SDN y Open Networking
La Revolución de la *'Conectocracia'*

Gonzalo de Antonio

Dell EMC Networking Sales Executive, Spain & Portugal

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Business needs are changing

Increasing complexity of application ecosystems is driving IT transformation
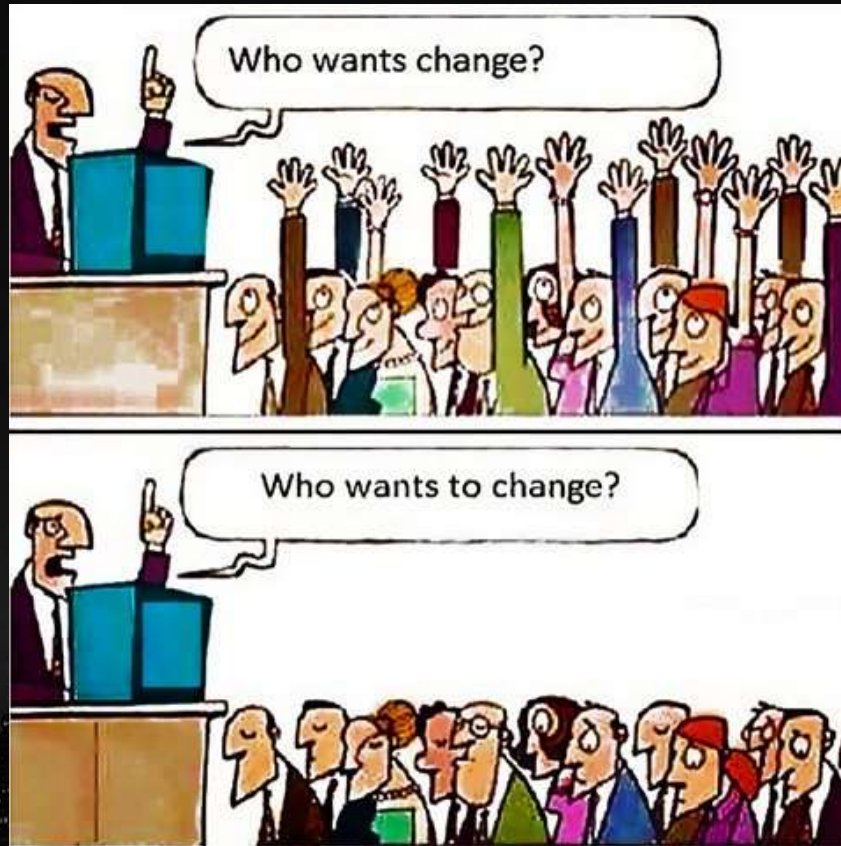
As application ecosystems become more complex, IT must transform to deliver greater

