



Dell Solutions Tour 2014

Share ideas, discuss trends and discover
IT solutions of tomorrow.

Dell Networking:
Change your network
activate your business
magnus_romedahl@dell.com

#DellST14



WHAT DO WE KNOW ABOUT FUTURE REQUIREMENTS?



Networking Industry Trends ...

1. **Bandwidth** needs continue to grow from data center to desktop to mobile device
2. Virtualization and new workloads changing data center **traffic patterns** and creating new bottlenecks
3. Explosion of mobile **devices**, multimedia and ways to connect

... **creating opportunities for innovation**

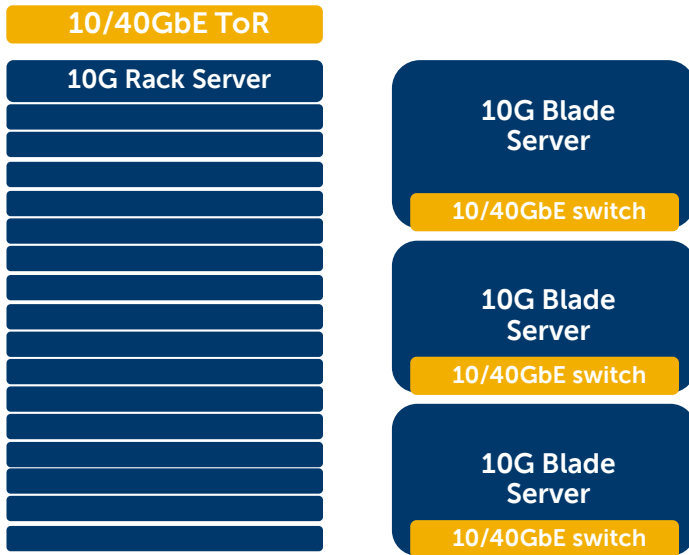


1

Transform the data center with 10/40GbE Ethernet platforms

BANDWIDTH

Harness 10GbE and 40GbE switching technologies to connect, consolidate and converge in-rack server and storage elements



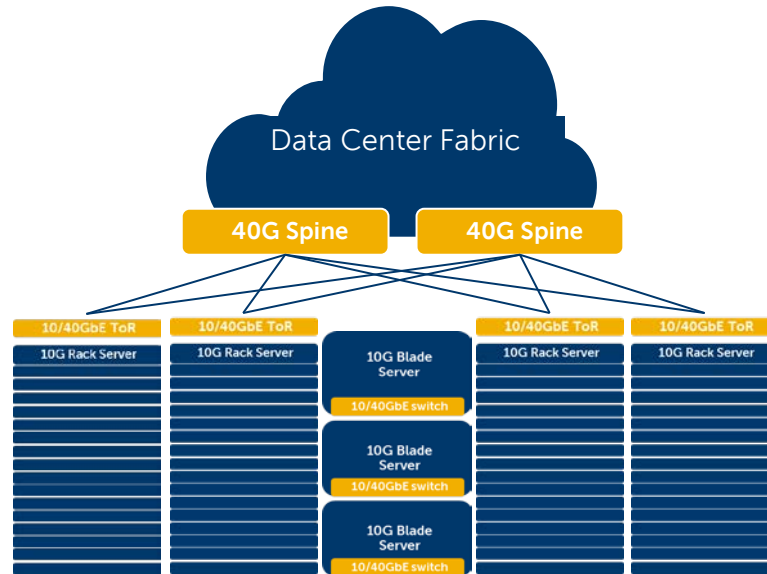
- **Connect** servers and storage at 10GbE to boost performance
- **Consolidate** server I/O, simplify cabling and operations
- **Converge** LAN/SAN resources with DCB-enabled Ethernet

TRAFFIC PATTERN

2

Develop high-performance, automated data center fabric solutions to accelerate east-west traffic and lower cost structures

Optimize data center infrastructure for east-west traffic & SDN initiatives



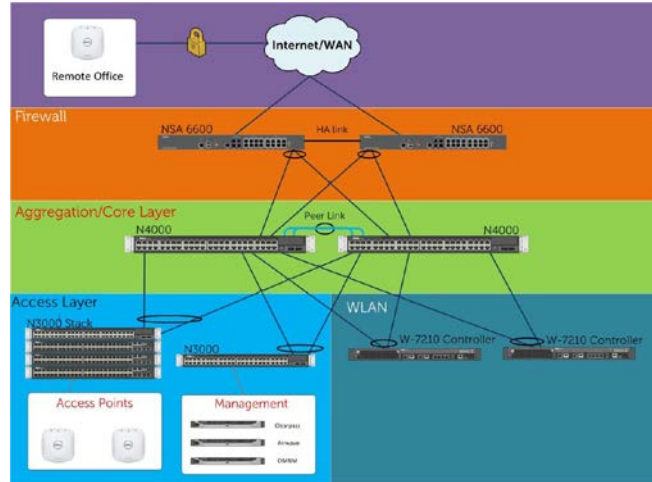
- **Scale-out performance** to address growing inter-rack traffic
- **Lower costs** utilizing fixed form-factor fabric switches
- **Simple operation** with software that automates deployments
- **Open Networking** for customer choice

