

# Apstra DCI DEMO

## 3-Stage Clos, 5-Stage Clos, DCI



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## Document Control

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### Change Authority:

### Revision History:

Version Number	Date Issued	Status	Reason for Change
1.0	08 March 2021	Apstra Installation, Apstra Configurations, DC1, DC2, CORE MPLS, DC1 Connectivity, Remote VTEPs, Security and Virtual Networks, Configlets, Time Voyager, Maintenance Mode, Server Bond, connectivity tests	First Beta
1.1	26 March 2021	Updated Topology, KVM automation script	First Official version
2.1	20 May 2021	Update Interfaces and IP to KVM default bridge	

## Document Guidance and Purpose

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This document provides some basic configuration examples for lab purposes only in order to help you get started with the Apstra Intent Based-Networking. All the Apstra' configurations shown here are based on the official documentation. You can find all the official information and documentation here: <https://portal.apstra.com/docs/guides.html>

**It does not intend to cover any best practice and/or production configuration.**

Following this document, you will be able to configure:

- 3-Stage Clos with ESI on Data Center 1
- 5-Stage Clos with 2 PODs on Data Center 2
- DC1 Type-2 and Type-5 connectivity through a basic MPLS Core using OTT method

You can find a summary of the content below:

- EVE-NG Information
- Create Resources (ASN, VNI and IP Pool)
- Create External Routers (DC1 and DC2 – EBGP connectivity to your MPLS Core)
- Create OffBox Agents (Spines, Leafs and Borderleafs)
- Create Logical Devices

- Create Interface Maps
- Create Racks
- Create Templates
- Create Blueprints (DC1 and DC2)
- Configure Blueprints
- Configure Remote EVPN Gateways (Enabling DCI connectivity)
- Create Security Zones (Customer 1 and 2 VRFs)
- Create Virtual Networks
- Create Configlets
- Time Voyager
- IBA Probe (Drain Traffic)
- Drain Leaf Device
- Device Remove
- Reverting Change
- Connectivity Tests
- Server Bonding Configuration – EVE-NG (**For KVM the automation script will configure it automatically**)

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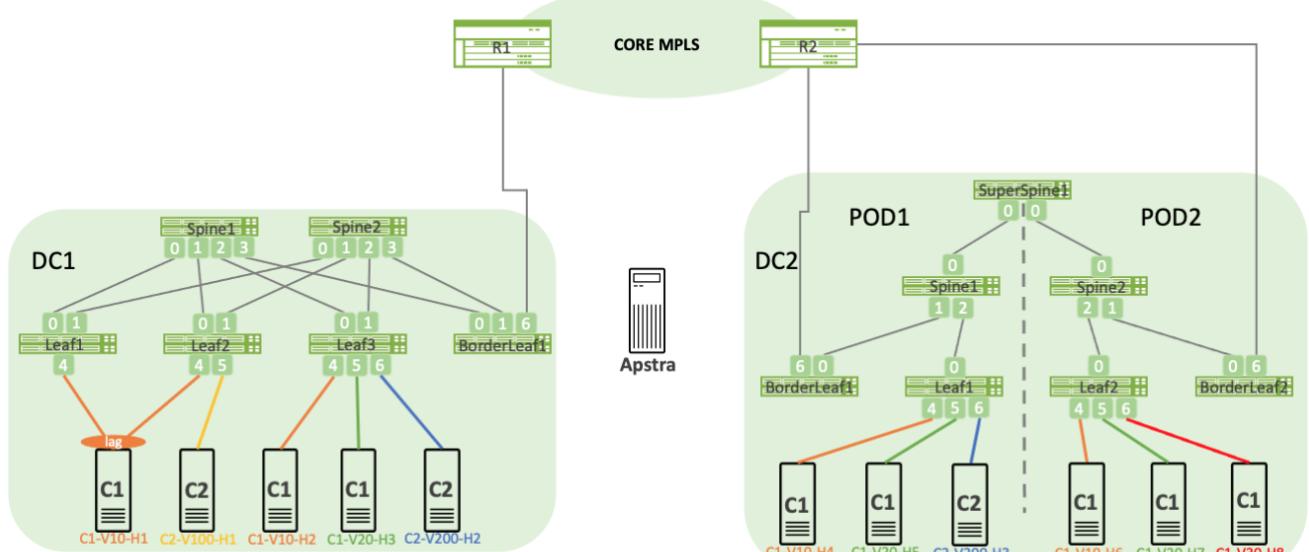
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## 1. Device Version

Model	Role	Version
Juniper vQFX	Spine, Leaf and Superspine	18.4R1.9 – EVE-NG
Juniper vQFX	Core MPLS	20.2R1.10 – KVM Topology
Juniper vMX	Core MPLS	20.4R1.12
EVE-NG	EVE-NG-PRO	3.0.1-17
Apstra	Apstra Server	3.3.0

## 2. Topology



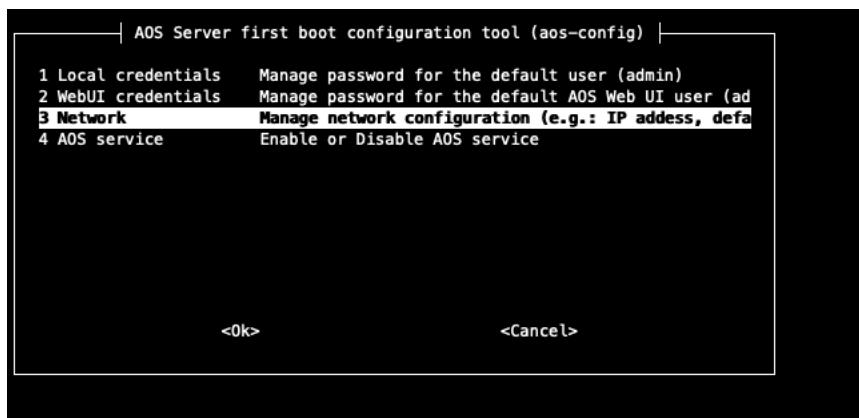
Name	IP	User/Password
DC1-Spine1	192.168.122.215/24	lab/lab123 – root/juniper123
DC1-Spine2	192.168.122.216/24	lab/lab123 – root/juniper123
DC1-Leaf1	192.168.122.217/24	lab/lab123 – root/juniper123
DC1-Leaf2	192.168.122.218/24	lab/lab123 – root/juniper123
DC1-Leaf3	192.168.122.219/24	lab/lab123 – root/juniper123
DC1-BorderLeaf1	192.168.122.225/24	lab/lab123 – root/juniper123
DC2-Spine1	192.168.122.220/24	lab/lab123 – root/juniper123
DC2-Spine2	192.168.122.221/24	lab/lab123 – root/juniper123
DC2-Leaf1	192.168.122.222/24	lab/lab123 – root/juniper123
DC2-Leaf2	192.168.122.223/24	lab/lab123 – root/juniper123
DC2-BorderLeaf1	192.168.122.226/24	lab/lab123 – root/juniper123
DC2-BorderLeaf2	192.168.122.227/24	lab/lab123 – root/juniper123
DC2-SuperSpine	192.168.122.224/24	lab/lab123 – root/juniper123
R1	192.168.122.176/24	lab/lab123 – root/juniper123
R2	192.168.122.177/24	lab/lab123 – root/juniper123
Apstra	192.168.122.180/24	admin/admin

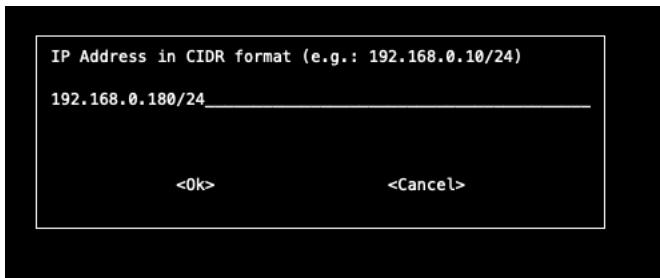
### 3. Apstra Installation

Please check the link below to configure your Apstra Server:  
[https://portal.apstra.com/docs/configure\\_aos.html](https://portal.apstra.com/docs/configure_aos.html)

- **Initial user/password**
  - admin/admin
- **New cli password for user “admin”**
  - Labapstrajuniper2021!
- **web password**
  - admin/admin

Go to Apstra via console (# **virsh console aos\_server\_3\_3 - KVM** ) , configure the network, change the password and restart the service





## 4. KVM Topology – Recommended

For KVM topology please visit the link below for further instructions and to download the scripts to build the topology.

