigE non-blocking, wirerate
- 384 x 1 GigE
- Designed for 1,248Gbps per slot
- 40G/100G ready
- 5.12 Terabits/ps switching capacity
- New Linux-based AOS 7 NOS
- Improved scalability, traffic management (Lossless network), features, resiliency
- Virtual Chassis
- MPLS and data center ready architecture
- <1.5 Watt per Gigabit/second

Large Enterprise Core

Data Center

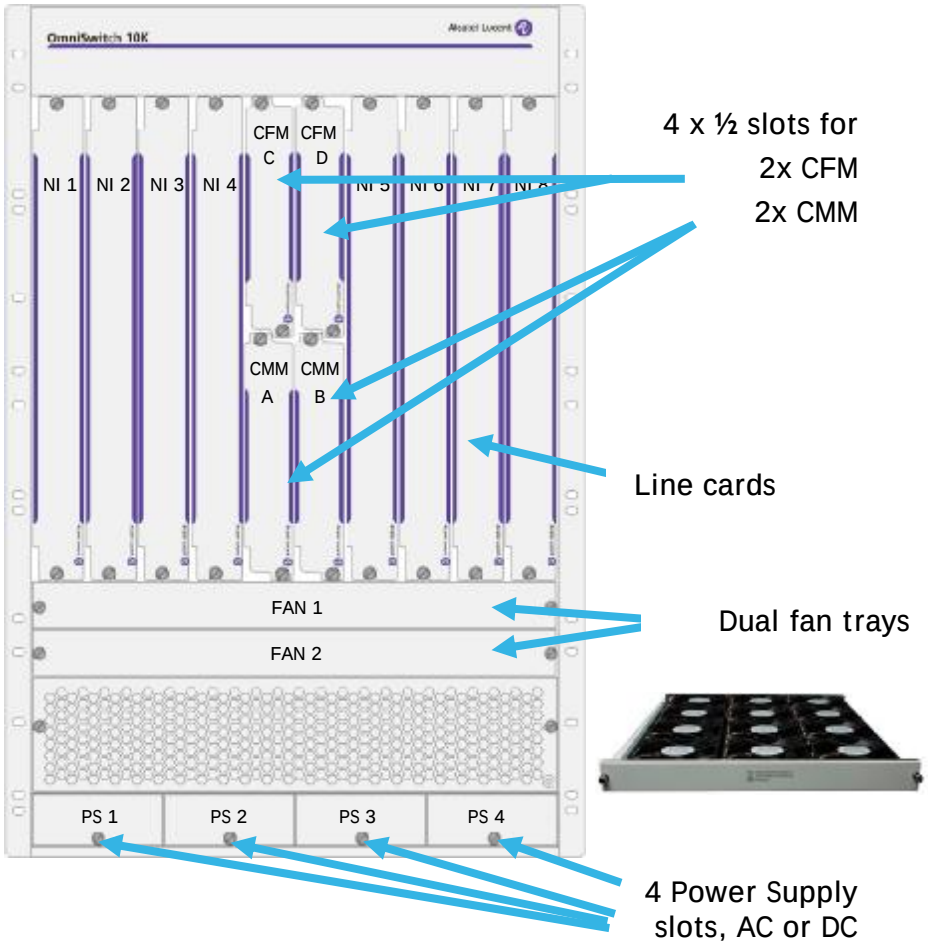
Verticals

AOS R8

Alcatel·Lucent Enterprise

OmniSwitch 10K
Modular Chassis Components

- 12-slot chassis
- 8 line card slots
  - 1,248 Gb/s per slot
    - 32 wire rate 10 Gigabit Ethernet ports on each NI card
  - 256 x 10 Gb/s non-blocking ports
  - Non-blocking wire-rate slot performance
  - Hot swappable
- 1+1 Management
  - Control Processor Module + fabric (CMM)
  - Control Fabric Module (CFM)
  - Hot swappable
- N+1 Power Supplies
  - Hot swappable
- 1+1 Fan tray redundancy
  - Hot swappable



Ring ERP AQM Low Power MEF

Alcatel·Lucent Enterprise

OmniSwitch 10K
Network Interfaces

- 40GB Ethernet Switch Module
  - 4 and 8 unpopulated 40G QFP+ ports
  - 3.2/6.4GB packet buffer

OS10K-QNI-U8

OS10K-QNI-U4

- 10GB Ethernet Switch Module
  - 32 unpopulated 1G/10G SFP+ ports
  - 5.0GB packet buffer (16E)
  - 6,4GB packet buffer (32E)
  - Standard table sizes (32K MAC, 16K L3, 8K ACL)
  - Supports 10GbE SFP+ & 1GbE SFP Transceivers
  - OS10K-XNI-U16E - 16 ports 10Gig Module
  - OS10K-XNI-U16L - 8 x10Gig + 8 x1Gig Module (upgradeable to 10Gig)

OS10K-XNI-U32E

OS10K-XNI-U16E/L

- 1GB Ethernet Switch Modules
  - 48 wire rate RJ-45 10/100/1000Base-T ports or
  - 48 SFP 100/1000 Ports
  - 1.25GB packet buffer
  - Large tables (128K L2, 32K L3, 48K ACL)
  - MPLS ready

OS10K-GNI-U48E

OS10K-GNI-C48E

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Enterprise

OMNISWITCH 6900

Alcatel·Lucent
Enterprise

OmniSwitch 6900-X
High Density 10GigE Switch

- High Density 10GigE Switch
  - 20 or 40 SFP+ ports (1G/10G)
  - Up to 64 SFP+ ports on the 6900-X40
  - Up to 32 SFP+ ports on the 6900-X20
- 640Gbps / 1.28 Tbps wire-rate capacity
- 480/ 960 Mpps
- Sub microsecond latency
- Virtual chassis of up to 6 switches
- Redundant hot power supplies, fans
  - Low power per port (3.5W per port)
  - Wire-rate switching and routing
  - 128K MAC addresses
  - Optional modules for utmost flexibility
  - Front To Back / Back To Front Air Flow
  - Software Controlled Fans Speed