3

Power the campus with solutions optimized for the mobile workforce

DEVICES

Connect end-users and end-points with secure wireless and wired solutions optimized for device mobility and multimedia



- **Ultimate mobility** with complete lineup of 802.11ac
- **Ultimate efficiency** with state-of-the-art energy-efficient 1/10GbE switches
- **Ultimate flexibility** with fully-redundant, fully-modular systems

Dell Networking – Transforming the Enterprise

Innovation & thought leadership

- Open Networking & Software Defined
- Industry leading Platforms for Fabrics & converged racks
- Mobile Enterprise



24,000

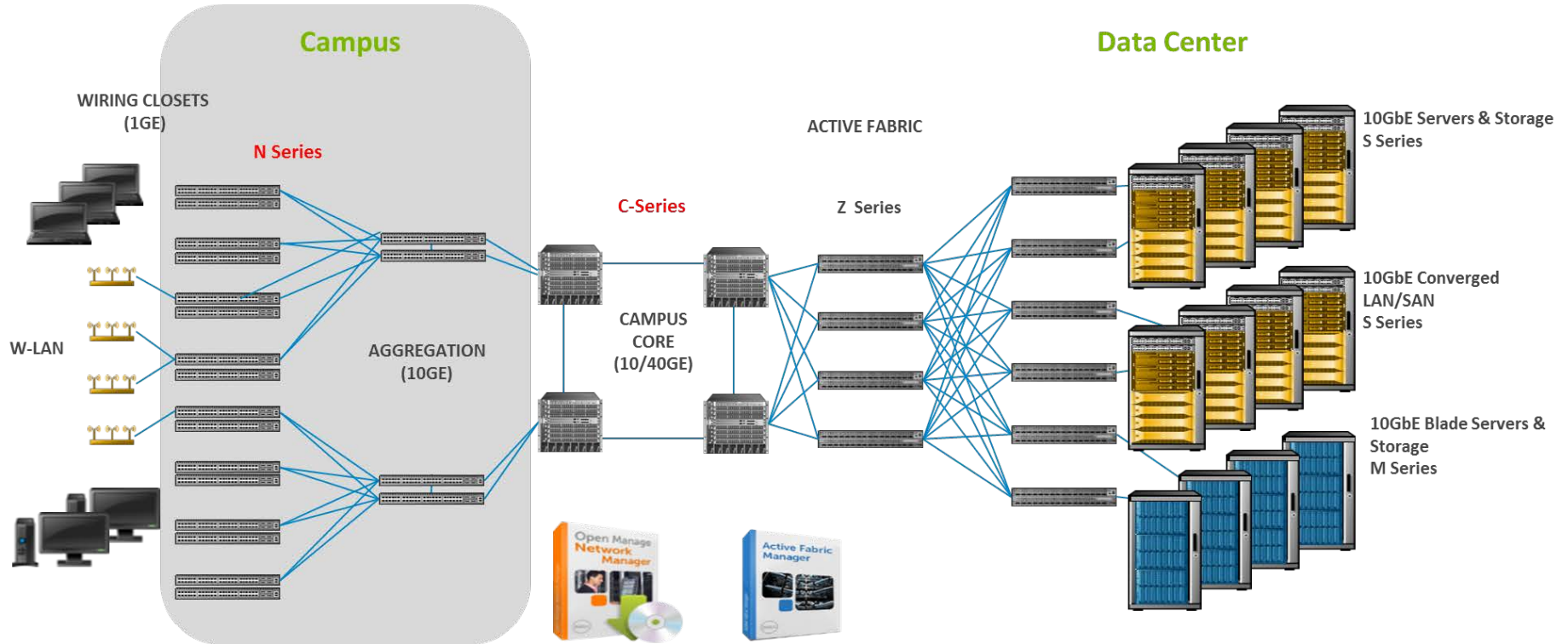


#3



3X

Dell Networking end-to-end



Dell Networking product portfolio

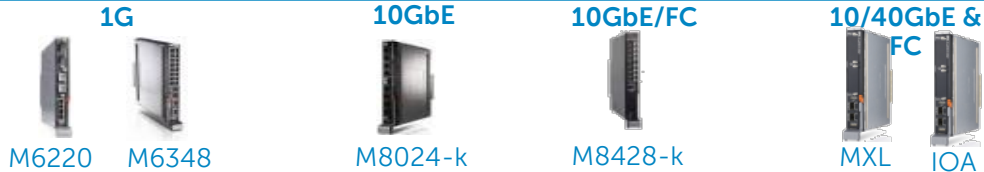
Campus & Data Center Chassis Switches



Core Fabric Switches



Blade I/O



Fabric & Access Switches



Wireless & BYOD



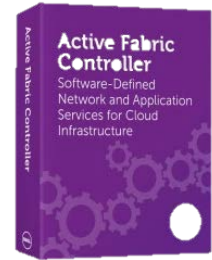
Controllers & Access Points



Instant access Points w/ built-in controller



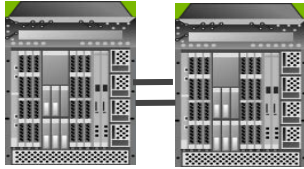
Guest access and BYOD



Dell Active Fabric solutions

Simple SDN-enabled fabrics optimized for performance & cost savings

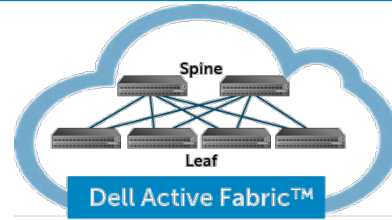
Conventional Core



Traditional chassis-based architectures drive power, cooling and cost up

Traffic is forced into a multi-tier pattern, adding latency

Active Fabric



Gartner recommends fixed-form-factor switches "as an alternative to chassis-based switch architectures"*

