



Route Leaking Use Case

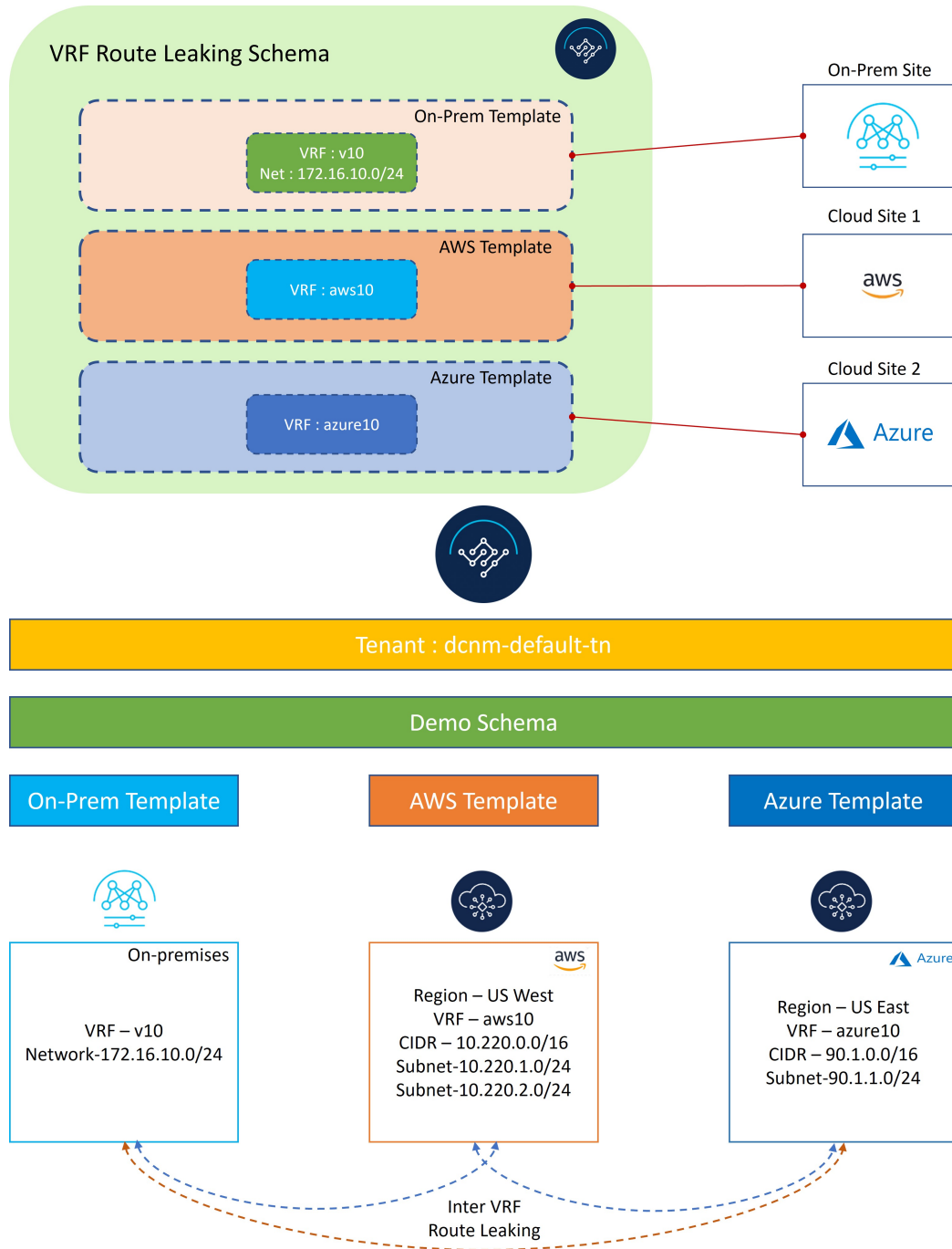
- [About the Route Leaking Use Case, on page 1](#)
- [Configure the Necessary Templates, on page 3](#)
- [Configure Route Leaking, on page 21](#)

About the Route Leaking Use Case

This route leaking use case uses separate templates for each site, which contains VRF and network definitions for the on-premises site, whereas for cloud sites these templates only contain the VRF definition. Unlike the stretched VRF (intra-VRF) use case described in [Stretched VRF Use Case](#), which does not require any configurations for exchanging prefixes between the sites because the same VRF is stretched to all sites, you must configure VRF leaking for this use case because each site uses a different VRF.

To propagate the prefixes between the sites (on-premises as well as cloud sites), you must explicitly configure route leaking on the respective templates associated with the sites.

Figure 1:



As shown in the figure above, each site has a separate associated template, which contains VRF/network definitions specific to that site only. On-Prem Template is associated to the NDFC managed on-premises site, whereas AWS Template and Azure Template are associated to the AWS and Azure cloud sites, respectively. Inter-VRF route leaking is configured explicitly between different VRFs to allow communication between the sites.

Configure the Necessary Templates

Use the procedures in the following sections to configure the templates that you will need for the route leaking use case.

Configure the On-Premises Site Template

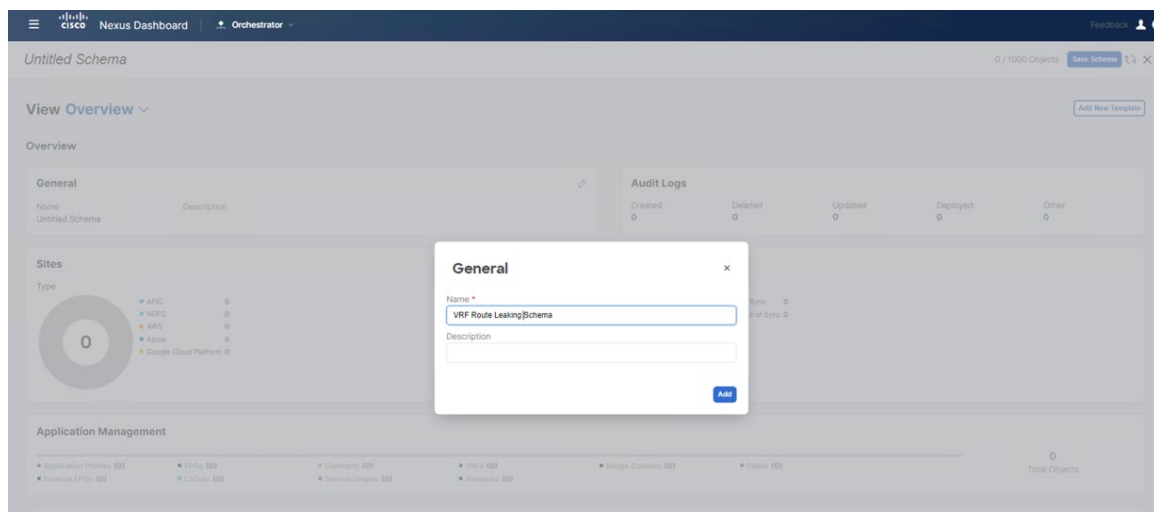
In this section, you will configure the `On-Prem Template` that will be associated to the NDFC managed on-premises site.

Step 1 In NDO, navigate to **Application Management > Schemas** and click **Add Schema**.

Step 2 Provide the schema name and click **Add**.

For this use case, we will name the new schema `VRF Route Leaking Schema`.

Figure 2:



You are returned to the **Overview** page for the new `VRF Route Leaking Schema` schema.

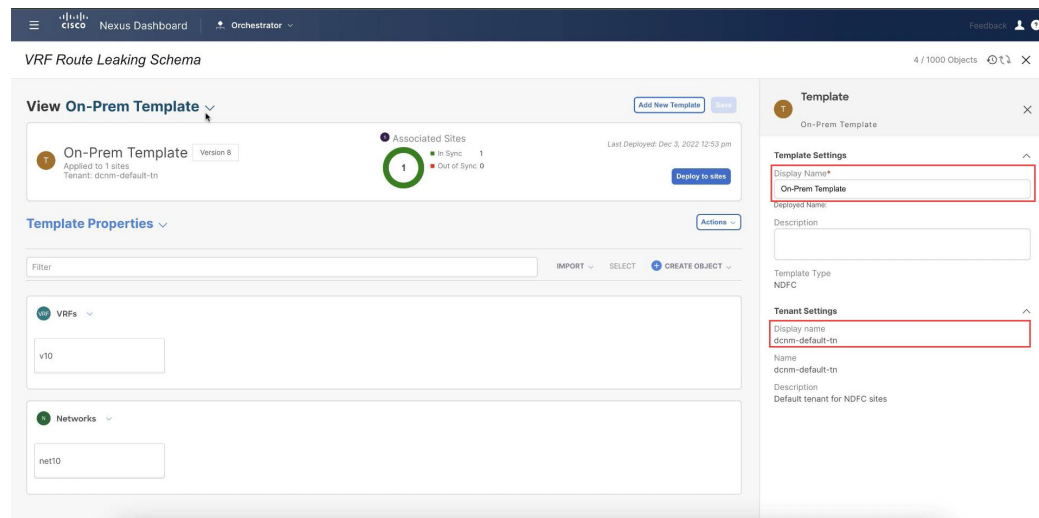
Step 3 Under the `VRF Route Leaking Schema` schema, click **Add New Template**.

Step 4 Choose the NDFC template.

Step 5 Enter a name in the **Display Name** field to create an NDFC-type template (for example, `On-Prem Template`).

Step 6 Select the `dcnm-default-tn` tenant in the **Select a Tenant** field to map the template to that tenant.

Figure 3:



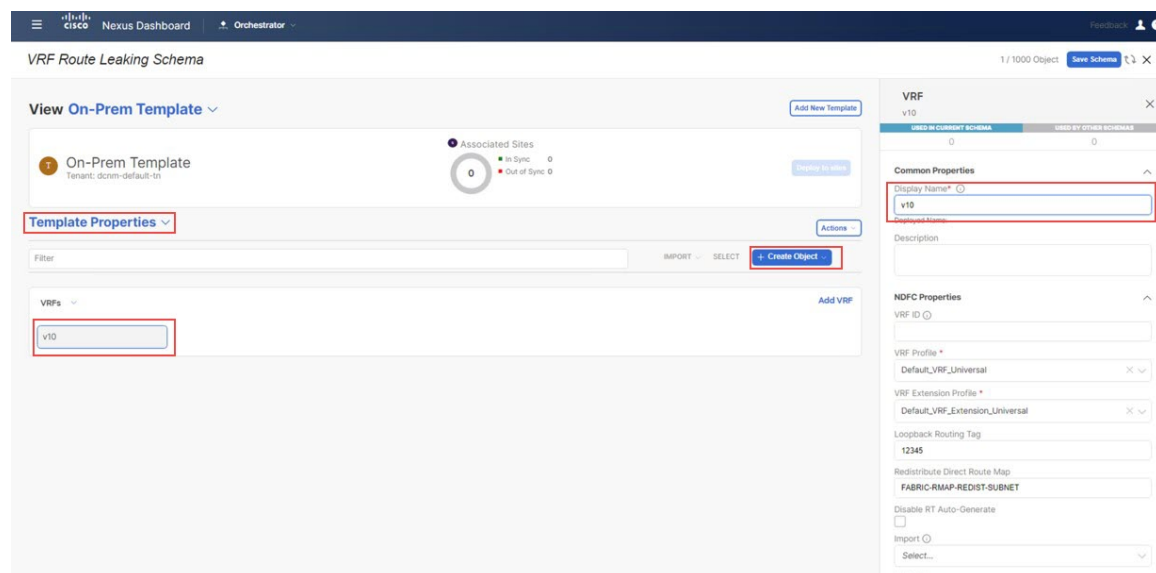
Step 7 Under **Template Properties**, click **Create Object** and choose **VRF** to create a VRF that will be used with the NDFC managed on-premises site.

Note If you have an on-premises VRF already created that you want to use instead of creating a new VRF, under **Template Properties**, click **Import**, then import the already-created VRF.

Currently, support is only available for importing VRFs and networks from on-premises sites.

Step 8 Enter a name in the **Display Name** field for this VRF (for example, v10).

Figure 4:



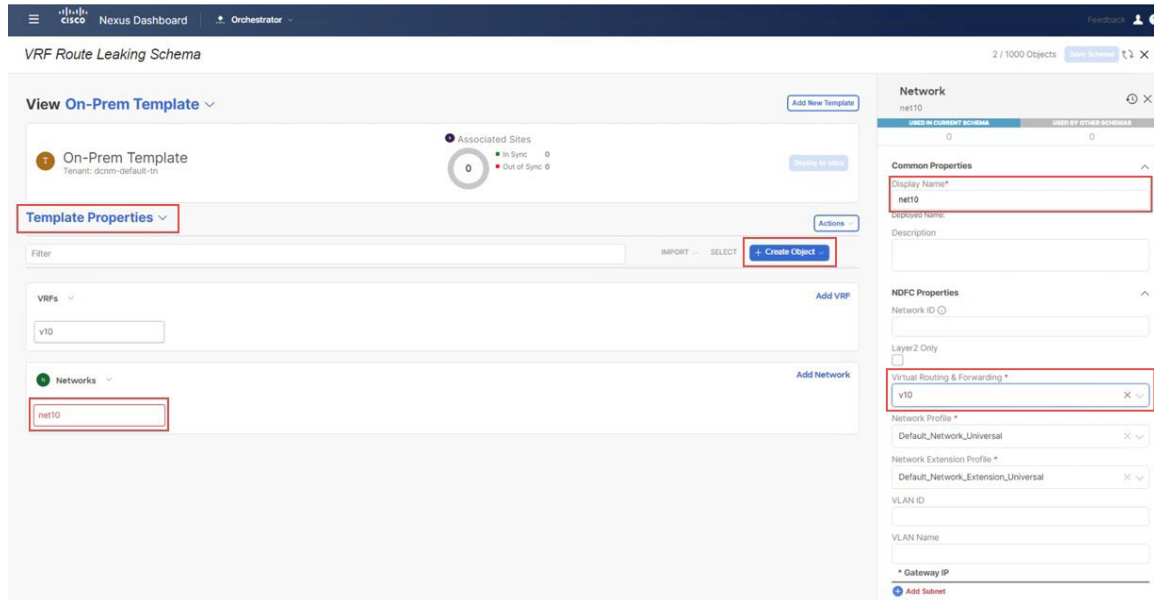
Step 9 Under **Template Properties**, click **Create Object** and choose **Network** to create a network.

Note If you have a network already created that you want to use instead of creating a new network, under **Template Properties**, click **Import**, then import the already-created network.

Step 10 Enter a name in the **Display Name** field for the network (for example, `net10`).

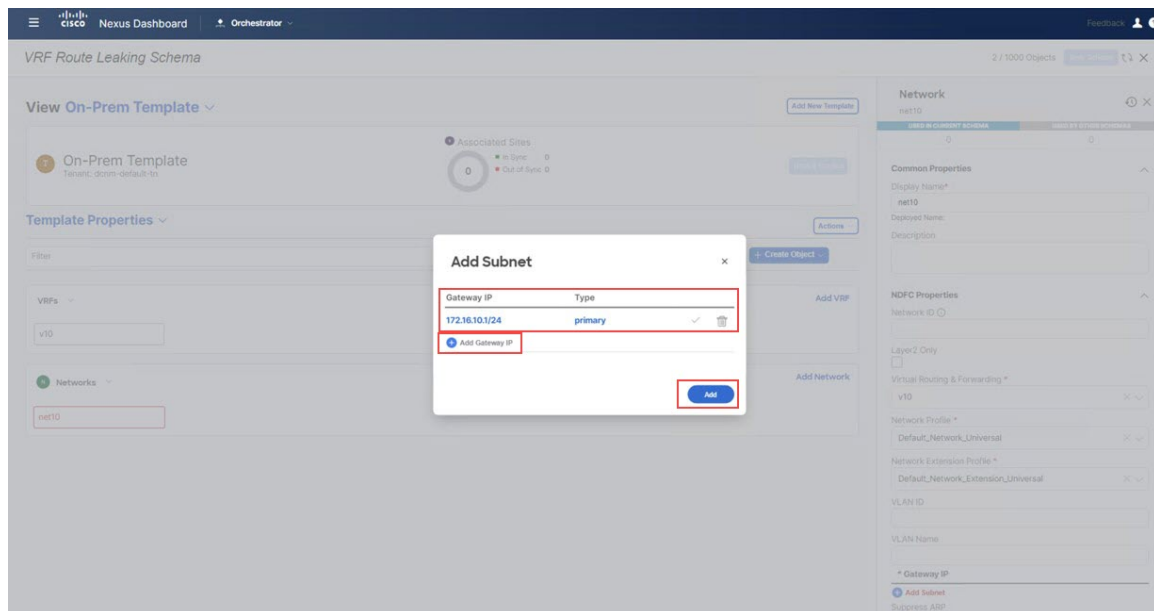
Step 11 In the **Virtual Routing & Forwarding** field, choose the `v10` VRF to map the `net10` network to that VRF.