[https://github.com/gilbertorgit/jnpr\\_apstra\\_kvm](https://github.com/gilbertorgit/jnpr_apstra_kvm)

## 5. EVE-NG

This document is not intended to be used as a support for installing EVE-NG, as implies that the user has this prerequisite.

Once you have installed your server you can load the lab template “**DC\_Apstra\_Topology**”. You will also have to download your own Apstra, vMX , vQFX, etc, images.

For more information about juniper images:

<https://www.eve-ng.net/index.php/documentation/howtos/>

Below is how I have configured the images directories and templates

### Apstra Template with KVM enabled

```
root@eve-ng:~# cat /opt/unetlab/html/includes/custom_templates.yml
---
custom_templates:
  - name: generic
    listname: generic template
  - name: Apstra
    listname: Apstra
...
```

```
root@eve-ng:~# cat /opt/unetlab/html/templates/intel/Apstra.yml
---
type: qemu
description: Apstra Juniper
name: Apstra
cpulimit: 8
icon: Server.png
cpu: 8
ram: 16384
ethernet: 1
console: telnet
shutdown: 1
qemu_arch: x86_64
qemu_version: 4.1.0
qemu_nic: virtio-net-pci
qemu_options: -enable-kvm -cpu host
```

```
eth_format: eth{0}
...
```

## Directories Images

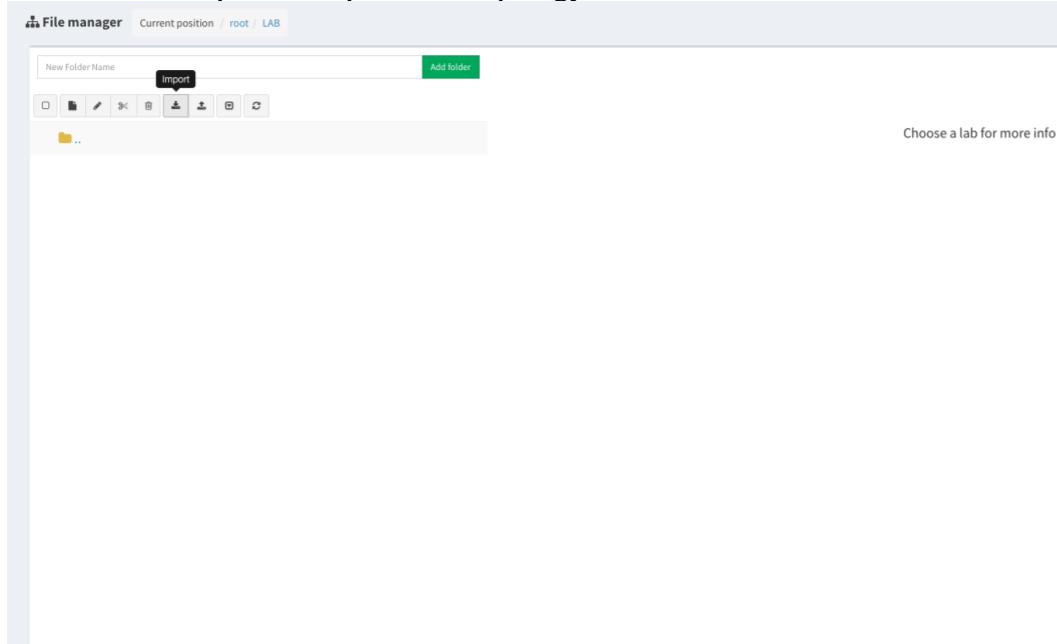
```
### vMX
root@eve-ng:~# ls -l /opt/unetlab/addons/qemu/vmxvcp-20.4R1.12-VCP/
total 1369480
-rw-r--r-- 1 root root 1391656960 Jan  8 19:52 virtioa.qcow2
-rw-r--r-- 1 root root     197120 Jan  8 19:53 virtiob.qcow2
-rw-r--r-- 1 root root   10485760 Jan  8 19:54 virtioc.qcow2
root@eve-ng:~# ls -l /opt/unetlab/addons/qemu/vmxvfp-20.4R1.12-VFP/
total 2390020
-rw-r--r-- 1 root root 2447376384 Jan  8 19:54 virtioa.qcow2

### vQFX
root@eve-ng:~# ls -l /opt/unetlab/addons/qemu/vqfxre-10K-F-18.4R1.9/
total 536772
-rw-r--r-- 1 root root 549650432 Feb 11 17:31 hda.qcow2
root@eve-ng:~# ls -l /opt/unetlab/addons/qemu/vqfxpfe-10K-F-18.4R1.9/
total 1866500
-rw-r--r-- 1 root root 1911291904 Feb 11 17:39 hda.qcow2

### vRR
root@eve-ng:~# ls -l /opt/unetlab/addons/qemu/junipervrr-19.4R2.6/
total 2458244
-rw-r--r-- 1 root root 2516844544 Jun 19 2020 virtioa.qcow2
-rw-r--r-- 1 root root     393216 Jun 19 2020 virtiob.qcow2

### Apstra
root@eve-ng:~# ls -l /opt/unetlab/addons/qemu/Apstra-3-3-0/
total 2420612
-rw-r--r-- 1 root root 2478702592 Feb  9 18:02 hda.qcow2
```

- Go to import and upload the topology



## 6. Resources

### 6.1. ASN Pool

Go to -> Resources -> ASN Pools -> +Create ASN Pool

Pool Name	Total Usage	Range Usage	Status	Tags	Actions
DC1-ASN-POOL	4%	4%	100 - 199 IN USE		
DC2-ASN-POOL	7%	7%	200 - 299 IN USE		
Private-64512-65534	0%	0%	64512 - 65534 NOT IN USE	default	
Private-4200000000-4294967294	0%	0%	4200000000 - 4294967294 NOT IN USE	default	

Add the ASN Pools as shown below

Name	Ranges
DC1-ASN-POOL	100-199
DC2-ASN-POOL	200-299

#### Edit ASN Pool

Name \*

Tags

Ranges \*

You can see the result below:

Pool Name	Total Usage	Range Usage	Status	Tags	Actions			
DC1-ASN-POOL	4%	4%	100 - 199	<span style="background-color: #2e7131; color: white;">IN USE</span>				
DC2-ASN-POOL	7%	7%	200 - 299	<span style="background-color: #2e7131; color: white;">IN USE</span>				
Private-64512-65534	0%	0%	64512 - 65534	<span style="background-color: #333; color: white;">NOT IN USE</span>				
Private-4200000000-4294967294	0%	0%	4200000000 - 4294967294	<span style="background-color: #333; color: white;">NOT IN USE</span>				

## 6.2. VNI Pool

Go to -> Resources -> VNI Pools -> +Create VNI Pool

Pool Name	Total Usage	Range Usage	Status	Tags	Actions			
Default-10000-20000	0.02%	0.02%	10000 - 20000	<span style="background-color: #2e7131; color: white;">IN USE</span>				
LAB-VNI-POOL	0.25%	0.25%	5000 - 7000	<span style="background-color: #2e7131; color: white;">IN USE</span>				

Add the VNI Pool as shown below

Name	Ranges
LAB-VNI-POOL	5000-7000

## Edit VNI Pool

**Name \***

**Tags**

**Ranges \***

Update

You can see the result below:

+ Create VNI Pool

Query: All
1-2 of 2

Pool Name	Total Usage	Range Usage	Status	Tags	Actions
Default-10000-20000	0.02%	0.02%	IN USE	default	<span>⋮</span>
LAB-VNI-POOL	0.25%	0.25%	IN USE		<span>⋮</span>