Reduce capital costs up to 70%, operational expense by up to 30%



Gartner.

Download
the report at Dell.com

- **77%** less power consumption than traditional networks
- **59%** average savings with Active Fabric™
- **86%** less time to design & deploy over manual installation

Dell Networking Z9500 Next Generation Fabric Switch

Next Gen in flexibility, scalability, and efficiency!



- **High Performance:** With over 10 Tbps at 40% lower latency*, the Z9500 *blazes ahead with industry leading performance*
- **High Flexibility:** *Facilitate small to large fabrics* with L2/L3 in a leaf-spine configuration with architectures up to over 100,000 servers
- **High Density:** with 132 x 40GbE or 528 x 10GbE in breakout mode packed in 3RU *providing superior port density*
- **High scalability:** Pay as you go pricing model allows you to license 36, 84, or 132 port skus *according to your business needs*.
- **High Energy Efficiency:** With just 1/3 the power consumption of the leading competitor, Dell delivers the *most energy efficient core switch* on the market



Dell Networking
Z9500

2x

Density per RU
vs Cisco Nexus 9K

~1\2

Power consumption
vs Cisco Nexus 6K



Active Fabric Manager Overview

Software application for automating data center fabric tasks

Single pane of glass

- One console to Design, Build and Monitor a fabric
- Manage multiple fabrics from a single console

Design templates for complex fabric topologies

- Layer 3 Fabrics – Distributed Core
- Layer 2 Fabrics – VLT (Virtual Link Trunking)

