Dell EMC SmartFabric Director

User Guide Release 2.0



Notes, cautions, and warnings

(i) NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Revision history

1

This table provides an overview of the changes in this guide.

Table 1. Revision history

Release	Revision	Description
2.0.0	A03 (November 2020)	 Getting started — Added new section on supported and tested scale limits Backup and restore — Added new section on how to create and restore backups Upgrade SFD — Updated how to upgrade SFD Notifications, events, alerts, and activities — Updated notifications, events, alerts, and activities Fabric intent configuration — Updated L3 BGP leaf spine fabric and L3 BGP EVPN leaf spine fabric with VxLAN; added L3 BGP leaf spine with NSX-T overlay fabric SwitchOS support matrix — Added new section on how to download new SmartFabric OS10 images and upload the images to SFD
1.2.0	A02 (May 2020)	 Installation using vCenter 6.7 — Updated information on service tag input Specify system settings — Added new section to upload the service tag Create user accounts — Updated screenshots for user management Define fabric intent — Added BFD to Layer 3 configuration
1.1.1	A01 (March 2020)	 Define switch lifecycle job — Enter a user-specified OS10 image name Upgrade SFD — Upgrade SFD software
1.1.0	A00 (January 2020)	Initial release

SmartFabric Director

Dell EMC SmartFabric Director (SFD) enables data center operators to build, operate, and monitor an open network underlay fabric. SFD works with Dell EMC PowerSwitch Series switches to ensure that their physical underlay networks are tuned for the specific overlay environment.

SFD enables the physical switch underlay infrastructure to keep pace with the changing demands of virtualized and softwaredefined networks, and provides customers a single view for operating, managing, and troubleshooting of physical and virtual networks.

Features

- Abstracted view of the fabric no need to manage individual switches
- Define, build, and maintain a Layer 2 or Layer 3 leaf spine data center fabric (underlay and EVPN overlay)
- Intent template-based provisioning underlay
- Authoritative repository of intent and switch configuration and state
- Fabric health management and monitoring including events, logs, alarms, states, and metrics (counters)
- Operator-driven remediation
- Full life-cycle management of switches including grouping of switches and scheduling of jobs
- Uses OpenConfig (gNMI, gNOI) for provisioning and streaming telemetry of switches

Inputs

- Provisioning using REST or gRPC/gNOI
- ONIE and gNOI life-cycle management
- Streaming telemetry using gRPC
- Agentless or Agent interface to switches
- L2 or L3 fabric topology

Streaming telemetry

Model-driven telemetry is a new approach for network monitoring. Data is streamed from network switches continuously, using a push model which provides near real-time access to operational statistics. Applications can subscribe to specific data items they need, by using standard-based YANG data models.

Streaming telemetry enables users to push data off the switch to an external collector at a higher frequency, more efficiently, and data on-change streaming.

Models

- destination-group tells the switch where to send telemetry data and how
- sensor-group identifies a list of YANG models that the switch should stream
- subscription-profile ties together the destination-group and the sensor-group



Getting started

This information describes the component and configuration requirements.

Dell EMC SmartFabric Director

• Dell EMC SmartFabric Director release 2.0.0

SmartFabric OS10

All PowerSwitches must be running these versions of Dell EMC SmartFabric OS10:

Release 2.0.0	10.5.2.0P1
Release 1.2.0	10.5.1.2
Release 1.1.2	10.5.0.4 or 10.5.0.5
Release 1.1.1	10.5.0.4 or 10.5.0.5
Release 1.1.0	10.5.0.4

Dell EMC PowerSwitches

- 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-ONZ9264F-ON
- Z9332F-ON

Platforms supported for BGP EVPN intent

Table 2. Supported platforms for BGP EVPN intent

Spine	Z9100-ON, Z9264F-ON, Z9332F-ON, S5232F-ON
Leaf	S5212F-ON, S5224F-ON, S5248F-ON, S5296F-ON, S4112F-ON, S4112T-ON, S4128T-ON, S4128F-ON, S4148T- ON, S4148FE-ON, S4148F-ON

VMware requirements

VMware ESXI

- Virtualization-ready x86 server
- VMware ESXi 7.0b U1, U2 (recommended); ESXi 6.5, U1, U2, U3
- VMware vSphere Enterprise Plus license
- Virtual appliance (OVA)
- 4vCPU
- 16G memory
- 100G available disk space (higher disk sizes may be required depending on fabric size and data retention requirements)

VMware NSX-T

See docs.vmware.com/VMware NSX-T Data Center for complete NSX-T requirements.

More requirements

- Web browser Chrome (version 72.0.3626.121 and later) and Firefox (version 68.0 and later) recommended
- vSphere web client 6.5 U1, U2, U3 supported for Flash client; not supported for HTML5 client
- vSphere web client 7.0 (all versions) nonsupported for Flash client; supported for HTML5 client
- Text or JSON editor to modify the JSON wiring diagram if required

Supported and tested scale limits

- Maximum number of switches in a fabric 64
- Maximum number of spines in a fabric 8
- Maximum number of leaf switches in a fabric 60
- Maximum number of edge leaf switches 2
- Maximum number of host-facing physical links 3000
- Maximum number of VLANs 512
- Maximum number of VNIs 512
- Maximum number of tenants/VRFs 1
- Maximum number of vCenter Servers 1
- Maximum number of NSX-T Managers 1
- Maximum number of DVS per vCenter 3

Software installation

This information describes how to install SFD in your SmartFabric OS10 network. If your switch came preinstalled with Dell EMC SmartFabric OS10, see Log in to SmartFabric OS10.

(i) NOTE: For detailed hardware installation steps, see the product-specific *Installation Guide* at www.dell.com/support/.

Topics:

- Download SFD image
- Log in to SmartFabric OS10

Download SFD image

This information explains show to download the SmartFabric Director software image.

- 1. Sign into DDL using your account credentials.
- 2. Locate your entitlement ID and order number, then select the product name.
- **3.** Select the **Products** tab and view your service tag that is located under Associated Hardware of Software ID; write the service tag down. The service tag is needed during first-time setup. The service tag is also visible in the license key.
- 4. Select the Available Downloads tab, select the wanted files to download, then click Download.
- 5. Read the Dell End-User License Agreement. Scroll to the end of the agreement, then click Yes, I agree.
- 6. Select how to download the software files, then click Download Now.
- 7. After you download the image, unpack the .tar file on a Linux or Windows server, then open the README file for instructions on how to validate the OVA file.

Log in to SmartFabric OS10

To log in to SmartFabric OS10, turn on the device and wait for the system to perform a power-on self-test (POST). Enter admin for both the default username and user password.

For better security, change the default admin password during the first SmartFabric OS10 login. The system saves the new password for future logins. After you change the password through the CLI, enter the write memory command to save the configuration.

```
OS10 login: admin
Password: admin
Last login: Sat Oct 6 00:25:33 UTC 2018 on ttyS0
Linux OS10 4.9.110 #1 SMP Debian 4.9.110-3+deb9u4 x86 64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
  _ *
                                                    * _
        Dell EMC Network Operating System (OS10)
_ *
                                                    * _
-* Copyright (c) 1999-2018 by Dell Inc. All Rights Reserved.
                                                     * _
_ *
                                                     * _
```

⁽⁾ **NOTE:** The available downloads include the software image, release notes, user guide, and JSON wiring diagram template (see Fabric wiring diagram definition for complete information).

This product is protected by U.S. and international copyright and intellectual property laws. Dell EMC and the Dell EMC logo are trademarks of Dell Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies. OS10# configure terminal OS10(config)# username admin password alpha404! role sysadmin OS10(config)# exit

Check SmartFabric OS10 version

OS10# write memory

1. View the SmartFabric OS10 version in EXEC mode.

OS10# show version Dell EMC Networking OS10 Enterprise Copyright (c) 1999-2020 by Dell Inc. All Rights Reserved. OS Version: 10.5.2.0 Build Version: 10.5.2.0.228 Build Time: 2020-09-19T04:16:06+0000 System Type: MX9116N-ON Architecture: x86_64 Up Time: 01:28:47

2. (Optional) If your switch is not preloaded with SmartFabric OS10 10.5.2.0, you must upgrade the operating system (see Upgrade SmartFabric OS10 in the *Dell EMC SmartFabric OS10 User Guide* at www.dell.com/support/).

Switch configuration

This information explains how to configure SmartFabric OS10 for SFD. For complete configuration information, see the *Dell EMC SmartFabric OS10 User Guide* at www.dell.com/support/.

Checklist

Gather these items before starting switch configuration from SmartFabric OS10 for SFD:

- Management interface IP address
- Host names to correspond with names used in the wiring diagram (JSON)
- JSON file (optionally exported from FDC)
- Interface breakouts
- Switch-port profile and port-group modes
- NTP server address
- Crypto security certificate

Topics:

- Management interface
- Crypto security
- Switch-port profiles
- NTP server configuration
- Authentication lockout

Management interface

This information explains how to configure Management interface access to network devices. You can configure the Management interface, but the configuration options on this interface are limited. You cannot configure gateway addresses and IP addresses if it appears in the main routing table. Proxy ARP is not supported on this interface.

1. Configure the Management interface.

OS10(config) # interface mgmt 1/1/1

2. By default, DHCP client is enabled on the Management interface. Disable DHCP client operations.

OS10(conf-if-ma-1/1/1) # no ip address dhcp

3. Configure an IP address and mask on the Management interface.

OS10(conf-if-ma-1/1/1) # ip address A.B.C.D/prefix-length

4. Enable the Management interface.

OS10(conf-if-ma-1/1/1) # no shutdown

5. Exit CONFIGURATION mode.

OS10(conf-if-ma-1/1/1) # exit

6. Configure the default route for the Management interface.

OS10(config)# management route 0.0.0.0/0 gateway_ip_address

Configure Management interface

```
OS10(config)# interface mgmt 1/1/1
OS10(conf-if-ma-1/1/1)# no ip address dhcp
OS10(conf-if-ma-1/1/1)# ip address 10.1.1.10/24
```

```
OS10(conf-if-ma-1/1/1)# no shutdown
OS10(conf-if-ma-1/1/1)# exit
OS10(config)# management route 10.10.20.0/24 10.1.1.1
```

For complete information about configuring Management interfaces, see the *Dell EMC SmartFabric OS10 User Guide* at www.dell.com/support/.

Crypto security

This information explains how to prepare your switch for SmartFabric Director from the OS10 side to install the crypto security profile and license.

The gNMI agent, available with SmartFabric OS10 release 10.5.2.0 and later, provides a new interface to configure OS10 devices. It uses gNMI protocol and OpenConfig YANG models to support create, read, update, and delete (CRUD) operations, life cycle management through gNOI and configuration of streaming telemetry.

The gNMI agent listens to SFD to receive remote configuration-change requests or upgrade and downgrade instructions. As a part of these remote configuration changes, the gNMI agent enables the telemetry agent to transmit preconfigured sensor group data in the OpenConfig format to SFD.

Setup crypto security

1. Log in to SmartFabric OS10, then verify that the installed software version meets the requirements.

```
OS10# show version
Dell EMC Networking OS10 Enterprise
Copyright (c) 1999-2020 by Dell Inc. All Rights Reserved.
OS Version: 10.5.2.0
Build Version: 10.5.2.0.228
Build Time: 2020-09-19T04:16:06+0000
System Type: MX9116N-ON
Architecture: x86_64
Up Time: 01:28:47
```

2. Verify your switch operating mode in EXEC mode.

OS10# show switch-operating-mode

Switch-Operating-Mode : Full Switch Mode

3. Set up the crypto security profile and certificate, then replace gnmi-os10-0 with a security-profile name of your choice. Format is gnmi-xxx-0 where xxx is any string.

```
OS10# config t
OS10(config)# crypto security-profile gnmi-os10-0
OS10(conf-sec-profile)# certificate gnmi-os10-0
OS10(conf-sec-profile)# exit
```

4. Start restconf and set HTTPS session timeout value.

OS10(config)# rest api restconf OS10(config)# rest https session timeout 60

5. Set up the gnmi-security-profile.

OS10(config)# gnmi-security-profile gnmi-os10-0 OS10(config)# exit

6. Create crypto certificate.

```
OS10# crypto cert generate self-signed cert-file home://gnmi-os10-0.crt key-file
home://gnmi-os10-0.key cname os10
Processing certificate ...
Successfully created certificate file and key
```

NOTE: The creation of the crypto certificate only needs to be done once. If the startup configuration is deleted, this step does not need to be repeated as certificates are retained.

7. Install the certificate.

```
OS10# crypto cert install cert-file home://gnmi-os10-0.crt key-file home://gnmi-
os10-0.key
Processing certificate ...
Certificate and keys were successfully installed as "gnmi-os10-0.crt" that may be
used in a security profile. CN = os10
```

8. Set the switch operating mode to SFD, then verify the mode.

9. Save the configuration.

OS10# write memory

10. SFD displays an informational message to reload the device for SFD mode to take effect; reload the switch.

OS10# reload

For complete information about crypto security profiles, see the *Dell EMC SmartFabric OS10 User Guide* at www.dell.com/support/.

Switch-port profiles

This information explains switch-port profiles. A port profile determines the enabled front-panel ports and supported breakout modes on Ethernet and unified ports. Change the port profile on a switch to customize uplink and unified port operation, and the availability of front-panel data ports.

NOTE: Port profiles are only applicable for the S4148-ON and S4148U-ON switches. You can skip to the next section if using these switches.

To change the port profile at the next reboot, use the switch-port-profile command with the wanted profile, save it to the startup configuration, then use the reload command to apply the changes.

- 1. Configure a platform-specific port profile. For a stand-alone switch, enter 1/1 for node/unit.
 - **NOTE:** Switch-port profiles are platform-specific. If switch-port-profile is not available, the configuration is not available for your specific platform.

```
OS10(config) # switch-port-profile node/unit profile
```

2. Exit CONFIGURATION mode, then save the port profile change to the startup configuration.

```
OS10(config)# exit
OS10# write memory
```

3. Reload the switch.

OS10# reload

The switch reboots with the new port configuration and resets the system defaults, except for the switch-port profile and these configured settings:

- Management interface 1/1/1 configuration
- Management IPv4/IPv6 static routes
- System hostname
- Unified forwarding table (UFT) mode
- ECMP maximum paths

You must manually reconfigure other settings on the switch after you apply a new port profile and reload the switch.

NOTE: After you change the switch-port profile, do not immediately back up and restore the startup file. You must use the write memory command and reloading the switch using the reload command or the new profile does not take effect.

Configure port profile

```
OS10(config)# switch-port-profile 1/1 profile-6
OS10(config)# exit
OS10# write memory
OS10# reload
```

Verify port profile

```
OS10(config) # show switch-port-profile 1/1

| Node/Unit | Current | Next-boot | Default |

| 1/1 | profile-2 | profile-2 | profile-1 |

Supported Profiles:

profile-1

profile-2

profile-3

profile-5

profile-6
```

For complete information about configuring specific ON-Series switch-port profiles, see the *Dell EMC SmartFabric OS10 User Guide* at www.dell.com/support/.

NTP server configuration

This information explains how to set up network time protocol (NTP) to synchronize timekeeping among a set of distributed time servers and clients. The protocol coordinates time distribution in a large, diverse network. NTP clients synchronize with NTP servers that provide accurate time measurement. NTP clients choose from several NTP servers to determine which offers the best available source of time and the most reliable transmission of information.

() NOTE: The NTP server configured on SFD should be on premise (located in the same data center as SFD), and reachable by SFD. Using NTP servers (such as time.google.com) that are not on premise or need Internet access for SFD to interface with is not recommended. The NTP server and the switch must have the same time.

To maintain accurate time, OS10 synchronizes with a time-serving host. For the current time, you can set the system to poll specific NTP time-serving hosts. From those time-serving hosts, the system chooses one NTP host to synchronize with and acts as a client to the NTP host. After the host-client relationship establishes, the networking device propagates the time information throughout its local network.

For complete information about NTP, see the Dell EMC SmartFabric OS10 User Guide at www.dell.com/support/.

Enable NTP

NTP is disabled by default. To enable NTP, configure an NTP server where the system synchronizes. To configure multiple servers, enter the command multiple times. Multiple servers may impact CPU resources.

Enter the IP address of the NTP server where the system synchronizes.

```
OS10(config)# ntp server ip-address
```

View system clock state

```
OS10(config)# do show ntp status
system peer: 0.0.0.0
system peer mode: unspec
leap indicator: 11
stratum: 16
precision: -22
```

root distance:	0.00000 s
root dispersion:	1.28647 s
reference ID:	[73.78.73.84]
reference time:	00000000.00000000 Mon, Jan 1 1900 0:00:00.000
system flags:	monitor ntp kernel stats
jitter:	0.000000 s
stability:	0.000 ppm
broadcastdelay:	0.000000 s
authdelay:	0.000000 s

View calculated NTP synchronization variables

```
OS10 (config) # do show ntp associations

remote local st poll reach delay offset disp

10.16.150.185 10.16.151.123 16 1024 0 0.00000 0.000000 3.99217

OS10 # show ntp associations

remote local st poll reach delay offset disp

10.16.150.185 10.16.151.123 16 1024 0 0.00000 0.000000 3.99217
```

Authentication lockout

This information explains how to prepare your switch for SmartFabric Director from the OS10 side in case of authentication lockout.

In OS10 10.5.2.0P1, the default lockout period after three invalid login attempts is five minutes. Within the five minutes, if additional login attempts are made irrespective of valid or invalid credentials, the lockout period is reset to five minutes after each attempt. This may lead to a denial of service from OS10. To avoid this issue, you need to configure the default lockout-period to zero minutes. Authentication lockout is applicable for all NBIs or applications connecting to a switch.

1. Configure the password attributes to zero seconds.

```
OS10(config) # password-attributes lockout-period 0
```

2. Exit CONFIGURATION mode.

OS10(config)# exit

3. Display the running configuration to verify the change.

OS10# show running-configuration password-attributes

password-attributes lockout-period 0

4. Write memory to save the configuration.

OS10# write memory

Configure lockout period

```
OS10(config)# password-attributes lockout-period 0
OS10(config)# exit
OS10# show running-configuration password-attributes
!
password-attributes lockout-period 0
OS10# write memory
```

First-time setup

This information explains what you must do if setting up SmartFabric Director for the first time.

(i) NOTE: SFD cannot be installed on a single ESXi embedded host client, and must be installed through a vCenter server.

Topics:

- Installation using vCenter 6.7
- Installation using vCenter 6.5
- Log in to SmartFabric Director
- Specify system settings
- Create user accounts

Installation using vCenter 6.7

This information describes how to import the SmartFabric Director OVA file into the content library, then create a virtual machine (VM). It is recommended that SFD is installed on a server which is part of your infrastructure rack, and is different from workload servers.

Download and install OVA

You can add items to a content library by importing files from your local system. You can import an OVA package to use as a template for deploying virtual machines.

- 1. Download the OVA from DDL or the VMware Solution Exchange, then store the OVA image locally or on a server.
- 2. Select Hosts and Domains, select the domain that the plug-in must manage, then select Action > Deploy OVF Template.
- 3. Select Local file, click Choose Files and select SmartFabric_Director_2.0.0.ova from a local source, then click Next. You can use either a URL or a local file.

Select an OVF template Select a name and folder	Select an OVF template Select an OVF template from remote URL or local file system
3 Select a compute resource 4 Review details 5 Select storage 6 Ready to complete	Enter a URL to download and install the OVF package from the internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.
	http://pa-dbcttl5.eng.vmware.com/vlakshmivenkat/sfd_code_drops/sfd.sit_dropt2_rtqa_5
	CANCEL BACK

4. Select a name and folder for the VM, then click Next.

2 Select a name and folder	Select a name and folder Specify a unique name and target location
3 Select a compute resource 4 Review details	Virtual machine name: std
5 Select storage 6 Ready to complete	Select a location for the virtual machine.
	v 🛃 10.196.207.148
	> Di DCI

5. Select the destination compute resource, then click Next.

 1 Select an OVF template 2 Select a name and folder 	Select a compute resource Select the destination compute resource for this operation
3 Select a compute resource	
4 Review details	✓ (1) DC1
5 Select storage	> 🛅 cluster1
6 Ready to complete	> 📋 Cluster2-Switches
	> 🛅 Cluster3
	> 🔝 w1-hs2-p1015.eng.vmware.com
	Compatibility
	 Compatibility checks succeeded.

6. Review and verify the template details, then click $\ensuremath{\textit{Next}}.$

 1 Select an OVF template 2 Select a name and folder 3 Select a compute resource 	Review details Verify the template det	tails.	
4 Review details			
5 License agreements	Publisher	No certificate present	
6 Select storage	Product	Dell EMC SmartFabric Director	
7 Select networks 8 Customize template	Download size	4.4 GB	
9 Ready to complete	Size on disk	7.7 GB (thin provisioned)	
		100.0 GB (thick provisioned)	

7. Accept the user license agreement (EULA), then click $\ensuremath{\textit{Next}}.$

License agreements The end-user license agreement must be accepted.
Read and accept the terms for the license agreement.
Congratulations on your new Dell EMC purchase!
Your purchase and use of this Dell EMC product is subject to and governed by the Dell EMC Commercial Terms of Sale, unless you have a separate written agreement with Dell EMC that specifically applies to your order, and the End User License Agreement (E-EULA), which are each presented below in the following order: • Commercial Terms of Sale • End User License Agreement (E-EULA) The Commercial Terms of Sale for the United States are presented below and are also
available online at the website below that corresponds to the country in which this product was purchased. By the act of clicking "I accept," you agree (or re-affirm your agreement to) the
I accept all license agreements.

8. Select the data store to store the configuration and datafile, then click Next.

 1 Select an OVF template 2 Select a name and folder 	Select storage Select the datastore in which	to store the confi	guration and disk f	les	
3 Select a compute resource 4 Review details 5 License agreements 6 Select storage 7 Select networks	Encrypt this virtual maching Select virtual disk format:	Thin	Management Serve Provision store Default	r) ~	
8 Customize template	Name	Capacity	Provisioned	Free	Type
9 Ready to complete	datastore1	1.85 TB	2.73 TB	121.91 GB	VN
	Compatibility				

9. Select a destination network for each network source, then click **Next**. The default VLAN ID for this network is 3939. The vCenter Server network must be connected to the port group where the vCenter is reachable for plug-in deployment of the VM.

Select networks Select a destination network for each source network.						
Source Network	Ŧ	Destination Network		Ŧ		
VM Network		VM Network		1947		
				1 items		
ID Allocation Cottings						
IP Allocation Settings						
IP allocation:	Stat	tic - Manual				
IP protocol:	IPw					
a, bugggent	15.87					
	Select a destination network for ea Source Network VM Network	Select a destination network for each source normalized and the source of the source o	Select a destination network for each source network. Source Network Y Destination Network VM Network VM Network VM Network	Select a destination network for each source network. Source Network v Destination Network VM Network VM Network VM Network		

- 10. Enter the system name for the appliance, select the checkbox if SSH access is enabled, list the NTP servers (space separated), enter the Domain Name Server, then click Next. The Service Tag can be added later as part of the system settings after logging into SFD.
- **11.** Select **Networking Properties** to customize the template.

 1 Select an OVF template 2 Select a name and folder 3 Select a compute resource 	Customize template Customize the deployment prop	Customize template Customize the deployment properties of this software solution.				
 4 Review details 5 License agreements 	> Networking Properties	3 settings				
 6 Select storage 	> SFD Host Properties	3 settings				
7 Select networks 8 Customize template	> System Services	3 settings				
9 Ready to complete						

12. Enter the IPv4 address for this interface, the netmask, and the default IPv4 gateway address for this VM.

1 Select an OVF template 2 Select a name and folder 3 Select a compute resource	Customize template Customize the deployment properties of this software solution.			
4 Review details 5 License agreements	V Networking Properties	3 settings		
6 Select storage	IPv4 Address	The IP address for this interface.		
7 Select networks 8 Customize template		0		
9 Ready to complete	Netmask	The netmask or prefix for this interface.		
		0		
	Default IPv4 Gateway	The default gateway address for this VM.		
		0		
	> SFD Host Properties	3 settings		
	> System Services	3 settings		

13. Select SFD Host Properties, then enter the password for the SFD host.

100

1 Select an OVF template	Customize template	
2 Select a name and folder	Customize the deployment propert	es of this software solution.
3 Select a compute resource 4 Review details		
5 License agreements	Networking Properties	3 settings
6 Select storage	SFD Host Properties	3 settings
7 Select networks 8 Customize template	admin@sfd.local password	initial password for the admin@sfd.local user
9 Ready to complete		account.
s ready to this parts		Password ①
		Confirm
		Password
	Hostname	Specifies the system name for the appliance
		std
	SSH access for user	0
	admin@sfd.local	
	> System Services	3 settings

14. Select System Services, enter the list of NTP servers separated by a space, then click Next.

 1 Select an OVF template 2 Select a name and folder 3 Select a compute resource 	Customize template Customize the deployment properties of this software solution.			
4 Review details 5 License agreements	> Networking Properties	3 settings		
6 Select storage	> SFD Host Properties	3 settings		
7 Select networks 8 Customize template	 System Services 	3 settings		
9 Ready to complete	NTP Servers	The list of NTP servers (space separated).		
		0		
	Domain Name Servers	The domain name server IPv4 addresses for this VM (space separated).		
	Domain Search Path	The domain search path for this VM (space separated).		

15. Click Finish to start creation of the VM, then power on the VM.

(i) NOTE: Once installation finishes, it may take 7 to 12 minutes for the SFD VM to be fully operational.

Installation using vCenter 6.5

This information describes how to modify the .vmx file for a successful SmartFabric Director installation on vSphere 6.5. You must edit the .vmx file and comment out the nvram location setting.

NOTE: If you are using vSphere 6.7, go to the next section. If you are using vSphere 6.5, you must modify the nvram setting before creating a VM.

- 1. Shut down the SFD virtual machine.
- 2. Download the .vmx configuration file from the VM folder, then open the file in a text editor.
- **3.** Comment out the nvram setting.

```
.encoding = "UTF-8"
config.version = "8"
virtualHW.version = "10"
pciBridge0.present = "TRUE"
svga.present = "TRUE"
pciBridge4.present = "TRUE"
pciBridge4.virtualDev = "pcieRootPort"
pciBridge4.functions = "8"
pciBridge5.present = "TRUE"
pciBridge5.virtualDev = "pcieRootPort"
<snip>
#nvram = "ovf:/file/file2" <- The 'nvram' entry must be commented out</pre>
```

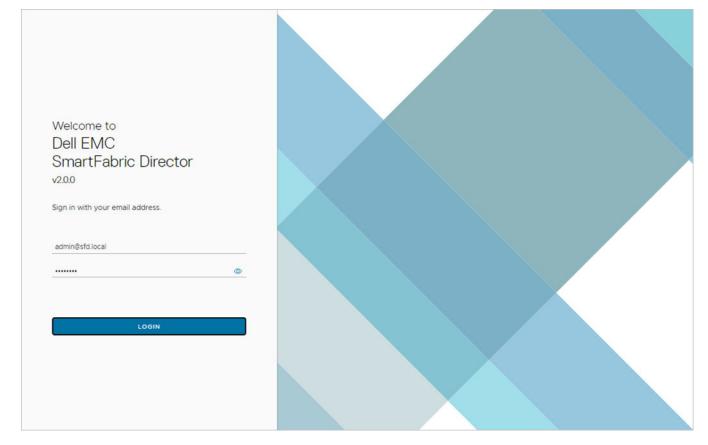
4. Save the changes, replace the file on the VM folder, then exit the text editor.

5. Start the VM.

() NOTE: If SmartFabric Director is restarted and if any changes have been made to the switches (such as switches reloaded) during this time, it is recommended to reload the switch again after SFD is up. This ensures that the complete configuration is redownloaded to the switches.

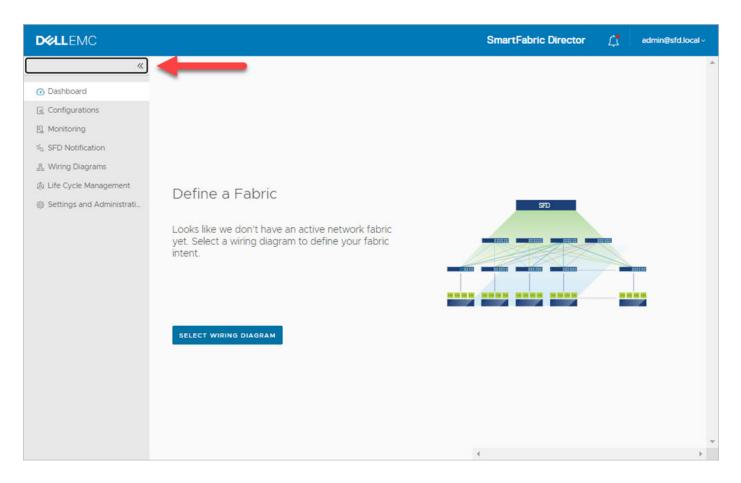
Log in to SmartFabric Director

- 1. Open a browser window, then enter the IP address that is specified during installation of the SFD VM in vCenter.
- 2. Enter admin@sfd.local for the username and the password that is configured during VM deployment, then click Login.



