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# OmniSwitch™ 6850E Stackable LAN Switch

Sales Presentation

# OmniSwitch 6850E Product Family

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The OmniSwitch 6850E series:

- Is the latest Alcatel-Lucent's line of layer-3 GigE fixed configuration stackable LAN switches
- Offers a wide variety of port / feature option combinations to meet any customer configuration need
- Built to meet the requirements of the network edge for delivering the high quality user experience of an application fluent network
  - 24 and 48 port 1GigE configurations PLUS up to **4 x 10GigE** for stacking/uplinks
  - Provides **wire-rate** L2 and L3 switching simultaneously for IPv4 and IPv6
  - Up to 48 ports of 802.3at PoE+ support, providing sufficient power for devices required to deliver new voice, video and collaborative applications
  - Provides bandwidth, resiliency and security demanded by these real-time applications

# Alcatel-Lucent Operating System (AOS) Software Release 6.4.4 features overview

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- Enhanced Security
  - High availability for redundant NAC policy servers with fail open option
  - Enhanced user authentication and network profile assignment
  - Dynamic ARP Inspection (per VLAN)
  - LLDP-based rogue device detection
- Power Management
  - Dynamic power allocation
  - Priority power assignment in low power conditions
- High Availability
  - Active - Active Dual Homed Links
  - Detection and recovery of link failures with “flap detection”
- Trouble shooting tool to detect copper cable breaks and discontinuities



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What is new and why will customer care?

## What's new: OS6850E - Support for PoE+

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All PoE models of OmniSwitch 6850E family support up to 30W of PoE per port

- **Standard compliant** - IEEE 802.3at compliant
- **Dynamic power allocation** and priority power assignment in low power conditions



Why will my customer care?

- Ensures that the new devices such as CCTV cameras, WLAN access points, and full featured IP desktop sets can be supported
- Maximizes green benefits of PoE+ by optimizing allocation of power delivered per port based upon endpoint attached
- Priority power assignment in low power conditions ensures critical resources have the power

## What's new: OmniSwitch 6850E - More bandwidth

An optional plug-in module that has two 10Gig SFP+ ports is supported on all models.

- 2 x 10G SFP+ ports used as uplinks or as stacking
- Supports **remote stacking** - each unit in the stack can be 10km apart from each other but still managed as a single virtual chassis

### Why will my customer care?

- Increases uplink capacity when needed without replacing the switch
- Moving to 10G SFP+ form factor (vs. XFP ) improves the power consumption
- Simplified Management - support of up to 8 units as a single **virtual chassis**, over multiple wiring closets or sites
- Improved Resiliency - Enables a resilient network ring architecture

Default stacking connectors  
Replaceable by OS6-XNI-U2



2 additional 10Gig SFP+ ports

# What's new: OmniSwitch 6850E - Support for 10 Gigabit LRM optics

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## Long Reach Multimode(LRM) optical interface

- IEEE 802.3aq standard for supporting up to 220m. distances on all grades multimode fiber (MMF)
- 80% of the existing fiber deployments on campus are multimode fiber (MMF)

## Why will my customer care?

- **Investment Protection:** Allow customers to re-use their existing MMF fiber installations to cost effectively upgrade from 1 gigabit to 10 Gigabit
- **Green:** Low power consumption , less heat

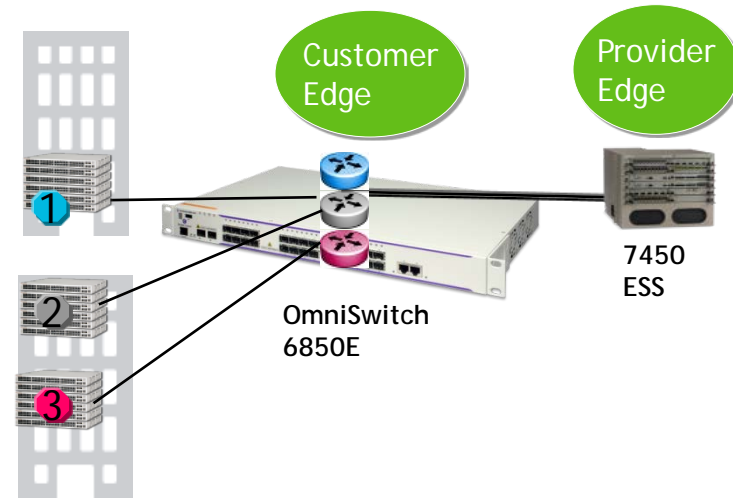
# What's new: OmniSwitch 6850E Support for Virtual Routing & Forwarding (VRF)

OmniSwitch 6850E provides multiple independent virtual routing tables to accomplish this in a single system

- Network isolation for applications, servers and switches

Why will my customer care?