OS6900-X40

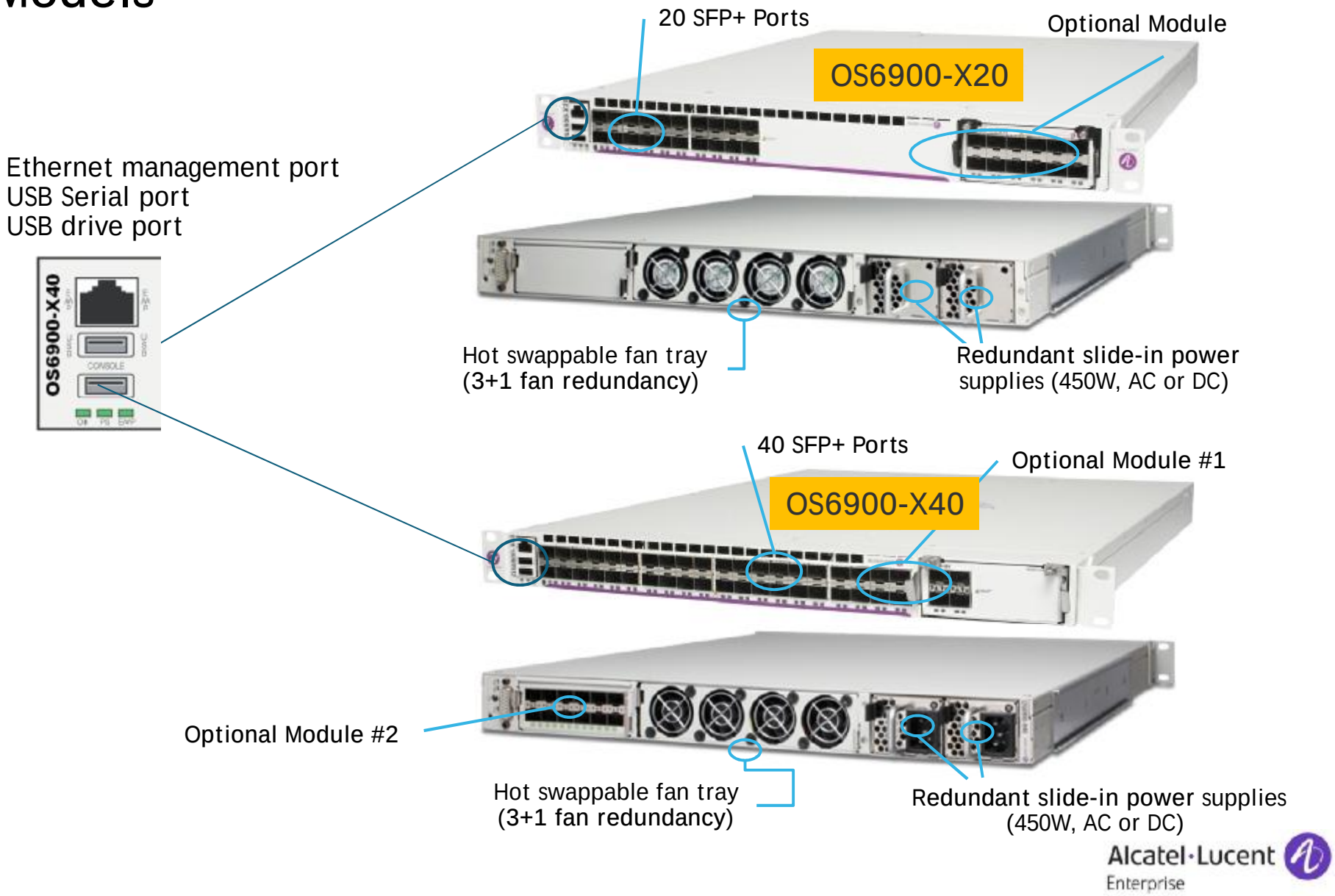
OS6900-X20

AOS R8

LAN Core / Aggregation
Data Center Top of Rack switch
Verticals

Alcatel·Lucent Enterprise

OmniSwitch 6900-X Models



Alcatel·Lucent Enterprise

OmniSwitch 6900-T
High Density 10GigE Switch

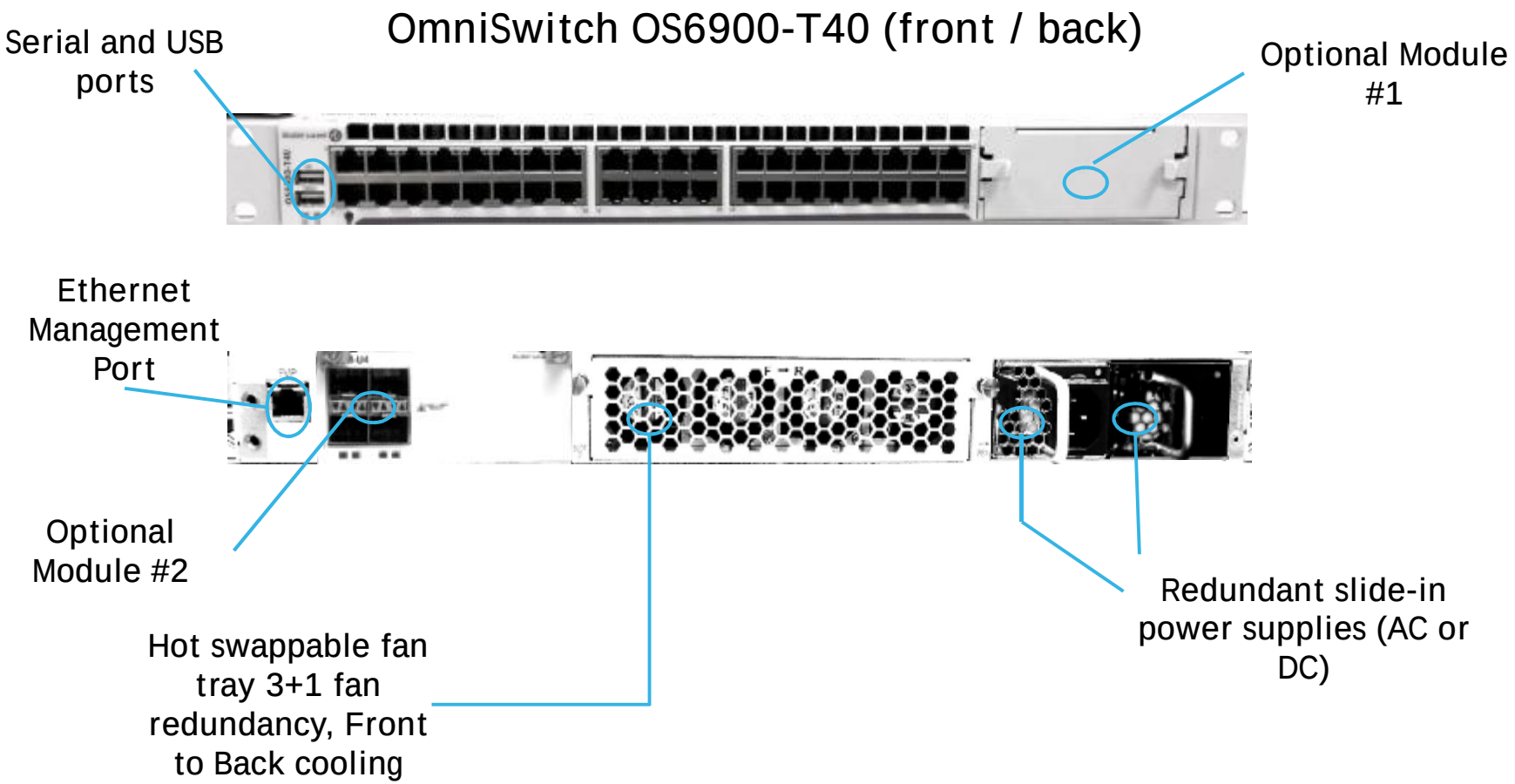
- High Density 10GigE Switch
  - 20 or 40 fixed 10GBase-T ports (IEEE 802.3an)
  - Up to 56 10GBase-T ports on the 6900-T40
  - Up to 28 10GBase-T ports on the 6900-T20
- 10GigE Server and Storage connectivity
- 640Gbps / 1.28 Tbps wire-rate capacity/ low latency
- Latency <4us (~3.3us)
- Redundant hot power supplies, fans
  - Wire-rate switching and routing
  - 128K MAC addresses
  - IPv4 hosts 8K / IPMC 8K
  - Optional modules
    - 1 for OS6900-T20 (in front)
    - 2 for OS6900-T40 (one each in front & rear)
  - Front to Back / Back to Front Air Flow
  - Software Controlled Fans Speed
  - Energy Efficient Ethernet IEEE 802.3az
  - CAT 5e = 55 meters
  - CAT 6a/7 = 100 meters
  - 1G/10G auto-negotiation

OS6900-T40

OS6900-T20

Alcatel·Lucent Enterprise

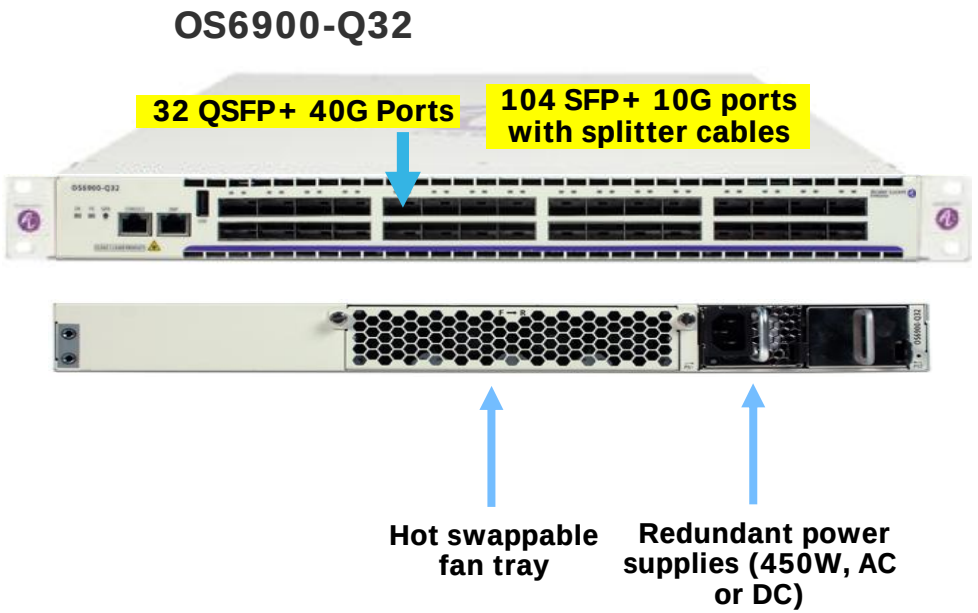
OmniSwitch 6900-T



Alcatel·Lucent Enterprise

OmniSwitch 6900-Q32 Overview

- Higher port density in 1RU
  - 96 x 10G plus 8x40G in factory default mode
  - up to 104 x 10G ports in 10G-only mode
- Scalable to 32x40G-BaseX ports with QSFP+ connectors
  - Operate @40G or 4x10G using splitter cables
  - 8 Fixed 40G ports (ports 7-10 and 23-26)
  - Port can be fiber or copper depending on the transceiver or cable used
- Very Low Latency ~500ns-700ns
- 2.56T bps switching and 1.52B pps throughput
- Virtual chassis of up to 6 switches
- Tri-color LED per data port
  - 40G Port Status
  - 10G (Breakout cable) Port Status and beacon control per port
- 1+1 redundant PS and R2F/F2R fan trays

