Netzwerkautomatisierung mit Dell SmartFabric Services und VMware ESXi

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- Reasons for Automation
- Dell´s Vision of Automation
- Fabric Design Center
- NW Automation with SmartFabric Services and ESX
- SmartFabric Director
- Networking Products for SmartFabric

Data era putting pressure on IT

Balancing needs of Data and Operations

Data

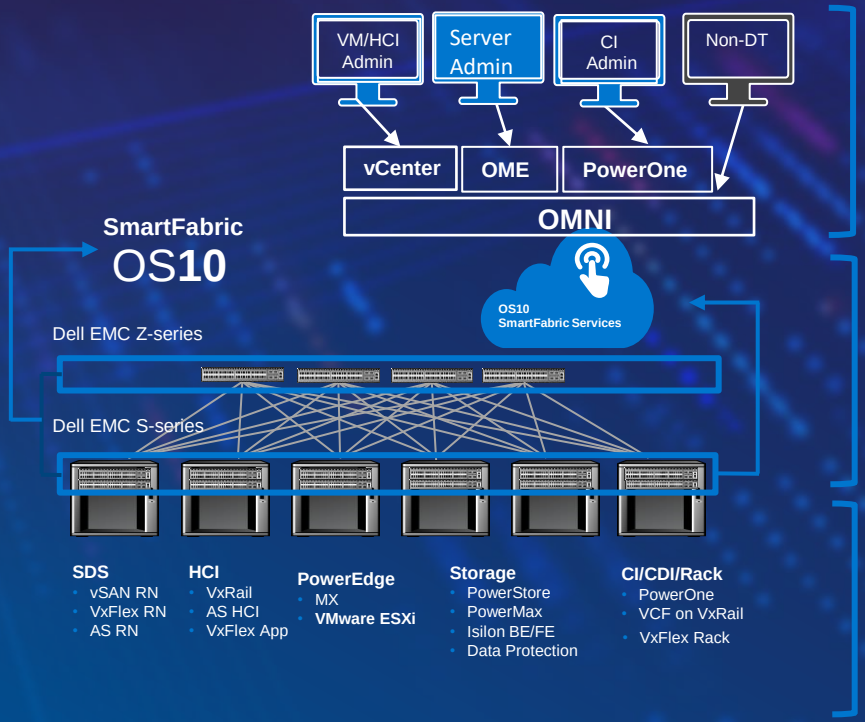
Infrastructure

Divergent Investments to Meet Both Needs

Operations

DELL Technologies

SmartFabric Services – Our vision on IT



User experience

- Simple to orchestrate and manage
- One application, same look and feel for Dell Technologies solutions
- Standalone App for other solutions e.g. KVM, storage only

Fabric Operations

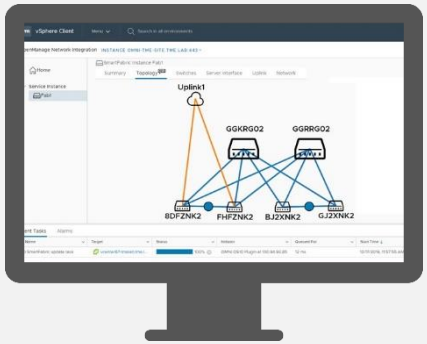
- Self-forming fabric
- Deployment consistency and predictability – two switch to max scale
- Fabric level lifecycle management & operations
- Zero touch fabric expansion
- Dynamic switch replacement

Solutions Operations

- Dynamic onboarding of DT/partner devices
- Dynamic underlay provisioning for virtual environments
- Qualified for typical use cases
- Faster time to productivity, better overall customer experience
- Natural fit for pay as you grow solutions

The Dell Technologies advantage

Centralized. Simple & Automated. Holistic Dell solution.



Centrally Managed from vSphere

Solution: PowerSwitch S/Z Series interconnect with **SmartFabric OS10**

Automate 98% of network tasks

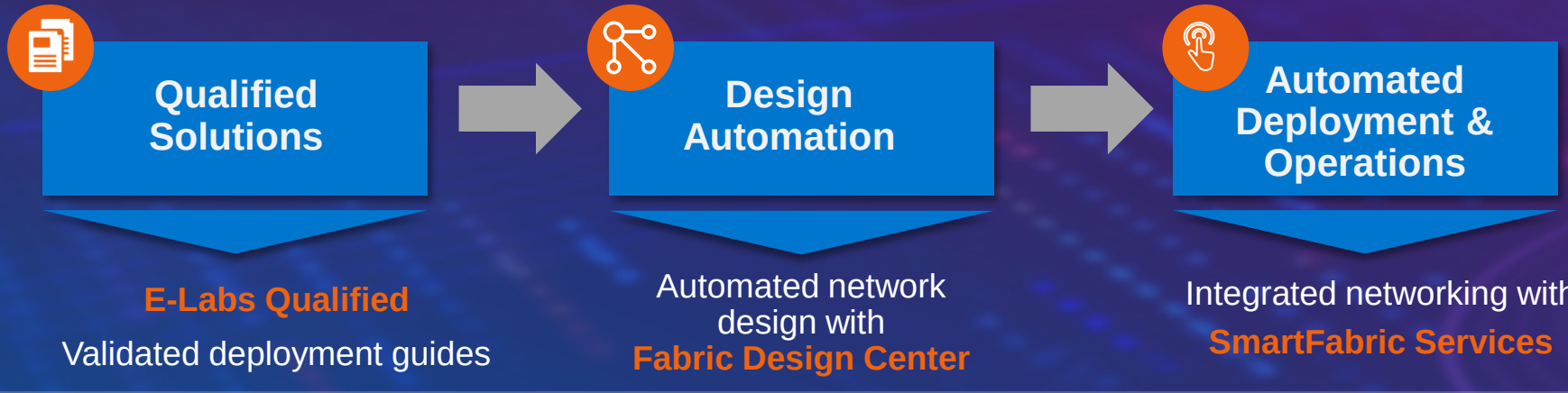
Managed as unified infrastructure

Deep integration removes complexity and reduces risk

Connects to core network with a few ports using industry standard protocols

More agile, reliable and simple

Enabling Turnkey Fabrics with Dell EMC Networking



DIY Fabrics

Ideal for Organizations depending on traditional network deployment models

DevOps Integration

Ideal for Organizations leveraging DevOps driven network operations

Automated Ansible Playbooks to kickstart Ansible integration

Solution Integration

Ideal for Organizations looking for simplified networking that is deployed and managed as an extension of the Compute and Storage Infrastructure