- **Enhanced security** by customer traffic isolation through the shared provider network
- Reduced the number of devices - **less complexity**
- IP Addresses can be duplicated across VRF instance



Campus: Network isolation for applications, servers and switches: OmniSwitch 6850E provides multiple independent virtual routing tables to accomplish this in a single system.





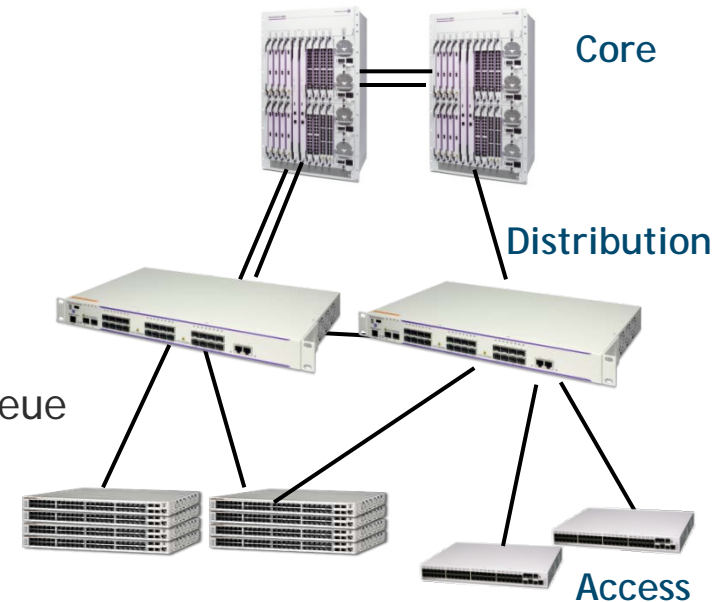
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## New Product Positioning

# OmniSwitch 6850E : High performance and availability Distribution or Small Network Core

## Advantages/Why the OmniSwitch 6850E?

- **High-port density in a small form factor**
- 10GigE performance providing high throughput for backbone connections:
  - 16 x 10GigE ports per full stacked chassis
  - Competitive pricing
- **Wire rate** performance and full support of:
  - of IPv4/IPv6
  - multicast for media and backup applications
- Extensive QoS classification marking queuing and queue service capabilities
  - End-to-end QoS capabilities
  - Optimizes delivery of real-time applications
- High availability features and redundancy
  - Redundant stack loop, power supplies

