

DELL NETWORKING

Las Redes al servicio de su negocio

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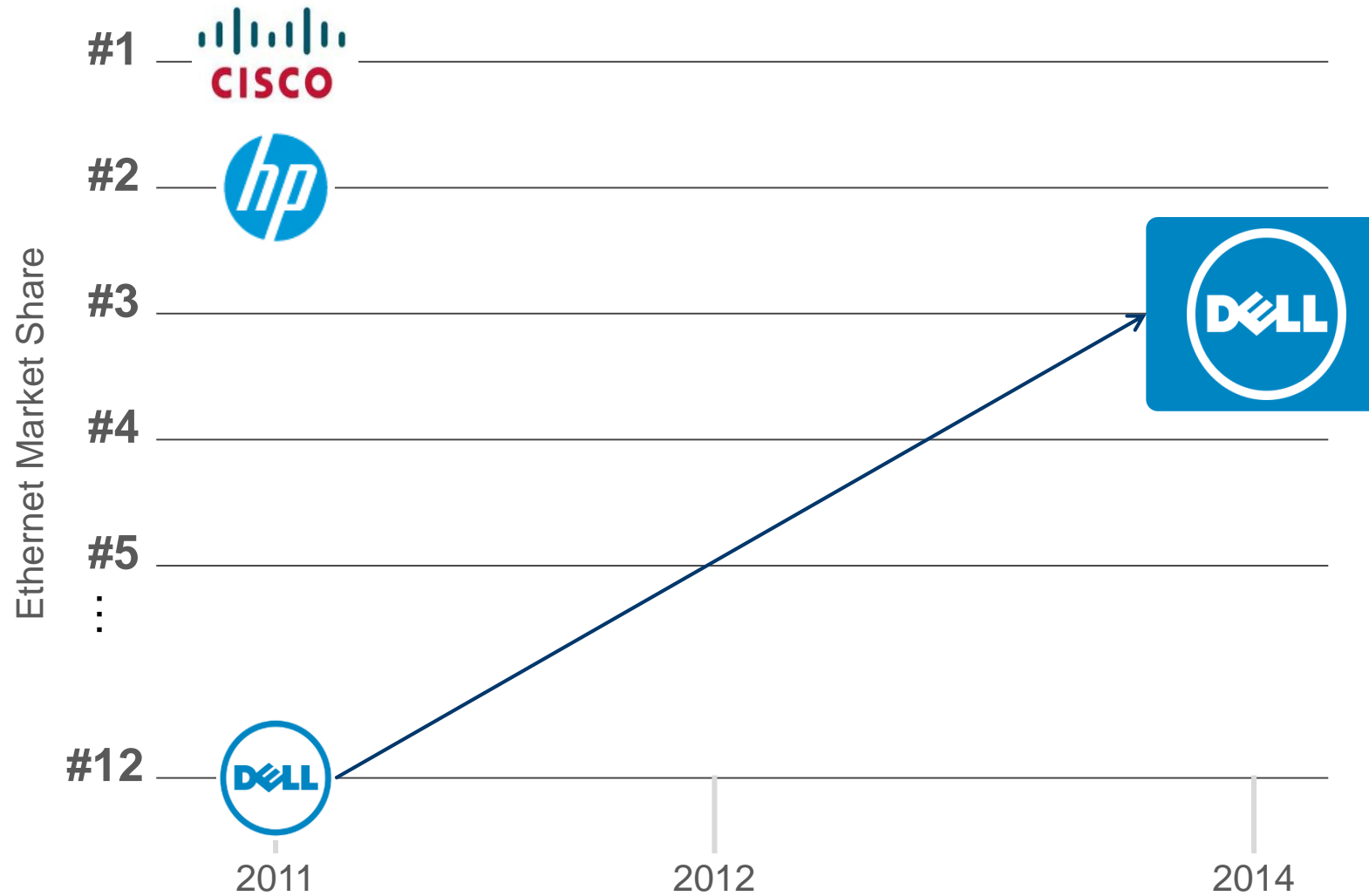


Agenda

- Introducción
- Ejemplo de una solución para una red Campus
- Ejemplo de una solución para una red DC
- Conclusiones

INTRODUCCIÓN

DELL Networking, ganando cuota de mercado



Source: Q12014 Dell'Oro, Revenue market share



Dell Networking

Unifying Dell solutions for multiple environments

PowerEdge

- Network I/O blades
- Adapters: NIC, HBA, CNA
- 1/10GbE

Solution Convergence

- Business-ready configurations
- M1000e Convergence
- Virtualization-ready

ORACLE ENTERPRISE MANAGER 12^c

Management and application-specific

- Cloud management
- Open automation, open frameworks
- Infrastructure management

AIM

Compellent

- Fibre channel and iSCSI

EqualLogic

- 1/10GbE
- PS60x0, 65x0 iSCSI

PowerVault

- 1/10GbE & 8Gb FC

Networking

- 1/10/40GbE Ethernet
- 16/8/4 Gbps FC
- FCoE, iSCSI
- WLAN
- Modular chassis
- Top-of-rack
- I/O blades
- Adapters
- Management