## 6.3. IP Pool

Go to -> Resources -> IP Pools -> +Create IP Pool

+ Create IP Pool

Query: All
1-17 of 17

Pool Name	Total Usage	Per Subnet Usage	Status	Tags	Actions
DC1-EXTERNAL-ROUTER	0.76%	0.76%	IN USE		<span>⋮</span>
DC1-LEAF-LOOPBACK	4.69%	4.69%	IN USE		<span>⋮</span>
DC1-SPINE-LEAF	1.56%	1.56%	IN USE		<span>⋮</span>
DC1-SPINE-LOOPBACK	1.56%	1.56%	IN USE		<span>⋮</span>
DC1-VIRTUAL-LEAF-LOOPBACK	0%	0%	NOT IN USE		<span>⋮</span>
DC2-EXTERNAL-ROUTER	1.56%	1.56%	IN USE		<span>⋮</span>

Add the IP Pools as shown below

Name	Subnets
------	---------

<b>DC1-EXTERNAL-ROUTER</b>	10.1.1.0/24
<b>DC1-LEAF-LOOPBACK</b>	10.20.30.0/24
<b>DC1-SPINE-LEAF</b>	10.10.0.0/22
<b>DC1-SPINE-LOOPBACK</b>	10.20.31.0/24
<b>DC1-VIRTUAL-LEAF-LOOPBACK</b>	10.100.100.0/24
<b>DC2-EXTERNAL-ROUTER</b>	20.2.2.0/24
<b>DC2-LEAF-LOOPBACK</b>	20.20.30.0/24
<b>DC2-SPINE-LEAF</b>	20.10.0.0/22
<b>DC2-SPINE-LOOPBACK</b>	20.20.31.0/24
<b>DC2-SPINE-SUPERSPINE</b>	20.11.0.0/22
<b>DC2-SUPERSPINE-LOOPBACK</b>	20.20.33.0/24
<b>DC2-VIRTUAL-LEAF-LOOPBACK</b>	20.100.100.0/24

### Edit IP Pool

Name \*

Tags

Subnets \*

[+ Add a subnet](#)

Update

You can see the result below:

Pool Name	Total Usage	Per Subnet Usage	Status	Tags	Actions
DC1-EXTERNAL-ROUTER	<div style="width: 0.78%;">0.78%</div>	<div style="width: 0.78%;">0.78%</div>	10.1.1.0/24	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC1-LEAF-LOOPBACK	<div style="width: 4.69%;">4.69%</div>	<div style="width: 4.69%;">4.69%</div>	10.20.30.0/24	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC1-SPINE-LEAF	<div style="width: 1.56%;">1.56%</div>	<div style="width: 1.56%;">1.56%</div>	10.10.0.0/22	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC1-SPINE-LOOPBACK	<div style="width: 1.56%;">1.56%</div>	<div style="width: 1.56%;">1.56%</div>	10.20.31.0/24	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC1-VIRTUAL-LEAF-LOOPBACK	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	10.100.100.0/24	<span style="background-color: #333; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">NOT IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-EXTERNAL-ROUTER	<div style="width: 1.56%;">1.56%</div>	<div style="width: 1.56%;">1.56%</div>	20.2.2.0/24	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-LEAF-LOOPBACK	<div style="width: 4.69%;">4.69%</div>	<div style="width: 4.69%;">4.69%</div>	20.20.30.0/24	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-SPINE-LEAF	<div style="width: 0.78%;">0.78%</div>	<div style="width: 0.78%;">0.78%</div>	20.10.0.0/22	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-SPINE-LOOPBACK	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	20.20.31.0/24	<span style="background-color: #333; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">NOT IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-SPINE-SUPERSPINE	<div style="width: 0.39%;">0.39%</div>	<div style="width: 0.39%;">0.39%</div>	20.11.0.0/22	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-SUPERSPINE-LOOPBACK	<div style="width: 0.39%;">0.39%</div>	<div style="width: 0.39%;">0.39%</div>	20.20.33.0/24	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
DC2-VIRTUAL-LEAF-LOOPBACK	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	20.100.100.0/24	<span style="background-color: #333; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">NOT IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
Private-10.0.0.8	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	10.0.0.0/8	<span style="background-color: #333; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">NOT IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
Private-172.16.0.0/12	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	172.16.0.0/12	<span style="background-color: #333; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">NOT IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
Private-192.168.0.0/16	<div style="width: 1.95%;">1.95%</div>	<div style="width: 1.95%;">1.95%</div>	192.168.0.0/16	<span style="background-color: #0070C0; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>
TESTNET-203.0.113.0/24	<div style="width: 0%;">0%</div>	<div style="width: 0%;">0%</div>	203.0.113.0/24	<span style="background-color: #333; color: white; border-radius: 50%; padding: 5px 10px; font-size: small;">NOT IN USE</span>	<span style="font-size: small;">Edit</span> <span style="font-size: small;">Delete</span> <span style="font-size: small;">Details</span>

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## 6.4. External System

Go to -> External Systems -> External Routers -> +Create External Router

Pool Name	Total Usage	Per Subnet Usage	Status	Tags	Actions
DC1-EXTERNAL-ROUTER	0.78%	0.78%	IN USE		
DC1-LEAF-LOOPBACK	4.49%	4.49%	IN USE		
DC1-SPINE-LEAF	1.56%	1.56%	IN USE		
DC1-SPINE-LOOPBACK	1.56%	1.56%	IN USE		
DC1-VIRTUAL-LEAF-LOOPBACK	0%	0%	NOT IN USE		
DC2-EXTERNAL-ROUTER	1.56%	1.56%	IN USE		

Add the External Routers as shown below:

Name	IPv4 Loopback Address	ASN
DC1-R1	100.100.11.1	65002
DC2-R2	100.100.12.1	65002

### Edit External Router

Name \*: DC1-R1

IPv4 Loopback Address \*: 100.100.11.1

IPv6 Loopback Address:

ASN \*: 65002

**Update**

You can see the result below:

Name	IPv4 Loopback Address	IPv6 Loopback Address	ASN	Actions
DC1-R1	100.100.11.1		65002	
DC2-R2	100.100.12.1		65002	
dualstack_example_router2	198.51.100.2	fc01:a05:198:51:100::2	65533	
example_router1	198.51.100.1		65534	

## 7. Agents

### 7.1. OffBox Agents

Go to -> Devices -> Agents -> OFFBOX -> +**Create Offbox Agent(s)**

Add the Agents as shown below:

<b>Device Addresses</b>	<b>Platform</b>	<b>Username</b>	<b>Password</b>
192.168.122.215	Junos	lab	lab123
192.168.122.216	Junos	lab	lab123
192.168.122.217	Junos	lab	lab123
192.168.122.218	Junos	lab	lab123
192.168.122.219	Junos	lab	lab123
192.168.122.220	Junos	lab	lab123
192.168.122.221	Junos	lab	lab123
192.168.122.222	Junos	lab	lab123
192.168.122.223	Junos	lab	lab123
192.168.122.224	Junos	lab	lab123
192.168.122.225	Junos	lab	lab123
192.168.122.226	Junos	lab	lab123
192.168.122.227	Junos	lab	lab123

\*\*\*You can also add as a range: **192.168.122.215-192.168.122.227**

### 7.2. Managed Devices

Now go to Devices -> Managed Devices -> Select **ALL** and Click **Acknowledge selected systems**

The screenshot shows the Juniper QOS interface under the 'Managed Devices' section. On the left sidebar, 'Managed Devices' is highlighted. The main area displays a table of 13 selected Juniper vQFX devices. The table columns are: Device Key, Device Profile, Operation Mode, Management IP, AOS Version, Hostname, Location, OS, Acknowledged?, State, Blueprint, and Comms. All devices listed have 'FULL CONTROL' in the Operation Mode column and 'Junos' in the OS column. Most devices are in 'IS-ACTIVE' state, except for one in 'DC2'. Blueprints DC1 and DC2 are represented by green icons.