- EFFICIENCY
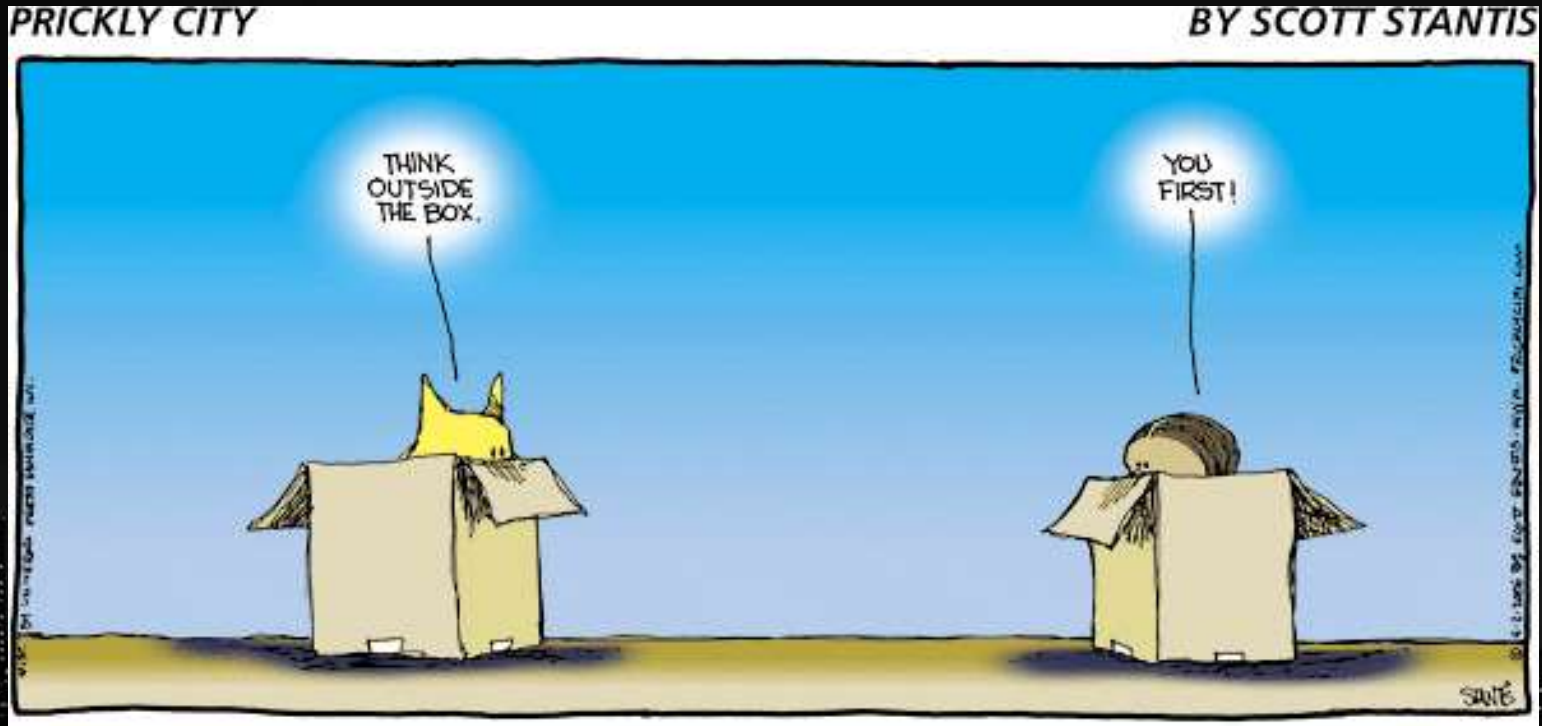
- PREDICTABILITY

- BUSINESS AGILITY

81%

agree that if they do not embrace IT TRANSFORMATION, their firm will no