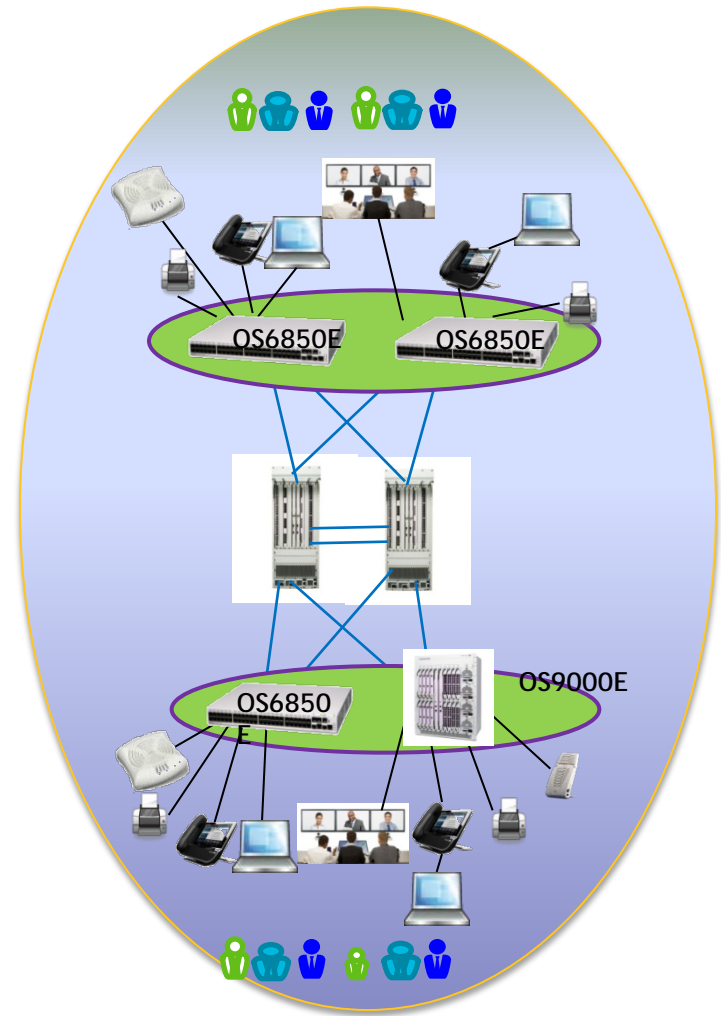


Resilient switches, links and topology for network continuity

# OmniSwitch 6850E at the edge of Converged IP Network

## Advantages/Why the OmniSwitch 6850E?

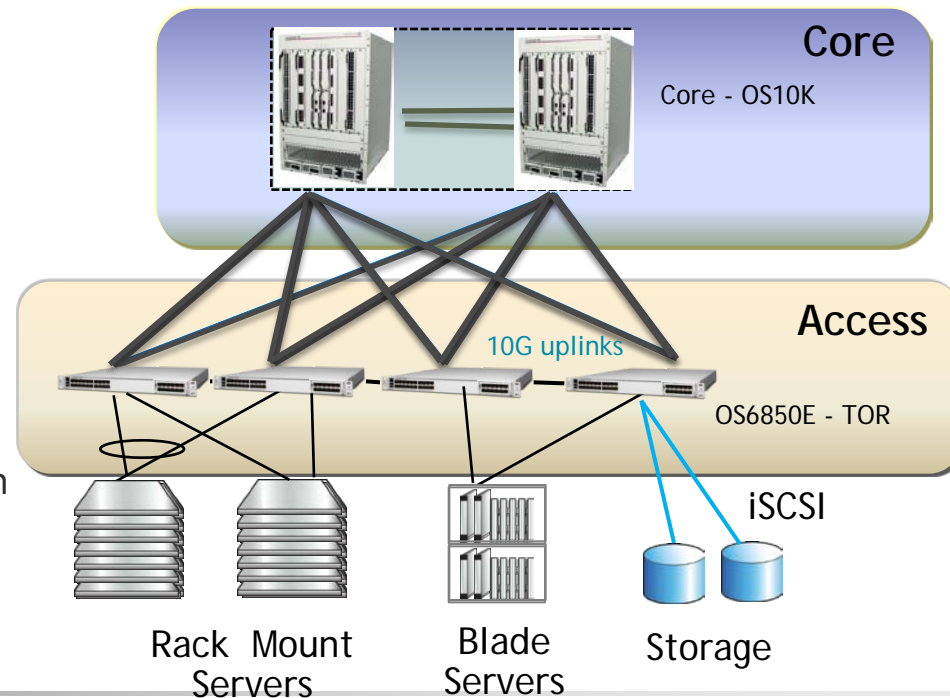
- Triple speed to support various end devices
- **High performance Gigabit and 10GigE** switching for real-time applications
- **Power Over Ethernet + (PoE+)** - support latest VoIP phones, WLAN AP, security cameras etc.
- Comprehensive security for user and device authentication and mobility
- Traffic anomaly detection, rogue device detection and DOS isolation and containment
- Enhanced QoS and ACLs with dynamic user profile assignment for granular control
- Automated Provisioning