Clients

- Thin and physical devices

Security

- Device recognition
- VPN
- Firewalls

Virtualization

- Efficient fabrics
- Provisioning
- Workload migration

Windows Server 2008 R2 Hyper-V™

vmware

Creator Dell V5 Creator



EJEMPLO SOLUCIÓN RED CAMPUS



Proyecto ejemplo



Requisitos

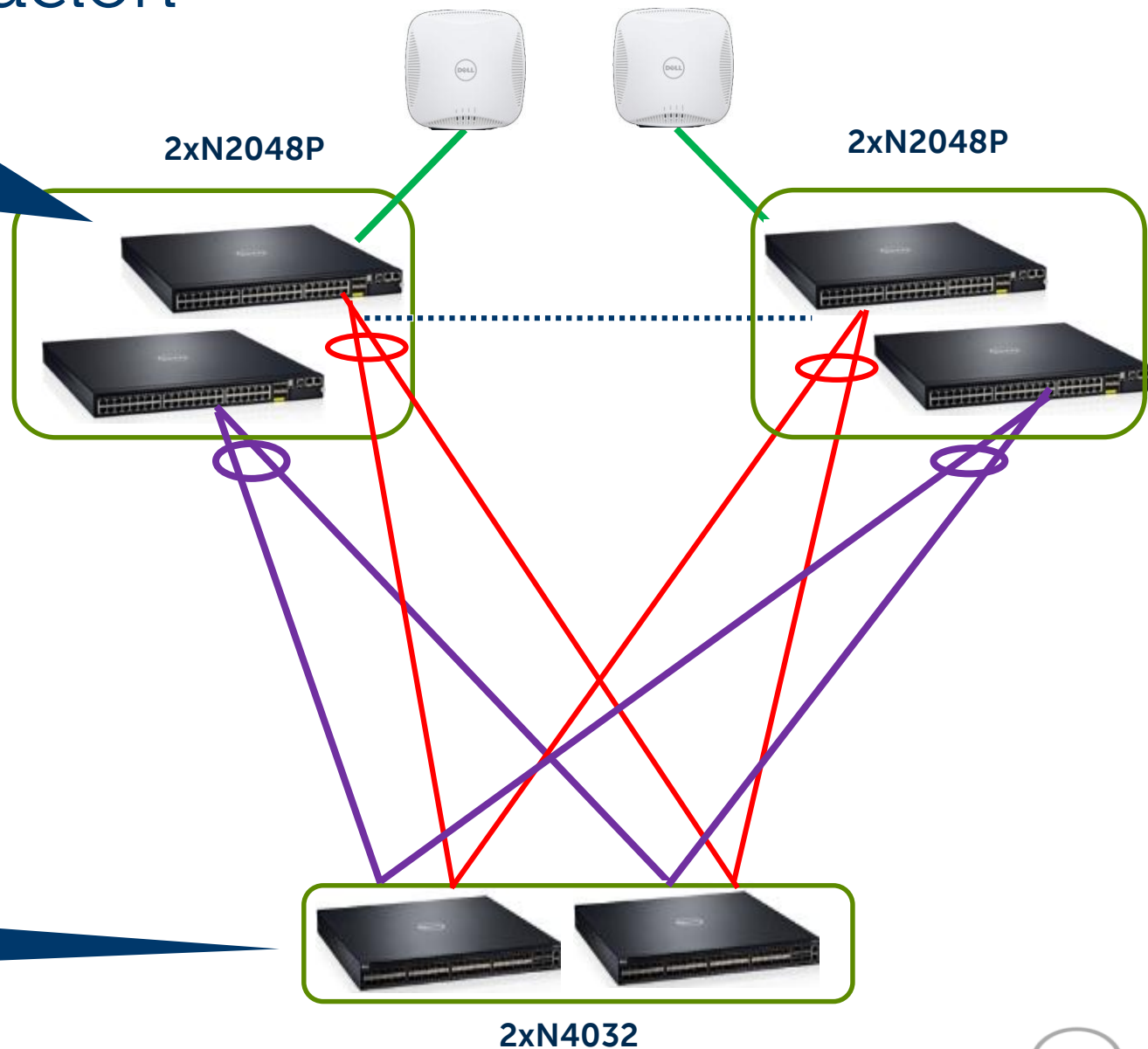
- ✓ Edificio de 4 Plantas
 - 3 Plantas de puestos de trabajo
 - 1 Planta para un Executive Business Center.
 - 350 puestos por planta en las 3 plantas de trabajo
- ✓ BYOD es un requisito y la seguridad es crítica. Se tratan datos de carácter Restringido
- ✓ Puestos de trabajo cableados a 1G en cobre
- ✓ Uplinks a 10G en fibra
- ✓ POE+ para poder desplegar Wifi exterior y desplegar cámaras de video vigilancia
- ✓ Comunicaciones Unificadas, Lync para voz, desde el ordenador y también Wireless

Diagrama de red para la solución

- ✓ Stack 2 x 48 puertos POE+ (11 Stacks)
- ✓ Desde cada Switch 2x10G de uplink
- ✓ Wireless Instant Access Point 11ac
- ✓ Autenticación Segura

- ✓ No Spanning-Tree // Full active
- ✓ Full-line rate
- ✓ Bajo consumo energético
- ✓ Alta Densidad

- ✓ Puertos 10G-SR, 48 en total
- ✓ Estacado de 160 Gbps



Dell Networking N2000 Series

1 Gigabit Ethernet with Layer 2+ capabilities

- ✓ Up to **220 Gbps** switch fabric capacity.
- ✓ Supports up to **48 line-rate 1GbE**. (600 1GbE in a stack)
- ✓ N-Series stacking cables and built-in ports . stacking at up to 84 Gbps
- ✓ Up to 48 ports of **PoE+** and Up to **4,094** VLANs supported
- ✓ Advanced network security including highly **configurable ACLs**
- ✓ **USB Rapid deployment** expedites switch configuration
- ✓ **Energy Efficient Ethernet** (EEE) and lower power PHYs
- ✓ **Fresh Air® compliant** for high operating temperature environments



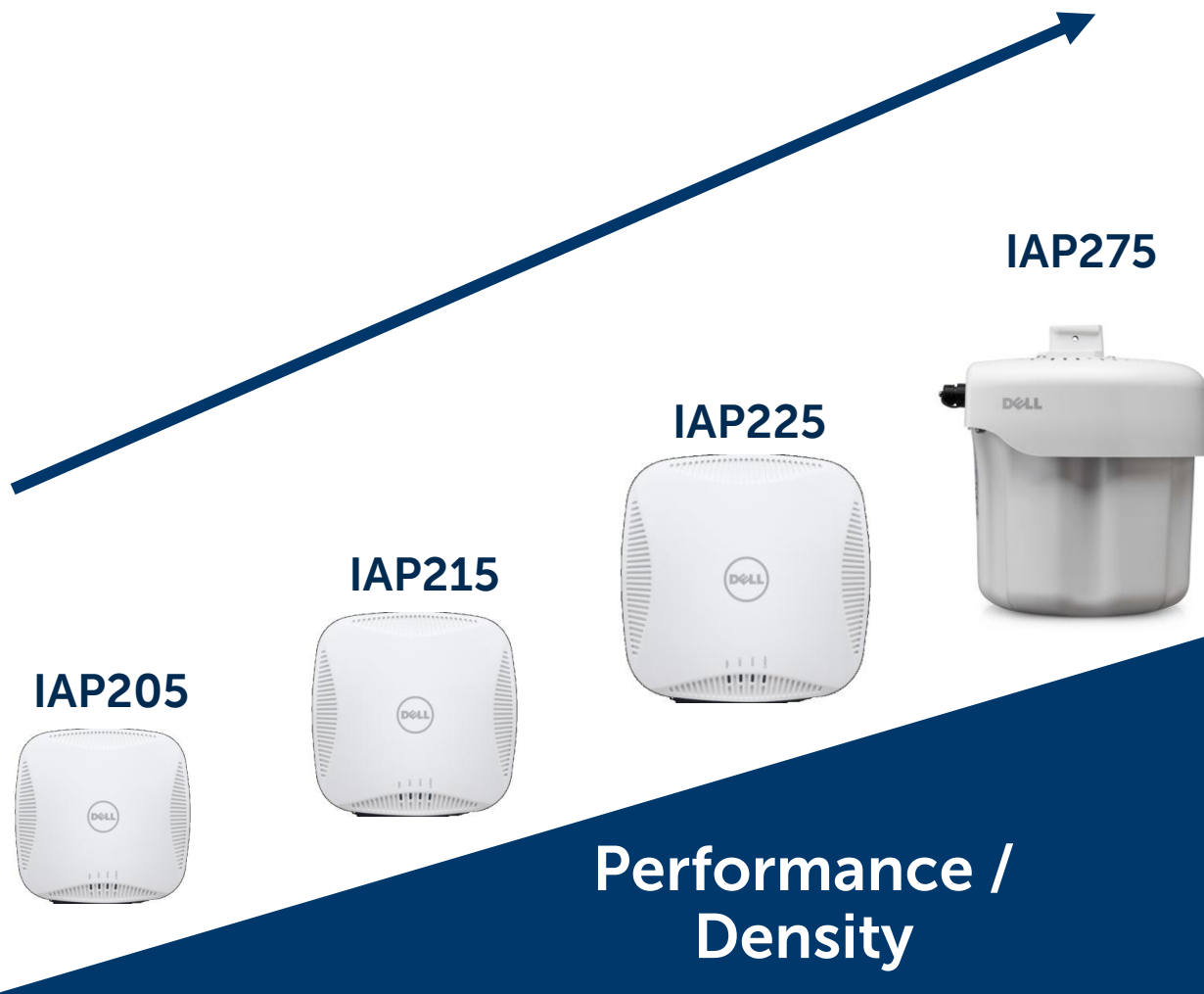
Dell Networking N4000 Series(PCT 8100)

