

DELL EMC SMARTFABRIC DIRECTOR

The evolution of networks has seen a shift from legacy, proprietary technologies that are hardware-bound to modern, open technologies that are software-driven and driving innovation. As seen with the rapid adoption of server virtualization throughout data centers, today's organizations are embracing the concepts of a software-defined network based on virtualization concepts that bring enhanced efficiency, agility and security. The challenge that remains is how to ensure the physical underlay network is provisioned and optimized for these virtual environments.

The Dell EMC SmartFabric Director enables data center operators to build, operate and monitor an open network underlay fabric based on Dell Open Networking PowerSwitch Series switches. SmartFabric Director automates and simplifies the provisioning and monitoring of the fabric using Openconfig based models and protocols. Tight integration with VMware vSphere and NSX-T allows SmartFabric Director to dramatically simplify fabric provisioning for dynamic virtualized workloads and overlays.

SmartFabric Director provides the following key features and functions:

Leaf-Spine Fabric Automation

SmartFabric Director uses a declarative model that allows the user to express intent with a set of well-defined fabric types. User input to SmartFabric Director is in the form of a JSON formatted file that includes wiring diagram information.

The four pre-defined fabric types include:

- A layer 2 leaf-spine fabric
- Layer 3 Border gateway protocol (BGP) leaf-spine fabric
- Layer 3 BGP leaf-spine fabric with NSX-T overlay
- VXLAN based BGP EVPN Layer 2 overlay over L3 BGP leaf-spine fabric

Network topologies with edge/border leaves with BGP as the peering protocol are also supported.

Fabric discovery is an ongoing process and ensures that the fabric wiring is consistent with the user-defined intent. The quick error-free deployment of the SmartFabric OS10 configuration on the PowerSwitches takes away the guesswork and enables rapid auto-provisioning of fabrics. Complex Day N operations such as add/remove switch, links, etc. are easily handled with a few clicks. SmartFabric Director allows the user to import multiple fabric wiring diagrams to manage changing requirements.

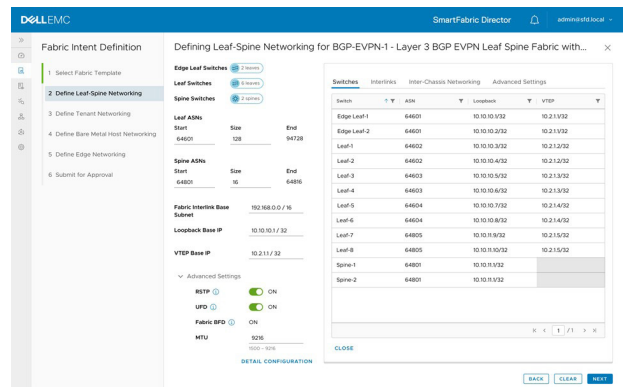


Fig 1. Declare user intent with minimal user input

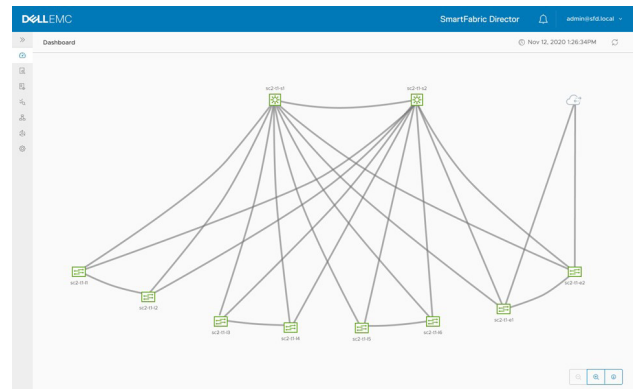


Fig 2. Fabric fully provisioned



Fig 3. Switch health visibility

BGP EVPN Fabric Intent

SmartFabric Director supports deployment of VXLAN based BGP EVPN fabric. This intent allows for stretching certain VLANs across clusters while terminating other VLANs at the ToR. SFD now supports two different types of overlays networks:

- NSX-T
- BGP EVPN

Bare Metal Workloads

SmartFabric Director supports non-virtualized Bare Metal workloads. This provides flexibility in deploying virtualized and non-virtualized workloads in the same fabric.

NSX-T 3.0 Integration

SmartFabric Director can now integrate with NSX-T v3.0. NSX-T 3.0. NSX-T v3.0 is now integrated within VDS 7.0. This should make deploying and maintaining NSX-T much simpler for customers moving forward.

