

Netzwerkautomatisierung mit Dell SmartFabric Services und VMware ESXi

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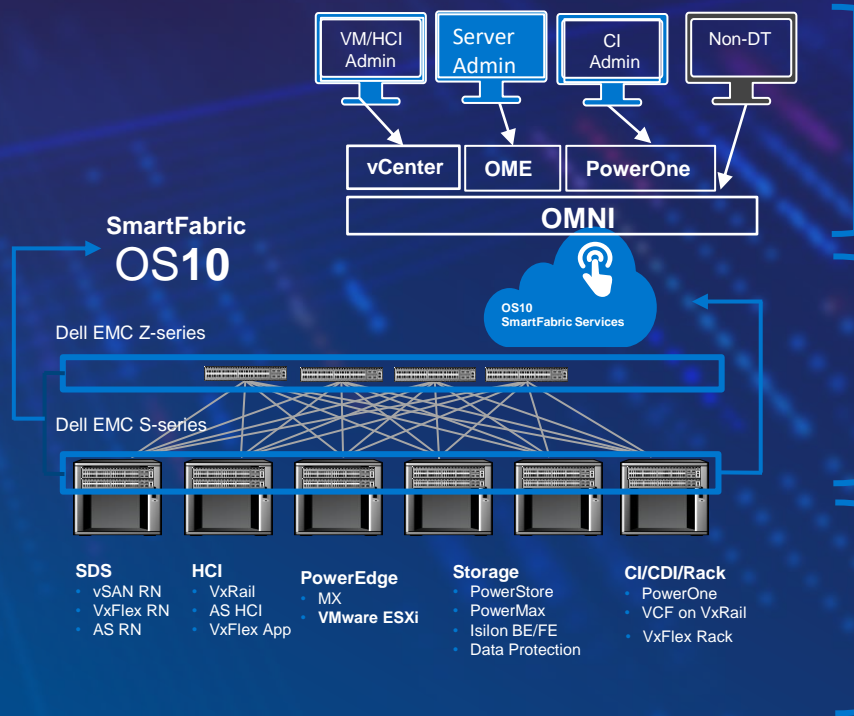
- Reasons for Automation
- Dell's Vision of Automation
- Fabric Design Center
- NW Automation with SmartFabric Services and ESX
- SmartFabric Director
- Networking Products for SmartFabric

Data era putting pressure on IT

Balancing needs of Data and Operations



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

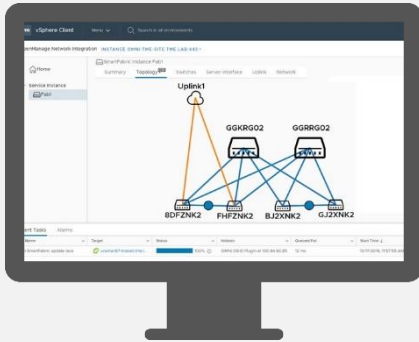
- Self-forming fabric
- Deployment consistency and predictability – two switch to max scale
- Fabric level lifecycle management & operations
- Zero touch fabric expansion
- Dynamic switch replacement