10 Gigabit Ethernet with advanced Layer 3 capabilities



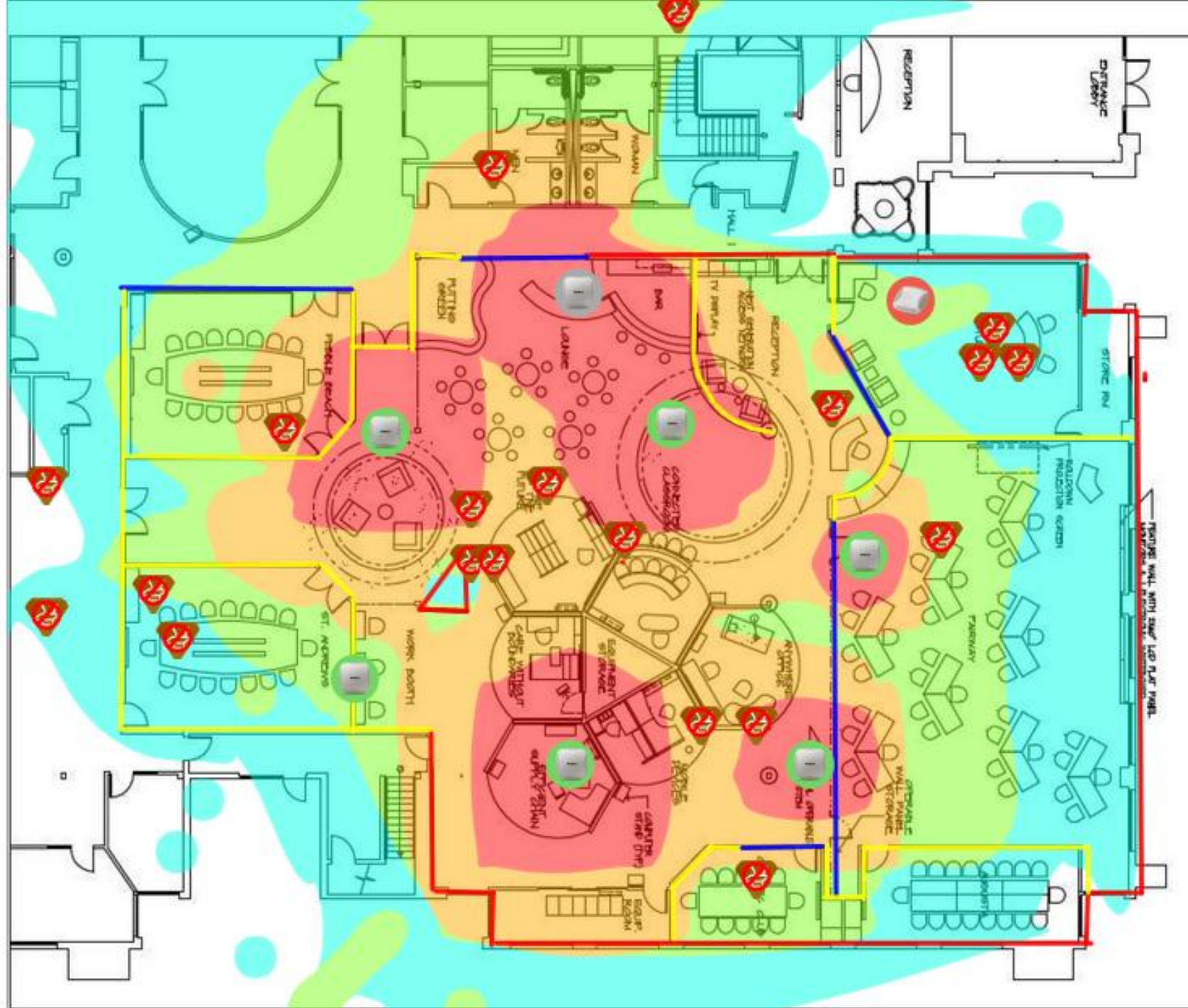
- ✓ **Up to 1.2Tbps** switch fabric capacity
- ✓ Supports up to **64 line-rate 10GbE**. (672 10GbE ports in stack)
- ✓ Hot swap expansion module supporting dual QSFP+ (8 x 10GbE), Quad 10GBaseT, and Quad SFP+
- ✓ Plug-and-Play configuration with Dell EqualLogic™ and validated with **Compellent™ iSCSI storage**
- ✓ Dual 80PLUS-certified hot swappable power supplies
- ✓ **Energy Efficient Ethernet (EEE)** and lower power PHYs
- ✓ **Tool-less rails** significantly reduce rack installation time
- ✓ **USB Rapid deployment** expedites switch configuration

Solucion Wireless 11ac



Virtual Controller Technology






- ✓ Adaptive Radio Management
Stateful firewall & rogue AP
- ✓ Stateful QoS for voice & video
- ✓ 128 IAP Limitation
- ✓ Max 2000 Concurrent devices
- ✓ Alta Disponibilidad



Floor 1

Properties [View](#) [Edit](#)

Devices

-  APs ▶
-  Clients ▶
-  Interferers ▶
-  Rogues ▶
-  Tags ▶

Overlays

- AppRF ▶
- Ch. Utilization ▶
- Channel ▶
- Client Health ▶
- Heatmap ▶
- Speed ▶
- UCC ▶
- Voice ▶

Relation Lines

- APs
- Client Association
- Client Neighbors
- Interferers
- Rogues
- Surveys
- Tags