Figure 5:



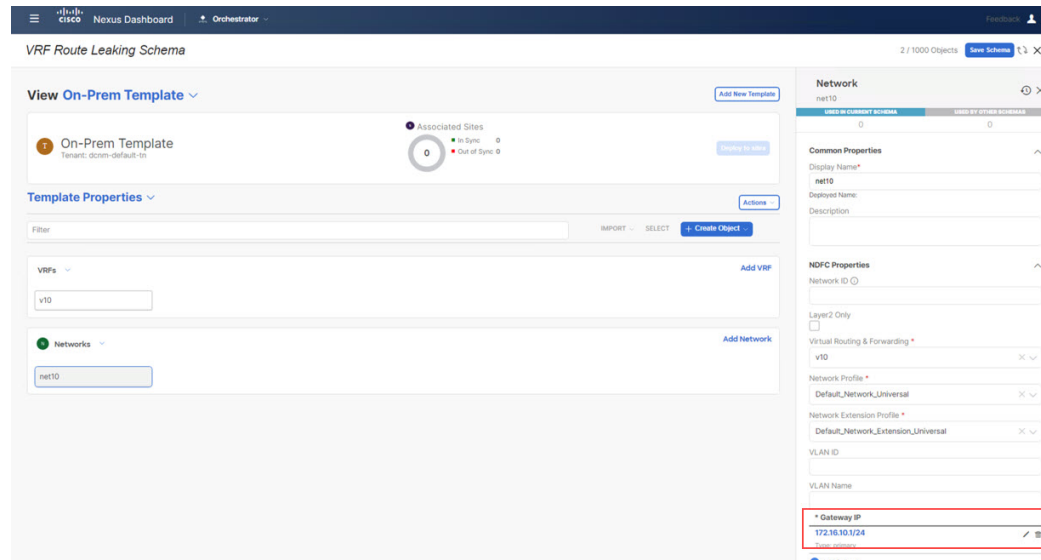
Step 12 In the **Gateway IP** field, click **Add Subnet** and provide the gateway IP address, then click **Add**.

Figure 6:



The gateway IP address is now displayed in the **Gateway IP** field.

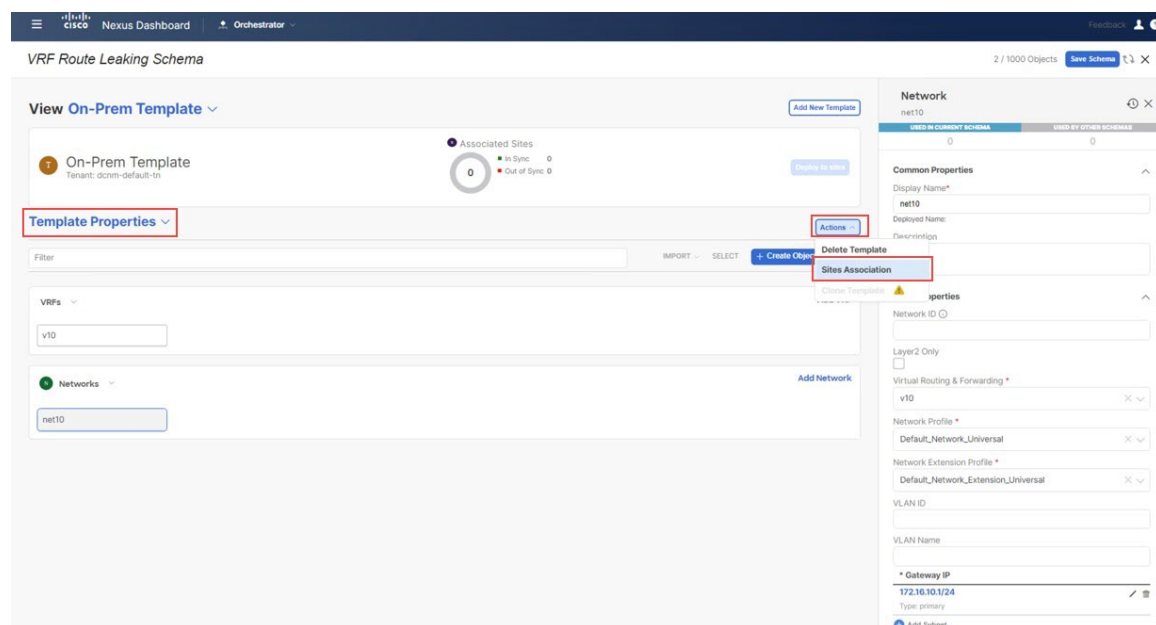
Figure 7:



Step 13 Define other optional parameters for this network, if necessary.

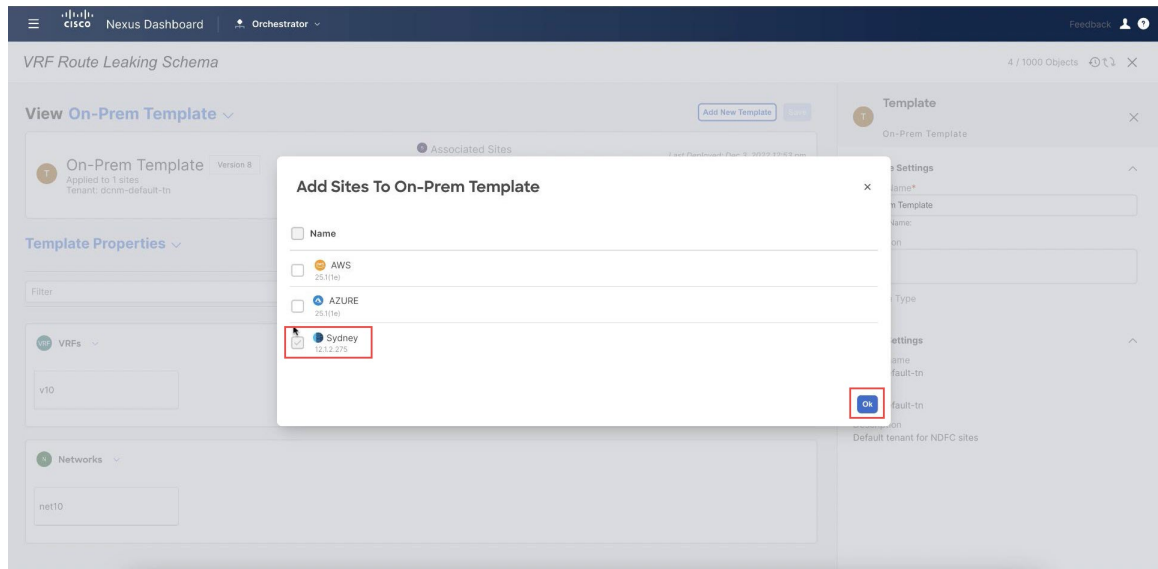
Step 14 In the **Template Properties** area, click **Actions > Sites Association**.

Figure 8:



Step 15 Associate this template only to the on-premises site (the `sydney` site in this example use case), then click **Ok**.

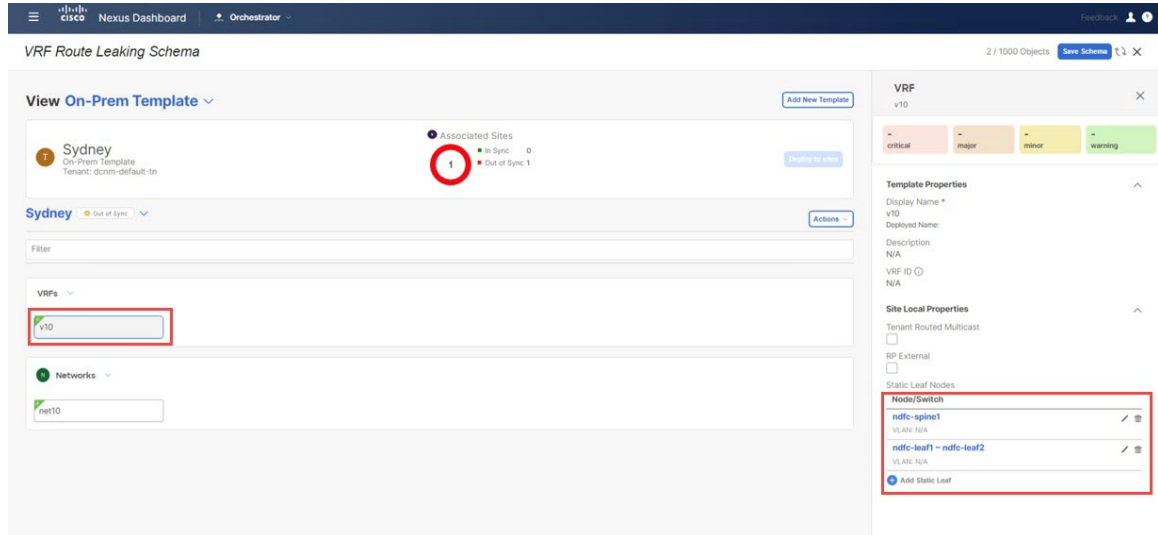
Figure 9:



Step 16 Click **Template Properties** and select the on-premises site (the `sydney` site in this example use case), then select the `v10` VRF.

Step 17 In the right pane, click **Add Static Leaf**.

Figure 10:



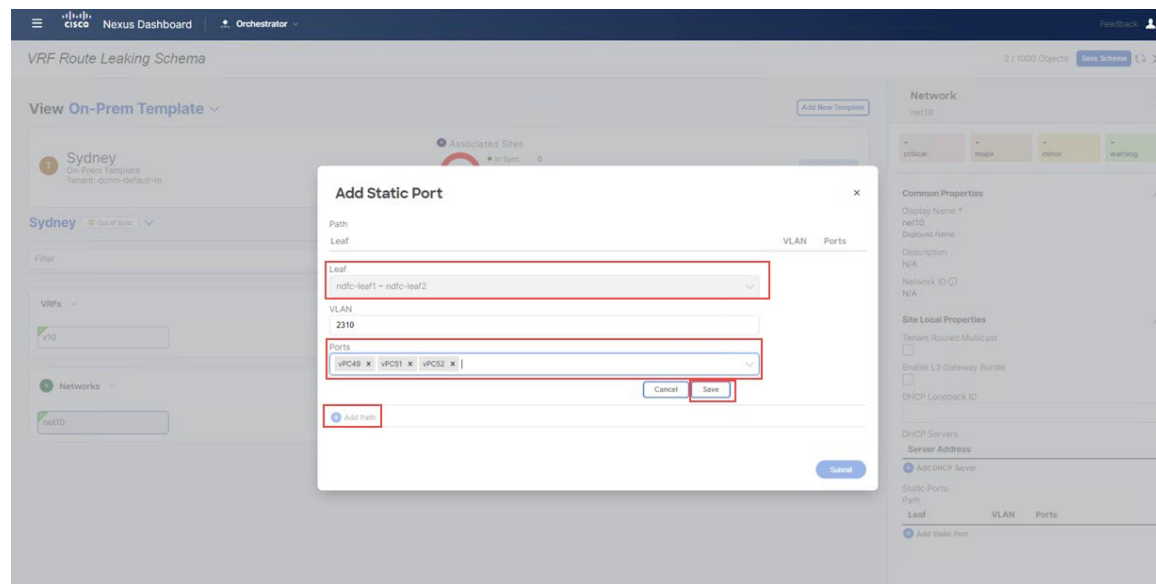
The **Add Static Leaf** window appears.

Step 18 In the **Leaf** field, select the leaf/border/border gateway device where this VRF is to be deployed and click **Ok**.

In this example, you need to deploy the VRF on the leaf nodes (where the endpoints part of the network mapped to the VRF will be connected) and on the BGW spine node to be able to extend the Layer 3 connectivity for the VRF towards the cloud sites.

- Step 19** To attach the network to the leaf switches, click the `net10` network, then click **Add Static Port** to add the ports where you want to deploy this network.
The **Add Static Port** window appears.
- Step 20** In the **Add Static Port** window, click **Add Path**.
The **Add Static Port** window appears.
- Step 21** In the **Leaf** field, select the device where you want to deploy this network.
- Step 22** (Optional) Enter the necessary information in the **VLAN** field.
- Step 23** In the **Ports** field, select the ports where you want to deploy this network.
- Step 24** Click **Save**.

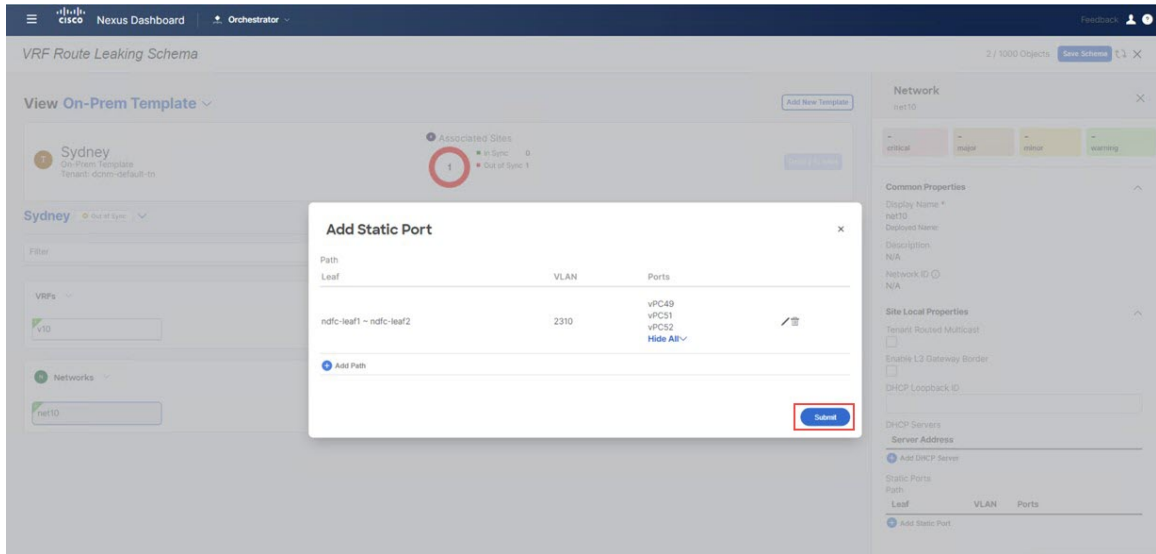
Figure 11:



You are returned to the **Add Static Port** window.

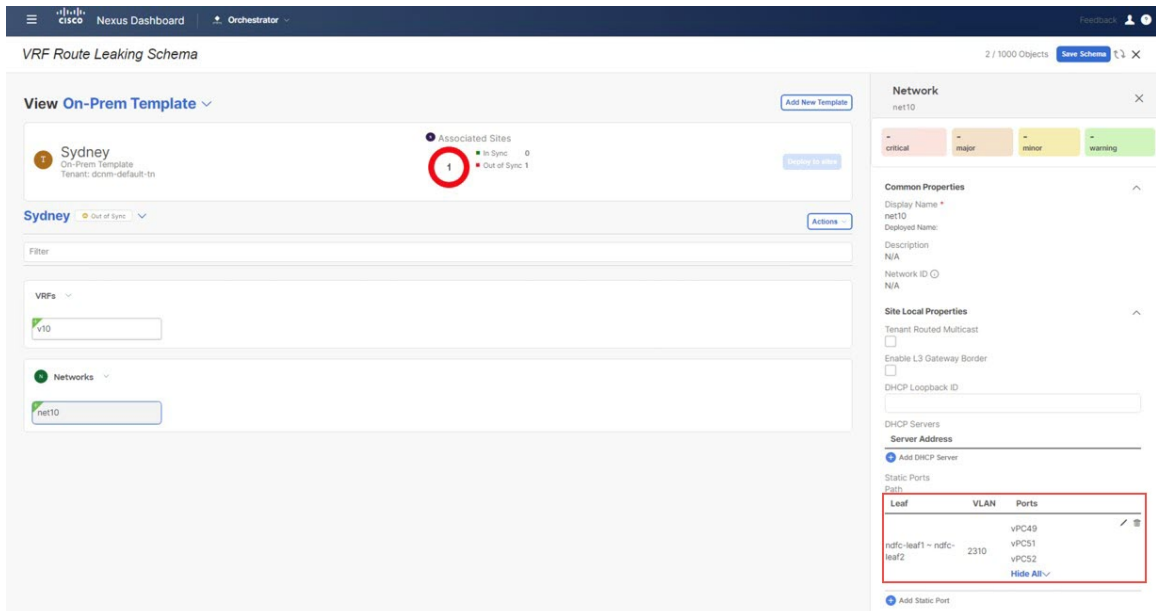
- Step 25** In the **Add Static Port** window, click **Submit**.

Figure 12:



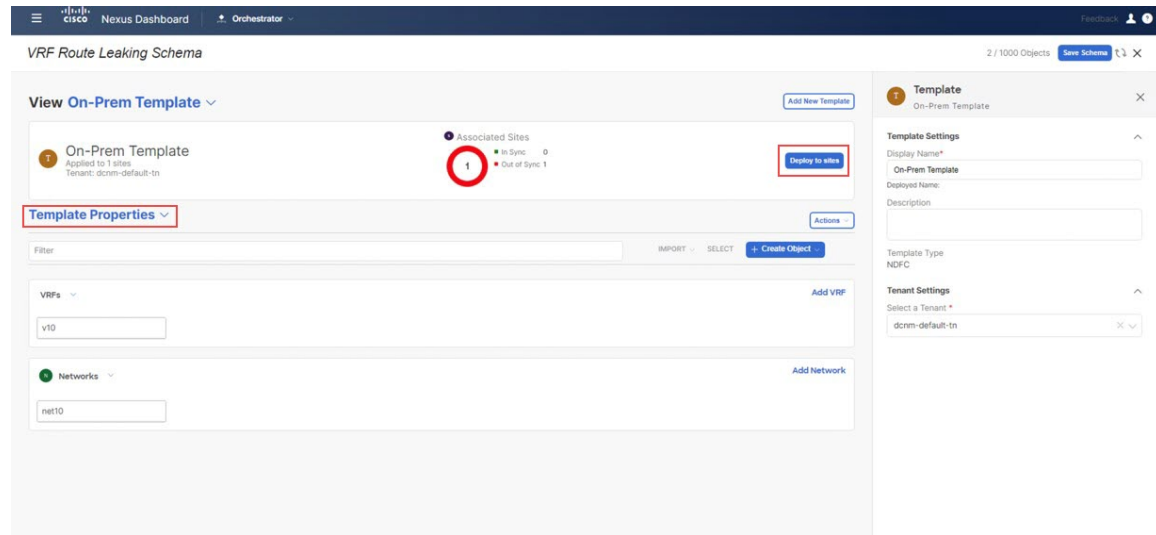
You are returned to the on-premises template window.

