



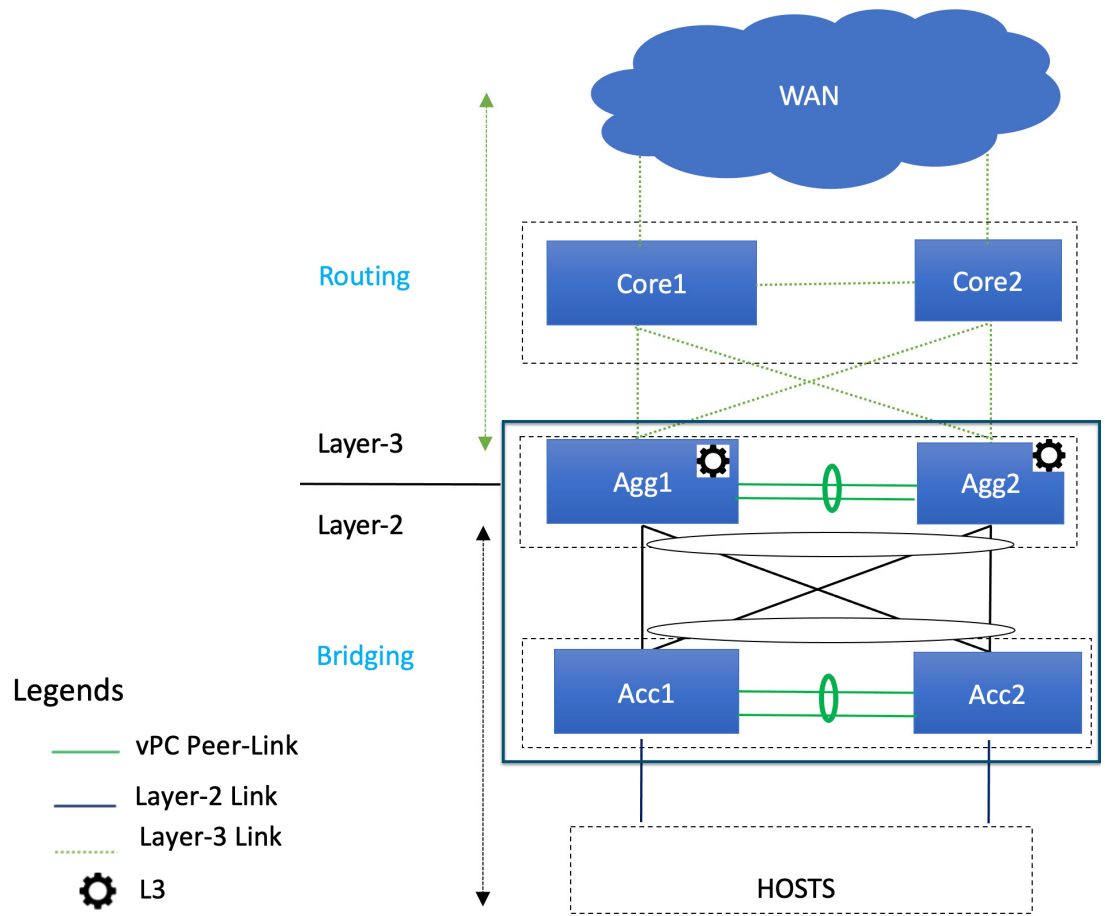
Day 0 Configurations

- [Configure the Enhanced Classic LAN Fabric, on page 1](#)
- [Configure the External Connectivity Network Fabric, on page 17](#)
- [Create a Fabric Group, on page 24](#)

Configure the Enhanced Classic LAN Fabric

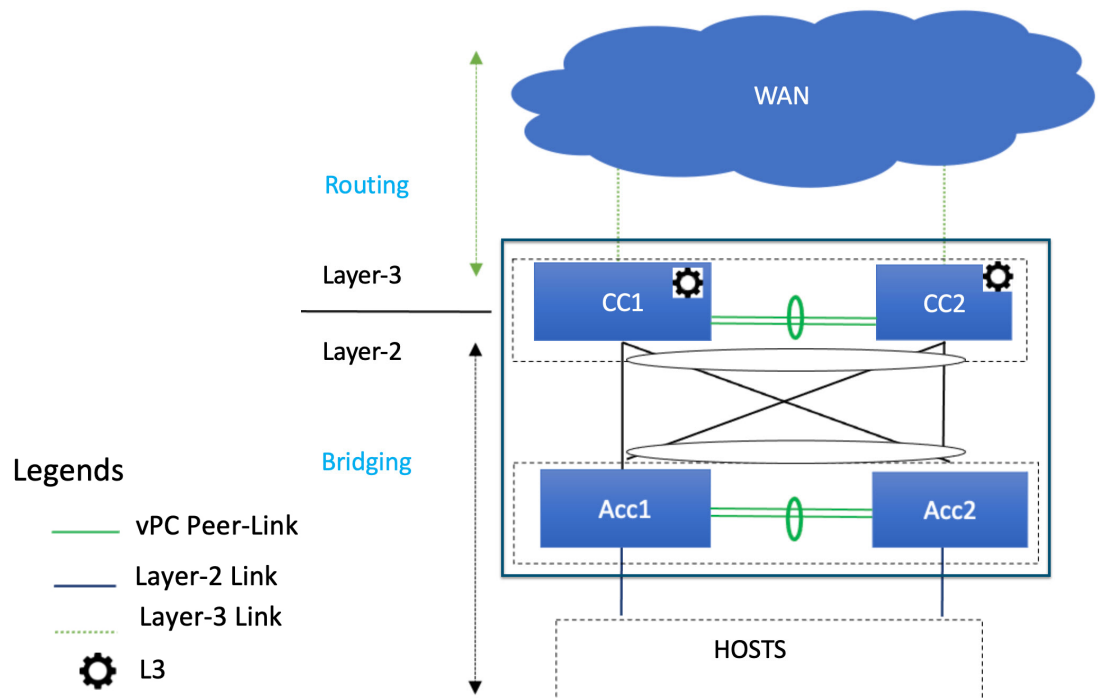
In these procedures, you will be configuring the Enhanced Classic LAN fabric that will be used to manage part of your legacy/classic network through NDFC.

- If your existing legacy/classic network falls into the three-tier topology scenario, you will be configuring a fabric that will be used for the Access and Aggregation tiers in that three-tier topology.



You will be configuring a separate External Connectivity Network fabric for the Core tier in a later section in this case.

- If your existing legacy/classic network falls into the two-tier (Collapsed Core) topology scenario, you will be configuring a fabric that will be used for both tiers in that two-tier topology.



In this case, the Core and Aggregation tiers are collapsed into a single, combined tier called the "Collapsed Core" tier.

You will be using the Enhanced Classic LAN fabric template for these configurations. For more information on that fabric template, see [Enhanced Classic LAN](#).

Before you begin

Verify that you have completed all of the necessary tasks provided in [Prerequisites](#) before beginning these procedures.

-
- Step 1** In NDFC, navigate to **LAN > Fabrics**.
A page showing all of the configured fabrics appears.
- Step 2** Click **Actions > Create Fabric**.

LAN > Fabrics

Fabrics Refresh

Filter by attributes

Fabric Name	Fabric Technology	Fabric Type	ASN	Fabric Health	Actions
<input type="radio"/> FabricGroup <small>Hide child Fabrics</small>	Multi-Fabric Domain	Fabric Group	NA	✔ Healthy	<div style="border: 1px solid #ccc; padding: 2px;"> Create Fabric Edit Fabric Delete Fabric </div>
<input type="radio"/> Fab1	Classic LAN	Enhanced Classic LAN	65025	⚠ Minor	
<input type="radio"/> Ext	Custom	External Connectivity Network	500	⚠ Major	

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Step 3 In the **Create Fabric** screen, enter a name for the Enhanced Classic LAN fabric (for example, `Access-Agg-Fab`), then click **Choose Template**.