Navigating SmartFabric Director

The navigation menu is automatically collapsed at log in. Click >> to expand the menu.



Specify system settings

This information describes how to specify system settings for SmartFabric Director for first-time use.

- 1. Upload service tag to About.
- 2. Upload SwitchOS support matrix to About.
- 3. Add vCenter server or NSX-T Manager to VMware Managers.
- 4. (Optional) Add additional DNS servers System Settings.
- 5. (Optional) Add additional NTP servers to System Settings.
- 6. (Optional) Add Active Directory server to Service Integrations.
- 7. Add switch image server to Service Integrations.
- **8.** Add backup location to Backup Locations.

Upload service tag and Switch OS support matrix

The About tab displays the SmartFabric Director software version, service tag, and switchOS support.

(i) NOTE: This example shows a new installation.

D¢	ALEMC	SmartFabric Director	Ľ,	admin@sfd.local ~
>>	Settings and Administration			
0	About User Management System Settings Service Integrations Backup & Restore Upgrade			
E1	O No Service Tag is found. Please upload license file (.XML) containing service tag.			
×a	SmartFabric Director Version 2.0.0			
&	Service Tag 🕦 🏦 UPLOAD			
٢	SwitchOS Support Matrix 👔 🔍 UPLOAD			
۲				
		4		

Upload service tag

- 1. Sign into DDL using your account credentials (see Download SFD image).
- 2. Download the SFD license file (XML) to your local file system.
- **3.** Click **Upload** to the right of Service Tag.

DØLLEMC	SmartFabric Director	adminifisht local -
Settings and Administration	ining service tag.	

4. Click Select file, navigate to where you saved the file, then click Upload.

Upload switchOS support matrix

1. Sign into DDL using your account credentials (see Download SFD image).

- 2. Download the SFD SwitchOS support matrix file to your local file system.
- **3.** Click **Upload** to the right of SwitchOS support matrix.

4. Click Select file, navigate to where you saved the file, then click Upload.

DELLEMC			
Gi About User Managerr			
	Update SwitchOS Support Matrix X		
	Upload a certified SwitchOS Support Matrix. You can download a certified flie from the Dell Digital Locker (DDL) to your local directory. You will need your DDL credentials to download the flie. (WARNNO) The existing flie will be overwritten. (cmart#abric_Directo_rt_matrix_v2.0.enc x) CANCEL UPLOAD		

Both the license and SwitchOS support matrix are now uploaded successfully.

D¢	ALEMC	SmartFabric Director	۵	admin@sfd.local ~
»	Settings and Administration			A
•	About User Management System Settings Service Integrations Backup & Restore Upgrade			
E),	SmartFabric Director Version 2.0.0 Service Tag ① ABCDEFC ① UPLOAD			
² α	SwitchOS Support Matrix () (V20) 🛧 UPLOAD			
۵ ۵				
		(- F

VMware Manager integrations

(i) NOTE: You can only have one active VMware Manager integration with SmartFabric Director.

1. Select Settings and Administration > Service Integrations, then select VMware Managers.

D						SmartFabric Director	۵	admin@sfd.local ~
»	Settings and Administration							
0	About User Management	System Settings Service Integra	ations Backup & Restor	re Upgrade				
6. 8.	AD Server	+ ADD VCENTER SERVER	ADD NSX MANAGER	REMOVE				
6	Switch Image Servers	IP Address/FQDN	Туре	Username	Associated Tenant	Description	Last Updat	ed
8.	VMware Managers							
@ @	Backup Locations							
					8			
				We couldn't fi	nd any VMware Managers			
								0.0000
								0 items

 Click Add vCenter server to configure integration with a vCenter. See NSX Manager if you are not using a vCenter Server.

DØ	LLEMC				SmartFabric Director	idmini@sta	local -
		Add vCenter Se	ATHENT ,	. × 1			
		Active fabrics might i IP Address/FODN Username Password Description (optional)	be affected upon addition of this vCenter 100.67.120.100 administrator@vsphere.local 	•			

3. Enter the IP address/FQDN, username, password, optional description, then click Add.

LEMC					SmartFabric Dire	ctor 🕂	admin@sfd.
Settings and Administration							
About User Management	System Settings Service Integrations	Backup & Restore Up	grade				
AD Server	+ ADD VCENTER SERVER + ADD NSX	K MANAGER					
Switch Image Servers	IP Address/FQDN	Туре	Username	Associated Tenant	Description	Last Updated	
VMware Managers	ttps://100.67.120.100	vCenter Server	(administrator@vsphere.local	Not Applicable		Oct 20, 2020,	12:09:45 PM

4. (Optional) Select the vCenter server, click on the three dots, select **Remove** and follow the steps. You can also select **Edit** to modify the settings for the vCenter server.

D						SmartFabric Dire	ector 🗘	admin@sfd.local	ų į
»	Settings and Administration								^
© R R	About User Management Sy AD Server	stem Settings Service Integrations + ADD VCENTER SERVER + ADD NS		grade					
5 8 8	Switch image Servers VMware Managers Backup Locations	P Address/POEN Edit: 210.100 Remove	Type vCenter Server	Username (Assolated Tenant Not Applicable	Description	Last Updated Oct 20, 2020, 1	12:09:45 PM	
								1 Herrs	

Click **Remove** to delete the vCenter server.

D	ALLEMC		SmartFabric Direct	tor 🖄 administrational
35.				
50				
15.				
4				
3				
8		REMOVE VMWARE MANAGER(S) × Removing VMware Manager(s): (<u>Proprint Octavitation</u>); Cance: Remove		films of

(i) NOTE: If you are using an ESXi host and remove the current VMware Manager, you must add a new connection to SFD.

Add NSX Manager

1. Select Settings and Administration > Service Integrations, then select VMware Managers.

D∜	LLEMC				SmartFabri	c Director	admin@sfd.local ~					
»	Settings and Administration						*					
0	About User Management S											
	AD Server	+ ADD VCENTER SERVER + ADD NSX MANAGER										
×a	Switch Image Servers	IP Address/FQDN	Туре	Username	Associated Tenant	Description	Last Updated					
æ	VMware Managers											
٢	Backup Locations											
۲												
				We couldn't find a	any VMware Managers							
							0 items					

2. Click Add NSX Manager to configure integration.

D¢						
30						
10.						
-						
30		Add NSX Mana	ger	×		
			be affected upon addition of this NSX Manag	er.		
		IP Address/FODN	100.57.5.180 Enter the active cluster's VIP/API endpoint	_		
		Username	admin			
		Password				
		Description (optional)				
			CANCEL	ADD		
					-	

 $\textbf{3.} \hspace{0.1 cm} \text{Enter the IP address/FQDN, username, password, optional description, then click \textbf{Add}.}$

D¢					S	martFabric Direc	tor 🗘	admin@sfd.local	÷
>>	Settings and Administration								^
0		ystem Settings Service Integrations		ade					
E.	AD Server	+ ADD VCENTER SERVER + ADD NST				1			
×α	Switch Image Servers VMware Managers	IP Address/FQDN : (https://100.67.5.180)	Type NSX Manager	Username	Associated Tenant Not Applicable	Description	Oct 21, 2020, 8	:39:06 AM	
&	Backup Locations	C : (nttps://100.87.3.180	trans transing gas	edmin	the opposite				
۲	and an and a second sec								
Ŵ									
								1 items	

4. (Optional) Select the NSX Manager to delete, then click **Remove** and follow the steps.

(i) NOTE: If you are using an ESXi host and remove the current VMware Manager, you must add a new connection to SFD.

Add additional DNS or NTP servers

1. Select Settings and Administration > System Settings.

D¢	ALEMC	SmartFabric Director	4	admin⊜sfd.local ∽
>>	Settings and Administration			^
>> C C C C C C C C C C C C C C C C C C	Settings and Administration About User Management System Settings Service Integrations Backup & Restore Upgrade System Name sfd IP Address(s) 100.67.130.111 Default Gateway (90.87.120.224) DNS Servers(s) + ADD UP TO 3 MORE (90.87.10.20) NTP Servers(s) + ADD UP TO 3 MORE (90.87.10.20)			
		4		•

2. (Optional) Click Add up to 3 more to add additional DNS servers, enter the IPv4 address, then click Add.

DØ		SmartFabric Director	L.	admin@sfd.local ~
»				
۲				
E.				
-0				
2				
8				
۲				
	Add DNS Server ×			
	IPv4			
	10.0.0.12			
	CANCEL ADD			
				v

NTP server

The NTP server was adding and configured on the switch during VM deployment (see Installation using vCenter 6.7). Use these steps to add or modify the NTP server after installation.

- 1. Select Settings and Administration > Service Integrations.
- 2. (Optional) Click Add up to 3 more to add additional NTP servers, enter the IPv4/FQDN, then click Add.

D≪LL EMC	SmartFabric Director
>> Settings and Administration	
About User Management <u>System Settings</u> Service Integrations Backup & Restore Upg	
EL System Name std	
E Address(s) 100.67.120.111	
Default Gateway (100.87.120.334)	
A DNS Servers(s) + ADD UP TO 3 MORE	
EL NTP Servers(s) + ADD UP TO 3 MORE (100.8710.20)	
•	
Add NTP Server	×
IPv4/FQDN	1.12, us.pool.ntp.org
	CANCEL ADD

Add AD server

(i) NOTE: If you do not set up an Active Directory Server, you must create user accounts.

- 1. Select Settings and Administration > Service Integrations.
- 2. Select AD Server, then click Add AD Server.

DØLLEM						
3) Settings						
(f) About						
AD Se	+ and an structure (1) to 10	Add AD Server		×		
Texture .	ET Severore			0.	Description	
10.		Server URL	ldap://192.168.120.28:389			
0		Username	Administrator			
		Password		0		
		Attributes (optional)	ou,cn.dc.dc Example: cn=users.dc=domain.dc=local			
		Description (optional)				
				11		
			CANCEL	ADD		
	1944					

3. Enter the server URL, username (admin), password, optional attributes, and optional description, then click Add.

Add switch image server

The image server is where the switch software images are stored. See Download SFD image for more information about how to download a software image.

- 1. Select Settings and Administration > Service Integrations.
- 2. Select Switch Image Servers, then click Add switch image server.

DØ	LLEMC				Sma	rtFabric Director	4	admin@sfd.local ∽
»								
۲								
E.								
×a.								
3. 81		Add Switch Ima	ge Server	×				
		Туре	TFTP	~				
		IP Address/FQDN	100.67.3.168					
		Base Directory	/user/home					
		Description (optional)		li				
				CANCEL	reis			

3. Select the image transport type (TFTP, FTP, SFTP, SCP or HTTP), enter the IP address/FQDN, enter the username and password, enter an optional description, then click **Add**.

D⊗	LLEMC	SmartFabric Direct	ar ⊈	admin@sfd.loc	cal~
>>	Settings and Administration				^
× 0 2 2 5, v 4, 43		stem Settings Service Integrations Backup & Restore Upgrade + ADD SWITCH IMAGE SERVER REMOVE P Address/PODN Y Type Y Username Y Base Directory Y Description : (100.673.108) TFTP /	Y Lett Updat Oct 20, 2	ed 020, 2:21:04 PM	T
				184	ms 🔻

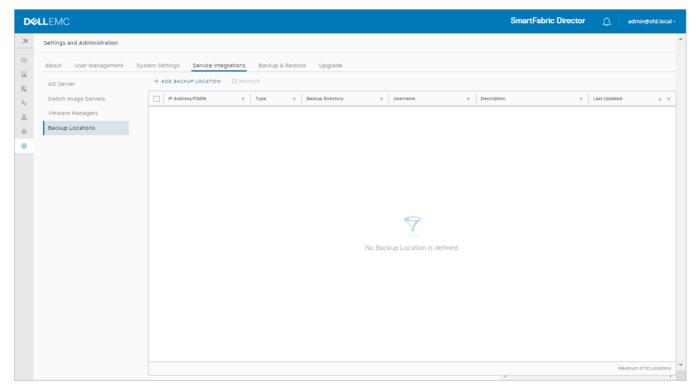
4. (Optional) Select the switch image server, click on the three dots, select **Remove** and follow the steps. You can also select **Edit** to modify the settings for the switch image server.

DØ	LL EMC				SmartFabric Director	d administrated local -
35						1
10 12						
						Los Usades
2						04120-2020 212104-214
•						
			Remove Switch Image Server	×		
			Are you sure you want to remove Switch Image Serv	ver: (100.67.3.108) ?		
				CANCEL REMOVE		
						1 mm

Add backup location

For a new installation, you must first add a backup location before you can schedule backups.

1. Select Settings and Administration > Service Integrations > Backup Locations.



2. Click Add backup location.

3. Select the backup type (FTP or SFTP), IP address or FQDN, username and password, optional description, then click Add.

DØLLEMC					SmartFabric Director	μ	dmin@std.local+
	Backup Locations	Add Backup Loo	cation	×			
	D 200 Name 7 D	Туре	FTP	· .			
		IP Address/FQDN	100 67.120.28				
		Username	Administrator				
		Password		0			
		Backup Directory	/sfdBackup	_			
		Description (optional)		2			
			CANCEL	ADD			

The new backup location is added. Click on the three dots to edit or remove a backup location.

(i) NOTE: You cannot remove a backup location if backup jobs are connected to the location. You must first remove the backup jobs, then you can remove the backup location.

LLEMC	SmartFabric Dire	ector 🗘	admin@sfd.k	ocal∽
Settings and Administration				^
About User Management Sys AD Server Switch Image Servers VMware Managers Backup Locations	tem Settings Service Integrations Backup & Restore Upgrade + ADD BACKUP LOCATION REMOVE I IF Address/PADN Y Type Y Backup Directory Y Username Y Description I (00.057.120.28) FTP /St/Backup (Administrator)			· T
			Maximum of 10 Locat	tions
	About User Management Sys AD Server Switch Image Servers VMware Managers	Settings and Administration About User Management System Settings Service integrations Backup & Restore Upgrade AD Server + ADD BACKUP LOCATION Image Remove VMware Managers Image Remove Image Servers Image Servers <td>Settings and Administration About User Management System Settings Backup & Restore Upgrade AD Server + A00 BACKUP LOCATION Immovie Immovie Immovie Settings Barvers Impovie Impovie Impovie Impovie Impovie Vitware Managers Impovie Impovie Impovie Impovie Impovie Impovie Backup Locations Impovie Impovie</td> <td>Settings and Administration About User Management System Settings Service Integrations Backup Assess About + Ab9 Backup Locations Image Services Image Services</td>	Settings and Administration About User Management System Settings Backup & Restore Upgrade AD Server + A00 BACKUP LOCATION Immovie Immovie Immovie Settings Barvers Impovie Impovie Impovie Impovie Impovie Vitware Managers Impovie Impovie Impovie Impovie Impovie Impovie Backup Locations Impovie Impovie	Settings and Administration About User Management System Settings Service Integrations Backup Assess About + Ab9 Backup Locations Image Services Image Services

Create user accounts

This information describes how to add user accounts to SmartFabric Director. You can add local users through SmartFabric Director, or you can use the Active Directory Server. You can enable or disable SSH access for a local user, activate or deactivate, and remove a local user.

NOTE: If you have setup an Active Directory Server, you do not need to add local users. Skip to Using SmartFabric Director.

1. Select Settings and Administration > User Management to add local users.

×	ALEMC						Sm	artFabric Direct	or 🗘	admin@sfd.loc
	Settings and Administration									
	About User Management System Settings Service Integrations Backup & R	estore Upgrad	le							
	+ ADD USER @ ACTIVATE ACCOUNT © DEACTIVATE ACCOUNT									
	□ Username ↓ ▼ Name ▼ Contact Phone Number	T Role	т	Account Status	т	SSH	T Up	dated By	Last Updated	
	i i i i i i i i i i i i i i i i i i i	system a	dmin	Active		ENABLED	ad	min@sfd.local	Oct 19, 202	0, 8:11:40 AM
										1 iter
										1140

2. Click Add user, enter the user email address (username), password twice, first and last name, optional phone number, then click Add.

NOTE: Each new local user has admin role privileges automatically, and SSH status is enabled by default. Ampersand (&), percent (%), greater than (>), less than (<), and single quote (`) are not allowed in user names.

DØLLEMC				SmartFabric Direct:	admin@std.local -
					Ť
	Add Local User		×		Last Mainten
	Username (email address)	ssmith@yourcompany.com			(Def. 18, 2020, 8 1140 AM
	Password		@		
	Confirm Password		•		
	First Name	Sam			
	Last Name	Smith			
	Contact Phone Number (optional)	Example: +1 (353) 555-3535			
	Role	admin	~		
		CANCEL	ADD		

The new user is added. Note that the new user's role is admin, while the administrator has the system admin role.

(i) NOTE: There can only be one system admin role.

D∜	LEMC	SmartFabric Director	admin@sfd.	local ~
>>	Settings and Administration			
0	About User Management System Settings Service Integrations Backup & Restore Upgrade			
	+ ADD USER 🔗 ACTIVATE ACCOUNT – 🖄 DELETE			
×a.	□ Username ↓ ▼ Name ▼ Contact Phone Number ▼ Role ▼ Account Status ▼ SSH	T Updated By T	Last Updated	т
&	ENABLED	admin@sfd.local	Oct 20, 2020, 2:34:09 PM	
۲	system admin O Active ENABLED	admin@sfd.local	Oct 19, 2020, 8:11:40 AM	
۲				
			2	Items
		*		*

3. (Optional) Continue adding new users, or select a user then click on the three dots to view the available options.

LEMC							SmartFabric Directo	or ᠿ admi	in@sfd.local
Settings and Admin	nistration								
About User Ma	anagement System	m Settings Service	e Integrations Backup	& Restore Upgrade					
+ ADD USER	ACTIVATE ACCOUNT	○ deactivate acc	COUNT 📋 DELETE						
Edit Ove	rride Password	Name T	Contact Phone Number	T Role	T Account Status	Υ SSH	T Updated By T	Last Updated	т
	octivate Account able SSH	Sam Smith		admin	Active	ENABLED	admin@sfd.local	Oct 20, 2020, 2:34:0	9 PM
Dele				system admin	Active	ENABLED	admin@sfd.local	Oct 19, 2020, 8:11:40	AM

Edit user

1. Select the user name, click on the three dots, then select **Edit**.

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10							
10.							
4		Context Place Number	a Sule (a Attractivitatio)		90H		
2	🗆 🔲 🌒 anned transformation and transformation	Edit User		\times	ENGBLIED :		
8					CLISARCE		
•		Username	ssmith@yourcompany.com				
		First Name	Sam				
		Last Name	Smith				
		Last realize	Scilor				
		Contact Phone Number (optional)	Example: +1 (305) 550-5535	<u></u>			
		Role	admin	~			
			CANCEL	SAVE			
						-	1

2. Make changes, then click **Save**.

Deactivate account

You may want to deactivate an account of a user leaves your company.

- 1. Select the user name, click on the three dots, then select **Deactivate account**.
- 2. Click Deactivate.

DØ	LEMC			Sn	artFabric Director
30					
100					
10.					
4					
3					
	Deactivate Are you sure you	i want to deactivate 🍋 simithid yourc	ANCEL DEACTIVATE		

Disable SSH

(i) NOTE: SSH is only for remote access to the console. Disable SSH to prevent access to the console through SSH.

- 1. Select the user name, click on the three dots, then select **Disable SSH**.
- 2. Click Disable SSH.

LLEMC					SmartFabric Directo	r 🗘 🔤	
Settings an	ad Administration						
About	User Management System Settings Service Integrations Backup & Restore	Upgrade					
+ ADD U	SER 🛞 ACTIVATE ACCOUNT 🚫 DEACTIVATE ACCOUNT 📋 DELETE						
	Username & T Name T Contact Phone Number T	Role Y	Account Status T	SSH T	Updated By Y	Last Updated	
0 :	Sam Smith	admin	Active	DISABLED	admin@sfd.local	Nov 2, 2020, 7:36	43 AM
-	(admin@std.local)	system admin	(Active	ENABLED	admin@sfd.local	Oct 29, 2020, 7:28	3:49 AM

Delete user

1. Select the user name, click on the three dots, then select **Delete**.

DØ	LEMC				Smi	artFabric Director 🛛 🖽	- 247
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39							
10.							
20							
•	Delete	loor					
				×			
	Are you sur	e you want to delete 🥲 ssmithe	ourcompany.com)?				
			CANCEL	DELETE			

2. Click Delete.



Using SmartFabric Director

This information describes how to build, define, and deploy a data center SmartFabric. After completion of the SFD bootstrap and integration into your data center network operations, you are now ready to build, define, and deploy a SmartFabric. The steps outline a deployment where the operator specifies the SmartFabric for the first time, starting with a clean state.

Topics:

- Import fabric wiring diagram
- Fabric intent configuration
- Importing a new wiring diagram

Import fabric wiring diagram

This information describes how to use the fabric definition screens to import a fabric wiring diagram. Fabric definition describes the switches, their roles (spine, leaf, or edge leaf), and the wiring diagram of how these switches interconnect.

You must specify the reachability information, such as the Management IP and credentials (username and password) of each switch, so that SFD can connect to the switches.

NOTE: The fabric wiring diagram must be edited manually using a text or JSON editor. Using Fabric Design Center enables generation of the JSON file.

It is assumed that the switches have been racked, stacked, and connected as per the wiring diagram. All switches must have the minimum version of SmartFabric Director and OS10.5.2.0P1 installed, along with the base configuration to connect, and communicate through the gNMI and gNOI interfaces. For more information about the base configuration, see Switch configuration.

You must define the role of each switch, and the interface type such as interlink, host, edge facing, or VLT link. It is expected that the switches are wired per the definition in the wiring diagram.

- Interlinks are switch ports that are used to connect a leaf switch to a spine switch
- Host interfaces are switch ports that are connected to host
- Edge interfaces (on an edge leaf) are switch ports that are connected to an external switch

Using Fabric Design Center

Dell EMC Fabric Design Center allows you to automatically create a JSON file based on your selections. You can import a JSON wiring diagram file through SFD. On reading the JSON file, SFD displays the fabric graph as described in the JSON file. You can download a JSON wiring template from DDL.

NOTE: If you have previously configured the switch, the wiring diagram JSON results generated from FDC may need modifications to work with your switch.

- 1. Open a browser, then go to fdc.emc.com and log in with your Dell Customer/Partner credentials.
- 2. Select the checkbox to agree to the terms of use, then click OK.
- 3. Select either Designing network fabric for a customer opportunity or Trying Fabric Design Center, then click OK.

DELLEMC Fai	bric Design Center			🛛 Help	C+ Logout
A Home Turnkey Network I	Design Build-Your-Own Network Design	Import Network Design	OS9 to OS10 Config Conversion Be	•	
					0
Network Fabric for Hy					
<u>2</u> 22	Tell us about your visit				
Dell EMC VxRail Appliances			is Derive Contra		
	 Designing network fabric for a customer of 	pportunity 🕑 irying Fab	ric Design Center		
Network Fabric for Re					
			ок		
Dell EMC vSAN Ready	Dell EMC Solutions for	Dell EMC VxFlex Re	Pady		
Nodes	Microsoft Azure Stack HCI	Nodes			
©2020 Dell, Inc. Privacy Statement					Feedback

- 4. Select Build-Your-Own-Network Design at the top.
- 5. Create your Layer 2 or Layer 3 network, then click **Apply**. You can select the number of racks that are needed for the design. The default number of spines is calculated based on the default bandwidth to the rack.

KLEMC Fabric De	sign Center				() Help	C+ Logou
Home Turnkey Network Design	Build-Your-Own Network Design	Import Net	work Design OS9 to OS10 Config Conversi	on ^{Beta}		
uild-Your-Own Network D	esign					•
Fabric Details						~
Network Fabric Name	NewFabric		External Network Connectivity	Layer 3		~
Fabric Design	Layer 3 Leaf and Spine	~	External Network Routing Protocol	eBGP		~
Fabric Routing Protocol	eBGP	~	External Network Connections per Uplink Switch	2 X	10G SFP+	~
Default Leaf/ToR Switch	S5248F-ON	~	Default Spine Switch	\$5232F-ON		~
Default Bandwidth to Rack	400	G	Number of Workload Racks	2		
Network Overlay	BGP EVPN	~				
						Apply
20 Deil, Inc. Privacy Statement						Feedba

6. Verify the fabric design, then click **Next**. You can also click Edit and make any necessary changes to meet your requirements.

ld-		Network Design Bulle	1-Your-Own Network Design	import Netwo	rk Design OS9 to OS10	Config Conversio						
Fa	abric De	tails										~
Net	work Fabric	Name	NewFab	ric		External M	Network Connectivity	Layer :	3			🖸 Edit
Fab	ric Design		Layer 3	Leaf and Spine		External M	Network Routing Protocol	eBGP				
Fab	ric Routing F	Protocol	eBGP			External N	Network Connections per	Uplink Switch 2x10G	SFP+			
Def	ault Leaf/To	R Switch	S5248F-	ON		Default Sp	pine Switch	\$5232	F-ON			
Def	ault Bandwid	dth to Rack	400G									
Net	work Overla	у	BGP EV	N								
or	kload Ra	acks (Leaf Node	es) +		Workload			Rack Oversubscription				
	Rack#	Rack Name	Switches	Ports	Bandwidth(Gbps)	Rack Unit	Uplink Connections	Ratio	EDGE Rack	Action	s	
	1	Rack-1	\$5248F-ON	0	NA	0	4 X 100	-	1	©.	ŧ	+ Workload
>	2	Rack-2	S5248F-ON	0	NA	0	4 X 100	•	×	ø	ŧ	+ Workload
> >												

7. Select Wiring Diagram, select SFD-Wiring for the format, then click Download to save the JSON file for importing into SFD.

cal View Network View Wining Diagram Bill of Materials Network Configuration Configuration Download Select Format: SFD-Wring					
Select Formal SFD-Wing A Download Switches Switchame Ming Dagram Ming Dagram NewFabric-SPINE-2 S232F-0N Galdeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee	sical View Network View Wiring Diagram B	ill of Materials Network Configuration Configuration Downli	oad		📥 Save Design
Switches Switch Marke Wring Diagram NewFabric-SPINE-1 S5237-0N Image: Compare State		· · · · · ·		[
Switch Name Wich Model Wing Diagram New Fabric - SPINE-1 55227-0N Image: Comparison of the Spine of			Select Format:	SFD-Wiring	📥 Download
NewFabric-SPINE-1 SS23F-ON Image: Comparison of the comparison	Switches				
NewFabric-SPINE-2 S5232F-ON Image: Comparison of the comparison	Switch Name	Switch Model		Wiring Diagram	
NewFabric-LEAF-1 S5248F-ON Image: Comparison of the comparison	NewFabric-SPINE-1	\$5232F-ON			
NewFabric-LEAF-2 55248F-ON Image: Comparison of the comparison	NewFabric-SPINE-2	55232F-ON		=	
NewFabric-LEAF-3 55248F-ON	NewFabric+LEAF+1	55248F-ON		•	
	NewFabric-LEAF+2	55248F-ON			
NewFabric-LEAF-4 S5248F-ON	NewFabric-LEAF-3	\$\$248F-ON			
	NewFabric-LEAF-4	\$\$248F-ON		=	

8. Click Save to save the file for import into SFD.

For complete information, see the Dell EMC Fabric Design Center User Guide.

Import a wiring diagram

You can import a JSON wiring diagram file through SFD. On reading the JSON file, SFD displays the fabric graph as described in the JSON file. You can download a JSON wiring template from DDL.

() NOTE: Once the JSON file is imported or activated, any active intent of the fabric is no longer valid, and a new intent must be defined and submitted for approval.

1. Click Import Fabric from the dashboard or Wiring Diagrams > Import.

D%LL EMC		SmartFabric Director	admin@sfd.local →
>> C C C C C C C C C C C C C C	Define a Fabric Looks like we don't have a network fabric defined yet. Import a network fabric definition JSON here. Note: You can download a wiring diagram template JSON file from the Dell Digital Locker (DDL). You will need your DDL credentials to download the file.		

2. Go to where you saved the file, then select the JSON file to import.

DELLEMC		
2 Wring Disgrams @		
No Active Wining Diagram Looks like we don't have an active network fabric yet. Select a winig diagram to define your fabric intent		
	IMPORT FABRIC Importing wiring-template-2.0-Sep-30- EVPN json	

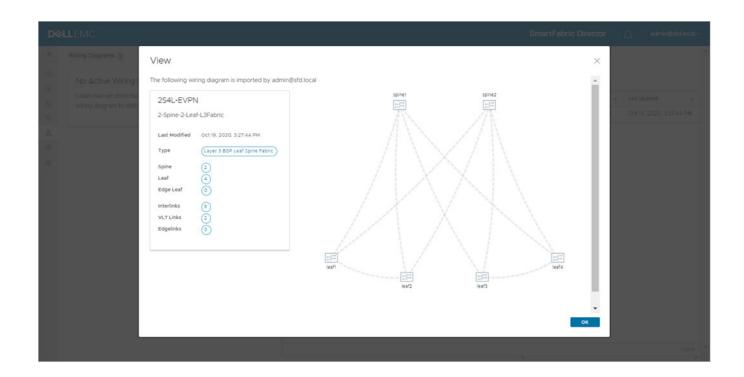
Wiring import success.