# OmniSwitch 6850E in the Data Center

## Advantages/Why the OmniSwitch 6850E?

- High density, small form factor to servers with 1 x GigE connectivity:
  - **80% of servers still use GigE** for connectivity today.
- Optional support to add 2 additional 10GigE interfaces for 10GigE server connectivity
- Uplink connectivity of 2 10GigE - connecting GigE servers in the same rack.
- Data center form factor
  - Low power consumption
  - Low heat dissipation
- Profile-based policies:
  - For user, device, location, application
  - **Virtual Machine profile** expanding the AOS User Network profile concept:
    - Automatic Network Reconfiguration
    - Maximizes investment in virtualization



# The OmniSwitch 6850E Addressing Customer Issues

Customer issue or business problem	How we address the issue	Differentiation with our approach
Poor quality user experience	<ul style="list-style-type: none"> <li>▪ Increased resiliency</li> <li>▪ Increased uplink bandwidth</li> <li>▪ Sufficient power for new devices such as CCTV and fully features desktop phones</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dual-ring stacking architecture with fault tolerance for non-stop operations</li> <li>▪ Per-switch redundant power supplies</li> <li>▪ Policy-based power allocation on priority ports</li> <li>▪ Continuous cycling on re-convergence after link failure is automatically eliminated</li> <li>▪ 2x10GigE plug-in module</li> <li>▪ All ports are 30W capable to supply 803.at compliant power with redundant power supplies and priority power allocation in low power conditions</li> </ul>
High capital expense	<ul style="list-style-type: none"> <li>▪ Cost reduction through virtualization</li> <li>▪ Better use of network links</li> <li>▪ OS6850E is stack-compatible with the older OS6850 family</li> <li>▪ 6850E allows re-use of power supplies and accessories</li> </ul>	<ul style="list-style-type: none"> <li>▪ Virtual routing and forwarding (VRF) reduces need for multiple physical network switches</li> <li>▪ Active – active links for cost reduction</li> <li>▪ Network expansion without operational complexity or equipment forklift</li> <li>▪ No need to replace existing power supplies and accessories</li> </ul>
Security breaches	<p>ARP poisoning protection per VLAN</p> <p>Detection of rogue LLDP endpoints</p> <p>Enhanced authentication to recognize individual users</p>	<p>Enhanced fine grained threat detection</p> <p>Tighter controls on device access to network</p> <p>Unique fine grained post admission control</p>
Complex and expensive operations	<p>Optimized power consumption</p> <p>Remote stacking</p> <p>New copper cable trouble shooting tool</p> <p>OmniSwitch 6850E runs same OS as all OmniSwitches</p>	<ul style="list-style-type: none"> <li>▪ Low power consumption, PoE+ with dynamic power allocation and priority power assignment</li> <li>▪ Switches can be up to 10KM apart</li> <li>▪ Unique imbedded trouble shooting tools</li> <li>▪ Other vendors have many different OS variants on their switches creating complexity and inefficiency</li> </ul>



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## Summary/Key Takeaways

# New Network Edge for the Application Fluent Network

## Key Takeaways

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- **Growing Network Edge Bandwidth demands: New OmniSwitch 6850E stackable LAN switch with expanded support for 10GigE**
  - Cost-effective 10GigE uplink support
  - Virtual chassis enables up to 8 to be managed as a single entity
  - Compatibility with OmniSwitch 6850 platform
- **New, high-density standards-based 802.1at PoE+ support - a MUST to enable deployment of latest generation of Power over Ethernet devices - e.g. video surveillance cameras, WLAN access points, IP phones, tablets, etc.**
  - New **OmniSwitch 6850E supports up for up to 48 PoE+ ports**
- Software enhancements to further deliver the Application Fluent Network vision:
  - **Intelligent power management** for PoE/PoE+ to maximize the green benefits of these devices
  - Enhancement to Alcatel-Lucent's **SafeNAC network access control** technology to further improve the security of the network.