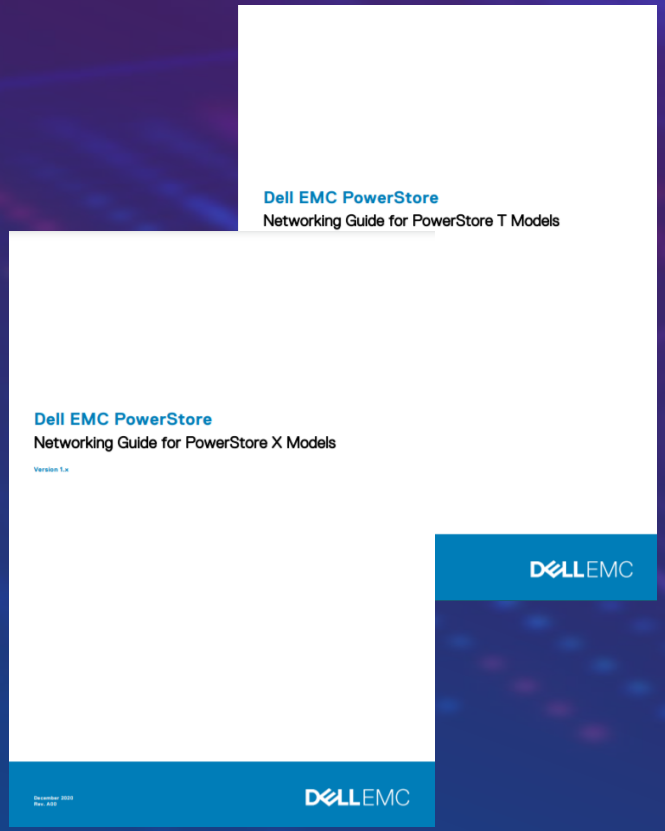
Deployment Guides

Deployment Guides for Dell Technology

Prooven Solutions

Development of collateral:

- Reference Architecture Guides
- Deployment Guides and Videos
- Application Notes
- Technical White Papers
- https://infohub.delltechnologies.com/



Deployment Guides for Dell Technology

Step-by-Step Guides

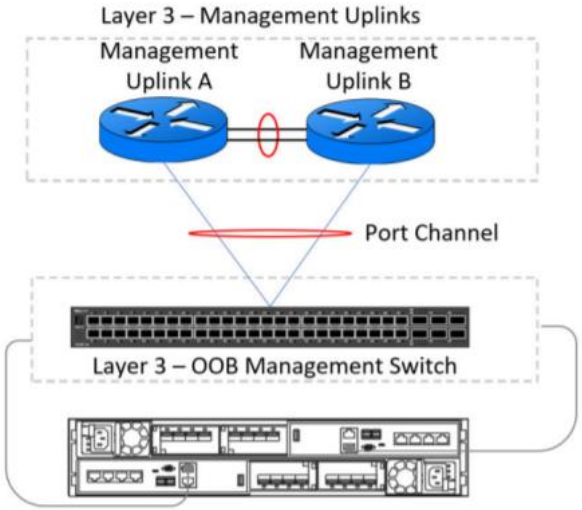


Figure 10. Out-of-band management switch uplink connections

Table 30. Example of running-configuration on ToR switches

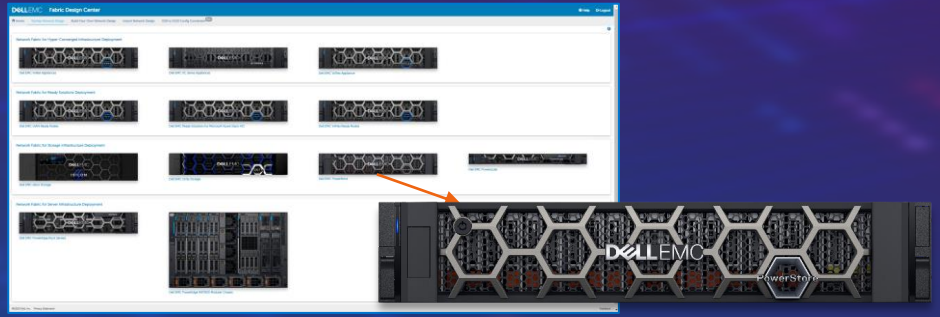
Switch1	Switch 2
! Version 10.4.1.4 ! Last configuration change at Mar 19 04:24:55 2020 ! snmp-server contact http://www.dell.com/support hostname Switch1 interface breakout 1/1/25 map 100g-1x interface breakout 1/1/26 map 100g-1x interface breakout 1/1/29 map 100g-1x interface breakout 1/1/30 map 100g-1x username admin password 6q9QBeYjZ $jfxzVqGhkxX3smxJSH9DDz7/3OJc6m5wjF8nnLD7/ VKx8SloIhp4NoGZs0I/ UNwh8WVuxwfd9q4pWIgNs5BKH. role sysadmin ntp server 100.0.10.200 iscsi enable iscsi target port 860 iscsi target port 3260 spanning-tree mode rstp spanning-tree rstp priority 40960 aaa authentication login default local aaa authentication login console local ! class-map type application class-iscsi ! policy-map type application policy-iscsi ! interface vlan1 description Internal_Network no shutdown ! interface vlan100 description Management_Network no shutdown ! interface vlan200 description Storage_Network no shutdown ! interface vlan400 description vMotion_Network no shutdown !	! Version 10.4.1.4 ! Last configuration change at Mar 19 04:24:55 2020 ! snmp-server contact http://www.dell.com/support hostname Switch1 interface breakout 1/1/25 map 100g-1x interface breakout 1/1/26 map 100g-1x interface breakout 1/1/29 map 100g-1x interface breakout 1/1/30 map 100g-1x username admin password 6q9QBeYjZ $jfxzVqGhkxX3smxJSH9DDz7/3OJc6m5wjF8nnLD7/ VKx8SloIhp4NoGZs0I/ UNwh8WVuxwfd9q4pWIgNs5BKH. role sysadmin ntp server 100.0.10.200 iscsi enable iscsi target port 860 iscsi target port 3260 spanning-tree mode rstp spanning-tree rstp priority 45056 aaa authentication login default local aaa authentication login console local ! class-map type application class-iscsi ! policy-map type application policy-iscsi ! interface vlan1 description Internal_Network no shutdown ! interface vlan100 description Management_Network no shutdown ! interface vlan200 description Storage_Network no shutdown ! interface vlan400 description vMotion_Network no shutdown !