Figure 13:



- Step 26** Click the arrow next to the on-premises site, and from the drop-down menu, select **Template Properties**.
- Step 27** Click **Deploy to Sites**.

Figure 14:

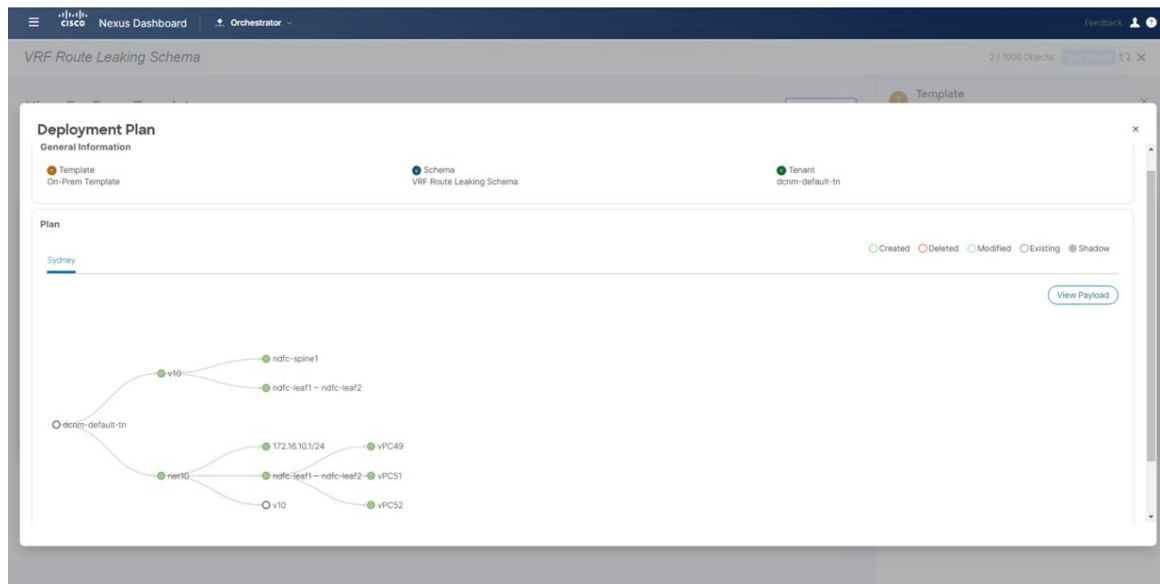


Step 28 Deploy On-Prem Template to the sites.

- Click **Deployment Plan** for additional verification.

Click on the on-premises site to see the deployment plan for that specific site.

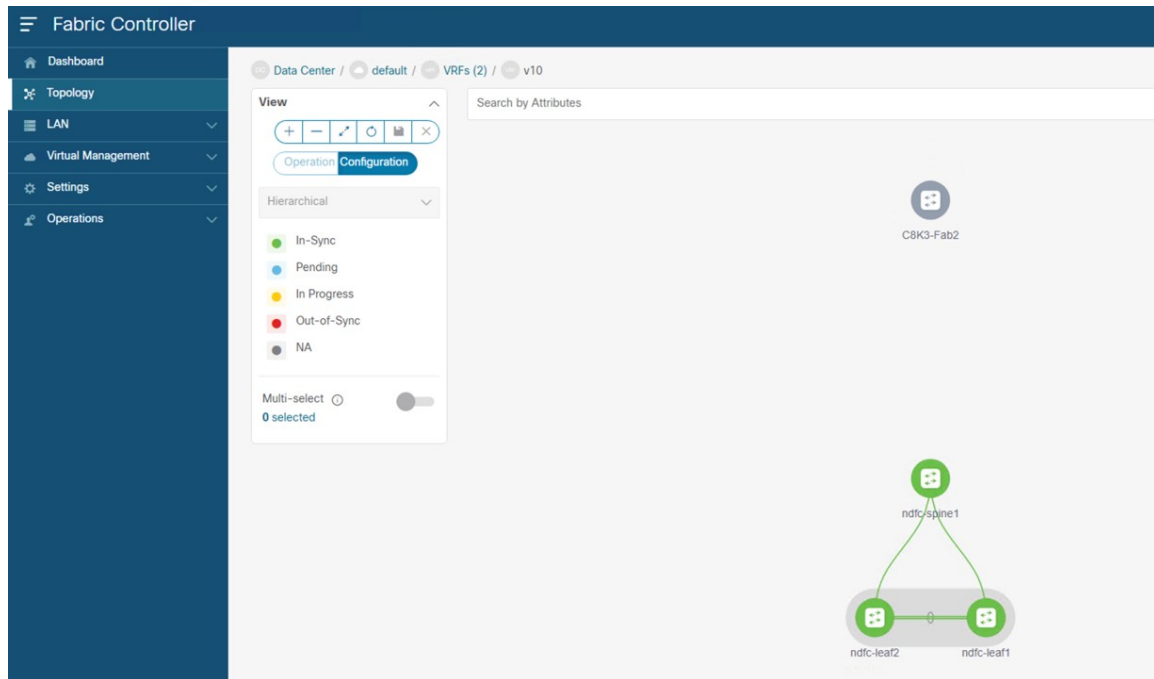
Figure 15:



- Click **Deploy** to have NDO push the configurations to NDFC.
This pushes the NDO configurations to NDFC.

Step 29 In NDFC, verify that the VRF was deployed successfully.

Figure 16:



What to do next

Follow the procedures provided in [Configure the Azure Site Template, on page 11](#).

Configure the Azure Site Template

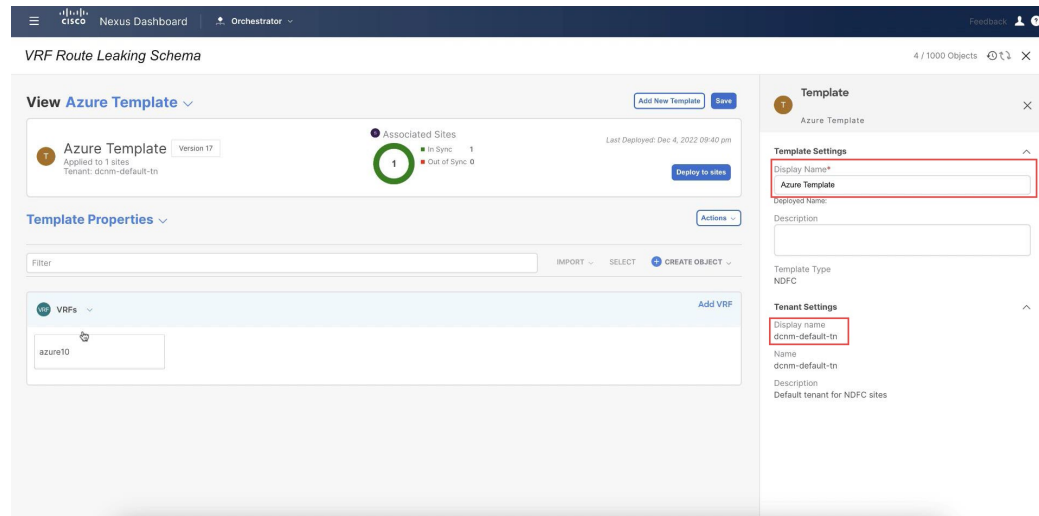
In this section, you will configure the `Azure Template` that will be associated to the Azure site.

Before you begin

Follow the procedures provided in [Configure the On-Premises Site Template, on page 3](#).

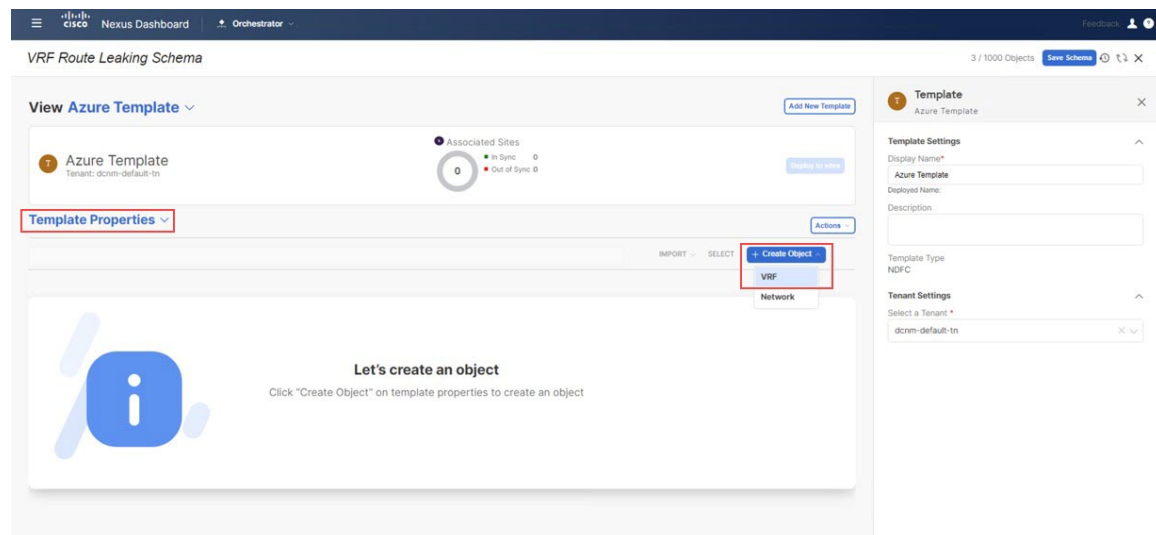
- Step 1** Under the `VRF Route Leaking Schema` schema, click **Add New Template**.
- Step 2** Choose the NDFC template.
- Step 3** Enter a name in the **Display Name** field to create an NDFC-type template for the Azure site (for example, `Azure Template`).
- Step 4** Select the `dcnm-default-tn` tenant in the **Select a Tenant** field to map the template to that tenant.

Figure 17:



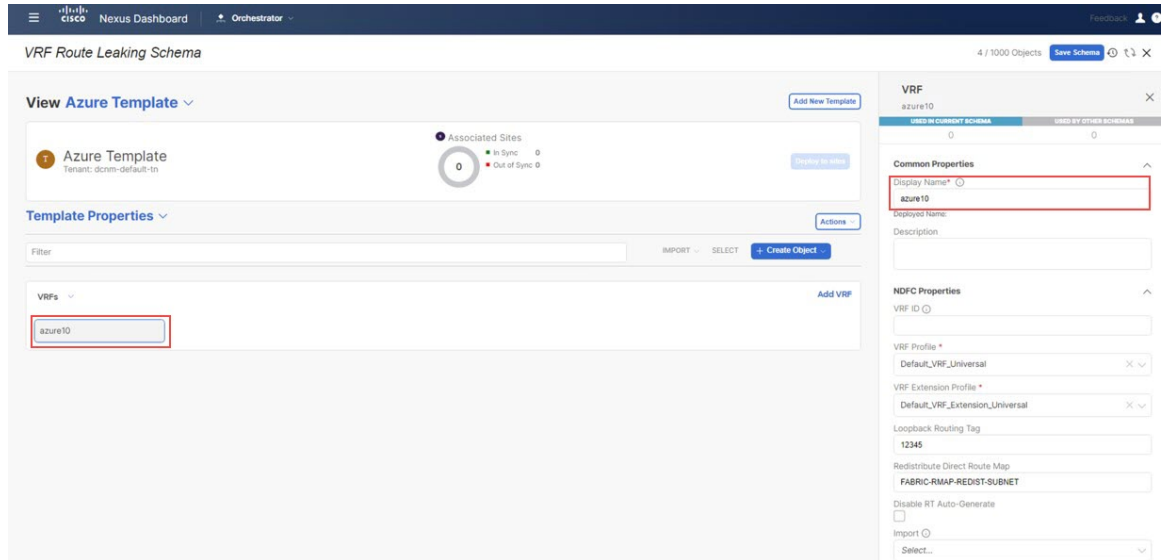
Step 5 Under **Template Properties**, click **Create Object** and choose **VRF** to create a VRF that will be used with the Azure site.

Figure 18:



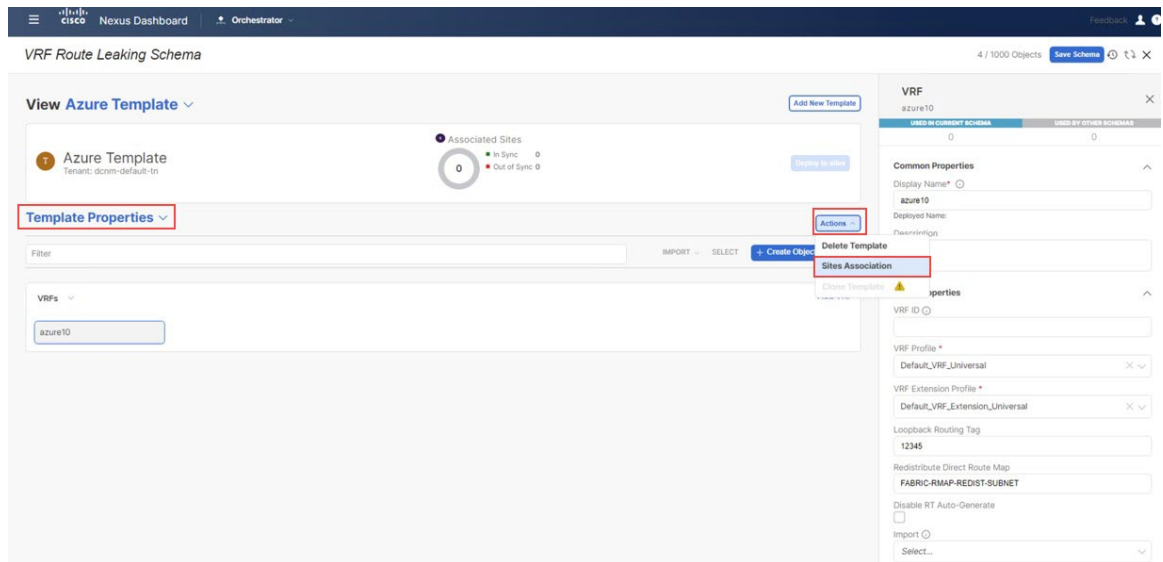
Step 6 Enter a name in the **Display Name** field for this VRF (for example, azure10).

Figure 19:



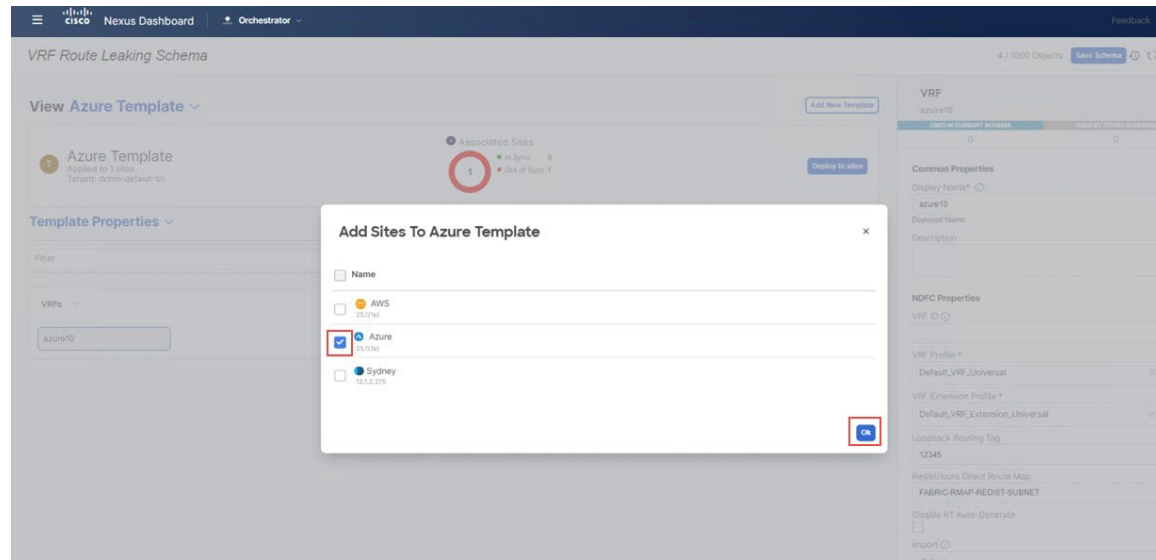
Step 7 In the **Template Properties** area, click **Actions > Sites Association**.

Figure 20:



Step 8 Associate this template only to the Azure site, then click **Ok**.

Figure 21:



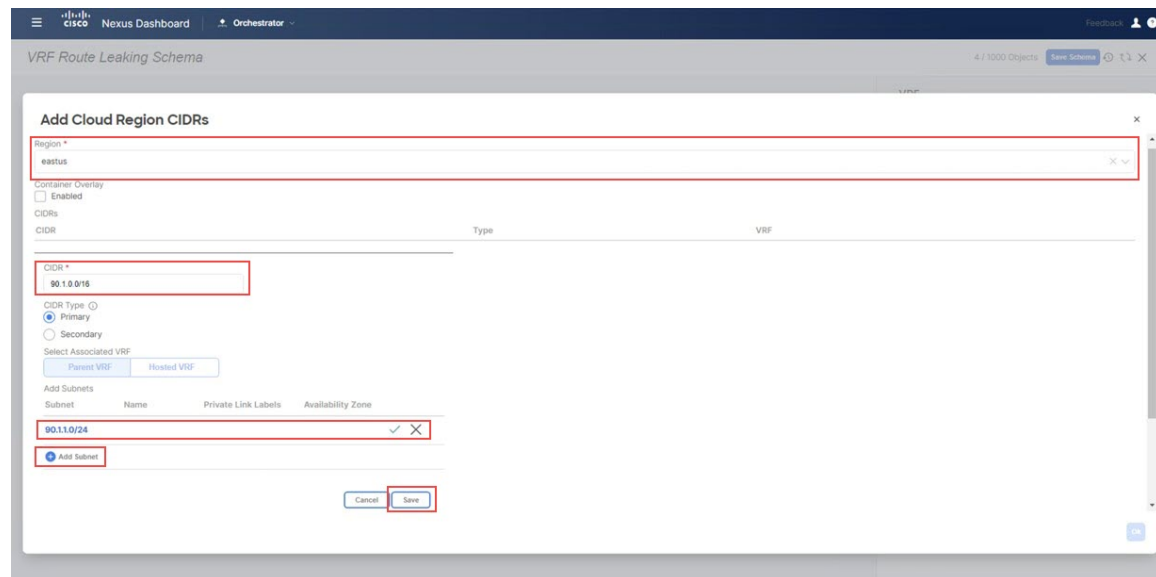
Step 9 Click the `azure10` VRF, then click **Add Region** to create the VNet in a selected region. The **Add Cloud Region CIDRs** window appears.