Automated provisioning and configuration

- Leverages embedded automation capabilities
- 1/8 time for deploying a fabric

Holistic packaging

- OVF compliant holistic virtual appliance
- Built-in documentation



1. Design



2. Build



3. Run

Reduce fabric deployment time by up to 86%

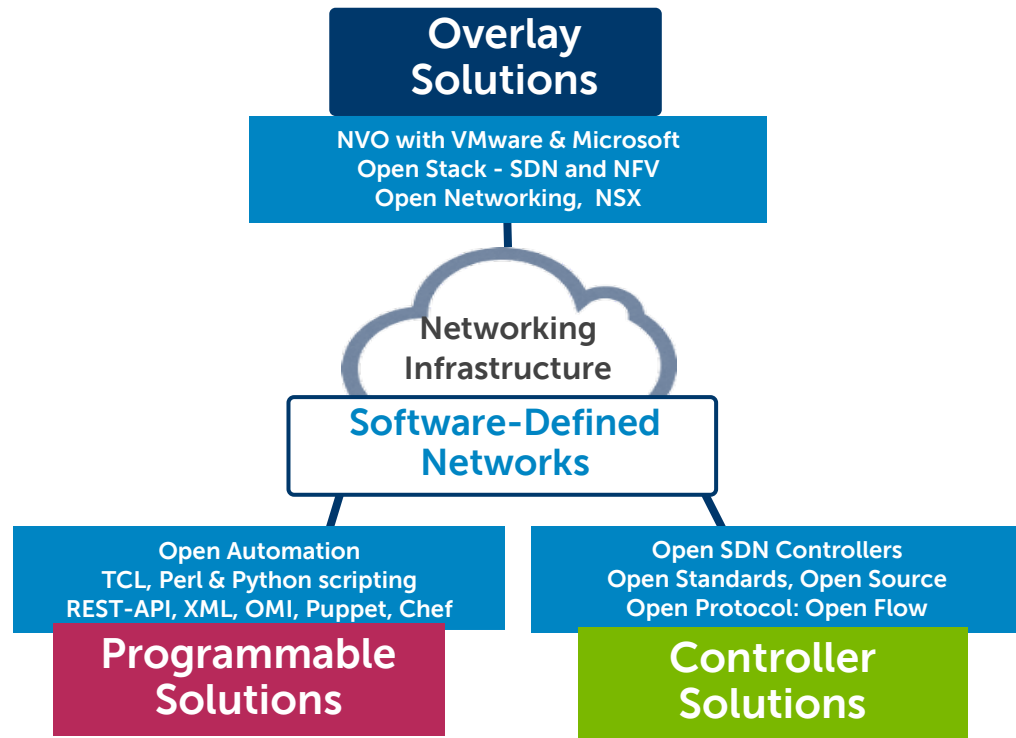


Network Virtualization Product of the Year Award



Software Defined Networking with Choice

Open Standards, Open Protocols, Open Source



Hypervisor-based

- Hypervisor-agnostic solutions for network virtualization and network function virtualization

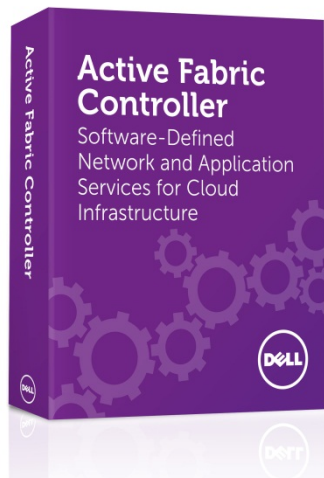
Controller-based

- OpenFlow solutions based on open standards and open source innovations

Programmatic management

- Legacy programmability using standard management interfaces and scripting languages

Active Fabric Controller



Zero Touch
Deployment &
Operation

Built-In
Topology Discovery &
Optimization

Dell Solutions Tour 2014

Transform & Modernize IT Operations with a Network Designed for the Cloud

AFC Delivers on-demand virtualized network services for OpenStack with fully automated, whole-lifecycle management of the physical infrastructure

Deliver Customized Policy that Provisions & Scales Seamlessly

Provides real-time workload visibility and dynamically scalable policy - delivering adaptive security to make your Data Center untouchable

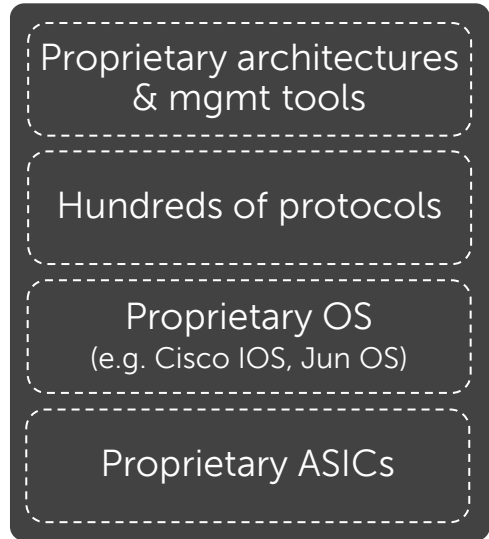
Experience Ultimate Efficiency with Elastic, Auto-Adapting Fabric Services

Automated topology discovery & forwarding optimization enables simple, seamless scalability - Programmable QoS & DCB enables convergence & higher-density operations

