

Configuring ToR switches and Deploying Networks in Data Center VXLAN EVPN Fabrics

This chapter describes how to configure the ToR switches and deploy networks in NDFC.

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Overview

The L2 ToRs are considered as replacements for FEXs. In earlier NDFC releases, you can add the Layer 2 ToR switches in an external, and connected to the Leaf switches in the Data Center VXLAN EVPN fabric. The network overlay attachments were managed from the VXLAN EVPN Multi-Site domain as both Data Center VXLAN EVPN fabrics with Spine/Leaf and External fabrics with ToRs were added to an VXLAN EVPN Multi-Site domain. From Cisco NDFC Release 12.1.1e, you can add L2 ToR devices in the same fabric as Spine/Leaf Data Center VXLAN EVPN fabric. This allows a single configuration point for deploying and extending networks for a VXLAN fabric topology with L2 ToRs.

Note It is not recommended to have a combination of FEX and ToRs in leaf switches due to scale limitation.

An L2 ToR can be physically connected in one of the following ways:

- Connected to a leaf through a port-channel
- Connected to a vPC pair of leafs through vPC
- Connected to one of the leafs in a vPC pair through a port-channel.

A pair of L2 ToRs can be configured in vPC. A ToR vPC pair can only be connected to a leaf vPC pair through back-to-back vPC (also known as Double-Sided vPC).

Description

ToR devices are added to a Data Center VXLAN EVPN in the same way as all other devices.

ToR role must be set on ToR devices before Recalculate and Deploy.

Perform Recalculate and Deploy after any change of ToR pairings/unpairings.

ToRs must be physically connected to the intended parent leaf switches.

vPC Pairing should be done before Leaf-ToR pairings/unpairings.

ToR pairings/unpairings can be done on an individual leaf, or a leaf vPC pair.

Network Overlay association for ToR switches are managed from their parent leaf(s).

ToR ports are shown as additional Ports under leaf.

All intermediate configuration is transparently handled.

Deletion of a leaf will also delete all associated child ToR devices.

A leaf can be connected to many ToRs, but a ToR can be connected to only one leaf or leaf vPC pair.

On the **Edit Fabric** window, click the **Advanced** tab and specify the applicable fabric settings.

Spanning-tree Root Bridge Protocol: Choose the protocol from the drop-down list for configuring root bridge. Below are the available protocols:

- **rpvst+**: Rapid Per-VLAN Spanning Tree
- **mst**: Multiple Spanning Tree
- **unmanaged** (default): STP Root not managed by NDFC.

Note It is recommended to use **mst** protocol for L2 ToR.

Spanning-tree VLAN Range: Specify the VLAN range. The default value is 1 -3967.

MST Instance Range: Specify the MST instance range. The default value is 0.

STP Bridge Priority: Specify the bridge priority for the spanning tree in increments of 4096.

Limitations

Interface Groups on L2 ToRs are not supported.

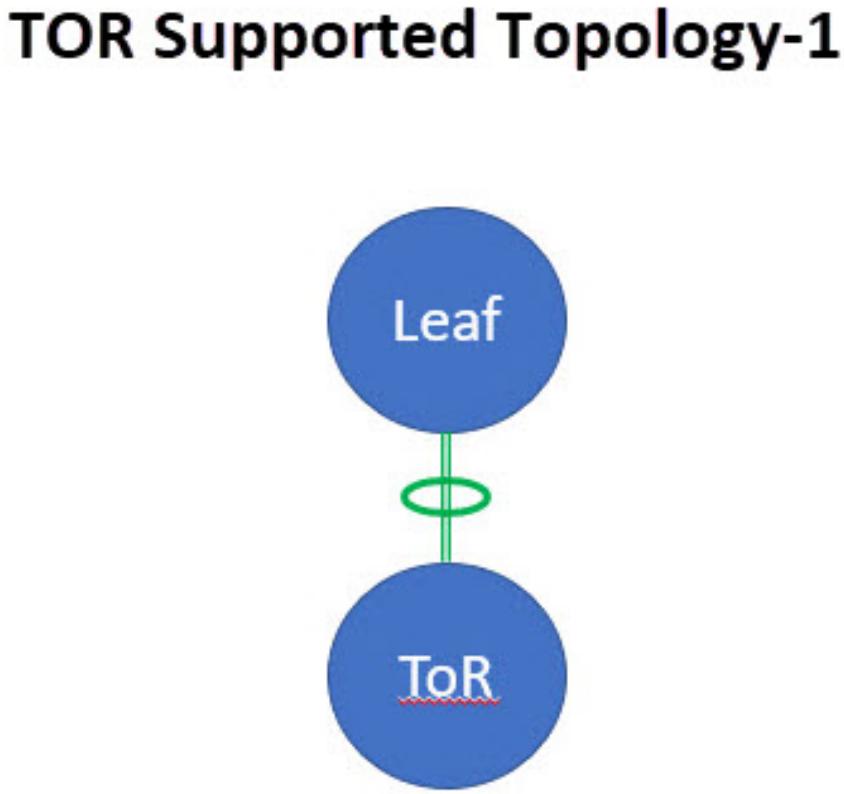
Brownfield import on L2 ToRs is not supported.