longer be COMPETITIVE in their market (10% increase vs. 2017)[1]
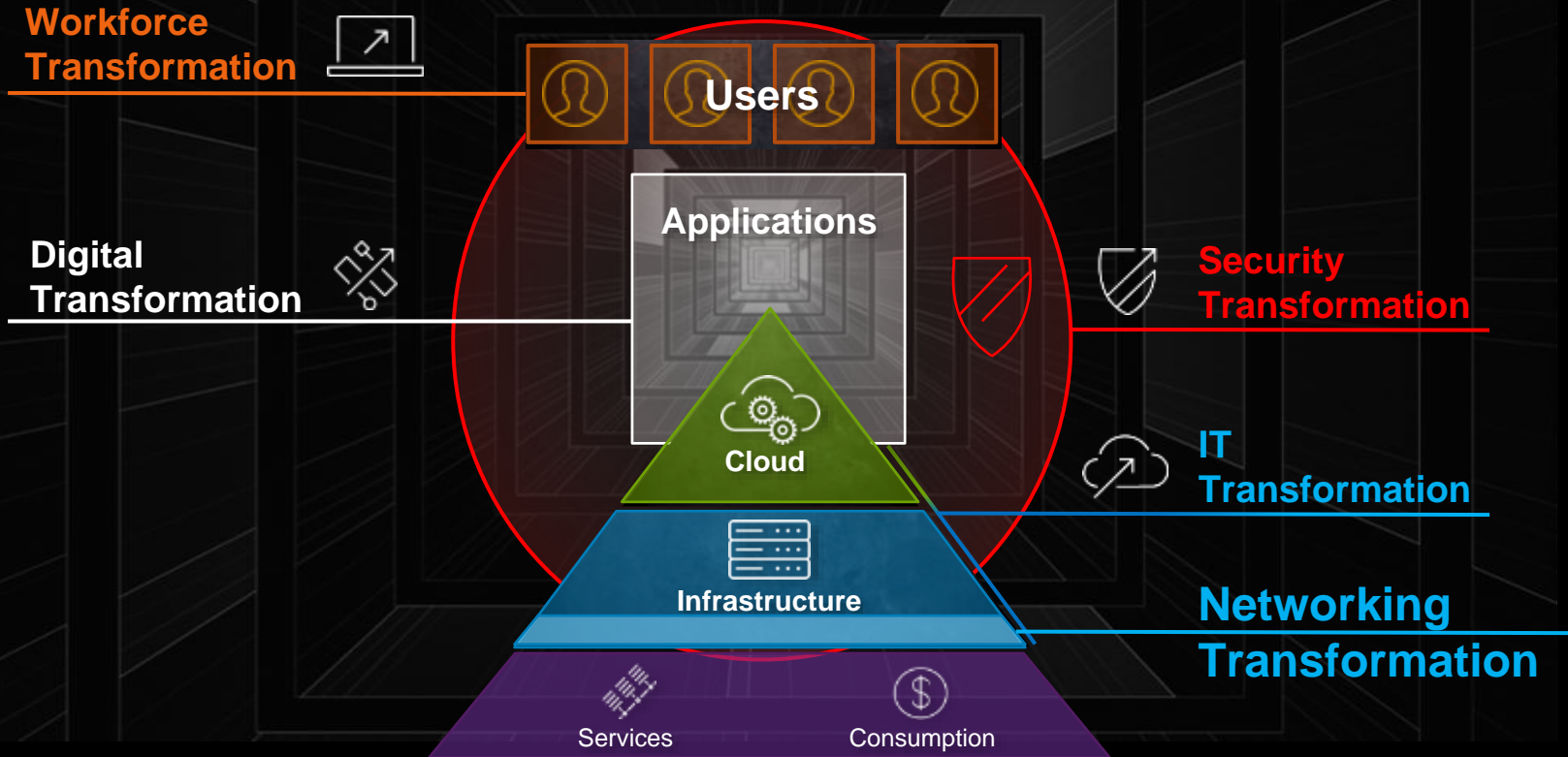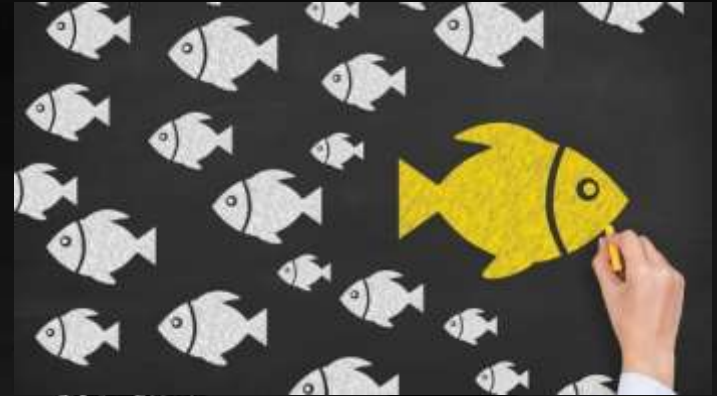
Are you ready for CHANGE???