Step 4 Choose the `Enhanced Classic LAN` template, then click **Select**.

Select Type of Fabric

Search Type of Fabric

- Data Center VXLAN EVPN**
Fabric for a VXLAN EVPN deployment with Nexus 9000 and 3000 switches.
- Enhanced Classic LAN**
Fabric for a fully automated 3-tier Classic LAN deployment with Nexus 9000 and 7000 switches.
- Campus VXLAN EVPN**
Fabric for a VXLAN EVPN Campus deployment with Catalyst 9000 switches and Nexus 9000 switches.
- BGP Fabric**
Fabric for an eBGP based deployment with Nexus 9000 and 3000 switches. Optionally VXLAN EVPN can be enabled on top of the eBGP underlay.
- Custom Network**
Fabric for flexible deployments with a mix of Nexus and Non-Nexus devices.
- Fabric Group**
Domain that can contain Enhanced Classic LAN, Classic LAN, and External Connectivity Network fabrics.

Select

Step 5 In the **General Parameters** tab in the `Enhanced Classic LAN` template, make the necessary configurations. The following configurations are mandatory in the **General Parameters** page:

- In the **Routing Protocol** field, choose the routing protocol between this Enhanced Classic LAN fabric and the External Connectivity Network fabric that will be configured in the next section, if necessary.

Options are:

- **ebgp**
 - **ospf**
 - **none**: NDFC does not configure the peering protocol if the **none** option is selected. You must manually configure the peering protocol with this option, if necessary.
- If the **Routing Protocol** is **ebgp**, in the **BGP ASN** field, enter a unique, non-overlapping value.
For this use case, we will use 65535 as the BGP ASN number that will be assigned to the Enhanced Classic LAN fabric.

The remaining fields are optional. They have been automatically configured based on Cisco best practices, but you can change them if necessary. For example, in the **General Parameters** page.

Fabric Name
Access-Agg-Fab

Pick Fabric
Enhanced Classic LAN >

General Parameters Spanning Tree vPC Protocols Advanced Resources Manageability Bootstrap Configuration Backup Flow Monitor

First Hop Redundancy Protocol
hsrp HSRP or VRRP

Routing Protocol
ebgp VRF Lite Aggregation-Core or Collapsed Core-WAN Peering Protocol Options

BGP ASN*
1-4294967295 | 1-65535[0-65535] It is a good practice to have a unique ASN for each Fabric

Enable Performance Monitoring

Step 6

In the **Spanning Tree** tab, make the necessary configurations for your setup.

For example, in the **Spanning-tree Root Bridge Protocol** field, the `rpvst+` (Rapid Per-VLAN Spanning Tree) option is selected by default, but the `mst` (Multiple Spanning Tree) and `unmanaged` (STP root not managed by NDFC) options are also acceptable.

Fabric Name
Access-Agg-Fab

Pick Fabric
[Enhanced Classic LAN >](#)

General Parameters **Spanning Tree** VPC Protocols Advanced Resources Manageability Bootstrap Configuration Backup Flow Monitor

Spanning Tree Root Bridge Protocol
rpvst+
Protocol to be used for configuring Root Bridge: rpvst+: Rapid Per-VLAN Spanning Tree, mst: Multiple Spanning Tree, unmanaged (default): STP Root not managed by NDFC. Note: Spanning Tree Settings and Bridge Configs are applicable at Aggregation layer only.

Spanning Tree VLAN Range*
1-3967
Vlan range, Example: 1,3-5,7,9-11, Default is 1-3967 (Applicable only for Aggregation devices)

MST Instance Range

MST instance range, Example: 0-3,5,7-9, Default is 0 (Applicable only for Aggregation devices)

Spanning Tree Bridge Priority
0
Bridge priority for the spanning tree in increments of 4096 (Applicable only for Aggregation devices)

Spanning Tree Hello Interval
2
Set the number of seconds between generation of config bpdu, default is 2 (Applicable only for Aggregation devices)

Spanning Tree Forward Delay
15
Set the number of seconds for the forward delay timer, default is 15 (Applicable only for Aggregation devices)

Spanning Tree Max Age Interval
20
Set the maximum number of seconds the information in a bpdu is valid, default is 20 (Applicable only for Aggregation devices)

Spanning Tree Pathcost Method
short
long: Use 32 bit based values, short (default): Use 16 bit based values for default port path costs (Applicable only for Aggregation devices)

Step 7

In the **Bootstrap** tab, determine how you want NDFC to discover the switches in the Enhanced Classic LAN fabric.

You can use either of these two methods to discover the switches in the fabric:

- By manually entering the necessary information to allow NDFC to discover those switches. This option is applicable if you have already configured certain parameters, such as the out-of-band management IP addresses, on the switches that need to be discovered.

If you decide to use this method, that step is provided later in these procedures ([Step 10, on page 9](#)).

- By using the Power On Auto Provisioning (POAP) feature in NDFC. This option is useful if you do not already have certain parameters, such as the management IP address, default route, and start up configurations, already configured on the switches that need to be discovered.

POAP automates the process of installing configuration files on devices that are deployed on the network for the first time. POAP allows devices to be brought up without performing any manual configuration. When a POAP feature-enabled device boots and does not find the startup configuration, the device enters POAP mode, locates a DHCP server, and bootstraps itself with its interface IP address, gateway, and DNS server IP addresses. The device obtains the IP address of a TFTP server and downloads a configuration script that enables the switch to download and install the appropriate software image and configuration file.

Note the following:

- Only out-of-band POAP is supported for switches in the Enhanced Classic LAN Fabric type.
- NDFC can be configured as the local DHCP server, handing out the IP addresses when requested by the switch while in the POAP phase. Once the switch fetches the IP address, a default route for the reachability

and desired startup configuration (optionally an image used to boot the switch) is pushed to the switch. Alternatively, an external DHCP server is also supported.

If you decide to use this method, follow these procedures to configure the POAP feature:

- a. Click the **Bootstrap** tab in this page to make the necessary configurations in the **Bootstrap** area.
- b. Check the box in the **Enable Bootstrap** field.
- c. (Optional) Check the box in the **Enable Local DHCP Server** field (NDFC as DHCP server).
- d. Define the subnet scope and default gateway that will be sent to the switch as soon as the switch is pre-provisioned while in the POAP loop.

Fabric Name
Access-Agg-Fab

Pick Fabric
Enhanced Classic LAN >

General Parameters Spanning Tree VPC Protocols Advanced Resources Manageability **Bootstrap** Configuration Backup Flow Monitor

Enable Bootstrap Automatic IP Assignment For POAP

Enable Local DHCP Server Automatic IP Assignment For POAP From Local DHCP Server

DHCP Version
DHCPv4

DHCP Scope Start Address*
10.30.12.17 Start Address For Switch POAP

DHCP Scope End Address*
10.30.12.20 End Address For Switch POAP

Switch Mgmt Default Gateway*
10.30.12.1 Default Gateway For Management VRF On The Switch

Switch Mgmt IP Subnet Prefix*
24 (Min:8, Max:30)

Switch Mgmt IPv6 Subnet Prefix
(Min:64, Max:128)

DHCPv4 Multi Subnet Scope▲

lines with # prefix are ignored here

Enable AAA Config Include AAA configs from Manageability tab during device bootstrap

Bootstrap Freeform Config

Additional CLIs required during device bootstrap/login e.g. AAA/Radius

Step 8 Make any additional configurations to the template for the Enhanced Classic LAN fabric in the remaining tabs, if necessary.

Updates to any of the values in the following tabs are all optional.