Device Key	Device Profile	Operation Mode	Management IP	AOS Version	Hostname	Location	OS	Acknowledged?	State	Blueprint	Comms
500000010000	Juniper vQFX	FULL CONTROL	192.168.0.215	AOS_3.3.0c_OB.26	spine1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC1	green
500000020000	Juniper vQFX	FULL CONTROL	192.168.0.216	AOS_3.3.0c_OB.26	spine2		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC1	green
500000050000	Juniper vQFX	FULL CONTROL	192.168.0.217	AOS_3.3.0c_OB.26	jnpr-esi-leaf-001-leaf1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC1	green
500000040000	Juniper vQFX	FULL CONTROL	192.168.0.218	AOS_3.3.0c_OB.26	jnpr-esi-leaf-001-leaf2		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC1	green
500000030000	Juniper vQFX	FULL CONTROL	192.168.0.219	AOS_3.3.0c_OB.26	jnpr-single-leaf-001-leaf1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC1	green
5000000180000	Juniper vQFX	FULL CONTROL	192.168.0.220	AOS_3.3.0c_OB.26	spine001-001-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green
5000000200000	Juniper vQFX	FULL CONTROL	192.168.0.221	AOS_3.3.0c_OB.26	spine002-001-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green
50000001C0000	Juniper vQFX	FULL CONTROL	192.168.0.222	AOS_3.3.0c_OB.26	leaf001-002-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green
5000000210000	Juniper vQFX	FULL CONTROL	192.168.0.223	AOS_3.3.0c_OB.26	leaf002-002-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green
5000000250000	Juniper vQFX	FULL CONTROL	192.168.0.224	AOS_3.3.0c_OB.26	spine001-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green
5000000260000	Juniper vQFX	FULL CONTROL	192.168.0.225	AOS_3.3.0c_OB.26	jnpr-border-leaf-001-leaf1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC1	green
5000000280000	Juniper vQFX	FULL CONTROL	192.168.0.226	AOS_3.3.0c_OB.26	leaf001-001-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green
50000002A0000	Juniper vQFX	FULL CONTROL	192.168.0.227	AOS_3.3.0c_OB.26	leaf002-001-1		Junos 18.4R2-S2.3	✓	IS-ACTIVE	DC2	green

## 8. Logical Devices

Go to Design -> Logical Devices -> +Create Logical Device

Create the Logical Devices as shown below:

Start creation of a new logical device by filling the form. Alternatively, you can [Import Logical Device](#) from JSON.

Name \*

### PANEL #1

TOTAL

PORT GROUPS

Connected to ▾

**8 ports**  
8 assigned • 0 available

**4 x 10 Gbps**  
Spine

**2 x 10 Gbps**  
Peer

**2 x 10 Gbps**  
External Router



#### Edit port group

Number of ports \*

4

Speed \*

10 Gbps

Connected To \*

- Superspine
- Spine
- Leaf
- Access
- L2 Server
- L3 Server
- External Router
- Peer
- Unused

Cancel



Update Port Group

Add Panel

Create Another?

Create

## Edit Logical Device

Updating the logical device ports may not be allowed because it is referenced by JNPR\_vQFX\_\_AOS-7x10-Spine interface map.

Name \*

### PANEL #1

TOTAL

PORT GROUPS

Connected to ▾

**7 ports**  
7 assigned • 0 available

**5 x 10 Gbps**  
Superspine • Leaf

**2 x 10 Gbps**  
External Router



#### Edit port group

Number of ports \*

5

Speed \*

10 Gbps

Connected To \*

- Superspine
- Spine
- Leaf
- Access
- L2 Server
- L3 Server
- External Router
- Peer
- Unused

Cancel



Update Port Group

Add Panel

## Edit Logical Device

Updating the logical device ports may not be allowed because it is referenced by JNPR\_vQFX\_AOS-7x10-SuperSpine interface map.

Name \*

### PANEL #1

TOTAL

**7 ports**  
7 assigned • 0 available

PORT GROUPS

**5 x 10 Gbps**  
Spine

Connected to ▾

**2 x 10 Gbps**  
External Router



#### Edit port group

Number of ports \*

Connected To \*

- Superspine
- Spine
- Leaf
- Access
- L2 Server
- L3 Server
- External Router
- Peer
- Unused

Speed \*

10 Gbps ▾

Cancel



Update Port Group

Add Panel

## Edit Logical Device

Updating the logical device ports may not be allowed because it is referenced by JNPR\_vQFX\_10x10-Leaf interface map.

Name \*

**PANEL #1**

TOTAL	PORT GROUPS	Connected to										
10 ports 10 assigned • 0 available	<b>2 x 10 Gbps</b> Spine <b>2 x 10 Gbps</b> Peer <b>4 x 10 Gbps</b> Access • L2 Server • L3 Server <b>2 x 10 Gbps</b> External Router	Connected to ▾										
<table border="1"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> </table>			1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10			

**Edit port group**

Number of ports \*

Speed \*

Connected To \*

- Superspine
- Spine
- Leaf
- Access
- L2 Server
- L3 Server
- External Router
- Peer
- Unused

**Add Panel**

\*\*\*\*You have to select the roles and ports

You can see the result below:

Name	Capabilities	Panels Count	Ports Count	Ports Summary	Actions
JNPR-7x10-Spine	7 x 10 Gbps	1	7	JNPR-7x10-Spine <b>5 x 10 Gbps</b> Superspine • Leaf 	
JNPR-7x10-SuperSpine	7 x 10 Gbps	1	7	JNPR-7x10-SuperSpine <b>5 x 10 Gbps</b> Spine 	
JNPR-8x10-BorderLeaf	8 x 10 Gbps	1	8	JNPR-8x10-BorderLeaf <b>4 x 10 Gbps</b> Spine 	
JNPR-10x10-Leaf	10 x 10 Gbps	1	10	JNPR-10x10-Leaf <b>2 x 10 Gbps</b> Spine <b>2 x 10 Gbps</b> Peer <b>4 x 10 Gbps</b> Access • L2 Server • L3 Server <b>2 x 10 Gbps</b> External Router	

## 9. Interface Maps

Go to Design -> Logical Devices -> +Create Interface Map

Create the Logical Devices as shown below:

### Create Interface Map

Name \*

Logical device \*

Device profile \*

Map interfaces

Logical device port groups		Mapped/required number of interfaces	Device profile interfaces
Speed	Connected To		
10 Gbps	Spine	4 / 4	▶ Select interfaces
10 Gbps	Peer	2 / 2	▶ Select interfaces
10 Gbps	External Router	2 / 2	▶ Select interfaces

Interface map preview Click on interface to toggle the details



Create Another?

**Create**

## Edit Interface Map

Name \*

Logical device \*

Device profile \*

### Map interfaces

Logical device port groups		Mapped/required number of interfaces	Device profile interfaces
Speed	Connected To		
10 Gbps	Spine	2 / 2	▶ Select interfaces
10 Gbps	Peer	2 / 2	▶ Select interfaces
10 Gbps	Access • L2 Server • L3 Server	4 / 4	▶ Select interfaces
10 Gbps	External Router	2 / 2	▶ Select interfaces

### Interface map preview

Click on interface to toggle the details



Update

## Edit Interface Map

Name \*

Logical device \*

Device profile \*

Map interfaces

Logical device port groups		Mapped/required number of interfaces	Device profile interfaces
Speed	Connected To		
10 Gbps	Superspine • Leaf	5 / 5	▶ Select interfaces
10 Gbps	External Router	2 / 2	▶ Select interfaces

Interface map preview Click on interface to toggle the details



Update

## Edit Interface Map

Name \*

Logical device \*

Device profile \*

Map interfaces

Logical device port groups		Mapped/required number of interfaces	Device profile interfaces
Speed	Connected To		
10 Gbps	Spine	5 / 5	▶ Select interfaces
10 Gbps	External Router	2 / 2	▶ Select interfaces

Interface map preview Click on interface to toggle the details



Update

You can see the result below:

The screenshot shows a table listing five Juniper vQFX devices. The columns are: Name, Device Profile, Logical Device, and Actions. The devices listed are: JNPR\_vQFX-7x10-Spine, JNPR\_vQFX-7x10-SuperSpine, JNPR\_vQFX\_7x10-BorderLeaf, and JNPR\_vQFX\_10x10-Leaf. All devices are categorized under Juniper vQFX and have a logical device name matching their physical model. The Actions column contains icons for edit, delete, and refresh.