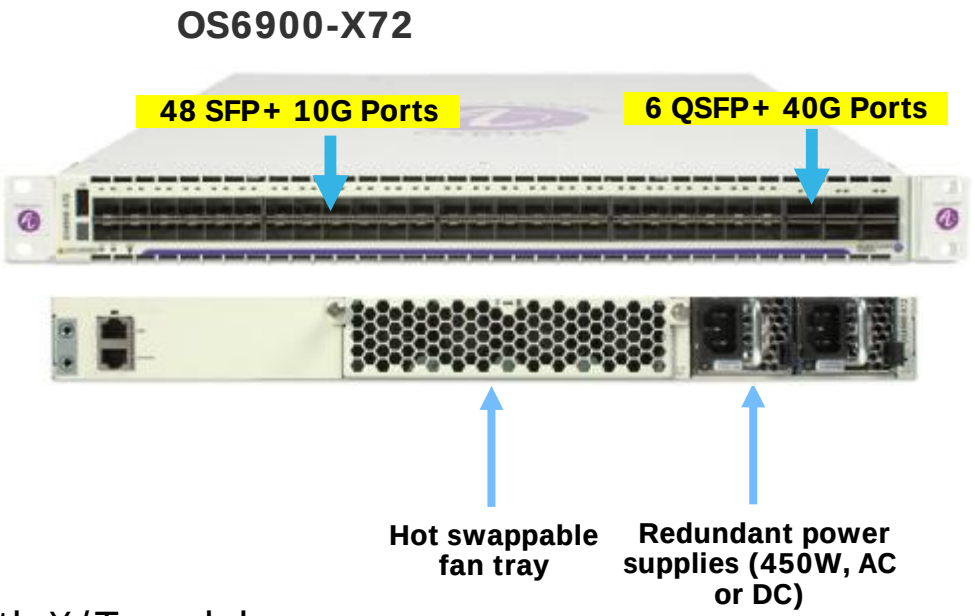


- Can be mixed in a Mesh Virtual chassis with X/T models
- VXLAN hardware gateway

Alcatel·Lucent Enterprise

OmniSwitch 6900-X72 Overview

- Higher port density in 1RU
  - 48 x 10G ports
  - 6 x 40G ports
  - Up to 72x10G in 10G only-mode
- Very Low Latency ~500ns-700ns
- 1.4Tbps switching
- 1.4Gpps throughput
- Virtual chassis of up to 6 switches
- 1+1 redundant PS and R2F/F2R fan trays
- Can be mixed in a Mesh Virtual chassis with X/T models
- VXLAN hardware gateway



Alcatel·Lucent Enterprise

OmniSwitch 6900
Optional modules for X and T Models

OS-HNI-U6

4 x 10G SFP+ ports

2 x 40G QSFP+ ports

OS-QNI-U3

3 x 40G QSFP+ ports

40G

OS-XNI-U12E

12 port SFP+ ports

1G/10G

FC 2G/4G/8G

OS-XNI-U12

12 port SFP+ ports

1G/10G

OS-XNI-U4

4 port SFP+ ports

1G/10G

OS-XNI-T8

8 ports 10GBase-T

100M/1G/10G

Alcatel·Lucent Enterprise

OmniSwitch 6900
Power Supplies and Fans

- Fully loaded OS6900-xxx requires a single 450w PSU power
- Hot-swappable AC and DC PSU
- 1+1 redundant, removable

PS & Fans (Front-to-Rear Airflow)

- AC - OS6900-BP-F
- DC - OS6900-BPD-F

- Fans OS6900-FT-F
  - Single removable unit
  - Field replaceable tray in the rear of the chassis

PS & Fans (Rear-to-Front Airflow)

- AC - OS6900-BP-R
- DC - OS6900-BPD-R

- Fans OS6900-FT-R
  - Single removable unit
  - Field replaceable tray in the rear of the chassis

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OmniSwitch 6900 & 1OK
Optional Transceivers Support

- Gigabit Ethernet
  - SFP-GIG-SX
  - SFP-GIG-LX
  - SFP-GIG-LH40
  - SFP-GIG-LH70
  - SFP-GIG-T
- CWDM Gigabit Ethernet
  - SFP-GIG-CWD
- Bi-directional Ethernet
  - SFP-100-BX20LT
  - SFP-100-BX20NU
  - SFP-100-BXLC-D
  - SFP-100-BXLC-U
  - SFP-GIG-BX-D
  - SFP-GIG-BX-U
- Ethernet 100-FX
  - SFP-100-LC-MM
  - SFP-100-LC-SM15
  - SFP-100-LC-SM40
- Triple-seed SFP+ Fibre Channel
  - Optical
  - Auto-sensing 2G, 4G, 8G FC

- Direct Attach SFP+
  - 1m/3m/7m
- SFP-10G-ZR
  - 10G SFP+ Optical
  - Distance up to 80 km
  - Single Mode
- 40-Gigabit QSFP+
  - QSFP-40G-SR
  - QSFP-40G-C
- QSFP-4x10G-C
  - QSFP-4x10G-C1M
  - QSFP-4x10G-C3M
  - QSFP-4x10G-C5M

- QSFP-4x10G-SR
  - QSFP-4x10G-SR

- 10-Gigabit SFP+
  - SFP-10G-SR
  - SFP-10G-LR
  - SFP-10G-ER
  - SFP-10G-LRM
  - SFP-10G-C

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OmniSwitch 6900 Hardware
Buffer And Traffic Management

- Switch Advanced Features
  - Virtualization with MC-LAG or Virtual Chassis
  - Fast network re-convergence and optimal load balancing with Shortest Path Bridging
  - Ease of configuration

- Optimum Application Performance with Rich QoS
  - Rich application classification capabilities (L2/L3/L4)
  - Advanced Queuing and congestion management
    - Enhanced Transmission Selection (ETS) 802.1Qaz (DCB)
    - Queue Set profiles (SPQ, WFQ, RED, WRED)
  - Congestion Notification
    - Priority based Flow Control (PFC), IEEE 802.1Qbb (DCB)
    - 802.3x

- Core Routing Layer 3 support
  - Wire-rate at L2 / L3 (IPv4/v6, unicast and multicast)
  - Advanced routing support with protocols such as OSPF, BGP, PIM-SM, BFD, VRF

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OS2220: Enterprise networking for SMB

Available Q1/2018

Operational simplicity

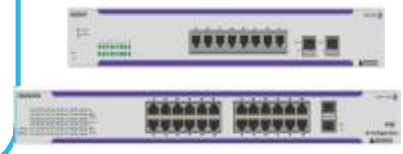
- Simple web management
- Simplified support without specialized IT
- VoIP, WIFI and data network auto provisioning

Cost efficient

- Quick deployment
- Minimal investment
- Limited Lifetime warranty

Comprehensive portfolio

- 8, 24 and 48* PoE
- 8, 24 and 48* non-PoE
- 1GE downlinks and uplinks



Flexibility and cost effective connectivity for your business

* May/2018

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OS2230: price sensitive access for Enterprise

Available Q4/2018

Operational simplicity

- Simple web and CLI management
- AOS-lite solution with targeted L2/L3 support
- VoIP, WIFI and data network auto provisioning

Cost efficient

- Minimal investment
- Limited Lifetime warranty
- Quick deployment as part of the iFab