- **VPC:** Modify vPC default values.
- **Advanced:** Modify entries for AAA, NXAPI, or templates to be used for sub-operations and CoPP profile, as well as group freeform configurations for Access and/or Aggregation switches.
- **Resources:** Modify entries for the default IP and subnet ranges.

- **Manageability:** Modify entries for DNS, NTP, and syslog server settings.
- **Configuration Backup:** Modify entries to define the cadence of automatic fabric level backups.
- **Flow Monitor:** Modify entries to enable Netflow.

For more information on these fields in the Enhanced Classic LAN fabric template, see *xref2:Enhanced Classic LAN KB article*.

Step 9 When you have completed the necessary configurations to the Enhanced Classic LAN fabric template, click **Save**.

The **LAN Fabric** page appears again, with the newly created Enhanced Classic LAN fabric added to the list of configured fabrics.

Step 10 If necessary, enter the necessary information to allow NDFC to discover the switches in the Enhanced Classic LAN fabric.

Note You do not have to go through the procedures in this step if you **Enabled Bootstrap** through the **Bootstrap** area in NDFC in the previous step.

Verify that reachability exists between NDFC and these switches before proceeding with this step.

- a) In the **Overview** page for the Enhanced Classic LAN fabric, click the **Switches** tab, then click **Action > Add Switches**.
 - b) In the **Add Switches** screen, verify that the **Discover** option is selected, then add the necessary information to discover the switches.
 - In the **Seed IP** field, enter the management IP addresses of the switches. Only out-of-band management of switches is supported.
 - In the **Preserve Config** field, make the appropriate selection.

If you remove the check from the box in the **Preserve Config** field, all existing configurations except the management IP address, the default gateway, and the boot variables will be erased so that a fresh configuration will be pushed out from NDFC.

 - If you are bringing in a greenfield deployment for NDFC to manage, remove the check from the box so that any existing configurations are not preserved on the switches.
 - If you are bringing in a brownfield deployment for NDFC to manage, check the box if you want existing configurations on the switches preserved; otherwise, remove the check from the box if you do not want the existing configurations on the switches preserved.
- Enter any remaining information in the **Add Switches** screen that is necessary to discover the switches.

Add Switches - Fabric: Access-Agg-Fab

Switch Addition Mechanism*
 Discover Bootstrap Pre-provision

Seed Switch Details

Seed IP*

Ex: "2.2.2.20" or "10.10.10.40-60" or "2.2.2.20, 2.2.2.21"

Authentication Protocol*
 MD5

Username*
 admin

Password*

Max Hops*
 2

Preserve Config

Unchecking this will clean up the configuration on switch(es)

Close Discover Switches

c) Click **Discover Switches**.

Click **Confirm** in the confirmation popup window that appears.

d) In the **Discovery Results** screen, check the check box next to the switches that will be imported into the Enhanced Classic LAN fabric and click **Add Switches**.

Add Switches - Fabric: Access-Agg-Fab

Switch Addition Mechanism*
 Discover Bootstrap Pre-provision

Seed Switch Details

Fabric: Access-Agg-Fab

Switch:

Authentication Protocol: MD5

Username: admin

Password: **Set**

Max Hops: 2

Preserve config: **Enabled**

← Back

Discovery Results

Filter by attributes

Switch Name	Serial Number	IP Address	Model	Version	Status	Progress
<input type="checkbox"/> fabric1-leaf1			N9K-C93180YC-EX	10.2(3)	Already Managed in Fab1	
<input checked="" type="checkbox"/> Agg1			N9K-C93180YC-FX	10.2(1)	Manageable	
<input type="checkbox"/> N3K3			N3K-C36180YC-R	9.3(7)	Not Reachable	
<input type="checkbox"/> ToR3			N9K-C93240YC-FX2	10.2(2)	Not Reachable	
<input type="checkbox"/> N7K1-Core2			N7K-C7009	8.4(7)	Manageable	
<input checked="" type="checkbox"/> Access1			N9K-C93180YC-EX	10.3(2)IMG9(0.168)	Manageable	
<input checked="" type="checkbox"/> Access2			N9K-C93180YC-FX	10.3(1)IMG9(0.198)	Manageable	
<input type="checkbox"/> edge-router			N9K-C93180YC-EX	7.0(3)I7(9)	SNMPV3 Unknown User Or Pass	
<input checked="" type="checkbox"/> Agg2			N9K-C9364C	10.1(2)	Manageable	
<input type="checkbox"/> FANOUT			N5K-C5548UP	7.3(6)N1(1)	SNMPV3 Unknown User Or Pass	

10 Rows

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Close Add Switches

The status will change to **Switch Added** when the process is complete. Click **Close** to close out of this window.

Step 11 Define the roles for the switches in the Enhanced Classic LAN fabric.

Once the switches are discovered in the Enhanced Classic LAN fabric, the next step is to define the roles, or the intent, for those switches. Based on the roles that you assign to the switches, the appropriate configuration will be generated and pushed to the switches by NDFC.

The following roles are available for the switches in the Enhanced Classic LAN fabric in this step:

- **Access role:** Normally, you would manually assign this role to the switches in the Access tier in either the three-tier hierarchical network topology or the two-tier Collapsed Core topology.

However, by default, all Nexus 9000 switches that are discovered in a fabric that uses the `Enhanced Classic LAN` template are automatically assigned an **Access** role. This is because the majority of switches that are used in this type of fabric are normally used at the Access tier, so you won't have to manually assign the **Access** role to those particular Nexus 9000 switches in this case.

- **Aggregation role:** You will assign this role to the following switches:

- For the three-tier hierarchical network topology, you will assign the **Aggregation** role to the switches in the Aggregation tier as the Layer 2/Layer 3 demarcation. Aggregation also acts as the Spanning Tree Bridge and a gateway with the relevant FHRP configurations.
- For the two-tier Collapsed Core topology, you will assign the **Aggregation** role to the switches in the Collapsed Core tier, where the Core and Aggregation levels are unified on the same switch. These switches serve as a Layer 2/Layer 3 demarcation, a bridge, and a gateway, and will also connect to the WAN (optionally using VRF-Lite, which is fully supported in the Aggregation layer).

- After the discovery process is finished for the switches, navigate back to the **Switches** tab, if necessary.
- Verify that the roles for all of the Nexus 9000 switches discovered in this fabric are automatically set to **Access**.

As described previously, all Nexus 9000 switches in this type of fabric are automatically assigned an **Access** role so that you don't have to manually assign this role to all of the switches in the Access tier of a three-tier or two-tier Collapsed Core topology.

In addition, all the switches will show NA in the Config Status column, because no configurations have been pushed out to the switches at this point in the process.

- Click the boxes next to the switches that will be assigned the **Aggregation** role.