Name	Device Profile	Logical Device	Actions
JNPR_vQFX-7x10-Spine	Juniper vQFX	JNPR-7x10-Spine	
JNPR_vQFX-7x10-SuperSpine	Juniper vQFX	JNPR-7x10-SuperSpine	
JNPR_vQFX_7x10-BorderLeaf	Juniper vQFX	JNPR-8x10-BorderLeaf	
JNPR_vQFX_10x10-Leaf	Juniper vQFX	JNPR-10x10-Leaf	

## 10. Rack

### 10.1. JNPR-BORDER-LEAF

Go to Design -> Rack Types -> +Create Rack Type

Add the parameters as shown below:

Name	Description	Connectivity Type
JNPR-BORDER-LEAF	JNPR-BORDER-LEAF	L2

The dialog shows the following fields:

- Name**: JNPR-BORDER-LEAF
- Description**: JNPR-BORDER-LEAF
- Connectivity Type**: L2 (selected)

Go to -> Leafs TAB

<b>Name</b>	JNPR-BORDER-LEAF
<b>Leaf Logical Device</b>	JNPR-8X10-BorderLeaf
<b>Links per Spine</b>	1
<b>Link Speed</b>	10Gbps
<b>Redundancy Protocol</b>	None
<b>External Facing</b>	ON
<b>Links to external router</b>	1
<b>Link Speed</b>	10 Gbps

## Summary

Name *	JNPR-BORDER-LEAF
Description	JNPR-BORDER-LEAF
Connectivity Type *	<input checked="" type="radio"/> L2 <input type="radio"/> L3

## Configuration

## Preview

Leafs
Access Switches
Servers
Topology
Logical Devices

**Leaf**

Name \*: JNPR-BORDER-LEAF

Leaf Logical Device: JNPR-8x10-BorderLeaf

Links per spine (4 available) \*: 1 Link speed \*: 10 Gbps

Redundancy Protocol:  None  MLAG  ESI

External facing?

**External Link**

Links to external router (2 available) \*: 1 Link speed \*: 10 Gbps

```

graph TD
    ER[external_routers] --- JL[JNPR-BORDER-LEAF_1]
    
```

## 10.2. JNPR-SINGLE-LEAF

Go to Design -> Rack Types -> +Create Rack Type

Add the parameters as shown below:

Name	Description	Connectivity Type
JNPR-SINGLE-LEAF	JNPR-SINGLE-LEAF	L2

## Summary

Name *	JNPR-SINGLE-LEAF
Description	JNPR-SINGLE-LEAF
Connectivity Type *	<input checked="" type="radio"/> L2 <input type="radio"/> L3

Go to -> Leafs TAB

Name	JNPR-SINGLE-LEAF
Leaf Logical Device	JNPR-10X10-Leaf
Links per Spine	1
Link Speed	10Gbps

<b>Redundancy Protocol</b>	None
<b>External Facing</b>	OFF

Configuration

Leafs Access Switches Servers

**Leaf**

Name \* JNPR-SINGLE-LEAF

Leaf Logical Device \* JNPR-10x10-Leaf

Links per spine (2 available) \* Link speed \*

1 10 Gbps

Redundancy Protocol  None  MLAG  ESI

External facing?

+ Add new leaf

Preview

Topology Logical Devices

```

graph TD
    Leaf[JNPR-SINGLE-LEAF_1] --- S1[Server1_1]
    Leaf --- S2[Server2_1]
    Leaf --- S3[Server3_1]
  
```

Go to -> **Servers TAB** – Now we will create 3 Servers:

<b>Name</b>	Server1
<b>Server Count</b>	1
<b>Logical Device</b>	AOS-1x10-1
<b>***Click Add Link</b>	
<b>Name</b>	server-1-link-1
<b>Switch</b>	JNPR-SINGLE-LEAF
<b>LAG Mode</b>	No LAG
<b>Physical Link Count per leaf</b>	1
<b>Link Speed</b>	10Gbps

\*\*\* Click **Add new server group** and repeat the same process changing the parameters as shown below:

<b>Name</b>	Server2
<b>Server Count</b>	1
<b>Logical Device</b>	AOS-1x10-1
<b>***Click Add Link</b>	
<b>Name</b>	server-2-link-1
<b>Switch</b>	JNPR-SINGLE-LEAF
<b>LAG Mode</b>	No LAG
<b>Physical Link Count per leaf</b>	1
<b>Link Speed</b>	10Gbps

<b>Name</b>	Server3
<b>Server Count</b>	1
<b>Logical Device</b>	AOS-1x10-1
<b>***Click Add Link</b>	
<b>Name</b>	server-3-link-1
<b>Switch</b>	JNPR-SINGLE-LEAF
<b>LAG Mode</b>	No LAG
<b>Physical Link Count per leaf</b>	1

<b>Link Speed</b>	10Gbps
-------------------	--------

You can see the result below:

## Server1

**Leafs**   **Access Switches**   **Servers**

---

**Server**  

**Name \***  
Server1

**Server count \***  
1

**Port Channel ID Min** **Max**

0		0	
---	---	---	---

**Logical Device \***

AOS-1x10-1	
------------	---

**Link**

**Name \***  
server-1-link-1

**Switch \***  
JNPR-SINGLE-LEAF ×

**LAG Mode**

LACP (Active) <sup>?</sup>    LACP (Passive) <sup>?</sup>    Static LAG (no LACP) <sup>?</sup>    No LAG <sup>?</sup>

**Physical link count per leaf (1 available) \***  
1 ☰

**Link speed \***  
10 Gbps ×

## Server2

**Server**

**Name \***  
Server2

**Server count \***  
1

**Port Channel ID Min** 0      **Max** 0

**Logical Device \***  
AOS-1x10-1

**Link**

**Name \***  
server-2-link-1

**Switch \***  
JNPR-SINGLE-LEAF

**LAG Mode**  
 LACP (Active)  LACP (Passive)  Static LAG (no LACP)  No LAG

**Physical link count per leaf (1 available)\***  
1

**Link speed \***  
10 Gbps

### Server3

**Server**

**Name \***  
Server3

**Server count \***  
1

**Port Channel ID Min** 0      **Max** 0

**Logical Device \***  
AOS-1x10-1

**Link**

**Name \***  
server-3-link-1

**Switch \***  
JNPR-SINGLE-LEAF

**LAG Mode**  
 LACP (Active)  
 LACP (Passive)  
 Static LAG (no LACP)  
 No LAG

**Physical link count per leaf (1 available) \***  
1

**Link speed \***  
10 Gbps

### 10.3. JNPR-ESI-LEAF

Go to Design -> Rack Types -> +Create Rack Type

Add the parameters as shown below:

Name	Description	Connectivity Type
JNPR-ESI-LEAF	JNPR-ESI-LEAF	L2

**Summary**

**Name \***  
JNPR-ESI-LEAF

**Description**  
JNPR-ESI-LEAF

**Connectivity Type \***  
 L2
 L3

Go to -> Leafs TAB

<b>Name</b>	JNPR-ESI-LEAF
<b>Leaf Logical Device</b>	JNPR-10X10-Leaf
<b>Links per Spine</b>	1
<b>Link Speed</b>	10Gbps
<b>Redundancy Protocol</b>	ESI
<b>External Facing</b>	OFF

Leaf

Name *	JNPR-ESI-LEAF		
Leaf Logical Device *	JNPR-10x10-Leaf		
Links per spine (2 available) *	1	Link speed *	10 Gbps
Redundancy Protocol	<input type="radio"/> None <input type="radio"/> MLAG <input checked="" type="radio"/> ESI		
External facing?	<input checked="" type="checkbox"/> OFF		
Add new leaf			

Go to -> **Servers TAB** – Now we will create 3 Servers:

Name	Server1
<b>Server Count</b>	1
<b>Logical Device</b>	AOS-2x10-1
<b>***Click Add Link</b>	
<b>Name</b>	server-1-dual-link
<b>Attachment Type</b>	Dual-Homed
<b>Switch</b>	JNPR-ESI-LEAF
<b>LAG Mode</b>	LACP(Active)
<b>Physical Link Count per leaf</b>	1
<b>Link Speed</b>	10Gbps

\*\*\* Click **Add new server group** and repeat the same process changing the parameters as shown below:

Name	Server2
<b>Server Count</b>	1
<b>Logical Device</b>	AOS-1x10-1
<b>***Click Add Link</b>	
<b>Name</b>	server-2-link-1
<b>Switch</b>	JNPR-ESI-LEAF
<b>Attachment Type</b>	Single-Homed
<b>Peer leaf</b>	First
<b>LAG Mode</b>	No LAG
<b>Physical Link Count per leaf</b>	1
<b>Link Speed</b>	10Gbps

Name	Server3

<b>Server Count</b>	1
<b>Logical Device</b>	AOS-1x10-1
<b>***Click Add Link</b>	
<b>Name</b>	server-3-link-1
<b>Switch</b>	JNPR-ESI-LEAF
<b>Attachment Type</b>	Single-Homed
<b>Peer leaf</b>	Second
<b>LAG Mode</b>	No LAG
<b>Physical Link Count per leaf</b>	1
<b>Link Speed</b>	10Gbps

You can see the result below:

### Server1

**Server**

**Name \***

**Server count \***

**Port Channel ID Min**      **Max**

0	0
---	---

**Logical Device \***

**Link**

**Name \***

**Switch \***



**Attachment Type**

Single-Homed  Dual-Homed

**LAG Mode**

LACP (Active)  LACP (Passive)  Static LAG (no LACP)  No LAG

**Physical link count per individual switch (2 available) \***

**Link speed \***

### Server2

### Server

**Name \***  
Server2

**Server count \***  
1

**Port Channel ID Min** 0      **Max** 0

**Logical Device \***  
AOS-1x10-1

### Link

**Name \***  
server-2-link-1

**Switch \***  
JNPR-ESI-LEAF

**Attachment Type**  
 Single-Homed    Dual-Homed

**Peer Leaf**  
 First    Second

**LAG Mode**  
 LACP (Active)  LACP (Passive)  Static LAG (no LACP)  No LAG

**Physical link count per individual switch (1 available) \***  
1

**Link speed \***  
10 Gbps

## Server3

### Server

**Name \***  
Server3

**Server count \***  
1

**Port Channel ID Min** 0      **Max** 0

**Logical Device \***  
AOS-1x10-1

### Link

**Name \***  
server-3-link-1

**Switch \***  
JNPR-ESI-LEAF

**Attachment Type**  
 Single-Homed  Dual-Homed

**Peer Leaf**  
 First  Second

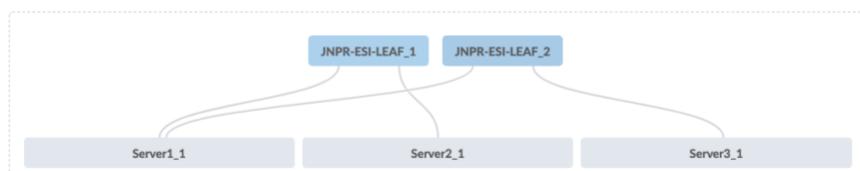
**LAG Mode**  
 LACP (Active)  LACP (Passive)  Static LAG (no LACP)  No LAG

**Physical link count per individual switch (1 available) \***  
1

**Link speed \***  
10 Gbps

[Expanded View](#) [Compact View](#)

Topology Preview



## 11. Templates

### 11.1. JNPR-3-STAGE-TEMPLATE

Go to Design -> Template -> +Create Template

Add the parameters as shown below:

Name	JNPR-3-STAGE-TEMPLATE
Type	RACK BASED
ASN Allocation Scheme(spine)	Unique
Routing Policy(import)	ALL
Overlay Control Protocol	MP-EBGP EVPN
Spine to Leaf Links Type	IPv4

Edit Template x

Common Parameters

Name *	JNPR-3-STAGE-TEMPLATE
Type *	RACK BASED

Policies

ASN Allocation Scheme (spine)	<input checked="" type="radio"/> Unique <input type="radio"/> Single
Routing Policy (import)	<input type="radio"/> Default Only <input checked="" type="radio"/> ALL
Overlay Control Protocol	<input type="radio"/> Static VXLAN <input checked="" type="radio"/> MP-EBGP EVPN
Spine to Leaf Links Type	<input checked="" type="radio"/> IPv4 <input type="radio"/> IPv6 <input type="radio"/> IPv4-IPv6

JNPR-BORDER-LEAF	1
JNPR-ESI-LEAF	1
JNPR-SINGLE-LEAF	1
Spine Logical Device	JNPR-7x10-Spine

Count

2

## Structure

## Rack Types

JNPR-BORDER-LEAF (1x10 Gbps links to spines)	<input type="text" value="1"/>	<input type="button" value="+"/>	<input type="button" value="X"/>
JNPR-ESI-LEAF (1x10 Gbps links to spines)	<input type="text" value="1"/>	<input type="button" value="+"/>	<input type="button" value="X"/>
JNPR-SINGLE-LEAF (1x10 Gbps links to spines)	<input type="text" value="1"/>	<input type="button" value="+"/>	<input type="button" value="X"/>

## Spines

## Spine Logical Device \*

JNPR-7x10-Spine	<input type="button" value="X"/>
-----------------	----------------------------------

## Count \*

2	<input type="button" value="+"/>
---	----------------------------------

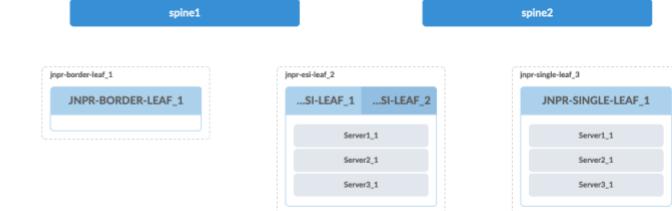
## Spine External Connectivity

## Preview

Topology   Racks   Spine Logical Device

 Expand Nodes?    Show Links?

external\_routers



## 11.2. JNPR-5-STAGE-BASE

Go to Design -> Template -> +Create Template

Add the parameters as shown below:

Name	JNPR-5-STAGE-BASE
Type	RACK BASED
ASN Allocation Scheme(spine)	Single
Routing Policy(import)	ALL
Overlay Control Protocol	MP-EBGP EVPN
Spine to Leaf Links Type	IPv4

ASN Allocation Scheme (spine)  
 Unique  Single

Routing Policy (import)  
 Default Only  ALL

Overlay Control Protocol  
 Static VXLAN  MP-EBGP EVPN

Spine to Leaf Links Type  
 IPv4  IPv6  IPv4-IPv6

JNPR-BORDER-LEAF	1
JNPR-SINGLE-LEAF	1
Spine Logical Device	JNPR-7x10-Spine
Count	1
Links Per Superspine Count	1
Link to Superspine Speed	1

The screenshot shows the Apstra DCI Demo interface. On the left, there are several configuration panels:

- Spines:** A section for adding racks, currently showing one rack named "JNPR-BORDER-LEAF\_1".
- Spine Logical Device:** Set to "JNPR-7x10-Spine".
- Count:** Set to 1.
- Spine External Connectivity:** A note: "For MP-EBGP EVPN templates, external connectivity parameters are determined by selected Racks".
- Superspine Connectivity:** Set to 1 Link per Superspine Count at 10 Gbps Speed.

On the right, the **Topology** tab is selected, showing a network diagram with a central **spine1** node connected to two leaf nodes: **JNPR-BORDER-LEAF\_1** and **JNPR-SINGLE-LEAF\_1**. The **JNPR-BORDER-LEAF\_1** node contains three server icons labeled Server1\_1, Server2\_1, and Server3\_1. An **external\_routers** node is also shown connected to the spine1.