Comprehensive portfolio

- 8, 24 and 48 PoE
- 8, 24 and 48 non-PoE
- 1GE downlinks and uplinks

Cost effective AOS connectivity for emerging markets

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AOS SOFTWARE KEY STRENGTH

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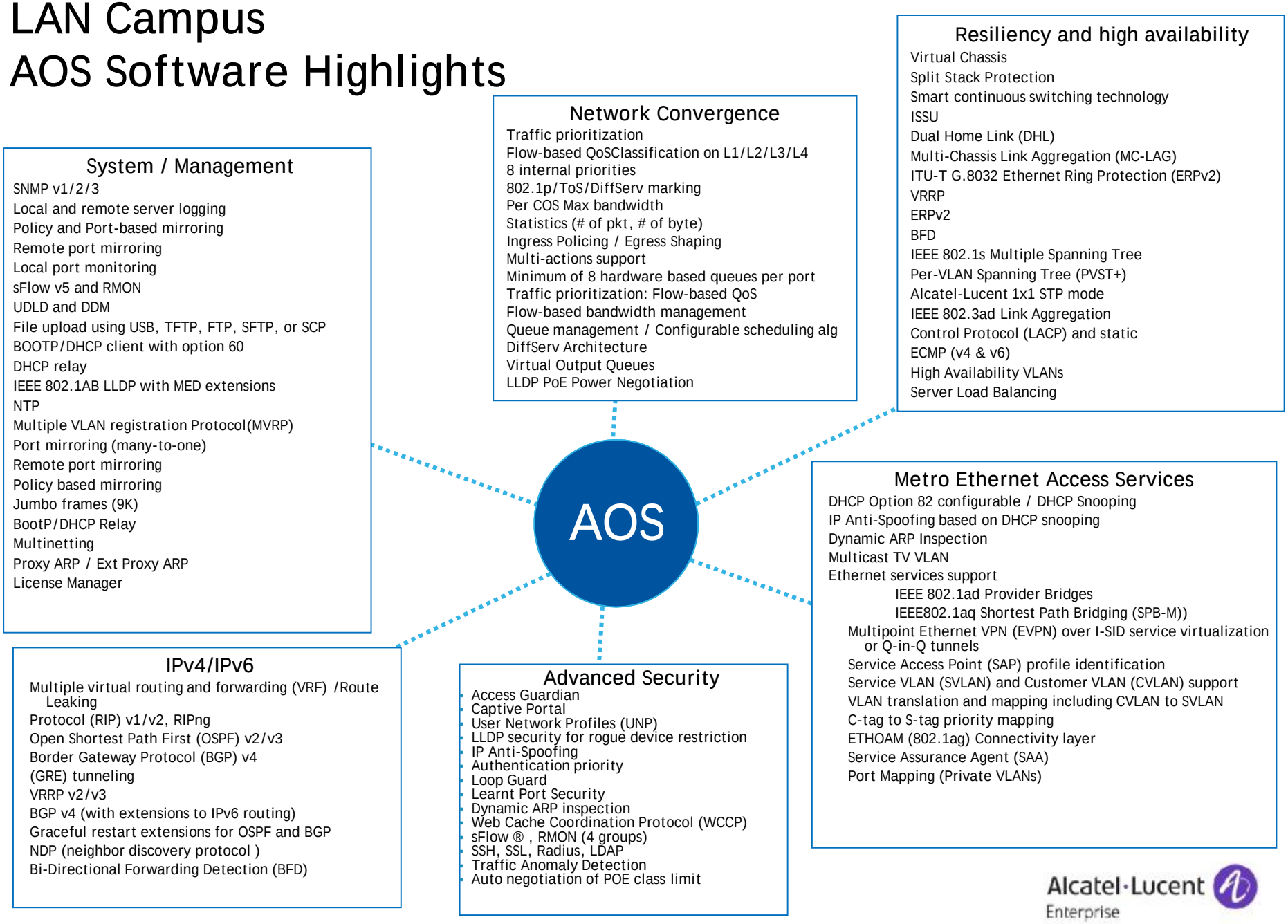
LAN Campus
AOS Software Highlights



Network Convergence

Traffic prioritization
Flow-based QoSClassification on L1/L2/L3/L4
8 internal priorities
802.1p/ToS/DiffServ marking
Per COS Max bandwidth
Statistics (# of pkt, # of byte)
Ingress Policing / Egress Shaping
Multi-actions support
Minimum of 8 hardware based queues per port
Traffic prioritization: Flow-based QoS
Flow-based bandwidth management
Queue management / Configurable scheduling alg
DiffServ Architecture
Virtual Output Queues
LLDP PoE Power Negotiation

Resiliency and high availability

Virtual Chassis
Split Stack Protection
Smart continuous switching technology
ISSU
Dual Home Link (DHL)
Multi-Chassis Link Aggregation (MC-LAG)
ITU-T G.8032 Ethernet Ring Protection (ERPv2)
VRRP
ERPv2
BFD
IEEE 802.1s Multiple Spanning Tree
Per-VLAN Spanning Tree (PVST+)
Alcatel-Lucent 1x1 STP mode
IEEE 802.3ad Link Aggregation
Control Protocol (LACP) and static
ECMP (v4 & v6)
High Availability VLANs
Server Load Balancing

System / Management

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
BOOTP/DHCP client with option 60
DHCP relay
IEEE 802.1AB LLDP with MED extensions
NTP
Multiple VLAN registration Protocol(MVRP)
Port mirroring (many-to-one)
Remote port mirroring
Policy based mirroring
Jumbo frames (9K)
BootP/DHCP Relay
Multinetting
Proxy ARP / Ext Proxy ARP
License Manager

Metro Ethernet Access Services

DHCP Option 82 configurable / DHCP Snooping
IP Anti-Spoofing based on DHCP snooping
Dynamic ARP Inspection
Multicast TV VLAN
Ethernet services support
- IEEE 802.1ad Provider Bridges
- IEEE802.1aq Shortest Path Bridging (SPB-M))

Multipoint Ethernet VPN (EVPN) over I-SID service virtualization or Q-in-Q tunnels
Service Access Point (SAP) profile identification
Service VLAN (SVLAN) and Customer VLAN (CVLAN) support
VLAN translation and mapping including CVLAN to SVLAN
C-tag to S-tag priority mapping
ETHOAM (802.1ag) Connectivity layer
Service Assurance Agent (SAA)
Port Mapping (Private VLANs)

IPv4/IPv6

Multiple virtual routing and forwarding (VRF) /Route Leaking
Protocol (RIP) v1/v2, RIPng
Open Shortest Path First (OSPF) v2/v3
Border Gateway Protocol (BGP) v4
(GRE) tunneling
VRRP v2/v3
BGP v4 (with extensions to IPv6 routing)
Graceful restart extensions for OSPF and BGP
NDP (neighbor discovery protocol)
Bi-Directional Forwarding Detection (BFD)

Advanced Security

- Access Guardian
- Captive Portal
- User Network Profiles (UNP)
- LLDP security for rogue device restriction
- IP Anti-Spoofing
- Authentication priority
- Loop Guard
- Learnt Port Security
- Dynamic ARP inspection
- Web Cache Coordination Protocol (WCCP)
- sFlow ® , RMON (4 groups)
- SSH, SSL, Radius, LDAP
- Traffic Anomaly Detection
- Auto negotiation of POE class limit

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OmniSwitch for Campus Manageability

Common Management Interfaces

- Fully integrated into OmniVista 2500 global network management
  - Auto discovery
  - Topology
  - Trap notification
  - Application Visibility

- Ability to create policies across multiple services
  - Built-in logic to avoid conflicts
    - QOS
    - Security (AQM, Access Guardian,…)

- Familiar CLI and GUI
  - WebView – Embedded Manager Server
  - Telnet, SSH,
  - Full SNMPv3 support

- Native support in 5620 SAM
  - Provides manageability from the head quarter to the remote locations

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OmniSwitch for Campus
Manageability AOS features highlights

- Dual image and dual configuration file storage
- Intuitive AOS-based CLI
- Human readable ASCII based config files
- Auto Remote Configuration
- Virtual-Chassis
- Web based element manager GUI (WebView)
- OmniVista 2500 NMS
  - SNMPv1/v2/v3
  - LLDP for building topology maps within OV
- SFTP and SCP Secured file upload
- IGMPv1/v2/v3 multicast snooping
- USB support
  - Upload/download
  - Disaster recovery
- DHCP Server

- LLDP network policies for IP phones classification
- Local & remote logging (Syslog)
- MVRP for pruning and dynamic VLAN creation
- sFlow
- Network Time Protocol Client and Server
- Port level
  - Auto-negotiating 10/100/1000 ports automatically
  - Configure port speed and duplex setting
  - Auto MDI/MDIX
  - Auto negotiation of PoE class limit
- Port mirroring
  - Local and Remote port mirroring
  - Policy based mirroring
- Port monitoring

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OmniSwitch for Campus
High Availability

Physical redundancy

- Absence of any single point of failure
  - Redundant CMMs in chassis as in stacked configuration
  - Redundant PSUs – Hot-swappable
  - Redundant fans
- Working/certified configuration
  - Multiple copies of *.img files as well as boot.cfg files

Logical redundancy (AOS)

- Distributed software
  - Each module features a CPU
  - Most layer-2 and basic layer-3 processes distributed on the modules themselves
  - Foundation of the Smart Continuous Switching – enabled by MAC retention feature
- Large numbers of open standards (IEEE And RFC) for resilient design
  - Virtual Chassis
  - MC-LAG
  - Dual Home Link Aggregation Active-Active
  - Link aggregation (IEEE 802.3ad)
  - Spanning Tree (IEEE 802.1D, 802.1w, 802.1s) and PVST+
  - ERPv2 - Ethernet Ring Protection (G.8032)
  - VRRP and routing protocols for Ipv4 and IPv6