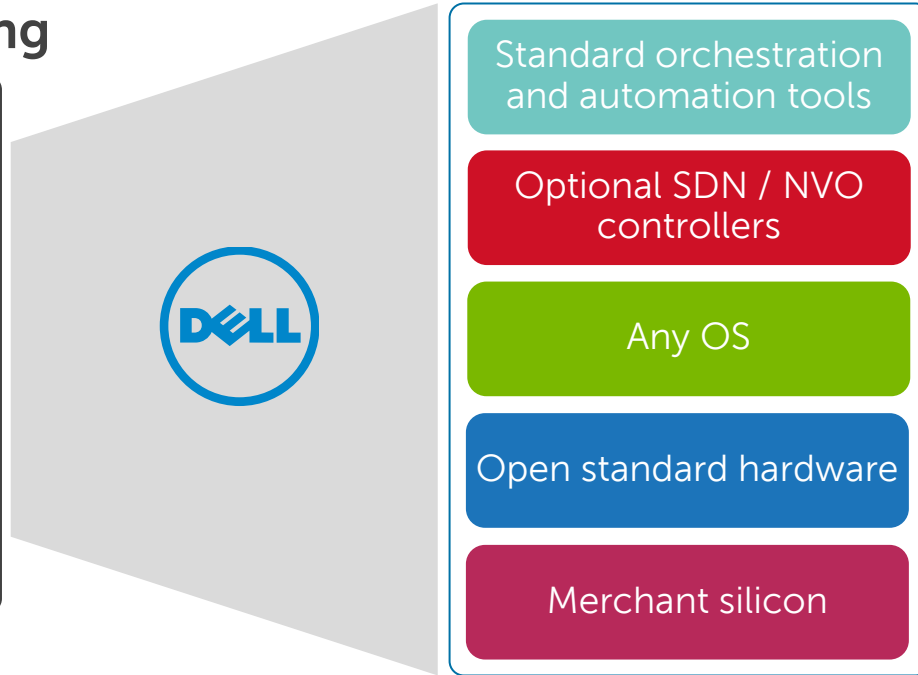


Dell—Fueling the **Open Networking** revolution

Traditional Networking



The Future of Networking



Dell enables the Open Networking Ecosystem

Leverage open, innovative and best-of-breed solutions

Standard orchestration & automation tools

Optional 3rd party SDN/ NVO solutions

Any networking OS

Open standard hardware

Merchant silicon



Automation



Orchestration



Monitoring



Dell Open Networking with Cumulus OS

Best of networking and Linux come together

A multi-platform operating system for networking hardware that makes building, managing and automating massive-capacity next-generation datacenter networks simple.

- Modern datacenter & network orchestration, unifying common functions, scaling network specific ones
- Linux operations and troubleshooting
- Dell Fixed Configuration - Hardware Platform support for S4810-ON and S6000-ON with ONIE

