Dell Networking:
Change your network, activate your business

Name
Title

#DellST14

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 and multimedia rewriting the laws of campus networking for good
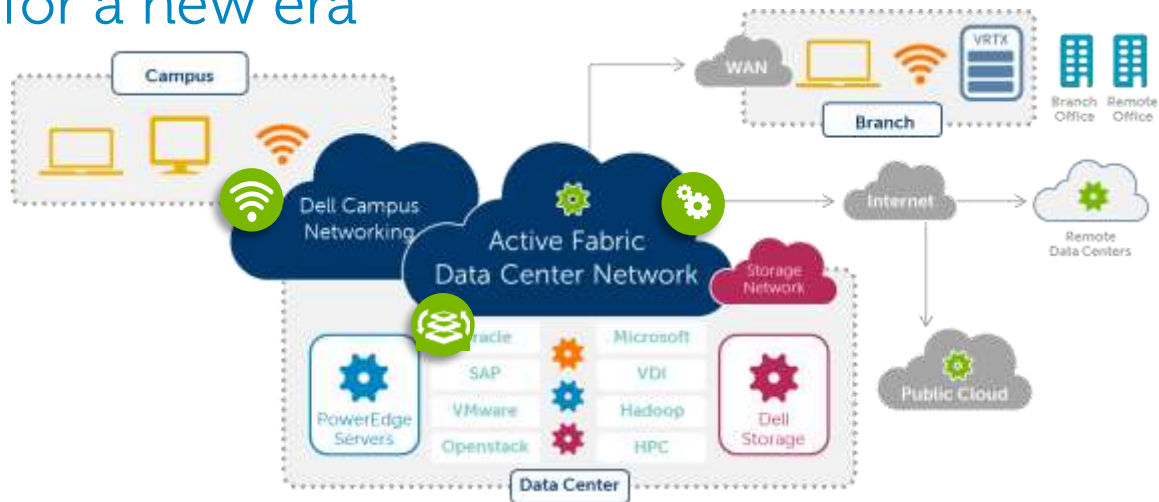
... creating opportunities for innovation

Dell Networking **end-to-end**
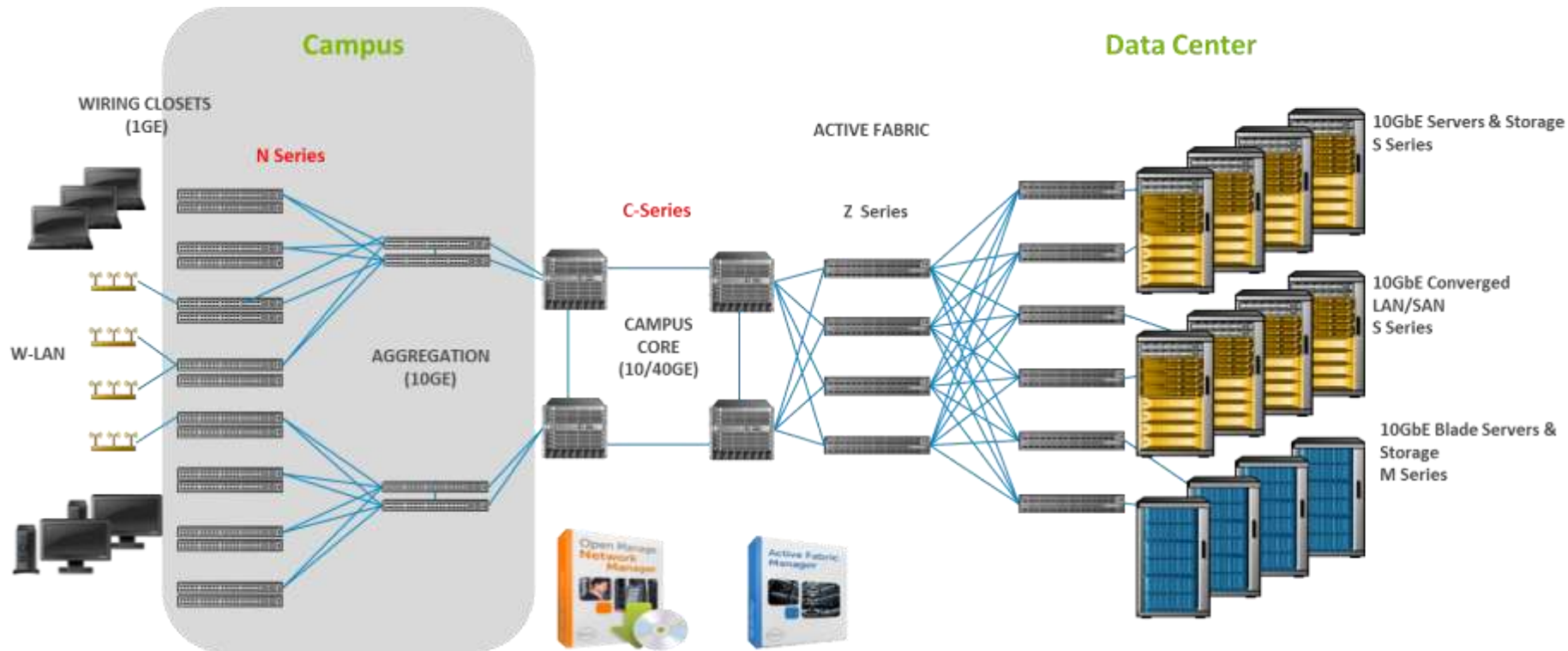
New solutions for a new era