Supported Topologies for ToR Switches

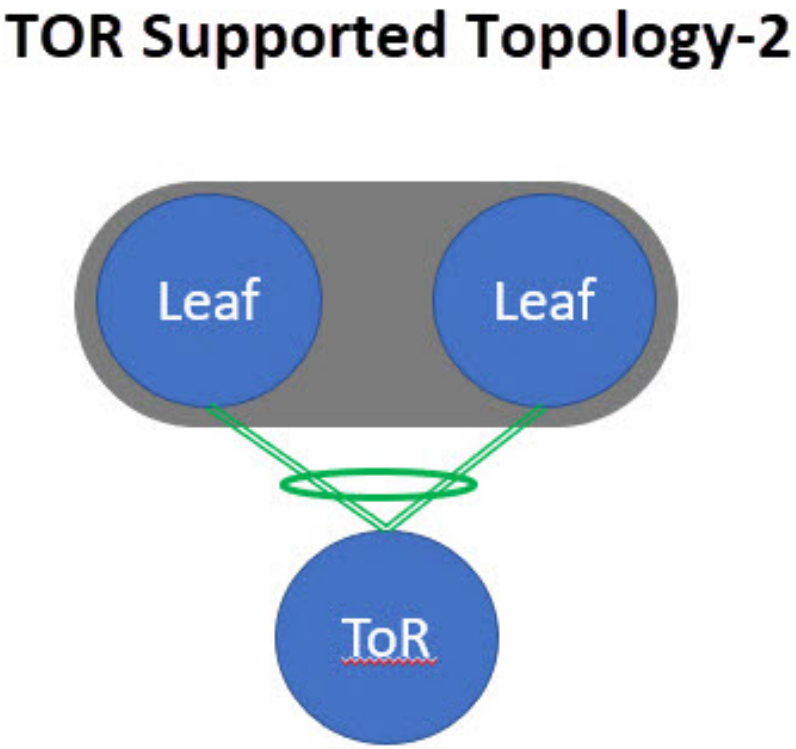
The following topologies with ToR switches are supported:

Note Only Cisco Nexus 9000 series switches are supported as ToR switches.

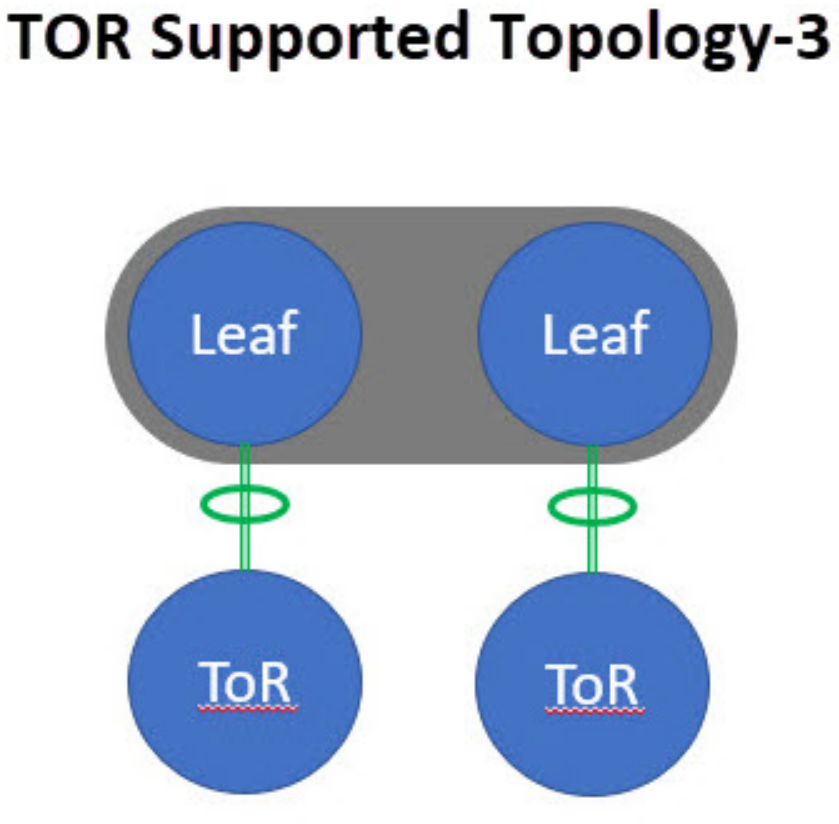
- ToR switch with port channel directly connected to leaf switch.