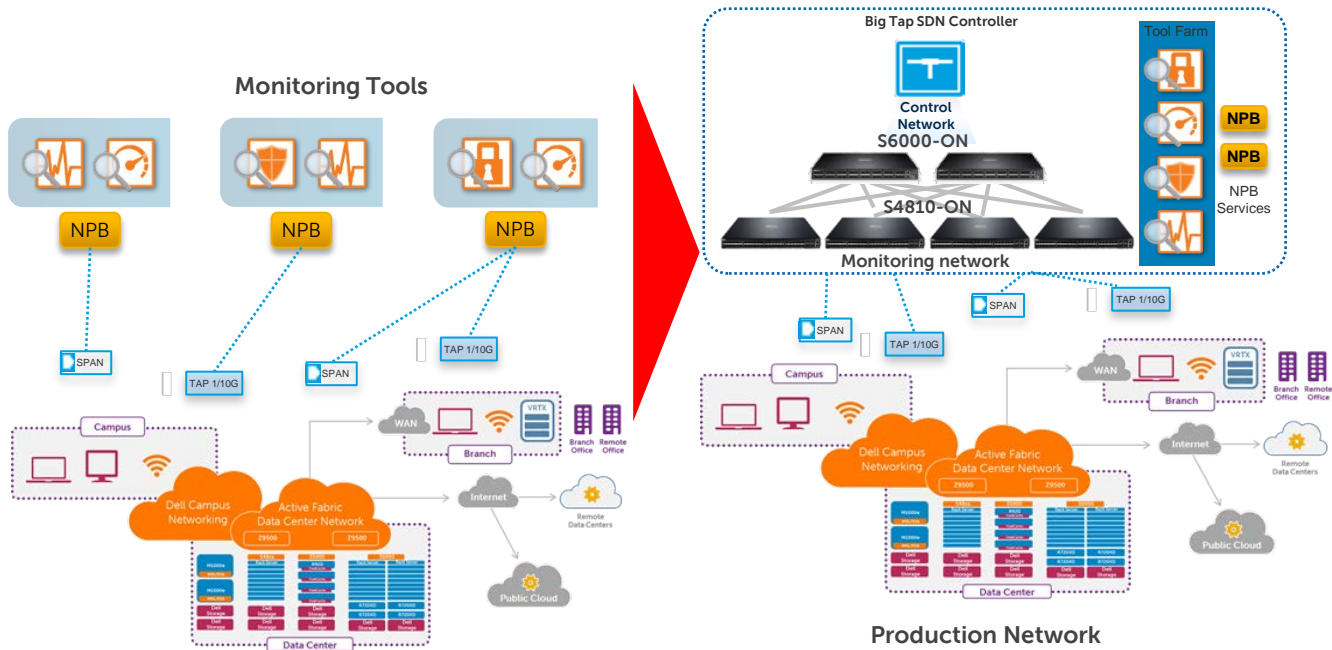


Subscription includes license, updates, and support | First line of support



Open Networking: Next Gen monitoring

Leverage SDN fabrics for Tap/SPAN aggregation & filtering using BigSwitch



Production Network

Production Network

Optimized architecture for capabilities & cost

- Dell & BSN Big Tap™ multi-tier monitoring network for 75% of functions
- NPBs as service nodes for advanced functions
- Monitor a lot more traffic with same NPBs & Tools
- Improved NPB efficiency as well as tool efficiency



N-series: 1 and 10 Gigabit Ethernet switches

Modernize and scale your wired network quickly and easily

New N-Series lineup with new silicon & software

- Comprehensive enterprise-class Layer 2/3 feature set, Integrated Stacking and 10GbE & Linux OS
- Consistent simplified management & CLI/GUI
- Common management, security enforcement and network services with SDN, VLT

Deploy with confidence at any scale

- USB rapid deployment and built-in stacking make IDF installs go quickly and seamlessly
- With a lifetime warranty across hardware, software updates, power supplies, fans and optics, you're protected
- Proactive support options can get failing units replaced before they fail



N2000



N3000



N4000

1.5X
Performance Stacking units & ports,
Switching capacity*

75%
Simplicity with Faster deployment
(USB, guide rails, BMP)

80%
Energy Savings Efficiency
Fresh Air Green innovation

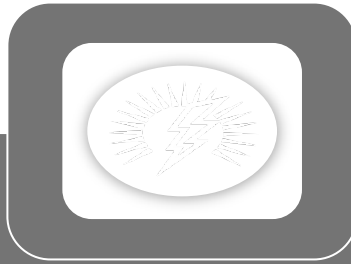
Why N-Series?

Modernize and Scale your wired network quickly and easily



Highly Reliable and Available Linux Kernel

Carrier Grade Linux kernel
Minimal disruption during network upgrades



Rapid Deployment and Interoperability

Reduce deployment time with ready rails and USB Config; Interoperable with existing networks. Industry standard CLI



Industry's most Energy Efficient network

Up to 80% energy savings per port and Fresh Air Compliance

Next Gen AC-wireless med W-series Instant

Configuration

L2 & L3 roaming
Firewall state
synchronization,
PMK (PairWise Master
Key) caching on each
AP)

ARM – Adaptive Radio
Management automatic
channel- and power
adjustment, Band steering
and Airtime fairness

Virtual Controller

Virtualized

Automatic election of VC,
Configuration and
firmware management

Instant Network
Forms a "virtuell controller"
Connect with ClearPass:
OnBoard for BYOD, Guest
or OnGuard for NAC



IAP205



IAP215



IAP225



IAP275

PERFORMANCE

Recent Announcements + ac capable Access Points

NEW



Dell W-IAP270



- ✓ 802.11ac Outdoor AP
- ✓ 3x3, 1.3Gbit data rate



Dell W-IAP220

- ✓ 802.11ac High Performance AP
- ✓ 3x3, 1.3Gbit data rate

NEW



Dell W-IAP210

- ✓ 802.11ac Access Points Mid performance AP
- ✓ 3x3, 1.3Gbit data rate

NEW



Dell W-IAP200

- ✓ 802.11ac Access Points
- ✓ 2x2, 867Mbit/s data rate

NEW



Dell W-IAP103
AP103H

- ✓ Entry level 802.11n Access Point
- ✓ 2x2, 300Mbps/s data rate (wall mount version)