In-rack solutions for the data center	Fabric solutions for the data center	Wired/wireless solutions for the campus
Transform your data center with high performance 10/40GbE Ethernet platforms	Optimize architectures for east-west traffic & SDN initiatives	Enable more devices and multimedia, less presence, and more remote capabilities

Dell Networking Strategy

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

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

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

Superior customer benefit

- **Maximum efficiency—**Save money, conserve space and reduce power consumption

- **Faster results—**Scale up, down and out on your terms easily and economically

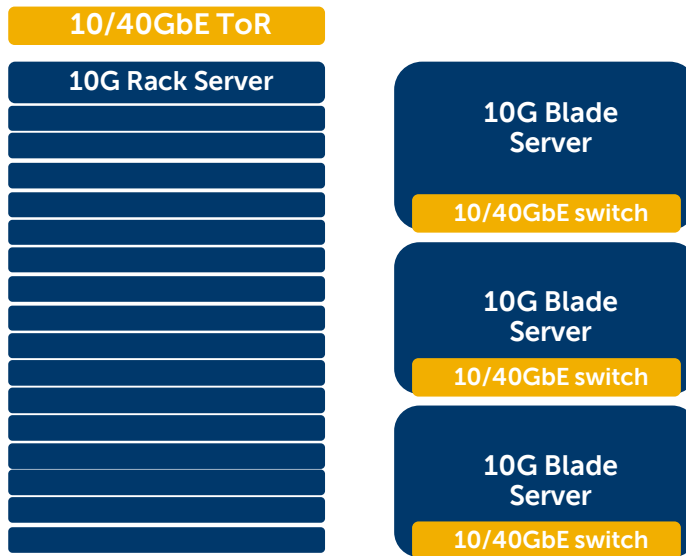- **Reliable operation—**Get results you expect when you expect them