# OmniSwitch OS6850E Family - Models



Models	10/100/1000 RJ-45 ports	1 Gig SFP ports	10Gig SFP+ ports - fixed	10Gig SFP+ plug-in or stacking ports	Max # 802.3af and 802.3at ports
OS6850E-24	24	4*		2	✗
OS6850E-24X	24	4*	2	2	✗
OS6850E-48	48	4*		2	✗
OS6850E-48X	48	2*	2	2	✗
OS6850E-U24X	2*	24	2	2	✗
<b>PoE Models</b>					
OS6850E-P24	24	4*		2	24)
OS6850E-P24X	24	4*	2	2	24
OS6850E-P48	48	4*		2	48
OS6850E-P48X	48	2*	2	2	48

\* these are combo ports

- All models have the expansion module consisting of 2 SFP+ ports (OS6-XNI-U2) that plugs into the back of the unit in place of the stacking connectors.
- AC and DC power supply options are offered ( same as the 6850 )
- There are NO Lite models ( 10/100 upgradable to Gig) in the 6850E family
- The maximum PoE power budget we can achieve is around  $54.5V \times 20A = 1090W$ , but we are limited to the 780W of PoE provided by the power supply



# OmniSwitch OS6850E Overview



## • Superior Performance

- Wire-speed first packet classification and processing
- Advanced features: 10GigE, Power over Ethernet (PoE+), and native IPv4/IPv6

## Feature Rich and Versatile

- Stackable, 24 or 48 ports copper 10/100/1000 Ethernet models
  - Up to four ports Gigabit fiber
  - Up to four 10 Gigabit SFP+ fiber
  - Up to 385 Gigabit and 16 10G SFP+ ports per stack.
- AC or DC power source option

## • Advanced Security

- Full support for:
  - Alcatel AccessGuardian
  - OmniVista 2770 Quarantine Manager and 2760 SecureView ACL Policy Manager
- Rich DoS protection

## Configuration and Management

- Runs on the Alcatel Operating Software (AOS)
- Backwards compatible with existing OS6850 models
- Fully managed by the OmniVista Network Management System (NMS) and to be integrated into 5620 SAM

# OS6850E Plug-in module (OS6-XNI-U6)

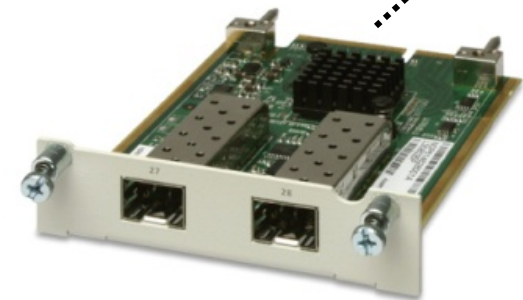
- Description

- By default the OS6850E is shipped with CX4 stacking connectors
- OS6-XNI-U2 is an optional item, and can be ordered separately
- The SFP+ ports can be configured either as uplinks or as stacking ports
- The maximum speed of each SFP+ port is 10Gig
- Hot-swappable

- Benefits

- Additional 10Gig ports on all OS6850E models
- Supports remote stacking ( up to 10km)

Default stacking connectors  
Replaceable by OS6-XNI-U2



OS6-XNI-U2

# OS6850E Modes of operations

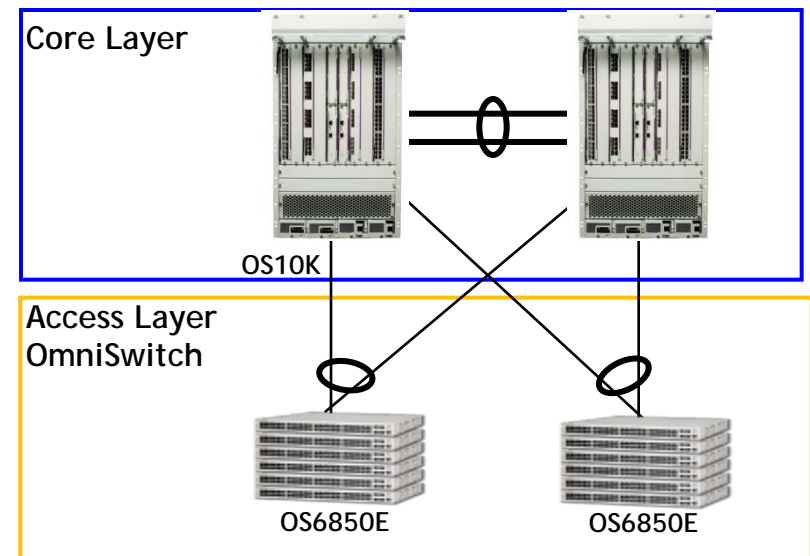
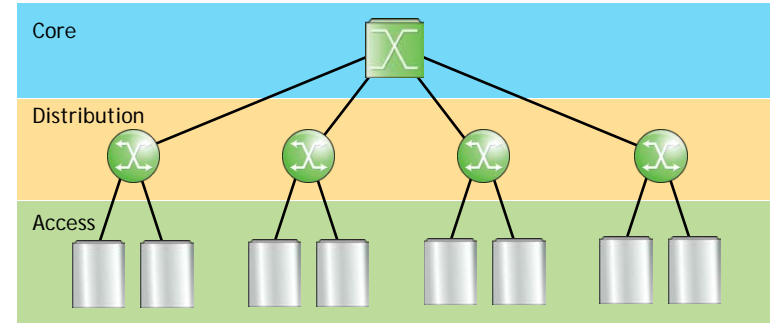
- The OS680E operates in 2 modes
  - In OS6850 mode when stacked with OS6850.
  - In 6850E mode - similar in features with the OS6855-U24X today
- The operating mode is configurable through CLI command;