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

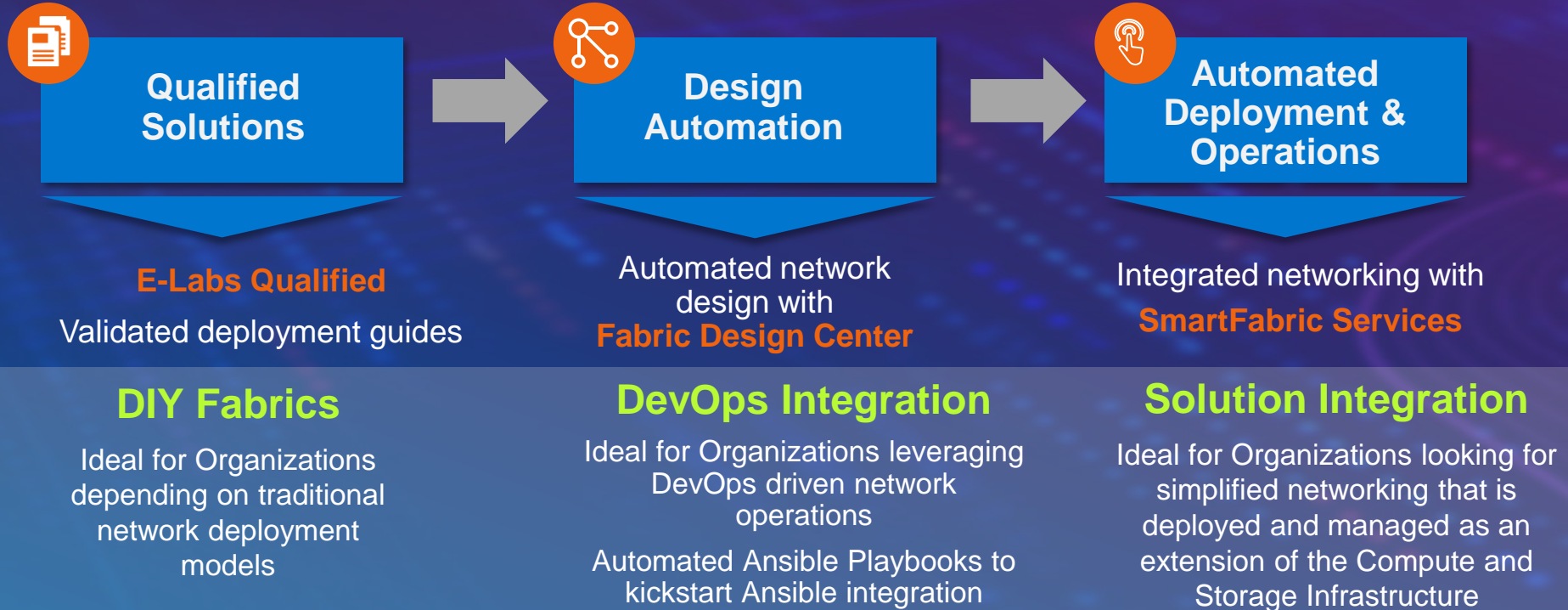
Managed as unified infrastructure

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



Deployment Guides

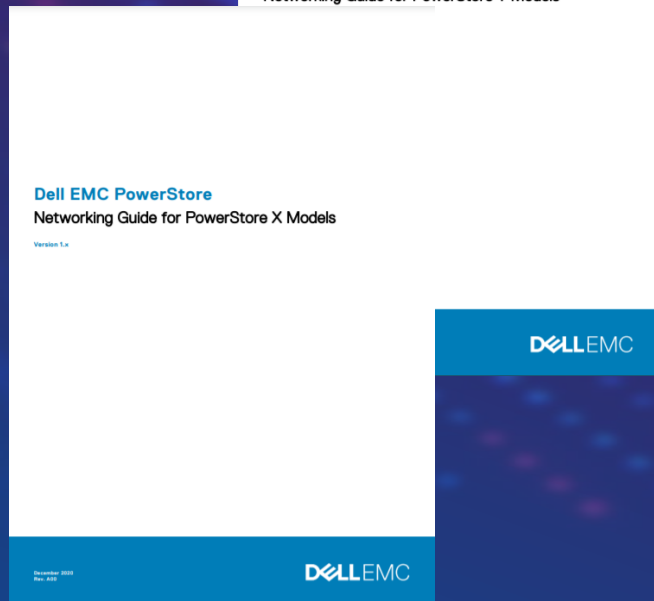
The background is a dark blue gradient with abstract, glowing patterns. It features several overlapping, semi-transparent shapes that resemble stylized letters or symbols, such as 'A', 'B', and 'C'. These shapes are composed of numerous small, bright blue dots and thin, glowing lines, creating a sense of depth and digital connectivity. The overall aesthetic is modern and tech-oriented.