Step 10 In the **Region** field, choose the region where you want to create the VNet.

Step 11 In the **CIDR** field, click **Add CIDRs** and define a CIDR block for the VNet.

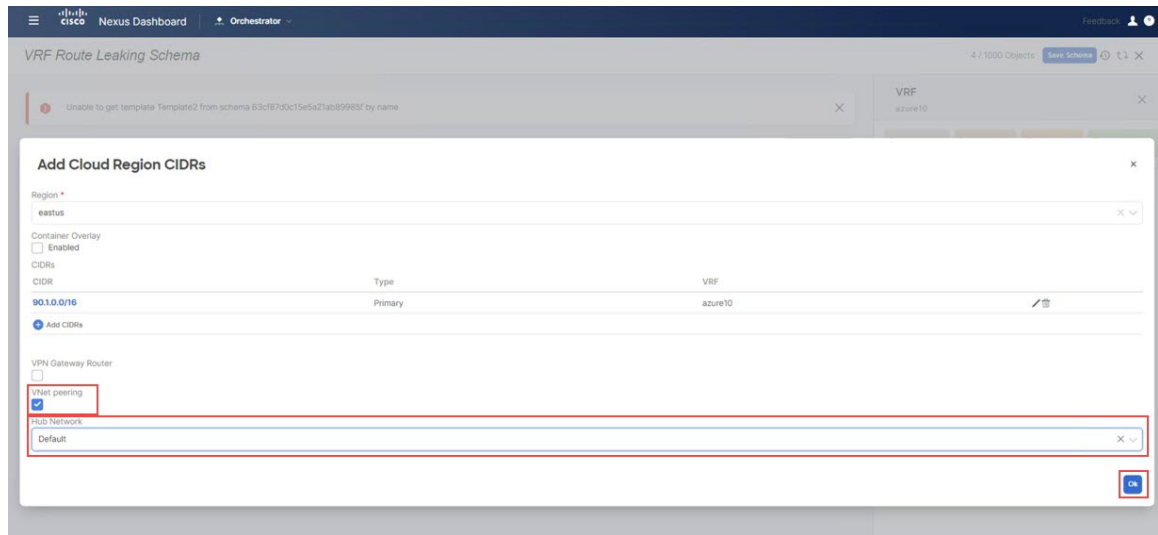
Step 12 Click **Add Subnet** to create the subnets, then click **Save**.

Figure 22:



Step 13 Check the box under the **VNet Peering** field, then select the hub network that was created on the Cisco Cloud Network Controller for Azure.

Figure 23:



Step 14 Click **Ok**.

You are returned to the Azure template window.

Step 15 Click the arrow next to the Azure site, and from the drop-down menu, select **Template Properties**.

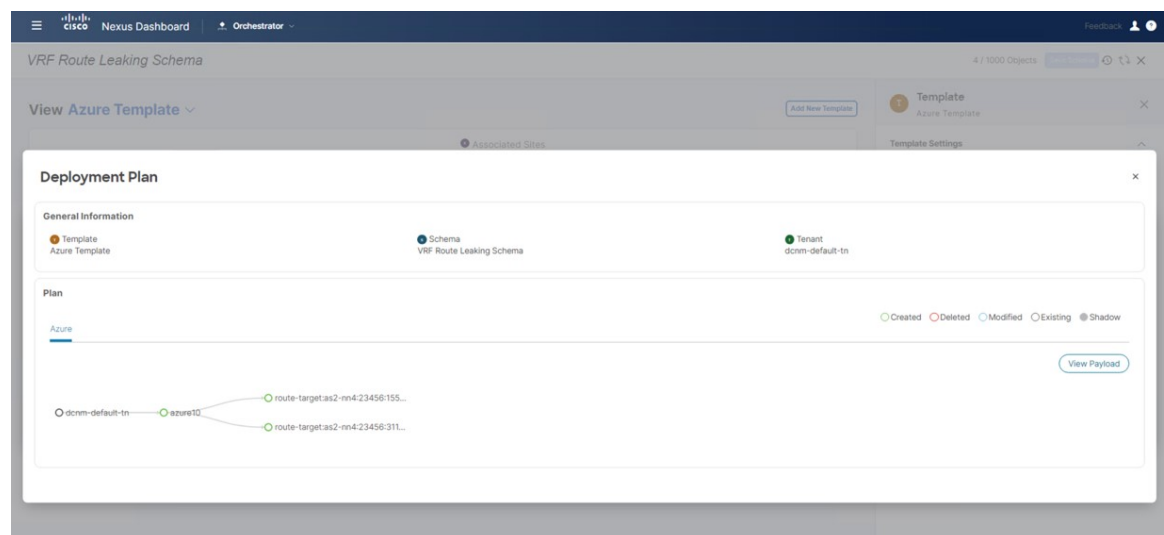
Step 16 Click **Deploy to Sites**.

Step 17 Deploy Azure Template to the sites.

- Click **Deployment Plan** for additional verification.

Click on the Azure site to see the deployment plan for that specific site.

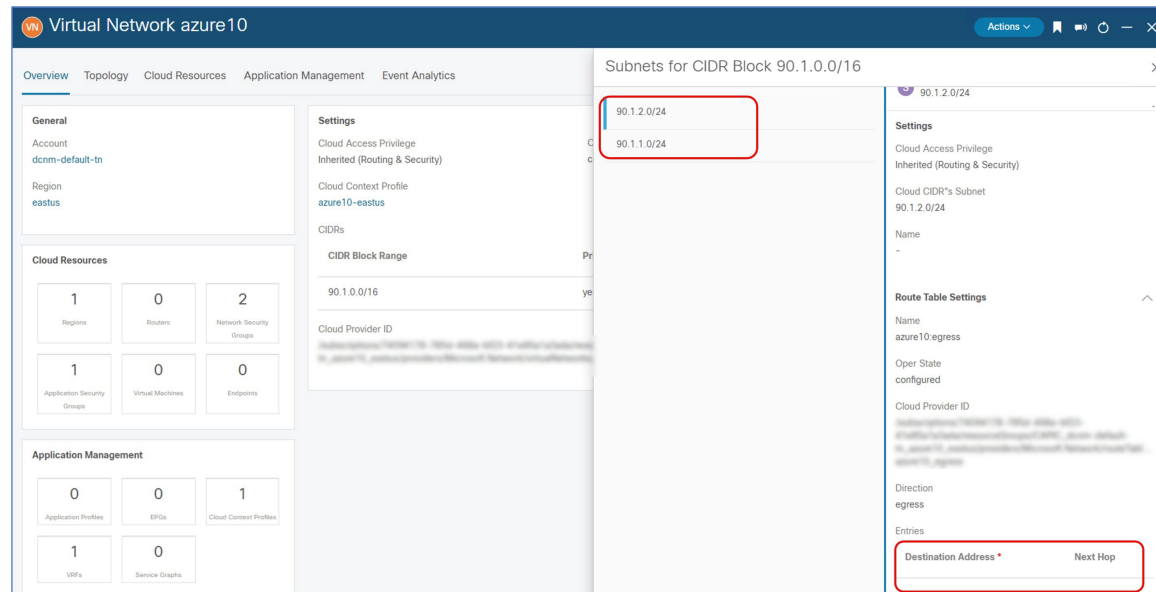
Figure 24:



- Click **Deploy** to have NDO push the configurations to NDFC.

To verify that the configurations were pushed out correctly, connect to the Cloud Network Controller deployed on Azure and navigate to **Cloud Resources > Virtual Networks**, then click the `azure10` VNet and use the information in the Overview page for additional verifications:

Figure 25:



Note that there is no destination address configured at this point in the process, so the Azure site cannot talk to any other site yet at this point in the process. This destination address configuration will be pushed out after you have completed the route leaking procedure.

What to do next

Follow the procedures provided in [Configure the AWS Site Template, on page 16](#).

Configure the AWS Site Template

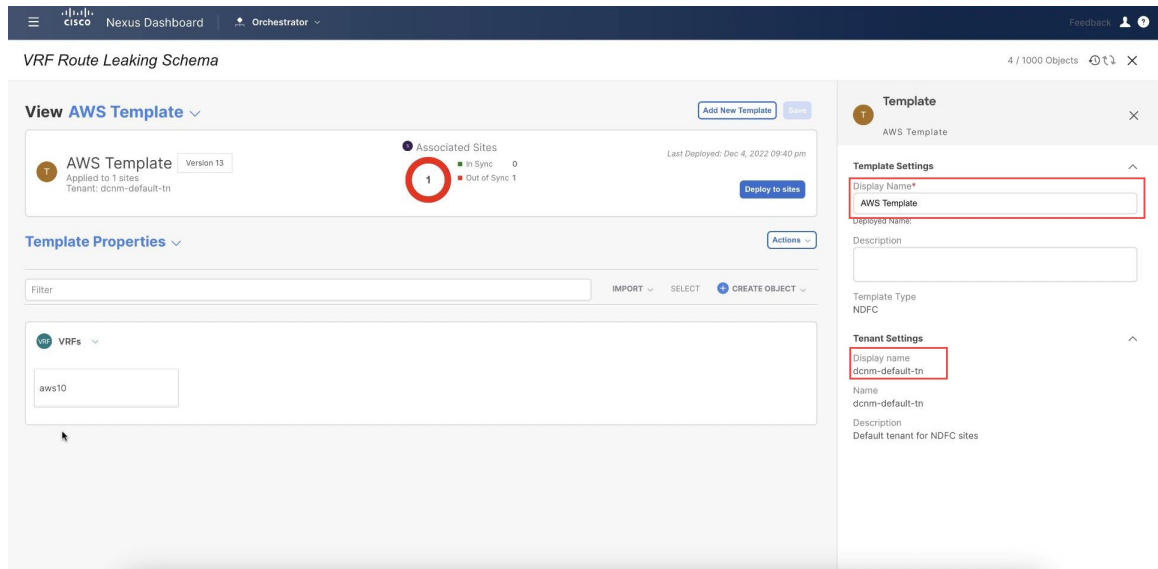
In this section, you will configure the `AWS Template` that will be associated to the AWS site.

Before you begin

Follow the procedures provided in [Configure the Azure Site Template, on page 11](#).

- Step 1** Under the `VRF Route Leaking Schema` schema, click **Add New Template**.
- Step 2** Choose the `NDFC` template.
- Step 3** Enter a name in the **Display Name** field to create an `NDFC`-type template for the AWS site (for example, `AWS Template`).
- Step 4** Select the `dcnm-default-tn` tenant in the **Select a Tenant** field to map the template to that tenant.

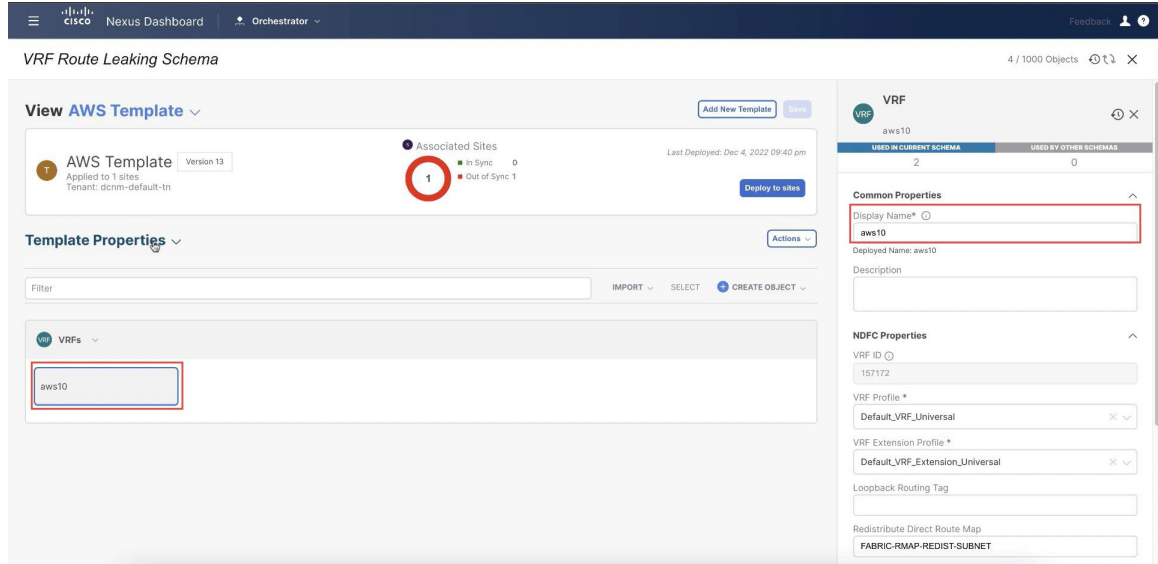
Figure 26:



Step 5 Under **Template Properties**, click **Create Object** and choose **VRF** to create a VRF that will be used with the AWS site.

Step 6 Enter a name in the **Display Name** field for this VRF (for example, `aws10`).

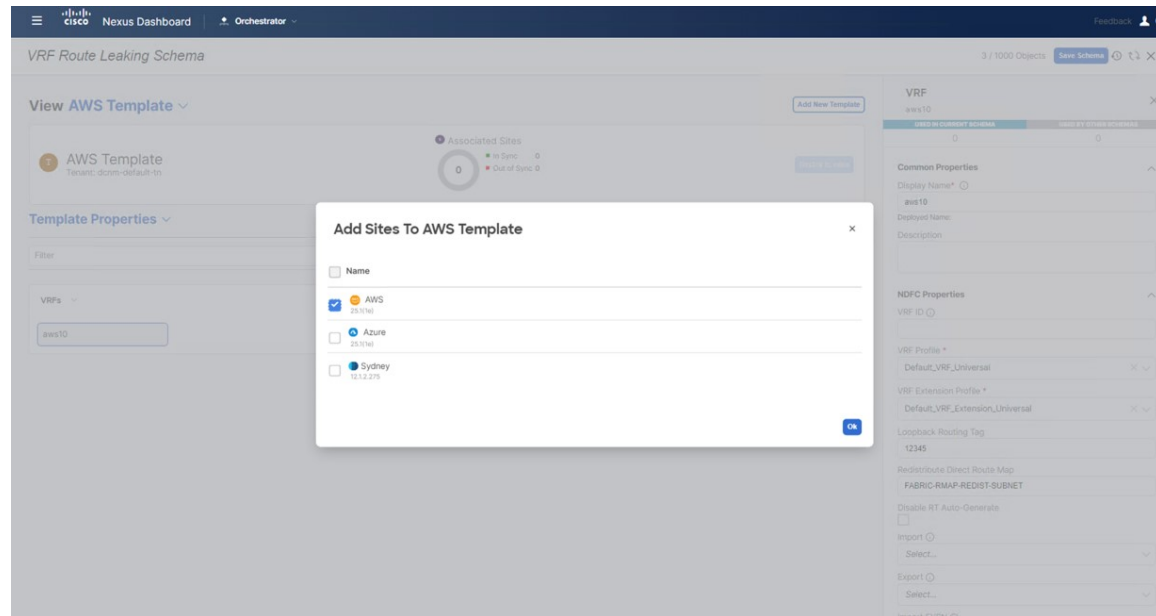
Figure 27:



Step 7 In the **Template Properties** area, click **Actions > Sites Association**.

Step 8 Associate this template only to the AWS site, then click **Ok**.

Figure 28:



Step 9 Click the arrow next to **Template Properties**, and from the drop-down menu, select the AWS cloud site.

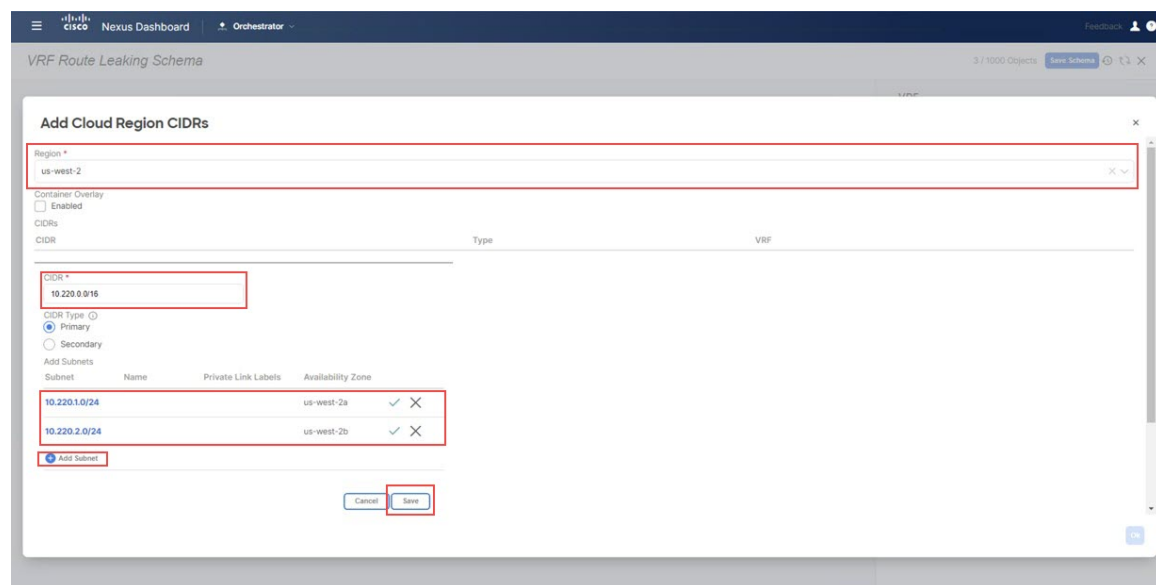
Step 10 Click the `aws10` VRF, then click **Add Region** to create the VPC in a selected region. The **Add Cloud Region CIDRs** window appears.