Fabric Overview - Access-Agg-Fab

Overview **Switches** Links Interfaces Interface Groups Policies Networks VRFs Event Analytics History Resources Metrics

Filter by attributes

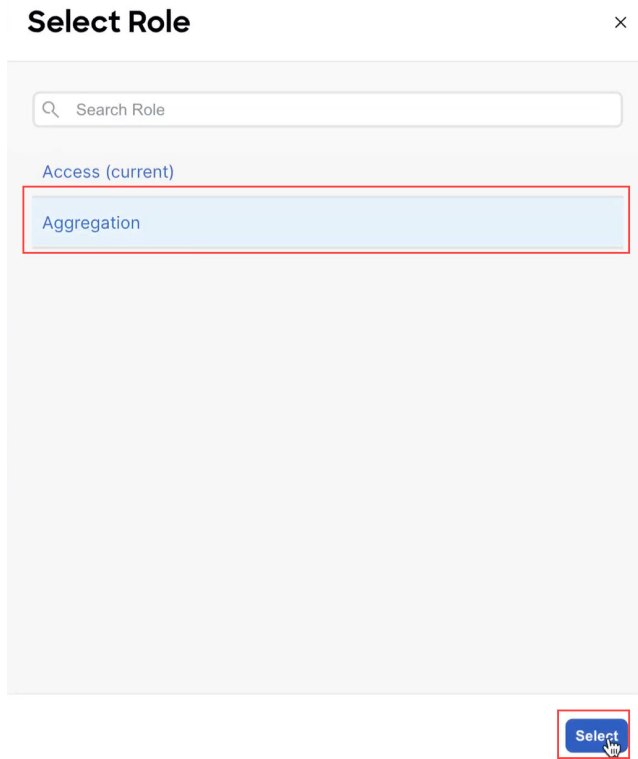
Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model
<input type="checkbox"/> Access1	172.25.65.134	Access	FDO22231NTF	Normal	NA	Minor	Rediscovering	N9K-C93180YC-EX
<input type="checkbox"/> Access2	172.25.65.135	Access	FDO222310CP	Normal	NA	Minor	Rediscovering	N9K-C93180YC-EX
<input checked="" type="checkbox"/> Agg1	172.25.65.130	Access	FDO22230BXL	Normal	NA	Minor	Rediscovering	N9K-C93180YC-EX
<input checked="" type="checkbox"/> Agg2	172.25.65.131	Access	FDO22230TDY	Normal	NA	Minor	Rediscovering	N9K-C93180YC-EX

Actions ^

- Add Switches
- Preview
- Deploy
- Discovery >
- Set Role**
- vPC Pairing
- ToR/Access Pairing
- vPC Overview
- More >

- Click **Actions > Set Role**.

- e) Choose **Aggregation** from the list of roles for the switches, then click **Select**.



Click **Ok** in the warning popup that appears.

Step 12 Configure vPC pairing for the switches.

Once the roles have been defined, you can configure vPC pairing for the switches that have been assigned **Access** or **Aggregation** roles.

- For switches that are defined with the **Access** role, vPC is recommended, but is not mandatory.
- For the switches that are defined with the **Aggregation** role, vPC peering is mandatory for fabrics that are configured using the `Enhanced Classic LAN` template, as it is recommended based on Cisco best practices.

For both types of switches, a related setting in the **Advanced** tab of **Fabric Settings** is enabled by default, which allows NDFC to automatically detect and pair Access or Aggregation switches for optimal traffic engineering. You can disable this feature, if desired, in the **Enable Agg/Access Auto Pairing** field in the **Advanced** tab.

The following vPC pairing options are supported:

- Back-to-back
- Port channel
- Trunk ports

The following procedures apply, regardless of whether you are configuring a three-tier heirarchal network topology or a two-tier Collapsed Core topology:

- a) To set vPC pairing for the **Access** switches, select a switch that is assigned with the **Access** role, then click **Actions > vPC Pairing**.

Fabric Overview - Access-Agg-Fab

Overview **Switches** Links Interfaces Interface Groups Policies Networks VRFs Event Analytics History Resources Metrics

Filter by attributes

Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model
<input checked="" type="checkbox"/> Access1	172.25.65.134	Access	FDO22231NTF	Normal	NA	Minor	Ok	N9K-C93180YC-EX
<input type="checkbox"/> Access2	172.25.65.135	Access	FDO222310CP	Normal	NA	Minor	Ok	N9K-C93180YC-EX
<input type="checkbox"/> Agg1	172.25.65.130	Aggregation	FDO22230BXL	Normal	Pending	Minor	Ok	N9K-C93180YC-EX
<input type="checkbox"/> Agg2	172.25.65.131	Aggregation	FDO22230TDY	Normal	Pending	Minor	Ok	N9K-C93180YC-EX

Actions

- Add Switches
- Preview
- Deploy
- Discovery
- Set Role
- vPC Pairing**
- ToR/Access Pairing
- vPC Overview
- More

- b) In the **Select vPC Peer** screen, select a second Access switch to use for the vPC pairing, then click **Save**.
The additional switches that NDFC will recommend to be used for the vPC pairing for Access switches will be shown with the value **True** under the **Recommended** column.

vPC Pairing

Select vPC Peer for Access1

Filter by attributes

Device	Recommended	Reason	Serial Number	IP Address
<input checked="" type="radio"/> Access2	True	Switches are connected and have same role	FDO222310CP	172.25.65.135
<input type="radio"/> Access2	False	Already paired with FDO22230TDY (Agg2)	FDO22230BXL	172.25.65.130
<input type="radio"/> Agg2	False	Already paired with FDO22230BXL (Agg1)	FDO22230TDY	172.25.65.131

10 Rows

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Cancel Save

- c) To set vPC pairing for the **Aggregation** switches, select a switch that is assigned with the **Aggregation** role, then click **Actions > vPC Pairing**.

Fabric Overview - Access-Agg-Fab

Overview **Switches** Links Interfaces Interface Groups Policies Networks VRFs Event Analytics History Resources Metrics

Filter by attributes

Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model
<input type="checkbox"/> Access1	172.25.65.134	Access	FDO22231NTF	Normal	NA	Minor	OK	N9K-C93180YC-EX
<input type="checkbox"/> Access2	172.25.65.135	Access	FDO222310CP	Normal	NA	Minor	OK	N9K-C93180YC-EX
<input checked="" type="checkbox"/> Agg1	172.25.65.130	Aggregation	FDO22230BXL	Normal	NA	Minor	OK	N9K-C93180YC-EX
<input type="checkbox"/> Agg2	172.25.65.131	Aggregation	FDO22230TDY	Normal	NA	Minor	OK	N9K-C93180YC-EX

Actions

- Add Switches
- Preview
- Deploy
- Discovery
- Set Role
- vPC Pairing**
- ToR/Access Pairing
- vPC Overview
- More

- d) In the **Select vPC Peer** screen, select a second Aggregation switch to use for the vPC pairing, then click **Save**. The additional switches that NDFC will recommend to be used for the vPC pairing for Aggregation switches will be shown with the value **True** under the **Recommended** column.

Note vPCs are automatically discovered for brownfield deployments.

vPC Pairing

Select vPC Peer for Agg1

Filter by attributes

Device	Recommended	Reason	Serial Number	IP Address
<input checked="" type="radio"/> Agg2	True	Switches are connected and have same role	FDO22230TDY	172.25.65.131
<input type="radio"/> Access2	False	Switches have different roles	FDO222310CP	172.25.65.135
<input type="radio"/> Access1	False	Switches have different roles	FDO22231NTF	172.25.65.134