VMware vSphere® and NSX-T Data Center™ integration

Tight integration of SmartFabric Director with VMware vCenter and NSX-T ensures that the physical underlay/fabric is correctly provisioned to help ensure seamless functioning of the application workloads in a VMware Software-defined data center. This includes provisioning virtual LANs (v lans), auto-creation of Link aggregation (LAGs)/port-channels, auto-detecting add/remove of ESXi hosts and Maximum transmission unit (MTU) consistency checks.

Fabric lifecycle management

Upgrading switch images is a critical operation in a data center. SmartFabric Director automates this download, install and verify process and ensures that the fabric switches are upgraded with

the right images. User defined 'switch group' tags offer a highly flexible way to selectively upgrade specific switches that share common attributes.

Fabric visibility

SmartFabric Director supports highly scalable and flexible openconfig-based streaming telemetry to gather key operational data and statistics from the fabric switches. SmartFabric Director collects telemetry data from the switches and provides out-of-the-box insights such as switch health and fabric health that can ensure consistency between the operational state and the intended state. Comprehensive and highly intuitive visualization of the time-series data and other telemetry information greatly simplifies the day-to-day operations of the fabric. A switch profile screen includes key operational data that gives the operator a quick and easy way to monitor switch state.



Fig 4. Time-series representation of individual metrics

SmartFabric Director features and capabilities

Feature	Description
Intent-based auto- provisioning	Topology discovery and validation. Auto-provisioning of data center fabrics based on user intent.
Comprehensive topology support	- L2 leaf-spine fabric, L3 BGP leaf-spine fabric, L3 BGP leaf-spine fabric with NSX-T overlay, VXLAN based BGP EVPN Layer 2 overlay over L3 BGP leaf-spine fabric. -Edge/border leaf support with BGP as peering protocol
SmartFabric OS10 feature support	LLDP, VLAN, RSTP, VLT, LAG, LACP, VRRP, BGP, EVPN, VXLAN, BFD, UFD
Virtualized infrastructure aware	Integration with VMware vSphere (6.5 and higher versions) to auto learn virtual networks and provision fabric accordingly; auto-detect ESXi hosts and LAGs
NSX-T integration	Integration with VMware NSX-T (2.3 and higher versions) to auto- provision the fabric/underlay correctly for the NSX-T overlay; verification of transport VLAN, default VTEP gateway, MTU
Switch life cycle management	On-demand and scheduled switch OS upgrade; switchOS support matrix to enable error-free upgrades to certified OS images; user defined tag-based grouping for selective and phased upgrades; support for multiple (FTP/ SFTP/TFTP/HTTP/ SCP) image transfer protocols
Fabric visibility	Streaming telemetry from fabric switches for real-time visibility into fabric operational state
User management	Local users and Active Directory support for easy integration
Backup/Restore	Periodic FTP backups of configuration and logging data to ensure easy system recovery in the event of a failure
Application programming interface (API)	JSON-based northbound API to enable automation workflows and integrations
System access/management	Graphical user interface (GUI), API, CLI

System requirements

Hardware	Virtualization ready x86 server
Hypervisor	VMware ESXi 6.5 and higher
Form factor	Virtual appliance (OVA)
SmartFabric Director VM specifications	The minimum requirements are: CPU: 4vCPU Memory: 16GB Disk: 100GB*

*Larger disk size might be required to support telemetry and log collection in larger size fabrics with higher data retention requirements. Please check the user guide for sizing information and best practices.

SmartFabric OS10 supported

SmartFabric Director Version	OS10 Releases Supported
1.1.1	10.5.0.5 10.5.0.4
1.1.0	10.5.0.4
1.2.0	10.5.1.2
2.0.0	10.5.2.0P1

PowerSwitch switches supported

SmartFabric Director Version	Switches supported
1.1.0, 1.1.1, 1.2.0, 2.0.0	S4048-ON, S4048T-ON S4112F-ON, S4112T-ON, S4128F-ON, S4128T-ON, S4148F-ON, S4148FE-ON, S4148T-ON S4248FB-ON, S4248FBL-ON S5212F-ON, S5224F-ON, S5232F-ON, S5248F-ON, S5296F-ON S6010-ON Z9100-ON, Z9264F-ON, Z9332F-ON*

Ordering information

SKU	Description
634-BTHW	SmartFabric Director, 8 switches, Perpetual
634-BTHX	SmartFabric Director, 32 switches, Perpetual
634-BTHY	SmartFabric Director, 64 switches, Perpetual

*Supported only in 2.0.0

Learn more at Dell.com/SmartFabric-Director



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