Fabric Design Center

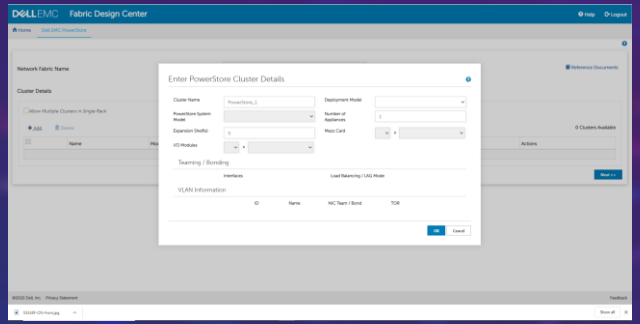
Fabric Design Center

Automated Network Design, Deployment and DevOps Integration

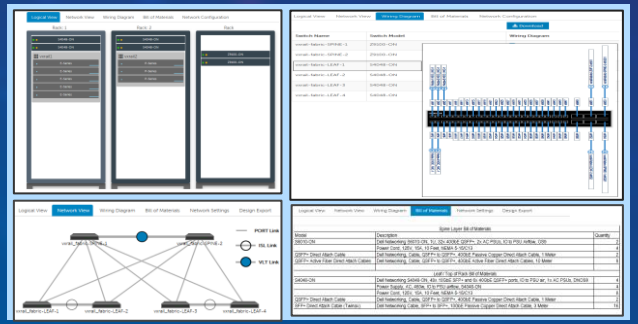
1. Choose the Solution reference architecture



2. Size the Solution Deployment



3. Get the complete Network design, wiring diagrams & bill of materials



4. Download configurations and deploy network fabric or download Ansible Playbooks for DevOps Integration

FDC a Network Design Wizard

fdc.emc.com

Ansible

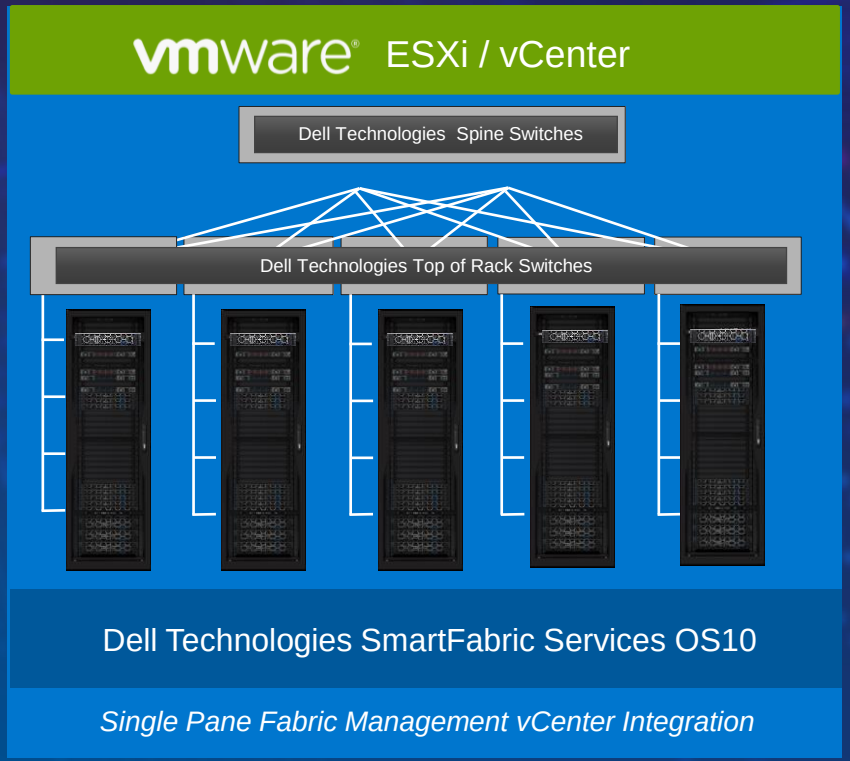
Demo Video for PowerStore Design using FDC

DELL Technologies

NW Automation with SmartFabric Services

SmartFabric Services for VMware ESXi

Dynamic Network Provisioning and vCenter Integrated Operations



Faster time to Productivity

Zero touch fabric deployment

Protection from human error - predictable and repeatable fabric experience

Automation at Scale

Provides 100% fully automated, zero-touch day 2 operations for VMware ESXi virtual networks