Integrated BYOD Access with Best User Experience over Wi-Fi

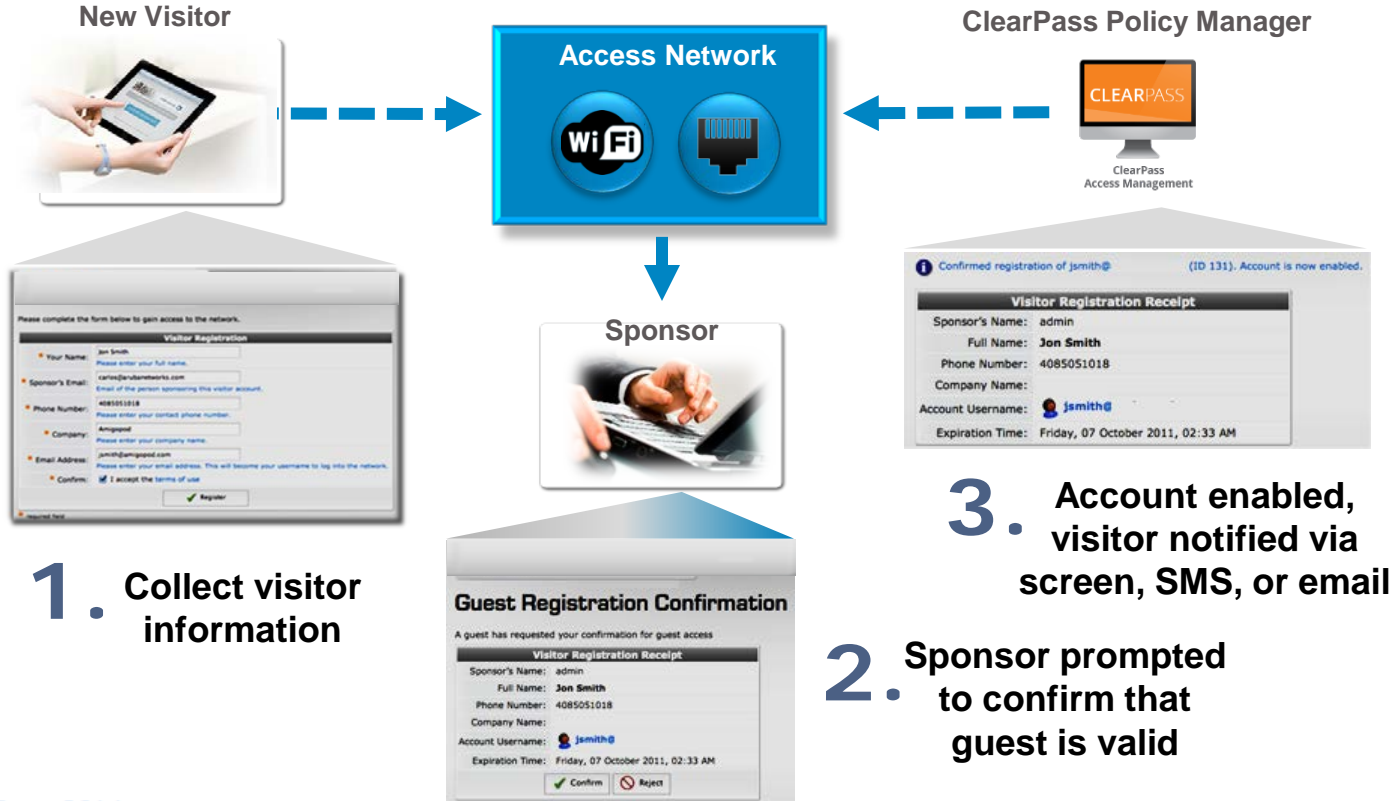


A man in a dark suit and tie is smiling and looking towards a line of guests at a reception desk. The guests are seen from behind, including a man in a purple shirt with a black backpack, a woman in a grey top, and a woman in a white hat. The background shows a modern office or hotel lobby with glass partitions and bright lighting.

GUEST NETWORK CHALLENGES:

- **Secure access – how?**
- **Staff Intervention for every Guest**
- **Different tools for WLAN-, Wired access and Reporting**