…Modernize and transform your network on your terms

Transform the data center with 10/40GbE Ethernet platforms

1

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

10/40GbE ToR

10G Rack Server

10G Blade Server

10/40GbE switch

10G Blade Server

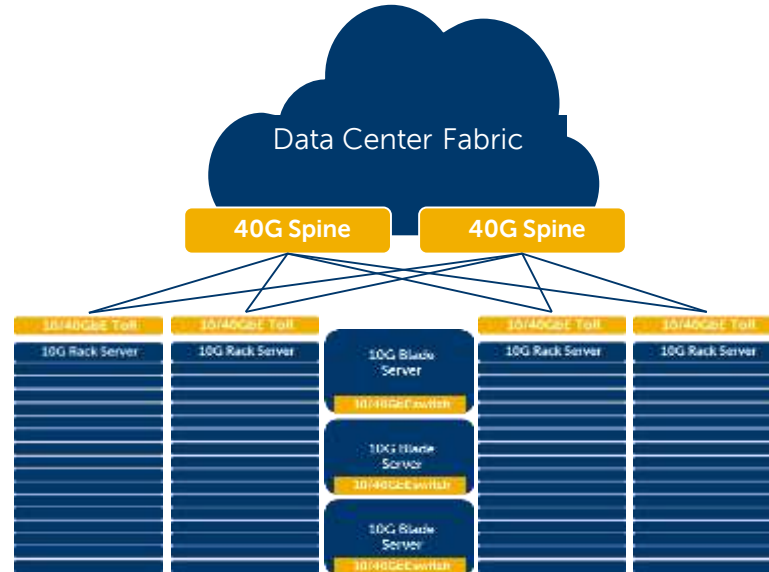**10/40GbE switch**

10G Blade Server

10/40GbE switch

- **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

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

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

Data Center Fabric

40G Spine   40G Spine

10/40GbE ToR   10/40GbE ToR   10/40GbE ToR   10/40GbE ToR

10G Rack Server   10G Rack Server   10G Blade Server   10G Rack Server   10G Rack Server

10/40GbE switch

10G Blade Server
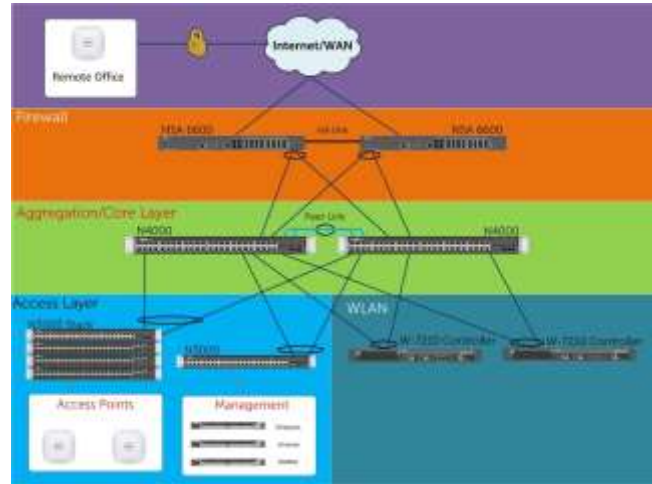
10/40GbE switch

10G Blade Server

10/40GbE switch

- **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

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

Unlocking networking for innovation

2011	2012	2013	2014	Today

2011
Data center chassis bottleneck
- ✓ **Active Fabric**
- ✓ **Open Automation Framework**

2012
In-rack east-west traffic optimization
- ✓ **MXL/IOA for M1000e**
Simplified fabric management
- ✓ **Active Fabric Manager**

2013
Network programmability
- ✓ **SDN – a choice**
In-rack convergence
- ✓ **S5000/S6000 ToRs**
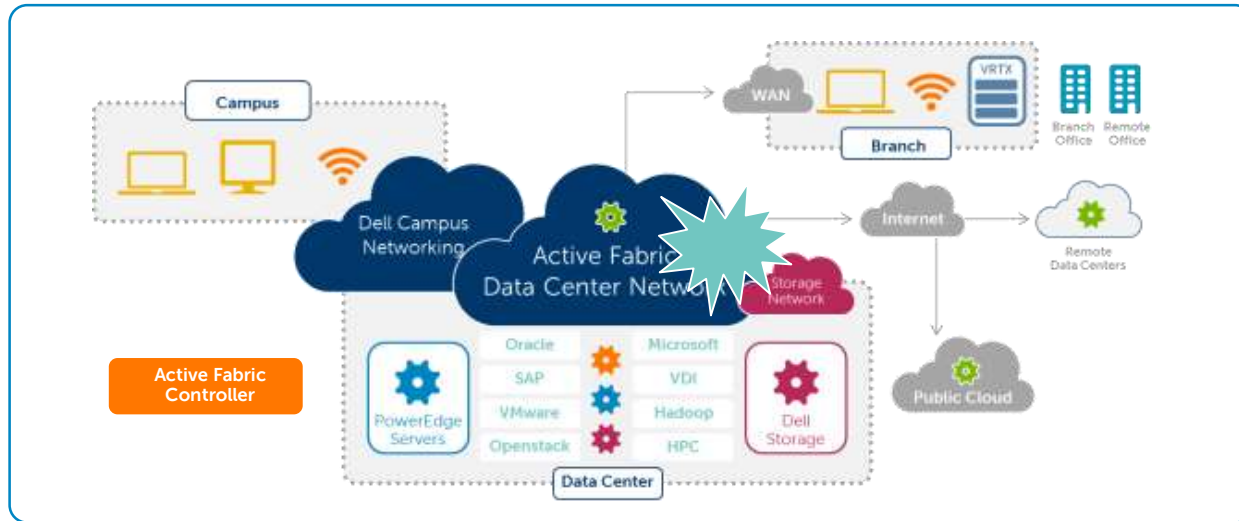Enterprise mobility
- ✓ **Campus & wireless refresh**