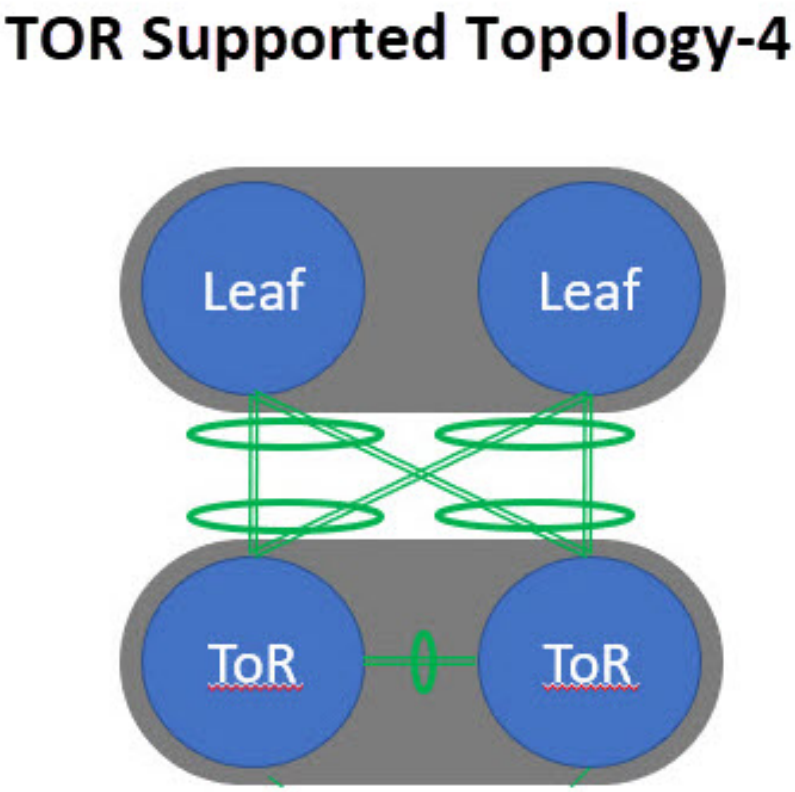
- ToR switch connected to leaf switches in a vPC pair.



- ToR switches with port channels connected to leaf switches individually. The leaf switches are in a vPC pair.



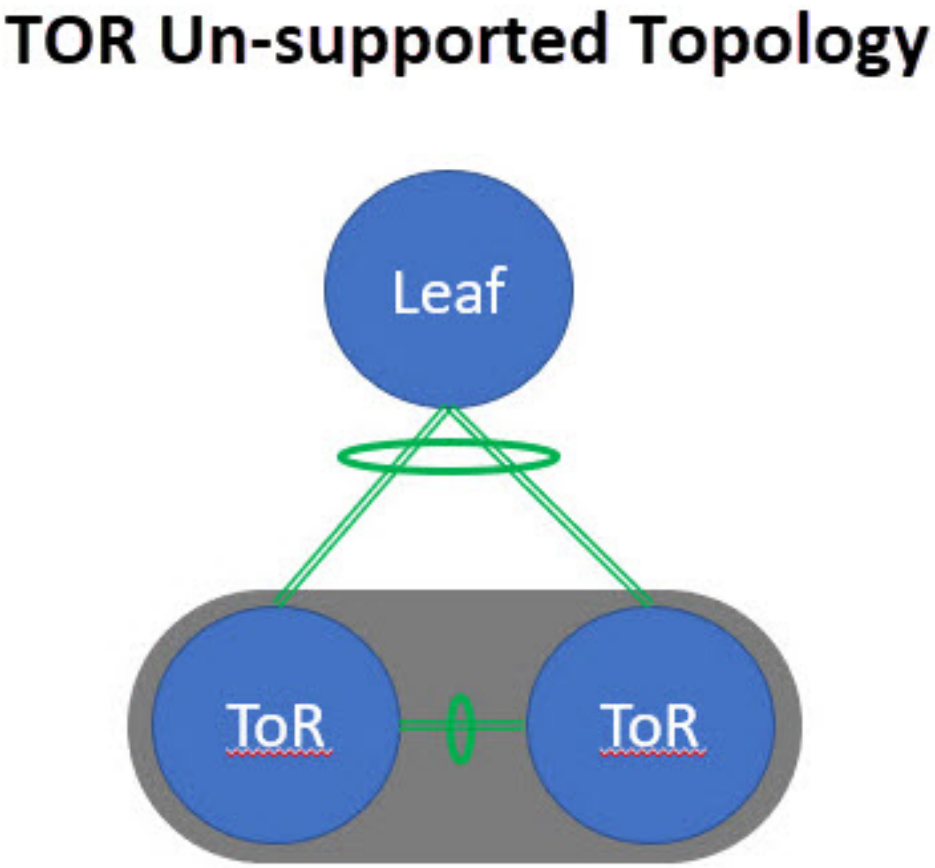
- ToR switches with back-to-back vPC connections. The leaf switches and ToR switches are both in vPC pairs.