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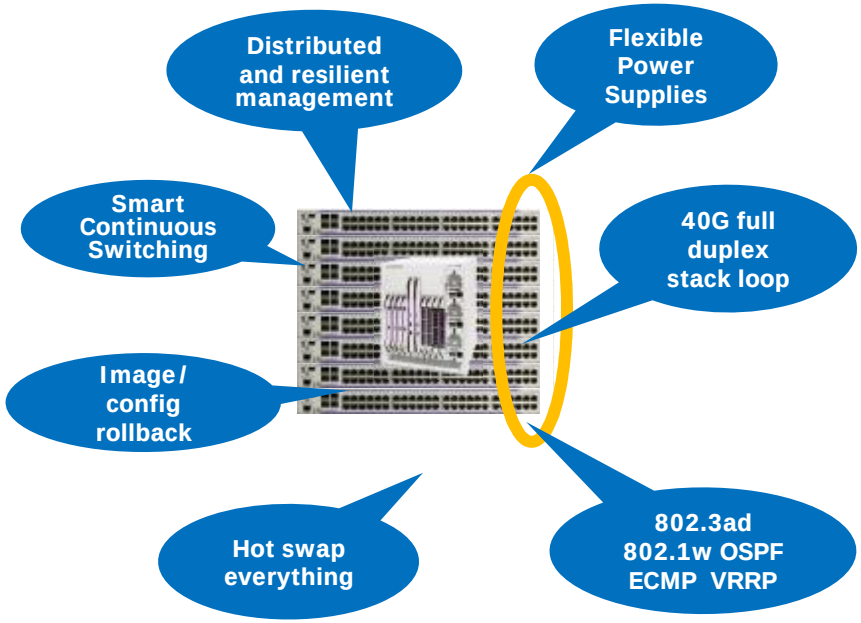
OmniSwitch for Campus
Availability AOS features highlights

High Availability

- Redundant 1:1 power supplies (AC-to-DC & DC-to-DC)
- Redundant Management & Fabric
- Redundant Stacking link
- Access Switch stackable up to 8 units
- Virtual Chassis



- Virtual Chassis
- Multi-Chassis Link Aggregation (MC-LAG)
- Dual Home Link Aggregation
  - Active-Active
  - Active-Standby
- SPB-M
- Ethernet Ring Protection
  - Ethernet Ring Protection v2 (G.8032)
- IEEE 802.3ad - LACP dynamic link aggregation
- IEEE 802.1w STP w/ sub-second failover
- Per-VLAN spanning tree (1x1)
- IEEE 802.1s - multiple STP
- MRVP
- PVST+
- Broadcast storm control
- BPDU blocking
- Routing Protocols for IPv4 and IPv6
- VRF
- OSPF-ECMP
- VRRP v2 & v3
- Bi-Directional Forwarding Detection (BFD)

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OmniSwitch for Campus
Security AOS features highlights

- 802.1X multi-client, multi-VLAN support for per client
  - authentication and dynamic VLAN assignment
- IEEE 802.1X with MAC based authentication
  - group mobility or “guest” VLAN support
  - MAC-based authentication for non-802.1X host
- Access Guardian
  - Captive Portal
  - Captive Portal Web Pages
  - Posture Check
  - Network Profiles (UNP)
  - Dynamic UNP
  - QoS Policy Lists
- Private VLAN
- PKI authentication for SSH access
- Quarantine Manager and Remediation
- Learned Port Security (LPS) (MAC address lockdown)
- Loop Guard
- RADIUS and TACACS+ admin authentication
- Support of Microsoft NAP

- Dynamic ARP Inspection (per VLAN)
- Access control lists to filter out unwanted traffic
  - Including denial of service attacks; Flow based
  - Filtering in hardware (L1-L4)
  - FIPS 140-2 Encryption Modules
- Switch protocol security (IPv4 & 6)
  - MD5 for RIPv2, OSPFv2 and SNMPv3
  - SSH for secure CLI session with PKI
  - SSL for secure HTTP session
  - IPsec Support for IPv6, OSPFv3 and RIPng
- Web Cache Coordination Protocol (WCCP)
- DHCP Snooping
- DHCP IP Spoof protection
- Traffic Anomaly Detection (TAD)
- LLDP security for rogue device restriction

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OmniSwitch for Campus
Convergence / Triple Play features highlights

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
  - Support of sr/trTCM
- Queue management
  - Priority queues: eight hardware-based queues per port
  - Random Early Detect/Discard (RED), configurable de-queuing algorithm; Strict Priority, Weighted and Deficit Round Robin
- Power-over-Ethernet
  - IEEE 802.3af for PoE

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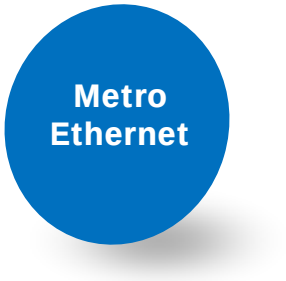
OmniSwitch for Campus
Metro Ethernet features highlights

- Q-in-Q (Vlan stacking)/802.1ad
- Ethernet OAM compliant with 802.1ag
- Y-1731
- Dying Gasp
- Wire-speed Ethernet Loopback
- IEEE 802.1ag to v8.1
- Remote Config/Zero touch
- Eth OAM-SAA & IP-SLA
- Ethernet loopback for external test generation device
- DHCP Option 82 – relay agent information
- Dying Gasp – Power loss
- 802.1ad DEI Bit support
- QOS & Eservices counters\statistics
- L2 Protocol Tunneling
- 2544 CPE test head
- G.8032 ERP



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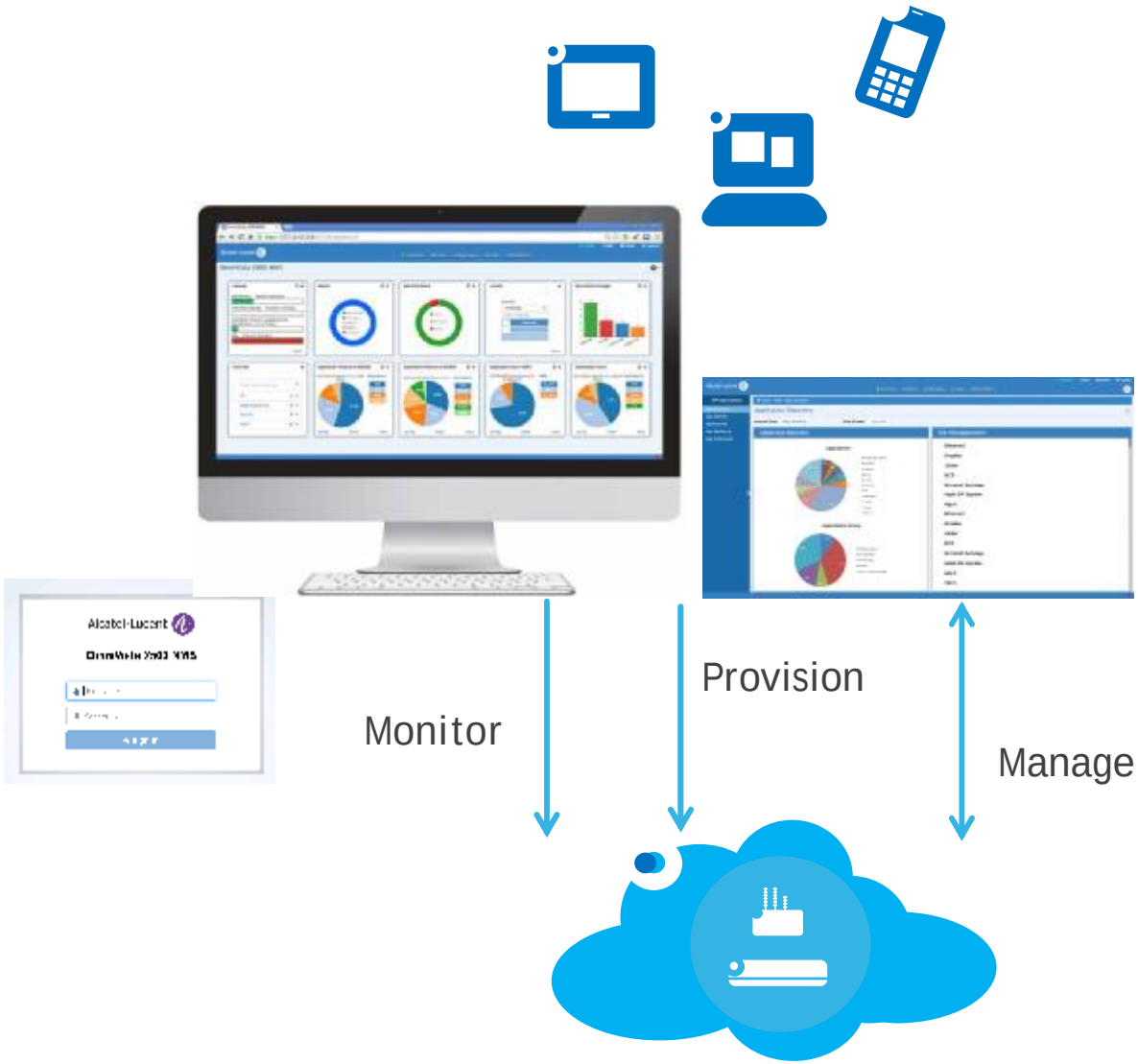
OmniVista 2500 NMS-E Overview