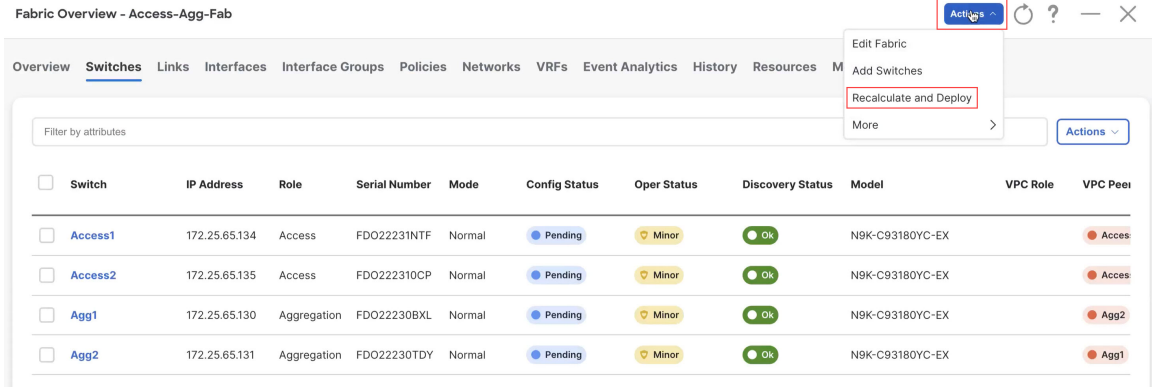
10 Rows

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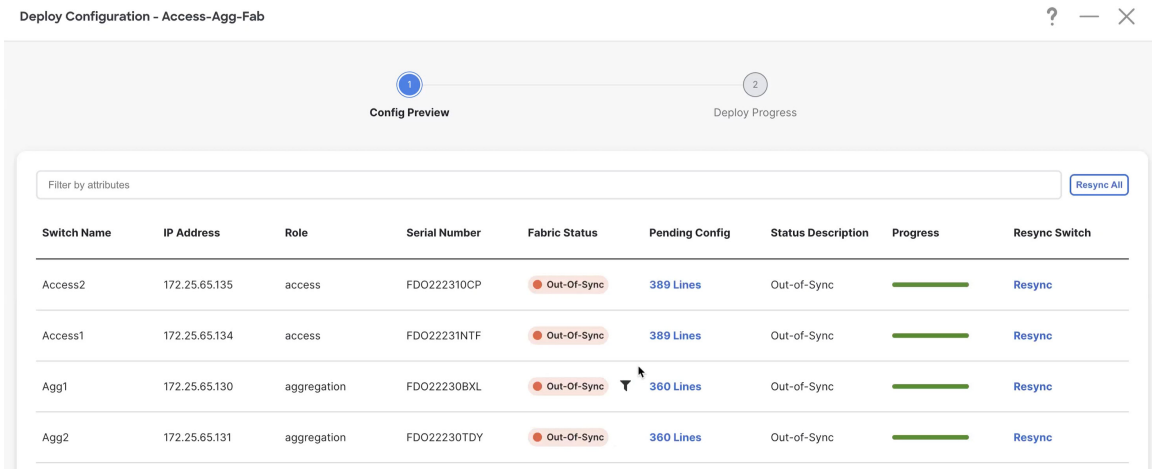
Cancel Save

Step 13 Recalculate and deploy.

- a) At the top of the page, click **Actions > Recalculate and Deploy**.



b) Preview the configuration updates as the recalculation process progresses.



You can click on the blue link in the **Pending Config** column to get additional information on the changes that are being configured for the switches. For example, if you were to click on the blue link in the **Pending Config** column for one of the Access switches, you might see information similar to the following.

Pending Config - Access-Agg-Fab - Access1

```

Pending Config Side-by-Side Comparison
cfs eth distribute
feature lacp
feature lldp
feature vpc
snmp-server host [redacted] traps version 2c public udp-port 2162
switchname Agg1
vpc domain 2
peer-keepalive destination [redacted] source [redacted] hold-timeout 3
peer-switch
auto-recovery reload-delay 360
interface port-channel500
switchport
switchport mode trunk
description "vpc-peer-link Access1--Access2"
no shutdown
spanning-tree port type network
switchport trunk allowed vlan 1-4094
vpc peer-link
interface ethernet1/1
description "PO 500 (vpc-peer-link) member Access1-Ethernet1/1 to Access2-Ethernet1/1"
channel-group 500 force mode active
no shutdown
interface ethernet1/2
description "PO 500 (vpc-peer-link) member Access1-Ethernet1/2 to Access2-Ethernet1/2"
    
```

Similarly, you might see information similar to the following if you were to click on the blue link in the **Pending Config** column for one of the Aggregation switches.

Pending Config - Access-Agg-Fab - Agg1

Pending Config Side-by-Side Comparison

```

cfs eth distribute
feature bgp
feature dhcp
feature hsrp
feature interface-vlan
feature lacp
feature nxapi
feature vpc
feature lldp
nxapi http port 80
nxapi https port 443
router bgp 65535
configure terminal
service dhcp
snmp-server host [redacted] traps version 2c public udp-port 2162
switchname fabric1-border1
ip dhcp relay
route-map fabric-rmap-redis-subnet permit 10
  match tag 12345
ip dhcp relay information option
ip dhcp relay information option vpn
ipv6 dhcp relay
vpc domain 1
  ip arp synchronize

```

- c) When the recalculation process is completed, click **Deploy All**, then click **Close** when you see **Success** and **Deployment Completed** in the **Deploy Configuration** window.
- d) In the **Fabric Overview** window, verify that the status shown in the **Config Status** column shows as **In-Sync**.

Fabric Overview - Access-Agg-Fab Actions ↕ ⌂ ? — ✕

Overview Switches Links Interfaces Interface Groups Policies Networks VRFs Event Analytics History Resources Metrics

Filter by attributes Actions ↕

<input type="checkbox"/>	Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model	VPC Role	VPC Peer
<input type="checkbox"/>	Agg1	[redacted]	Access	[redacted]	Normal	In-Sync	Minor	OK	N9K-C93180YC-EX	Primary	Agg2
<input type="checkbox"/>	Agg2	[redacted]	Access	[redacted]	Normal	In-Sync	Minor	OK	N9K-C93180YC-EX	Secondary	Agg1
<input type="checkbox"/>	fabric1-border1	[redacted]	Aggregation	[redacted]	Normal	In-Sync	Minor	OK	N9K-C93180YC-EX	Primary	fabric1-b
<input type="checkbox"/>	fabric1-border2	[redacted]	Aggregation	[redacted]	Normal	In-Sync	Minor	OK	N9K-C93180YC-EX	Secondary	fabric1-b

What to do next

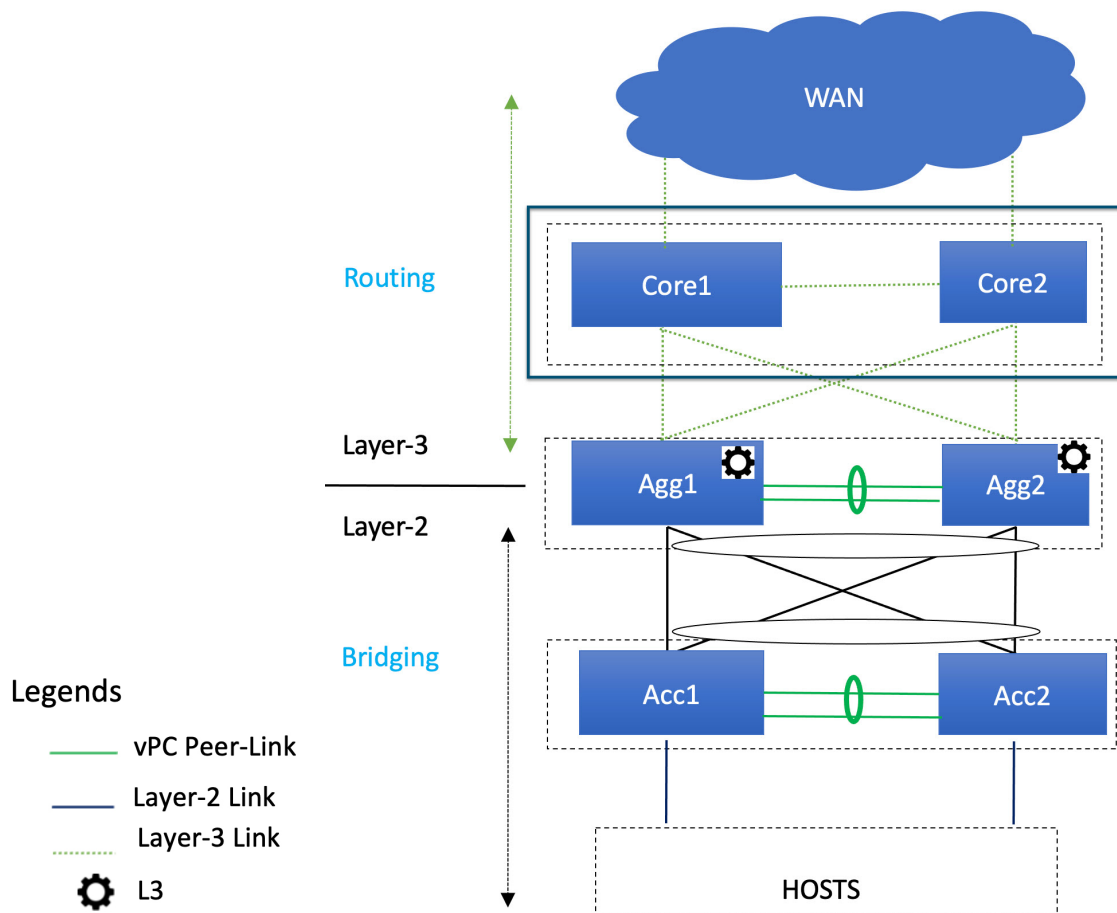
- For a two-tier Collapsed Core topology, as described in [Supported Legacy/Classic Network Topologies](#), you have completed the Day 0 configurations because the Enhanced Classic LAN fabric that you configured in this topic covers both tiers in a two-tier Collapsed Core topology. You are now ready to begin the Day 1 configurations. Go to [Day 1 Configurations](#).
- For a three-tier hierarchical topology, as described in [Supported Legacy/Classic Network Topologies](#), you will configure the External Connectivity Network fabric that you will need for the Core tier next. Go to [Configure the External Connectivity Network Fabric](#), on page 17.