### 11.3. JNPR-5-STAGE-TEMPLATE

Go to Design -> Template -> +Create Template

Add the parameters as shown below:

Name	JNPR-5-STAGE-TEMPLATE
Type	POD BASED
Overlay Control Protocol	MP-EBGP EVPN
Spine to Leaf Links Type	IPv4

Edit Template

Common Parameters	
Name *	JNPR-5-STAGE-TEMPLATE
Type *	POD BASED
Policies	
Spine to Superspine Links	<input checked="" type="radio"/> IPv4 <input type="radio"/> IPv6 <input type="radio"/> IPv4-IPv6
Overlay Control Protocol (override)	<input type="radio"/> Static VXLAN <input checked="" type="radio"/> MP-EBGP EVPN

JNPR-5-STAGE-BASE	2
Spine Logical Device	JNPR-7x10-Spine

**Pods**

JNPR-5-STAGE-BASE 2 3

**Add pods**

**Superspines**

Superspine Logical Device JNPR-7x10-SuperSpine

**Ports Summary**

JNPR-7x10-SuperSpine

5 x 10 Gbps Spine    2 x 10 Gbps External Router

Plane Count \* 1 Per Plane Count \* 1

External link count \* 0 External Link Speed Select...

**Preview**

**Topology**    **Pods**    **Superspine Logical Device**

Expand Nodes?  Show Links?

⚠ Superspine links are hidden

## 12. Blueprint

### 12.1. DC1

Go to Blueprints -> +Create Blueprint

Name	DC1
Template	JNPR-3-STAGE-TEMPLATE

#### Create

**Create Blueprint**

**Blueprint parameters**

Name *	DC1
Template *	JNPR-3-STAGE-TEMPLATE

**Intent preview**

Expanded View Compact View

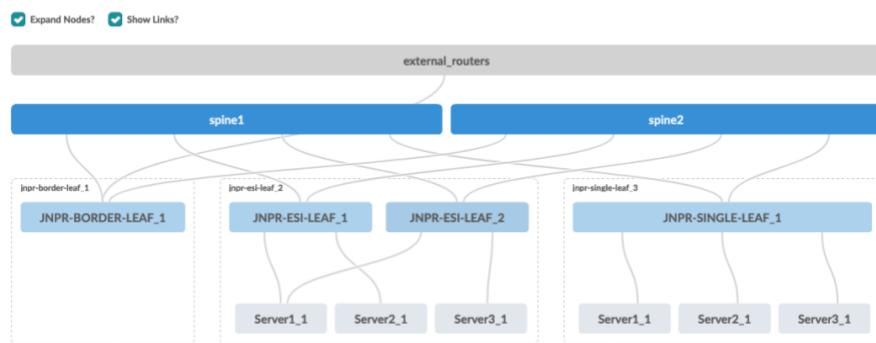
**Template Parameters**

Name	JNPR-3-STAGE-TEMPLATE
Type	RACK BASED

**Topology Preview**

Create Another? Create

## Topology Preview



## 12.1.1. Resources

Go to Blueprints -> DC1 -> Staged -> Physical -> Build -> Resources

Add the right resources as shown below:

**ASNs – Spines**

**DC1-ASN-POOL**

**ASNs – Leafs**

**DC1-ASN-POOL**

**Loopback IPs – Spines**

**DC1-SPINE-LOOPBACK**

**Loopback IPs – Leafs**

**DC1-LEAF-LOOPBACK**

**Link IPs – Spines<>Leafs**

**DC1-SPINE-LEAF**

**Link IPs – To External Router**

**DC1-EXTERNAL-ROUTER**

Go to -> ASNs – Spines -> Update assignments: Select **DC1-ASN-POOL** and **SAVE**

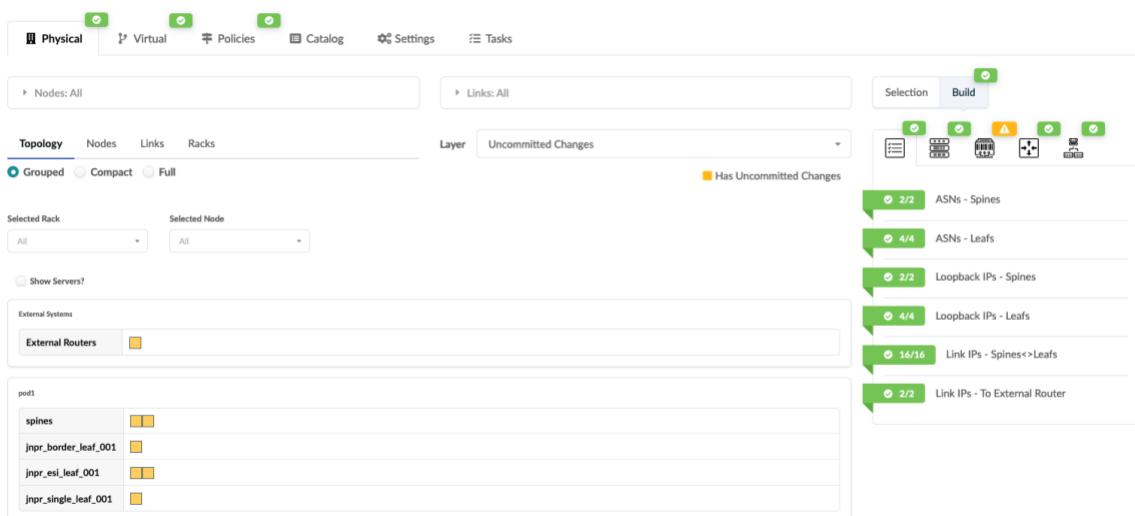
The screenshot displays two main sections of the Apstra DCI Demo interface. The top section shows the initial state where no pools are assigned. It includes a summary of resources available for assignment:

- ASN - Spines: 0/4 assigned, 0/2 not assigned
- ASN - Leafs: 0/4 assigned, 0/2 not assigned
- Loopback IPs - Spines: 0/2 assigned, 0/2 not assigned
- Loopback IPs - Leafs: 0/4 assigned, 0/2 not assigned
- Link IPs - Spines <> Leafs: 0/16 assigned, 0/2 not assigned
- Link IPs - To External Router: 0/2 assigned, 0/2 not assigned

The bottom section shows the state after assigning the ASN - Spines pool to the selected spines nodes. The summary now reflects the assigned state:

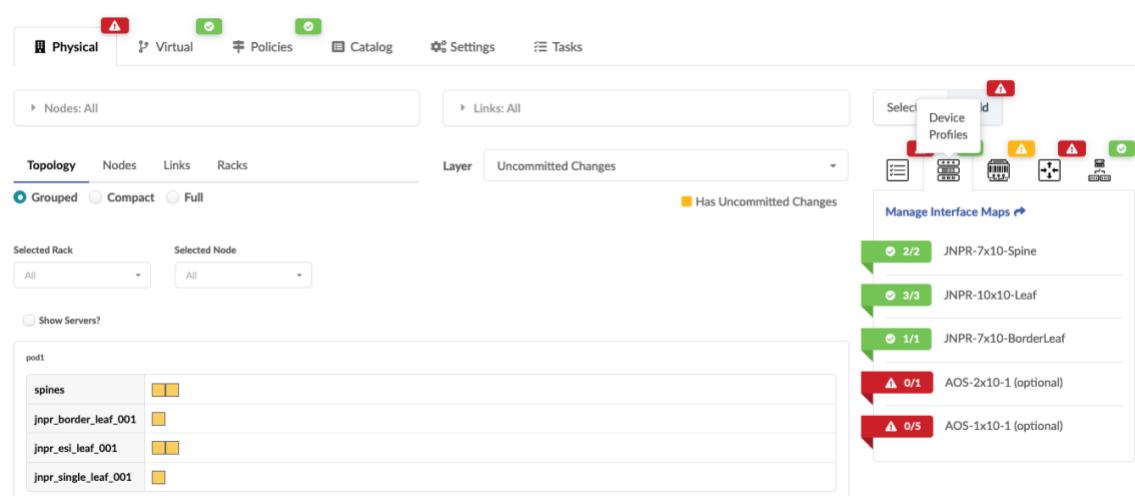
- ASN - Spines: 1/4 assigned, 0/2 not assigned
- ASN - Leafs: 0/4 assigned, 0/2 not assigned
- Loopback IPs - Spines: 0/2 assigned, 0/2 not assigned
- Loopback IPs - Leafs: 0/4 assigned, 0/2 not assigned
- Link IPs - Spines <> Leafs: 0/16 assigned, 0/2 not assigned
- Link IPs - To External Router: 0/2 assigned, 0/2 not assigned