Features	OS6850 Mode	OS6850E Mode
L2 Table	16K	32K
IP multicast groups	1K	2K
VRF	No	16
Ingress Filter Processor	16 slices*128 = 2K rules	16*256 = 4K QoS rules
Egress Filter Processor	No	4 slices x 128 = 512 QoS rules
Source Learning per VLAN	No	Yes
Others	Same	

# OmniSwitch 10K and OS6850E – Simplify network architecture

OS6850E excellent choice for the edge of 2 tier network

- Flexible OS6850E with up to 385 1GigE ports per stack and 10GigE uplinks for migration to 10GigE as needed
- Virtual Chassis and switch enhancements maximizes switching bandwidth
- Full featured NAC control embedded in the operating system
- Support for PoE to power end devices such as wireless access points, IP phones, CCTV etc.

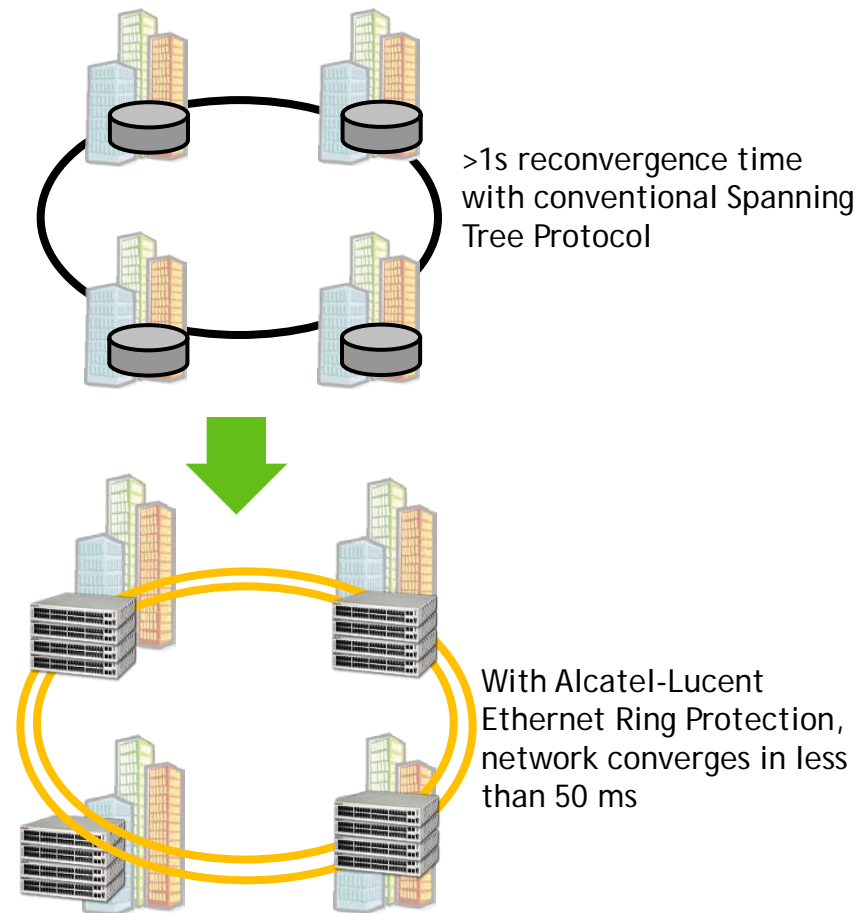


OmniSwitch 10K and 6850E reduce network layers

# OmniSwitch 6850E - Increasing Network Availability and Reliability

## Advantages/Why 6850E?

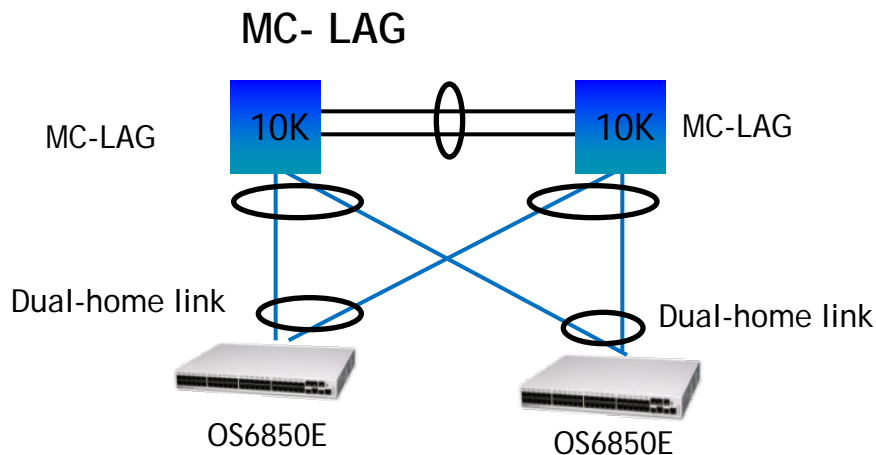
- 24 port fiber model supporting SMF and MMF at various distances