D¢	ALEMC	SmartFabric Director 🚊 admin8std.local -	
»	Wiring Diagrams ()		^
0 6 8 8 8 8 8 8 8	No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wring diagram to define your fabric intent.	IMPORT © DEFINE INTENTY © DELETE Name v Description v Type v Status v Updated By v Last updated v : : 254L-EVPN 2-Spine-2-Leaf-L3Fabric Layer 3 BGP Leaf Spine Fabric INACTIVE admin®sfd.local Oct 19, 2020, 3:27:44 PM	
		1 items	Ŧ

3. Select the fabric intent, click the three dots, then select **View** to display the wiring diagram.

D≪	LLEMC		SmartFabric Director	
»	Wiring Diagrams ()			4
	No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wiring diagram to define your fabric intent.	IMPORT CONTREMIENT DEFINE INTENT DEFINE INTENT VIEW DELETE DELETE	Status Y Updated By Y Last Updated Y INACTIVE admini@std.local Oct 19, 2020, 3:27:44 PM	
			1 items	•

4. Click **OK** to close the wiring diagram.



Fabric intent configuration

This information describes how to define a fabric intent, approve the fabric intent, then deploy it. You can either import a previously defined fabric intent or start a new one from scratch.

Layer 3 BGP leaf spine fabric

In SFD fabric intent definition, you can specify the fabric type as *Layer 3 BGP leaf spine fabric* to enable step-by-step guidance to operationalize BGP EVPN fabric.

Select fabric template

1. Select the fabric, click on the three dots, then **Define intent > Create new intent**. If modifying an active intent, make a copy of an intent from the table of intents (active or otherwise), then make the necessary changes.

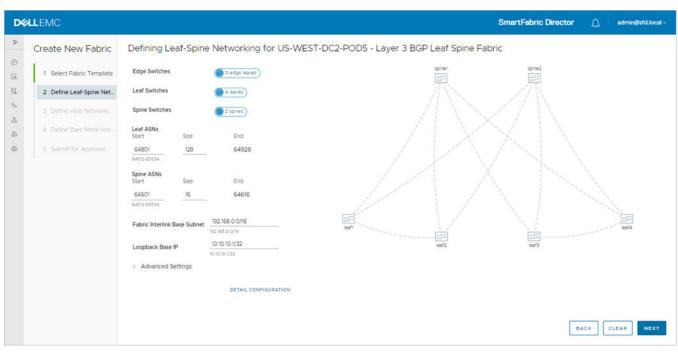
D	ALEMC					SmartFa	bric Director	۵	admin@sfd.loca	ि
>>	Wiring Diagrams 🕠									*
0	No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wring diagram to define your fabric intent.		G DEFINE INTENT > VIEW DELETE	CREATE NEW INTENT COPY ACTIVE INTENT COPY OTHER INTENTS	eaf Spine Fabric		Updated By T admin@std.local	Cct 26. 2	tted τ 2020, 5:45:15 Α.Μ	
		1							1 ibem	-

2. Select Layer 3 BGP Leaf Spine Fabric as the fabric template, then click Next.

D¢			Smai	rtFabric Director	¢	admin@sfd.local ~
»	Fabric Intent Definition	Select Fabric T	emplate			×
G,	1 Select Fabric Template	Start with one of the ne	twork fabric templates.			
0	2 Define Leaf-Spine Networking	Fabric Name	US-WEST-DC2-POD5			
×⊲ ×⊲	3 Define Host Networking	Fabric Template	Select a template to start 🗸			
٢	4 Define Bare Metal Host Networking		Layer 2 VLT Fabric			
٢	5 Define Edge Networking		Layer 3 BGP Leaf Spine Fabric			
	6 Submit for Approval		Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay (NSX Manager re Layer 3 BGP EVPN Leaf Spine Fabric with VxLAN	equired)		
						CANCEL NEXT

Define leaf spine networking

1. Specify the fabric interlink subnet, the /32 loopback IP address seed, then click > to expand advanced settings. SFD generates a per-switch configuration for the interlinks between the leaf and spine switches.



Keep the default values for the leaf and spine ASNs, especially the size, to allow for future expansion. If the size is made restrictive, adding spine or leaf pair switches could result in a failure due to nonavailability of ASN numbers.

SFD allocates the interlink subnets and IP addresses to the loopback interfaces for each switch. You can specify the base addresses for these which are used as the starting point for allocation. These addresses are used within the fabric.

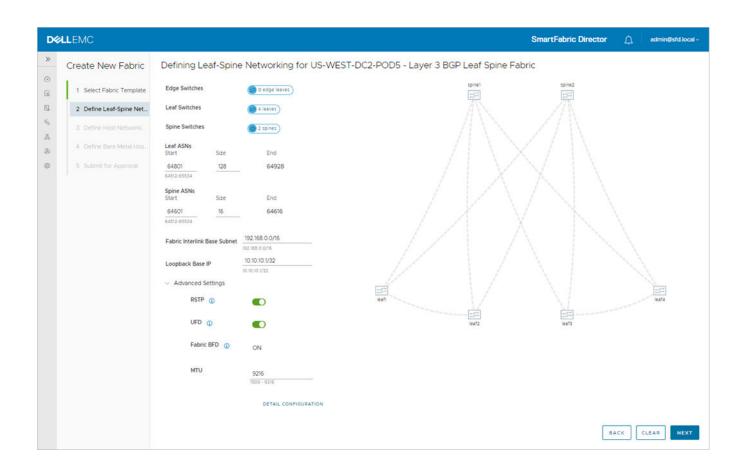
If switches are removed and added back, the individual IP addresses assigned to the newly added switch may not be in monotonically increased order. It not guaranteed that a previously allocated IP address will be used. The functionality of the fabric is not dependent on any specific order that the addresses are allocated by SFD. There can be no duplicate IP addresses within the fabric, and the addresses must be within the range starting with the specified base value.

Advanced settings

By default, rapid spanning-tree protocol (STP) is enabled to ensure a loop-free topology, as well as uplink failure detection (UFD) which detects the loss of upstream connectivity. An uplink state group is configured on each leaf switch which creates an association between the uplinks to the spins, and the downlink interfaces. In the event all uplinks fail on a switch, UFD automatically shuts down the downstream interfaces. This propagates to the hosts attached to the leaf switch.

Bidirectional forwarding detection (BFD) detects faults between two forwarding engines connected by a link. It provides low overhead detection of faults, even on physical media that does not support failure detection of any kind such as Ethernet. This is enabled by default on all switches in a fabric and cannot be modified.

2. Specify the maximum transmission units (MTUs) for the fabric, then click **Next**. SFD ensures that the MTU is set to a specified value on all switches in the fabric.



Define host networking

You can specify configuration to support servers carrying virtualized workloads, which are managed by vCenter. SFD interfaces with vCenter to retrieve the port group information when a workload (VM) is deployed. It uses the workload to configure the switch to bind the port to the VLAN.

1. Click Add VLAN to add the configuration for each port group for the vCenter Server, then click Next.

D¢	LLEMC	SmartFabric Director 🄶 admin@sfd.local	~
» Ø	Fabric Intent Definition	Define Host Networking for US-WEST-DC2-POD5 - Layer 3 Network Fabric	<
》 2 2 3 4 の	 Fabric Intent Definition 1 Select Fabric Template 2 Define Leaf-Spine Networking 3 Define Host Networking 4 Define Bare Metal Host Networking 5 Define Edge Networking 6 Submit for Approval 	Define Host Networking for US-WEST-DC2-POD5 - Layer 3 Network Fabric	
		$\square \qquad \qquad$	

2. Enter the VLAN ID corresponding to the port group, select the Type, then associate one or more VLT pairs to a VLAN ID from the list of available VLT pairs (from the wiring diagram).

8			
Add VLAN	>	<	
VLAN ID	108		
Туре	Workload ~		
Leaf Pair(s)	Select pair(s) ~		
Description (optional)	Leaf-1, Leaf-2		
	Leaf-3, Leaf-4		
	Leaf-5, Leaf-6		
	Leaf-7, Leaf-8		
	CANCEL		

3. Enter the VRRP Virtual IP, IP1, IP 2 information, then click **Close**.

DØLLEMC			SmartFabric Director	مُ
»				
Add VLAN		>	<	
ULAN ID	108			
Туре	Workload	v		
Leaf Pair(s)	Leaf Pair	Leaf-1, Leaf-2		
	VRRP Virtual IP	10.1.1.254		
	IP1	10.1.1.1		
	IP2	10.1.1.2		
	CLOSE			
Description (optional)				
		CANCEL		

- 4. (Optional) Click Add more pairs and repeat the steps.
- 5. Enter an optional description, then click **Add**. Each leaf in the VLT pair has its own IP, and each VLAN in the VLT pair has a VRRP virtual IP in the same subnet as the VLAN.

D¢	LEMC								Smart	Fabric Director	۵	admin@sfd.local ~
»	Create New Fabric	Define	Host Netwo	orking for US-	WEST-DC2-P	OD5 - Laye	er 3 BGP Leaf S	Spine Fat	pric			
0	1 Select Fabric Template	VMware	Manager(s)	00.67.120.10	0							
E 39	2 Define Leaf-Spine Net	+ ADD	VLAN	E VLAN(5)								
Å	3 Define Host Networki		VLAN ID	Φ. τ	VLAN Type	т	Leaf Pair	τ	VRRP Virtual IP	T Descri	ption	τ
6	4 Define Bare Metal Hos		> 108		Workload		(a) leaft:leaf2		1.1.1.1/8			
0	5 Submit for Approval						leaf3:leaf4		2.1.1.1/8			
												1 items
												BACK

The VLAN displays as each host is added.

6. Click >> to provide more details, then click Next.

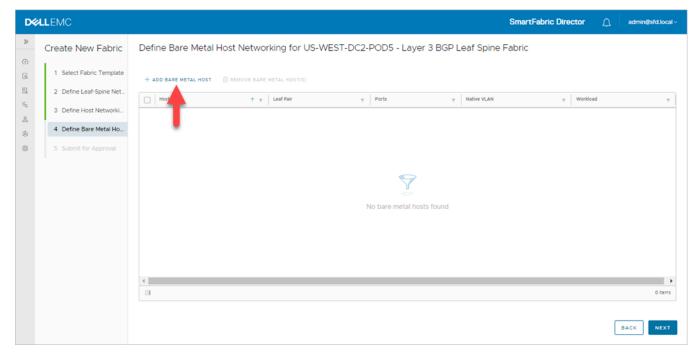
ect Fabric Template VMware Manager(s) text Fabric Template VMware Manager(s) text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template text Fabric Template	LLEMC			SmartFabric Director	admin@sfd.lo
Ine Host NetworkL Ine Host NetworkL Ine Bare Metal Hos. mit for Approval Ine Gartingate Ine Bare Metal Hos. Ine Bare Metal Hos. Int for Approval Ine Bare Metal Hos. Ine	Create New Fabric	Define Host Networking for US-WEST-DC2-	POD5 - Layer 3 BGP Leaf Spine Fabric		
Ine Host NetworkL Ime Host NetworkL Ine Bare Metal Hos Ime Bare Metal Hos Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imit for Approval Imi	1 Select Fabric Template	VMware Manager(s)			
ine Bare Metal Hos mit for Approval VLAN 108 VLAN 108 VLAN Type Workload Description Leaf Pair v VISRP Virtual IP v Virtual Interface 1 v IP1 v Virtual Interface 2 v IP2 v ieieattisat2 111.1/8 leaf2: vlan108 121.1/8 leaf2: vlan108 121.1/8 leaf4: vlan108 121.1/8 ieaf4: vlan108 231.1/8 v	2 Define Leaf-Spine Net	+ ADD VLAN			
ine Bare Metal Hos Image: Constraint for Approval Image: Constraint for Approval Image: Constraint for Approval Image: Constraint for Appr	3 Define Host Networki	П VLANID * т	V/LAN 109		
Leaf Pair VISRP Virtual IP Virtual Interface 1 VIRTUAL Interface 2 VIRTUAL INTErface 2 <	4 Define Bare Metal Hos	0 🚾 108			
Image: Search search 1111/8 leaft: vlan108 1211/8 leaf2: vlan108 1311/8 Image: Search 2111/8 leaf3: vlan108 2211/8 leaf4: vlan108 2311/8	5 Submit for Approval				
2111/8 leaf3: viant08 2211/8 leaf4: viant08 2311/8					
· · · · · · · · · · · · · · · · · · ·			(eaft: vian108	1.2.1.1/8 leaf2: vlan108	1.3.1.1/8
2 Zems			(af3:leaf3: vian108	2.2.1.1/8 leaf4: vian108	
					2 items
			21.11/8 leaf3: vian108		
					BACK
					BACK

Define bare metal host networking

Not all applications can be virtualized, and you may need to deploy non-virtualized workloads. Hosts used to deploy non-virtualized workloads are called *bare metal hosts*. SFD 2.0 supports bare metal hosts.

(i) NOTE: Define bare metal host networking is an optional step. Bare metal is required to add a VLAN in access or trunk mode. If there are no non-virtualized workloads (bare metal hosts), you can skip this step.

1. Click Add bare metal host.



2. Enter the Host Name to identify the VLT pair to which the host is connected to, then select the Leaf Pair.

D¢	ALLEMO			SmartFabric Director	adminitsfd.local ~
	Fabric Intent Definition	Define Bare Metal Hos	t Networking for US-WEST-DC2	-POD5 - Layer 3 Network	
R		Add Bare Metal	l Host	×	
19. N		Host Name	BM-1		
4		Leaf Pair	Select pair		
		Description (astional)	Leaf-1, Leaf-2		
10		Description (optional)	Leaf-3, Leaf-4		
			Leaf-5, Leaf-6 Edge-1, Edge-2		
			CANCEL	D	

3. Specify one or more switch ports that the server is connected to, select Access or Trunk for the port type, select the workload VLAN, an optional description, then click **Add**.

DØLLEMC				
Image: Second system Create New Fabric Image: Second system 1. Select Fabric Template	Define Bare Metal Host Networking for i		SP Leaf Spine Fabric	
Define Leaf Spine Het S Define Host Network A 4 Define Bare Metal Ho.	Host Name Host Name	BM-1 Ute less than 32 characters - ^ (? I s * S) , + are allowed.	native Multin (
Constant and examples	Leaf Pair Ports	leaf: leaf2 esthemati//11 % sthemati//21 % abo MoRe Ports abo MoRe Ports		
	Port Type Workload	Access 0	-	
	Description (optional)			
	1	CANCEL		
				ALC: NEXT

A trunk port type requires a native VLAN in addition to the workload VLAN. The switch default configuration has a native VLAN, and the switch native VLAN option is prepopulated. If you select trunk as the port type and would like to specify the native VLAN explicitly, enter a VLAN number. Similar to an access port type, a workload VLAN needs to be specified.

DELLEMC						SmartFabric Direc	tor <u>()</u>	adminijistid local v -
Create New Fabric Create New Fabric Sect Fabric Template Define Leaf Spine Net Define Kost Network Define Root Network define Bare Metal Ho.	Define Bare Metal Host	Networking for US Add Bare Metal Host Name Leaf Pair Ports			E Leaf Spine			
	*	Port Type Native VLAN (optional) Workload Description (optional)	ethernet///21 X) ADD MORE PORTS Trunk 108	CANCEL AD				

- 4. With a trunk port, the host can have more than one workload VLAN. Click Add more VLANs to add additional workload VLANs, then click Add.
- 5. The configured bare metal host displays in the bare metal host table. Click **Next** to proceed to edge networking.

LLEMC	SmartFabric Director
Create New Fabric	Define Bare Metal Host Networking for US-WEST-DC2-POD5 - Layer 3 BGP Leaf Spine Fabric
1 Select Fabric Template	+ ADD BARE METAL HOST
2 Define Leaf-Spine Net	Host Name 🕆 y Leaf Pair y Ports y Native VLAN y Workload
3 Define Host Networki	BM-1 (a) (a) (a) (a) (a)
4 Define Bare Metal Ho	leafiethernet///23 leafiethernet///23
5 Submit for Approval	leatz ethernétt//43
	BACK

6. (Optional) Select the bare metal host, click the three dots, then select **Edit** to modify the configuration.

Submit for approval

Once the fabric intent has been specified, it needs to be approved before deployment. Only approved fabric intents can be deployed. SFD provides a summary of the wiring diagram and the fabric intent.

1. Click on the individual tiles to view details of the intent before submitting it for approval.

DCLLEMC SmartFabric Director
Process New Fabra Regress Approval for US-WEST-DC2-PODS Configuration. 9 Sect Static Teal 9 Sect Static Teal

2. Details display in the right section. Click **Submit for approval** to continue.

D≪LL EMC			SmartFabric Director	۵	admin@sfd.local v
Create New Fabric Create New Fabric I Select Fabric Template Define Host Networki Define Bare Metal Hos. Submit for Approval	Request Approval for US-WEST-DC2-PC Submitting the following fabric intent for approval Wiring Diagram Layer 3 BGP Leaf Spine Fabric © 0 edge (aver) © 1 fabric 1 fabric Tabric Intent A L3_BGP Network Configuration for 254L-EVPN topology. Last Medified Nov 2, 2020, 30151 PM. Type Layer 3 BOP Leaf Spine Pabric BGP (Vier Details) Interface IPB	D5 Configuration Bare Metal Hosts Host Name T. Y Leaf Pair Y BM-1 Configuration	SmartFabric Director	Montport	
	Interface IPS (192168.0.0/16) VLT (2.VLT Pairs) RSTP ON UPD ON Public BPD ON MTU 9216 Bare Metal (1H515) Edge Links @ Connection(s) Number of VLANS (1VLANS)	< I CLOSE	BACK SAVE FOR LATER	SUBMI	1 čems

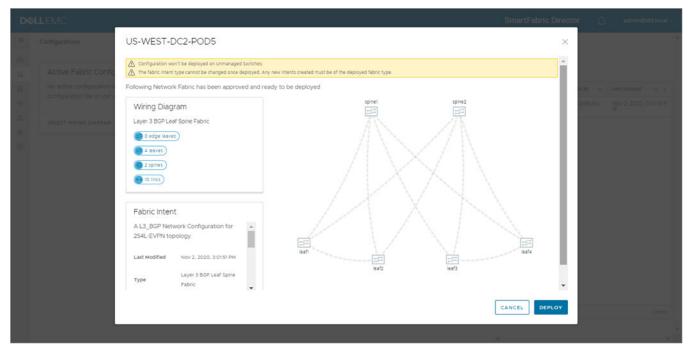
The fabric intent is approved automatically in SFD 2.0, and will display in the Fabric intent table.

Deploy an approved fabric intent

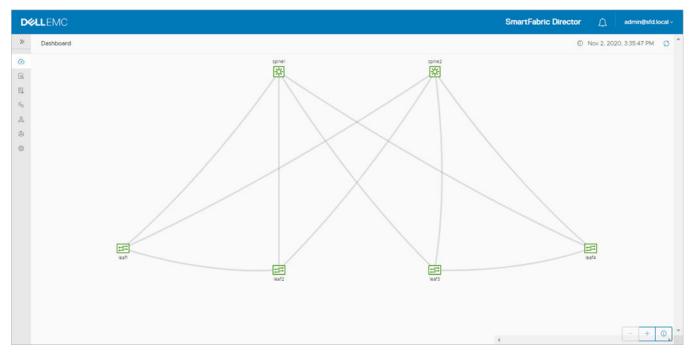
The Fabric intent table displays all fabric intents that are active (if there is one deployed), approved, or in draft state.

«LL EMC								•	martFab	ric Director	۰¢	admin@	iard.iocui
Configur	ations												
Activ	e Fabric Configurations	E REMO	ve										
	ive configuration is found. Get started with a uration file or use wizard to create a new fal		View		Network Type	τ		т	Status	T Update	d By 🔻	Last Updated	4 1
comy			Deploy Delete	5	Layer 3 BGP Leaf	Spine Fab	2S4L-EVPN		APPROVE	D admin al	@sfd.ioc	Nov 2, 2020, M	3:01:51
SELEC	WIRING DIAGRAM		Create Copy	-									

Click **Deploy** to deploy an approved fabric intent, or click **Create copy** to make a copy of the fabric intent and make edits to the intent.



SFD generates a per switch configuration and sends that to the switches using the gNMI interface. The progress of deployment can be viewed on the Topology page, as well as Job activities. As a switch is successfully configured, the color turns to green. The icons change from gray to blue, then to green.



Layer 3 BGP EVPN leaf spine fabric with VxLAN

Select fabric template

1. Select the fabric, then **Define intent** > **Create new intent**. If modifying an active intent, make a copy of an intent from the table of intents (active or otherwise), then make the necessary changes.

LLEMC					SmartFa	bric Director	admin@s	fd.local ~	
Wiring Diagrams ()									*
Wiring Diagrams () No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wiring diagram to define your fabric intent.	TROQUE C	G DEFINE INTENT > DEFINE INTENT > VIEW DELETE	CREATE NEW INTENT	eaf Spine Fabric		Updated By T admin@std.local		т 15 АМ	
								1 items	÷
	No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a	Wiring Diagrams () No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wiring diagram to define your fabric intent.	Wiring Diagrams () No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wiring diagram to define your fabric intent. DEFINE INTENT > DEFINE INTENT > DEFINE INTENT > DEFINE INTENT > DEFINE INTENT >	Wring Diagrams () No Active Wring Diagram Immost Correction of the entropy of the entr	Wiring Diagrams () No Active Wiring Diagram Looks like we don't have an active network fabric yet. Select a wiring diagram to define your fabric intent.	Wring Diagrams Image: Contract of the sector of the se	Wring Diagram:	Wring Diagrams No Active Wring Diagram Looks like we don't have an active network fabric yet. Select a wring diagram to define your fabric intent.	Wring Diagrams Cover dative metwork fabric yet. Select a

2. Select Layer 3 BGP EVPN leaf spine fabric with VxLAN, then click Next.

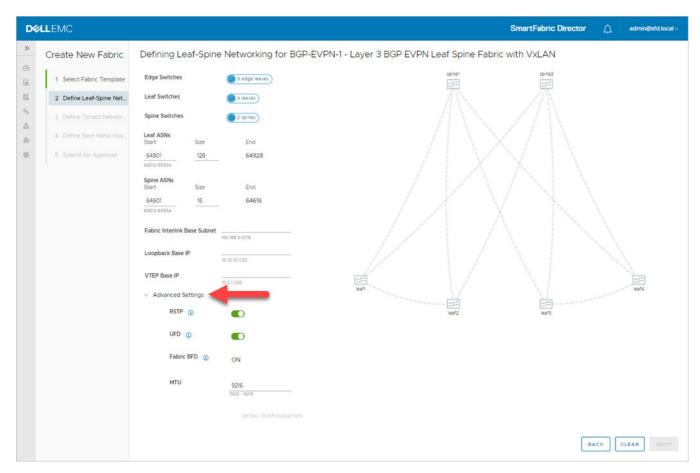
D	¢LL EMC			SmartFabrie	c Director	ΔI	admin@sfd.local ~
>>	Create New Fabric	Select Fabric Temp	olate				
0	1 Select Fabric Template	Start with one of the network	fabric templates.				
E),	2 Define Leaf-Spine Net	Name	BGP-EVPN-1				
λų 68	3 Define Tenant Networ	Network Template	Layer 3 BGP EVPN Leaf Spine Fabric with VxLAN				
٩	4 Define Bare Metal Hos						
٢	5 Submit for Approval						
						CAN	CEL

Define leaf spine networking

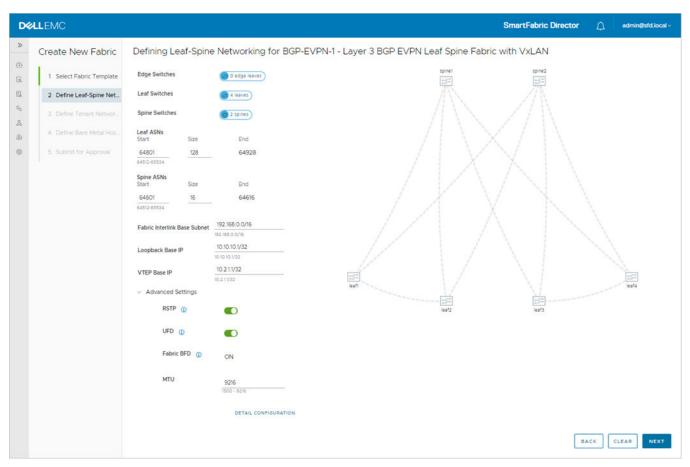
Define underlay for BGP EVPN

(i) NOTE: The fabric type cannot be changed once deployed.

1. It is recommended to keep the default values for the leaf and spine ASNs to allow for future expansion. If the size is made restrictive, adding spine or leaf pair switches could result in failure due to nonavailability of ASNs. Click **Advanced settings**.



2. Specify the base addresses to be used as the starting point for allocation. SFD allocates the interlink subnets, IP address to the loopback interfaces, and the VTEP IP address for each switch. These addresses are used within the fabric.
 (i) NOTE: Underlay network configuration can not be changed after deployment for future development. Advanced settings can be changed.



If switches are removed and added back, the individual IP addresses assigned to the newly added switch may not be in monotonically increasing order and it is not guaranteed that a previously allocated IP address is reused.

The functionality of the fabric is not dependent on any specific order that the addresses are allocated by SFD. There cannot be duplicate IP addresses within the fabric, and the addresses must be within range starting with the specified base value.

- **3.** Enable rapid spanning-tree protocol (**RSTP**) to ensure a loop-free topology. Disabling STP would disable the functionality on all switches in the fabric.
- **4.** Enable uplink failure detection (**UFD**) to detect the loss of upstream connectivity. An uplink state group is configured on each leaf switch, creating an association between the uplinks to the spins and the downlink interfaces.

If all uplinks fail on a switch, UFD automatically shuts down the downstream interfaces. This propagates to the hosts attached to the leaf switch. The host then uses its link to the remaining switch to continue sending traffic across the leaf-spine network. Disabling UFD disables the functionality on all switches in the fabric.

Bi-directional forwarding detection (BFD) is a network protocol that is used to detect faults between two forwarding engines connected by a link. It provides low-overhead detection of faults, even on physical media that does not support failure detection of any kind (such as Ethernet). BFD is enabled by default on all switches in a fabric and cannot be modified.

5. Specify the maximum transmission unit (MTU) for the fabric (default 9216).

SFD ensures that the MTU is set to the specified value on all switches in the fabric. VxLAN is an overlay technology that has an overhead due to the VxLAN header. A lower MTU value could result in slower throughput.

6. Click Detail configuration to view the per switch configuration parameters allocated by SFD, then click Next.

ઘ	LEMC						SmartFabric D	rector	Δ	admin@sfd.loca
	Create New Fabric	Defining Leaf-Spine	Networking for BGP-E	/PN-1 - Layer 3 BGP E		_eaf Spine F	abric with VxLAN			
	1 Select Fabric Template	Edge Switches	😝 0 edge leaves	Switches L3 Interlinks	Inter Cr	nassis Networking	Advanced Settings			
	2 Define Leaf-Spine Net	Leaf Switches	a leaves	Switch T Y ASN	T	Loopback T	VTEP			т.
	3 Define Tenant Networ	Spine Switches	2 spines	leaf1 6480	01	10.10.10.3/32	10.2.1.1/32			
	4 Define Bare Metal Hos	Leaf ASNs		leaf2 6480	D1	10.10.10.4/32	10.2.1.1/32			
		Start Size	End	leaf3 6480	02	10.10.10.5/32	10.2.1.2/32			
	5 Submit for Approval	64801 128 64512-65534	64928	leaf4 6480	02	10.10.10.6/32	10.2.1.2/32			
		Spine ASNs		spine1 6460	01	10.10.10.1/32				
		Start Size	End	spine2 6460	02	10.10.10.2/32				
		64601 16 64512-65534	64616							
		Fabric Interlink Base Subnet	192.168.0.0/16							
			192.168.0.0/16							
		Loopback Base IP	10.10.10.1/32							
		VTEP Base IP	10.2.1.1/32							
		 Advanced Settings 								
		RSTP ()								
		UFD 🕕								
		Fabric BFD	ON							6 items
		MTU	9216 1500 - 9216	CLOSE						
			DETAIL CONFIGURATION							
								8	ACK	CLEAR NEXT

Define tenant networking

Specify a vCenter (VMware Manager)

In BGP VxLAN fabric with hardware VTEP, NSX-T is not required. For virtualized workloads, a vCenter is required. SFD interfaces with vCenter using the REST API. The reachability information (IP address) and credentials must be specified for SFD to establish a session. VMware Manager is specified as part of System settings.