Step 11 In the **Region** field, choose the region where you want to create the VPC.

Step 12 In the **CIDR** field, click **Add CIDRs** and define a CIDR block for the VPC.

Step 13 Click **Add Subnet** to create the subnets and map them to the availability zones, then click **Save**.

Figure 29:

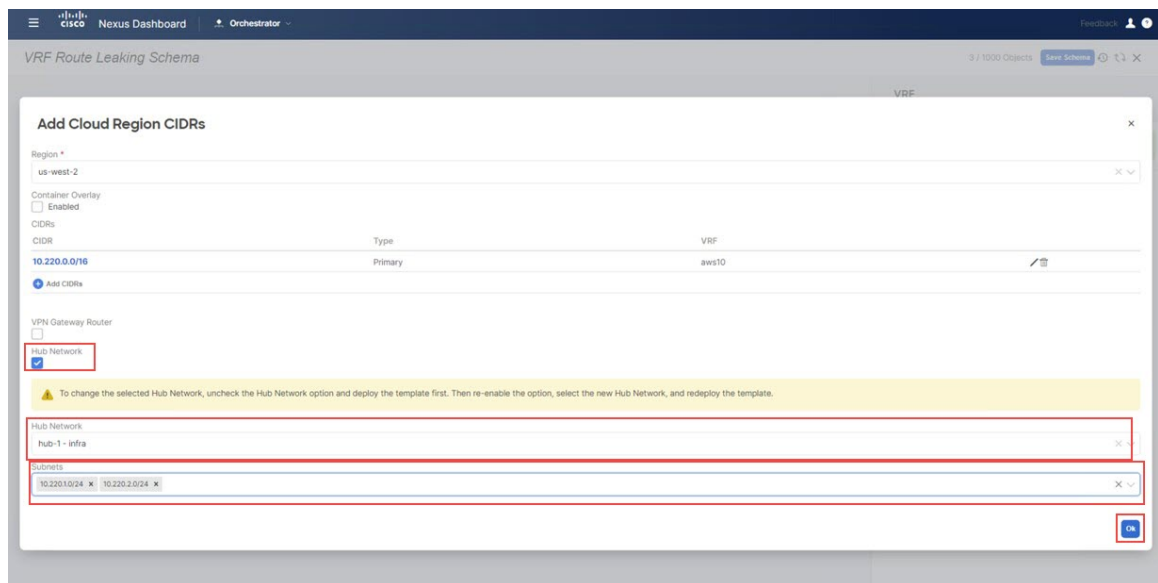


Step 14 Check the box under the **Hub Network** field, then select the hub network that was created on the Cisco Cloud Network Controller for AWS.

This allows the Cisco Cloud Network Controller to attach the subnets onto the transit gateway, which builds the connectivity from those subnets to the transit gateway, where the transit gateway already has the connectivity to the Cisco Catalyst 8000Vs in the cloud.

Step 15 In the **Subnets** field, map the subnets that will be used for the transit gateway.
It is best practice to have a dedicated subnet that will be used for the transit gateway.

Figure 30:

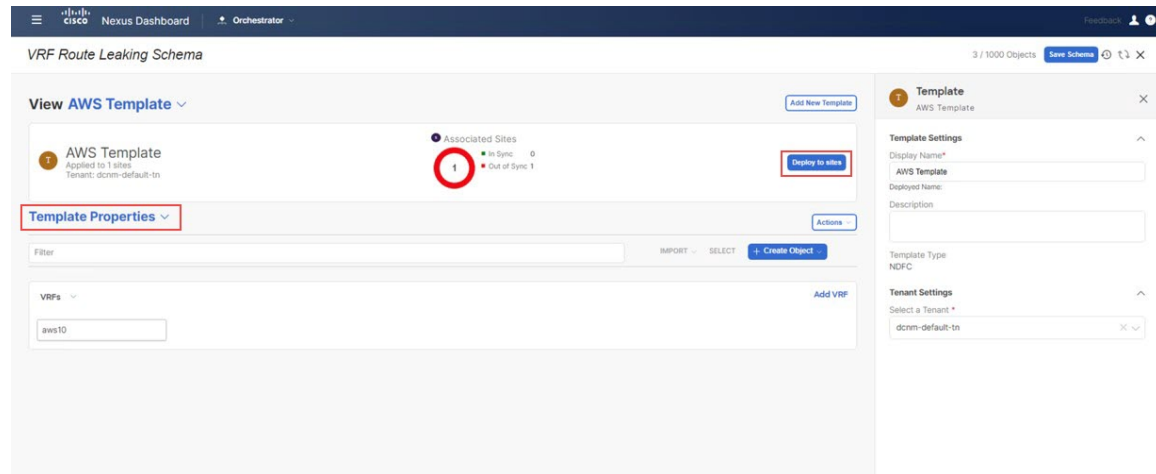


Step 16 Click **Ok**.
You are returned to the AWS template window.

Step 17 Click the arrow next to the AWS site, and from the drop-down menu, select **Template Properties**.

Step 18 Click **Deploy to Sites**.

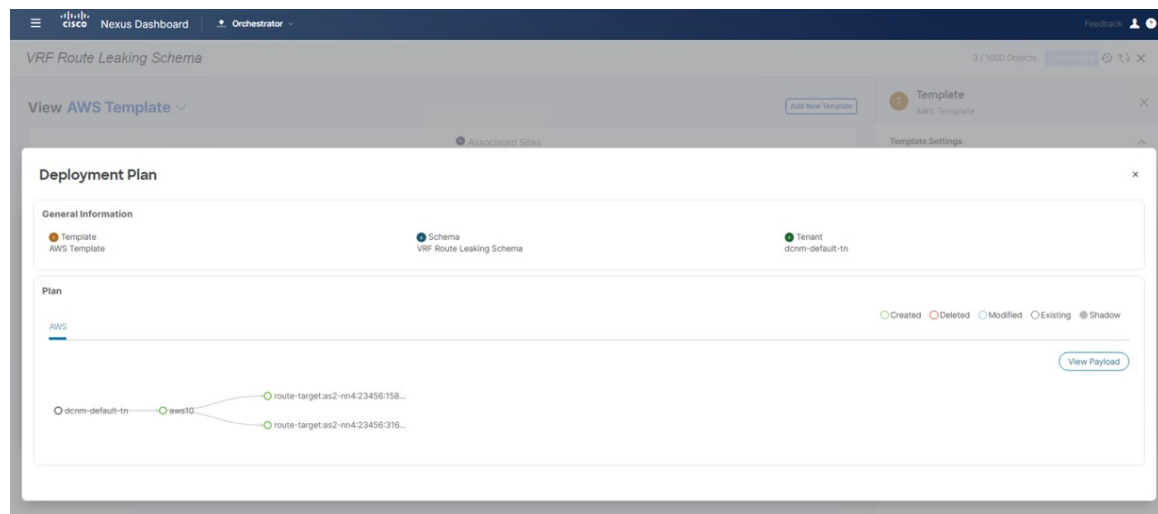
Figure 31:



Step 19 Deploy AWS Template to the sites.

- Click **Deployment Plan** for additional verification.
Click on the AWS site to see the deployment plan for that specific site.

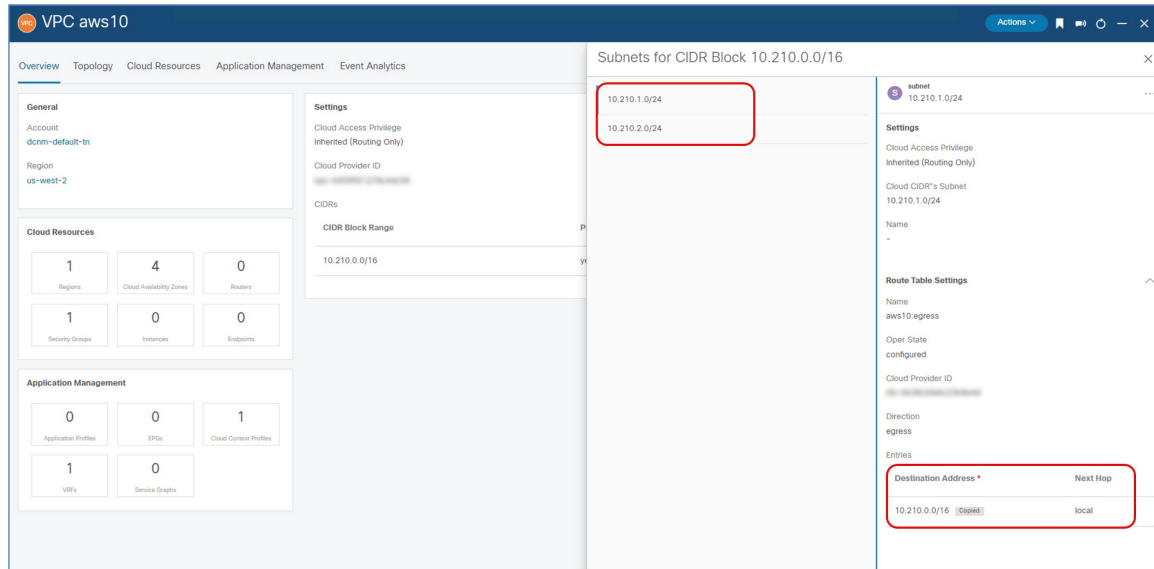
Figure 32:



- Click **Deploy** to have NDO push the configurations to NDFC.

To verify that the configurations were pushed out correctly, connect to the Cloud Network Controller deployed on AWS and navigate to **Cloud Resources** > **VPCs**, then click the `aws10` VPC and use the information in the Overview page for additional verifications:

Figure 33:



Note that there is a destination address configured at this point in the process for AWS, but this shows only that this AWS site can talk to itself; the AWS site cannot talk to any other site yet at this point in the process. The necessary destination address configuration that will allow the AWS site to talk to another site will be pushed out after you have completed the route leaking procedure.

What to do next

Configure route leaking using the procedures provided in [Configure Route Leaking, on page 21](#).

Configure Route Leaking

Use the procedures in the following sections to configure the route leaking use case.

Configure Route Leak from Azure VRF to NDFC VRF

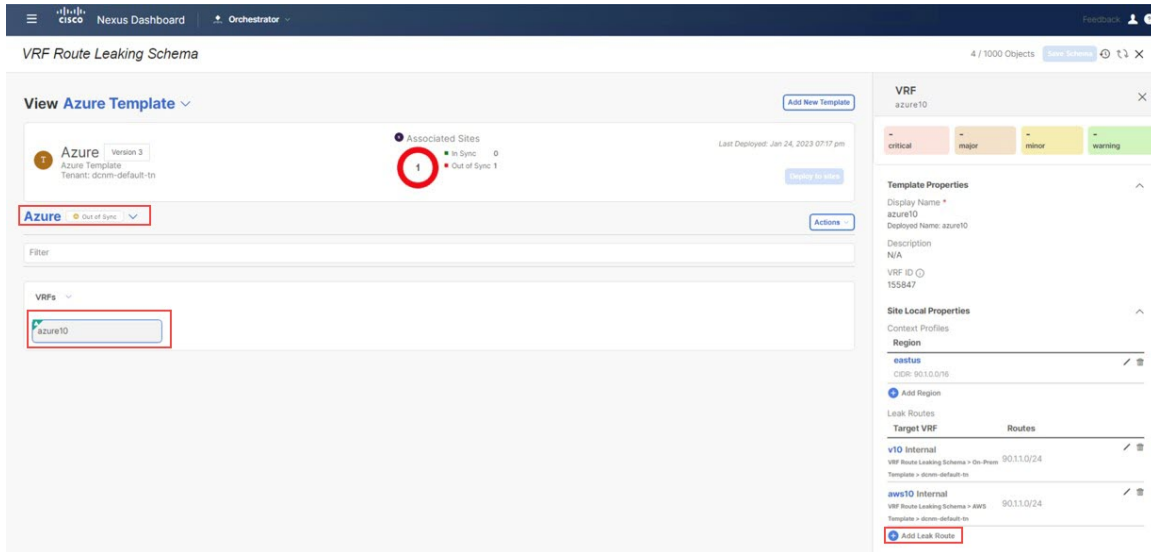
In this section, you will configure the route leak from the Azure VRF (`azure10`) to the NDFC VRF (`v10`).

Before you begin

Configure the necessary templates using the procedures provided in [Configure the Necessary Templates, on page 3](#).

- Step 1** Click the `Azure Template` that you configured earlier in these procedures and the `dcnm-default-tn` tenant.
- Step 2** Click the `azure10` VRF that you configured earlier in these procedures.
- Step 3** In the right pane, click **Add Leak Route**.

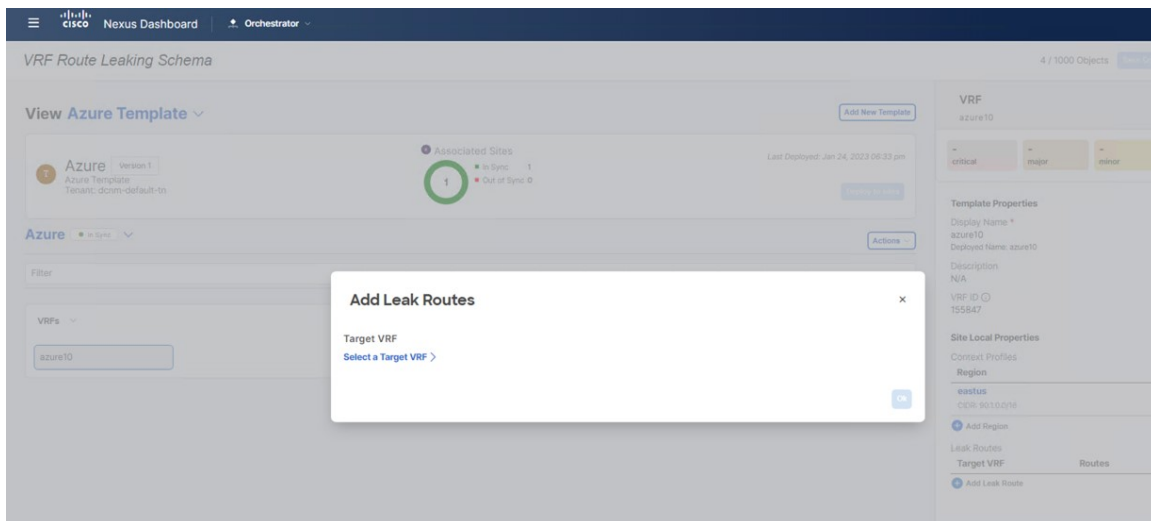
Figure 34:



The **Add Leak Routes** window appears.

Step 4 In the **Add Leak Routes** window, click **Select a Target VRF**.

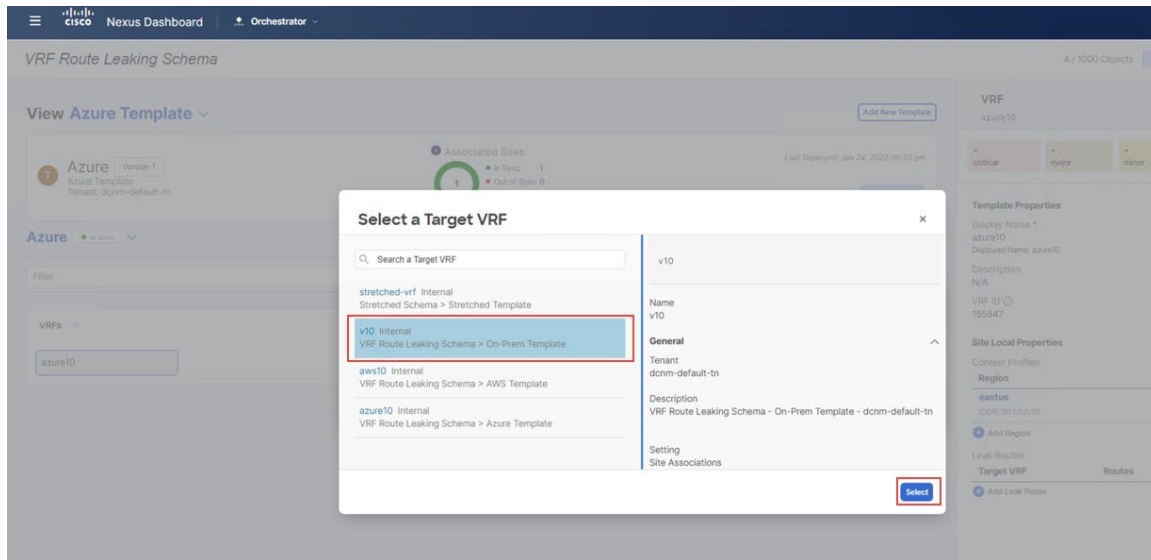
Figure 35:



The **Select a Target VRF** window appears.

Step 5 In the **Select a Target VRF** page, select the NDFC VRF (v10) that you want to leak routes to, then click **Select**.