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

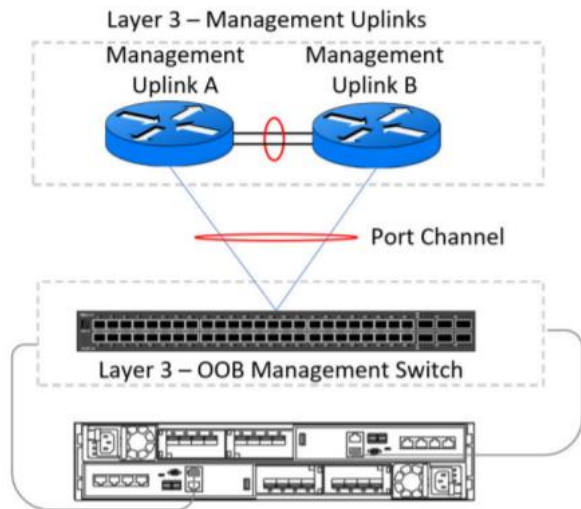


Figure 10. Out-of-band management switch uplink connections

Table 30. Example of running-configuration on ToR switches

Switch1	Switch 2
<pre>! 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 \$6\$q9QBeYjZ \$jfxzVqGhxxX3smxJSH9DDz7/30Jc6m5wjF8nnLD7/ VKx8SsIoIhp4NoG2s0I/ UNwh8WVuxwfd9q4pWigNs5BRK. 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 !</pre>	<pre>! 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 \$6\$q9QBeYjZ \$jfxzVqGhxxX3smxJSH9DDz7/30Jc6m5wjF8nnLD7/ VKx8SsIoIhp4NoG2s0I/ UNwh8WVuxwfd9q4pWigNs5BRK. 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 !</pre>

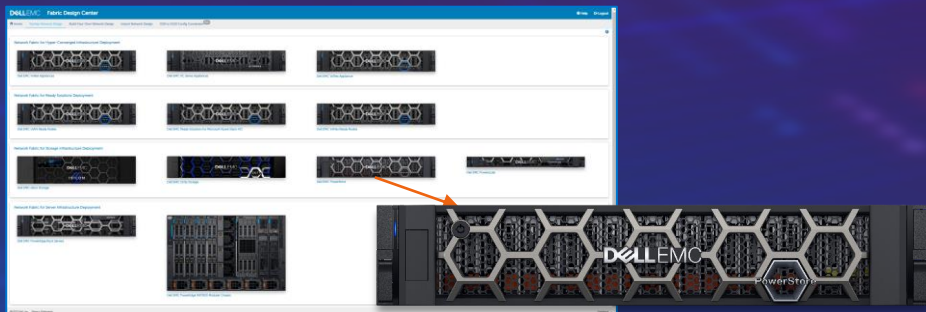
The background is a deep blue gradient with abstract, glowing geometric patterns. These include a grid of thin lines, some of which are thicker and more prominent, and clusters of small, bright blue dots. The overall effect is a sense of depth and digital complexity.