1. Click Add vCenter server.

D	ELL EMC	SmartFabric Director 🗘 admin@sfd.local ~
»	Fabric Intent Definition	Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VxLAN $ imes$
	 Select Fabric Template Define Leaf-Spine Networking Define Bare Metal Host Networking Define Edge Networking Submit for Approval 	Define Tenant Networking for BGP-EVPN-I - Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN * a. Tenants * a. Tenants * dd, edit, or remove tenants and associate vCenter servers * of No VMware Manager connection is defined. Please add a vCenter server before associating a tenart. * Movement * ADD TENANT * ADD TENANT * IBB Type * Center Association * Tenant * IBB Type * Center Association * Tenant * IBB Type * Center Association * Exception * IBB Type * Center Association * Exception * Ibb tenants found * b. VaLAN Segments * c. Non-stretched VLANs * Add, edit, or remove VaLAN segments > c. Non-stretched VLANs
		BACK NEXT

2. Specify the IP address or FQDN of the vCenter server, username, and password that is used to establish a session for REST API-based interaction with vCenter, then click **Add**.

Add a tenant

EVPN allows multitenancy, but SFD 2.0 only supports a single tenant.

1. Click > a. Tenants, then Add tenant.

2 Define Leaf-Spine Net VMware Manager(s) Inter://00.07.120.100 3 Define Tenant Netwo + ADD TENANT REMOVE TENANT(s) 4 Define Bare Metal Hos + y IRB Type y	th VXLAN	¥
1 Select Fabric Template ✓ a. Tenants Warming ✓ a. Tenants ✓ A. Tenants ▲ Add, edit, or remove tenants and associate vCenter servers 2 Define Leaf-Spine Net ✓ a. Tenants ♦ Marger(s) ♦ Marger(s)	T Description	Y
Solution Solution Solution Solution Solution Solution	T Description	Ÿ
3 Define Tenant Netwo_ 9 Define Tenant Netwo_ 4 Define Bare Metal Hos_ 5 Submit for Approval	Y Description	¥
4 Define Bare Metal Hos 5 Submit for Approval	T Description	Ŧ
5 Submit for Approval		
		0 items
> b. Val,AN Segments (Warning) Add, edit, or remove VxLAN segments		
> c. Non-stretched VLANs (Warning) Add, edit, or remove non-stretched VLANs		

2. Specify a tenant name and associate a vCenter, then click Add. Symmetric IRB for the VxLAN VTEP cannot be modified.

DØ	LEMC			SmartFabric Director	Admini@sht.local	
		Add for BGP-EVPN Add for ormore Add Tenant Tenant IRB Type Associated vCenter Description (optional)	A1 - Layer 3 BGP EVPN Leaf Spine Fabric with			

The new tenant is added to the Tenant table. To edit the tenant, select the tenant, then click the three dots to edit or remove the tenant. If you remove the tenant, all associated configuration for that tenant will also be removed.

te New Fabric	Denne Tr	SHOULD RECOVOIR	Ing for DOP-ET	river - Layer 5 D	OP EVENU	Leaf Spine Fabric wit				
Select Fabric Template	🗸 a. Tenant	5	Add, edit, or rem	ove tenants and associate v	Center servers					
Define Leaf-Spine Net	VMware	Manager(s)	https://100.67.120.100							
Define Tenant Netwo	+ ADD	TENANT 👘 REMOVE	TENANT(S)							
		Tenant	↑ т	IR8 Type	т	vCenter Association	т	Description		
		SFD-Tenant		Symmetric		https://100.67.120.100				
										,
	> b. VxLAN	Segments Warning	Add, edit, or rem	ove VxLAN segments						
				nove non-stretched VLANs						
	Define Leaf-Spine Net Define Tenant Netwo	Define Leaf-Spine Net	Define Leaf-Spine Net. Define Bare Metal Hos submit for Approval	Define Leaf-Spine Net Define Tenant Netwo Define Bare Metal Hos Submit for Approval	Define Leaf-Spine Net VMware Manager(s)	Define Leaf-Spine Netwo VMware Manager(s) Interp://noo.67.120.100 Define Bare Metal Hos Image: transmit if the spine of the sp	Define Leaf-Spine Network VMware Manager(s) Interst Network Define Bare Metal Hos isubmit for Approval isobrit for Approval isobrit for Approval isobrit for Approval 	Define Leaf-Spine Network VMware Manager(s) Inter Z/100 87 120.100 Define Bare Metal Host Image: the state of the st	Define Leaf-Spine Network Center Control of Claims and Claims and Claims and Claims and Claims Define Bare Metal Hos Exercise Association x x center x center center x center center	Define Leaf-Spine Network VMware Manager(s) <pre></pre>

Add VxLAN segments (VNIs)

A VxLAN segment is a virtual network grouping that all related workloads belong to. It is similar to a VLAN in Layer 2 fabric, but spans across racks or data centers.

1. Click > b. VxLAN segments, then Add VxLAN segment.

A virtual network ID (VNI) is used to identify a VxLAN segment.

2. Specify a unique VNI for each VxLAN segment across all tenants, then select the Type from the drop-down.

8				
DØLLEMC				
» Create New				
15 .1 Select Fabric	anta Anta	wat in simple that the set second contains the	_	
Ek 2 Detre Leat	Add VxLAN Segme	ent	×	
A Define Tena	Tenant	SFD-Tenant 1008	<i>x</i> .) P	
195 A Sheetter	Type Anycast Gateway IP Leaf Pair(s) Description (optional)	Workload VSphere Management vMotion Storage Transport Workload Other		

3. Select the leaf pairs from the drop-down.

D&LLEMC			SmartFabric Director	admini@shtliocal.v
» Create New				
1 Select Fabr	04331050 cm 20505522 mil	names is talenting and associate (charing and and		
El 2 Detreiler S Define Ten			×	
A CR. Deles Service	Tenant	SFD-Tenant	v marater	
(e)	Туре	Workload		
	Anycast Gateway IP	1111/8	-	
	Leaf Pair(s)	Select pair(s) Select pair(s)		
	Description (optional)	leaft: leaf2		
		leaf3: leaf4	A00	
	straiched VLAM warning And edit of	e remove recontractional VLANS		
				BACK

Distributed anycast gateway is the default gateway that enables the use of the same gateway IP address across all leaf switches that are part of the VxLAN network. This ensures that each leaf switch can function as the default gateway for the workloads that are directly connected to it.

This feature facilitates flexible workload placement, host mobility, and optimal traffic forwarding across the VxLAN fabric. The specified anycast gateway IP address is used across all the leaf switches that are part of the VxLAN segment.

4. Specify the racks where the workloads belonging to a given VxLAN segment reside, then click Close.

D¢	ALL EMC				Smart/Fabric Director Director administrational v
-35		Define Te	Add VxLAN Segment		× N
) à Tenante	Tenant	SFD-Tenant	
		~ n Vican	VNI	1008	
		+ 400 V	Туре	Workload	
		121	Anycast Gateway IP	111.1/8	X Description X
		3	Leaf Pair(s)	Leaf Pair leaf1: leaf2 VLAN ID 1008 2 - 4093 (except reserved VLANK) IP1 12.11/8 IP2 13.11/8 CLOSE	
		> c.Noya	Description (optional)		CANCEL ADD

The selected leaf pair displays. For each rack that would host these workloads, a local VLAN must be specified for the ToR pair. This local VLAN is associated with a specific VxLAN segment on the specified leaf pair. As in host networking, for L3 BGP fabric, the IP addresses for the two VIPs must be specified.

5. Click Add more pairs to specify additional leaf pairs corresponding to the racks where workloads can be placed.

D¢	LL EMC			SmartFibric Director
-32				
9 6 1		Add VxLAN Segme	ent	×
		- and Tenant	SFD-Tenant	
1		VNI VNI	1008	Y Destruction Y
.961		Туре	Workload	· · ·
		Anycast Gateway IP	1.11.1/8	
		Leaf Pair(s)	ADD MORE PAIRS	
		Description (optional)		
		100		CANCEL ADD

6. (Optional) Repeat the steps to add more leaf pairs, then click Add.

VxLAN segments

1. Each newly added VxLAN segment displays. Click >> to view the parameter configuration for each new segment.

Create New Fabric	Define Tenant Networ	ing for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VxLAN	
1 Select Fabric Template	> a. Tenants	Add, edit, or remove tenants and associate vCenter servers	
2 Define Leaf-Spine Net	↓ b. VxLAN Segments	Add, edit, or remove VxLAN segments	
3 Define Tenant Netwo	+ ADD VXLAN SEGMENT	REMOVE VXLAN SEGMENT(S)	
4 Define Bare Metal Hos	VNI т	VNI 1008	×
5 Submit for Approval	008	Tenant SED-Tenant VLAN Type Workload Anycast Gateway IP 1111/8 Description	
		Leaf Pair v vLANID v IP1 v IP2 (model:leaf2) 1008 1211/8 1311/8 EDIT REMOVE 1008 1211/8 1311/8	T
	> c. Non-stretched VLANs	Add, edit, or remove non-stretched VLANs	

2. Click Edit to modify an existing VxLAN segment.

D	ALL EMC			SmartFabric Director	scal y - 1
35					
6) 16. 14.		Edit VxLAN Segment		×	
4 5 6 8		Tenant VNI Type Anycast Gateway IP Leaf Pair(s)	SFD-Tenant 1008 Workload 1111/8 eiraft leaf2 ×) ADD MORE PAIRS	· · · · · · · · · · · · · · · · · · ·	
		Description (optional)		CANCEL SAVE	

- 3. Make changes, then click **Save** or **Cancel** to discard the changes.
- 4. (Optional) Click **Remove** to delete the selected VxLAN segment, then click **Remove** again to confirm deletion. You can also click **Cancel** to cancel the operation.

DELLEMC				SmartFa	bric Director	۵	admin@shtTocal y :
» Create N							
1991							
E 3 Define E 3 Define E 4 Define			X ANCEL REMOVE 7 VLANIE 2008				

- 5. (Optional) Select multiple VxLAN segments to remove more than one, then select Remove VxLAN segments.
- 6. (Optional) All selected VxLAN segments are listed. Click **Remove** or **Cancel**.

Non-stretched VLANs

You may have workloads in more than one data center across Layer 3 boundaries. It does not need to be placed in a VxLAN segment, but you must define the VLAN. VLANs defined for these are local to a rack (leaf pair), and are not stretched across racks.

(i) NOTE: If all workloads are placed in more than one rack, skip these steps and click Next.

1. Select > c. Non-stretched VLANs, then click Add VLAN.

Create New Fabric	Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VxLAN
1 Select Fabric Template	> a. Tenants Add, edit, or remove tenants and associate vCenter servers
2 Define Leaf-Spine Net	> b. VXLAN Segments Add, edit, or remove VXLAN segments
3 Define Tenant Netwo	c Non-stretched VLANs Warning Add, edit, or remove non-stretched VLANs
4 Define Bare Metal Hos	These VLANs are not associated with the VNIs or stretched across the fabric.
5 Submit for Approval	+ ADD VLAN T REMOVE VLAN(S)
	VLAN ID T Y Tenant Y VLAN Type Y Leaf Pair Y VRRP Virtual IP Y Description Y
	No VLANs found
	UI O fem

2. Specify a unique VLAN ID which belongs to a specific tenant. The VLAN ID cannot be used for any other VxLAN segment or other nonstretched VLANs.

DELLEMC Smarth		
Create New Fabric Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN Server Fabric Tenant Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN Define Tenant Networking for BGP-EVPN-1 - Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN Define Tenant Add VLAN Define Tenant Add VLAN Define Tenant SPD-Tenant Type Leaf Pair(s) Description (optional) VMotion Storage Define Tenant Leaf Pair(s) Description (optional) Description (optional) Descrip		

(i) NOTE: SFD 2.0 only supports a single tenant. This field is automatically populated.

- **3.** Select the leaf-pair (ToRs) of the rack where the workload are placed from the drop-down.
- 4. Specify the VLAN for the ToR pair, specify the two VIPs required, then click Close.

DØLLEMC							
* Create New Fabric	Define Te	Add VLAN				И	
II. 1 Select Fabric Template III. 2 Define Leaf Spine Net.	> a Tenanti > la VaLAN	VLAN ID	120 2 -4094 (except reserved VLA	NS)			
3 Define Tenant Netwo.	C & Non-sta	Tenant	SFD-Tenant				
an Dates for some some	These VLA	Туре	Workload		×		
6 Superfortigroup	+ 460 -	Leaf Pair(s)	Leaf Pair VRRP Virtual IP IP1 IP2 CLOSE	leaf3: leaf4 2111/8 2211/8 2311/8		enaine 1 D	
	0	Description (optional)			CANCEL ADD		

- 5. (Optional) Click **Add more pairs** if you have more hosts or workloads which are part of the same VLAN but in different racks. Configure the additional leaf pairs, then click **Close**.
- 6. (Optional) Click Add.
- 7. The added nonstretched VLANs display in the VLAN table. Click >> to view more information, then click Next.

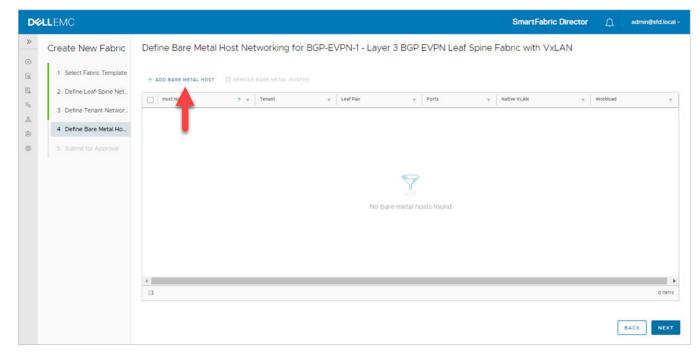
LEMC				SmartFabric	Director 🔔	admin@sfo
Create New Fabric	Define Tenant Networ	rking for BGP-EVPN-1 - Layer 3	BGP EVPN Leaf Spine Fab	pric with VxLAN		
1 Select Fabric Template	> a. Tenants	Add, edit, or remove tenants and associat	e vCenter servers			
2 Define Leaf-Spine Net	> b. VxLAN Segments	Add, edit, or remove VxLAN segments				
3 Define Tenant Netwo		Add, edit, or remove non-stretched VLAN	5			
4 Define Bare Metal Hos	These VLANs are not associat	ed with the VNIs or stretched across the fabric.				
5 Submit for Approval	+ ADD VLAN	VLAN(5)				
	VLAN ID	↑ ⊤ Tenant ⊤ VLAN Ty	pe T Leaf Pair	T VRRP Virtual IP	T Description	
	□ » 120	SFD-Tenant Worklo	ed eaf3:eaf4	2111/8		
						Tite

Define bare metal host networking

Not all applications can be virtualized, and you may need to deploy non-virtualized workloads. Hosts used to deplay non-virtualized workloads are called *bare metal hosts*. SFD 2.0 supports bare metal hosts.

NOTE: Define bare metal host networking is an optional step. Bare metal is required to add a VLAN in access or trunk mode. If there are no non-virtualized workloads (bare metal hosts), you can skip this step.

1. Click Add bare metal host.



2. Enter the Host Name to identify the VLT pair to which the host is connected to, then select the Leaf Pair.

DØ	LL EMC					SmartFabri	c Director	 Liocal (*)
* 0 11 11 10 11		Add Bare Metal	BM-1 Use less than 32 characters.		Leaf S ×			
а. Ф.		Tenant Leaf Pair Ports Port Type Workload Description (optional)	SFD-Tenant leaft: iceaft: iceaft: abd MORE Access 1008	C ethernet///21 ×) ADD MORE PORTS				
				CANCEL	00			

3. Specify one or more switch ports that the server is connected to, select Access or Trunk for the port type, select the workload VLAN, an optional description, then click **Add**.

A trunk port type requires a native VLAN in addition to the workload VLAN. The switch default configuration has a native VLAN, and the switch native VLAN option is prepopulated. If you select trunk as the port type and would like to specify the native VLAN explicitly, enter a VLAN number. Similar to an access port type, a workload VLAN needs to be specified.

»			_	
Add Bare Metal	Host	>	<	
E Host Name	BM-1			
	DM-1			
Leaf Pair	Leaf-1, Leaf-2	~		
(a) Ports	C Leaf-1:1/1/43 ×	C Leaf-2:1/1/43 ×		
	C Leaf-1:1/1/44 ×	C Leaf-2:1/1/44 ×		
	ADD MORE PORTS	ADD MORE PORTS		
Port Type	Trunk	~		
	110110			
Native VLAN	99	~		
Workload VLAN	1230 X			
	ADD MORE VLANS			
Description (optional)				
		CANCEL		

4. With a trunk port, the host can have more than one workload VLAN. Click Add more VLANs to add additional workload VLANs, then click Add.

D∜	ALLEMO					SmartFabric Director	🚊 adminitistid local 🗧
3	Fabric Intent Definition	Defin	e Rare Metal Host	Networking for	LIS-WEST-DC2-P	POD5 - Layer 3 Netwo	
E		+ AD	Add Bare Metal	Host	;	×	
10			Host Name	BM-1		T Post Type T N	
			Leaf Pair	Leaf-1, Leaf-2	~		
4			Ports	C Leaf-1:1/1/43 X	C Leaf-2:1/1/43 X		
1				C Leaf-1:1/1/44 X	C Leaf-2:1/1/44 ×		
				ADD MORE PORTS	ADD MORE PORTS		
			Port Type	Trunk	v		
			Native VLAN (optional)	99	×		
			Workload VLAN	1230 X			
				ADD MORE VLANS			
			Description (optional)				
					CANCEL ADD		
		<u>m</u>					

5. The configured bare metal host displays in the bare metal host table. Click Next to proceed to edge networking.

«LL EMC						SmartFabric Director	۵	admin@sfd.loca
Create New Fabric	Define Bare Metal H	Host Networking for I	BGP-EVPN-1 - Layer	3 BGP EVPN Leaf S	pine Fab	ric with VxLAN		
1 Select Fabric Template	+ ADD BARE METAL HOST	II REMOVE BARE METAL HOST(S						
2 Define Leaf-Spine Net	Host Name	↑ Tenant	+ Leaf Pair	T Ports	Ŧ	Native VLAN T	Workload	,
3 Define Tenant Networ	□ : BM-1	SFD-Tenant	(leaft: leaf2)	eaft.ethernett/1/1:1)		1008	
4 Define Bare Metal Ho				leaf2.ethernet1/1/2-1	5			
	4							

6. (Optional) Select the bare metal host, click the three dots, then select **Edit** to modify the configuration.

Submit for approval

Once the fabric intent is complete, you can then submit it for approval. A summary of the wiring diagram and the fabric intent displays. Select on the tiles provides details of that specific parameter.

1. Click **VTEP** within the fabric intent to view VTEP intent details.

DELLEMC			SmartFabric	Director 🛕 admin@sfd.local >
> Create New Fabric I Select Fabric Template I 2 Define Leaf-Spine Net I 3 Define Tenant Networ I Define Bare Metal Hos Image: Submit for Approval	Request Approval for BGP-EVPN-1 Configu Submitting the following fabric intent for approval Wiring Diagram Layer 3 BGP EVPN Leaf Spine Fabric with VXLAN © 0 edge leaves © 1 elaves © 1 elaves	VТЕР <u>VTEPIP</u> ↑ ү 1021//32		Leaf Pair: v Control of the set
	VLANS			2 ñems
	Bare Metal	CLOSE	BACK	FOR LATER SUBMIT FOR APPROVAL

2. Click **Tenants** to view tenant intent details.

D%LL EMC				SmartFabric Director	۵	admin@sfd.local v
>> Create New Fabric (a) 1 Select Fabric Template (a) 2 Define Leaf-Spine Net (b) 3 Define Tenant Networ (a) 4 Define Bare Metal Hos (b) 5 Submit for Approval	Request Approval for BGP-EVPN-1 Config Submitting the following fabric intent for approval Wiring Diagram Layer 3 BGP EVPN Leef Spine Fabric with VxLAN © edge ieaves © 2 spines © 2	Tenants Tenant \uparrow y IS	RB Type v L3 VNI YMMETRIC 20000		<u>т</u> Descrip	
				BACK SAVE FOR LATER	SUBMI	T FOR APPROVAL

3. Click Submit for approval to submit the fabric intent. Click Back to return to the previous step, or click Save for later.

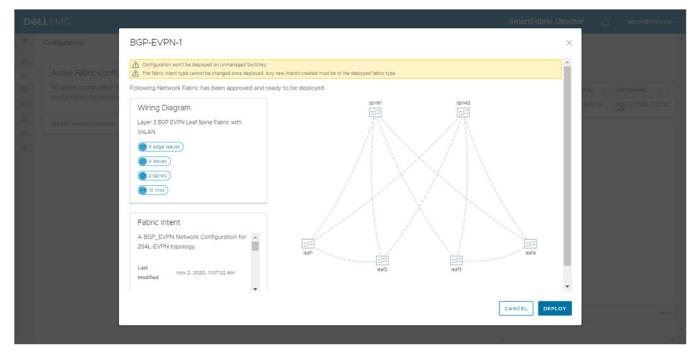
DVLLEMC		SmartFabric Director
>> Configurations		•
Active Fabric Configurations B C C C S SELECT WIRNO DIAGRAM	PENOVE Pabric Name v Network Type v Wring Diagram Egr-EVPN-1 Layer 3 GGP EVPN Leaf Spi 254L-EVPN ne Fabric with VXLAN Support of the second secon	Y Status Y Updated By Y Last updated V APPROVED admin@sfd.loc Nov 2, 2020, 11:07:32
		1 items
		4

Deploy an approved fabric intent

1. Once the fabric intent is approved, you are ready to deploy the fabric so SFD can configure each switch based on the intent. Select the fabric intent, click the three dots, then select **Deploy**.

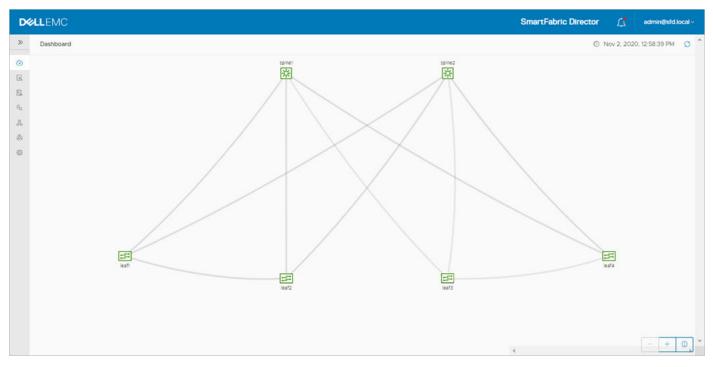
Dę	LLEMC		SmartFabric Director
»	Configurations		
	Active Fabric Configurations No active configuration is found. Get started with a saved fabric configuration file or use wizard to create a new fabric. SELECT WIRING DIAGRAM	REMOVE View v View Deploy Layer 3 BQP EVPN Leaf Spi 254L-EVP Create Copy	
			1 Rems.

2. Once the fabric intent is approved, you are ready to deploy the fabric so SFD can configure each switch based on the intent. Select the fabric intent, click the three dots, then select **Deploy**.



(i) NOTE: You can optional select View prior to Deploy.

SFD starts configuring each switch, and the progress displays on the dashboard. As each switch is successfully configured, the switch turns green.

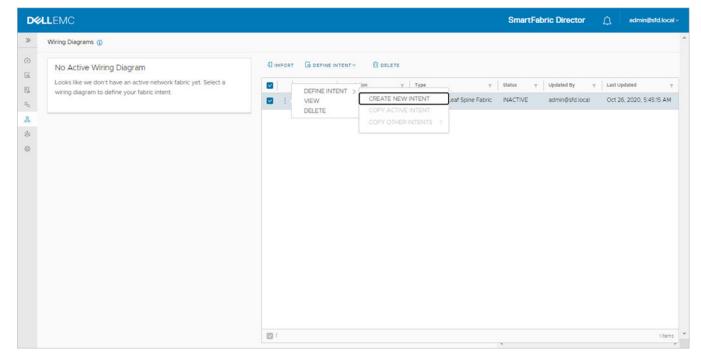


Details of the deployment can be viewed in the SFD notifications page.

Layer 3 BGP leaf spine fabric with NSX-T overlay

Select fabric template

1. Select the fabric, then **Define intent** > **Create new intent**. If modifying an active intent, make a copy of an intent from the table of intents (active or otherwise), then make the necessary changes.



2. Select Layer 3 BGP leaf spine fabric with NSX-T Overlay, then click Next.

Dé				SmartFabric Director	D	admin@sfd.local v
>>	Create New Fabr	Select Fabric Tem	plate			
0	1 Select Fabric Templa	Start with one of the netwo	rk fabric templates.			
5	2 Define Leaf-Spine Ne	Name	BGP-NSXT-1			
×0 8	3 Define Host Networki	Network Template	Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay (N $ \sim$			
٢	4 Submit for Approval					
٢						
					CAN	CEL NEXT

Define leaf spine networking

1. It is recommended to keep the default values for the leaf and spine ASNs to allow for future expansion. If the size is made restrictive, adding spine or leaf pair switches could result in failure due to nonavailability of ASNs. Click **Advanced settings**.

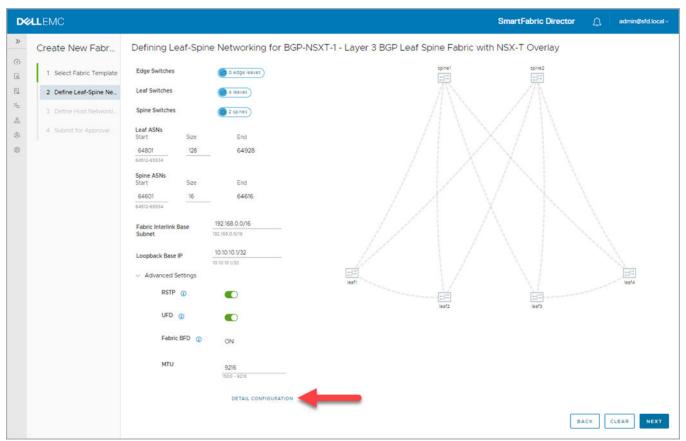
Create New Fabr	Defining Leaf-S	pine Networking for BGP-NS	XT-1 - Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay	
create new rabi	Denning Loon o	pine rectioning for boil inc	ATT East of bor Eedi opine rabite warnow roverlay	
1 Select Fabric Template	Edge Switches	0 edge leaves	spine1 spine2	
2 Define Leaf-Spine Ne	Leaf Switches	a leaves		
3 Define Host Networki	Spine Switches	2 spines		
4 Submit for Approval	Leaf ASNs Start Size	End	$/ X \times X$	
	64801 128	64928		
	64512-65534			
	Spine ASNs Start Size	End		
	64601 16	64616		
	64512-65534			
	Fabric Interlink Base	192.168.0.0/16	E est	
	Subnet	192 168.0.0/16	kent leafe	
	0 000000000	10.10.10.1/32	leaf2 leaf3	
	Loopback Base IP	10.10.10.1/32		
	> Advanced Settings			
		DETAIL CONFIGURATION		

2. Specify the base addresses to be used as the starting point for allocation. SFD allocates the interlink subnets, IP address to the loopback interfaces, and the VTEP IP address for each switch. These addresses are used within the fabric.

If switches are removed and added back, the individual IP addresses assigned to the newly added switch may not be in monotonically increasing order and it is not guaranteed that a previously allocated IP address is reused.

The functionality of the fabric is not dependent on any specific order that the addresses are allocated by SFD. There cannot be duplicate IP addresses within the fabric, and the addresses must be within range starting with the specified base value.

3. Enable rapid spanning-tree protocol (**RSTP**) to ensure a loop-free topology. Disabling STP would disable the functionality on all switches in the fabric.



4. Enable uplink failure detection (**UFD**) to detect the loss of upstream connectivity. An uplink state group is configured on each leaf switch, creating an association between the uplinks to the spins and the downlink interfaces.

If all uplinks fail on a switch, UFD automatically shuts down the downstream interfaces. This propagates to the hosts attached to the leaf switch. The host then uses its link to the remaining switch to continue sending traffic across the leaf-spine network. Disabling UFD disables the functionality on all switches in the fabric.

Bi-directional forwarding detection (BFD) is a network protocol that is used to detect faults between two forwarding engines connected by a link. It provides low-overhead detection of faults, even on physical media that does not support failure detection of any kind (such as Ethernet). BFD is enabled by default on all switches in a fabric and cannot be modified.

5. Specify the maximum transmission unit (MTU) for the fabric (default 9216).

SFD ensures that the MTU is set to the specified value on all switches in the fabric. VxLAN is an overlay technology that has an overhead due to the VxLAN header. A lower MTU value could result in slower throughput.