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La Revolución de la Conectocracia

The network cannot be the obstacle to transform the business model

Data Center Networking **Trends**

25G in Rack Server Refresh Cycle (14G)	**200/400G Fabrics** Fabric transitions to 200G/400G (cost)	**Hyper convergence** Increase in east-west Network IO
Telemetry & Network Analytics Telemetry in Packet Headers (In-Band)	**Data Center Networking Trends**	**Software Defined Networking** Network Virtualization
Data Center Interconnects (DCI) Disruption by Merchant Silicon	**Multi-tenant Security** East-west Firewalling (service chaining)	**Machine Learning Clusters** High Performance Fabrics (ROCE)

Dell EMC is challenging the networking status quo

Traditional Networking

Open Networking

Proprietary architectures

Proprietary software

Proprietary ASICs

Investment protection

Innovation velocity

Business agility

Shifting the paradigm

CHANGE

Compute paradigm **shift** over last 20 years

The disaggregated server model changed the landscape

Mainframe /proprietary model

Digital
Sun
SGI
IBM

- Proprietary architectures & mgmt tools
- Limited apps
- Proprietary OS (e.g., Solaris, HP–UX, Ultrix)
- Proprietary CPUs (e.g., SPARC, PA-RISC, Alpha)

x86 servers model today

Dell
HP
(Compaq)
Others

- Orchestration/automation for distributed computing
- Application ecosystem
- Standard OS – hypervisors
  VMware | Windows Server System | Red Hat Linux | Suse
- Industry standard (X86 CPU)
  Intel | AMD

Benefits

- Open – Choice for customers
- Rapid Innovation at every layer (CPU, OS/Hypervisor, Applications, Middleware …)
- Best of Breed solution to meet your needs
- Rich ecosystem for all use cases
- Cost-effective solutions

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Dell EMC 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

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Standard orchestration and automation tools

Optional SDN / NVO controllers

Any OS

Open standard hardware

Merchant silicon

CHANGE

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Making the **open networking shift** work for you
Leverage open, innovative and best-of-breed solutions for the data center

Why Open Networking?

Array of Choices

Several options to choose the right OS for your workload

Open Architecture

A scale-out leaf-spine software-defined architecture instead of 3-tier traditional networks

Re-purpose HW & SW

HW can be replaced to take advantage of merchant silicon inventions keeping the same SW. SW can be replaced keeping the same HW.