2014
Lock-in / lack of choice
- ✓ **Open Networking**

Today
Next-generation performance & manageability for cloud data centers
- ✓ **Z9500 Fabric Switch**
- ✓ **Active Fabric Controller**

Dell Networking product portfolio

Campus & Data Center Chassis Switches

C7004/7008   E600i/E1200i

Core Fabric Switches

Z9000   Z9500

Blade I/O

1G	10GbE	10GbE/FC	10/40GbE & FC

M6220   M6348   M8024-k   M8428-k   MXL   IOA

Fabric & Access Switches

1G	10GbE	10GbE/FC	10/40GbE

S55/S60   N3000   S4810 / 20T   S5000   S6000

N2000   N4000

Wireless & BYOD

Controllers & Access Points
Indoor

Outdoor

Instant access Points w/ built-in controller

Guest access and BYOD

Active Fabric Controller
Software-Defined Network and Application Services for Cloud Infrastructure

Active Fabric Manager
Automatic build-out, deployment and provisioning of fabric installations

OpenManage Network Manager
Simplify and control network management
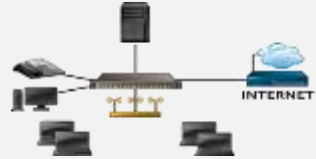
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Reference architectures for any network

SOHO

End-user networking

10s End-users
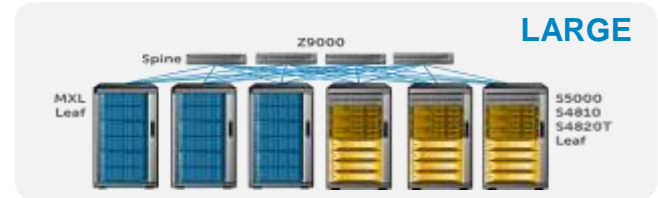
Data center networking

10s-100s Server/VMs

SMALL/MEDIUM

S4810 or Z9000 Spine
MXL 10/40G Leaf
S5000 S4810 S4820T S60, S55 Leaf

ROBO

WLAN: W-Series
Controller
PowerEdge VRTX
INTERNET/ WAN

100-1000s End-users

1000s Server/VMs

LARGE

Spine   Z9000
MXL Leaf
S5000 S4810 S4820T Leaf

CAMPUS

WLAN Controller
W-3x00/W-6000 W-6xx
INTERNET/ WAN
To Data Center

1000s+ End-users

1000s+ Server/VMs

EXTRA LARGE

Spine   Z9000
Leaf
MXL
S5000 S4810 S4820T S60,S55

Unlocking networking for **innovation**

Choice of SDN approach delivers a comprehensive SDN Strategy
Open Standards, Open Protocols, Open Source