Figure 36:

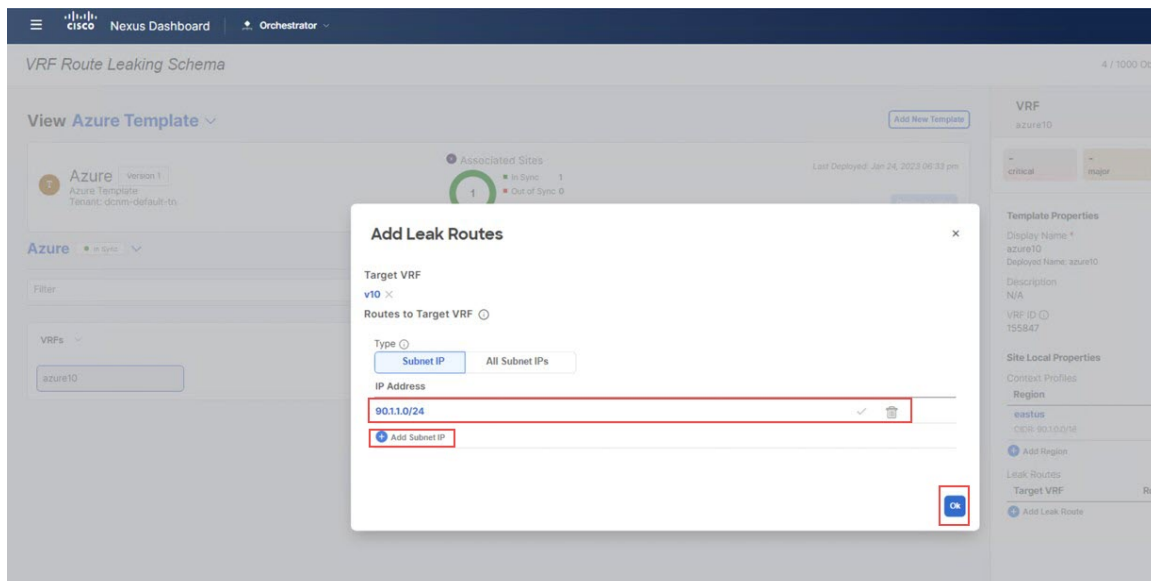


You are returned to the **Add Leak Routes** window.

Step 6 In the **Add Leak Routes** window, click **Add Subnet IP**, then add the Azure cloud subnets that you want to propagate to the on-premises site.

Note The **Add Subnet IP** option allows leaking of only selective subnets. Alternatively, you can use the **All Subnet IPs** option instead in the case where all the prefixes need to be leaked into a destination VRF.

Figure 37:



For this use case, you will use the 90.1.1.0/24 subnet.

Step 7 Click **Ok**.

You are returned to the `Azure Template` page, where you can see the configuration for this route leak from the Azure VRF to the NDFC VRF.

What to do next

Follow the procedures provided in [Configure Route Leak from Azure VRF to AWS VRF, on page 24](#).

Configure Route Leak from Azure VRF to AWS VRF

In this section, you will configure the route leak from the Azure VRF (`azure10`) to the AWS VRF (`aws10`).

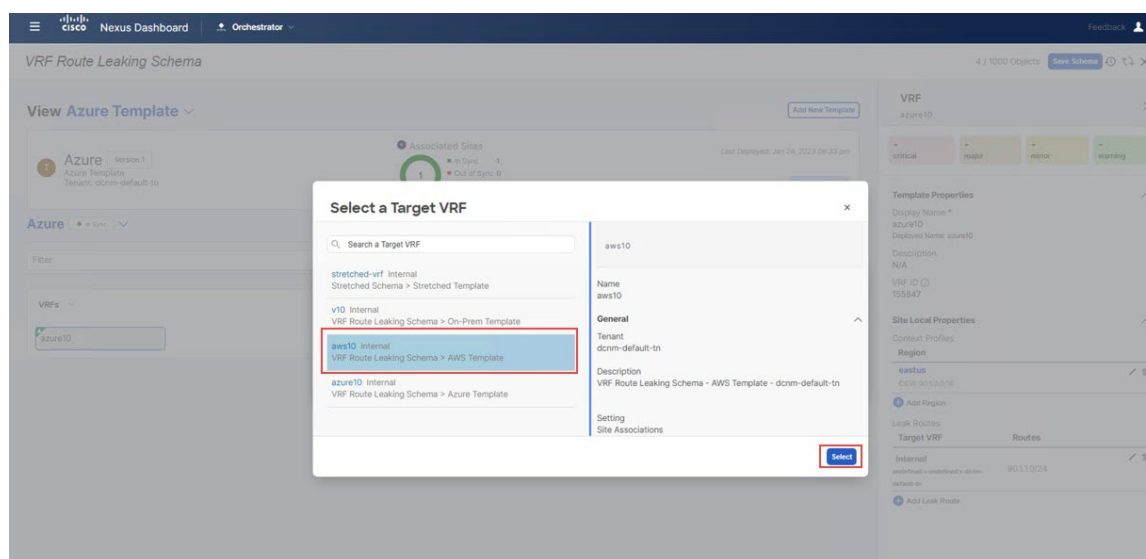
For these procedures, you will be going through the exact same procedures that you performed in [Configure Route Leak from Azure VRF to NDFC VRF, on page 21](#), except in these procedures, you will be selecting a different target VRF (the AWS target VRF in these procedures).

Before you begin

Follow the procedures provided in [Configure Route Leak from Azure VRF to NDFC VRF, on page 21](#).

Step 1 In the **Select a Target VRF** page, select the AWS VRF (`aws10`) that you want to leak routes to, then click **Select**.

Figure 38:

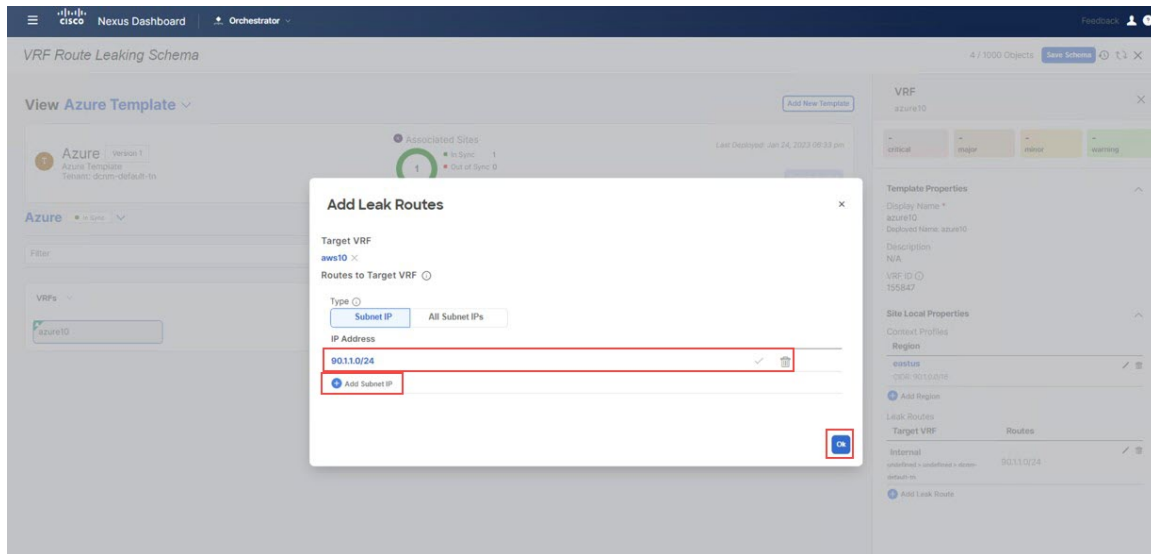


You are returned to the **Add Leak Routes** window.

Step 2 In the **Add Leak Routes** window, add the subnets that you want to propagate to the AWS cloud.

For this use case, you will use the `90.1.1.0/24` subnet. Therefore, you will click the dropdown menu and choose the `90.1.1.0/24` subnet.

Figure 39:



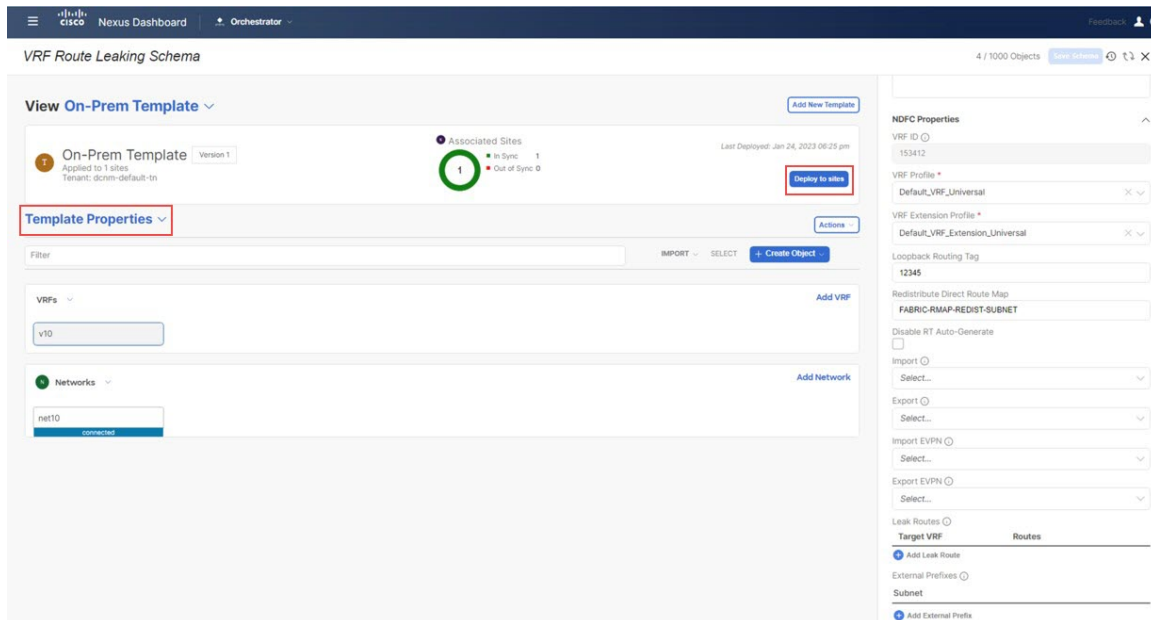
Step 3 Click **Ok**.

You are returned to the **Azure Template** page, where you can see the configuration for this route leak from the Azure VRF to the AWS VRF, as well as the route leak from the Azure VRF to the NDFC VRF that you configured in the previous set of steps.

Step 4 Click the arrow next to the Azure site, and from the drop-down menu, select **Template Properties**.

Step 5 Click **Deploy to sites**.

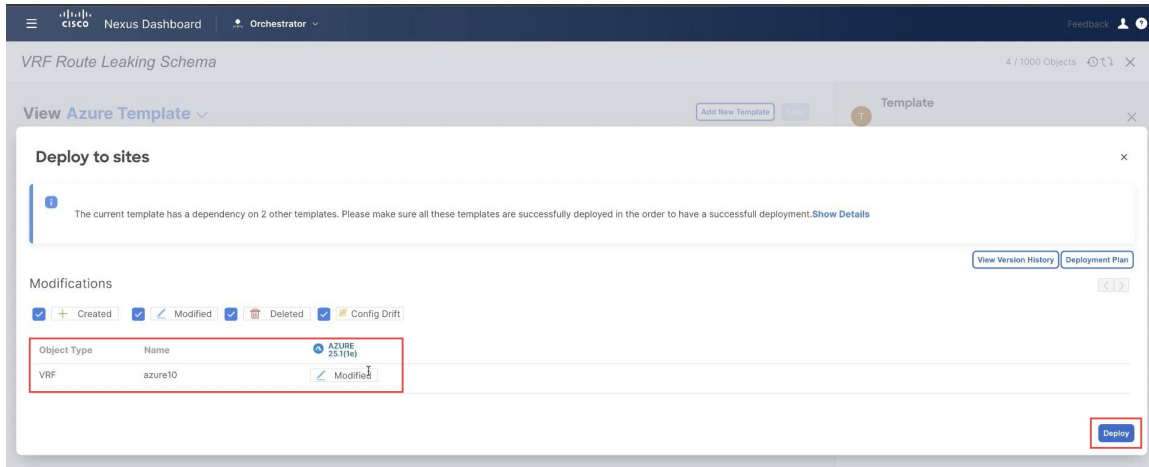
Figure 40:



The **Deploy to sites** window appears, showing where the template will be deployed.

- Step 6** Click **Deployment Plan** for additional verification, then click on a site to see the deployment plan for that specific site.
- Step 7** Click **Deploy** to have NDO push the configurations to the site specific controllers.

Figure 41:



What to do next

Follow the procedures provided in [Configure Route Leak from AWS VRF to NDFC VRF, on page 26](#).

Configure Route Leak from AWS VRF to NDFC VRF

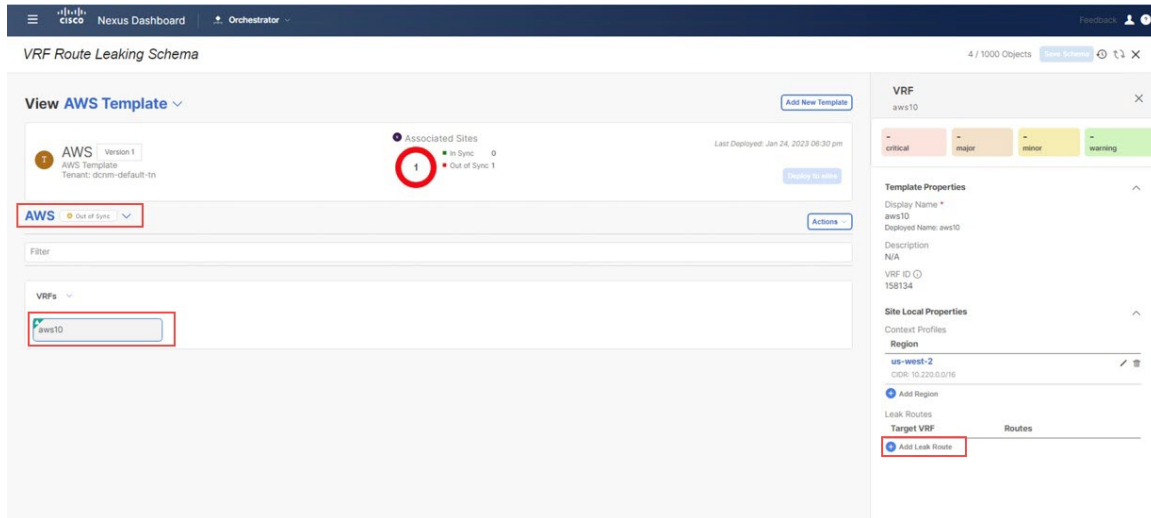
In this section, you will configure the route leak from the AWS VRF (`aws10`) to the NDFC VRF (`v10`).

Before you begin

Follow the procedures provided in [Configure Route Leak from Azure VRF to AWS VRF, on page 24](#).

- Step 1** Click the `aws` Template that you configured earlier in these procedures and the `dcnm-default-tn` tenant.
- Step 2** Click the `aws10` VRF that you configured earlier in these procedures.
- Step 3** In the right pane, click **Add Leak Route**.

Figure 42:



The **Add Leak Routes** window appears.

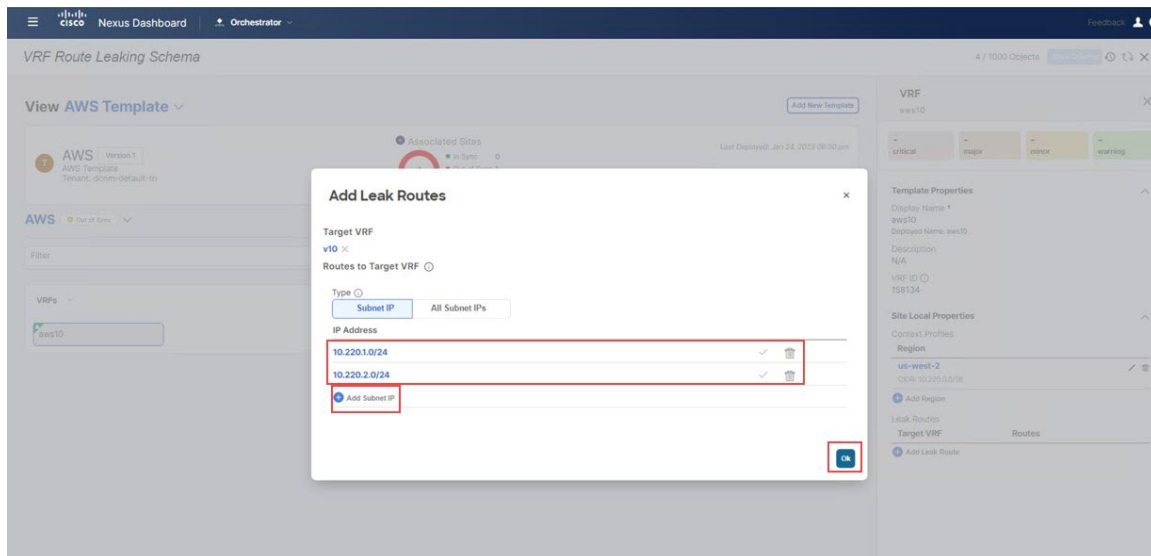
Step 4 In the **Add Leak Routes** window, click **Select a Target VRF**.
The **Select a Target VRF** window appears.

Step 5 In the **Select a Target VRF** window, select the NDFC VRF (v10) that you want to leak routes to, then click **Select**.
You are returned to the **Add Leak Routes** window.

Step 6 In the **Add Leak Routes** window, click **Add Subnet IP**, then add the AWS cloud subnets that you want to propagate to the on-premises site.