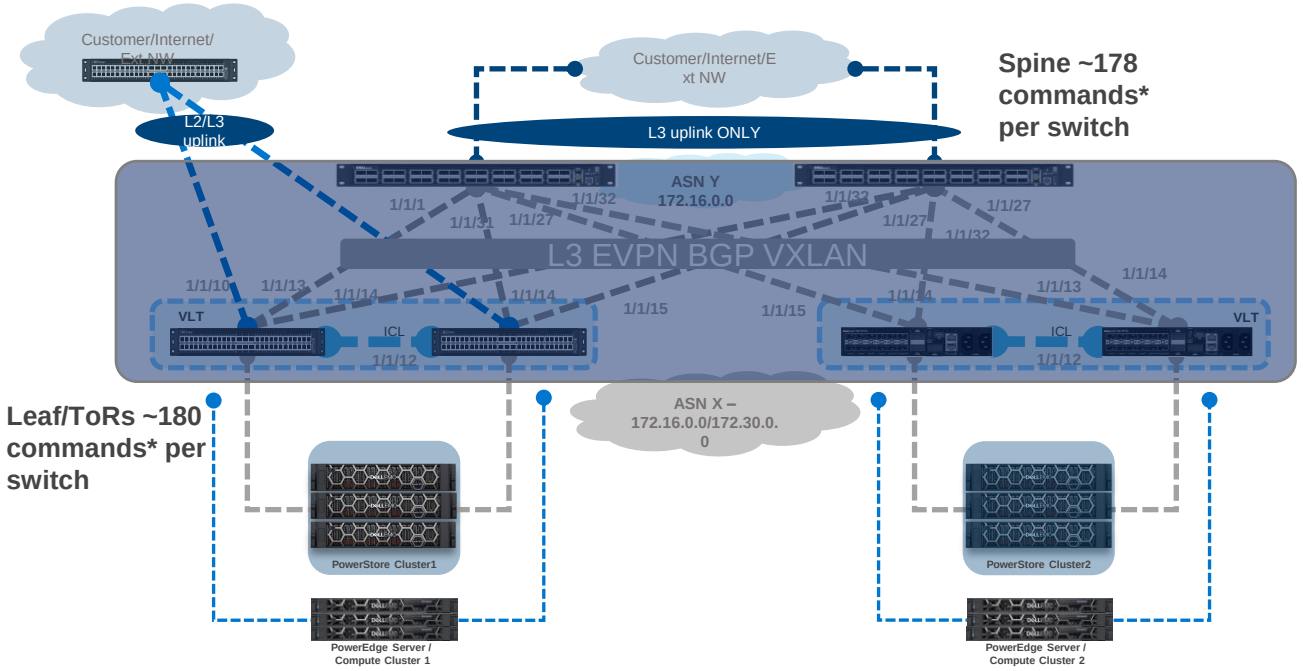
Greater Expandability

Single or multi-rack rack workload clusters in a single site

Connect non-ESXi devices to the same fabric

Automated fabric deployment with SmartFabric Services

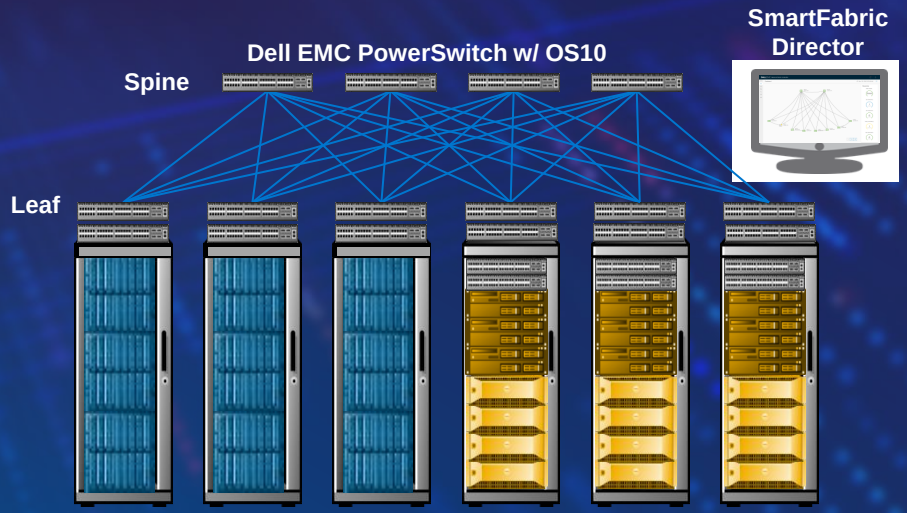
Single Command to deploy a High Performance, Low Latency Ethernet fabric for PowerStore



Automated Data Center Fabric

- Install switches and complete wiring connections
- Configure out of band management interfaces
- Execute single command on each switch to select SmartFabric Services deployment
- Switches reboot and join the automated fabric

Simplifying network complexity



4 spine x 6 leaf fabric configuration using CLI

Switch type	# of CLI to configure	# of switches	Total CLI
Spine switch	561	4	2244
Leaf switch	228	6	3648
		Total	5892

SmartFabric configuration steps = 10

SmartFabric Services solution

- Create fabric in 3 easy steps resulting in 98% reduction of configuration steps*
- Deployment of a fully functional fabric in just a few minutes
- Elimination of manual errors and misconfigurations

Deploying Data Center Fabric with SmartFabric Services

- Enable SmartFabric Services on Leaf Nodes with role as leaf specifying the VLTi Interfaces
- Enable SmartFabric Services on Spine Nodes with role as spine

- This configuration is repeated on all “Leaf” nodes.
- **ONLY** “Leaf” nodes can assume the “Master” role.
- 1/1/12 is the VLTi link

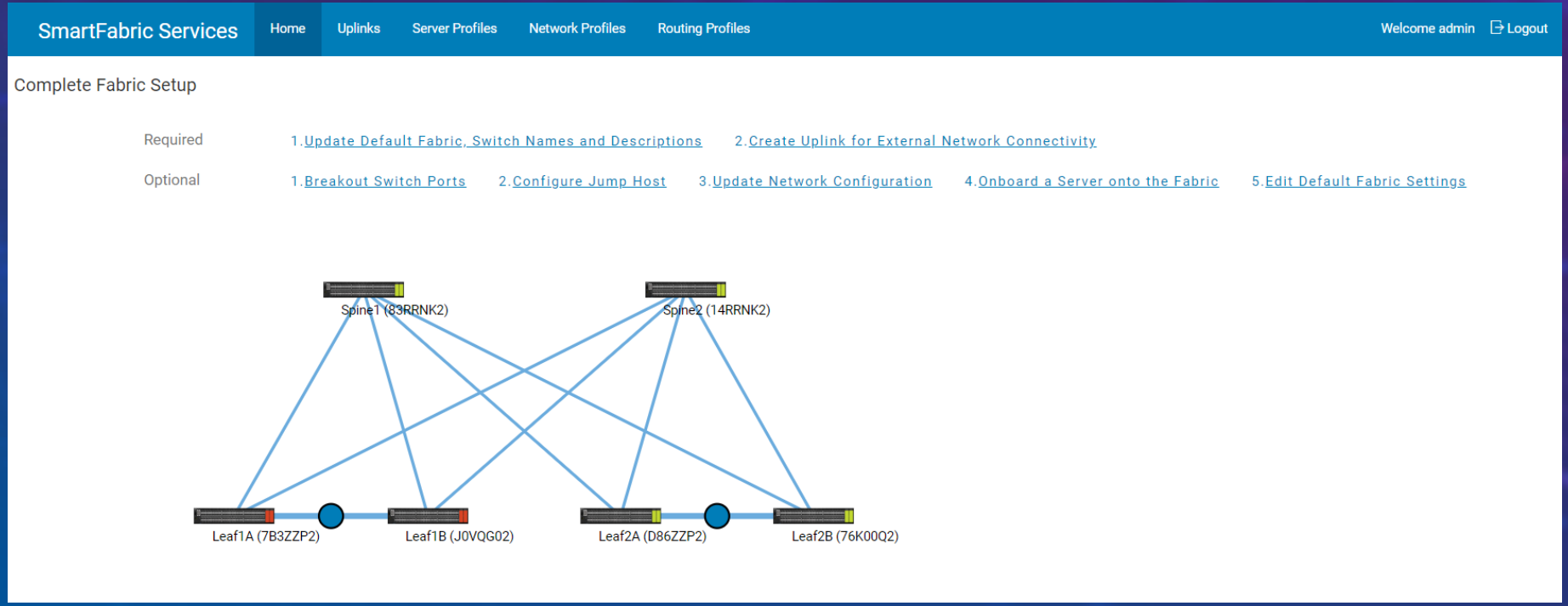
```
mk-s4112F-02(config)# smartfabric l3fabric enable role LEAF vlti ethernet 1/1/12


Reboot to change the personality? [yes/no]:
```

- This configuration is repeated on all “Spine” nodes.