Floorplan Features

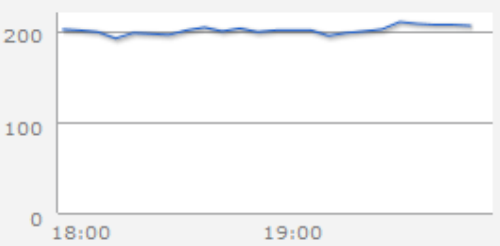


- Home
- Groups
- APs/Devices
- Clients
- Reports
- System
- RAPIDS
- VisualRF

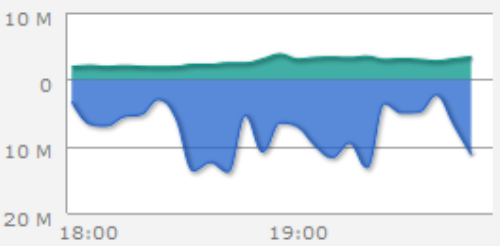
Overview

Trends

Clients



Total Usage



Watched Clients

Name	Health	Health Trend	SNR (dB)	SNR Trend	Last Heard	Active
30:85:A9:2F:16:37	86	▲	-	-	30 days 5 hours 37 minutes ago	Yes
james	-	-	35	-	32 days 22 hours 18 minutes ago	Yes
E8:99:C4:7F:E1:8A	100	▲	-	-	13 hours 6 minutes ago	Yes
BC:47:60:FE:39:62	-	-	-	-	-	No

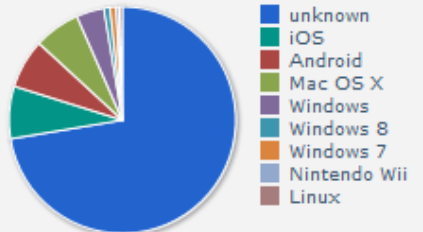
Potential Performance Issues

	Down	Total
APs	292	360
Controllers	1634	1685
Remote Nodes	790	814
Switches	3	14

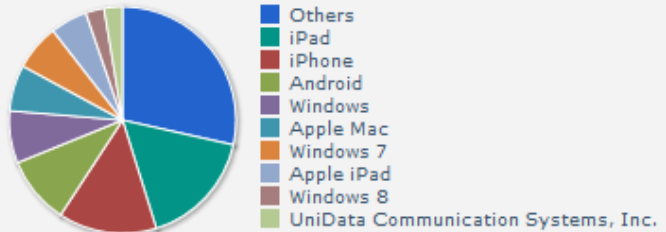
Clients

Distribution of 228 Clients

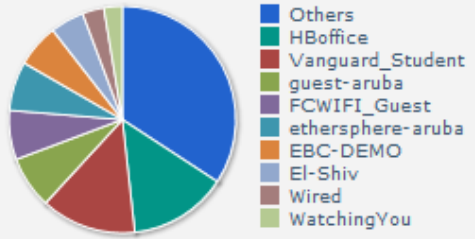
By Operating System



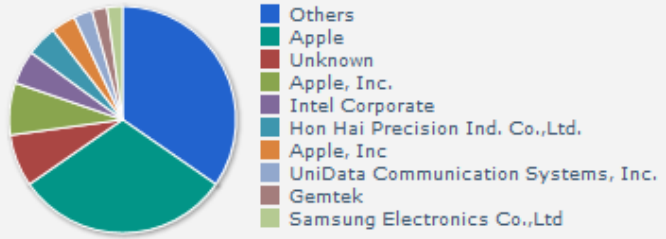
By Device Type



By SSID



By WLAN Vendor

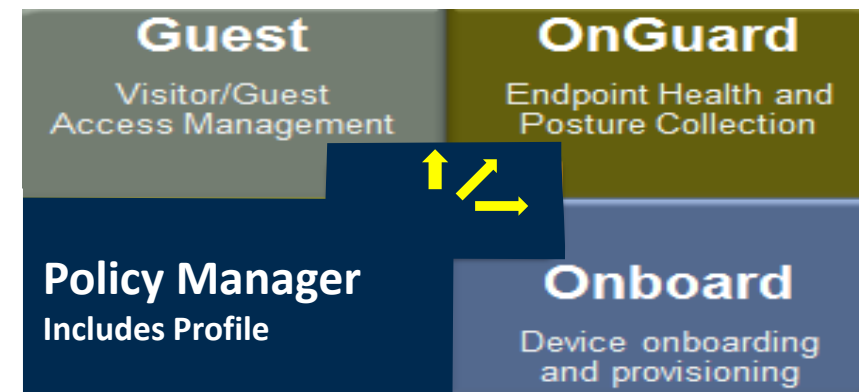






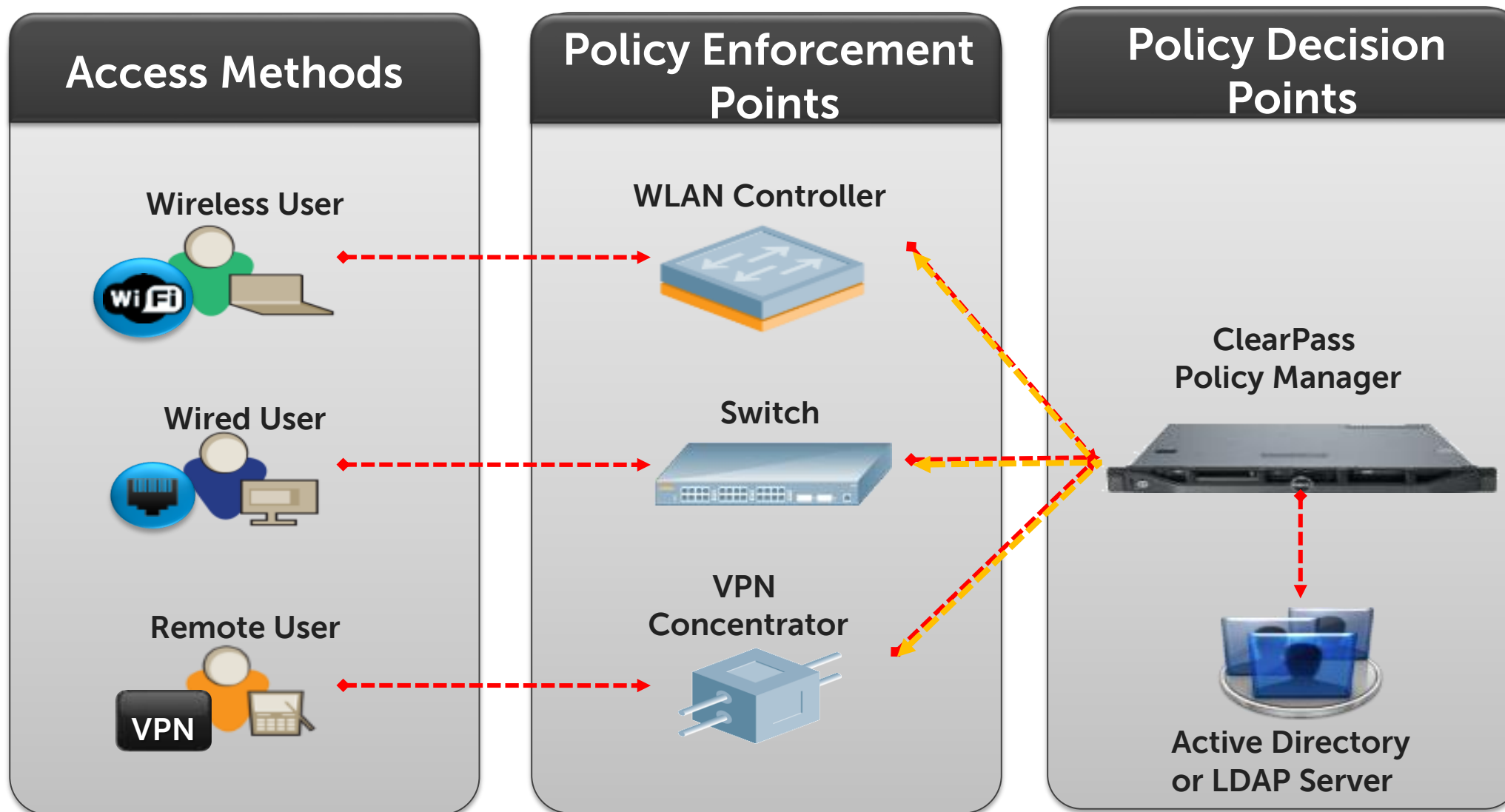
BYOD, GUEST and POLICY solution with vertical integration