Standardize HW

Opportunity to standardize on HW not requiring fork-lift upgrade

Lower TCO

Reduced CapEx and OpEx compared to traditional Incumbent infrastructure

Investment Protection

Open and agile scale-out deployment to address future growth

Evolution in Open Networking

Traditional Networking

Networking OS

+

HW platforms

Aggregated HW and NOS

Open Networking 1.0

Networking OS

HW platforms

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Disaggregated HW and NOS

Open Networking 2.0

Micro-Applications

Networking BASE OS

HW platforms

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Disaggregated HW and NOS. Further disaggregation of NOS and micro-apps
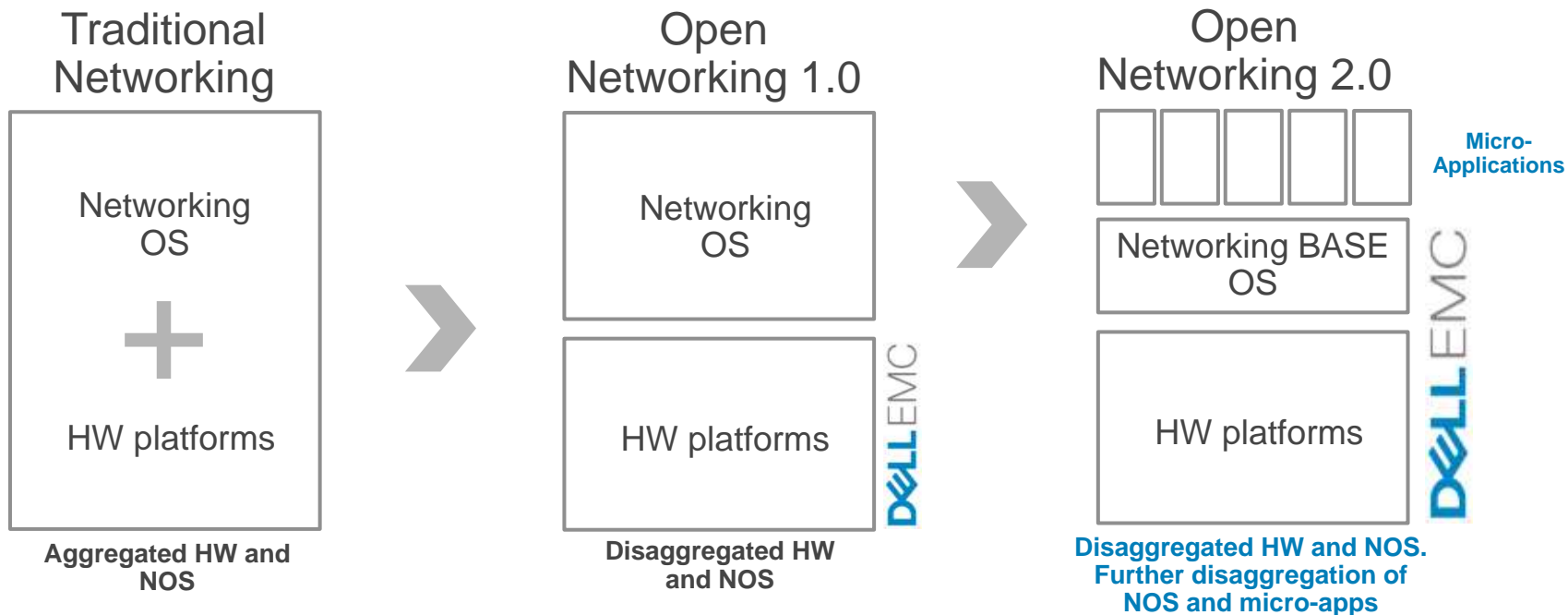
| Last several decades | Since 2014
Dell was the first to offer this model | 2018 onwards
Dell is the first to offer this model |

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The most complete and open SDN framework

For the Data Center

Open Networking Spectrum

More converged → ← More disaggregated

1. Dell EMC networking stack: Full Dell EMC service and support for hardware and software

2. Open networking stack: Dell EMC service and support with warm hand-over to software partner

3. Disaggregated open source stack: Dell EMC service and support for base OS and hardware

4. Disaggregated open source stack: Dell EMC service and support for hardware elements

DELLEMC ProSupport

OS10 Enterprise Edition

- Xbig switch networks
- CUMULUS
- ip infusion
- Pluribus NETWORKS

DELLEMC ProSupport

OS10 Open Edition — Open Switch

Quagga | Open Switch | SONIC

DELLEMC ProSupport

DELLEMC Switching Platforms
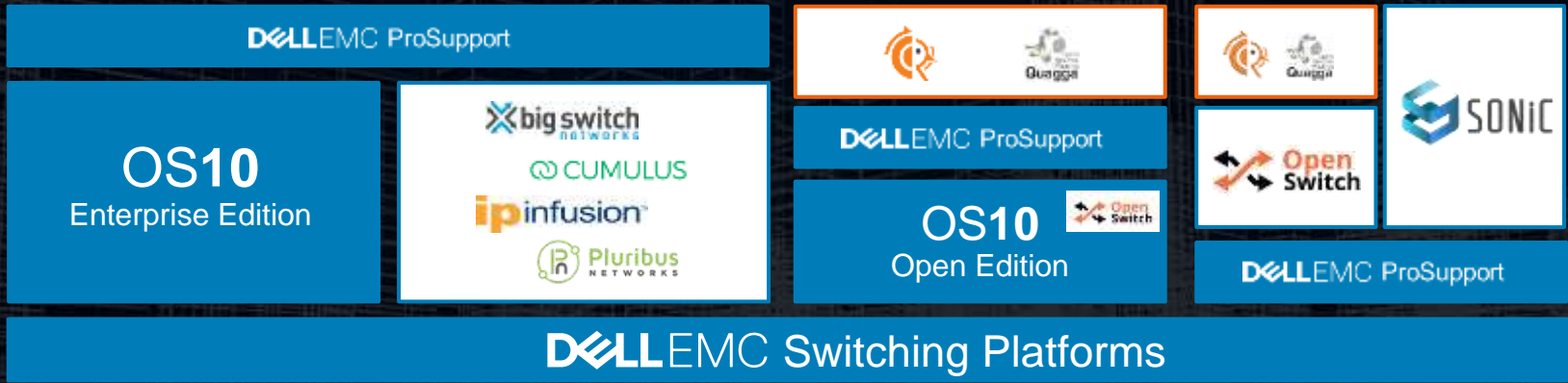
OS10 Open Edition = OpenSwitch