Note The **Add Subnet IP** option allows leaking of only selective subnets. Alternatively, you can use the **All Subnet IPs** option instead in the case where all the prefixes need to be leaked into a destination VRF.

Figure 43:



For this use case, you will use the following subnets:

- 10.220.1.0/24
- 10.220.2.0/24

Step 7 Click **Ok**.

You are returned to the `AWS Template` page, where you can see the configuration for this route leak from the AWS VRF to the NDFC VRF.

What to do next

Follow the procedures provided in [Configure Route Leak from AWS VRF to Azure VRF, on page 28](#).

Configure Route Leak from AWS VRF to Azure VRF

In this section, you will configure the route leak from the AWS VRF (`aws10`) to the Azure VRF (`azure10`).

For these procedures, you will be going through the exact same procedures that you performed in [Configure Route Leak from AWS VRF to NDFC VRF, on page 26](#), except in these procedures, you will be selecting a different target VRF (the Azure target VRF in these procedures).

Before you begin

Follow the procedures provided in [Configure Route Leak from AWS VRF to NDFC VRF, on page 26](#).

Step 1 In the **Select a Target VRF** page, select the Azure VRF (`azure10`) that you want to leak routes to, then click **Select**. You are returned to the **Add Leak Routes** window.

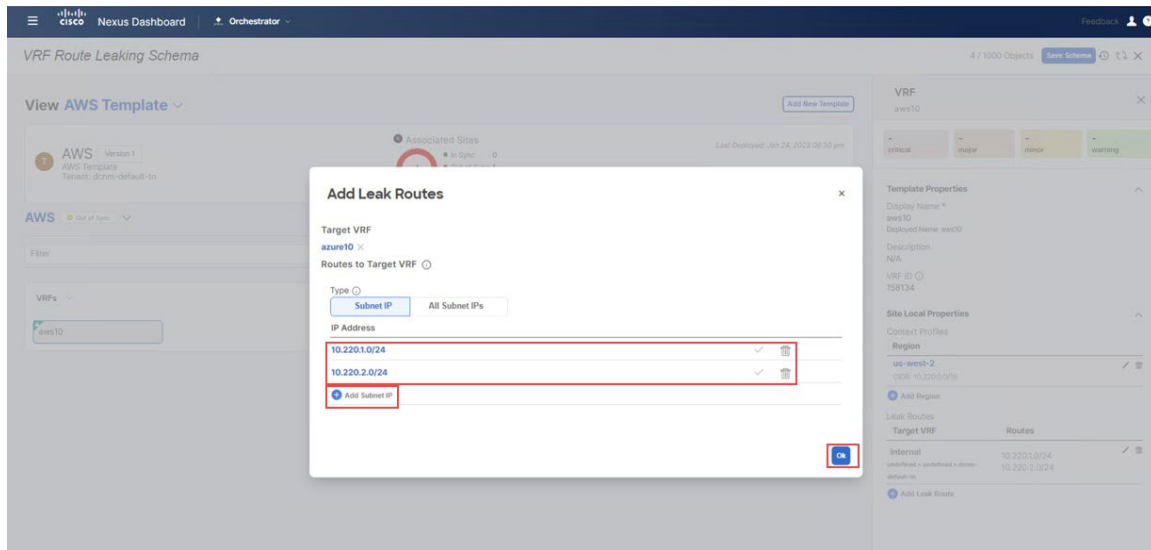
Step 2 In the **Add Leak Routes** window, add the subnets that you want to propagate to the Azure cloud.

For this use case, you will use the following subnets:

- 10.220.1.0/24
- 10.220.2.0/24

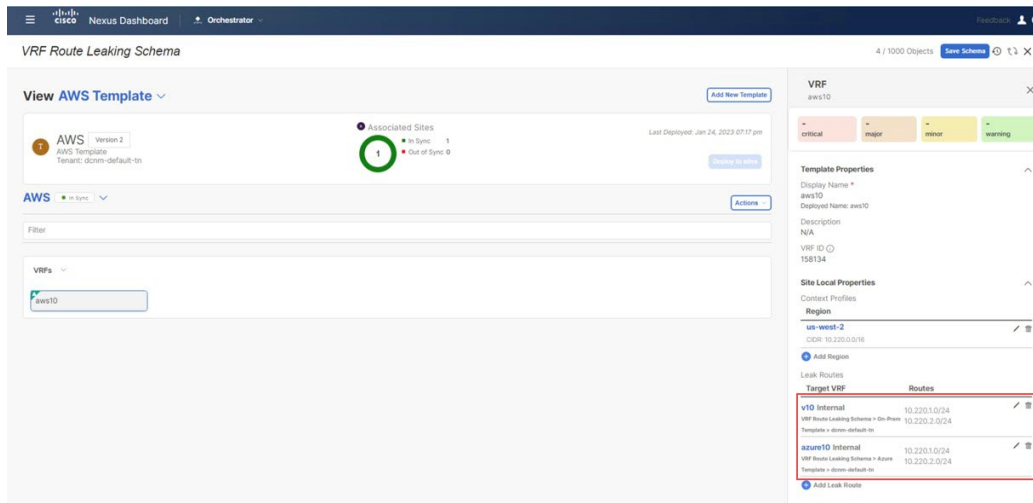
Therefore, you will click the dropdown menu and choose those subnets.

Figure 44:

**Step 3** Click **Ok**.

You are returned to the `AWS Template` page, where you can see the configuration for this route leak from the AWS VRF to the Azure VRF, as well as the route leak from the AWS VRF to the NDFC VRF that you configured in the previous set of steps.

Figure 45:

**Step 4** Click the arrow next to the AWS site, and from the drop-down menu, select **Template Properties**.**Step 5** Click **Deploy to sites**.

The **Deploy to sites** window appears, showing where the template will be deployed.

Step 6 Click **Deployment Plan** for additional verification, then click on a site to see the deployment plan for that specific site.**Step 7** Click **Deploy** to have NDO push the configurations to the site specific controllers (NDFC and Cloud Network Controller).

What to do next

Follow the procedures provided in [Configure Route Leak from NDFC VRF to AWS VRF](#), on page 30.

Configure Route Leak from NDFC VRF to AWS VRF

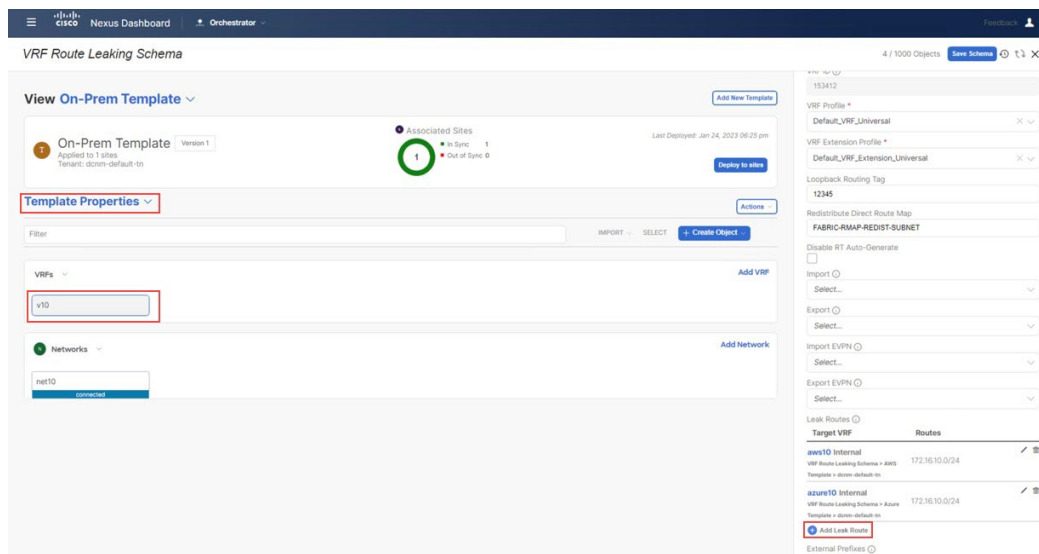
In this section, you will configure the route leak from the NDFC VRF (v10) to the AWS VRF (aws10).

Before you begin

Follow the procedures provided in [Configure Route Leak from AWS VRF to Azure VRF](#), on page 28.

- Step 1** Click the **On-Prem Template** that you configured earlier in these procedures and the `dcnm-default-tn` tenant.
- Step 2** Click the `v10` VRF that you configured earlier in these procedures.
- Step 3** In the right pane, click **Add Leak Route**.

Figure 46:



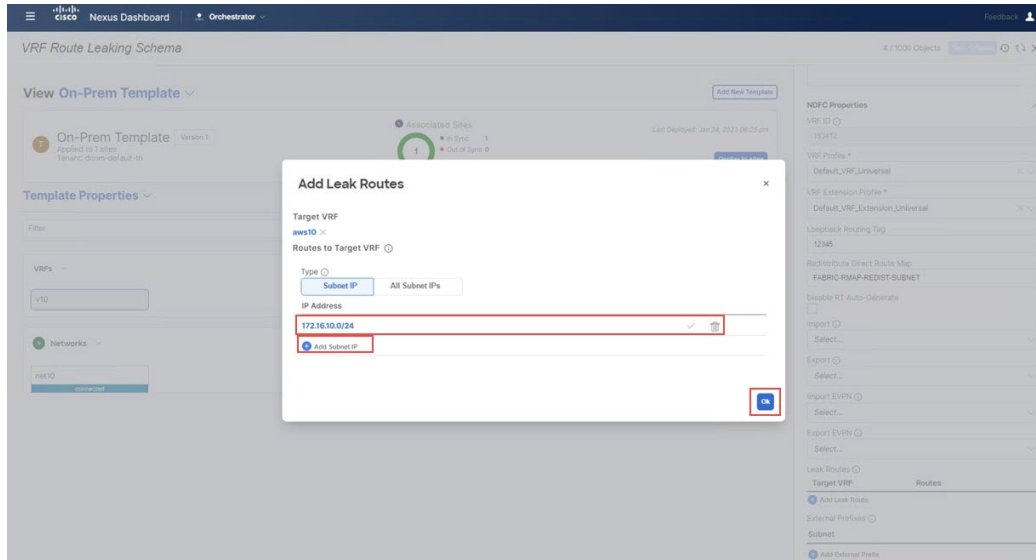
The **Add Leak Routes** window appears.

- Step 4** In the **Add Leak Routes** window, click **Select a Target VRF**.
The **Select a Target VRF** window appears.
- Step 5** In the **Select a Target VRF** window, select the AWS cloud site VRF (`aws10`) that you want to leak routes to, then click **Select**.
You are returned to the **Add Leak Routes** window.
- Step 6** In the **Add Leak Routes** window, click **Add Subnet IP**, then add the AWS cloud subnets that you want to propagate to the on-premises site.

Note The **Add Subnet IP** option allows leaking of only selective subnets. Alternatively, you can use the **All Subnet IPs** option instead in the case where all the prefixes need to be leaked into a destination VRF.

For this use case, you will use the `172.16.10.0/24` subnet.

Figure 47:

**Step 7** Click **Ok**.

You are returned to the **On-Prem Template** page, where you can see the configuration for this route leak from the NDFC VRF to the AWS VRF.

What to do next

Follow the procedures provided in [Configure Route Leak from NDFC VRF to Azure VRF, on page 31](#).

Configure Route Leak from NDFC VRF to Azure VRF

In this section, you will configure the route leak from the NDFC VRF (v10) to the Azure VRF (azure10).

For these procedures, you will be going through the exact same procedures that you performed in [Configure Route Leak from NDFC VRF to AWS VRF, on page 30](#), except in these procedures, you will be selecting a different target VRF (the Azure target VRF in these procedures).

Before you begin

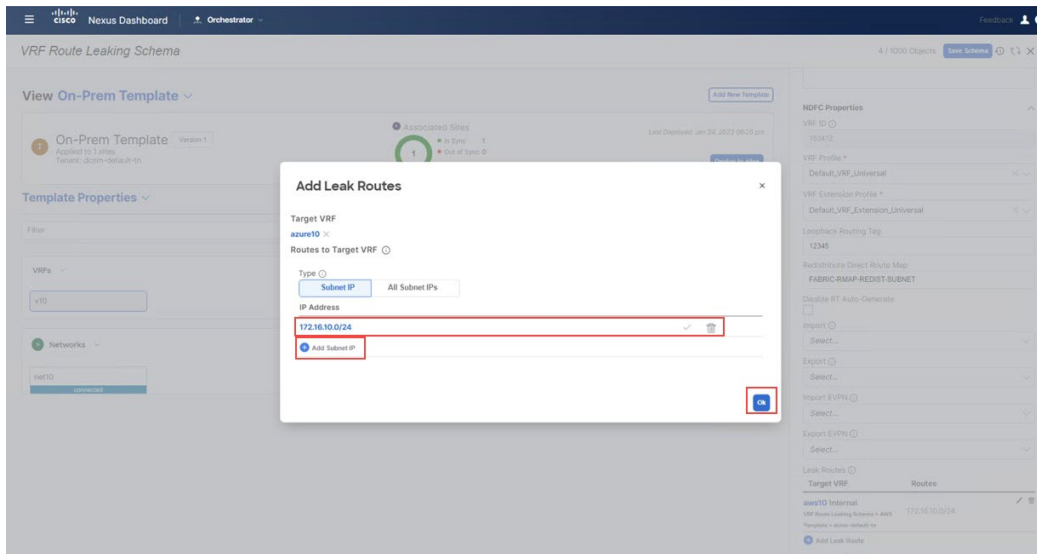
Follow the procedures provided in [Configure Route Leak from NDFC VRF to AWS VRF, on page 30](#).

Step 1 In the **Select a Target VRF** window, select the Azure VRF (azure10) that you want to leak routes to, then click **Select**. You are returned to the **Add Leak Routes** window.

Step 2 In the **Add Leak Routes** window, add the subnets that you want to propagate to the Azure cloud.

For this use case, you will use the 172.16.10.0/24 subnet. Therefore, you will click the dropdown menu and choose the 172.16.10.0/24 subnet.

Figure 48:



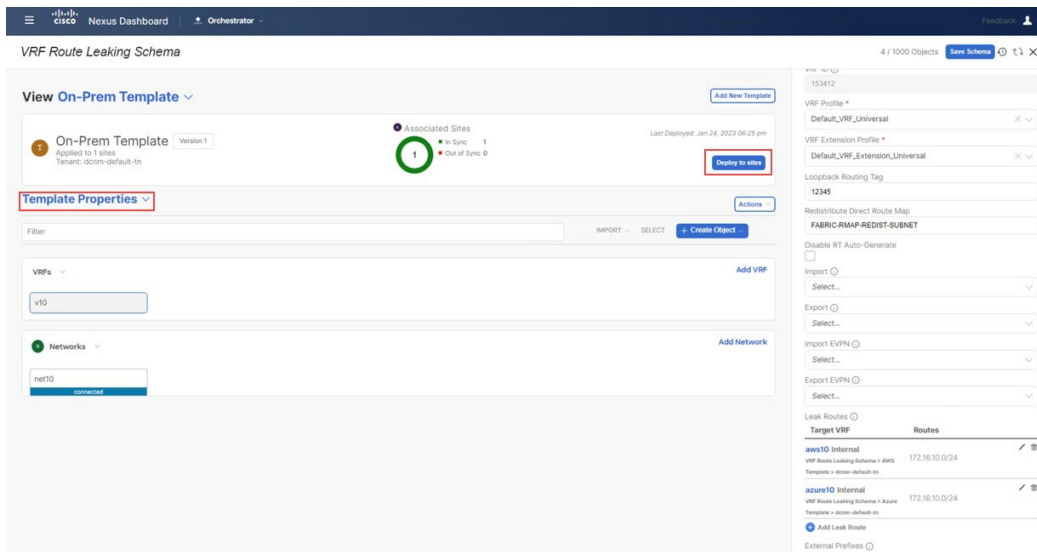
Step 3 Click **Ok**.

You are returned to the **On-Prem Template** page, where you can see the configuration for this route leak from the NDFC VRF to the Azure VRF, as well as the route leak from the NDFC VRF to the AWS VRF that you configured in the previous set of steps.

Step 4 Click the arrow next to the on-premises site, and from the drop-down menu, select **Template Properties**.

Step 5 Click **Deploy to sites**.

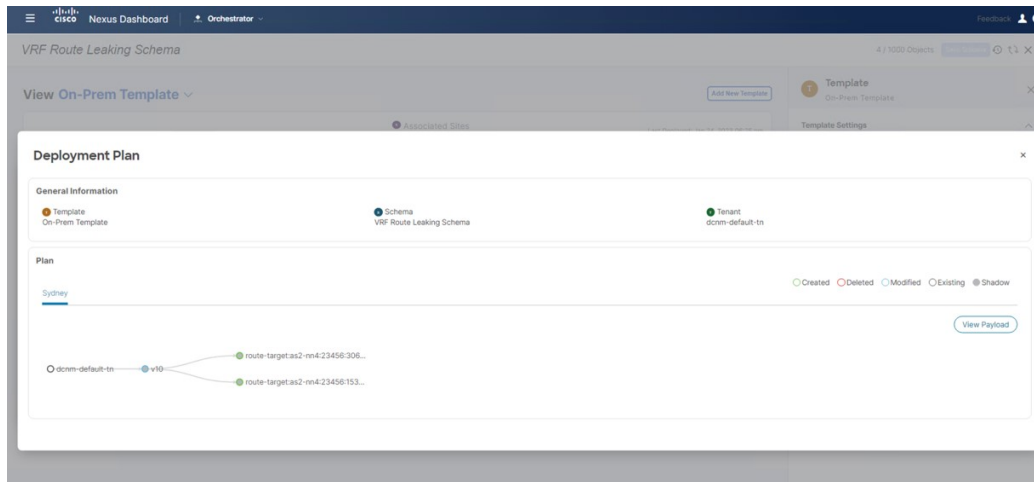
Figure 49:



The **Deploy to sites** window appears, showing where the template will be deployed.