Configure the External Connectivity Network Fabric



Note The procedures in this section apply only if you have a three-tier hierarchical topology, as described in [Supported Legacy/Classic Network Topologies](#). Do not follow these procedures if you have a two-tier, collapsed core topology, because you will have already configured the only fabric that you need for that two-tier topology in [Configure the Enhanced Classic LAN Fabric, on page 1](#).

In these procedures, you will be configuring an External Connectivity Network fabric specifically for the core tier in a three-tier topology, as described in [Supported Legacy/Classic Network Topologies](#).



You already configured the Enhanced Classic LAN fabric for the access and aggregation tiers in a previous section. You will configure two separate fabrics because typical deployments use a shared core, which will reside in a separate, External Connectivity Network fabric that is shared by the first (access-aggregate) fabric that you configured in previous procedures.

You will be using the External Connectivity Network fabric template for these configurations. For more information on that fabric template, see [Enhanced Classic LAN](#).

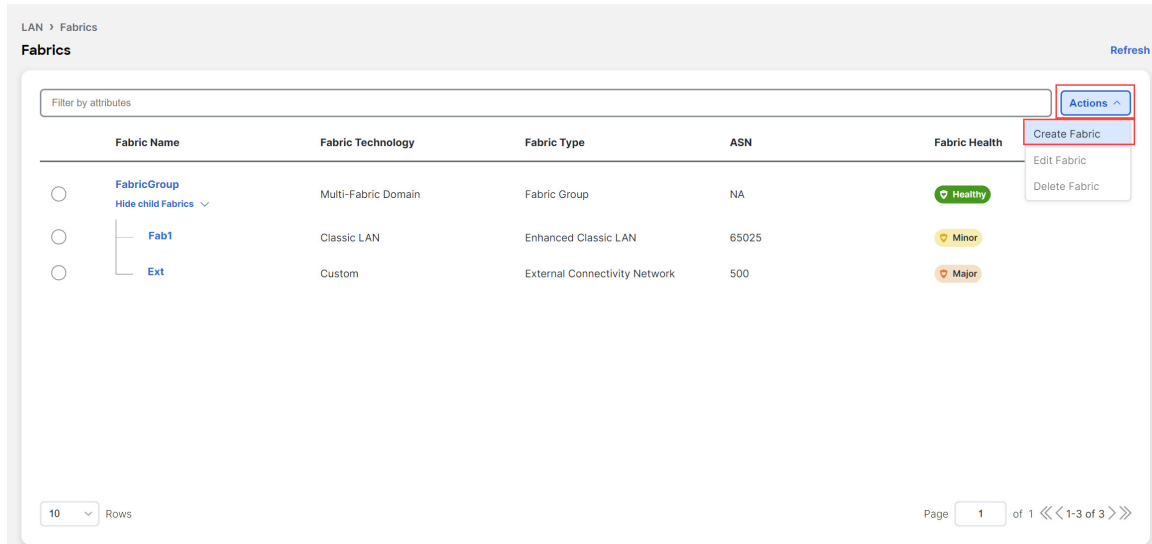
Before you begin

Verify that you have configured the Enhanced Classic LAN fabric using the procedures provided in [Configure the Enhanced Classic LAN Fabric, on page 1](#).

Step 1 In NDFC, navigate to **LAN > Fabrics**, if you are not there already.

A page showing all of the configured fabrics appears.

Step 2 Click **Actions > Create Fabric**.



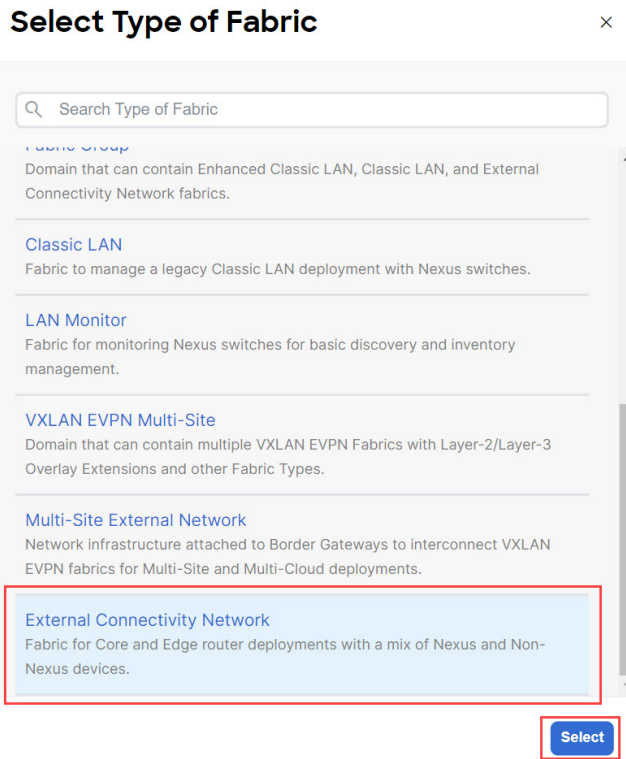
The screenshot shows the 'LAN > Fabrics' page in NDFC. The page title is 'Fabrics' and there is a 'Refresh' button in the top right. A search bar labeled 'Filter by attributes' is at the top. Below it is a table with the following columns: Fabric Name, Fabric Technology, Fabric Type, ASN, and Fabric Health. The table contains three rows of data. The 'Actions' menu is open, showing options: Create Fabric, Edit Fabric, and Delete Fabric. The 'Create Fabric' option is highlighted with a red box.

Fabric Name	Fabric Technology	Fabric Type	ASN	Fabric Health
<input type="radio"/> FabricGroup <small>Hide child Fabrics</small>	Multi-Fabric Domain	Fabric Group	NA	Healthy
<input type="radio"/> Fab1	Classic LAN	Enhanced Classic LAN	65025	Minor
<input type="radio"/> Ext	Custom	External Connectivity Network	500	Major

At the bottom left, there is a '10 Rows' dropdown. At the bottom right, there is a pagination control: 'Page 1 of 1' with navigation arrows and '1-3 of 3'.

Step 3 In the **Create Fabric** screen, enter a name for the External Connectivity Network fabric (for example, `Core-Fab`), then click **Choose Template**.

Step 4 Choose the `External Connectivity Network` template, then click **Select**.