Overlay Solutions

NVO with VMware & Microsoft Open Stack - SDN and NFV Open Networking

Networking Infrastructure

Software-Defined Networks

Open Automation TCL, Perl & Python scripting REST-API, XML, OMI, Puppet, Chef

Programmable Solutions

Open SDN Controllers Open Standards, Open Source Open Protocol: Open Flow

Controller Solutions
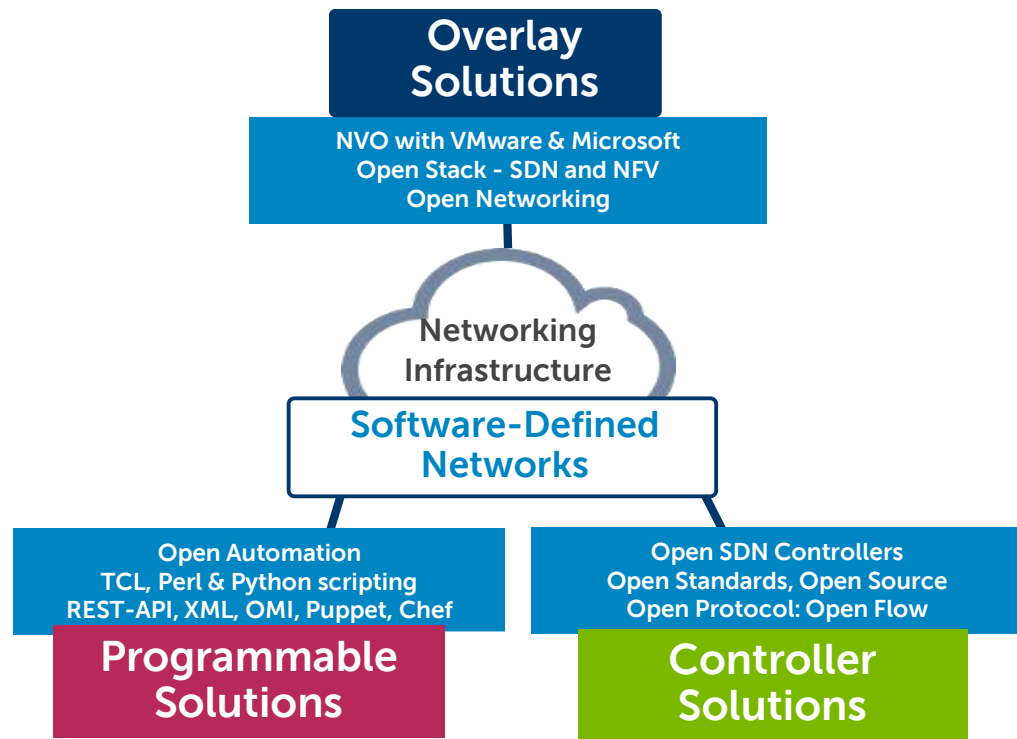
Hypervisor-based
- Hypervisor-agnostic solutions for network virtualization and network function virtualization
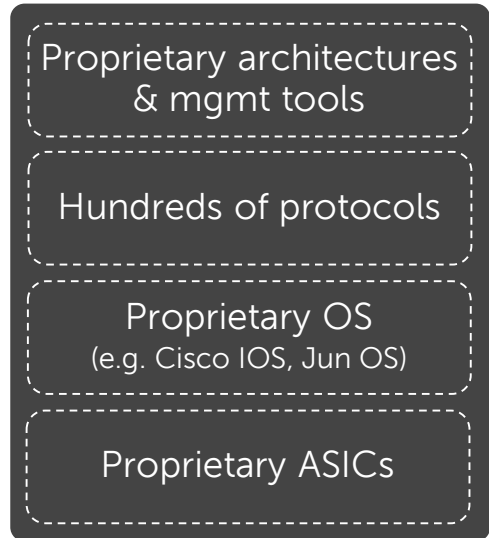
Controller-based
- OpenFlow solutions based on open standards and open source innovations

Programmatic management
- Legacy programmability using standard management interfaces and scripting languages

Dell—Fueling the **Open Networking** revolution

The Future of Networking

Traditional Networking

Proprietary architectures & mgmt tools

Hundreds of protocols

Proprietary OS
(e.g. Cisco IOS, Jun OS)