Unsupported Topology for ToR Switches

The following topology with ToR switches are not supported:

ToR vPC pair connected to single leaf switch.



Configuring ToR Switches

Create a fabric with template and add switches to the fabric, including switches used as ToRs. For more information, see Creating a VXLAN EVPN Fabric Using the Data Center VXLAN EVPN Template. Based on the selection of topology, perform any of the following steps:

Procedure

Step 1 Perform the following procedure to configure ToR and leaf switch as shown in the ToR Topology-1 and 3, where ToR switch(s) connected to leaf switch(s) through port channel. Leaf switches are already added to the fabric.

a. Add ToR switches to the and set role as ToR.

b. Select the leaf switch connected to ToR and click on **Actions** > **TOR Pairing**.

The **TOR Pairing** Window appears with the list of ToR switches.

c. Select all the ToR switches connected to this leaf and click **Save** (NDFC also gives recommendation based on ToR's connectivity to the leaf).

d. On the **Fabric Overview** window, click **Actions** > **Recalculate and Deploy**.

e. After the configuration deployment is completed in the **Deploy Configuration** window, click **Close**.

Step 2 Perform the following procedure to configure ToR and leaf switch as shown in the ToR Topology-2 and 4, where ToR switch connected to leaf switch through vPC pair, and back-back vPC connection.

a. Select either of the vPC paired leaf switch and click on **Actions** > **TOR Pairing**. For more information, see *Creating a vPC setup*.

The **TOR Pairing** Window appears with the list of ToR switches.

b. When the vPC pair of leaf nodes is selected, by default, you must select the required ToR switch(s) in the list.

If you selected either leaf 1 or leaf 2, check the **Complete TOR Pairing as VPC Pair** check box.

c. Select the ToR switch(es) and click **Save**.

d. On the **Fabric Overview** window, click **Actions** > **Recalculate and Deploy**.

e. After the configuration deployment is completed in the **Deploy Configuration** window, click **Close**.

Step 3 Perform the following procedure to un-pair the ToR.

a. Remove the overlay attachment before un-pairing the ToR.

b. On the **Fabric Overview** window, click the **Switches** tab.

c. Select any vPC leaf switch and click on **Actions** > **TOR Pairing**.

The **TOR Pairing** window appears.

d. Check the **Complete TOR Pairing as VPC Pair** check box for topologies-2 and 4 and uncheck the ToR switch to unpair.

e. Click **Save**.

f. On the **Fabric Overview** window, click **Actions** > **Recalculate and Deploy**.

g. On the **Deploy Configuration** Window, click **Deploy**.

h. After the configuration deployment is completed in the **Deploy Configuration** window, click **Close**.

Deploying Networks on ToR Switches

To deploy networks on ToR switches in the , perform the following steps:

Procedure

Step 1 Choose **LAN** > **Fabrics**, double-click on the .

Step 2 In the **Networks** window, select the networks that you want to deploy or create a new network. For information about creating a network, see Creating Network for Standalone Fabrics.

Step 3 On the **Fabric Overview** window, click **Networks** > **Network Attachments**.

Step 4 Select the leaf switches and click on **Actions** > **Edit**.

The **Edit Network Attachment** window appears.

Step 5 On the **Edit Network Attachment** window, choose **Attach**.

Step 6 (Optional) Enter the value in the **VLAN** field.

Step 7 Select interfaces/ports on a leaf switch and/or associated ToR(s) attaching Endpoints or Layer 2 devices and click **Save**. Therefore, the port channels that are used to connect the ToR(s) toward the leaf node(s) or vPC pair will be automatically updated with the required VLAN deployed in the server interfaces of the ToR switch.

Step 8 Select the leaf switch and click on **Actions** > **Deploy**.