6. Click Detail configuration to view the per switch configuration parameters allocated by SFD, then click Next.

-		
Create New Fabr	Defining Leaf-Spine Networking for BG	P-NSXT-1 - Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay
1 Select Fabric Template	Edge Switches	Switches L3 Interlinks Inter Chassis Networking Advanced Settings
2 Define Leaf-Spine Ne	Leaf Switches	Switch 🛧 🐺 ASN 🐺 Loopback
3 Define Host Networki	Spine Switches	leaf1 64801 10.10.10.3/32
4 Submit for Approval	Leaf ASNs Start Size End	leaf2 64802 10.10.10.4/32
	64801 128 64928	leaf3 64803 10.10.10.5/32
	64512-65534	leaf4 64804 10.10.10.6/32
	Spine ASNs	spine1 64601 10.10.10.1/32
	Start Size End	spine2 64602 10.10.10.2/32
	64601 16 64616 64512-65534	
	Fabric Interlink Base 192.168.0.0/16	
	Loopback Base IP 10.10.10.1/32	
	 Advanced Settings 	
	RSTP ()	
	UFD 🕦 🌑	
	Fabric BFD ① ON	62
	MTU one	CLOSE
	9216 1500 - 9216	
	DETAIL CONFIGURATION	

Define host networking

You can specify configuration to support servers carrying virtualized workloads, which are managed by NSX-T Manager. SFD interfaces with NSX-T Manager to retrieve the port group information when a workload (VM) is deployed. It uses the workload to configure the switch to bind the port to the VLAN.

1. Click Add VLAN to add the configuration for each port group for the NSX-T Manager, then click Next.

D∜		SmartFabric Director	
> C E E y	Create New Fabr 1 Select Fabric Template 2 Define Leaf-Spine Ne	Define Host Networking for BGP-NSXT-1 - Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay VMware Manager(s) () (00.67.5.180) () (00.67.5.180) () (00.67.5.180) + ADD VLAN () REMOVE VLAN(S)	
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	3 Define Host Networki 4 Submit for Approval	VLAN ID T VLAN Type T Leaf Pair T VRRP Virtual IP T Description T	
		III Oliems BACK NEXT	

2. Enter the VLAN ID corresponding to the port group, select the Type, then associate one or more VLT pairs to a VLAN ID from the list of available VLT pairs (from the wiring diagram).

DØLLEMC			SmartFabric Director	.admint[std.local -
Create New Fabr Create New Fabr Create New Fabr Create New Fabr		SXT-1 - Layer 3 BGP Leaf Spine Fabric with NSX-T C	overlay .	
3 Define Host Hetwork.	VLAN ID Type Leaf Pair(s) Description (optional)	118 2-4094 (except reserved VLAxs) Transport ~ (e) (eart: Iea/2 x) ADD MORE PAIRS		

- 3. (Optional) Click Add more pairs and repeat the steps.
- 4. Enter an optional description, then click **Add**. Each leaf in the VLT pair has its own SVI IP, and each VLAN in the VLT pair has a VRRP virtual IP in the same subnet as the VLAN.

LEMC				SmartF	abric Director 🗘	admin@sfd.loo
Create New Fabr	Define Host Networ	king for BGP-NSXT-1 - Lay	ver 3 BGP Leaf Spine Fak	pric with NSX-T Overlay		
1 Select Fabric Template	VMware Manager(s)	100.67.5.180				
2 Define Leaf-Spine Ne	+ ADD VLAN					
3 Define Host Networki	VLAN ID	🕆 💡 VLAN Type	T Leaf Pair	T VRRP Virtual IP	T Description	
4 Submit for Approval	🗆 » 118	Transport	(leaftdeaf2	1.1.1.1/8		

5. Click >> to provide more details, then click Next.

D	LEMC		SmartFabric Director
» () I I V	Create New Fabr 1 Select Fabric Template 2 Define Leaf-Spine Ne	Define Host Networking for BGP-NSXT-1 - Layer 3 BG VMware Manager(s) • 000 015 3180 • 000 07 120 100 + ADD VLAN	P Leaf Spine Fabric with NSX-T Overlay
	Befine Host Network Submit for Approval	VLAN 118 VLAN 118	Transport v VBRP Virtual IP v Virtual Interface 1 v IP1 v Virtual Interface 2 v IP2 v
		0	1 items
		EDIT RE	BACK NEXT

Submit for approval

Once the fabric intent is complete, you can then submit it for approval. A summary of the wiring diagram and the fabric intent displays. Select on the tiles provides details of that specific parameter.

DØLLEI	MC	SmartFabric Director	
» Cre	ate New Fabr	Request Approval for BGP-NSXT-1 Configuration	
	Select Fabric Template	Submitting the following fabric intent for approval	
EJ 2	Define Leaf-Spine Ne	Wiring Diagram	
	Define Host Networki	Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay	
a 4	Submit for Approval	e o edge leaves	
0		© 2 spins	
		Fabric Intent A L3_BGP_NSX_T Network Configuration for 254L- EVPN topology. Last Modified Oct 26, 2020, 8:23:37 AM Layer 3 BOP Leaf Spine Fabric with NSX-T Type Layer 3 BOP Leaf Spine Fabric with NSX-T	
		BACK SAVE FOR LATER SUBMIT FOR APPROVAL	

Deploy an approved fabric intent

Once the fabric intent is approved, you are ready to deploy the fabric so SFD can configure each switch based on the intent.

1. Select the fabric intent, click the three dots, then select **Deploy**.

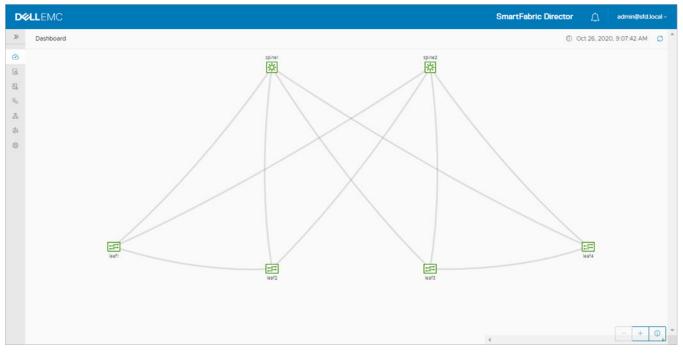
(i) NOTE: You can optional select View prior to Deploy.

Configuratio	ins										
No active configura	Fabric Configurations configuration is found. Get started with a saved fabric tion file or use wizard to create a new fabric.	Viev Dep Dele	loy	Network Type Layer 3 BGP Leaf Spin bric with NSX-T Overia Layer 3 BGP Leaf Spin bric	Wiring Diagram 254L-EVPN 254L-EVPN	т	Status y APPROVED DRAFT	Updated By admin@sfd.l admin@sfd.l admin@sfd.l al	loc	Last Updated Oct 26, 2020, 7 AM Oct 26, 2020, AM	8.23.3

2. Click Deploy.

DELLEMC	SmartFabric Dir	ector	Ω	admint[std.local+
2 Configurations	BGP-NSXT-1	×		
CO Active Fabr	Configuration won't be deployed on Unmanaged Switches. Conf The fabric intent type cannot be changed once deployed. Any new intents created must be of the deployed fabric type.	î		
EL No active cont configuration f		H		
s companies	Wiring Diagram			
	Fabric Intent A L3_BGP_NSX_T Network Configuration * for 254L-EVPN topology. Last Modified Oct 26, 2020, 82337 AM	•		
	CANCEL DEPLO	Y.		

SFD starts configuring each switch, and the progress displays on the dashboard. As each switch is successfully configured, the switch turns green.



Details of the deployment can be viewed in the SFD notifications page.

Layer 2 VLT fabric

This information explains the Layer 2 fabric. The leaf spine networking template for a Layer 2 fabric is different from that for a Layer 3 fabric.

() NOTE: You can only use a vCenter Server to configure a Layer 2 fabric intent. NSX-T Manager is only used for Layer 3 fabric intents.

Select fabric template

For Layer 2 leaf spine fabric, you do not specify any parameters. SFD generates a per-switch configuration for the interlinks between the leaf and spine switches.

- 1. Select **Configurations** from the left column to view and define fabric intents, then click **Get Started**. If there are no existing fabric intents, you can use the user interface to specify the fabric intent. Any such file can be used as a seed and edited.
- 2. Enter the Fabric Name, select Layer 2 VLT fabric, then click Next.

D	¢LL EMC			SmartFabric Director	۵	admin@sfd.local ~
» ©	Create New Fabr	Select Fabric Ter	nplate			
E	1 Select Fabric Templa	Start with one of the netw	ork fabric templates.			
E1	2 Define Leaf-Spine Ne	Name	US-WEST-DC2-POD5			
50	3 Define Host Networki	Network Template	Layer 2 VLT Fabric			
& ©	4 Define Bare Metal Ho		Select a template or auto configure option to start			
0	5 Submit for Approval		Layer 2 VLT Fabric			
			Layer 3 BGP Leaf Spine Fabric			
			Layer 3 BGP Leaf Spine Fabric with NSX-T Overlay (NSX-T manager required)			
			Layer 3 BGP EVPN Leaf Spine Fabric with VxLAN			
					CAN	NCEL

Define leaf-spine networking

You are now ready to specify the parameters to generate configuration for the host facing ports, inter-VLAN routing, and host dual-homing. This screen also indicates the IP or DNS address of the vCenter (VMware Manager) used to manage the VMs on the hosts that are connected to this fabric.

1. For Layer 2 leaf spine fabric, SFD generates a per switch configuration for interlinks between the leaf and the spine switches. Click **Next** to continue.

D4	XLL EMC					SmartFabric Director	۵	admin@sfd.local v
»	Create New Fabr	Defining Leaf-Spin	e Networking for US-V	VEST-DC2-POD5 - Layer 2 V	LT Fabric			
0	1 Select Fabric Template	Edge Switches	😑 0 edge leaves		spine1	spine2		
E1	2 Define Leaf-Spine Ne	Leaf Switches	4 leaves		A			
30	3 Define Host Network	Spine Switches	2 spines					
8. Ø	4 Define Bare Metal Ho.,	> Advanced Settings			$+ \vee$	$\sqrt{1}$		
٢	5 Submit for Approval		DETAIL CONFIGURATION					
				isafi	\mathbf{V}	M		ieaf4
					leaf2	leaf3		
						в.	АСК	CLEAR

2. (Optional) Click Detail Configuration to view the per switch configuration, click Clear to clear the specified intent, along with the detailed (per switch) configuration for the interlinks. Click Back to return, or click Next to continue.
 i) NOTE: Fields cannot be edited.

Create New Fabr	enter la terre terre i poter de					SmartFabric Director	Δ	admin@sfd.local ~
	Defining Leaf-Spir	ne Networking for US-W	EST-DC2	-POD5 - Layer 2	VLT Fabric			
1 Select Fabric Template	Edge Switches	🔘 0 edge leaves)	L2 Interli	nks Inter Chassis Net	working Advanced Settin	gs		
2 Define Leaf-Spine Ne	Leaf Switches	4 leaves	S	ritch T	Portchannels / Interfaces	Peer Interfaces	VLT LAGID	Ŧ
3 Define Host Networki	Spine Switches	2 spines	> 5	ine1	port-channell		1	
4 Define Bare Metal Ho	> Advanced Settings		> 6	af3	port-channell		1	
5 Submit for Approval			> 5	ine1	port-channel2		2	
		DETAIL CONFIGURATION	> le	afi	port-channel1		1	
			> _ s	ine2	port-channell		1	
			> 10	af4	port-channell		1	
			> 5	ine2	port-channel2		2	
			> le	af2	port-channell		1	
			CLOSE					8 items

Details of inter chassis networking configuration for Layer 2 fabric.

D%	LLEMC					SmartFabric Di	rector <u>A</u>	admin@sfd.local ~
»	Create New Fabr	Defining Leaf-Spin	e Networking for US-W	EST-DC2-POI	D5 - Layer 1	2 VLT Fabric		
0	1 Select Fabric Template	Edge Switches	edge leaves	L2 Interlinks	Inter Chassis Ne	tworking Advanced Settings		
뜨	2 Define Leaf-Spine Ne	Leaf Switches	4 leaves	VLTO				
*a &	3 Define Host Network.	Spine Switches	() 2 spines	VLT Pair	Υ	VLT interlinks	т	Domain T
٢	4 Define Bare Metal Ho.,	> Advanced Settings		leaf3		leaf3-ethernet1/1/49 to leaf4-ethernet1/1/49		127
۲	5 Submit for Approval		DETAIL CONFIGURATION	leaf1		Seafi-ethernett///49 to leaf2-ethernett///49		127
				spine1		spinel-ethernet///5 to spine2-ethernet///5		127
								3 items
				CLOSE				
							BACK	LEAR NEXT

Details of advanced settings for Layer 2 fabric.

(i) NOTE: RSTP is enabled by default and cannot be disabled.

LLEMC		SmartFabric Director
Create New Fabr	Defining Leaf-Spine Networking 1	or US-WEST-DC2-POD5 - Layer 2 VLT Fabric
1 Select Fabric Template	Edge Switches	L2 Interlinks Inter Chassis Networking Advanced Settings
2 Define Leaf-Spine Ne	Leaf Switches	~ UFD
3 Define Host Networks	Spine Switches	Uplink State v Upstream Interfaces v
4 Define Bare Metal Ho.,	> Advanced Settings	leaf3 : 1 leaf3 : port-channel1
5 Submit for Approval	DETAIL CONFIG	
		leaf2 : 1 leaf2 : port-channel1 leaf4 : 1 leaf4 : port-channel1
		reary , 1 Jean , port-chainen) 4 items
		CLOSE
		CLOSE

Define host networking

You are now ready to specify the parameters to be used by SFD to generate the configuration for host facing ports, inter-VLAN routing, and host dual-homing. This screen also indicates the IP or DNS address of the vCenter (VMware Manager) used to manage the VMs on the hosts that are connected to this fabric.

1. Select **System Settings** from the left column, then select **VMware Manager Integration**. A list of vCenter Server connections previously configured display. If there are no existing vCenter Server connections, this table is blank.

D¢	LEMC						SmartFabri	c Director	Ð	admin@sfd.local ~
>>	Create New Fabr	Define Host Netwo	rking for US-WES	T-DC2-POD5 -	Layer 2 VLT Fa	bric				
0	1 Select Fabric Template	VMware Manager(s)	100.67.120.100							
E.	2 Define Leaf-Spine Ne	+ ADD VLAN 📋 REMOVE	VLAN(S)							
×α ×α	3 Define Host Networki		Υ . Υ	VLAN Type	т	VRRP Virtual IP	т	Description		т
٩	4 Define Bare Metal Ho									
٢	5 Submit for Approval									
					∇					
					No VLANs for	und				
										0 items
										BACK

2. Click Add VLAN to add the configuration for each port group used by the vCenter, select the VLAN type, select the leaf pairs, enter an optional description, then click Add.

D¢	ALLEMC			SmartFabric Direct	or 🗋 edmin@sfd.local -
		VMware Manager(s)	222		
		Add VLAN			
		VLANID	101 2 -4094 (except reserved VLANs)		
		Туре	Workload	×	
		VRRP Virtual IP	1.11.1/8		
		IP1	1.2.1.1/8		
		IP2	1.3.1.1/8		
		Description (optional)		<i>B</i>	
				CANCEL	

SFD creates a virtual interface on each spine, and associates it to the VLAN ID. Each virtual interface obtains an SVI IP, and each VLAN in the VLT pair obtains a VRRP virtual ip in the same subnet as the VLAN.

3. (Optional) Delete any VLAN ID row by selecting the checkbox to the left of each row.

D¢	LEMC						SmartFabric	Director	Δ	admin@sfd.local ~
>>	Create New Fabr	Define Host Netw	orking for US-WES	T-DC2-POD5 ·	Layer 2 VLT Fa	abric				
@ 	1 Select Fabric Template	VMware Manager(s)	100.67.120.100							
EL.	2 Define Leaf-Spine Ne	+ ADD VLAN	/E VLAN(S)							
×0 S	3 Define Host Networki	VLAN ID	↑ Ţ	VLAN Type	т	VRRP Virtual IP	Υ	Description		Ψ
٩	4 Define Bare Metal Ho	□ » 101		Workload		1.1.1.1/8				
٢	5 Submit for Approval									
										1 items
										BACK

4. Navigate between pages by using the arrows; click **Back** to go to the previous step, or click **Next**.

5. Select Add bare metal host.

D¢		SmartFabric Director 🚊 edmin@sfd.loca	d~
»	Create New Fabr	Define Bare Metal Host Networking for US-WEST-DC2-POD5 - Layer 2 VLT Fabric	
6	1 Select Fabric Template	+ ADD BARE METAL HOST I REMOVE BARE METAL HOST(S)	
E. %	2 Define Leaf-Spine Ne	Host Name	
8	3 Define Host Networki		
٢	4 Define Bare Metal Ho		
٢	5 Submit for Approval		
		Υ ^Φ	
		No bare metal hosts found	
		< Constant and a second and	► 5
		BACK	

6. Enter the Host Name to identify the VLT pair to which the host is connected to, then select the Leaf Pair.

DOLLEMC				SmartFabric Director	edmini[istd.local -
2 Create New Fabr 6) 1. Select Fabric Template 80 2. Define Lest Spine Ne 74 3. Define Hort Networks 80 4. Define Bare Metal Ho	Define Bare Metal Host Networking for ADD BARE METAL HOST Host Name Leef Pair		×		
	Ports Port Type Workload Description (optional)	Select Port 1 v Select Port 2 Access Select VLAN(s) CANCEL	* *		
	1				E here RATIK HEXT

7. Specify one or more switch ports that the server is connected to, select Access or Trunk for the port type, select the workload VLAN, an optional description, then click **Add**.

D	ØLLEMC				SmartFabric Director	admin@std.local -
		Define Bare Metal Host Networki + x00 exter Hetal Host	ng for US-WEST-DC2-P RE METAL HOST	OD5 - Layer 2 VLT Fabric		
		Host Name Leaf Pair Ports Port Type Workload	BM-1 Use less than 32 characters leaf1: leaf2 () ethernet///21 ×) ADD MORE PORTS Access 101	-*(?IS*S), + are allowed.		
		Description (ptional)	CANCEL ADD		a bes BACK MENT

The bare metal host configuration displays; click Next.

D∜		SmartFabric Director	
»	Create New Fabr	Define Bare Metal Host Networking for US-WEST-DC2-POD5 - Layer 2 VLT Fabric	
6	1 Select Fabric Template	+ ADD BARE METAL HOST ()	
E. %	2 Define Leaf-Spine Ne	Host Name ↑ γ Leaf Pair γ Ports γ Native VLAN γ Workload γ	
8	3 Define Host Networki	BM-1 (aft: leaf2) (aft: leaf2) (0)	
٢	4 Define Bare Metal Ho	eaf2.ethernett///2:1	
٢	5 Submit for Approval		
		III 18ems	
		BACK NEXT	

Submit for approval

You are now ready to submit your L2 fabric intent for approval. The fabric intent must be approved before it can be deployed on the physical switches by SFD. Each fabric intent is associated with a wiring diagram.

 The wiring diagram summary displays, along with a topology graph which corresponds to the wiring diagram. Click Save for Later to save the specified fabric intent as a draft in the SFD data store, or click Back to return to Define overlay networking.

The summary displays different depending on the type of fabric configured. The example shows a Layer 3 fabric intent.

(i) **NOTE:** BFD is disabled by default on links from Edge ports to the external peer router. You can enable Edge ports if the external router has BFD enabled.

DELLEMC			SmartFabric Director	۵ .	admin@sfd.local v
 Create New Fabr Select Fabric Template Define Leaf-Spine Ne Define Host Networki Define Bare Metal Ho Submit for Approval 	Request Approval for US-WEST-DC2-POD5 Submitting the following fabric intent for approval Wiring Diagram Layer 2 VLT Fabric © 0 edge leaves © 0 edge leaves © 0 edge leaves © 1 fabric Intent AL2_VLT Network Configuration for 254L-Layer2 topology Lest Modified Oct 27, 2020, 12:06:20 PM Type Layer 2 VLT Fabric	Configuration	SDIN2 THE SAVE FOR LATER	SUBMIT P	Server and the server

- 2. Click **Submit for Approval** to submit the fabric intent, along with the associated wiring diagram for approval by the authorized approver.
- 3. (Optional) Click **Back** to go to the previous step, or click **Save For Later** to save the specified fabric intent as a draft. All drafts are saved in the SFD data store.

Any fabric intent pending approvals are listed in the fabric intent list which can be viewed by selecting the Intent icon on the left.

Importing a new wiring diagram

This information explains how to import a new wiring diagram. You may update the fabric to add or remove switches, or add or remove links.

1. Select Wiring Diagrams > Import.

DELLEMC	SmartFabric Director dimensional administrational -
3 Wring Diagrams (j)	
(2) 2S4L-EVPN (2878)	
2-Spine-2-Kent-LSFabric	
The Last workful to 2, 2020, Rod Street	
Type (Layvistic Law Spree Pare)	
(*) 1999 (*) 196 (*)	Import Fabric
	Importing FDC-NewFabric-Wiring json
examples (C)	intering Pocheereens, minugoor
noprista 🕐	\cup

2. Define and associate a Fabric Intent. You can also clone or copy an existing Fabric Intent, then make any necessary changes by going through the Fabric Intent Wizard.

D¢	LLEMC		SmartFabric Director
»	Wiring Diagrams ()		,
0 6 7 8 8 8 8 8 8	No Active Wiring Diagram Looks like we do not have an active network fabric yet. Select a wiring diagram to define your fabric intent.	BINFORT GODEFINE INTENT DEFINE INTENT DEFINE INTENT DELETE COPY ACTIVE INTENT COPY OTHER INTENTS	v Status v Updated By v Last Updated v Leaf Spine Fabric INACTIVE admin@std.local Nov 2, 2020, 2:48:00 PM US-WEST-DC2-POD5 Layer 3 BGP Leaf Spine Fabric
			1 Barrs - Y

3. See Approve fabric Intent and Deploy fabric intent.

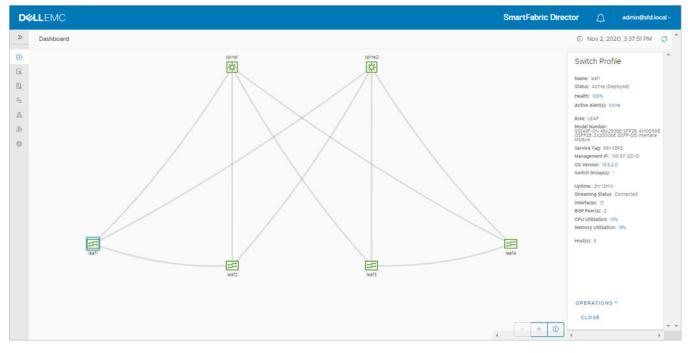
Monitoring

8

This information explains how to monitor the fabric, viewing switch level details. Monitoring data is the last information streamed by the switch to SFD. The switch streams telemetry information to SFD every 60 seconds. The streaming status of a network device is available in the switch profile under monitoring.

1. From the SmartFabric Director dashboard, select a switch to open up the switch profile panel to view a summary of the switch.

NOTE: When viewing CPU data over a large time window, the graph displays peak CPU data. This time window can be adjusted or lowered to get a granular view of the CPU data.



2. Select the **Monitoring** icon from the left to view the fabric health.

DELLEMC		SmartFabric Director	lmin@sfd.local ~
*	Monitoring FABRIC ~	US-WEST-DC2-PO Start Nov 1, 2020, 3:43:30 PM End Nov 2, 2020, 3	:43:30 PM 🖸
(a) Dashboard (c) Configurations (c) Configurations (c) Annutoring (c) SED Notification (c) Viring Diagrams (c) Life Cycle Management (c) Settings and Administration	Monitoring PASHIC ~	Type v Severity v Created At Updated At Status Updated By Current Status	Critical Critical Error Warning
		No Alerts Found	

- **3.** Select any interface to view the switch profile and details.
- 4. Scroll down to view additional details.

Topics:

• Notifications, events, alerts, and activities

Notifications, events, alerts, and activities

This release has made enhancements and now displays notifications, alerts, and activities. In additional, two types of message types for notifications are introduced.

Toast message

Toast messages provide information and medium priority events to reference later. Toast messages when they are not dismissed should live in a notifications panel until they are dismissed or the notification expires. The notification expiration default is six seconds, unless the notification is acknowledged or the condition is cleared.

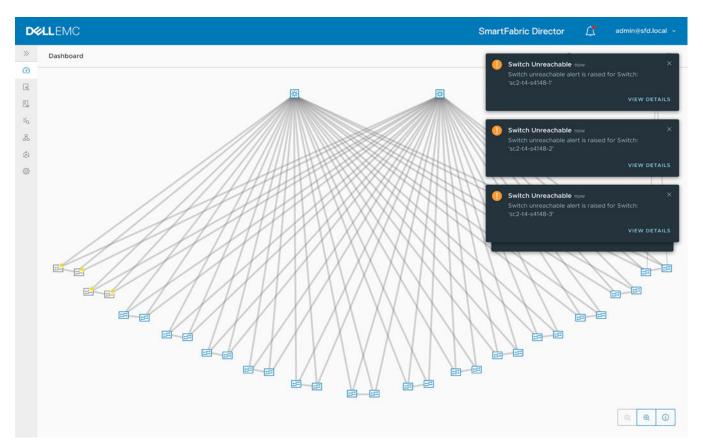
Snackbars

Snackbars are a quick configuration of a successful action. It displays in the current user view only, and displays for up to six seconds, or until dismissed or the page is navigated away from.

DELLEMC SmartFabric Director	م admin@sfd.local ×
>> Settings and Administration	
About User Management System Settings Service Integration Backup & Restore	
ADD USER ACTIVATE ACCOUNT DEACTIVATE ACCOUNT DELETE	
Va Username Vame Y Contact Phone Number Y Role Y Account Status Y SSH Y Updated By	Y Last Updated Y
B endmin@std.local System Admin +1 (800) 624-9897 system admin @ Active ENABLED admin@std.local admin@std.local	Feb. 14, 2020 12:00:00PM
ENABLING IN PROGRESS admin@std.local	Feb. 14, 2020 12:10:00PM
🥺 janedoe@domain has been successfully added. 🛛 ×	K < 1/1 > >

Snackbars display along the bottom of the screen. This notification is used for these confirmations:

- Successful SFD service tag upload
- Switch operating system support matrix file upload
- VM manager addition
- Active Directory (AD) server addition or removal
- Switch image server addition or removal
- Backup server addition or removal
- Lifecycle management (LCM) job completion
- Backup job completion
- Wiring diagram import
- Fabric intent (configuration) deployment

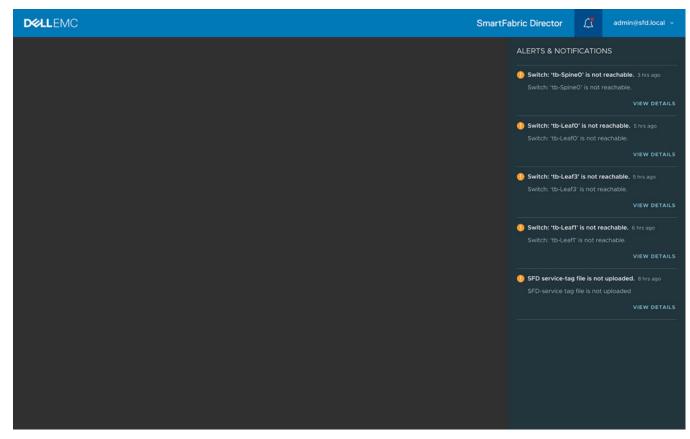


Toast notifications display at the upper right of the screen. If multiple toast messages display simultaneously, they are placed along the right edge of the screen.

Alerts and notifications

You can view job activity details, events, alerts, and switch logs with SFD 2.0. Alerts and notifications appear at the bell icon at the top of the screen.

1. Click the **bell icon** to list all notifications which have not been acknowledged.



Events which need attention display as alerts and notifications.

2. Click View details to view more information.

SFD job activities

For long running SFD job activities such as fabric intent deployment (fabric configuration), you can view the lifecycle management (LCM) progress using the job activities tab. You can view the job type, status, start and end time, and summary information for each job.

restarted. Provisioni
restarted. Provision
restarted. Provision
restarted. Provision
ge filename 'PKGS_O 10.5.2.0.242stretch 4 bin' on the switche
ew backup: 'Tuesday ckup job: 'tuesdayba 0-2020_12-03-53.83
ew backup: 'Monday ckup job: 'mondayba 0-2020_12-03-16.70-
oric intent 'BGP-NSX'

(i) NOTE: If the job is in progress, the end time is disabled and unavailable.

Click > to view details.

SFD	Notification			LAST 1	DAY - Start Oct 26, 2020, 8:42:23	AM End Oct 27, 2020, 8:42:23 AM
Job	Activities Switch Log E	Events Alerts				
	Job Name	Job Type	T Status	🕆 🛛 Start Time	End Time	Information
×	In Progre Completed	Fabric Config - Config Replay 1: 1 Switch(es) 1: 0 Switch(es) 2: with Errors: 0 Switch(es)	Completed	Oct 27, 2020, 7:49:23 AM	Oct 27, 2020, 7:49:28 AM	Switch: 'test2' restarted. Provision g the switch.
		eployment Completed - from Oct 27, 2020 ress: 100%	, 7:49:23 AM to Oct 27, 20	20, 7:49:28 AM		
>			, 7:49:23 AM to Oct 27, 28 Completed	28, 7:49:28 AM Oct 27, 2020, 7:49:20 AM	Oct 27, 2020, 7:49:24 AM	Switch: 'leaf4' restarted. Provision g the switch.
>	Progr	ess: 100%			Oct 27, 2020, 7:49:24 AM Oct 27, 2020, 7:46:37 AM	Switch: 'leaf4' restarted. Provision g the switch. Installing image filename 'PKGS_O _Enterprise_10.5.2.0.242stretch, staller_y86_68 LPM rion the switche
	Progr BGP-NSXT-1	ess: 100% Fabric Config - Config Replay	Completed	Oct 27, 2020, 7:49:20 AM		g the switch.
>	Progr BGP-NSXT-1 Day 0 Update A	Fabric Config - Config Replay Lcm - Lcm Image Update	Completed Completed	Oct 27, 2020, 7:49:20 AM Oct 27, 2020, 7:35:34 AM	Oct 27, 2020, 7:46:37 AM	g the switch. Installing image filename 'PKGS_O 0_Enterprise_10.5_2.0.242stretch, staller_x86_64.0 in on the switcher Start taking new backup :Tuesday ackup for backup job. 'tuesdayba up cem 2710-2020 12:03-538

Switch log

SFD acts as a destination for switch logs. Select **Switch log** to view the switch logs that are organized on a per-switch level.