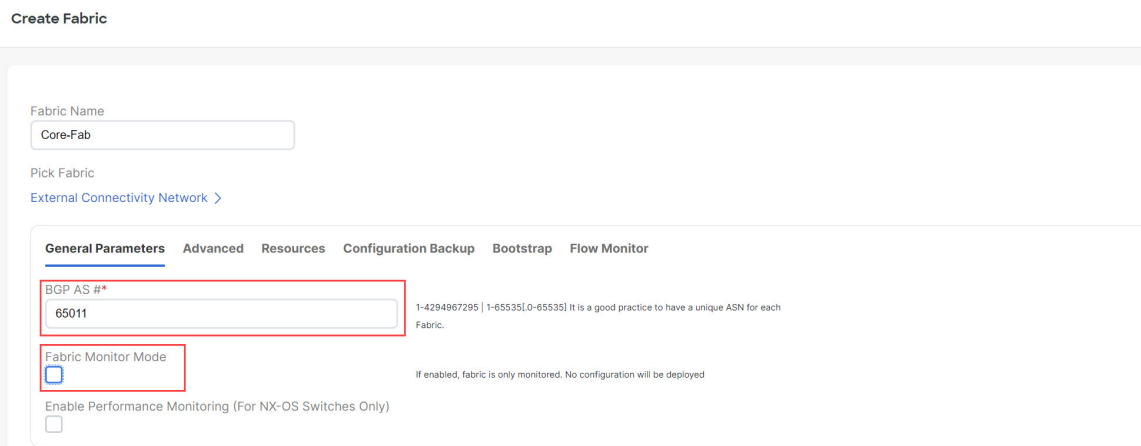


Step 5 In the **General Parameters** tab, make the necessary configuration specifically for this use case.

- In the **BGP ASN** field, enter a unique, non-overlapping value.

For this use case, we will use 65011 as the BGP ASN number that will be assigned to the External Connectivity Network fabric.

- Uncheck the box next to the **Fabric Monitor Mode** field.



Step 6 Determine how you want NDFC to discover the switches in the External Connectivity Network fabric, if applicable. The options available to you depend on the type of deployment that you are managing through NDFC:

- If you are managing a *greenfield* deployment, then, similar to the Enhanced Classic LAN fabric, you can use either of these two methods to discover the switches in the fabric:
 - By manually entering the necessary information to allow NDFC to discover those switches. This option is applicable if you have already configured certain parameters, such as the out-of-band management IP addresses, on the switches that need to be discovered.
If you decide to use this method, that step is provided later in these procedures ([Step 9, on page 20](#)).
 - By using the Power On Auto Provisioning (POAP) feature in NDFC. This option is useful if you do not already have certain parameters, such as the management IP address, default route, and start up configurations, already configured on the switches that need to be discovered.
If you decide to use this method, click the **Bootstrap** tab in this page to make the necessary configurations in the **Bootstrap** area using the same process as provided in the procedures for the Enhanced Classic LAN fabric.
- If you are managing a *brownfield* deployment, then the only option available for you is to manually enter the necessary information to allow NDFC to discover the switches; you cannot use the Power On Auto Provisioning (POAP) feature when managing a brownfield deployment. Go to [Step 9, on page 20](#) for those procedures.

Step 7 Complete the remaining configurations for the External Connectivity Network fabric, if necessary.

The remaining parameters are optional. They have been automatically configured based on Cisco best practices, but you can change them if necessary.

Step 8 When you have completed the necessary configurations to the External Connectivity Network fabric template, click **Save**.

The **LAN Fabric** page appears again, with the newly created External Connectivity Network fabric added to the list of configured fabrics.

Step 9 If necessary, manually enter the necessary information to allow NDFC to discover the switches in the External Connectivity Network fabric.

Note You do not have to go through the procedures in this step if you enabled POAP through the **Bootstrap** area in NDFC in the previous step.

Verify that reachability exists between NDFC and these switches before proceeding with this step.

- In the **Overview** page for the External Connectivity Network fabric, click the **Switches** tab, then click **Action > Add Switches**.
- In the **Add Switches** screen, verify that the **Discover** option is selected, then add the necessary information to discover the switches.
 - In the **Seed IP** field, enter the management IP addresses of the switches. Only out-of-band management of switches is supported.
 - Enter any remaining information in the **Add Switches** screen that is necessary to discover the switches.

Add Switches - Fabric: Core-Fab

Switch Addition Mechanism*
 Discover Move Neighbor Switches

Seed Switch Details

Seed IP*

i Ex: "2.2.2.20" or "10.10.10.40-60" or "2.2.2.20, 2.2.2.21"

Authentication Protocol*
 MD5

Device Type*
 NX-OS

Username*
 admin

Password*

Max Hops*
 0

Close Discover Switches

c) Click **Discover Switches**.

Click **Confirm** in the confirmation popup window that appears.

d) In the **Discovery Results** screen, check the check box next to the switches that will be imported into the External Connectivity Network fabric and click **Add Switches**.

Add Switches - Fabric: Core-Fab

Switch Addition Mechanism*
 Discover Move Neighbor Switches

Seed Switch Details

Fabric: Core-Fab Switch:

Authentication Protocol: MD5 Username: admin

Password: Set Max Hops: 0 Preserve config: Enabled

← Back

Discovery Results

Filter by attributes

Switch Name	Serial Number	IP Address	Model	Version	Status	Progress
<input checked="" type="checkbox"/> xbow1			N77-C7706	8.4(3)	<input checked="" type="checkbox"/> Manageable	
<input checked="" type="checkbox"/> xbow2			N77-C7702	8.2(3)	<input checked="" type="checkbox"/> Manageable	
<input type="checkbox"/> N9K-RS			N9K-C9396PX	9.3(5)	<input checked="" type="checkbox"/> Manageable	

Close Add Switches

The status will change to **Switch Added** when the process is complete. Click **Close** to close out of this window.

Step 10 Define the role for the switches in the External Connectivity Network fabric.

Similar to the process in the Enhanced Classic LAN fabric, once the switches are discovered in the External Connectivity Network fabric, the next step is to define the roles for those switches. Based on the roles that you assign to the switches, the appropriate configuration will be generated and pushed to the switches by NDFC.

- a) Click the box next to the switch for the External Connectivity Network fabric, then click **Actions > Set Role**.

Fabric Overview - Core-Fab

Overview **Switches** Links Interfaces Policies Event Analytics History Resources Metrics

Filter by attributes

<input checked="" type="checkbox"/>	Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model
<input checked="" type="checkbox"/>	xbow1	172.22.230.170	Spine	FXS1841Q0TX	Migration	NA	Healthy	Ok	N77-C7706
<input checked="" type="checkbox"/>	xbow2	172.22.230.168	Spine	JPG1908000J	Migration	NA	Healthy	Ok	N77-C7702

Actions

- Add Switches
- Preview
- Deploy
- Discovery
- Set Role**
- vPC Pairing
- ToR/Access Pairing
- vPC Overview
- More

- b) Determine what role you want to set for the switches in the External Connectivity Network.

As described in [Supported Legacy/Classic Network Topologies](#), you can set the roles for the switches in the External Connectivity Network to either the `Core Router` or `Edge Router` role.

Locate and select either the `Core Router` or the `Edge Router` option in the **Select Role** list, then click **Select**.

Step 11 Recalculate and deploy.

- a) At the top of the page, click **Actions > Recalculate and Deploy**.

Fabric Overview - Core-Fab

Overview **Switches** Links Interfaces Policies Event Analytics History Resources Metrics

Filter by attributes

<input type="checkbox"/>	Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model	VPC Role	VPC Peer
<input type="checkbox"/>	xbow1		Core Router		Normal	NA	Healthy	Ok	N77-C7706		
<input type="checkbox"/>	xbow2		Core Router		Normal	NA	Healthy	Ok	N77-C7702		

Actions

- Edit Fabric
- Add Switches
- Recalculate and Deploy**
- More

- b) Preview the configuration updates as the recalculation process progresses.