- ✓ Support for Guest and BYOD
- ✓ Profiling & Posture checking, and 802.1x profile creation capability
- ✓ 3 HW appliances & 3 SW VM appliances
 - ✓ CPPM500
 - ✓ CPPM5000
 - ✓ CPPM25000
- ✓ Flexible License options

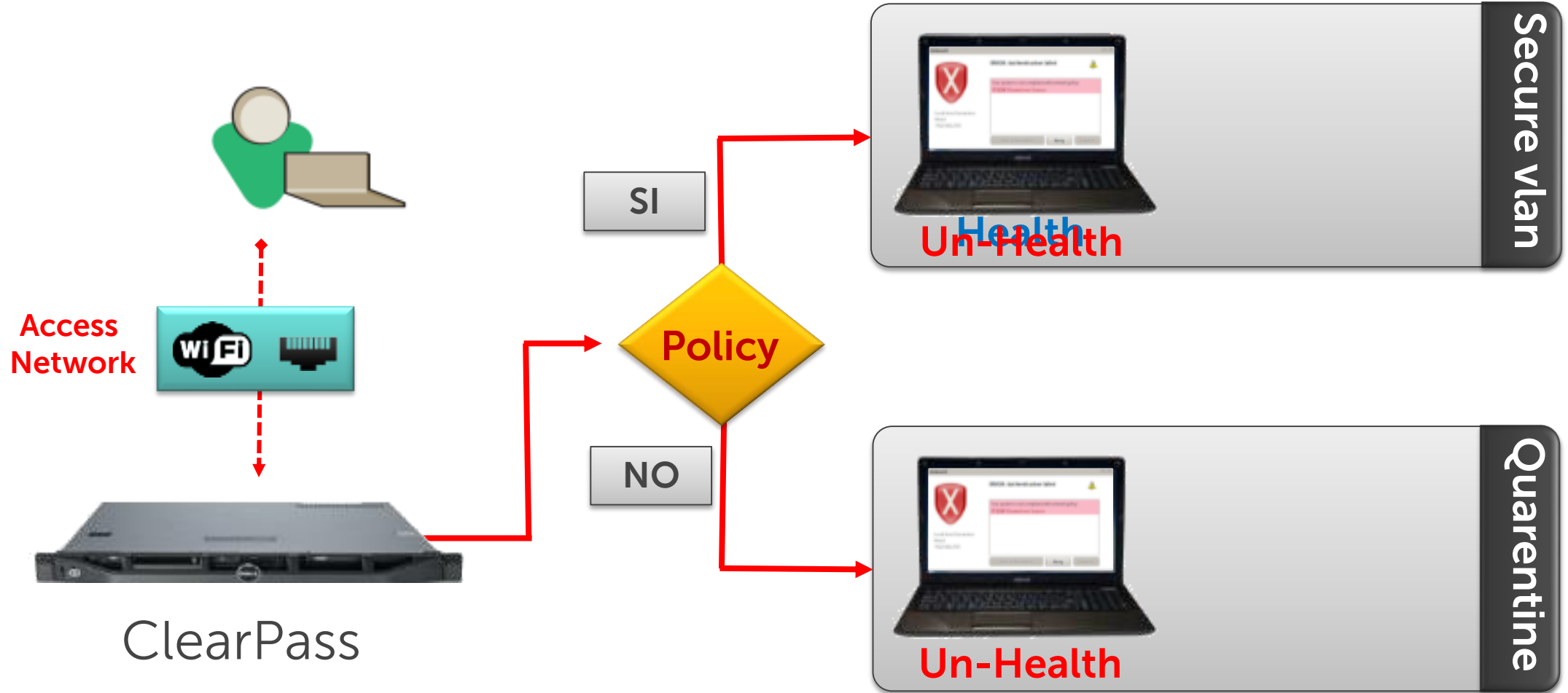


BYOD, GUEST and POLICY solution

with vertical integration



BYOD, GUEST and POLICY solution with vertical integration



EJEMPLO SOLUCIÓN RED DATACENTER



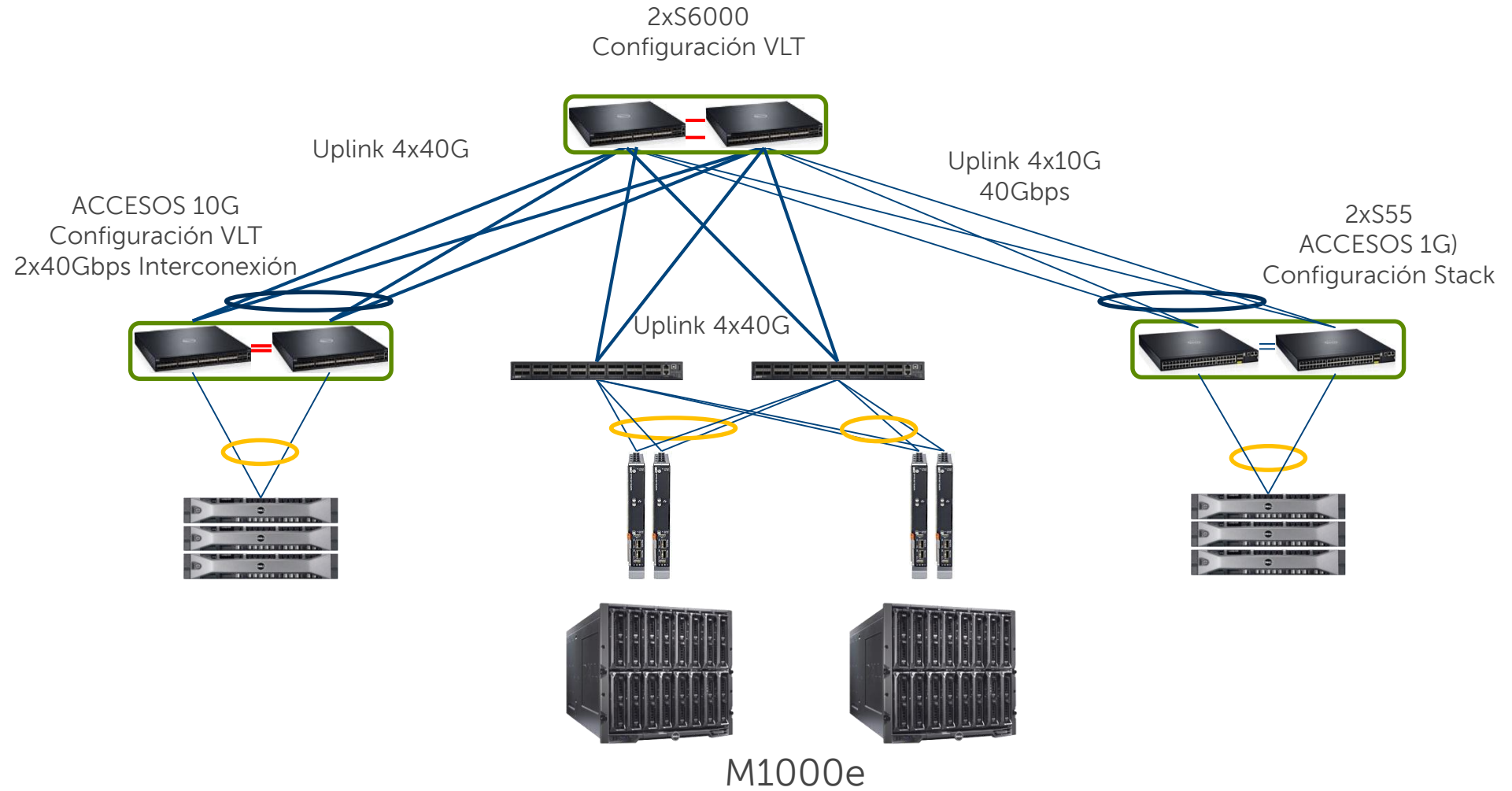
DATACENTER - DSC



Requisitos

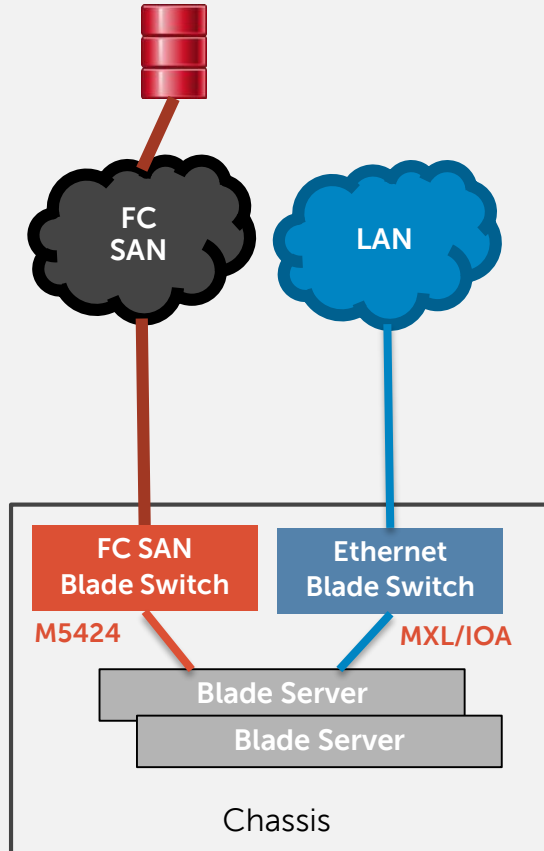
- Conexión de distintos tipos de Servidores 1G, 10G y 40G