Fabric Design Center

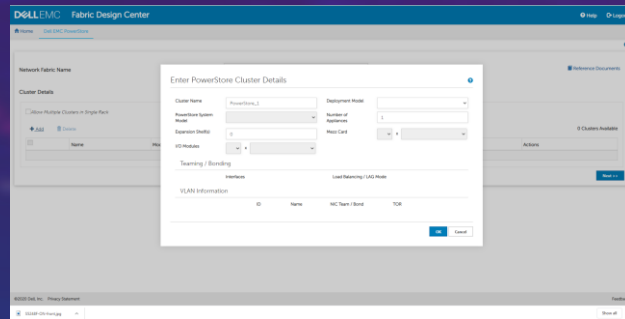
Fabric Design Center

Automated Network Design, Deployment and DevOps Integration

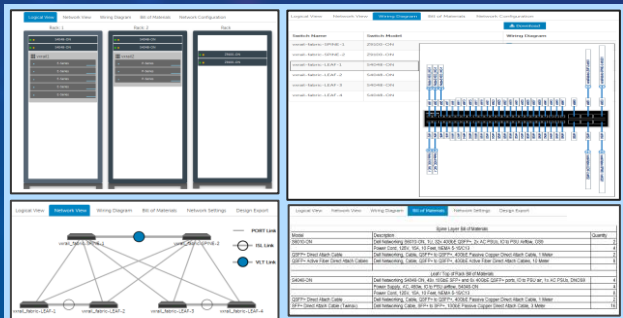
1 Choose the Solution reference architecture



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](#)

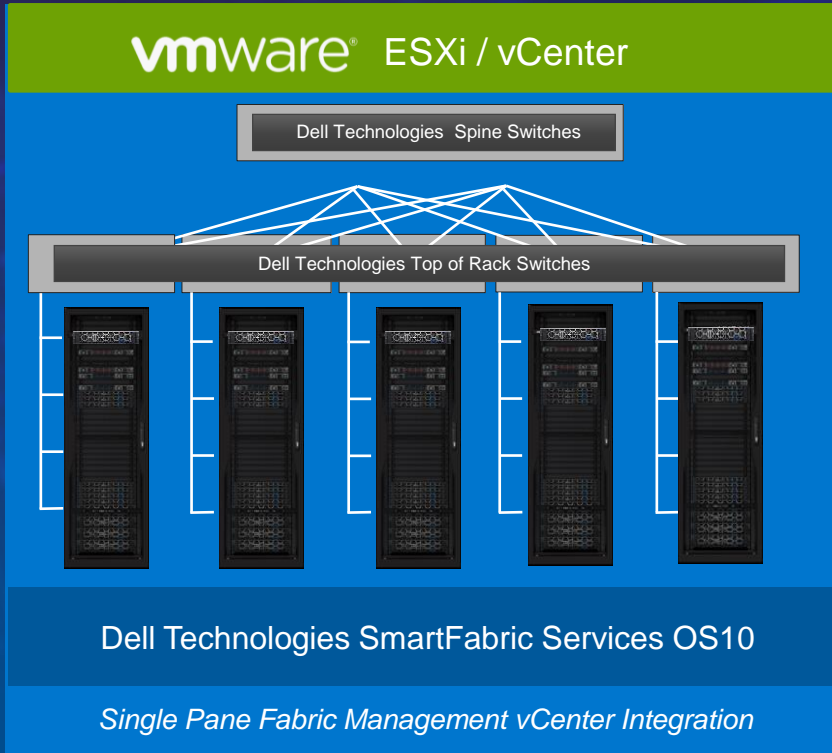
Dell Technologies

The background is a dark blue gradient with abstract, glowing patterns of light blue and white lines and dots, suggesting a digital or network environment.