D⊗	LLEMC	Sm	artFabric Director	admin@	sfd.local	·~
>>	SFD Notification	LAST 1 DAY V Start Oct 26, 202	0, 8:45:00 AM End Oct	27, 2020, 8:45:00 AN	¢ Ø	^
C II II X	Job Activities Switch Log Events Alerts Q Search syslog Name				т т т т	
			items per pa	ge <u>to 6 of</u> 6	items	Ψ F

Click > to view details.

	MC SmartFabric Director	adming	sidilo
SFD	Notification ELAST 1 DAY Start Oct 26, 2020, 8:47:01 AM End Oct 27, 2	020, 8:47:01 A	M
Job	Activities Switch Log Events Alerts		
Q	Search syslog		
	Name		y
~	leaf		-
	<pre>(161:1 2020-10-27715:08:07.059158+00:00 leafl dn_alm 957 Node.1-Unit.1:PRI [event], Dell EMC (DS10) %LADF_LIC_EVAL_PRD_EXP: Evaluation license time expiry notice. Evaluation license asse install a valid perpetual license. (165:1 2020-10-27714:09:13,16553:40:00 leafl dn_alm 957 Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DPL_PURGE_DELAY_SIOP_TIMER: PIM detected multicast peer-routing timer start (165:1 2020-10-27714:09:13,16553:40:00 leafl dn_alm 957 Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DPL_PURGE_DELAY_SIOP_TIMER: PIM detected multicast peer-routing timer start (165:1 2020-10-27714:09:13,15953:40:00 leafl dn_alm 957 Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DPL_PURGE_DELAY_SIOP_TIMER: PIM detected multicast peer-routing timer start (165:1 2020-10-27714:09:13,15953:40:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PURGE_DELAY_SIOP_TIMER: PIM detected multicast peer-routing timer start (165:1 2020-10-27714:09:23,211584:00:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[EVEITON_ROLE: VLT unit 1 is elected as secondary (165:1 2020-10-27714:09:23,211584:00:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[WF: VLT unit 1 is up (165:1 2020-10-27714:09:23,20579:04:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[WF: Interface operational state is up :Vlan118 (165:1 2020-10-27714:09:23,20579:04:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[WF: Interface operational state is up :Vlan118 (165:1 2020-10-27714:09:23,20579:04:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[WF: Interface operational state is up :Vlan118 (165:1 2020-10-27714:09:23,20579:04:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[WF: Interface operational state is up :Vlan118 (165:1 2020-10-27714:09:23,20579:04:00 leafl dn_alm 957 - Node.1-Unit.1:PRI [event], Dell EMC (DS10) %DVL_PUEL[WF: VL Teerface operational state is up (165:1 2020-10-27714</pre>	expired. Pl 2	

Events

You can view all SFD events using the Events tab. Events are classified as critical, warning, and info severity levels. Event type, timestamp, and summary information display.

ell	LEMC			SmartFabric Director	cal
s	SFD Notification		LAST 1 DAY - Start OC	t 26, 2020, 8:49:00 AM End Oct 27, 2020, 8:49:00 AM	
	Job Activities Switch Log Events Ale	ris			
	Timestamp	Information τ	Event Type	τ Severity τ	1
	> Oct 27, 2020, 7:56:17 AM	Loopback Network IP address : '10.10.10.3' is not reacha ble from switch 'leaf2'.	NETWORK_REACHABILILTY_FAILED_EVENT	Warning	1
	> Oct 27, 2020, 7:56:17 AM	Loopback Network IP address : '10.10.10.3' is not reacha ble from switch 'leaf4'.	NETWORK_REACHABILILTY_FAILED_EVENT	Warning	
	> Oct 27, 2020, 7:52:17 AM	Telemetry collector connected for switch leaf4 .	TELEMETRY_COLLECTOR_CONNECTED	info	
	> Oct 27, 2020, 7:51:36 AM	BFD session state on interface 'port-channell' for switc h : 'spine2' is UP	BFD_SESSION_STATE_UP_EVENT	info	
	> Oct 27, 2020, 7:51:21 AM	Telemetry collector connected for switch leaf2 .	TELEMETRY_COLLECTOR_CONNECTED	info	
	> Oct 27, 2020, 7:50:37 AM	Telemetry collector disconnected for switch leaf4 .	TELEMETRY_COLLECTOR_DISCONNECTED	Warning	
	> Oct 27, 2020, 7:50:37 AM	Telemetry collector disconnected for switch leaf2 .	TELEMETRY_COLLECTOR_DISCONNECTED	Warning	
	> Oct 27, 2020, 7:50:35 AM	BFD session state on interface 'port-channel2' for switc h : 'spine1' is UP	BFD_SESSION_STATE_UP_EVENT	info	
	> Oct 27, 2020, 7:50:35 AM	BFD session state on interface 'port-channel' for switc h : 'spine!' is UP	BFD_SESSION_STATE_UP_EVENT	Into	
	> Oct 27, 2020, 7:50:22 AM	Switch : 'leaf2' discovered its neighbor 'host101.dellabs. net' through LLDP.	LLDP_NEIGHBOR_DISCOVERED	(Info)	
	> Oct 27, 2020, 7:50:22 AM	Switch : 'leaf2' discovered its neighbor 'host107.dellab s.net' through LLDP.	LLDP_NEIGHBOR_DISCOVERED	(Info)	
	> Oct 27, 2020, 7:50:22 AM	Switch : 'leaf2' discovered its neighbor 'host103.dellabs. net' through LLDP.	LLDP_NEIGHBOR_DISCOVERED	Info	
	> Oct 27, 2020, 7:50:22 AM	Switch : "leaf2" discovered its neighbor "host105.delllab	LLDP_NEIGHBOR_DISCOVERED	(into)	

Click > to view details.

SFD	Notification		LASTIDAY~ Start Oct	t 26, 2020, 8:51:00 AM End Oct 27, 2020, 8:51:00 AM
Job	Activities Switch Log Events Alerts			
	Timestamp	Information T	Event Type	r Severity T
×	Oct 27, 2020, 7:56:17 AM	Loopback Network IP address : '10.10.10.3' is not reacha ble from switch 'leaf2'.	NETWORK_REACHABILILTY_FAILED_EVENT	Warning
	Additional Information: Loc	pback Network IP address : '10.10.10.3' is not reachable	from switch 'leaf2'.	
>	Oct 27, 2020, 7:56:17 AM	Loopback Network IP address : '10.10.10.3' is not reacha ble from switch 'leaf4'.	NETWORK_REACHABILITY_FAILED_EVENT	Warning
>	Oct 27, 2020, 7:52:17 AM	Telemetry collector connected for switch leaf4 .	TELEMETRY_COLLECTOR_CONNECTED	info
>	Oct 27, 2020, 7:51:36 AM	BFD session state on interface 'port-channel' for switc h : 'spine2' is UP	BFD_SESSION_STATE_UP_EVENT	Info
>	Oct 27, 2020, 7:51:21 AM	Telemetry collector connected for switch leaf2 .	TELEMETRY_COLLECTOR_CONNECTED	(info)
>	Oct 27, 2020, 7:50:37 AM	Telemetry collector disconnected for switch leaf4 .	TELEMETRY_COLLECTOR_DISCONNECTED	Warning
>	Oct 27, 2020, 7:50:37 AM	Telemetry collector disconnected for switch leaf2 .	TELEMETRY_COLLECTOR_DISCONNECTED	Warning
×	Oct 27, 2020, 7:50:35 AM	BFD session state on interface 'port-channel2' for switc h : 'spine1' is UP	BFD_SESSION_STATE_UP_EVENT	Info
>	Oct 27, 2020, 7:50:35 AM	BFD session state on interface 'port-channel' for switc h : 'spine' is UP	BFD_SESSION_STATE_UP_EVENT	Into
>	Oct 27, 2020, 7:50:22 AM	Switch : 'leaf2' discovered its neighbor 'host101.dellabs. net' through LLDP.	LLDP_NEIGHBOR_DI\$COVERED	info
>	Oct 27, 2020, 7:50:22 AM	Switch : "leaf2' discovered its neighbor 'host107.dellab s.net' through LLDP.	LLDP_NEIGHBOR_DISCOVERED	info
	0++ 27, 2020, 7:50:22 AM	Switch - 'leaf2' discovered its peigbbor 'bost103 dellabs		

Alerts

SFD alerts are events with demand attention. Alerts are shown as toast messages and available at the Bell icon. You can take action on an alert (acknowledge), and also view a list of alerts using the Alerts tab.

Alert display descriptions:

- Created at column displays the time when the alert was created
- Updated at column displays the timestamp when the last action was taken
- Status updated by field displays the user who last performed the action

Alerts can also be cleared if the event triggering that alert goes away. In such cases, the *Status updated by* field displays as *SFD* system.

	EM	C						SmartFabric Directo	or admin@sfd.lo	ca
SF	DNO	otifica	ation				LAST 1 DAY ~ St	art Oct 26, 2020, 8:52:34 AM	End Oct 27, 2020, 8:52:34 AM	
Je	ob Ad	ctiviti	es Switch Log Events	Alerts						
	V.Ac	-	WLEDGE (* REOPEN 🖄 R	ESOLVE						
			Information T	туре т	Severity	T Created At	Updated At	Status Updated By	Current Status T	1
		>	Telemetry collector disconne cted for switch leaf4 .	TELEMETRY_DISCONNECTE D_ALERT	Warning	Oct 27, 2020, 7:50:37 AM	Oct 27, 2020, 7:52:17 AM	sfd-system	Resolved	
		>	Telemetry collector disconne cted for switch leaf2 .	TELEMETRY_DISCONNECTE D_ALERT	Warning	Oct 27, 2020, 7:50:37 AM	Oct 27, 2020, 7:51:21 AM	sfd-system	Resolved	
		>>	Interface health threshold ha s breached for interface: por t-channel2 on switch: spine1 and is currently at value : 0%	INTERFACE HEALTH THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:50 AM	Oct 27, 2020, 7:49:47 AM	sfd-system	Resolved:	
		»	Interface health threshold ha s breached for interface: por t-channel2 on switch: spine2 and is currently at value : 0%	INTERFACE_HEALTH_THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:50 AM	Oct 27, 2020, 7:49:47 AM	sfd-system	Resolved	
		*	Interface health threshold ha s breached for interface: por t-channel! on switch: spine1 and is currently at value : 0%	INTERFACE HEALTH THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:50 AM	Oct 27, 2020, 7:49:47 AM	sfd-system	Resolved	
		>	Interface health threshold ha s breached for interface: por t-channell on switch: spine2 and is currently at value : 0%	INTERFACE_HEALTH_THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:49 AM	Oct 27, 2020, 7:49:47 AM	sfd-system	Resolved	
		»	Switch health threshold has breached for switch : spine2 and is currently at value : 6 0%	SWITCH HEALTH THRESHO LD_BREACHED_ALERT	Warning	Oct 27, 2020, 7:47:46 AM	Oct 27, 2020, 7:49:44 AM	sfd-system	Resolved	
		*	Switch health threshold has breached for switch : spine1 and is currently at value : 6 0%	SWITCH_HEALTH_THRESHO LD_BREACHED_ALERT	Warning	Oct 27, 2020, 7:47:46 AM	Oct 27, 2020, 7:49:44 AM	sfd-system	Resolved	
		55.1	Operational state is DOWN f	INTERFACE LINK DOWN A	Marcine	Oct 27, 2020, 7:46:36 AM	Oct 27, 2020, 7:49:36 AM	sfd-system	Resolved	

By default, the table is filtered to display Open and Acknowledged alerts. The Current status filter can be used to view any combination of open, acknowledged, or resolved alerts.

	lotific	ation				LAST 1 DAY ~	start Oct 26, 2020, 8:52	2:34 AM End Oct 27, 2020, 8:52:34 A
Job A	ctiviti	ies Switch Log Events	Alerts					
∼.a	скио	WLEDGE (* REOPEN 🗄 R	ESOLVE					
		Information T	Туре у	Severity	T Created At	Updated At	👃 🔰 Status Updated By	Current Status
	>>	Telemetry collector disconne cted for switch leaf4 .	TELEMETRY_DISCONNECTE D_ALERT	Warning	Oct 27, 2020, 7:50:37 AM	Oct 27, 2020, 7:52:17 AM	sfd-system	×
	>>	Telemetry collector disconne cted for switch leaf2 .	TELEMETRY_DISCONNECTE D_ALERT	Warning	Oct 27, 2020, 7:50:37 AM	M Oct 27, 2020, 7:51:21 AM	sfd-system	Open Acknowledged Resolved
	>>	Interface health threshold ha s breached for interface: por t-channel2 on switch: spine1 and is currently at value : 0%	INTERFACE HEALTH THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:50 At	0ct 27, 2020, 7:49:47 AM	l sfd-system	nevenev
	>>	Interface health threshold ha s breached for interface: por t-channel2 on switch: spine2 and is currently at value : 0%	INTERFACE_HEALTH_THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:50 AJ	M Oct 27, 2020, 7:49:47 AM	f sfd-system	Resolved
	*	Interface health threshold ha s breached for interface: por t-channel1 on switch: spine1 and is currently at value : 0%	INTERFACE HEALTH THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:50 A	d Oct 27, 2020, 7:49:47 AN	l sfd-system	Resolved
	>>	interface health threshold ha s breached for interface: por t-channell on switch: spine2 and is currently at value : 0%	INTERFACE HEALTH THRE SHOLD_BREACHED_ALERT	Critical	Oct 27, 2020, 7:47:49 AM	M Oct 27, 2020, 7:49:47 AM	sfd-system	Resolved
	*	Switch health threshold has breached for switch : spine2 and is currently at value : 6 0%	SWITCH HEALTH THRESHO LD_BREACHED_ALERT	Warning	Oct 27, 2020, 7:47:46 AM	4 Oct 27, 2020, 7:49:44 AM	l sfd-system	Resolved
	>>	Switch health threshold has breached for switch : spine1 and is currently at value : 6 0%	SWITCH HEALTH THRESHO LD_BREACHED_ALERT	Warning	Oct 27, 2020, 7:47:46 AM	4 Oct 27, 2020, 7:49:44 AN	t sfd-system	Resolved
		Operational state is DOWN f			Oct 27, 2020, 7:46:36 AM	4 Oct 27, 2020, 7:49:36 AM		Resolved

Click >> to view details.

D%				SmartFabric Director	d.local ~					
»	SFD Notific	ation		LAST 1 DAY ~ Start Oct 26, 2020, 8:52:34 AM End Oct 27, 2020, 8:52:34 J	AM ØÎ					
0	Job Activit	ies Switch Log Events Alerts								
G,	V ACKNO	WLEDGE C'REOPEN SRESOLVE								
8. %		Information T	Teleme	etry collector disconnected for switch leaf4 .	×					
&		Telemetry collector disconnected for switch leaf4 .	Descriptio	TALAN PARTITI AND TRADECORDERS AND A CONTRACTOR AND						
٢	>>>>	Telemetry collector disconnected for switch leaf2.	Type	TELEMETRY_DISCONNECTED_ALERT						
۲	×	Interface health threshold has breached for interface: port-chan nel2 on switch: spinel and is currently at value : 0%	Severity	Warning						
	 »	interface health threshold has breached for interface: port-chan nel2 on switch: spine2 and is currently at value : 0%	Created A	At Oct 27, 2020, 7:50:37 AM						
	• »	Interface health threshold has breached for interface: port-chan nell on switch: spinel and is currently at value : 0%	v Even	nts Total 2 events with the latest updated at Oct 27, 2020, 7:52:17 AM						
		Interface health threshold has breached for interface: port-chan nelf on switch: spine2 and is currently at value : 0%		Telemetry collector connected for switch leaf4 Oct 27, 2020, 7:52:17 AM Telemetry collector disconnected for switch leaf4 Oct 27, 2020, 7:50:37 AM						
	• »	Switch health threshold has breached for switch : spine2 and is currently at value : 60%	> Statu	tus Resolved by sfd-system at Oct 27, 2020, 7:52:17 AM						
		Switch health threshold has breached for switch : spine1 and is c urrently at value : 60%								
	• »	Operational state is DOWN for Interface : 'vian118' on switch: 'lea $\rm ff'$								
		Operational state is DOWN for Interface : 'port-channell' on swit ch: 'spine2'								
	. 🔳 🛛 »	Operational state is DOWN for Interface : 'port-channel2' on swi tch: 'spine2'								
		Operational state is DOWN for Interface : 'port-channell' on swit ch: 'spinel'			-					
				×.						

Alert detail includes a list of events that lead to the alert and status which display details on updates and the status of the alert.

LEMC			SmartFabric Director 🛕	admin@sfd.local
SFD Notification	n		LAST 1 DAY - Start Oct 26, 2020, 8 52:34 AM End Oct 27, 2020	, 8:52:34 AM
Job Activities	Switch Log Events Alerts			
V ACKNOWLE	DOE C'REOPEN BRESOLVE			
	ormation v	* Telemetry col	lector disconnected for switch leaf4 .	×
🔲 < Te	iemetry collector disconnected for switch leaf4 .			
	iemetry collector disconnected for switch leaf2 .	Description	Telemetry collector disconnected for switch leaf4 .	
> Int	erface health threshold has breached for interface: port-chan I2 on switch: spine1 and is currently at value : 0%	Type Severity	TELEMETRY_DISCONNECTED_ALERT	
> int	erface health threshold has breached for interface: port-chan (2 on switch: spine2 and is currently at value : 0%	Created At	Oct 27, 2020, 7:50:37 AM	
> Int	erface health threshold has breached for interface: port-chan if on switch: spinel and is currently at value : 0%	> Events	Total 2 events with the latest updated at Oct 27, 2020, 7:52:17 AM	
> int	erface health threshold has breached for interface: port-chan if on switch: spine2 and is currently at value : 0%	✓ Status	Resolved by sfd-system at Oct 27, 2020, 7:52:17 AM	
Sw Sw	vitch health threshold has breached for switch : spine2 and is rrently at value : 60%	Oct 27,	2020, 7.52:17 AM (e) Resolved by stid-system	
Sw Sw	witch health threshold has breached for switch : spine1 and is c entry at value : 60%	Oct 27, 3	020, 7:50.37 AM Open	
> Op fi ⁰	perational state is DOWN for Interface : 'vian118' on switch: 'lea		by sfd-system	
■ » Op	erational state is DOWN for interface : 'port-channell' on swit 'spine2'			
> Op	erational state is DOWN for Interface : 'port-channel2' on swi 1: 'spine2'			
■ » Op	verational state is DOWN for interface : 'port-channell' on swit			

Bulk actions are available such as acknowledge an open alert, reopen, or resolve an acknowledged alert by selecting more than one alert.

SFD	Notifi	ications					LAST 1 DAY 👻	tart Mar. 4, 2020 3:24:15PM	End Mar. 5, 2020 3	3:24:15PM
Job	Activi	ities Switch Log Events Alerts								
~	ACKNO	DWLEDGE (* REOPEN 🗄 RESOLVE								
		Information	٣	туре т	Severity	Ŧ	Created at T	Updated at	Status Updated By	Current Status
	>>	Switch 'tb-Spine1' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 5, 2020 3:24:15PM	Mar. 5, 2020 3:24:15PM	SFD-system	Open
	>>	Switch 'tb-Leaf2' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 5, 2020 3:18:28AM	Mar. 5, 2020 3:18:28AM	SFD-system	Open
	\gg	Switch 'tb-Leaf5' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 5, 2020 3:18:20AM	Mar. 5, 2020 3:18:20AM	SFD-system	Open
	>>	Switch 'tb-Leaf4' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 4, 2020 8:34:15PM	Mar. 5, 2020 10:34:20AM	admin@sfd.local	Open
	\gg	Switch 'tb-Spine0' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 4, 2020 8:34:11PM	Mar. 4, 2020 9:34:24AM	admin@sfd.local	Open
	>>	Switch 'tb-LeafO' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 4, 2020 8:34:11PM	Mar. 4, 2020 8:34:11PM	admin@sfd.local	Open
	\gg	Switch 'tb-Leaf3' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 4, 2020 8:34:11PM	Mar. 4, 2020 8:34:11PM	admin@sfd.local	Open
	>>	Switch 'tb-Leaf1' is not reachable.		SWITCH_UNREACHABLE_ALERT	Warning		Mar. 4, 2020 8:34:11PM	Mar. 4, 2020 8:34:11PM	admin@sfd.local	Open
	>>	SFD service-tag file is not uploaded.		SERVICE TAG NOT UPLOADED	Warning		Mar. 4, 2020 11:56:00PM	Mar. 4, 2020 11:56:00PM	SFD-system	Open

Click **Acknowledge** to confirm the action when selecting more than one alert.

DØLLEMC									
> 0 E E									
4	Acknowledge Alerts Are you sure you want to acknowled	ge 5	Warning alerts?					×	
	Information Switch 'tb-Spine1' is not reachable. Switch 'tb-Leaf2' is not reachable. Switch 'tb-Leaf5' is not reachable. Switch 'tb-Leaf0' is not reachable. Switch 'tb-Leaf3' is not reachable.	Ŧ	Type SWITCH_UNREACHABLE_ALE SWITCH_UNREACHABLE_ALE SWITCH_UNREACHABLE_ALE SWITCH_UNREACHABLE_ALE	RT RT RT RT	Severity Warning Warning Warning Warning Warning	Y	Created at Mar. 5, 2020 3:24:11 Mar. 5, 2020 3:18:28 Mar. 5, 2020 3:18:28 Mar. 4, 2020 8:34:11 Mar. 4, 2020 8:34:11	8AM 8AM AM	
					c	ANCE	K < 1 /1 >		

Click **Resolve** to confirm the action when selecting more than one alert.

Resolve Alerts		×	
Resolved alerts cannot be reopened. Are you sure you want to resolve 5 Warning alerts?			
Information Type	▼ Severity ▼	Created at	
Switch 'tb-Spine1' is not reachable. SWITCH_UNREACHABLE_AU		Mar. 5, 2020 3:24:11AM	
Switch 'tb-Leaf2' is not reachable. SWITCH_UNREACHABLE_AU		Mar. 5, 2020 3:18:28AM	
Switch 'tb-Leaf5' is not reachable. SWITCH_UNREACHABLE_AU		Mar. 5, 2020 3:18:28AM	
Switch 'tb-Leaf0' is not reachable. SWITCH_UNREACHABLE_AL		Mar. 4, 2020 8:34:11AM	
Switch 'tb-Leaf3' is not reachable. SWITCH_UNREACHABLE_AI	LERT Warning	Mar. 4, 2020 8:34:11AM	
	1	$\langle \langle 1 \rangle / 1 \rangle \rangle$	
	C/	RESOLVE	

(i) NOTE: Resolving an alert disables any additional actions such as reopen.

You can also acknowledge or resolve an individual alert.

D∜		SmartFabric Director	ocal ~
>>	SFD Notifications	LAST 1 DAY -> Start Mar. 4, 2020 3:24:15PM End Mar. 5, 2020 3:24:15PM	ø
> C L	SFD Notifications Job Activities Switch Log Events Alerts ACKNOWLEDGE PEOPEN RESOLVE information Important Important Switch 'tb-Leaf2' is not reachable. Switch 'tb-Leaf5' is not reachable. Switch 'tb-Leaf5' is not reachable. Switch 'tb-Leaf5' is not reachable. Switch 'tb-Leaf4' is not reachable. Switch 'tb-Leaf5' is not reachable. Switch 'tb-Leaf5' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable. Switch 'tb-Leaf6' is not reachable.	LAST 1 DAY × Start Mar. 4, 2020 3:24:15PM End Mar. 5, 2020 3:24:15PM Switch 'tb-Spine1' is not reachable. Description Switch 'tb-Spine1' is not reachable. Type SWITCH_UNREACHABLE_ALERT Severity Warnig Created at Mar. 5, 2020 3:24:15PM > Events Total 2 events with the latest updated at Mar. 5, 2020 3:20:0PM Status Acknowledged by admin@std.local at Mar. 5, 2020 3:20:12PM Mar. 5, 2020 3:20:12PM Chenowledged by admin@std.local at Mar. 5, 2020 3:20:12PM Mar. 5, 2020 3:20:09PM Opened by sEPD-System	×
		REOPEN RESOLVE	

Select the action and click $\ensuremath{\textbf{Reopen}}$ or $\ensuremath{\textbf{Resolve}}.$

DØLLEMC		SmartFabric Director	Δ	administid local ~
Resolve Alert	×			
Resolved alerts cannot	be reopened.]		
Are you sure you want	to resolve the alert from Mar. 5, 2020 3:24:11AM?			
Information	Switch 'tb-Leaf4' is not reachable.			
Events	2			
Туре	SWITCH_UNREACHABLE_ALERT			
Severity	Warning			
Created at	Mar. 4, 2020 8:34:15PM			
Updated at	Mar. 5, 2020 10:34:20AM			
Status Updated By	admin@sfd.local			
Current Status	Acknowledged			
	CANCEL RESOLVE			

Backup and restore

Proper backup of SFD is crucial to restore the system to its working state in the event of failure. This feature ensures that all configuration data is backed up. We recommend regular backups — backup frequency and schedule depend on your business needs and operational requirements.

At a bare minimum, it is recommended to take backups after any successful deployment, prior to any software upgrades, and after any major Day 2 change.

The backup preserves wiring diagrams, fabric intents, system and user settings and optionally events, syslogs, and telemetry and monitoring data The recommendation is to store backup copies on a separate server than the one where SFD is running. SFD supports FTP and secure FTP (sFTP) to transfer the backup .tar file to the backup server.

In the unlikely event that an SFD instance is corrupted and a new SFD OVA (of the same SFD Image version) is to be launched, the operator can spare the trouble of reimporting the fabric and reconfiguring the fabric Intent by restoring to a previously known state from backed up data.

NOTE: The intention of backup and restore is to restore previously backed up data within the same version of SFD, and not across SFD versions. The upgrade feature must be used to upgrade SFD to a higher version.

Topics:

- SFD backup
- SFD restore
- Backup and restore CLIs

SFD backup

Prior to SFD 2.0, backup and restore could be done using SFD CLI. SFD 2.0 adds user interface support for backup and restore.

Create a new backup job

- 1. Select Settings and Administration > Backup & Restore.
- 2. Click **New Job**, specify a job name and the backup location where SFD uploads the backup .tar file, which optional data to backup, then click **Next**.

NOTE: Events and logs, and monitoring data is optional. Select these check boxes if you would like to include this information in your backup.

DK	BLLEMC				SmartFabric Director	Δ	iidmin@std.local -
»	Settings and Administration						
	About User Managem	Schedule Backup	Customize Backup		×		
11 日本 五 余 日	Backup Jooks Backup Hermy Geboge	1 Customize Backup 2 Schedule Time 3 Summary	Job Name () Backup Location Backup Data Description (optional)	TuesdayBackup ftp://100.67.120.28/sfdBackup Configurations (excluding system settings) Events and Logs Monitoring Data	CANCEL		

SFD supports FTP or secure file transfer protocol (SFTP). By default, the configuration (wiring diagrams, fabric intent, user management) is in the backup file. You can choose to add Events and Logs to be in the backup file. You can also choose to include Monitoring data including switch syslogs in the backup datafile.

3. Specify if the backup should repeat, when to end, then click Next.

D⊗	LLEMC				SmartFabric Director	Ω	admin@sfd.local -
	Settings and Administration						
	About User Manageme	Schedule Backup	Schedule Time		×		
	Backup Jobs Backup History	1 Customize Backup	Start at	11/03/2020 4:54 AM 🔛			
	Restore	2 Schedule Time	Repeat	Daily	~		
		3 Summary	Recurrence End	Never	~		
					BACK		
						Maxir	num of 10 Active Jobs

SFD allows regularly scheduled backups or a nonrecurring backup job. For a one time or nonrecurring job, select **Does not repeat**. SFD supports backup recurring hourly, daily, or monthly. If Hourly is selected, then a backup job is run every hour starting from the day and time selected. For Daily, a job is scheduled every day at the time specified.