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Executing on our vision of an open network
End-to-end

Gartner
Data Center Magic Quadrant Data Center Networking

All organizations should shortlist Dell EMC,
particularly those interested in open networking

2018

2018

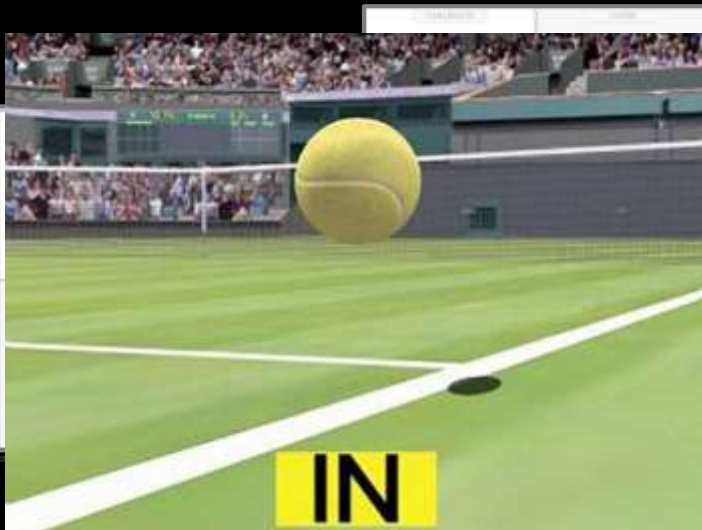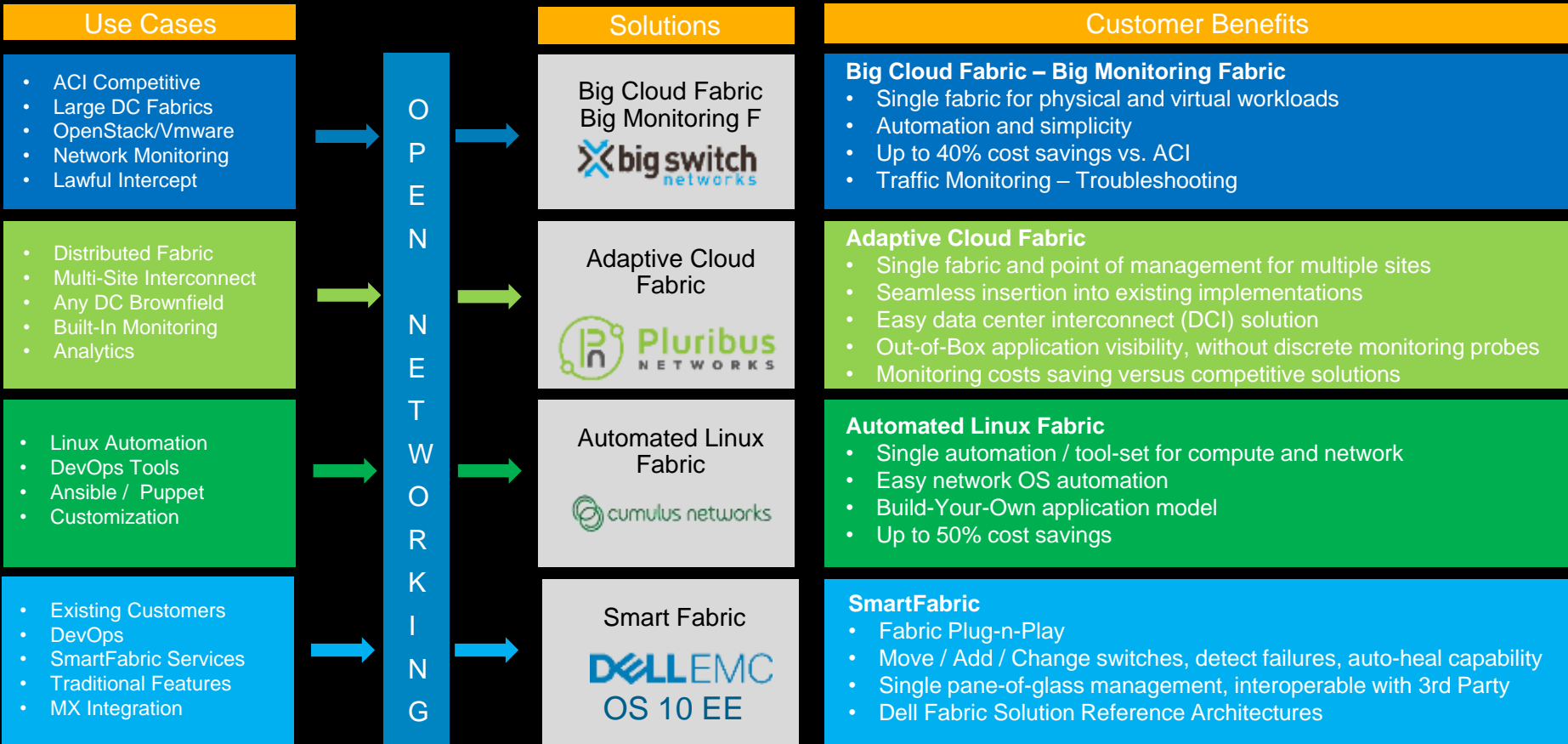**2015**