- Uso de varios tipos de almacenamiento FC, FCoE y almacenamiento sobre Ethernet (iSCSI, NFS, NAS, ...)
- Demostración de PoD y su gestión
- Integración con soluciones ya existentes, con impacto mínimo en las migraciones
- Cloud, SDN, Sistemas de gestión global

Solución DataCenter Mixta



Network Convergence for Blade Servers

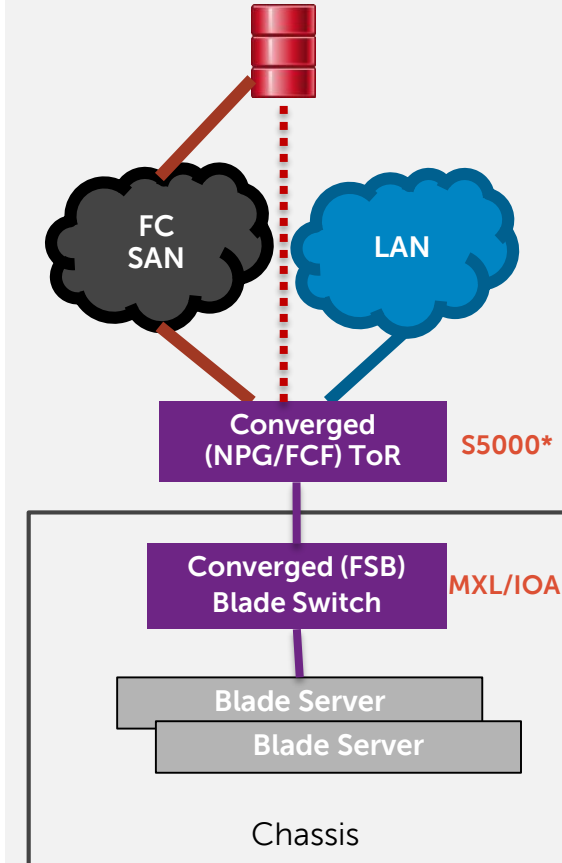
Traditional Model



- More infrastructure cost
 - NIC and HBA
 - SAN switch and Ethernet switch

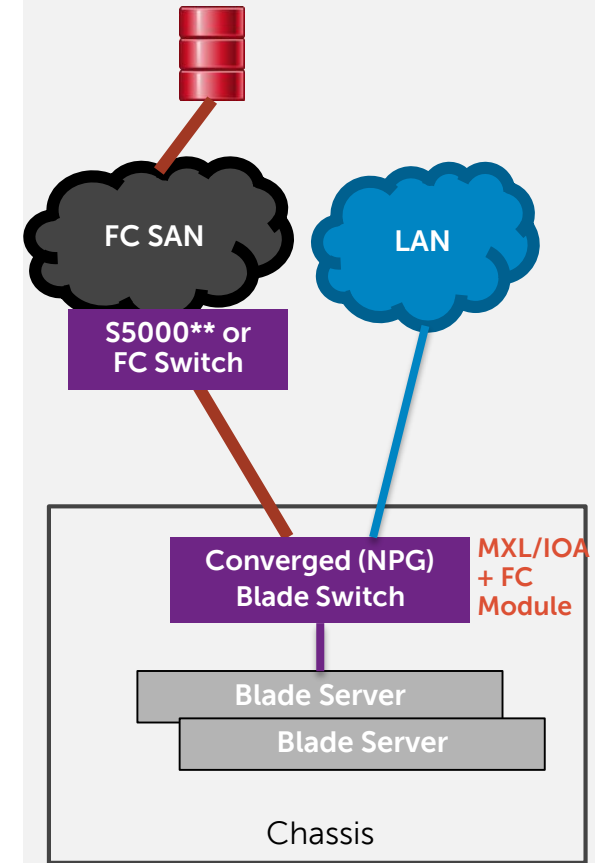
(Redundant SAN not shown for simplicity)
Eth FCoE FC