4. Review the information, then click **Schedule**.

DØ	DELLEMC SmartFabric Director						tioniy
	Settings and Administration						
	Settings and Administration Accur Liter Mehageme Backup Jobs Backu	Schedule Backup 1 Customize Backup 2 Schedule Time 3 Summary	Summary of Tuesday Scheduling following backup job scheduled Time Recurrence Location Backup Data Description	Backup Job Nov 3. 2020, 454 56 AM (2017) (hg //100 67 /20 28/std8ackup) (configurations (excluding system settings)	BACK		

Here is an example for a TuesdayBackup job. This job repeats daily for 52 weeks.

DELLEMC				
CELLEMC detings and Administration detings and Administration detings and Administration deting Jobs Backup History Beckup History Beckup History	Schedule Backup 1 Customize Backup 2 Schedule Time 3 Summary	Summary of TuesdayBackup Job Scheduling following backup job Pirst Backup Oct 21, 2020, 9:16.51 AM Recurrence (Delly for 32 time(s)) Location (hp://00.07.120.28/xfd8.cvup) Backup Data (Configurations (excluding system settings)) (Events and Logs) (Monitoring Data Description	×	
			BACK SCHEDULE	Angeograph of X-Article Adm

Both scheduled backup jobs display.

		SmartFabric Director 🛕 admin@sfd.
Settings and Administration		
About User Management	System Settings Service Integrations Backup & Restore Upgrade	
Backup Jobs	Backup Locations (ftp://100.67.120.28/sfdBackup)	
Backup History	STONER B SECOND	
Restore	Job Name Y Description Y Status Y Location Y Recurrence	T Updated By T Last Updated
	MondayBackup ACTIVE (trp://too_stdtsackup) Daily	admin@std.local Nov 3, 2020, 5:01:25 AM
	: TuesdayBackup ACTIVE (trp://toostdsackup Daily	admin@sfd.local Nov 3, 2020, 5:00:50 AM

Continue adding backup jobs, or you can click on the three dots of any scheduled backup, then select Edit, Remove, or View.

LEMC		SmartFabric Director 🛕 admin@sfo
Settings and Administration		
About User Management	System Settings Service Integrations Backup & Restore Upgrade	
Backup Jobs	Backup Locations (ftp://100.67.120.28/sfdBackup)	
Backup History	+ NEW JOB BENOVE	
Restore	Edit Y Description Y Status Y Location Y Recurrence	T Updated By T Last Updated
	Remove ACTIVE (tp://toostdtasckup) Daily View	admin@sfd.local Nov 3, 2020, 5:01:25 AM
	CTIVE (tp://too.stdsackup) Daily	admin@sfd.local Nov 3, 2020, 5:00:50 At

6. The backup job scheduled, and the backup location are available to view. SFD activities show the progress of the backup. The name of the backup .tar file that is saved on the backup server is generated by SFD and is based on the job name. Select View to display the details.

(i) NOTE: It is recommended to not rename the backup file on the destination backup server.

LLEMC	s	SmartFabric Directo	or 🔔 admin@sl	d.loca
Settings and Administration				
About User Management System Se	ettings Service Integrations Backup & Restore Upgrade			
Backup Jobs	Backup Instance y Status y Size y SPD Version y Backup Job y Content y	τ Location τ	Backup Time	
Backup History V	tuesdaybackup_cem Completed 502.81 MB 2.0.0 TuesdayBackup Configurations, Ev _2110-2020_20-27-5 86651ar biologia	V0.2E/stdBackup	Oct 21, 2020, 1:27:58 PM	
Restore	Completed Time : Oct 21, 2020, 1:28:11 PM Description: Additional information:			

Remove backup job

Removing a backup job cancels any future running of the job. The backup job history is preserved, and any backup files that are generated by the previous execution of the job would have been saved on the destination backup server, as SFD does not alter backup jobs.

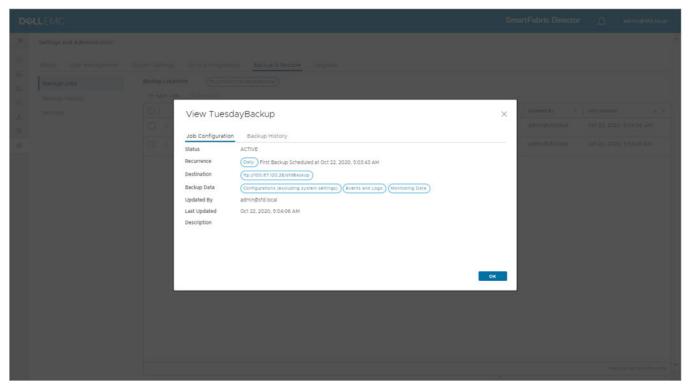
- 1. Select a backup job, click on the three dots, then select **Remove**.
- 2. Click **Remove** to confirm removal of the backup job.

DELLEMC		
>> Settings and Administratio		
About Lise Managers		
E. Backup Jobs		
No. Backup Hatory		
A Bestore		
	Remove Backup Job Are you sure you want to remove Backup Job: (Trester Recover) ? CANCEL REMOVE	

View backup job

1. Select a backup job, click on the three dots, then select $\ensuremath{\textit{View}}.$

2. Click **OK** to close the window.



SFD restore

In the rare instance that the SFD instance is corrupted, you can install a fresh instance and restore it from a previously backed up instance.

() NOTE: Restore of backup data between dissimilar SFD versions is not supported due to potential data model changes across SFD versions. SFD upgrade must be used to upgrade SFD to preserve data across SFD versions and data model reconciliation. SFD restore should not be used for upgrading SFD.

Restore backup job

1. Select Settings and Administration > Backup & Restore > Restore, then click Initiate restore.

D∜	LEMC		SmartFabric Director 🛕 ad	lmin@sfd.local ~
»	Settings and Administration			î
0	About User Management System Settings	Service Integrations Backup & Restore Upgrade		
C E ~ & @ @	Backup Jobs Backup History Restore	Restore Restore SFD from a v2.0.0 backup		
		Restore Summary	Ready to Restore	
				-

2. Specify the file location and the credentials that are required to retrieve the backup file, then click Next.

DØLL	EVIC				SmartFabric Director	۵	admin@sld.local+
» - 54							
	daud Usar Managament British Tackup Jobb Backup Hatany Retark	Initiate Restore 1 Retrieve Backups 2 Select a Backup	Retrieve Backups Connect to a remote location File Location Username Password	on to retrieve backup files. ftp://100.67.120.28/TuesdayBackup Enter a valid backup directory or a file perin star admin@stdllocal 			

SFD uses this information to obtain a list of backup files from the specified location. The first step in restoring is to direct SFD to retrieve the backup .tar file to restore from. SFD fetches up to 10 backup files and sorts them based on the timestamp.

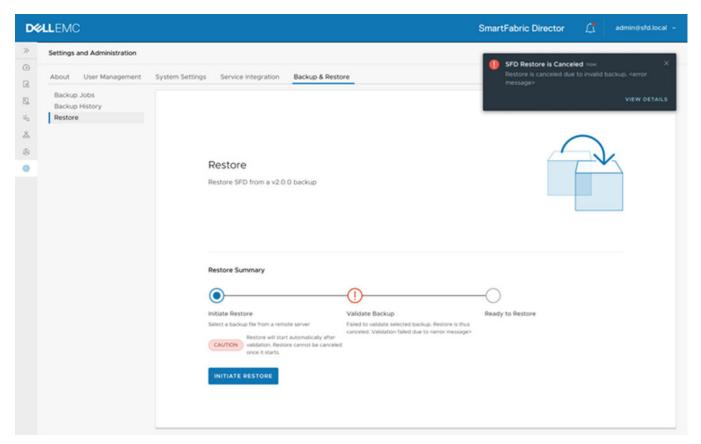
3. Select a file to initiate a restore, then click Initiate.

	About User Management	System Settings — Service I	tegration Backup & Restore		
	Backup Jobs Backup History Restore	Initiate Restore	Select a Backup	×	
		1 Retrieve Backups 2 Select a Backup	Restore will start automatically after validation. Restore cannot be canceled once it starts. Latest backups are retrieved and sorted by time. Maximum of 10 can be retrieved.		
			Backup File File Size Backup Time • mondaybackup_cfg_1578348600.tar 798 MB Aug 20, 2020 01:00	200PM	
			Content Configurations (excluding System Settings) Events and Logs Monitoring Data		
			> mondaybackup_cfg_1578348600.tar 798 MB Aug 14, 2020 0130 > mondaybackup_cfg_1578348600.tar 798 MB Aug 08, 2020 0130		
			> mondaybackup_cfg_1578348600.tar 798 MB Aug 02, 2020 01:00 > mondaybackup_cfg_1578348600.tar 798 MB July 26, 2020 01:00		
			> mondaybackup_cfg_1578348600.tar 798 MB July 20, 2020 01:10 > sfd1.tbackup_cfg_1578348600.tar 798 MB July 15, 2020 01:10		
			> sfdl.0backup_cfg_1578348600.tar 798 MB July 09, 2020 0110 > goldenbackup_cfg_1578348600.tar 798 MB July 03, 2020 0110		
			BACK	ITIATE	

When a file is selected, details about the contents display. This information is decoded by SFD from the backup filename. SFD downloads the selected backup file and starts the validation process. The progress of the initiate restore displays.

DELLEMC SmartFabric Director					
>>	Settings and Administration				
() R	About User Management	System Settings Service Integration Backup & Restore			
8	Backup Jobs Backup History				
Ξū.	Restore				
25			\frown		
۲					
۲		Restore			
		Restore SFD from a v2.0.0 backup Restore Summary initiate Restore Validate Backup Downloading selected file	Ready to Restore		

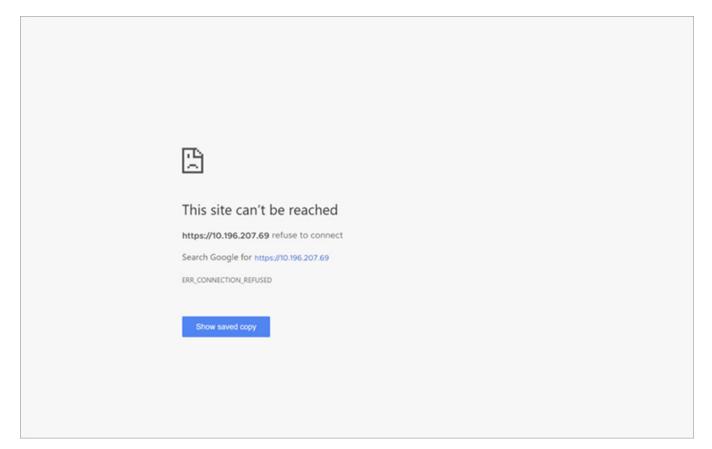
If the validation fails, the failure displays in the restore summary. The SFD restore is canceled, and a notification displays.



On successful validation, SFD is ready to be restored. During restoration, access to SFD is lost and the browser session shuts down and restarts.

D¢			SmartFabric Director 🛕 administrational -
	Settings and Administration About User Management Backup Jobs Backup History Restore	System Settings Service Integration Backup & Restore Upgrade Restore Restore SFD from a v2.0.0 backup	SFD UI is Shutting Down Now SFD restore is going to start. Your SFD UI session will be ending soon.
		Size: 584 MB	de&m_1593223200.tar Cnce restore starts, SFD UI will shut down. Please go to /oppl/mmawrehhc/oppu/restore.log to monitor restore process. rs (ex-cluding system settings),

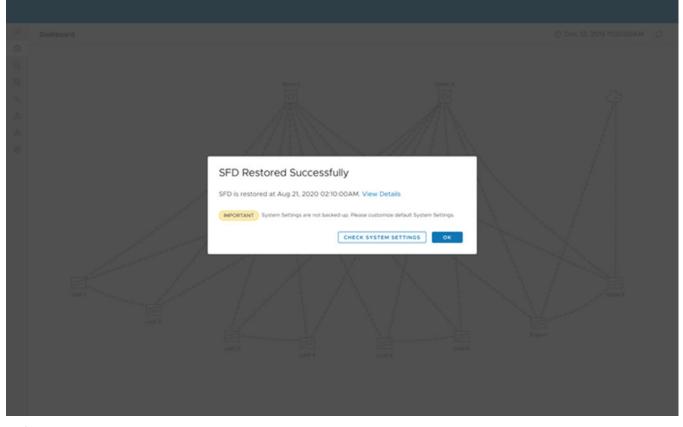
When SFD has shut down the browser session, this example shows the lost connection.



4. Reconnect to SFD, enter your SFD credentials, then click Log in. The login screen shows that SFD was successfully restored.

Welcome to				
Dell EMC				
SmartFabric Dire	ector®			
√2.0.0			2	
Sign in with your email address				
admin@sfd.local				
	0			
SFD is restored successfully.				
LOG IN				

5. Click **Check system settings** and verify that the fabric intent is correctly configured on the switches, and the fabric is operating correctly.



NOTE: Any SFD intent changes, events, alerts, switch telemetry, and syslogs that happened after the time it was backed up in the file that is used for restoration will be overwritten by the restore process.

Backup and restore CLIs

Use these commands to backup and restore data using the command-line interface (CLI) within the SFD application. See Using the CLI for complete information.

backup instance list

Lists all backup instances.

Command	backup instance list
Options	None
Usage	None
Example	sf6/> backup Instance list #ackup Instance Status Size SPD Version Backup Job Content Location Backup Scheduled Time(UTC) Backup Content Location wednesdeybackup_cem_02+06-2820_18-55-09.tar Completed 226 FM 1.1.1 WednesdeyBackup Configurations frg://10.196.287.12:21/sfdBackup 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09 2020-06-24 38:55:09



2.0 or later

backup job delete

Selects one backup job then deletes the job.

Commond	backup ich dolata
Command	backup job delete
Options	None
Usage	None
Example	sfd> backup job delete
Releases	2.0 or later

backup job list

Lists all backup jobs.

Command	backup job list
Options	None
Usage	None
Example	sfd> backup job list # Job Name Status Location Recurrence Content Created By Created At(UTC) 1 job2 Active ftp://10.196.207.12:21/sfdBackup Never Configurations root 2020-06-24 19:00:50 1 Events and Logs
	Monitoring Data job1 Active ftp://10.196.207.12:21/sfdBackup Never Configurations root 2020-06-24 19:00:30 Events and Logs Monitoring Data

Releases

2.0 or later

backup job schedule

Schedules a one-time backup job.

Command	<pre>backup job schedule [-h]name NAME [time TIME] [content {config,config_and_events,config_and_monitoring,all}] [description DESCRIPTION]</pre>
Options	 name — Backup job name time[OPTIONAL] — Backup time in UTC; current time by default content[OPTIONAL] — Backup content; configuration data by default -description[OPTIONAL] — Backup location description
Usage	None

Example	sfd> backup job schedulename WednesdayBackupcontent alldescription test
	# IP Address/FQDN User Backup Directory Protocol Created By Created At(UTC)
	1 10.196.207.12:21 ftpuser /sfdBackup FTP root 2020-06-24 18:51:23
	Please enter number of backup location that you want to store backup data: 1 Backup job scheduling status: BACKUP JOB OPERATION SUCCESS
Releases	2.0 or later

backup location add

Adds a backup location.

Command	backup location add [-h]host HOST [port PORT]user USERpassword PWDbackupdir PATHprotocol {ftp,sftp} [description DESCRIPTION]
Options	 host — Host of backup location such as 10.196.207.12 port[OPTIONAL] — Port of host user — Username of remote backup server password — Password of remote backup server backupdir — Backup directory to store backup file such as /sfdBackup protocol — ftp or sftp server description[OPTIONAL] — Backup location description
Usage	None
Example	sfd> backup location addhost 10.196.207.12port 21user ftpuserpassword vmwarebackupdir sfdBackupprotocol ftp Backup location configuration status: BACKUP_LOCATION_OPERATION_SUCCESS
Releases	2.0 or later

backup location delete

Selects a backup location then deletes the location.

Command	backup location delete
Options	None
Usage	A backup location cannot be deleted if it is currently used by a backup job.
Example	<pre>sfd> backup location delete ### IP Address/FQDN User Backup Directory Protocol Created By Created At(UTC) ### IP Address/FQDN User Backup Directory Protocol Created By Created At(UTC) ####################################</pre>

Releases

2.0 or later

backup location list

Lists all backup locations.

Command backup location list
Options None

Usage	None
Example	sfd> backup location list +
Releases	2.0 or later

backup restore initiate

Restores SFD to the state saved in the specified backup .tar bundle.

Command	backup restore initiate [-h]filepath <backup_tar_path>username <user>passw <pwd></pwd></user></backup_tar_path>
Options	 -filepath — URL of the backup file on a remote FTP/SFTP server such as ftp://10.0.0.1:21/sfdbac file.tar username — Username to the remote backup server password — Password to the remote backup server
Usage	None

Example	sfd> backup restore in	nitiatefilepath ftp://1	10.196.207.12/public/fittest/backupjobforfittes	st_ce_23-06-2020_16-29-17.tarusernam
	password vmware			
	Retrieving backup file	info		
	Retrieved Backup File	Attributes		
	+	•••••	•••••	
	Name	L	Value	
	+	•••••	••••••	
	File Name	backupjobforfittest	t_ce_23-06-2020_16-29-17.tar	
	File Size	1	7 MB	
	File Modified Timest	tamp	2020-06-23 16:29:00	
	+	•••••	••••••	
	Initiate restore reque	est		
	Initiate restore statu	IS: RESTORE_INITIATED		
	Current restore state:	DOWNLOAD_BACKUP_FILE_IN	PROGRESS	
	Current restore state:	VALIDATE_BACKUP_FILE_SUG	CCESS	
	Backup File Metadata			
	+			
	Name	Value		
	+			
	File Size	7 MB		
	SFD Version 1.1.	.1.1234567890		
	Content Types Co	onfigurations		
	Eve	ents and Logs		
	+			
	SFD Restore is going t	to start in 30 seconds. Si	FD UI session will shutdown during restore.	
	2020-06-23 17:11:35,69	98 [INFO][main:init_rest	ore]restore success!	
	2020-06-23 17:11:35,69	98 [INFO][main:init_resto	ore] - SFD UI is up and ready to use	
Releases	2.0 or later			

backup restore result

Displays details of the last restore result.

Command	backup restore rest	ılt
Options	None	
Usage	None	
Example	sfd> backup restore result Restore Result Info +	+
	Name	Value
	Restore Start Time Restored Contents Restored Version Restore Completed Time	2020-06-23 17:05:34 Configurations Events and Logs 1.1.1.1234567890 2020-06-23 17:06:54

Releases 2.0 or later

Upgrade SFD

Prior to upgrading SFD, see Download SFD image to download the upgrade bundle from DDL to a server which is reachable from SFD. You can use either the user interface or the CLI to upgrade SFD (see Upgrade CLIs).

NOTE: It is recommended that you backup the current SFD before starting an upgrade. Verify that there are no pending tasks in progress, such as backup. If you do have pending tasks, complete those tasks before starting an upgrade.

SFD upgrade

1. Go to Settings and Administration > Upgrade, then click Select.

D≪LL EMC	SmartFabric Director
>>> Settings and Administration	
About User Management System Settings Service Integration Backup & Restore Upgrade	
Upgrade SFD to Available Versions	$\langle \rangle \rightarrow \rangle$
Current SFD version is 2.0.0. You can find available upgrade versions and download the upgrade bundle from the Dell Digital Locker (DDL). You will need your DDL credentials to download the bundle.	
TP Please back up SPD before upgrade.	
Last Opprade: -	
Upgrade Summary	
• • • • • • • • • • • • • • • • • • •	
Select Upgrade Bundle Pre-upgrade Check Ready Select an upgrade bundle from a remote server	to Upgrade
SELECT	

2. Enter the upgrade bundle filename including server IP address, server credentials for SFD to access the upgrade bundle, then click **Select**.

				adminilistid local 🕞
	Select Upgrade I	Bundle	×	
	Select a bundle (.tar) from	n a remote location		
	Bundle	sftp://10.11.1:22/sfd2.1.0upgradebundle.tar	-	
	Username	admin@sfd.com	-	
	Password		•	
			_	
		CANCEL	.ect	

SFD supports FTP and Secure File Transfer Protocol to download the upgrade bundle. The upgrade bundle progress displays. Click **Cancel** to cancel the download and exit the upgrade process.

DELLEMC	SmartFabric Director
>> Settings and Administration	
About User Management System Settings Service Integration Backup & Restore Upgrade	
品	
& Upgrade SFD to Available Versions	$\langle \rangle \rightarrow \langle \rangle$
Current SFD version is 2.0.0. You can find available upgrade versions and download the upgrade bundle from the Dell Digital Locker (DDL). You will need your DDL credentials to download the bundle.	
(TP) Please back up SFD before upgrade.	
Last Upgrader -	
Upgrade Summary	
00	
Select Upgrade Bundle Pre-upgrade Check Ready Uploading std21.0upgradebundle.tar	y to Upgrade
CANCEL	

Once the upgrade bundle has downloaded, upgrade bundle information displays. SFD then performs the preupgrade check while the progress displays.

LEMC			SmartFabric Director	A admin@sfd.loc
Settings and Administration				
About User Management System Settings	Service Integration Backup & Restore	Upgrade		
Upgrade SFD to Avail	able Versions		~	~
	can find available upgrade versions and			\rightarrow
download the upgrade bundle fro	m the Dell Digital Locker (DDL). You will			\frown
need your DDL credentials to dov				
Last Upgrade: -				
Upgrade Summary				
\oslash — — — — — — — — — — — — — — — — — — —	O	0		
Select Upgrade Bundle	Pre-upgrade Check	Ready to	Upgrade	
Following bundle is ready to be installed: Name: t/02.10upgradebundle.tar Size: 768.MB SFD Version: 2.10 Setten/65 Support Matrix Version: 2.0	Checking in progress			

The preupgrade check includes verifying that the server hosting SFD has the required number of CPUs, memory, and disk space. The SFD upgrade matrix check verifies that SFD can migrate data from the current SFD version to the upgraded version.

Each SFD bundle comes with a manifest file that checks if the switches are running supported models and operating system versions. This check verifies against using older switch model or operating system versions which are not supported. SFD also checks system health to ensure that all services are operational.

If there are any failures, the upgrade will not be allowed. You can then take corrective actions to retry the preupgrade checks.

(i) NOTE: An upgrade from SFD 1.2.0 to 2.0.0 is allowed, but an upgrade from SFD 1.1.0 to 2.0.0 is not allowed.

3. Click Start upgrade.

EMC			SmartFabric Director 🋕 admin
ttings and A	Idministration		
bout Use	er Management System Settings Serv	ice Integration Backup & Restore Upgrade	
	Upgrade SFD to Available \	/ersions	
	Current SFD version is 2.0.0. You can find download the upgrade bundle from the De need your DDL credentials to download th	ell Digital Locker (DDL). You will	
	(TP) Please back up SFD before upgrade.		CV
	Last Upgrade: -		
	Upgrade Summary		
	\oslash		
	Select Upgrade Bundle	Pre-upgrade Check	Ready to Upgrade
	Following bundle is neady to be installed: Name: sl/d21.0upgradebundle.tar Size: 748.M8 SFD Version: 21.0 Switch05 Support Matrix Version: 2.0	System is ready for the upgrade. 6 Passed Last checked at: July 23, 2020 05:58:00AM	Ready to upgrade SFD from 2.0.0 to 2.1.0. CAUTION Upgrade cannot be canceled or pauced once it starts. During upgrade, SFD will be inaccessible.
			START UPGRADE CANCEL

4. Click **OK** or close the window to cancel the upgrade.

About Uner Management System Settings Set	vice integration Backup & Restore Upgrade	_
	View Pre-upgrade Check Result	
6	Passed. Last checked at: July 23, 2020 05:58:00AM	
S. Upgrade SFD to Availat	Upgrade Requirement Y Check Result Y	
Current SFD version is 1.0.0. You can download the upgrade buildle from	Minimum Number of CPU required is 8 Passed	
need your DOL predentials to downl.	Disk Space required is 1G8 Passed	
TB Passa bacrup 570 before stop an	Minimum Memory required 1668 Passed	
Last Upgrades >	Minimum SFD Version required is 2.0.0 Passed System Health required is GOOD Passed	
	Compatible SwitchOS Support Matrix is required Passed	
Upgrade Summary		
9		
Select Uppride Bunche	K < 1 /1 → X	plade
Pulling bundle is ready to be furnished.		
Name: M12 / June Hotovski Se Tare Mal Ma M10 Malen: 200	ок	
SelfcHOS Support Matrix Venior: 2.0		

(i) **NOTE:** Once the upgrade is initiated, SFD will not allow changes to the fabric including configuration or intent changes. Multiple upgrades should not be initiated simultaneously.

5. Click Start upgrade to begin the upgrade process.

withings and Administration bout User Management System Settings Service Integration Beckup & Restore Upgrade Upgrade SFD to Available Versions Current SFD version is 2.0.0. You can find available upgrade versions and download the upgrade bundle from the Dell Digital Locker (DDL). You will need your DDL credentials to download the bundle. Image: Presee back up SPD before upgrade. Upgrade Summary Opgrade Summary Steict Upgrade Bundle Pre-upgrade Check Deprese Bundle	
Upgrade SFD to Available Versions Current SFD version is 2.0.0. You can find available upgrade versions and download the upgrade bundle from the Del Digital Locker (DOL). You will need your DDL credentials to download the bundle. (P) Plesse back up SPD before upgrade. Let Upgrade :- Upgrade Summary ()	
Current SFD version is 2.0.0. You can find available upgrade versions and download the upgrade bundle from the Dell Digital Locker (DDL). You will need your DDL credentials to download the bundle. Presse back up SFD before upgrade. Last Upgrade:- Upgrade Summary	
Current SFD version is 2.0.0. You can find available upgrade versions and download the upgrade bundle from the Dell Digital Locker (DDL). You will need your DDL credentials to download the bundle.	
TP Presse back up SPD before upgrade. Last Upgrade :- Upgrade Summary	
Upgrade Summary	CV
\odot \odot \odot	
Select Upgrade Bundle Pre-upgrade Check Ready to Upgrade	
Following bundle is ready to be installed: System is ready for the upgrade. Ready to upgrade SFD from 2.0.0 to 2.1	
Name: sfú21.0upgradebundle.tar 6 Passed Size: 761 MB Last checked at: July 23, 2020 05:58:00AM Starts. During upgrade. to SPD Version: 2.0 Switch05 Support Matrix Version: 2.0	

Once the upgrade process starts, the SFD will not be available for operations. Click **Cancel** to cancel the upgrade.

D	ALL EMC		SmartFabric Director 🥼 admin@sfd.local v
» ©	Settings and Administration		SFD Will Upgrade in Few Seconds #000 X
	About User Management System Settings Service	ce Integration Backup & Restore Upgrade	SFD will upgrade from 2.0.0 to 2.1.0. Once upgrade starts, SFD will be inaccessible. VIEW DETAILS
8. 3	Upgrade SFD to Available V		$\langle \rangle$
0	Current SFD version is 2.0.0. You can find a download the upgrade bundle from the Del need your DDL credentials to download the (TP) Please back up SFD before upgrade.	I Digital Locker (DDL). You will	
	Last Upgrade: - Upgrade Summary		
	\oslash		
	Select Upgrade Bundle Following bundle is ready to be installed:	Pre-upgrade Check System is ready for the upgrade.	Ready to Upgrade Ready to upgrade SFD from 2.0.0 to 2.1.0.
	Name: st/s21.0upgradebundle.tar Size: 768 MB SFO Version: 2.10 SwitchOS Support Matrix Version: 2.0	5 Passed, 1 Warning Last checked at: July 23, 2020 05:58:00PM	CAUTION Upgrade cannot be canceled or pauced once it starts. During upgrade, SPD will be inaccessible.
	SFD will start upgrade soon! X		

Once the upgrade starts, the progress is shown.



Upgrading SFD...

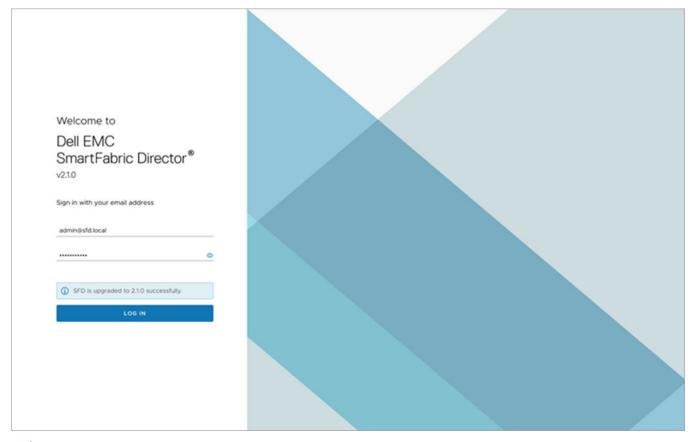
You will be prompted to login once upgrade is complete.

Updates display as the upgrade process progresses.