Dell EMC Networking Open Networking SDN Offerings

Use Cases

ACI Competitive
- ACI Competitive
- Large DC Fabrics
- OpenStack/Vmware
- Network Monitoring
- Lawful Intercept

- Distributed Fabric
- Multi-Site Interconnect
- Any DC Brownfield
- Built-In Monitoring
- Analytics

- Linux Automation
- DevOps Tools
- Ansible / Puppet
- Customization

- Existing Customers
- DevOps
- SmartFabric Services
- Traditional Features
- MX Integration

OPEN NETWORKING

Solutions

Big Cloud Fabric Big Monitoring F
big switch networks

Adaptive Cloud Fabric
Pluribus NETWORKS

Automated Linux Fabric
cumulus networks

Smart Fabric
DELLEMC
OS 10 EE

Customer Benefits

Big Cloud Fabric – Big Monitoring Fabric
- Single fabric for physical and virtual workloads
- Automation and simplicity
- Up to 40% cost savings vs. ACI
- Traffic Monitoring – Troubleshooting

Adaptive Cloud Fabric
- Single fabric and point of management for multiple sites
- Seamless insertion into existing implementations
- Easy data center interconnect (DCI) solution
- Out-of-Box application visibility, without discrete monitoring probes
- Monitoring costs saving versus competitive solutions

Automated Linux Fabric
- Single automation / tool-set for compute and network
- Easy network OS automation
- Build-Your-Own application model
- Up to 50% cost savings

SmartFabric
- Fabric Plug-n-Play
- Move / Add / Change switches, detect failures, auto-heal capability
- Single pane-of-glass management, interoperable with 3rd Party
- Dell Fabric Solution Reference Architectures