

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:

Fabric Automation with Auto Discovery and ZTD Server Support

SmartFabric Director uses a declarative model that allows the user to express intent with a set of well-defined fabric types.

The four pre-defined fabric types include:

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

SmartFabric Director also now supports auto discovery of the fabric topology, greatly simplifying the on-boarding of Data Center networks.

In addition, users also have the option of deploying a Zero Touch Deployment (ZTD) server to prepare fabric switches for management, allowing for greater operational flexibility and ease of use.

With SmartFabric Director, fabric discovery is an ongoing process that ensures the fabric wiring is consistent with the user-defined intent. The quick error-free deployment of the SmartFabric OS10 configuration on PowerSwitch switches removes any guesswork and enables rapid auto-provisioning of fabrics, while complex Day N operations, such as the addition or removal of switches or links, are easily handled with a few clicks.

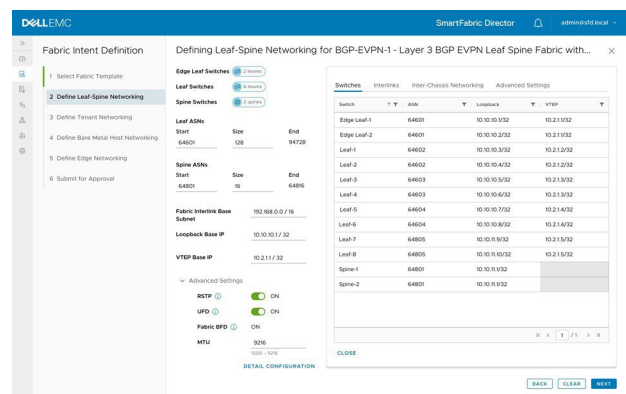


Fig 1. Declare user intent with minimal user input

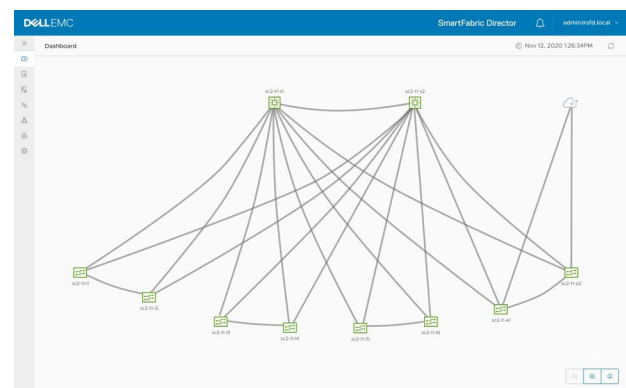


Fig 2. Fabric fully provisioned

BGP EVPN Fabric Support

SmartFabric Director supports deployment of VXLAN based BGP EVPN fabrics, allowing for the stretching of VLANs across clusters while terminating other VLANs at the top of rack. There are two different types of supported overlay networks:

- NSX-T
- BGP EVPN

Plus, the recently added diagnostic feature provides the ability to troubleshoot BGP EVPN connectivity issues through endpoint to endpoint verification.

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.

EVPN Multi-Tenancy with Multi-vCenter Instance Support

SmartFabric Director now supports multi-tenancy of EVPN fabrics allowing the provisioning and monitoring of fabrics that support multiple tenants, tying multi-tenancy constructs in the vSphere domain, such as a data center object, to multi-tenancy constructs in the underlay, such as VRFs, to enable a seamless Physical and Virtual integration. With that, customers also now have the ability to create separate vCenter instances for each tenant.

VMware vSphere® and NSX-T Data Center™ integration

Tight integration of SmartFabric Director with VMware vCenter and NSX-T (including NSX-T v3.0) 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 (vlans), auto-creation of Link aggregation (LAGs)/port-channels, auto-detecting add/remove actions 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. In addition, SFD telemetry is now multi-tenant aware, providing comprehensive and highly intuitive visualization of the time-series data and other telemetry information on a per-tenant basis, that greatly simplifies the day-to-day operations of the fabrics. A switch profile screen includes key operational data that gives the operator a quick and easy way to monitor switch status.



Fig 3. Switch health visibility



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 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
Auto discovery	With minimal user input, SmartFabric Director will discover the fabric topology
Zero Touch Deployment (ZTD) Server Support	ZTD server can be used to prepare fabric switches to be managed by SmartFabric Director
SmartFabric OS10 feature support	LLDP, VLAN, RSTP, VLT, LAG, LACP, VRRP, BGP, EVPN, VXLAN, BFD, UFD, DHCP Relay
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; switch OS 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	Multi-tenant aware, 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
API-first Architecture	Simplifies IT process automation and integration with common third party toolsets
System access/management	Graphical user interface (GUI), API, CLI

System requirement

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
2.1.0	10.5.2.4

PowerSwitch switches supported

SmartFabric Director Version	Switches supported **
1.1.0, 1.1.1, 1.2.0, 2.0.0, 2.1.0	<ul style="list-style-type: none">• 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, Z9264-ON, Z9332F-ON (2.0 and up)• Z9432-ON (2.1 Only)

**check the user guide for more comprehensive info

Ordering information

SmartFabric Director is available in 3 perpetual software configurations (not stackable)

- 8 Switches, Perpetual
- 32 Switches, Perpetual
- 64 Switches, Perpetual

SFD Switch Licenses are available in 2 bandwidth subscriptions for 1, 3, or 5 years

- SFD: 1 Switch License subscription for 1, 3, or 5 year, 3200G BW
- SFD: 1 Switch License subscription for 1, 3, or 5 year, 6400G BW

Learn more at Dell.com/SmartFabric-Director



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