Step 6 Click **Deployment Plan** for additional verification, then click on a site to see the deployment plan for that specific site.

Figure 50:



Step 7 Click **Deploy** to have NDO push the configurations to the site specific controllers (NDFC and Cloud Network Controller).

What to do next

Verify that the configurations were deployed successfully using the procedures provided in [Verify the Configurations, on page 33](#).

Verify the Configurations

In this section, you will verify that the configurations were deployed successfully. Note that for each of these verification steps, the exact command that would be used specifically for the configurations in this use case are shown. Replace the appropriate variables in each command based on your configuration.

Before you begin

Follow the procedures provided in [Configure Route Leak from NDFC VRF to Azure VRF, on page 31](#).

Step 1 Verify the configurations in NDO.

Verify the Configurations

Schemas

Filter by attributes

Name	Templates	Tenants
Stretched Schema	2	1
VRF Route Leaking Schema	3	1

10 Rows

Tenants

Search

dcrm-default-tn
VRF Route Leaking Schema

Tenants
dcrm-default-tn

General
Name: dcrm-default-tn
Description: Default tenant for NDFC

Associated Sites
3 of 4
• Sites (3)

Associated Users
1 of 1
• Users (1)

Assigned Schemas
5 of 2
• Schemas (5)

Topology

Schemas

Filter by attributes

Name	Templates	Tenants
Stretched Schema	2	1
VRF Route Leaking Schema	3	1

10 Rows

Templates

Search

On-Prem Template
VRF Route Leaking Schema

AWS Template
VRF Route Leaking Schema

Azure Template
VRF Route Leaking Schema

Template
On-Prem Template

General
Change Control Status: Deployment Successful

Tenant Name: dcrm-default-tn

Sites By Type
1 Total

- APIC: 1
- AWS: 0
- Azure: 0
- NDFC: 0
- Google Cloud Platform: 0

Application Management

0	0
AWS	BRIDGE DOMAIN
0	0
CONTRACT	EXTERNAL BGP
0	0
FILTER	LROUT
1	0
NETWORKS	SERVICE GRAPH
1	0
VRF	ERSA

The screenshots show the Cisco Nexus Dashboard Orchestrator interface. The left sidebar contains navigation options: Dashboard, Sites, Application Management, Fabric Management, Operations, Infrastructure, and Integration. The main content area is divided into three sections:

- Schemas:** A table listing schemas with columns for Name, Templates, and Tenants.

Name	Templates	Tenants
Stretched Schema	2	1
VRF Route Leaking Schema	3	1
- Templates:** A list of templates including On-Prem Template, AWS Template, and Azure Template. In the top screenshot, 'AWS Template' is selected, and in the bottom screenshot, 'Azure Template' is selected.
- Template Details:** A panel showing details for the selected template. It includes a 'General' section with 'Change Control Status' (Deployment Successful), 'Tenant Name' (dcnm-default-tn), and a 'Sites By Type' donut chart showing 1 total site. Below this is an 'Application Management' section with various application categories and their counts.

Step 2 Enter `sh ip route vrf v10` on the on-premises Border Gateway Spine device:

Verify the Configurations

```

ndfc-leaf1 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
ndfc-est-cik CatBK-AWS CatBK-AZURE ndfc-leaf1 x ndfc-spine CatBK-AWS (1) CatBK-AWS-2
A copy of each such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://opensource.org/licenses/gpl-3.0.html and
http://www.opensource.org/licenses/lgpl-2.1.php and
http://www.gnu.org/licenses/old-licenses/library.txt.
ndfc-leaf1#
ndfc-leaf1#
ndfc-leaf1#
ndfc-leaf1#
ndfc-leaf1#
ndfc-leaf1# sh ip route vrf v10
IP Route Table for VRF "v10"
'*' denotes best ucast next-hop
'*' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%string' in via output denotes VRF <string>
10.220.1.0/24, ubest/mbest: 1/0
   *via 10.10.0.1%default, [200/0], 03:01:42, bgp-65084, internal, tag 65091, segid: 153412 tunnelid: 0xa0a0001 encap: VXLAN
10.220.2.0/24, ubest/mbest: 1/0
   *via 10.10.0.1%default, [200/0], 03:01:42, bgp-65084, internal, tag 65091, segid: 153412 tunnelid: 0xa0a0001 encap: VXLAN
90.1.1.0/24, ubest/mbest: 1/0
   *via 10.10.0.1%default, [200/0], 03:06:33, bgp-65084, internal, tag 65092, segid: 153412 tunnelid: 0xa0a0001 encap: VXLAN
172.16.10.0/24, ubest/mbest: 1/0, attached
   *via 172.16.10.1, vlan2310, [0/0], 03:23:02, direct, tag 12345
172.16.10.1/32, ubest/mbest: 1/0, attached
   *via 172.16.10.1, vlan2310, [0/0], 03:23:02, local, tag 12345
172.16.10.11/32, ubest/mbest: 1/0, attached
   *via 172.16.10.11, vlan2310, [190/0], 03:20:45, hmm
ndfc-leaf1#
Default

```

The routing table on the on-premises leaf switch shows that the reachable subnets are:

- **AWS:** 10.220.0.0/16
- **Azure:** 10.220.0.0/16

Step 3

Connect to the Cloud Network Controller deployed on AWS and navigate to **Application Management > VRFs**, and verify that you can see the Azure and NDFC VRFs.

The screenshot displays the Cisco Cloud Network Controller (AWS) interface. The main view is titled 'VRFs Leak Routes' and contains a table of VRF configurations. The table has the following columns: Health, Name, EPGs, Cloud Context Profiles, Regions, VPCs, Routers, and Endpoints. The table lists 15 VRFs, all of which are in a 'Healthy' state. The 'aws10 : VPCs' VRF is highlighted, and a detailed view of this VRF is shown on the right. This view includes a search bar, a list of VPCs (aws10 10.220.0.0/16), and a summary of cloud resources and application management settings.

Health	Name	EPGs	Cloud Context Profiles	Regions	VPCs	Routers	Endpoints
Healthy	aws-ctrl infra	0	0	0	0	0	0
Healthy	aws10 Internal dcrn-default-tn	0	1	1	1	1	2
Healthy	azure10 Internal dcrn-default-tn	0	1	1	1	1	0
Healthy	copy common	0	0	0	0	0	0
Healthy	default common	0	0	0	0	0	0
Healthy	inf mgmt	0	0	0	0	0	0
Healthy	oob mgmt	0	0	0	0	0	0
Healthy	overlay-1 Internal infra	15	1	1	1	3	12
Healthy	stretched-vrf Internal dcrn-default-tn	0	1	1	1	1	2
Healthy	v10 Internal dcrn-default-tn	0	1	1	1	1	0

The detailed view for 'aws10 : VPCs' shows the following information:

- General:** Account: dcrn-default-tn, Region: us-west-2
- Cloud Resources:** 1 Region, 4 Cloud Availability Zones, 0 Routers, 1 Security Group, 0 Instances, 2 Endpoints
- Application Management:** 0 Application Profiles, 0 EPGs, 1 Cloud Context Profile, 1 VRFs, 0 Service Graphs
- Settings:** Cloud Access Privilege: Inherited (Routing Only)

Step 4 Remaining in the Cloud Network Controller deployed on AWS, perform a verification on the route table view.

Verify the Configurations

The image displays two screenshots of the AWS Management Console for VPC aws10, showing the configuration of subnets and route tables for CIDR Block 10.220.0.0/16.

Top Screenshot: Shows the 'Subnets for CIDR Block 10.220.0.0/16' view. The 'Route Table Settings' section shows a route table named 'aws10-egress' with the following entries:

Destination Address *	Next Hop
172.16.10.0/24	tgw- Hub Network
90.1.1.0/24	tgw- Hub Network
10.220.0.0/16	local

Bottom Screenshot: Shows the same 'Subnets for CIDR Block 10.220.0.0/16' view. The 'Route Table Settings' section shows the same route table 'aws10-egress' with the following entries:

Destination Address *	Next Hop
172.16.10.0/24	tgw- Hub Network
90.1.1.0/24	tgw- Hub Network
10.220.0.0/16	local

Step 5 In the AWS console, perform a verification on the route table view.

The screenshot displays the AWS Management Console interface for a route table. The breadcrumb navigation shows 'VPC > Route tables > rtb-... / routetable-[aws10:egress]'. A notification banner at the top states 'You can now check network connectivity with Reachability Analyzer' with a 'Run Reachability Analyzer' button. The 'Details' section shows the route table ID, main status (No), and VPC information. Below this, the 'Routes' tab is active, displaying a table of routes.

Destination	Target	Status	Propagated
10.220.0.0/16	local	Active	No
90.1.1.0/24	tgw-...	Active	No
172.16.10.0/24	tgw-...	Active	No

Step 6 Connect to the Cloud Network Controller deployed on Azure and navigate to **Application Management > VRFs**, and confirm that you can see the AWS and NDFC VRFs:

Verify the Configurations

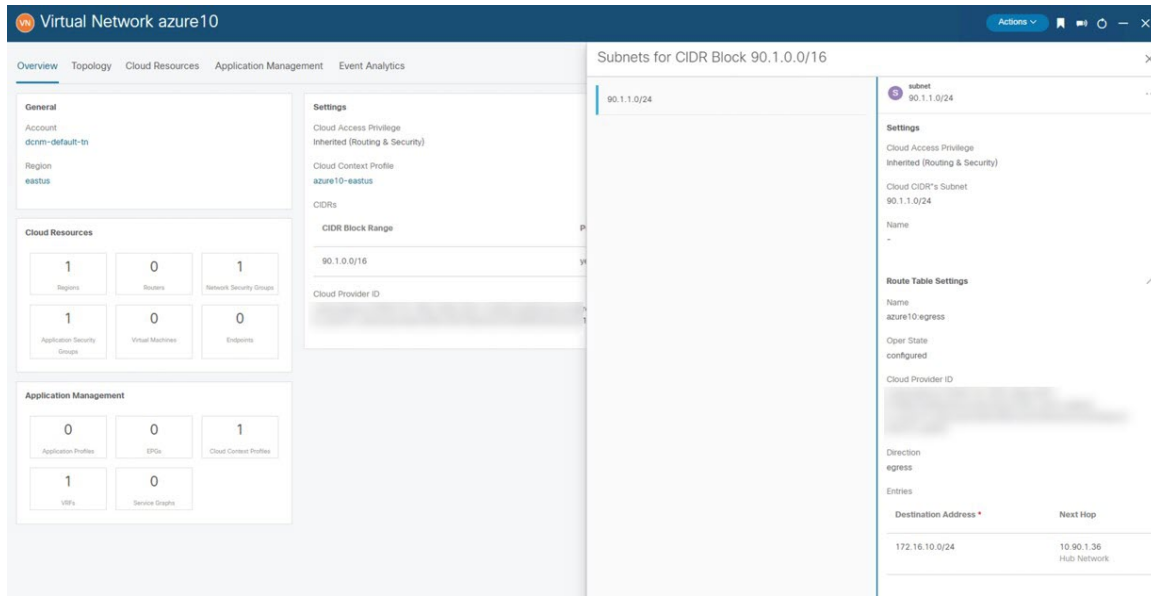
The screenshot displays the Cisco Cloud Network Controller (Azure) interface. The left sidebar contains navigation options: Dashboard, Topology, Cloud Resources, Application Management, Tenants, Application Profiles, EPGs, Contracts, Filters, VRFs, Services, Cloud Context Profiles, External Networks, Operations, Infrastructure, and Administrative. The main content area shows the 'VRFs' page with a table of VRFs and their associated resources.

Health	Name	EPGs	Application Management	Cloud Context Profiles	Regions	Virtual Networks	Routers	Endpoints
Healthy	ave-ctrl infra	0	0	0	0	0	0	0
Healthy	aws10 Internal msc-sea001 dcrnm-default-tn	0	1	1	1	0	0	0
Healthy	azure10 Internal msc dcrnm-default-tn	0	1	1	1	0	0	0
Healthy	copy common	0	0	0	0	0	0	0
Healthy	default-vrf common	0	0	0	0	0	0	0
Healthy	inb mgmt	0	0	0	0	0	0	0
Healthy	oob mgmt	0	0	0	0	0	0	0
Healthy	overlay-1 Internal infra	12	1	1	1	2	10	
Healthy	stretched-vrf Internal msc dcrnm-default-tn	0	1	1	1	0	0	0
Healthy	v10 Internal msc-sea001 dcrnm-default-tn	0	1	1	1	0	0	0

The second screenshot shows the 'azure10 : Virtual Networks' overview page. The left sidebar is the same as the first screenshot. The main content area shows the 'Virtual Networks' page for 'azure10'. The overview card displays the following information:

- Health: Healthy
- General: Account dcrnm-default-tn, Region eastus
- Cloud Resources: 1 Region, 0 Routers, 1 Network Security Groups, 1 Application Security Groups, 0 Virtual Machines, 0 Endpoints
- Application Management: 0 Application Profiles, 0 EPGs, 1 Cloud Context Profiles, 1 VRFs, 0 Service Graphs
- Settings: Cloud Access Privilege Inherited (Routing & Security)

Step 7 Remaining in the Cloud Network Controller deployed on Azure, navigate to **Cloud Resources > Virtual Networks**, then click the `azure10` VNet and use the information in the Overview page for additional verifications.



Virtual Network azure10

Overview Topology Cloud Resources Application Management Event Analytics

General

Account
dcom-default-tn

Region
eastus

Cloud Resources

Regions: 1, Routers: 0, Network Security Groups: 1

Application Security Groups: 1, Virtual Machines: 0, Endpoints: 0

Application Management

Application Profiles: 0, EPGs: 0, Cloud Connect Profiles: 1

VNFs: 1, Service Graphs: 0

Settings

Cloud Access Privilege
Inherited (Routing & Security)

Cloud Context Profile
azure10-eastus

CIDRs

CIDR Block Range
90.1.0.0/16

Cloud Provider ID

Subnets for CIDR Block 90.1.0.0/16

90.1.1.0/24

subnet 90.1.1.0/24

Settings

Cloud Access Privilege
Inherited (Routing & Security)

Cloud CIDR's Subnet
90.1.1.0/24

Name
-

Route Table Settings

Name
azure10_egress

Oper State
configured

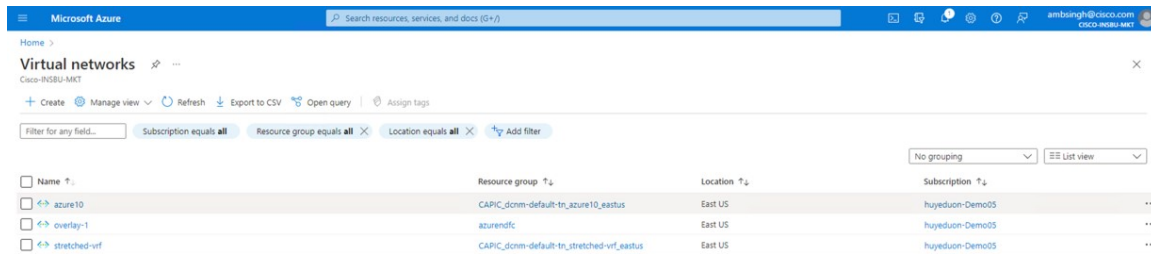
Cloud Provider ID

Direction
egress

Entries

Destination Address *	Next Hop
172.16.10.0/24	10.90.1.36 Hub Network

Step 8 In the Azure console, perform additional verifications.



Microsoft Azure

Search resources, services, and docs (G+)

Home >

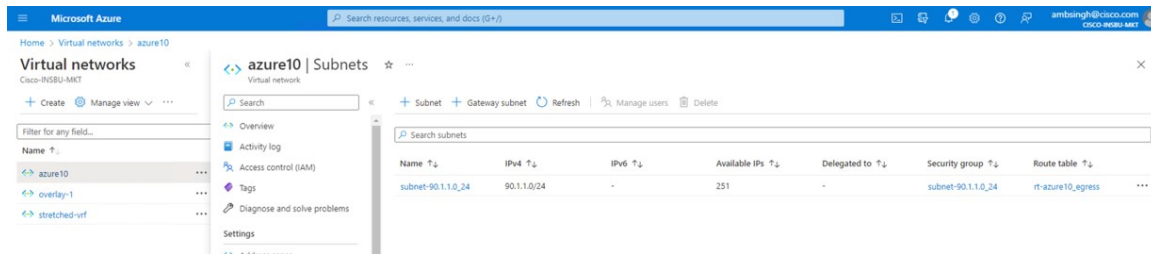
Virtual networks

Cisco-IN8U-MKT

+ Create Manage view Refresh Export to CSV Open query Assign tags

Filter for any field... Subscription equals all Resource group equals all Location equals all Add filter

Name ↑	Resource group ↑	Location ↑	Subscription ↑
azure10	CAPIC_dcom-default-tn_azure10_eastus	East US	huyeduon-Demo05
overlay-1	azurendfc	East US	huyeduon-Demo05
stretched-vrf	CAPIC_dcom-default-tn_stretched-vrf_eastus	East US	huyeduon-Demo05



Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual networks > azure10

Virtual networks

Cisco-IN8U-MKT

+ Create Manage view

Filter for any field...

azure10 | Subnets

Virtual network

+ Subnet + Gateway subnet Refresh Manage users Delete

Search subnets

Name ↑	IPv4 ↑	IPv6 ↑	Available IPs ↑	Delegated to ↑	Security group ↑	Route table ↑
subnet-90.1.1.0_24	90.1.1.0/24	-	251	-	subnet-90.1.1.0_24	rt-azure10_egress