Deploy Configuration - Core-Fab

1 Config Preview 2 Deploy Progress

Filter by attributes [Resync All](#)

Switch Name	IP Address	Role	Serial Number	Fabric Status	Pending Config	Status Description	Progress	Resync Switch
xbow1		core router		Out-Of-Sync	2 Lines	Out-of-Sync	<div style="width: 100%; height: 10px; background-color: green;"></div>	Resync
xbow2		core router		Out-Of-Sync	2 Lines	Out-of-Sync	<div style="width: 100%; height: 10px; background-color: green;"></div>	Resync

[Close](#) [Deploy All](#)

You can click on the blue link in the **Pending Config** column to get additional information on the changes that are being configured for the switches.

Pending Config - Core-Fab - xbow1

Pending Config Side-by-Side Comparison

```
router bgp 65011
configure terminal
```

- c) When the recalculation process is completed, click **Deploy All**, then click **Close** when you see **Success** and **Deployment Completed** in the **Deploy Configuration** window.
- d) In the **Fabric Overview** window, verify that the status shown in the **Config Status** column shows as **Success**.

Fabric Overview - Core-Fab

Actions

Overview **Switches** Links Interfaces Policies Event Analytics History Resources Metrics

Filter by attributes

<input type="checkbox"/>	Switch	IP Address	Role	Serial Number	Mode	Config Status	Oper Status	Discovery Status	Model	VPC Role	VPC Peer
<input type="checkbox"/>	xbow1		Core Router		Normal	Success	Healthy	Ok	N77-C7706		
<input type="checkbox"/>	xbow2		Core Router		Normal	Success	Healthy	Ok	N77-C7702		

Step 12 Navigate to **LAN > Fabrics** and select the External Connectivity Network fabric that you just created.

The **Overview** page for this External Connectivity Network fabric appears.

Step 13 Click the **Switches** tab to verify that the switch that you just added for the second fabric appears correctly.

Step 14 Click the **X** at the top right corner of the window to exit out of this page.

What to do next

If you want to group the fabrics together using the Fabric Group fabric template, go to [Create a Fabric Group, on page 24](#).

Create a Fabric Group



Note The procedures in this section apply only if you have a three-tier hierarchical topology, where you have two separate fabrics that you might want to show under a fabric group. You do not need these procedures if you have a two-tier, Collapsed Core topology, because there is only one fabric configured for that type of topology.

If you would like to have a group visualization for the Topological view, you can create a **Fabric Group** fabric type with the Access-Aggregate and Core fabrics as child members of this group. You will be using the Fabric Group fabric template for these configurations. For more information on that fabric template, see [Enhanced Classic LAN](#).

Step 1 In NDFC, navigate to **LAN > Fabrics**, if you are not there already.

A page showing all of the configured fabrics appears.

Step 2 Click **Actions > Create Fabric**.

LAN > Fabrics

Fabrics Refresh

Filter by attributes Actions ^

Fabric Name	Fabric Technology	Fabric Type	ASN	Fabric Health
<input type="radio"/> FabricGroup Hide child Fabrics v	Multi-Fabric Domain	Fabric Group	NA	✔ Healthy
<input type="radio"/> Fab1	Classic LAN	Enhanced Classic LAN	65025	⚠ Minor
<input type="radio"/> Ext	Custom	External Connectivity Network	500	⚠ Major

10 Rows Page 1 of 1 << 1-3 of 3 >>

- Step 3** In the **Create Fabric** screen, enter a name for the new fabric (for example, `Classic-Group`), then click **Choose Template**.
- Step 4** Choose the `Fabric Group` template, then click **Select**.

Select Type of Fabric

Search Type of Fabric

Fabric for a fully automated 3-tier Classic LAN deployment with Nexus 9000 and 7000 switches.

Campus VXLAN EVPN
Fabric for a VXLAN EVPN Campus deployment with Catalyst 9000 switches and Nexus 9000 switches.

BGP Fabric
Fabric for an eBGP based deployment with Nexus 9000 and 3000 switches. Optionally VXLAN EVPN can be enabled on top of the eBGP underlay.

Custom Network
Fabric for flexible deployments with a mix of Nexus and Non-Nexus devices.

Fabric Group
Domain that can contain Enhanced Classic LAN, Classic LAN, and External Connectivity Network fabrics.

Classic LAN
Fabric to manage a legacy Classic LAN deployment with Nexus switches.

LAN Monitor

Select

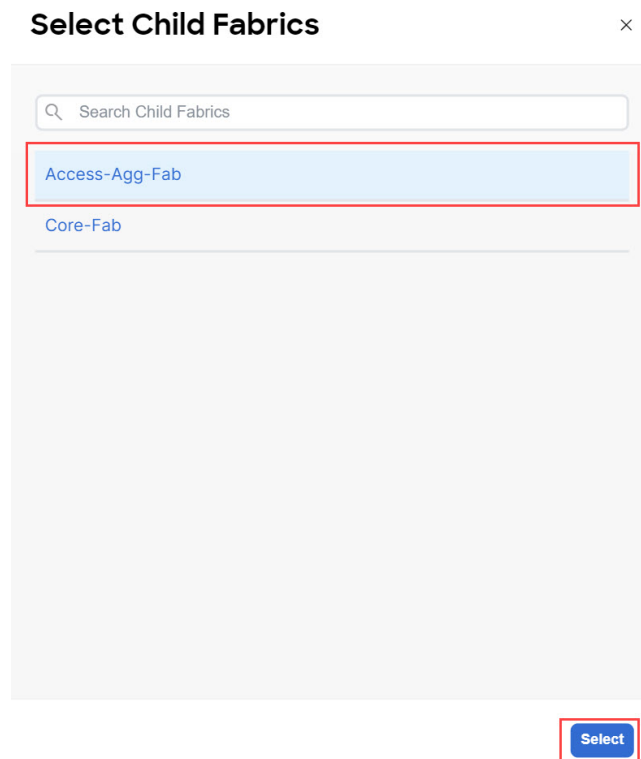
- Step 5** Click **Save** in the **Create Fabric** page.
You are returned to the **LAN Fabrics** page.
- Step 6** Double-click the fabric group that you just created.

The **Fabric Overview** page appears for the fabric group.

Step 7 Click **Actions > Add Child Fabric**.

The **Select Child Fabrics** page appears.

Step 8 Choose the Enhanced Classic LAN fabric that you created using the procedures provided in [Configure the Enhanced Classic LAN Fabric, on page 1](#), then click **Select**.



You are returned to the **Fabric Overview** page.

Step 9 Click **Actions > Add Child Fabric** again.

The **Select Child Fabrics** page appears.

Step 10 Choose the External Connectivity Network fabric that you created using the procedures provided in [Configure the External Connectivity Network Fabric, on page 17](#), then click **Select**.

You are returned to the **Fabric Overview** page.

Step 11 Click the **X** in the upper right corner of the page.

The **LAN Fabrics** page appears again, with the newly created fabric group added to the list of configured fabrics.

<input type="radio"/>	Classic-Group Hide child Fabrics ▾	Multi-Fabric Domain	Fabric Group
<input type="radio"/>	├── Access-Agg-Fab	Classic LAN	Enhanced Classic LAN
<input type="radio"/>	└── Core-Fab	Custom	External Connectivity Network

Right-click operations are now available from the Topology page per switch.

Step 12 If necessary, navigate to **LAN > Switches**, select one or more switches, then click **Actions > Deploy**.

What to do next

Begin the Day 1 configurations using the procedures provided in [Day 1 Configurations](#).