Automated Guest Self-service using ClearPass



OpenManage Network Manager 6.0

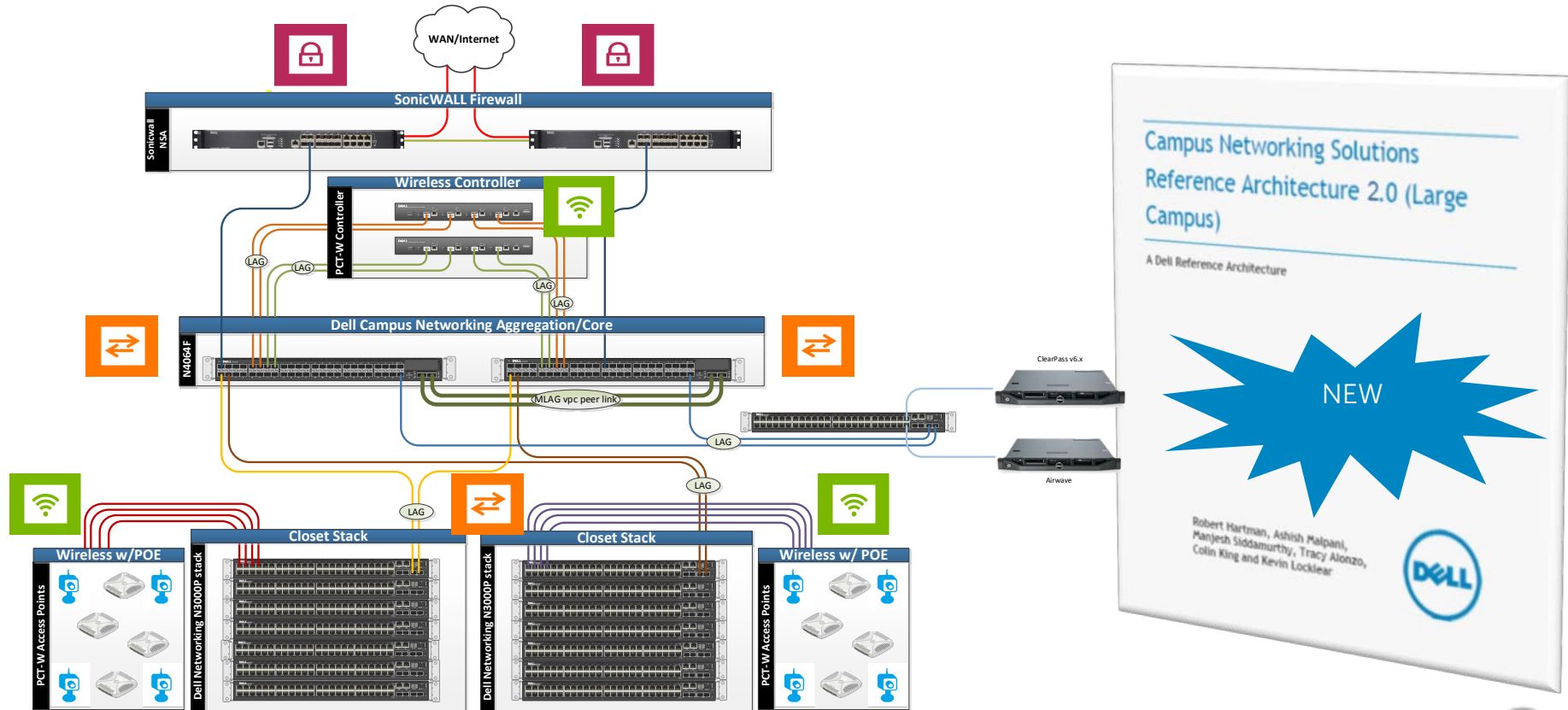
Network Element Manager for Dell and 3rd Party Network Switches

- Equipment Discovery Wizard
- Equipment Manager
- ProScan
- Inventory Reporting
- Advanced Scheduling
- Event Management
- Profile Manager
- Active Performance Monitors
- Network Topology
- OS Manager
- CLI Scripting/Automation

The image displays three overlapping screenshots of the Dell OpenManage Network Manager 6.0 web interface. The top screenshot shows the 'Managed Resources' table with columns for Network Status, Name, IP Address, Vendor, and Model. The middle screenshot shows the 'Alerts' section with a donut chart and a table of alerts. The bottom screenshot shows the 'Resource Discovery' section with a 'Quick Navigation' sidebar and a table of discovered devices. The interface includes a left-hand navigation menu with options like Home, Performance, Resources, Alerts, Reports, Network View, Traffic Flow, Discover, and Admin. The Dell logo is visible in the top left of each screenshot.



Dell campus reference architecture



THREE QUESTIONS

1. Does your network keep up with new virtualized workloads?

2. Do you want to know more about Open Networking and SDN?

3. Do you need more efficient and secure Mobile networks with guest access?



Contact your Dell Account Team or Dell Partner to discuss Net Gen Networks

www.dell.com/networking



Dell Solutions Tour 2014

Share ideas, discuss trends and discover
IT solutions of tomorrow.

Tak - fortsat god dag

#DellST14