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



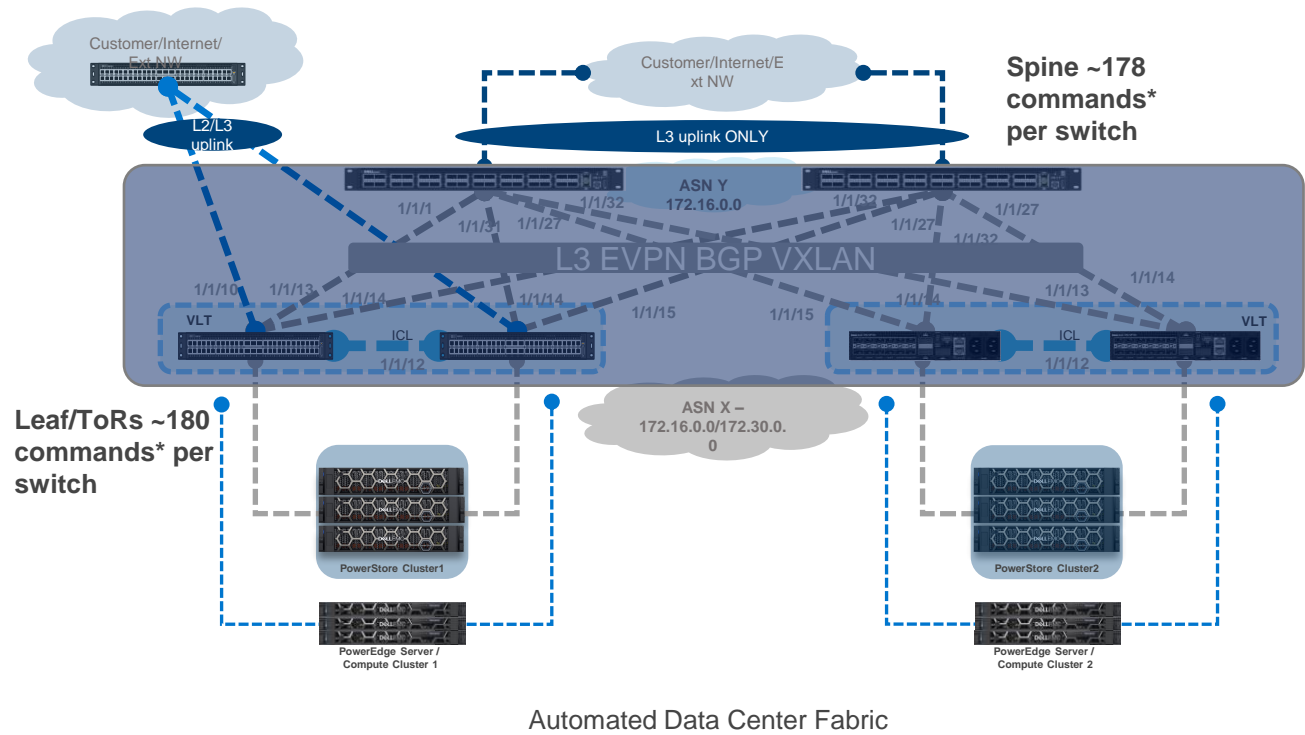
Greater Expandability

Single or multi-rack workload clusters in a single site

Connect non-ESXi devices to the same fabric

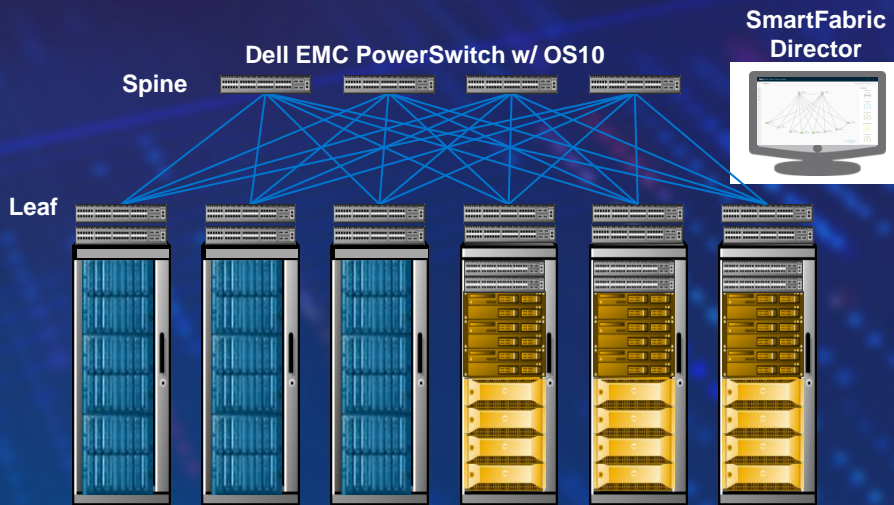
Automated fabric deployment with SmartFabric Services