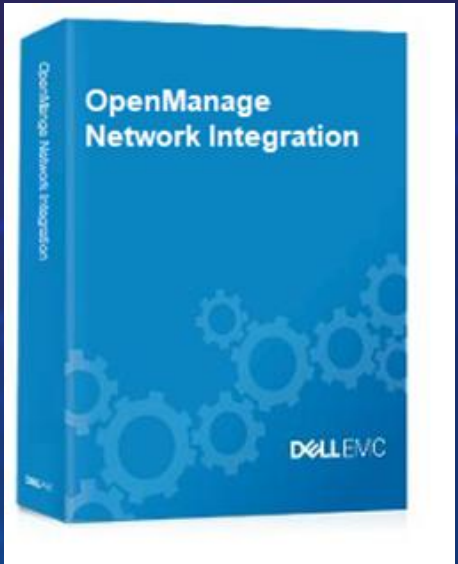
```
mk-s5232F-01(config)# smartfabric l3fabric enable role spine

Reboot to change the personality? [yes/no]:
```

SFS – SmartFabric Services

SmartFabric Services (SFS) User Interface (UI) via Browser



OpenManage Network Integration (OMNI)



- OpenManage Network Integration (OMNI) is designed to be the user interface to manage and operate one or more SmartFabric Instances.
- OMNI UI can be accessed directly via a web browser or through vCenter UI
- When registered with VMware vCenter, OMNI enables single pane of management for the physical network fabric and the VMware virtualization environment through vCenter.
- OMNI is delivered as a virtual machine, and is available to download from the Dell Support Portal @ https://www.dell.com/support/home/us/en/04/product-support/product/dell-openmanage-network/drivers
- OMNI is available at no additional cost to the customer.

Key Capabilities of OMNI include

- Zero-Touch provisioning of the physical network for changes in the virtual networking environment
- Manage and Operate multiple instances of SmartFabric Services
  - Manage Uplink connectivity from the fabric
  - Manage Onboarding and Policies for Non Integrated devices like bare metal servers, ready nodes, storage devices etc.
  - Life Cycle Management of the fabric – fabric upgrades, node replacement, etc.

SmartFabric Services Integrated Solutions

Automated Network Fabrics for VxRail, MX, Isilon and PowerOne environments

VxRail

Automates and simplifies networking for VxRail HCI deployments

Integrated with VxRail Manager

MX

Automated network fabric for dynamic PowerEdge MX I/O modules

Integrated with Dell EMC Open Manage

Isilon Backend

Automated, integrated fabrics for Isilon scale-out NAS backend network

Integrated with Dell EMC Isilon OneFS

Autonomous Network Fabric

Integrated with PowerOne Controller

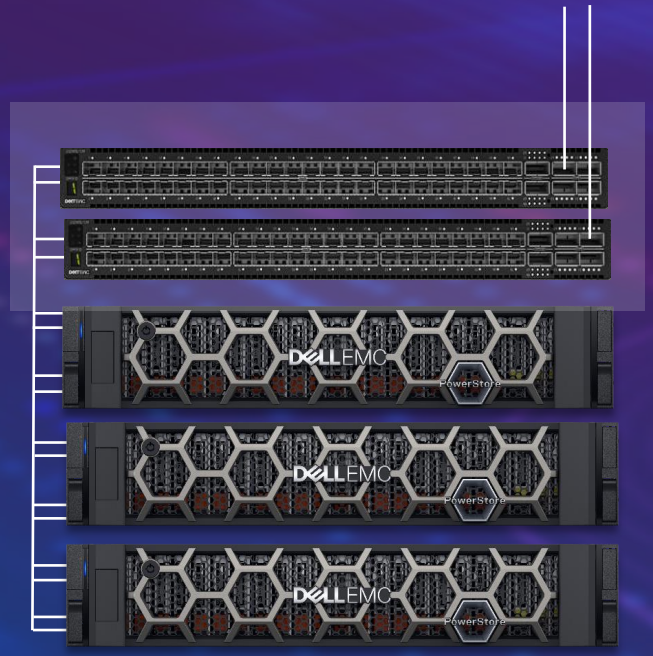
Dynamic Discovery of PowerStore Nodes in the Fabric

SFS automatically created a single rack VLT fabric or a multi rack leaf and spine fabric

Configure uplinks (Layer 2 or Layer 3) from PowerStore fabric interconnect to customer network

Rack and Stack PowerStore Nodes and power them on

PowerStore Nodes are automatically discovered on the fabric based on **LLDP**



Discovered PowerStore Nodes have to be Onboarded through OMNI for Network Connectivity