Converged Model - I



- Reduced infrastructure cost
 - Single CNA which enables logical NIC and HBA functions
 - Single converged ToR and Blade switches, which enable logical Ethernet and FC fabrics
- Ethernet and FC split at ToR

Converged Model - II



- Reduced infrastructure cost
 - Single CNA which enables logical NIC and HBA functions
 - Single converged blade switches, which enable logical Ethernet and FC fabrics
- Ethernet and FC split at the chassis edge

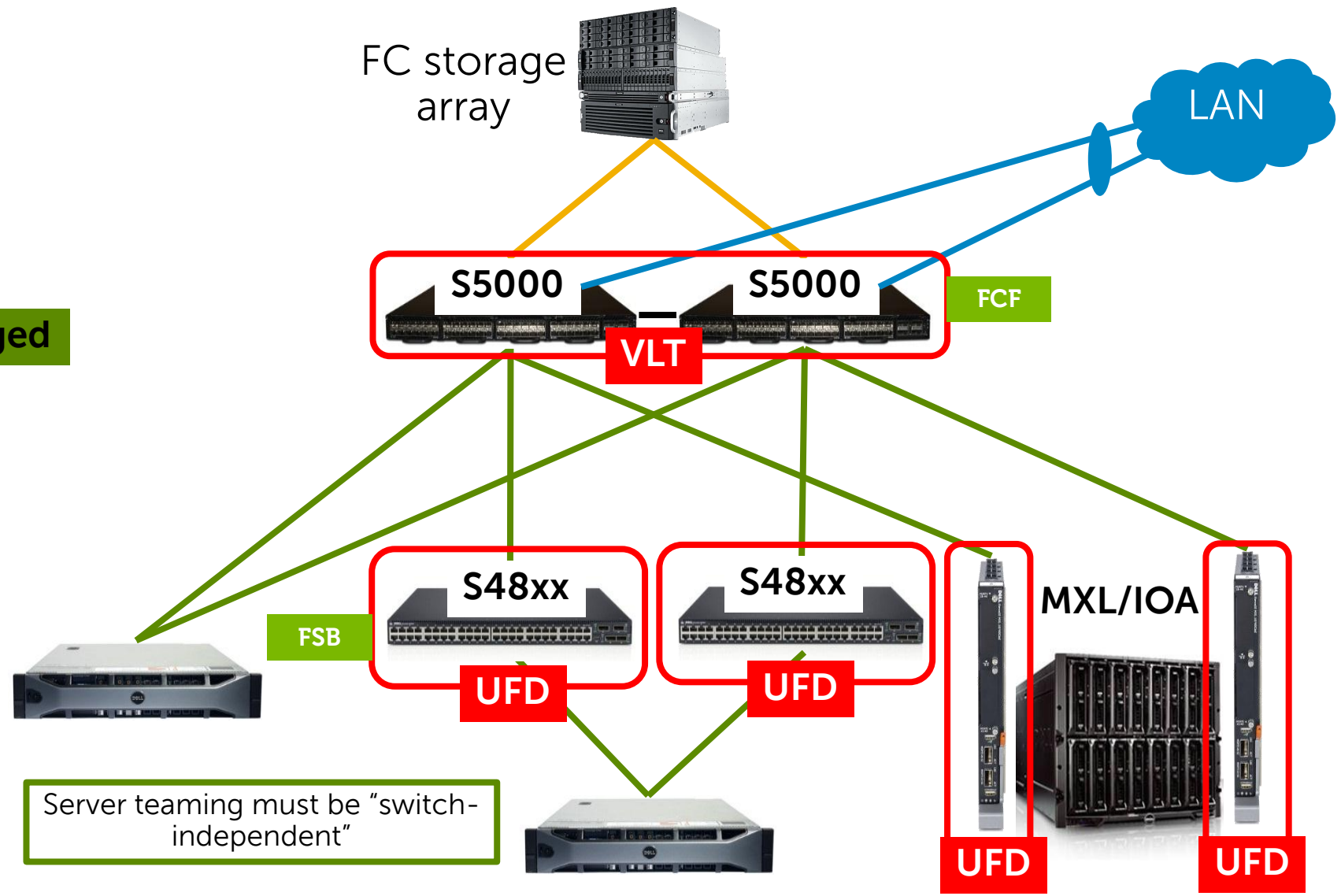


Multi-Hop FCoE Design

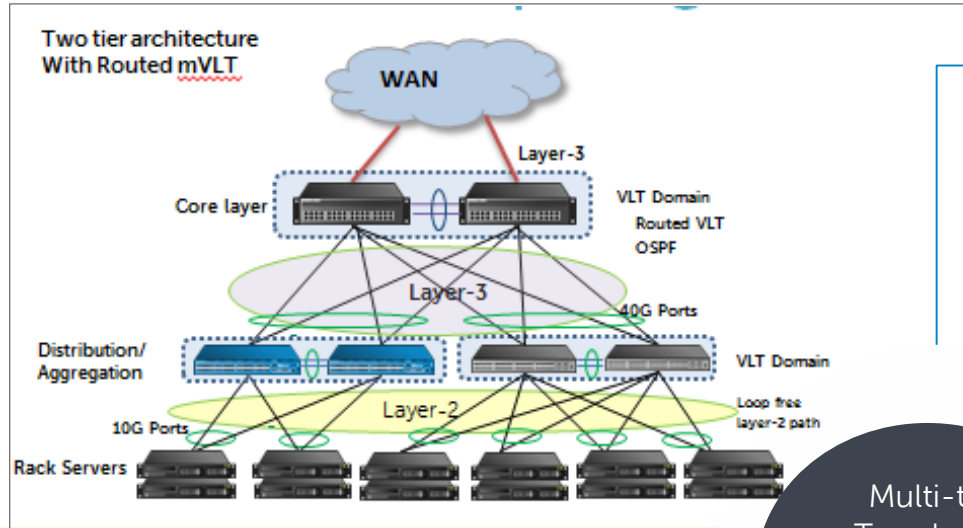
10GE

FC8

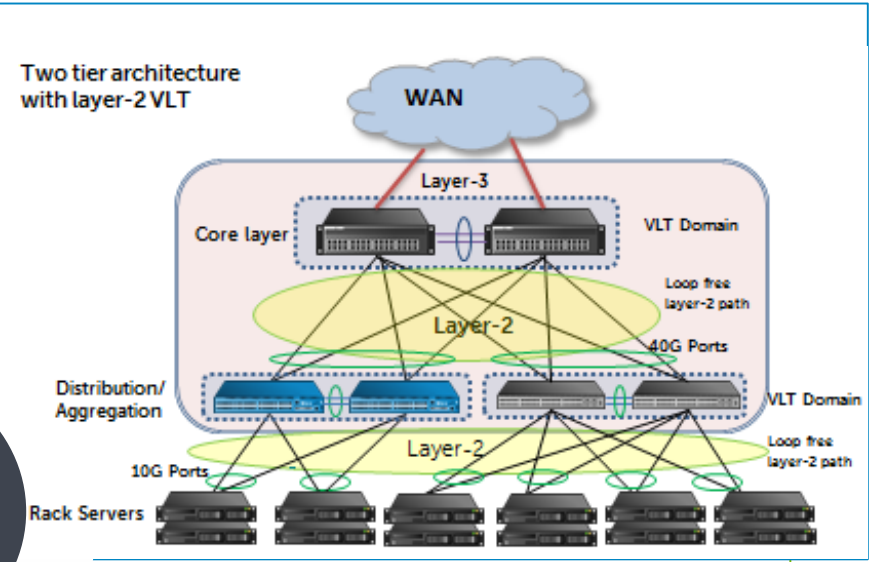
10GE converged



Active Fabric – Sample Design Templates

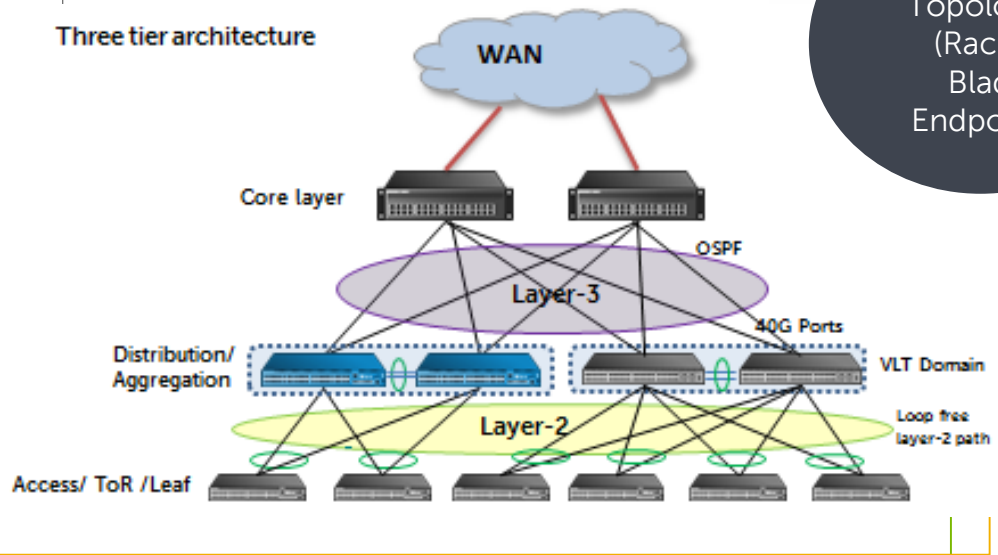


Two tier architecture with layer-2 VLT

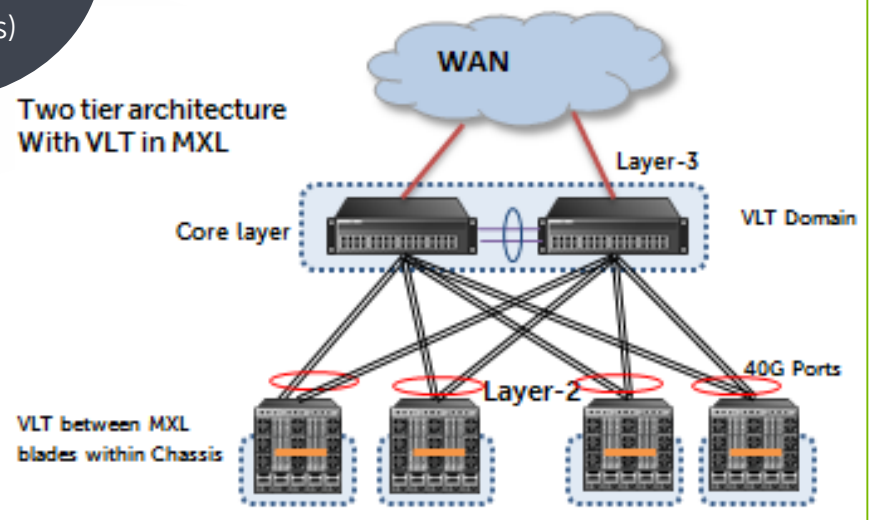


Multi-tier Topologies (Rack & Blade Endpoints)

Three tier architecture



Two tier architecture With VLT in MXL



Dell's portfolio of Active Fabric Manager products

Fabric switches



Z9500 10/40GbE Switch



S4810 1/10/40GbE Switch



S4820T 1/10/40GbE Switch