Full Web-based Applications

All are accessed directly through a single web GUI

Provides applications for extended NMS capabilities (QoS & Security)

Provides access to network wide activities

Provides access to individual or group of network devices for setup

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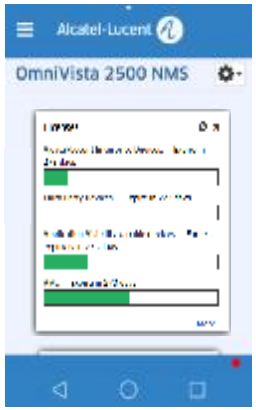
OmniVista 2500 NMS-E
Responsive Design & Flexible Interfaces

- OmniVista 2500 Home Page
- Customizable Dashboard
- Application Widgets



Android Phone

Tablet Rendering

Traditional PC Rendering

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Web Based User Interface

- Web GUI is supported on the following HTML5 Capable Browsers
  - Internet Explorer
  - Firefox
  - Chrome

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Web based Dashboard

- Landing page after login
- Web2.0 styling
- Tiled GUI “look ‘n feel”
- Responsive and reconfigurable
- Real time update for tiled applets
- User customizable
  - Position, “look ‘n feel”, content
- Mashable content
- Top level info, Top apps, Top critical info, Top Alerts
- Launcher for key applications
- Tile includes switch status, top alarms, focus view, micro apps (Locator, QM), AFN Stats….

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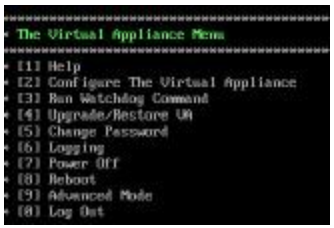
OmniVista 2500 NMS-E Release 4.2 Virtual Appliance

OV 4.2.x.R0x
Release Notes

- Available as Virtual Machine / Virtual Appliance for all HyperVisors
- Includes both operating system (Linux) and OmniVista application
- Supported hypervisors
  - VMware ESXi: 5.5 and 6.0
  - VirtualBox: 5.0.12 mini
  - MS Hyper-V: 2012 R2, 2016
- Upgradable through external repositories

vmware

Microsoft
Hyper-V



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OmniVista 2500 NMS-E Release 4.2 Virtual Appliance

OV 4.2.x.R0x
Release Notes

- Certified OS (64-bit version only) with hypervisor support
  - Microsoft Windows™ Server Hyper-V 2012 R2
  - Microsoft Windows™ Server Hyper-V 2016
  - Microsoft Windows 8.1 Pro & Enterprise Editions (with Hyper-V installed- Windows Features)

Microsoft Hyper-V

- Supported OS with VirtualBox 5.0.12 minimum installed
  - Red Hat® Enterprise Server 6.5 or higher
  - SUSE® Linux Professional v12.0

- Web GUI is supported on the following HTML5 Capable Browsers
  - Internet Explorer min 10+ (on Windows client PCs)
  - Firefox min 26+ (on Windows and Redhat/SuSE Linux client PCs)
  - Chrome min 26+ (on Windows and Redhat/SuSE Linux client PCs)

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OmniVista
Starter pack

OmniVista 2500 NMS Starter Pack - OV4-START-NEW

Starter Package is free -> OmniVista 2500 NMS with every order

Installers & VM appliance

OV2500 NMS applications

Features including VMM

10 licenses for ALU ENTERPRISE devices

10 licenses for 10 Stellar Aps

10 for 3rd PARTY devices

10 for VMM feature

Application Visibility feature is included from AOS version 8.3.1

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Configuration Applications

Discovery

OmniSwitch family, 3rd party devices
Intuitive discovery

Port Menu

Port Table displayed information for selected devices
Port information displayed up to 50 devices at a time
Port Table allowing enable/disable ports

Topology/Map

Interconnections and device/link status
Multi-vendor topology
One-Touch SPB Configuration
SPB Link Information & Topology Display
Virtual Chassis
Device Clusters status & trap status device in Cluster
LLDP Links between AOS and third-party devices
LLDP links between third-party devices

VLAN Manager

"VLAN Create" Wizard
Vlan mobility rules
Spanning Tree parameters
DHCP generic rules, User defined rules & Binding rules
Link aggregation
Integration with topology maps

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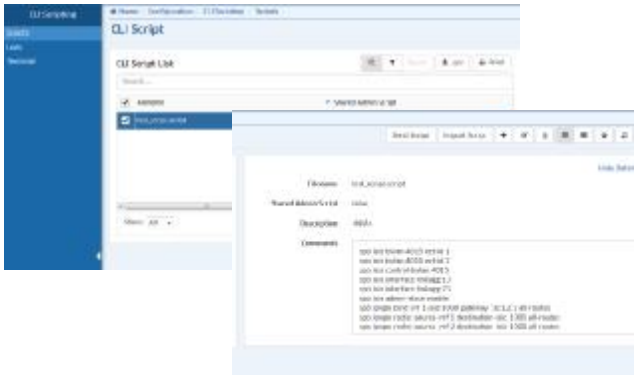
Configuration Applications