Enjoying operational simplicity with SmartFabric Services

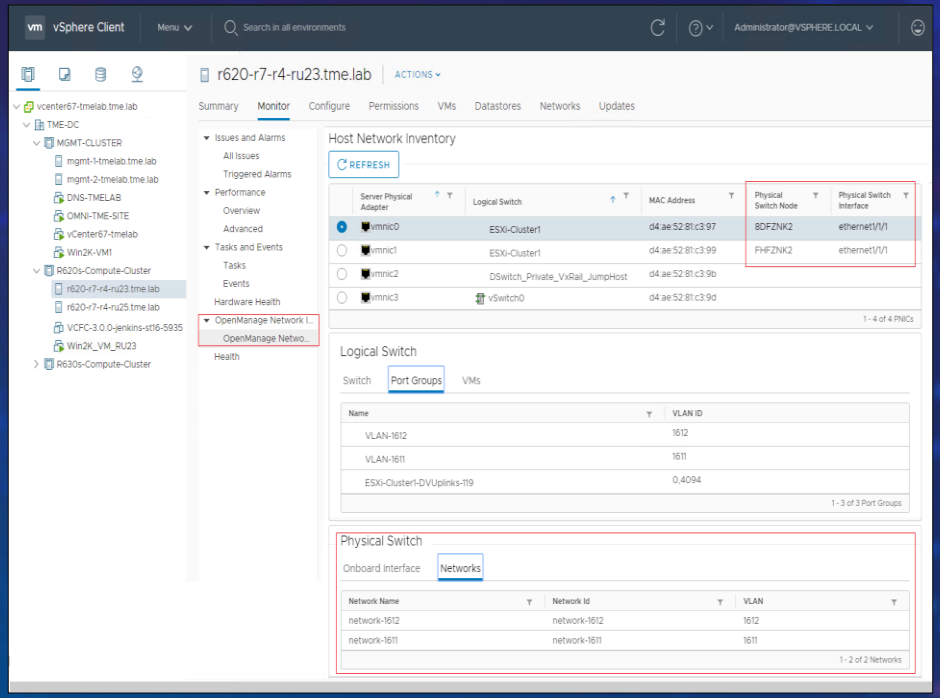
Deployment

1. Enable SFS on Dell EMC Switches, connect to external network
2. Deploy OMNI and register with VMware vCenter
3. Onboard PowerStore Nodes onto the fabric using vCenter
4. Use Initial Configuration Wizard in PowerStore Manager to complete PowerStore Cluster Deployment

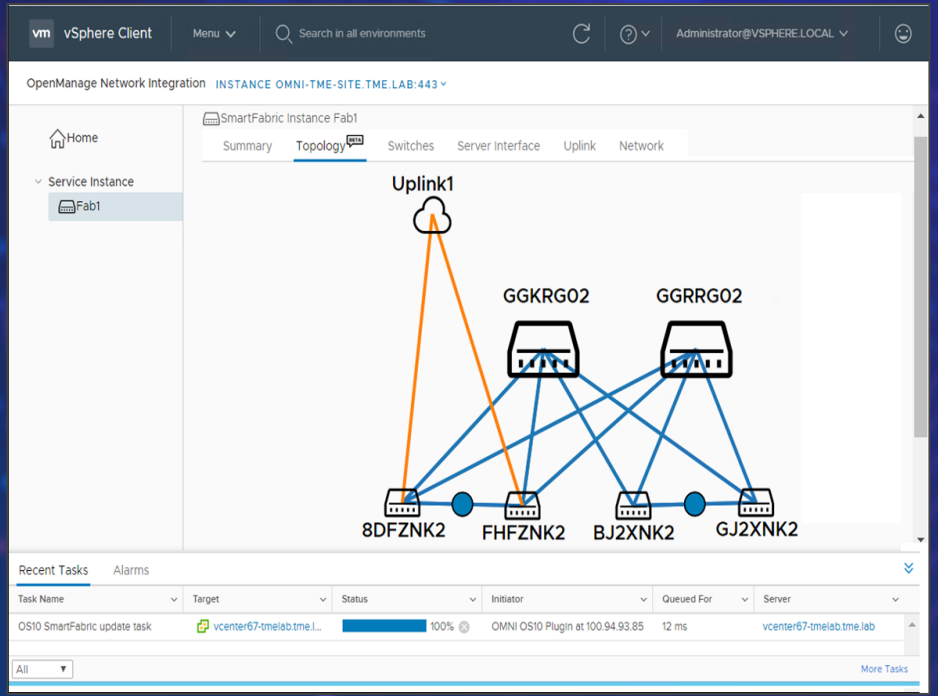
Day 2 Operations & LCM

- Single Pane Management through VMware vCenter
- Automated fabric expansion for PowerStore Scale Out
- Zero Touch network for PowerStore X AppsON Customer VM Networks
- Automated fabric lifecycle management
- Automated switch replacement
- Network visualization

Integrated Fabric Management with VMware vCenter



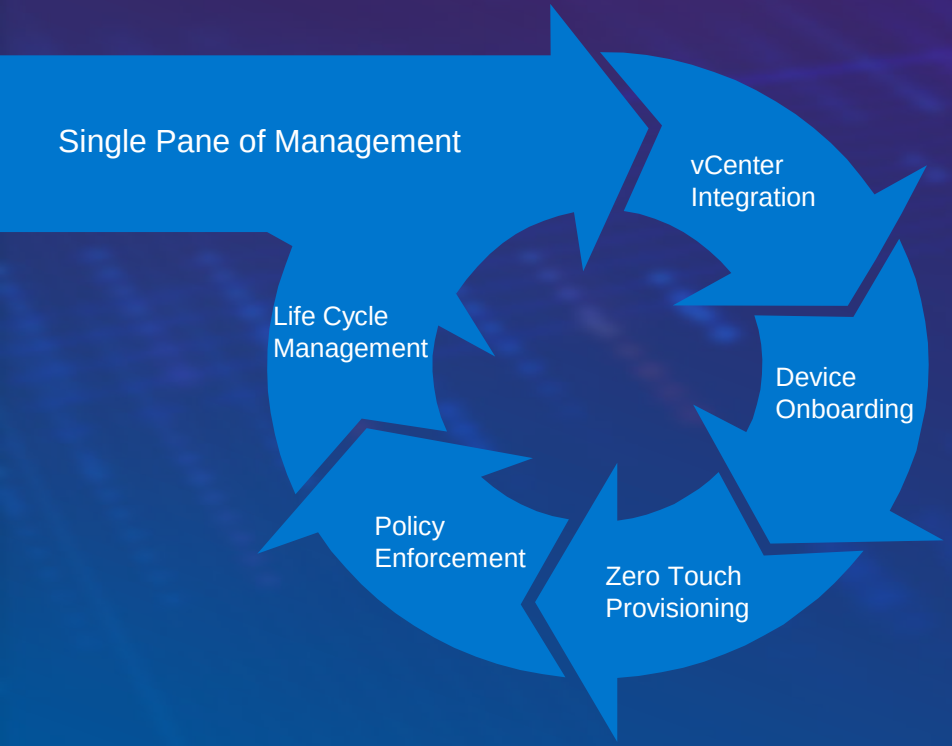
Integrated Fabric Management through vCenter Console
Network Visualization, Customization and Life Cycle Management