S5000 10/40GbE LAN/SAN Switch



S6000 10/40GbE Switch

Blade I/O switches

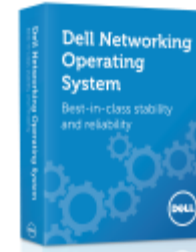


MXL 10/40GbE Blade Switch



PowerEdge M I/O Aggregator

Software



Dell Network Operating System 9



Active Fabric Manager



CONCLUSIONES



Dell Networking Product Portfolio

Campus & Data Center Chassis Switches



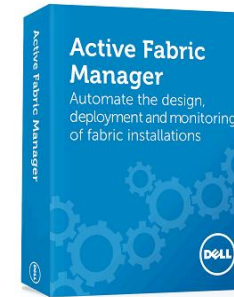
Blade I/O



Fabric & Access Switches



Wireless & BYOD



Comentarios finales

- Solución basada en protocolos estándar. Permite interoperabilidad con infraestructuras existentes
- Solución orientadas a proveer ventajas a los clientes: ahorros de Capex y Opex
- DELL Networking dispone de soluciones para las necesidades de hoy y los equipos están preparados para soportar las necesidades futuras
- SDN es una realidad, Os invito a la próxima sesión en la sala 19
- Campus, DataCenter, Convergencia, Blades, Wireless, BYOD... Las REDES habilitan los servicios y DELL es experta en soluciones, por lo que las redes están diseñadas y preparadas para ello.



¡¡¡GRACIAS!!!



The power to do more