- With up to 4 10G uplinks OS6850E delivers resilient ring architecture: 20Gig aggregate bandwidth
- Ethernet Ring Protection (ERP)
  - Delivers superior capabilities in terms of performance, link utilization, resiliency, and recovery for Ethernet topologies
  - Standards based, works in multi-vendor environment
  - Simpler network design -Eliminates STP
- Ethernet OAM - standard based implementation, desired in Carrier networks



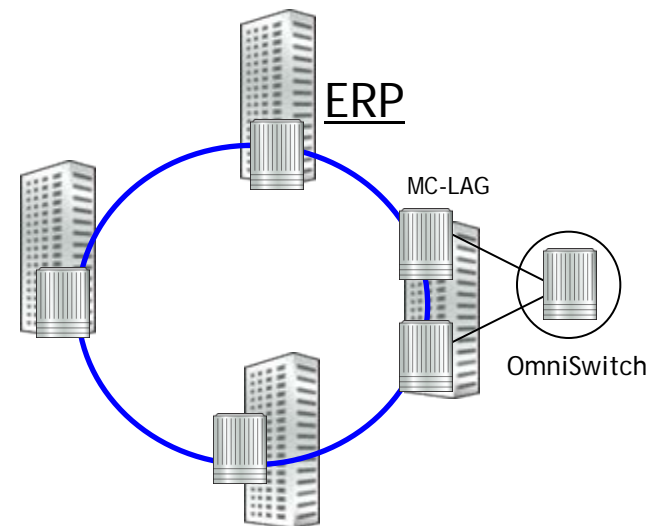
Alcatel-Lucent innovations deliver network continuity

# OS6850E – Optimized design for resiliency

- Ethernet Ring Protection (ERP) and DHL Active-Active
  - ALU innovative technologies field proven in Carrier networks
  - Delivers superior capabilities in terms of performance, link utilization, resiliency, and recovery for Ethernet topologies
  - Standards based, works in multi-vendor environment
  - Simpler network design -Eliminates STP



- DHL increases bandwidth utilization
- Supports resiliency



- 50msec recovery
- Easy to understand & configure

[www.alcatel-lucent.com](http://www.alcatel-lucent.com)