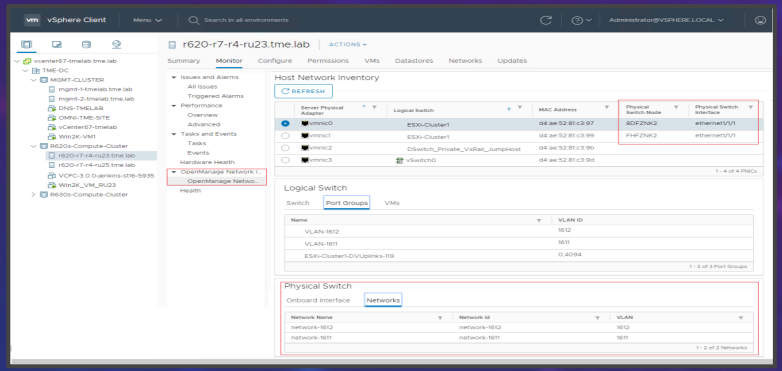


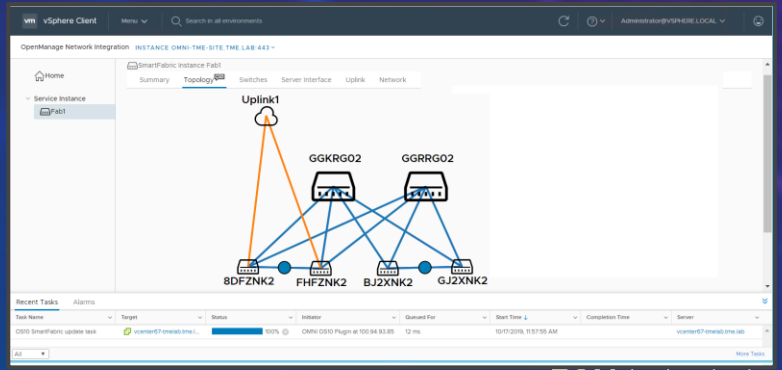
Single Pane visibility for Physical and Virtual Networking for ESXi Hosts
Zero Touch Provisioning of Underlay for Virtual Network Configuration

Unified solution level user experience with vCenter

OpenManage Network Integration (OMNI) for VMware vCenter





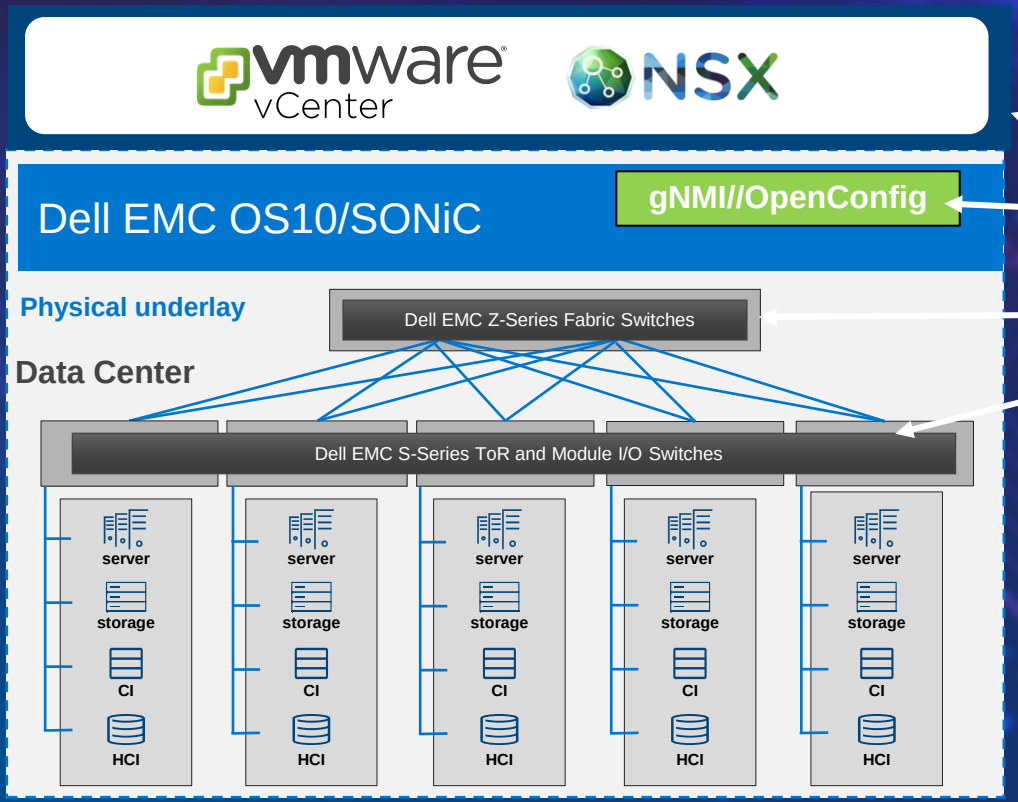


Zero Touch Day 2+ Networking Operations for PowerStore X

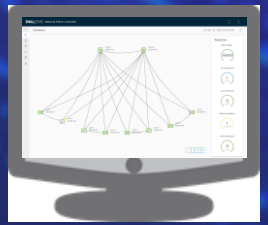
SmartFabric Director

Dell EMC + VMware working together

Virtual Overlay



SmartFabric Director



Tying together the physical and virtual network environments via tight integration with VMware vSphere and NSX-T:

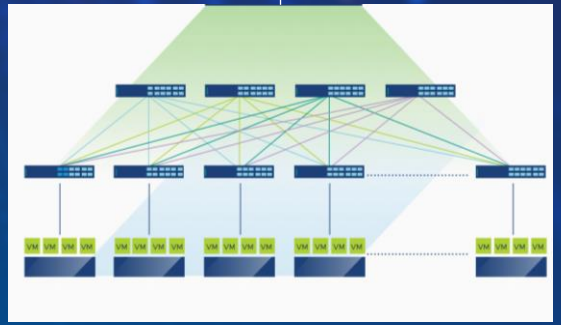
- Ensures the physical underlay fabric is correctly provisioned for smooth functioning of application workloads in a VMware SDDC
- Integration, fabric visibility life-cycle management and more