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



- 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

SmartFabric Services [Home](#) [Uplinks](#) [Server Profiles](#) [Network Profiles](#) [Routing Profiles](#) Welcome admin [Logout](#)

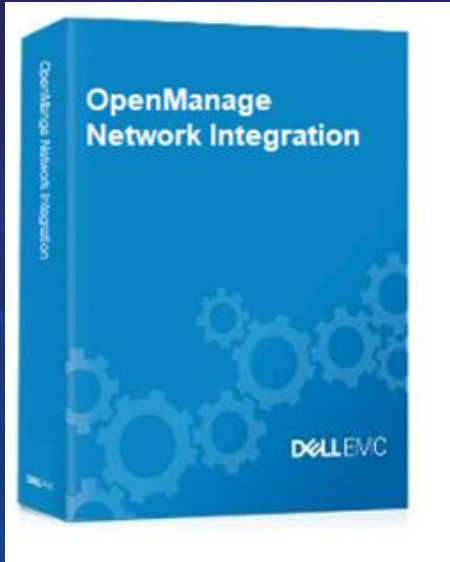
Complete Fabric Setup

Required [1. Update Default Fabric, Switch Names and Descriptions](#) [2. Create Uplink for External Network Connectivity](#)

Optional [1. Breakout Switch Ports](#) [2. Configure Jump Host](#) [3. Update Network Configuration](#) [4. Onboard a Server onto the Fabric](#) [5. Edit Default Fabric Settings](#)

```
graph TD; S1[Spine1 (83RRNK2)] --- L1A[Leaf1A (7B3ZZP2)]; S1 --- L1B[Leaf1B (J0VQG02)]; S1 --- L2A[Leaf2A (D86ZZP2)]; S1 --- L2B[Leaf2B (76K00Q2)]; S2[Spine2 (14RRNK2)] --- L1A; S2 --- L1B; S2 --- L2A; S2 --- L2B;
```

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

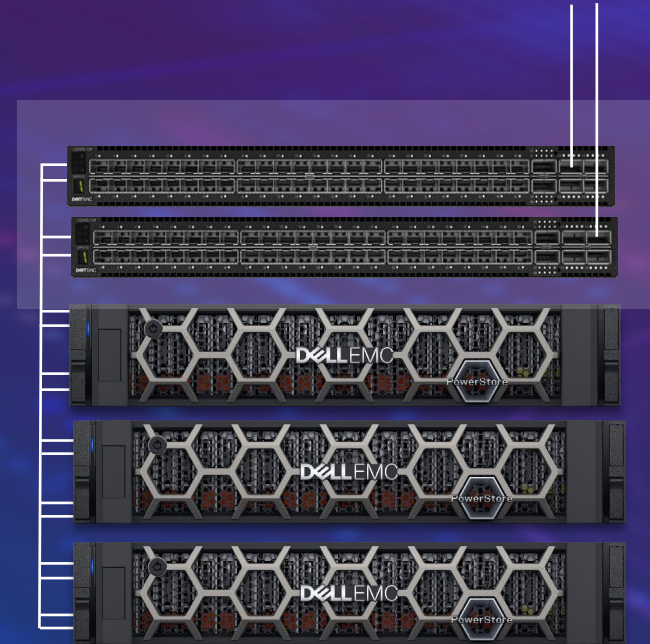
Dynamic Discovery of PowerStore Nodes in the Fabric

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

The screenshot displays the vSphere Client interface for a host named 'r620-r7-r4-ru23.tme.lab'. The 'Host Network Inventory' section contains a table with the following data:

Server Physical Adapter	Logical Switch	MAC Address	Physical Switch Node	Physical Switch Interface
vmnic0	ESXi-Cluster1	d4.ae.52.81.c3.97	8DFZNK2	ethernet1/1
vmnic1	ESXi-Cluster1	d4.ae.52.81.c3.99	FHFZNK2	ethernet1/1
vmnic2	DSwitch_Private_ViRaiL_JumpHost	d4.ae.52.81.c3.9b		
vmnic3	vSwitch0	d4.ae.52.81.c3.9d		