Proprietary ASICs

Standard orchestration and automation tools

Optional SDN / NVO controllers

Any OS

Open standard hardware

Merchant silicon

Dell Solutions Tour
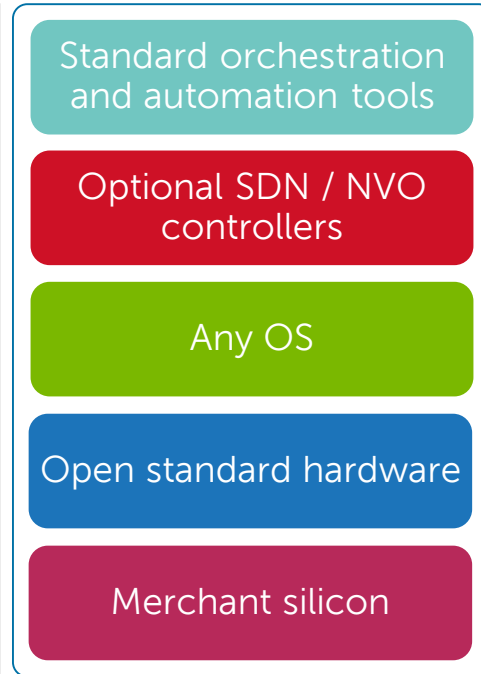
Engineering choice—software-defined **networking**

Programmatic solutions	Virtualization/ cloud-oriented	Controller solutions

• Enterprise-class infrastructure	**Dell Open Networking**	• Global services and support

Dell Networking customer wins

Web2.0 & E-commerce
- myYearbook
- ebay
- ESPN
- salesforce.com
- Alibaba.com
- Twitter
- ancestry.com
- YAHOO!
- zynga
- eHarmony
- facebook
- twitter
- Reed Elsevier
- Microsoft

Services & Service Providers
- Telefónica
- verizon
- Level(3)
- bharti
- TATA
- Cablemás
- BT
- ALTECH KTM
- READYSPACE — Cloud and Managed Hosting
- OptiNet
- Syniverse

Healthcare & Life Sciences
- UCSF — Institute for Human Genetics
- Deutsches Rotes Kreuz
- Weston Area Health NHS Trust
- DELTA DENTAL
- TGen
- NewYork-Presbyterian
- School of Medicine — University of Missouri Health System
- UF UNIVERSITY of FLORIDA

Education
- DHM | RI
- BURGMANN
- PEMBINA TRAILS SCHOOL DIVISION
- MARINO
- Cornell University — Center for Advanced Computing
- CITY AND ISLINGTON COLLEGE
- UB
- KIT
- TACC

Business
- ERNST & YOUNG — Quality In Everything We Do
- SAAB
- ExxonMobil — Taking on the world's toughest energy challenges
- @WalmartLabs
- Honeywell
- DOWJONES
- the cosmopolitan RESORT CASINO
- ConocoPhillips
- P&G
- HONDA
- NYSE Euronext

Government
- Copeland
- TAMAULIPAS
- GARLAND
- Kenya Airports Authority
- MAMPU
- KLIA NEXT GEN HUB — THE NEW WAY TO THE WORLD
- Australian Government — centrelink
- TEXAS LOTTERY
- Wright-Patterson Air Force Base

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Customer success - EMEA

Web 2.0 & E-commerce	Services & Service Providers	Healthcare & Life Sciences	Education & Government	Business	Manufacturing

Dell Networking — **Transforming the Enterprise**

CY13: ~3x the market*

WW	Dell	Market*
Data Center	17%	3%
Campus	9%	6%
TOTAL	16%	5%

Market Share Growth*

#3 in 40 GbE switching, outgrew market

#3 in blade switching (10G), fastest growth in the industry

#2 in 10G Base-T switching (Server attach)

Innovation & thought leadership

- **Open Networking & Software Defined -** Only IT vendor to provide a choice of OS & a migration path to SDN

- **Industry leading Platforms for Fabrics & converged racks** Solutions architected for new IT - industry recognition on ALL new data center platforms announced in 2013 & 2014!

- **Mobile Enterprise**—Complete refresh of wired, wireless & chassis switching for the modern campus

24,000
new customers CY13

15+
End-to-End Solutions
(Pan Dell & Enterprise)

Market-beating Growth (3X)
3M+ 10G Ports shipped
1M+ 10G ports in CY13

* Source: Dell'Oro 2014, Q1 & Q2

Let's get started

#DellST14

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