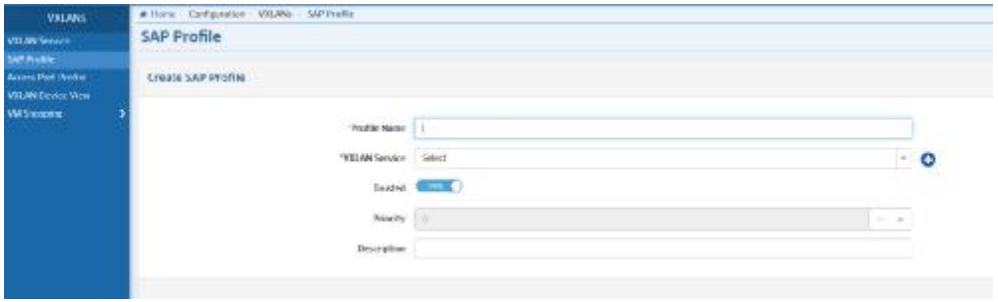
Telnet Scripting for task automation

Ability for user to write command sequences in CLI

Sent to multiple devices from OmniVista

Open scripting CLI engine compatible with AOS switches, 3rd party devices…





VXLAN Services

Configuration and display of VXLAN network and VMs snooping profiles

PolicyView

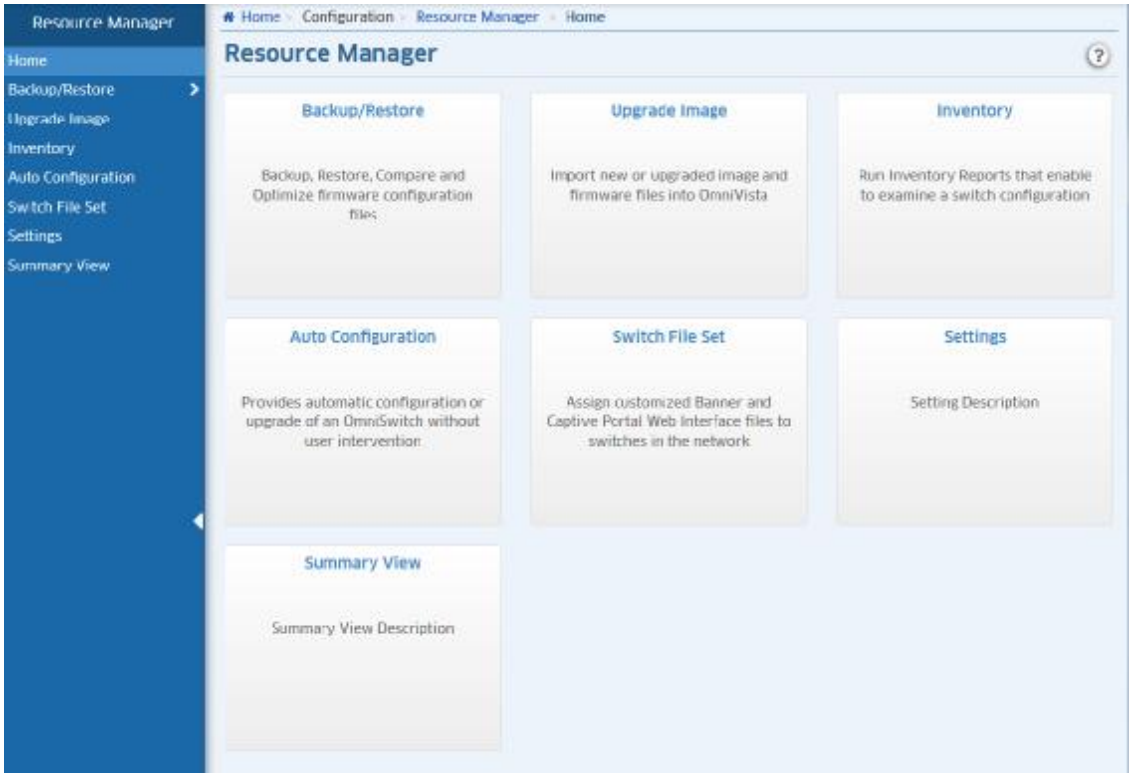
Provides Global QoS/ACL Configuration

OneTouch QOS config for Voice & Data

Wizard Expert Mode for complex policies

Enterprise

Configuration Applications



Resource manager

Switch resources management

Switch Backup/Restore

Upgrade Image

Inventory

Auto Configuration

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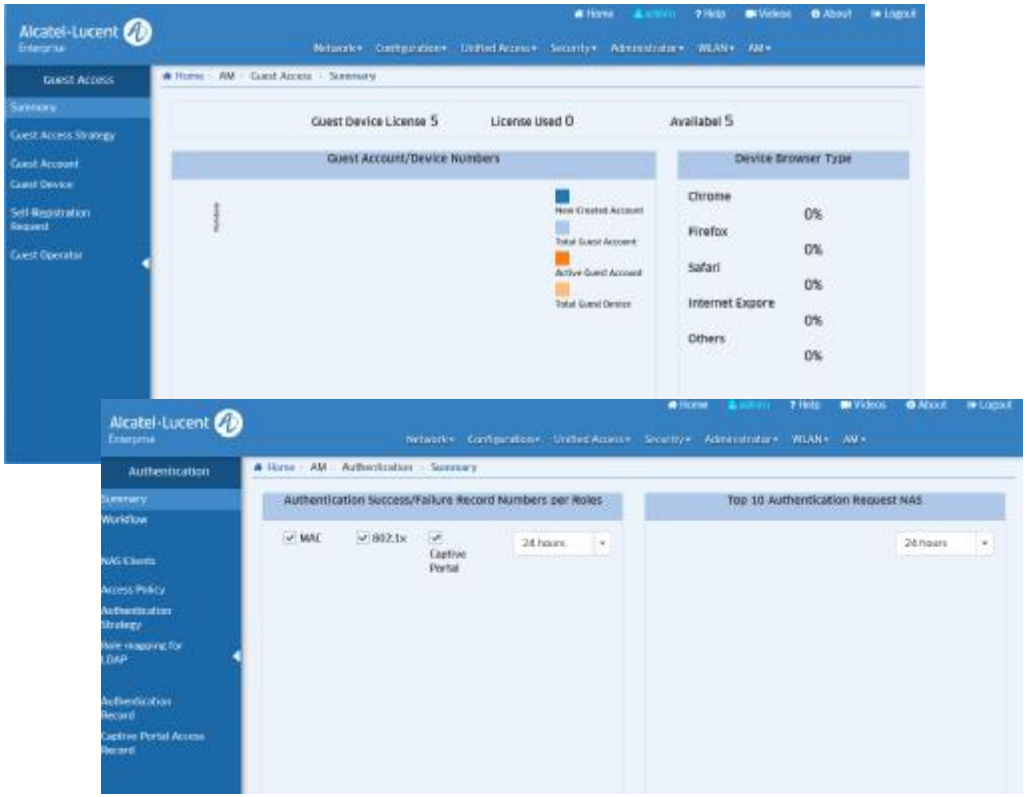
Configuration Applications



OV integrated Unified Policy Authentication Manager

AP group management

Secure NAC with Unified Access AG 2.0 Integration

Automated deployment with ALE OmniSwitch Integration

Smart Analytics Application Monitoring & Enforcement/ DPI

UPnP/ Bonjour Service Sharing

Employee - Supplicant/ Non-supplicant secure authentication

Guest Access – Self Registration/ Employee sponsored/ Social Login

BYOD

Strategy based Policy Enforcement

Extensive Captive Portal Customization

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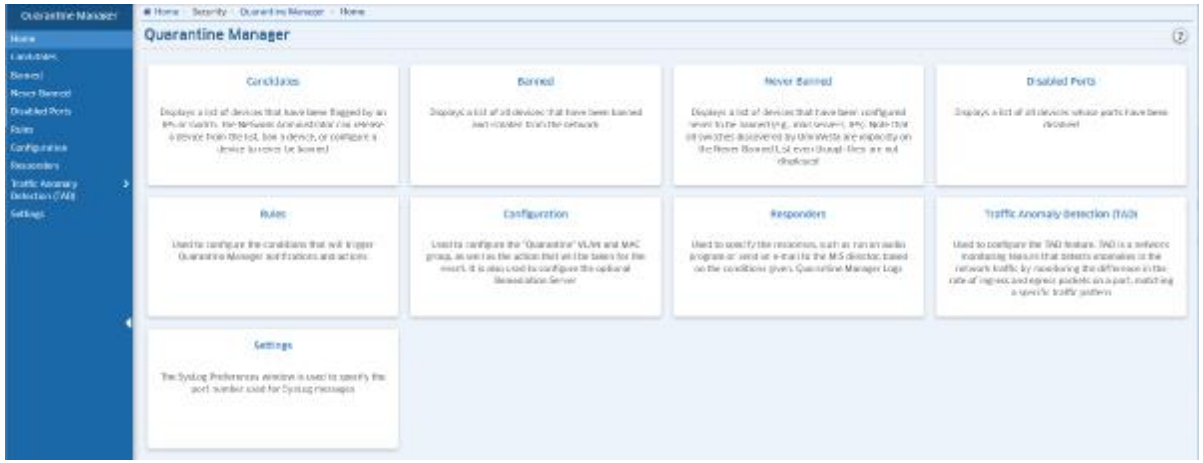
Security Applications