The 'Logical Switch' section shows a table of port groups:

Name	VLAN ID
VLAN-1612	1612
VLAN-1611	1611
ESXi-Cluster1-DVUplinks-119	0,4094

The 'Physical Switch' section shows a table of networks:

Network Name	Network Id	VLAN
network-1612	network-1612	1612
network-1611	network-1611	1611

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

The screenshot displays the 'OpenManage Network Integration' console for an instance named 'OMNI-TME-SITE.TME.LAB:443'. The 'Topology' view shows a network diagram with the following components and connections:

- Uplink1**: A cloud icon representing an external network, connected to two physical switches.
- GGKRG02** and **GGRRG02**: Two physical switches connected to Uplink1.
- 8DFZNK2**, **FHFZNK2**, **BJ2XNK2**, and **GJ2XNK2**: Four physical switches connected to the GGKRG02 and GGRRG02 switches.

The 'Recent Tasks' section at the bottom shows a task named 'OSTO SmartFabric update task' with a status of 100% and a server of 'vcenter67-tmelab.tme.lab'.

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

Single Pane of Management

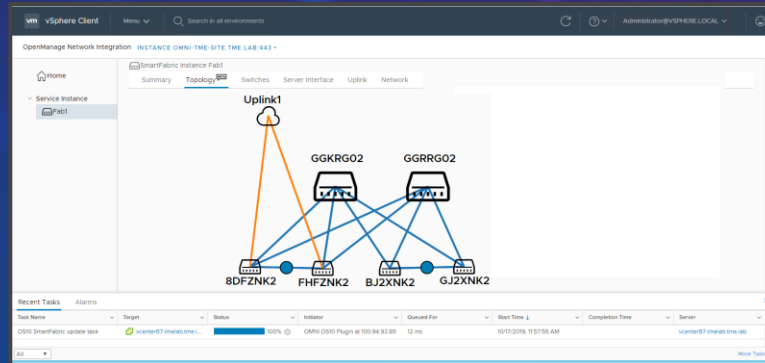
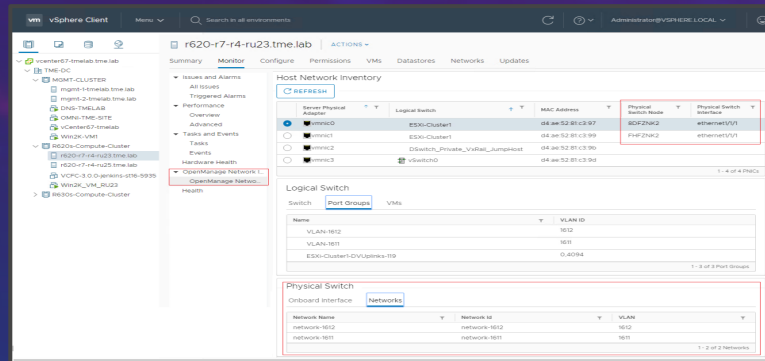
vCenter
Integration