Dell EMC + VMware working together

Building a VMware-ready fabric in 3 steps

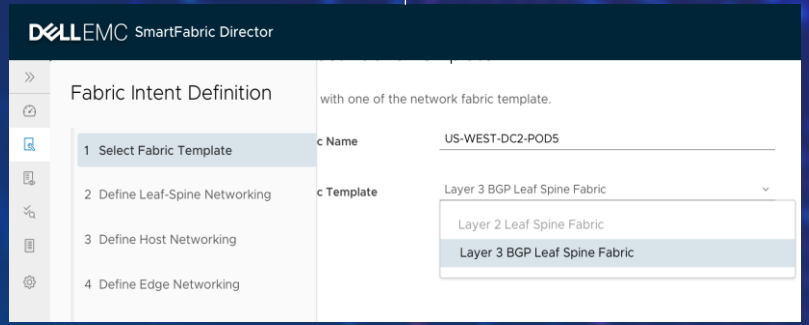
Create

physical setup



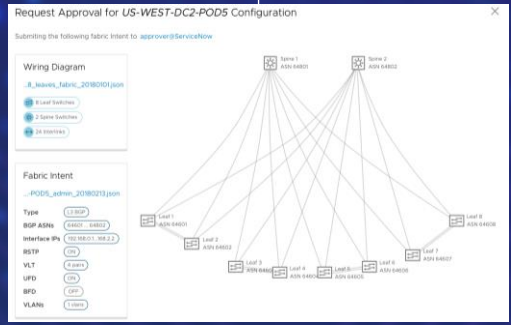
Define

logical topology



Deploy

your fabric



Networking Products for SmartFabric

SmartFabric Services – interconnect portfolio

S Series Top of Rack and S/Z Series Multi-Rack Interconnects

Entry-level / Mid-market
Top of Rack Interconnect

S5212F-ON

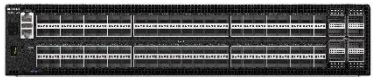
S5224F-ON

25 GbE

Mid-market / Enterprise
Top of Rack Interconnect

S5248F-ON

S5296F-ON



25 GbE

Large Deployments
Multi-Rack Interconnects

S5232F-ON

Z9264F-ON

100/400 GbE

10GbE fiber and copper switches from S4100 family are also supported

SmartFabric Services – Our vision on IT

Ihre Vorteile: Smart Value Angebote

- **Top-Selling-Konfigurationen** - Bereit zur Bestellung, vorkonfigurierte Speicherlösungen
- **Einfach zu bestellen** - Einzel-SKUs in OSC mit vorab genehmigten Preisen - einfach anklicken und kaufen!
- **Wettbewerbsfähiger Preis** - Immer günstiger als CTO-Konfigurationen
- **Flexible Angebote** - Passen Sie Ihre Lösung mit Hardware-, Software- und Service-Upgrades an
- **Deal-Registrierung -** Wir führen für Sie genehmigte Deal-Registrierung durch, damit Sie noch höhere Rabatte erhalten!
- **Promo-Rabatte** - Überprüfen Sie die neuesten verfügbaren Aktionen und sparen Sie noch mehr!

STOCK & NON-STOCK

Discount up to 500 off S-series with OS10 … S4112F/T, S4128F/T, S5212F, S5224F

- **Promotion is applicable only for Smart Value offers in GII/OSC** (and is not available Online)

- Stock VPNs:
  S4100 Series €400
  210-AOYR / 210-AOYW / 210-ALSY / 210-ALTC
  S5200 Series €500
  210-APHW / 210-APHQ

- Non-Stock Smart Value OCs:
  S4100 Series €400
  DNS4112 / DNS4112F_Industry-Standard / DNS4112F_Industry-Premium / DNS4112T / DNS4128 / DNS4128F_Industry-Standard / DNS4128F_Industry-Premium / DNS4128T
  S5200 Series €500
  DNS5212F_Entry-Level / DNS5212F_Industry-Standard / DNS5212F_Industry-Premium / DNS5224F_Entry-Level / DNS5224F_Industry-Standard / DNS5224F_Industry-Premium

DELL Technologies PARTNER PROGRAM

Dell EMC VxRail VDI

SKU	Order Code	Protocol	Chassis	Capacity	Service	Expansion Possibilities	Recommended UpSells
486-51590	**VxRail VDI 1A**	VSAN ADV	1U	2 x Intel Gold 6226R (16) Cores @ 2.9GHz, **384GB RAM**, 1 X 400GB SSD Cache 2 x 3.84TB SATA Capacity SSD	3Yr ProSupport and 4Hr mission critical	Additional Drives	• 3.84TB SATA Capacity SSD • DPS Suite/Appliance • Dell Network Top Of Rack Switching
486-51591	**VxRail VDI 1B**	VSAN ADV	1U	2 x Intel Gold 6226R (16) Cores @ 2.9GHz, **768GB RAM**, 1 X 400GB SSD Cache 2 x 3.84TB SATA Capacity SSD			
486-51592	**VxRail VDI 2A**	VSAN ADV	1U	2 x Intel Gold 6248R (24) Cores @ 2.9GHz, **768GB RAM**, 2 X 1.6TB SSD Cache 4 x 3.84TB SATA Capacity SSD		Additional Drives	• 3.84TB SATA Capacity SSD • DPS Suite/Appliance • Dell Top Of Rack Switching
486-51593	**VxRail VDI 2B**	VSAN ADV	1U	2 x Intel Gold 6248R (24) Cores @ 2.9GHz, **1,536GB RAM**, 2 X 1.6TB SSD Cache 4 x 3.84TB SATA Capacity SSD			
486-48749	**VxRail Compete 2**	VSAN ADV	14x3.5" Drives Chassis	3.2TB Raw – 2 x 1.6TB SSD + 32TB Raw – 8 x 4TB 7.2K Rpm NLSAS	3YR PS NBD	Additional Drives	• 3.84TB SATA Capacity SSD • DPS Suite/Appliance • Dell Top Of Rack Switching
486-57507	**VxRail Compete 3**	VSAN ADV	24x2.5"	2 x 800GB SSD, 4 x 3.84TB SATA SSD	3Yrs Pro Sup & 4hr MS		
486-57508	**VxRail Compete 4**	VSAN ADV	24x2.5"	1 x 800GB SSD, 2 x 1.92TB SATA SSD	3Yrs Pro Sup & 4hr MS		

- 3 nodes are required to create a new VDI cluster

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