Quarantine Manager and Remediation

Provides Global device containment

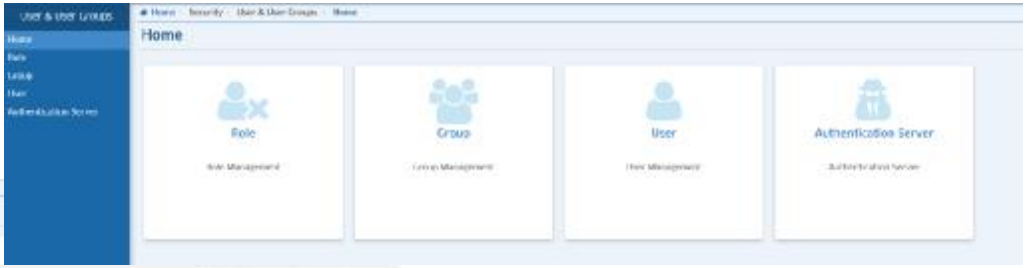
User and User Groups

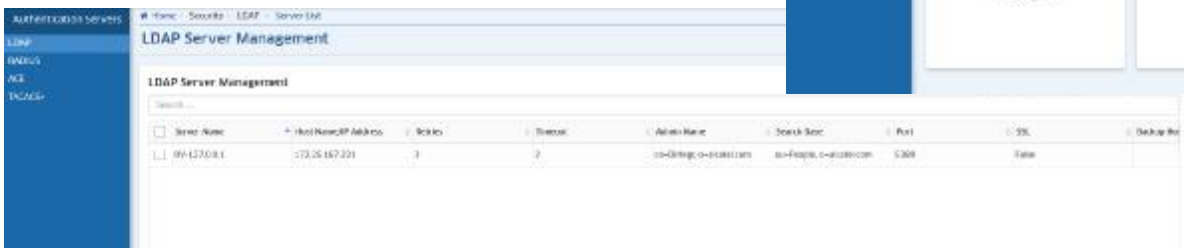
Provides Global User Management

SNMP, logins, user profile

Authentication Servers

Provides Global Auth Servers configuration





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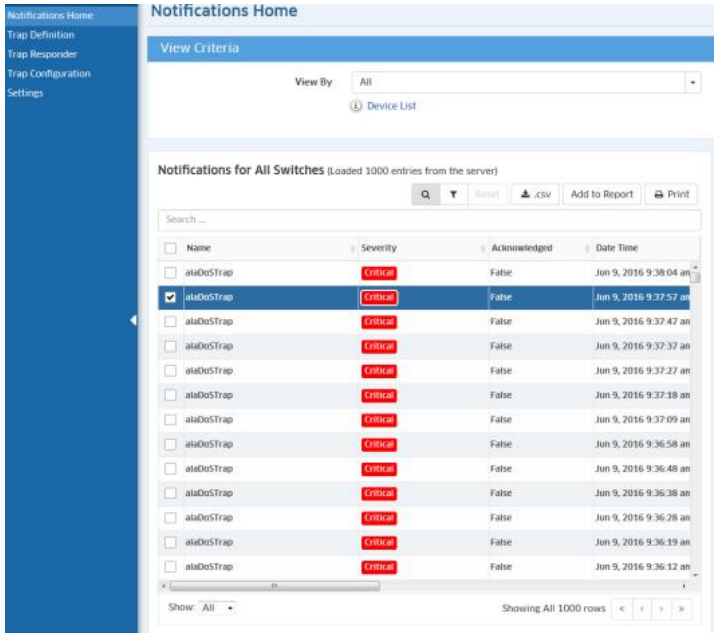
Monitoring Applications



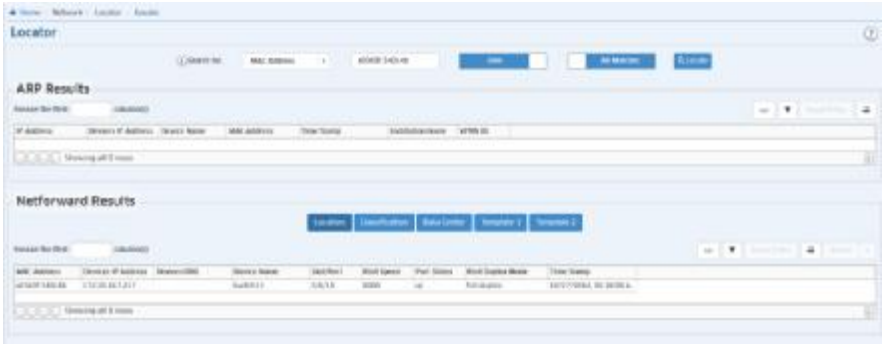
Trap Management

Multiple email addresses for Responder notification

Trap Responder with Trap Severity level or trap conditions using Filters

Locator

Devices & end-user location identification
AOS and third party solutions (MIB-II compliant)



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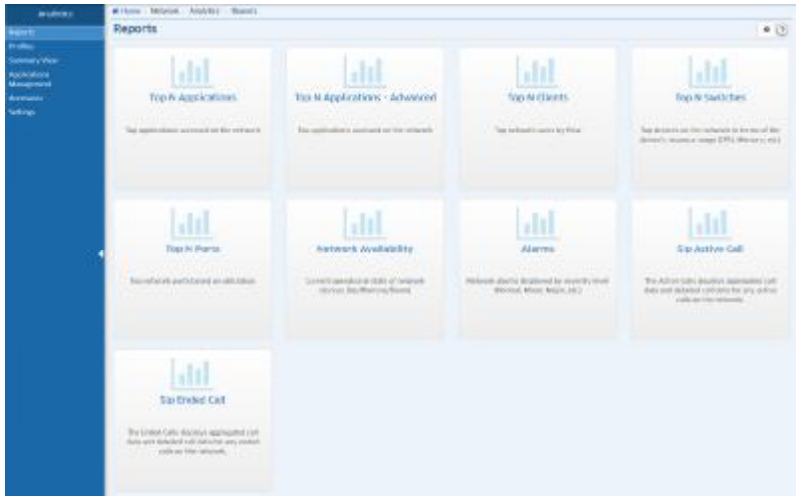
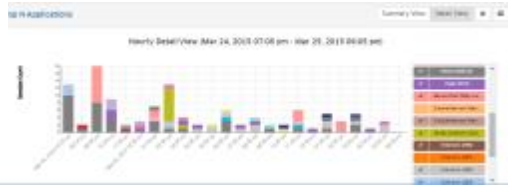
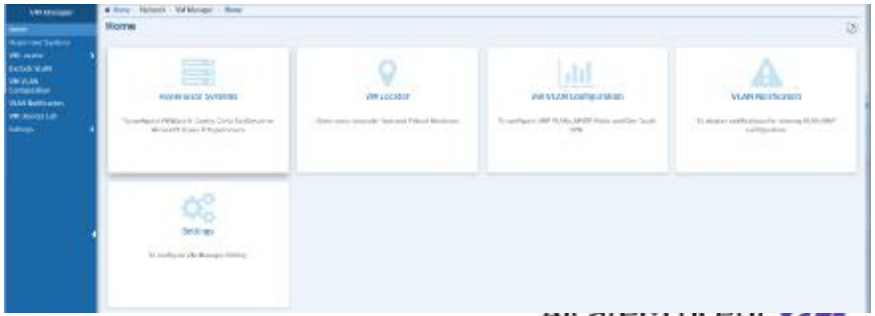
Monitoring Applications





Application Visibility
Network Visibility
Network Availability
Application/protocol flows identification
Network usage monitoring for each application
Provide users with a comprehensive view of network resource utilization and trends including users, devices, and applications

Virtual Machine Manager
Provides data center network operations, streamlining virtualization deployment automation
Location, VM provisioning and notification



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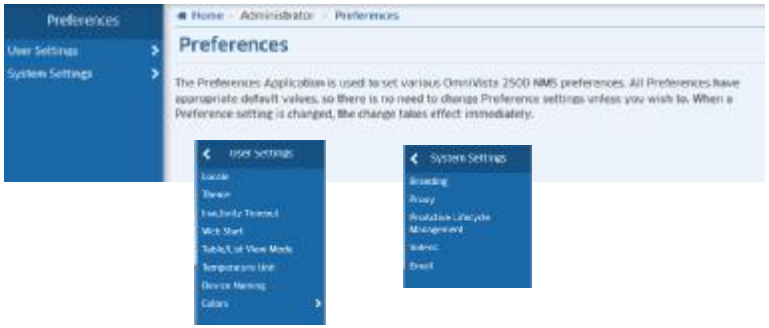
Administration Applications

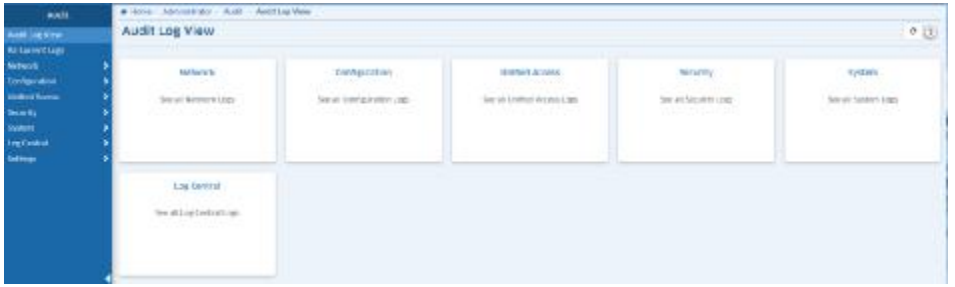
Preferences

Set OmniVista preferences for the web GUI



Audit

OV Logs – Applications, users, discovery, policies



License Management

Provides an overview of the number of devices/VMs being managed by each license type

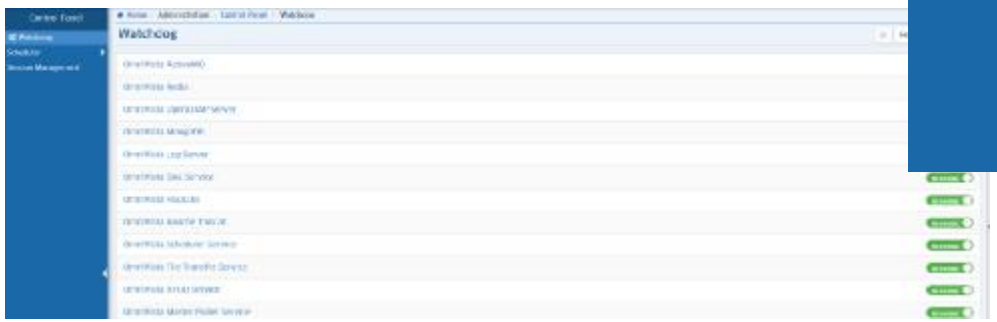
Permits to activate a license, either by importing a license file, or entering a license key(s)

Control Panel

Status of all of the services

Scheduled jobs administration

List of all OmniVista Client login sessions



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