Life Cycle
Management

Device
Onboarding

Policy
Enforcement

Zero Touch
Provisioning



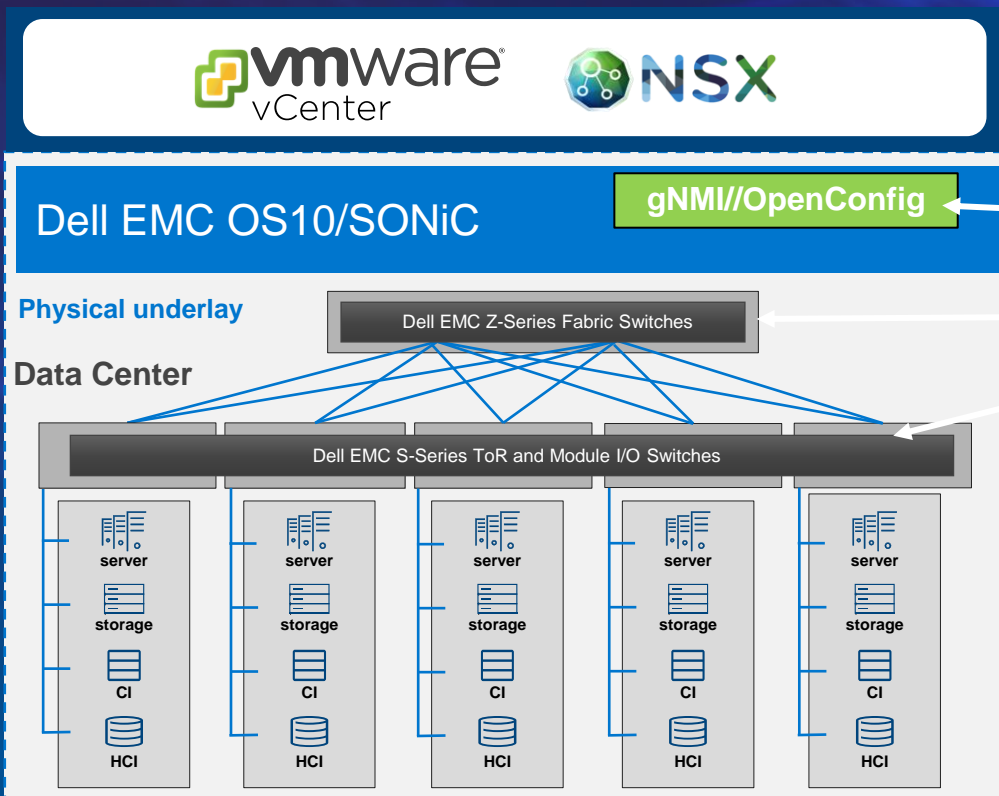
Zero Touch Day 2+ Networking Operations for PowerStore X

SmartFabric Director

The background is a dark blue gradient with abstract, glowing patterns. It features several sets of parallel lines that curve and intersect, creating a sense of depth and movement. Small, bright blue dots are scattered throughout, particularly along the lines, resembling a network or data flow. The overall aesthetic is futuristic and technological.

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

The screenshot shows the Dell EMC SmartFabric Director interface. The main heading is "Fabric Intent Definition" with a sub-note "with one of the network fabric template." Below this is a list of four steps: "1 Select Fabric Template", "2 Define Leaf-Spine Networking", "3 Define Host Networking", and "4 Define Edge Networking". The "c Name" field is set to "US-WEST-DC2-POD5" and the "c Template" dropdown is set to "Layer 3 BGP Leaf Spine Fabric". A list of available templates includes "Layer 2 Leaf Spine Fabric" and "Layer 3 BGP Leaf Spine Fabric".

Deploy
your fabric

The screenshot shows a "Request Approval for US-WEST-DC2-POD5 Configuration" window. It includes a "Wiring Diagram" section with a visual representation of the network topology, showing spine switches (Spine 1, Spine 2) and leaf switches (Leaf 1 through Leaf 8) connected to server racks. The diagram shows a complex mesh of connections between the spine and leaf layers. Below the diagram, there are configuration details for the fabric intent, including "Type" (BGP), "BGP ASN" (64512-64513), "Interface IP" (10.10.20.1-10.10.20.2), and other parameters like BGP, VLT, UPD, BFD, and VLANs.



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



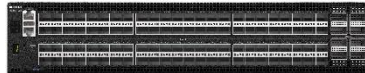
25 GbE

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

DELLTechnologies

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-AQYW / 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 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	<ul style="list-style-type: none"> 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	
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	<ul style="list-style-type: none"> 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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Wir unterstützen Sie kompetent und persönlich!

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