Upgrading SFD	
You will be prompted to login once upgrade is complete.	
July 23, 2020 08:38:16AM Starting data migration July 23, 2020 08:36:02AM Copying data July 23, 2020 08:34:54AM Verifying July 23, 2020 08:32:48AM Copying software July 23, 2020 08:30:41AM Uninstalling version 2.0.0.1234567890 July 23, 2020 08:28:34AM Verifying July 23, 2020 08:26:27AM Setting up installation July 23, 2020 08:24:20AM Stopping service	

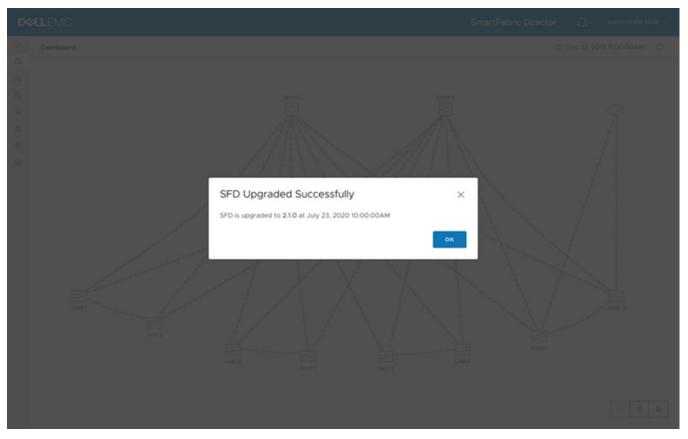
The current SFD version stops the services, uninstalls the current version, installs the new version, verifies the installation, copies the data, starts the new version, and starts the data migration. Once the data is migrated successfully, the SFD upgrade is complete, and SFD is ready for login.

6. Log in to the new version of SFD with your user credentials, then click Log in. A message displays showing that the SFD upgrade has been successful.



(i) NOTE: The upgrade success message is only shown on the first new login to the upgraded SFD instance.

7. Click **OK** or close the window to go to the SFD dashboard.



SFD reestablishes gNMI sessions with the switches and starts the discovery process. The dashboard updates accordingly. During the brief time that SFD is being upgraded, any telemetry streamed by or syslogs that are sent by switches will not be recorded by SFD.

If a switch rebooted during the time SFD is being upgraded and is operational before the SFD upgrade is complete, SFD cannot detect the reboot of the switch and configuration replay will not happen. The switch may not have the configuration based on the fabric intent.

(i) NOTE: We recommend that the operator verify the fabric for correct operation after an SFD upgrade.

The upgrade page shows the last successful upgrade summary.

LLEMC		SmartFabric Director 🗘 administr
Settings and	I Administration	
About U	Iser Management System Settings Service Integration Backup & Restore Upgrade	
	Upgrade SFD to Available Versions Current SFD version is 2.1.0. You can find available upgrade versions and download the upgrade bundle from the Deli Digital Locker (DDL). You will need your DDL credentials to download the bundle. Image: Deliver upgrade bundle from the Deli Digital Locker (DDL). You will need your DDL credentials to download the bundle. Image: Deliver upgrade bundle from the Deli Digital Locker (DDL). You will need your DDL credentials to download the bundle. Image: Deliver upgrade. Last Upgrade: Successful Current Version 200 210 Augrade Bay Completed Al 200 Augrade Bay Completed Al Augrade State to Doctooted Al Completed Al Augrade State to Doctooted Al	
	Upgrade Summary Select Upgrade Bundle Select an upgrade bundle from a remote server	Ready to Upgrade
	SELECT	

Topics:

• Upgrade CLIs

Upgrade CLIs

Use these commands to upgrade SFD using the command-line interface (CLI).

upgrade info

Displays the latest upgrade information and status.

Options	None
Options	

Usage None

Upgrade Result				
Name	Value			
Upgrade From Version 2 Upgrade To Version 2		1516 MB 2.0.0 2.1.0 CHECK_SUCCESS		
Pre-check report		+		
Pre-check report				
Upgrade Requirement	Check Result	Message		
Minimum number of CPU required 4	PASSED			
 Minimum free disk space required 1GB	PASSED			
Minimum memory required 8GB	PASSED	i i		
Minimum SFD version required [1.1.1.123456789]	PASSED			
System Health required GOOD	PASSED	i i		
Compatible Switch0S Support	PASSED			

2.0 or later

upgrade initiate

Starts an upgrade.

Command	upgrade initiate
Options	None
Usage	None
Example	sfd> upgrade initiate
Releases	2.0 or later

upgrade upload local

Uploads a local upgrade bundle.

Command	upgrade upload localpath FILEPATH
Options	None
Usage	To test an upgrade bundle, place one upgrade .tar inside a VM.

Example	sfd> upgrade upload loca Pre processing upgrade to Status: FILE_VALIDATION_ Status: FILE_VALIDATION_ Status: PRE_CHECK_IN_PRO Status: PRE_CHECK_IN_PRO	UN_PROGE IN_PROGE OGRESS OGRESS OGRESS OGRESS OGRESS OGRESS OGRESS OGRESS SS	tatus: SUCCESS RESS		2.1.0.1598423656.tar
	i	Upgrade	Result		i
	Name			-+	
	Upgrade File Name Upgrade File Size Upgrade From Version Upgrade To Version Upgrade Status Pre Check At (UTC)		2.1.0.1598423656.tar 1516 MB 2.0.0 2.1.0 PRE_CHECK_SUCCESS 2020-08-26 11:26:05		
	Pre-check report				
		e-check i	report	i	
	+ Upgrade Requirement				
	Minimum number of CPU required 4 Minimum free disk spac required 1GB Minimum memory require	ce	PASSED PASSED PASSED		
	Minimum SFD version re [1.1.1.123456789] System Health required Compatible SwitchOS Su Matrix is required	equired d GOOD	PASSED PASSED PASSED		

2.0 or later

upgrade upload remote

Uploads a remote upgrade bundle.

Command	upgrade upload remotefilepath PATHusername USERpassword PWD
Options	 filepath — URL of the backup file on a remote FTP/sFTP server such as ftp:// 10.0.0.1:21/2.0.0.1234567890.tar username — Username of the remote server password — Password of the remote server
Usage	The file path must end with a file name, and not a directory.

Example	fd> upgrade upload remotefilepath ftp://10.196.207.12:21/2.0.0.1234567890.tarusername ftpuserpassword vmware					
•	re processing upgrade bundle status: SUCCESS					
	urrent status state: FILE_DOWNLOADING					
	Current status state: FILE_DOWNLOADING					
	Current status state: FILE DOWNLOADING					
	Current status state: FILE_DOWNLOADING					
	Current status state: PRE_CHECK_IN_PROGRESS					
	Current status state: PRE_CHECK_FAILED					
	Error message: UNTAR_UPGRADE_FILE_FAILED					
	Error: Pre check upgrade bundle failed					
	Upgrade Result					
	• · · · · · · · · · · · · · · · · · · ·					
	Name Value					
	Upgrade File Name 1594161748765_2.0.0.1234567890.tar					
	Upgrade File Size 1381 MB					
	Upgrade From Version 1.1.1					
	Upgrade To Version 2.0.0					
	Upgrade Status PRE_CHECK_FAILED					
	+					

2.0 or later

Switch lifecycle management

This information explains switch lifecycle management. Each switch in the data center fabric must have the same software image. You can upgrade or downgrade the switch image software using SmartFabric Director. To ensure that unsupported models and images are not deployed in the fabric, a new feature called SwitchOS support matrix has been introduced.

Provide a file server (SFTP, FTP, SCP, TFTP, or HTTP) that is accessible through the Management port of switches, and reachable from SmartFabric Director. Download one or more relevant switch software images and manifest file to these servers.

Topics:

- Define switch groups
- Create switch update job
- Schedule switch update job
- SwitchOS support matrix

Define switch groups

This information describes how to create, edit, and delete switch groups to define an update job. To update a switch image, you must define an update switch lifecycle management job.

You can group switches into a switch group — SFD creates four default switch groups which are autopopulated based on the active fabric wiring diagram.

NOTE: Default switch groups cannot be edited or deleted. These switch groups are automatically created to enable users to upgrade all switches in the predefined switch groups without severely impacting availability of the fabric.

1. Select Life Cycle Management > Switch Groups > New Switch Group to define a new switch group.

LEMC				SmartFabric Director 🚊 🔤	dmin@sfd.loca
Life Cycle Manage	ment			() Oct 26, 2020, 10:	03:38 AM 🔇
Update Jobs	Switch Groups Switch Imag	ge Info			
+ NEW SWITCH	ROUP	Ĵ REMOVE 🛛 CREATE UPDATE JOB			
Name		Y Description	Y Member Switches	v Last Updated	
E : Leaf-	Group1	Leaf-Group1	() leaf1 () leaf3	Oct 26, 2020, 9:04:12 AM	
Spine :	-Group2	Spine-Group2	(spinel	Oct 26, 2020, 9:04:13 AM	
Leaf-	Group2	Leaf-Group2	(eaf2) (eaf4)	Oct 26, 2020, 9:04:13 AM	
: Spine	-Group1	Spine-Group1	(spine2	Oct 26, 2020, 9:04:13 AM	
					4 iter

2. Enter the name for the new switch group, select the switches to add to the switch group from the active wiring diagram, enter an optional description, then click **Create**.

y Depty	New Switch Gro	pup	×	
Leaf-G				
Spine	Name	Leaf-Group3		
Leaf-G	Member Switch(es)			
Spite				
	Description (optional)			
			10	
		CANC	EL CREATE	

You are now ready to define a switch lifecycle job to create an update job.

Create switch update job

This information describes how to create a switch update job. As part of the update job creation, you can select a switch group from the list of available switch groups.

1. Select Life Cycle Management > Switch Groups > Create Update Job.

Life C	ycle Management			() Oct 27, 2020	0, 7:13:27 AM
	te Jobs Switch Groups	Non-Contractory (Herbit Market)			
+ N	IEW SWITCH GROUP	REATE COPY I REMOVE CREATE UPDATE JOB	T Member Switches	T Last Updated	
	: Leaf-Group1	Leaf-Group1	(e) leaf)	Oct 26, 2020, 9:04:12 AM	
	: Spine-Group2	Spine-Group2	(spinel	Oct 26, 2020, 9:04:13 AM	
	: Leaf-Group2	Leaf-Group2	(eaf2) (eaf4)	Oct 26, 2020, 9:04:13 AM	
0	: Spine-Group1	Spine-Group1	(spine2	Oct 26, 2020, 9:04:13 AM	

2. Enter the job name, select the switch group, enter an optional description, then click Next.

DØ	LLEMC					Smart	Fabric Directo	r 🗘	admin@std local -	
.28										
		Create Update Job	Select Switch G	roup		×				
14 14 14		1 Select Switch Group	Job Name	Day 0 Update A						
4.		2 Select Image 3 Submit for Approval	Switch Group Description (optional)	Leaf-Group2	CANCEL	V				
					CANCEL	NEXT				

3. Specify an OS10 image including the file extension (.bin). Verify the specified image name matches the name of the image file on the remote server, then click **Next**. All switches in a switch group are updated to the specified image when the Update job is run.

D¢A						
-20.						
£1.	Update Jobs Remain Groups. Switch in	Create Update Job	Select Image		×	
14. 14.	+ NEW 2016 TO FILM ACTIONS + :	1 Select Switch Group	Image Server	tftp://100.67.3.168/		
840 1940	Description	2 Select Image			-	
2014 2014		3 Submit for Approval	Base Directory	1		
0			Extended File Path (optional)	If not defined, image will be selected from base directory	-	
			OS Image Version	OS v10.5.2.0 (latest)	2	
			OS Image	PKGS_OS10_Enterprise_10.5.2.0.242stretch_ins	st	
				Enter the full file name including extension (.bin)		
				BACK	EXT	
		i.				

The content of the OS image version drop-down is populated from the SwitchOS image support matrix.

4. Review the image update information, then click **Submit for approval**. You can also click **Save for later** or **Back** to return to the previous screen.

		SmartFabric Director 🚊 admini@sfd.local -
		© 021 27, 2020, 7.05 07 AM
Create Update Job 1 Select Switch Group 2 Select Image 3 Submit for Approval	Submit for Approval Requesting approval to upgrade () Left-Group2 to thp://100.67.3168/ GS_OS10_Enterprise_10.5.2.0.242stretch_installer_x86_64.bin Day O Update A Switch Name v Model v Desired os Ber2 SS248F-ON 48x256b OSFP20 Dinterface M Odule OS v10.5.2.0 SS248F-ON 48x256b OSFP20 Dinterface M Odule Ieaf4 SS248F-ON 48x256b OSFP20 Dinterface M Odule OS v10.5.2.0 SS248F-ON 48x256b OSFP20 Dinterface M Odule Ieaf4 SS248F-ON 48x256b OSFP20 Dinterface M Odule OS v10.5.2.0 SS248F-ON 48x256b OSFP20 Dinterface M Ieaf4 SS248F-ON 48x256b OSFP20 Dinterface M OS v10.5.2.0 SS248F-ON 48x256b OSFP20 Dinterface M Ieaf4 SS248F-ON 48x256b OSFP20 Dinterface M OS v10.5.2.0 SS248F-ON 48x256b OSFP20 Dinterface M Back SAVE FOR LATER SUBMIT FOR APPROV	PK

The status of the update job displays.

D¢	LLEMC SmartFabric Director A edmin@std.k	cal ~
>>	Life Cycle Management © Oct 27, 2020, 7:05:27 AM	σ ˆ
•	Update Jobs Switch Groups Switch Image Info + NEW JOB □ REMOVE ACTIONS →	
E. Vi	Improve sectors Mathematical sectors Improve sectors Improve sectors <	Ŧ
& ©	Image: Day 0 Update A OS v10.5.2.0 APPROVED admin@sfd.local Oct 27, 2020, 7:05:27 AM	
0		
	18	ems 👻
	x	- P

Schedule switch update job

This information describes how to schedule an update job. You can schedule an approved job for execution now, or select a future date and time using the calendar.

1. Select Schedule Now.

D¢	LLEMC								SmartFab	ric Director	A	admin@sfd.k	ocal ~	
>>	Life Cycle Mar	nagement								O	Oct 27, 202	0, 7:27:16 AM	ø	^
0 6 8 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Update Jobs	Switch Groups ACT Remove ACT View Create Copy Schedule Now Schedule For Later View Activities	Switch Image Info	y Switch Group (Content of Coup2)	Ŧ	Desired OS Y OS v10.52.0	Status APPROVED	v Update admin	d By y @sfd.local	Last Updated Oct 27, 2020, 7	05:27 AM		Y	
												18	ems r	Ŧ

When the job is run, SFD directs the switches to the Image Server to download the specified image. The switch downloads the image, installs the new image, and reboots.

2. Click Schedule. You can also select to schedule the job for a future date and time.

2 Ut Cycle Management 0: 0: 0: 0: 0: 0: 0: 0: 0: 0: 0: 0: 0: 0	D⊗		
Image: Second	- 30-		
Image: Sector due to the sector description of the sector description descripti descripti description descripti description description descripti	101. 10		
Image: Second line of the second l	-		
Schedule Job (Day 0 Update A) now.	36.		
Schedule job (Day 0 Update A) now.			
	0	Schedule Now ×	
		Schedule job Day 0 update A) now.	
		CANCEL	

The status of the update job displays.

D%							SmartFabric Director	a admin@s	fd.local ~
»	Life Cycle !	Management					Ø	Oct 27, 2020, 7:35:30 A	м о ^
ø	Update Jo	bs Switch Groups	Switch Image Info						
G. E1	+ NEW 3	08 👔 REMOVE 🔺	LCTIONS ~						
*0		Job Name T	Description T	Switch Group T	Desired OS T	Status Y	Updated By T Last Updated		×
å	0 :	Day 0 Update A		Leaf-Group2	OS v10.5.2.0	IN PROGRESS since Oct 27, 20 20, 7:35:28 AM	admin@sfd.local Oct 27, 2020,	7:35:28 AM	
۲									
۵						Т			
									1 items +
) items

Select View Activities to display the switch update job activities in the open window, then click OK.
 NOTE: You can also create a copy of the update job to simplify making changes to an existing job.

DELLEMC		Smart	tFabric Director	۵	admin@std.ic	cel -
37 Life Cycle Management						
Other Update Jobs Switch Downs Switch Information Base + New Job Entercore Actions -	Day 0 Update A Activities	×				
Na 📴 Jub Name V Description	(5) Oct 27, 2020, 7:36:14 AM	Ø	y Ladipoind			
22. En Cay O Update A	Completed: 0 Switch(es) In Progress: 2 Switch(es) Completed with Errors: 0 Switch(es)		04127,2020,7.35			
•	<pre>leaf2: Download In Progress - Oct 27, 2020, 7:35:43 AM Error: Details: PKGS_OSI0_Enterprise_10.5.2.0.242stretch_installer_x86_64.bin 735.35 MB Transfer Rate: 2.39 Mbps Progress: 1% Additional Information: In progress leaf4: Download In Progress - Oct 27, 2020, 7:35:43 AM Error: Details: PKGS_OSI0_Enterprise_10.5.2.0.242stretch_installer_x86_64.bin 735.35 MB Transfer Rate: 2.37 Mbps Progress: 1% Additional Information: In progress</pre>	ox				

4. Once the update job finishes, select **View** to display the update job activities.

SwitchOS support matrix

This new feature allows you to select images specified in the SwitchOS support matrix. If a new SmartFabric OS10 image is released and the current SFD version is verified with it, you can upload the image to SFD to be available in life cycle management.

1. Click on the SwitchOS support matrix to view the compatibility matrix.

D¢	ALEMC	SmartFabric Director	¢	admin@sfd.local ~
>>	Settings and Administration			A
\odot	About User Management System Settings Service Integrations Backup & Restore Upgrade			
6,	SmartFabric Director Version 2.0.0			
E ×q	Service Tag () ABCOBPC 🔿 UPLOAD			
&	SwitchOS Support Matrix 🕦 🗘 UPLOAD			
٢				
٢	T			
		4		

2. View the contents, then click **OK**.

D¢I	LEMC				SmartFabric Director
- R					
	About User Management System Sets smartmatrix Director Vender 2.0.0 service tag () asconto () uno	View SwitchOS Support N All supported OS versions from SwitchO			×
	Switches Support Harry (D) (127)	Switch Model Y	Supported OS T	OS Type	v (*
		\$4048-ON	v10.5.2.0	OS10	
		\$4048T-ON	v10.5.2.0	O\$10	
.0		S4112F-ON	v10.5.2.0	OS10	
		\$4112T-ON	v10.5.2.0	OS10	
		S4128F-ON	v10.5.2.0	OS10	
		\$4128T-ON	v10.5.2.0	OS10	
		\$4148F-ON	v10.5.2.0	OSIO	
		S4148FE-ON	v10.5.2.0	OS10	
		\$4148T-ON	v10.5.2.0	OS10	•
				2	0 items
					OK

3. Select Life cycle management > Switch image info to view the latest available SwitchOS image file available with the currently installed operating system on each discovered or active switch.

e Management Jobs Switch Groups					(D) Oct 26	2020, 3:41:02 PM
Jobs Switch Groups					0 00120,	2020, 0.4.02 PM
	Switch Image Inf	<u>•</u>				
TO SWITCH GROUP(S)	П лемоче FROM SW	ITCH GROUP(S)				
Switch Name T	Service Tag T	Model T	Latest Available 05	r Installed OS	τ Status τ	Switch Group(s)
spine2	43RRNK2	Z9264F-ON 64x100G, 2x10GbE SFP+ Interface Module	v10.5.2.0	v10.5.2.0	Active (Deployed)	Spine-Group1
leaf2	76M0002	S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module	v10.5.2.0	v10.5.2.0	Active (Deployed)	Leaf-Group2
leaf3	68ZZZP2	S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module	v10.5.2.0	v10.5.2.0	Active (Deployed)	S Leaf-Group1
spine1	D3RRNK2	Z9264F-ON 64x100G, 2x10GbE SFP+ Interface Module	v10.5.2.0	v10.5.2.0	Active (Deployed)	Spine-Group2
leaf1	68YYZP2	55248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module	v10.5.2.0	v10.5.2.0	Active (Deployed)	S Leaf-Group1
leaf4	6911002	S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module	v10.5.2.0	v10.5.2.0	Active (Deployed)	C Leaf-Group2
	Switch Name Y spine2 leaf2 leaf3 spine1 leaf1 leaf1	Switch Name v Service Tag v spine2 43RRNK2 leaf2 76M0002 leaf3 68ZZZP2 spine1 D3RRNK2 leaf1 68YYZP2	Switch Name v Service Tag v Model v Spine2 43RRNK2 Z9264F-ON 64x100G, 2x10GbE SFP+ Interface Module v Ieaf2 76M0002 S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module Ieaf3 68ZZZP2 S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module spine1 D3RRNK2 Z9264F-ON 64x100G, 2x10GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module leaf1 68YYZP2 S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module	Switch Name v Service Tag v Model v Latest Available 05 v spine2 438RNK2 Z9264F-ON 64x100G, 2x10GbE SFP+ Interface Module v10.5.2.0 v10.5.2.0 leaf2 76M0002 S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module v10.5.2.0 leaf3 68ZZZP2 S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module v10.5.2.0 spine1 D3RRNK2 Z9264F-ON 64x100G, 2x10GbE SFP1 Interface Module v10.5.2.0 leaf1 68YYZP2 S5248F-ON 48x25GbE SFP28, 4x100GbE QSFP28, 2x200GbE QSFP-DD Interface Module v10.5.2.0	Switch Name v Service Tag v Model v Latest Available OS v Installed OS Spine2 43RR/NK2 Z9264F-ON 64x100G, 2x10GbE SFP+ Interface Module v10.5.2.0 v10.5.2.0	Switch Name v Service Tag v Model v Latest Available os v Installed os v Status v spine2 43RRNK2 Z9264F-ON 64x100G, 2x10GbE SFP+ Interface Module v10.5.2.0 v10.5.2.0 v10.5.2.0 Active (Deployed) b leaf2 76M0002 S5248F-ON 48x25GbE SFP28, 4x100GbE OSFP28, 2x200GbE OSFP-DD Interface Module v10.5.2.0 v10.5.2.0 Active (Deployed) c leaf3 68ZZZP2 S5248F-ON 48x25GbE SFP28, 4x100GbE OSFP28, 2x200GbE OSFP-DD Interface Module v10.5.2.0 v10.5.2.0 Active (Deployed) c spine1 D3RRNK2 Z9264F-ON 48x25GbE SFP28, 4x100GbE OSFP28, 2x200GbE OSFP-DD Interface Module v10.5.2.0 v10.5.2.0 Active (Deployed) c spine1 D3RRNK2 Z9264F-ON 48x25GbE SFP28, 4x100GbE OSFP28, 2x200GbE OSFP-DD Interface Module v10.5.2.0 v10.5.2.0 Active (Deployed) c spine1 D3RRNK2 Z9264F-ON 48x25GbE SFP28, 4x100GbE OSFP28, 2x200GbE OSFP-DD Interface Module v10.5.2.0 v10.5.2.0 Active (Deployed) c spine1 D3RRNK2 S5248F-ON 48x25GbE SFP28, 4x100GbE OSFP28, 2x200GbE



This information explains how to access the command-line interface (CLI), and the available commands.

Access the CLI

1. SSH to the IP address configured for SFD.

```
login-srv-05-user%:~> ssh username@sfd.local@ip_address
admin@sfd.local@10.12.124.125's password:
Last login: Mon Oct 17 18:00:59 2019 from 10.12.1.9
```

2. Enter sfd to access the SmartFabric Director CLI.

```
admin@sfd.local@SFD-R5:~$ sfd
DellEMC SmartFabric Director CLI
sfd>
```

Command help

To view a list of available options or arguments, enter -h or --help after any command.

```
sfd> backup --help
usage: backup [-h] {list,create,delete,restore} ...
SFD backup operations - create, delete, list, restore
positional arguments:
   {list,create,delete,restore}
optional arguments:
   -h, --help show this help message and exit
```

Topics:

- log_level
- service
- support_bundle
- system

log_level

Sets the log-level for internal events and debug messages.

Command	<pre>log_level listservice service_name all log_level setservice service_namelevel log_level</pre>
Options	 service service_name — Lists log-levels for a specific service name all — Lists log-levels for all available services

• --level *log_level* — Sets the specified service to the wanted log-level (error, warn, info, debug, trace)

Usage

Use the all option to list all service levels.

Example

```
sfd> log_level list --service all
+-----+
| SERVICE LOG LEVELS |
+-----+
| Service Name | Log Level |
+-----+
| config-builder-service | INFO |
| fabric-orchestrator-service | INFO |
| host-network-service | INFO |
| notification-service | INFO |
| rest-api | INFO |
| switch-manager-service | INFO |
| system-controller-service | INFO |
| topology-service | INFO |
| telemetry-collector-service | INFO |
| telemetry-service | INFO |
| telemetry-
```

sfd> log_level set --service notification-service --level error

+-				OPERATION	STATUS	
· ·	Serv	vice	Name	İ	Status	
 +-	noti	fica	ation-s	service	1	

Releases

1.1.0 or later

service

Provides service operations including health and statistics.

Command	service [list healthname <i>service_name</i> statsname <i>service_name</i> restartname <i>service_name</i>]		
Options	 list — List all internal services health — Status of internal services stats — Metrics including memory and CPU usage of internal services restart — Restarts the specified service name service_name — Service name 		
Usage	This command provides information about services, performance, and state which can be used for monitoring to diagnose possible problems.		
Examples			
	<pre>sfd> service list ['config-builder-service', 'elasticsearch', 'external_syslog_collector', 'fabric-orchestrator-service', 'host-network-service', 'infra-processors', 'kube-state-metrics', 'nfc.host', 'nats', 'nats-exporter', 'nats-streaming', 'prometheus', 'prometheus-pgw', 'nginx-exporter', 'nginx-gw',</pre>		

'node_exporter', 'notification-service', 'rest-api', 'switchmanager-

```
      service', 'system-controller-service', 'topologyservice', 'telemetry-collector-service', 'telemetry-service']

      sfd> service health --name rest-api

      Service-Status : RUNNING

      Pod-Status : RUNNING

      I.1.0 or later
```

support_bundle

Creates a support bundle to be used for debugging purposes.

Command	<pre>support_bundle createname bundle_name</pre>			
Options	 create — Creates a support bundle name bundle_name — Name of the support bundle 			
Usage Example	 This command takes a snapshot of current internal states including health, debug messages, and logging. Verify you have enough local storage before running this command as the file size is large. NOTE: Do not attempt any SFD operations while the support bundle is being created. Generating a support bundle is CPU intensive, could result in momentary CPU spikes, and may impact the performance of SFD. 			
	<pre>sfd> support_bundle createname test Starting creating support bundle. It will take few minutes to collect data Successfully created support bundle test.tar.gz at /data/nfc_support_bundle/ path</pre>			
Releases	1.1.0 or later			

system

Displays the overall software health.

Command Options Usage	system health None None		
Example	+ SFD-System-Resource +		+ ++ Unit
	<pre> CPU Usage Memory - Available Memory - Available - % Available Disk (partition = /) Available Disk (partition = /) Network Rate 146.76 bps </pre>	14.87 2540158976 30.34 86.44	% bytes % Gb %
	+ SFD-System-Health ++	ervice-Status P	

+	+	+
config-builder-serv	vice RUNNING	RUNNING
elasticsearch	-	RUNNING
external syslog col	llector RUNNING	-
fabric-orchestrato:	r-service RUNNING	RUNNING
host-network-servic	ce RUNNING	RUNNING
infra-processors	-	RUNNING
kube-state-metrics	-	RUNNING
nfc.host	RUNNING	-
nats	-	RUNNING
nats-exporter	-	RUNNING
nats-streaming	-	RUNNING
prometheus	-	RUNNING
prometheus-pgw	-	RUNNING
nginx-exporter	-	RUNNING
nginx-gw	-	RUNNING
node_exporter	RUNNING	-
notification-servio	ce RUNNING	RUNNING
rest-api	RUNNING	FAILED
switch-manager-serv	vice RUNNING	RUNNING
system-controller-s	service RUNNING	RUNNING
topology-service	RUNNING	RUNNING
telemetry-collector	r-service RUNNING	RUNNING
telemetry-service	RUNNING	RUNNING
+		+
+	+	
System Overall Heal	lth	
+	+	
DOWN		
+	+	

1.1.0 or later

Frequently asked questions

This information contains answers to frequently asked questions about SmartFabric Director.

Configuration

Do I need to configure the Management interface on each switch?

The Management interface must be configured and enabled on each switch in the fabric (see Management interface).

How do I view switch port profile configuration?

```
OS10# show switch-port-profile 1/1

| Node/Unit | Current | Next-boot | Default |

| 1/1 | profile-2 | profile-2 | profile-1 |

Supported Profiles:

profile-1

profile-2

profile-3

profile-4

profile-5

profile-6
```

Lifecycle

How do I add a switch group?

See Define switch group for complete information.

Where can I view the status of my image update job?

See Schedule switch lifecycle job for complete information.

Administration

I cannot connect to my image server.

See Specify image servers for complete information.

Maintenance

How can I backup and restore SmartFabric Director?

SmartFabric Director supports back and restore to allow the software to return to a golden configuration at any time. Once the fabric has been defined, configured, and the behavior is verified the operator can use <code>backup create</code> to backup the SFD data including the fabric intent. See backup for complete information.

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