Below the interface, a message states: "You can see the result below:"



## 12.1.2. Device Profiles

Go to Blueprints -> DC1 -> Staged -> Physical -> Build -> **Device Profiles**



Add the right resources as shown below:

<b>JNPR-7x10-Spine</b>	<b>JNPR-7x10-Leaf</b>
<b>JNPR-7x10-Leaf</b>	<b>JNPR-10x10-Leaf</b>

<b>JNPR-7x10-Spine</b>	<b>JNPR-10x10-Leaf</b>
<b>JNPR-7x10-BorderLeaf</b>	<b>JNPR-8x10-BorderLeaf</b>

Go to -> JNPR-7x10-Spine -> Change Interface Maps Assignments: **Select JNPR\_vQFX\_AOS-7x10-Spine** -> and **UPDATE ASSIGNMENTS**

The screenshot shows the Apstra DCI Demo interface. At the top, there are navigation tabs: Physical (selected), Virtual, Policies, Catalog, Settings, and Tasks. Below the tabs are search bars for Nodes: All and Links: All. A layer dropdown shows "Build: Device Profiles - JNPR-7x10-Spine". On the left, a topology view shows a rack labeled "pod1" with nodes: spines, jnpr\_border\_leaf\_001, jnpr\_esi\_leaf\_001, and jnpr\_single\_leaf\_001. The "spines" node is highlighted with a red border. On the right, a "Manage Interface Maps" panel is open for "JNPR-7x10-Spine". It shows two entries: "spine1" and "spine2", both assigned to "Juniper vQFX". A tooltip "Change interface maps assignments" points to the entries. A progress bar at the bottom indicates "1-2 of 2" completed.

### Update interface map for JNPR-7x10-Spine

This screenshot shows the "Update interface map" step. It features a table with columns: Name, Interface Map, and Device Profile. Two rows are listed: "spine1" with "JNPR\_vQFX\_\_AOS-7x10-Spine" and "Juniper vQFX", and "spine2" with "JNPR\_vQFX\_\_AOS-7x10-Spine" and "Juniper vQFX". A "Page Size: 25" dropdown is visible. At the bottom right is a large blue button labeled "Update Assignments".

This screenshot shows the updated interface map status. The "Manage Interface Maps" panel now shows a green progress bar with "2/2" completed. The "JNPR-7x10-Spine" section lists "spine1" and "spine2" with "Juniper vQFX" assigned. A progress bar at the bottom indicates "1-2 of 2" completed. A red progress bar at the bottom indicates "0/3" completed for "JNPR-10x10-Leaf". A tooltip "Change interface maps assignments" points to the entries. A progress bar at the bottom indicates "0/1" completed for "JNPR-7x10-BorderLeaf".

Repeat the process for every single one but ignore **AOS-2X10-1(Optional)** and **AOS\_1X10-1(Optional)**. You can see the result below:

Topology   Nodes   Links   Racks   Layer   Uncommitted Changes   Has Uncommitted Changes

Selected Rack   Selected Node   Show Servers?

pod1

spines	2/2
jnpr_border_leaf_001	3/3
jnpr_esi_leaf_001	1/1
jnpr_single_leaf_001	0/5

Manage Interface Maps

- JNPR-7x10-Spine (2/2)
- JNPR-10x10-Leaf (3/3)
- JNPR-8x10-BorderLeaf (1/1)
- AOS-1x10-1 (optional) (0/5)
- AOS-2x10-1 (optional) (0/1)

### 12.1.3. Device

Go to Blueprints -> DC1 -> Staged -> Physical -> Build -> Devices

Physical   Virtual   Policies   Catalog   Settings   Tasks

Nodes: All   Links: All   Selection   Build   Devices

Assigned System IDs

Topography   Nodes   Links   Racks   Layer   Uncommitted Changes   Has Uncommitted Changes

Selected Rack   Selected Node   Show Servers?

pod1

spines	2/2
jnpr_border_leaf_001	3/3
jnpr_esi_leaf_001	1/1
jnpr_single_leaf_001	0/5

Go to -> Assigned System IDs -> **Change System IDs Assignments** -> Select the right System ID for your Spines, Leaf and BorderLeaf

The screenshot shows the Apstra DCI Demo interface. At the top, there are tabs for Physical, Virtual, Policies, Catalog, Settings, and Tasks. Below the tabs, there are search fields for Nodes: All and Links: All. A navigation bar includes Topology, Nodes, Links, Racks, Layer (set to Build: System IDs), and Selection/Build buttons.

The main area displays a topology view for 'pod1' containing nodes: spines, jnpr\_border\_leaf\_001, jnpr\_esi\_leaf\_001, and jnpr\_single\_leaf\_001. To the right, a modal window titled 'Assigned System IDs' shows a list of nodes and their current system IDs, all of which are currently 'Not assigned'.

Node	System ID
spine1	Not assigned
spine2	Not assigned
jnpr_border_leaf_001_leaf1	Not assigned
jnpr_esi_leaf_001_leaf1	Not assigned
jnpr_esi_leaf_001_leaf2	Not assigned
jnpr_single_leaf_001_leaf1	Not assigned

## Assign Systems

spine1	Spine	spine1	500000010000 (192.168.0.215)		<input checked="" type="radio"/> Deploy <input type="radio"/> Ready <input type="radio"/> Drain <input type="radio"/> Undeploy
spine2	Spine	spine2	500000020000 (192.168.0.216)		<input checked="" type="radio"/> Deploy <input type="radio"/> Ready <input type="radio"/> Drain <input type="radio"/> Undeploy
jnpr_border_leaf_001_leaf1	Leaf	jnpr-border-leaf-001-leaf1	5000000260000 (192.168.0.225)		<input checked="" type="radio"/> Deploy <input type="radio"/> Ready <input type="radio"/> Drain <input type="radio"/> Undeploy
jnpr_esi_leaf_001_leaf1	Leaf	jnpr-esi-leaf-001-leaf1	500000050000 (192.168.0.217)		<input checked="" type="radio"/> Deploy <input type="radio"/> Ready <input type="radio"/> Drain <input type="radio"/> Undeploy
jnpr_esi_leaf_001_leaf2	Leaf	jnpr-esi-leaf-001-leaf2	500000040000 (192.168.0.218)		<input checked="" type="radio"/> Deploy <input type="radio"/> Ready <input type="radio"/> Drain <input type="radio"/> Undeploy
jnpr_single_leaf_001_leaf1	Leaf	jnpr-single-leaf-001-leaf1	500000030000 (192.168.0.219)		<input checked="" type="radio"/> Deploy <input type="radio"/> Ready <input type="radio"/> Drain

**Update Assignments**

You can see the result below:

Node	System ID
spine1	500000010000
spine2	500000020000
jnpr_border_leaf_001	500000026000
jnpr_esi_leaf_001	500000050000
jnpr_esi_leaf_001_leaf1	500000040000
jnpr_single_leaf_001	500000030000
jnpr_esi_leaf_001_server001	Not assigned
jnpr_esi_leaf_001_server002	Not assigned
jnpr_esi_leaf_001_server003	Not assigned
jnpr_single_leaf_001_server001	Not assigned
jnpr_single_leaf_001_server002	Not assigned
jnpr_single_leaf_001_server003	Not assigned

## 12.1.4. External Routers

Go to Blueprints -> DC1 -> Staged -> Physical -> Build -> **External Routers**

Go to -> Manage External Routers -> **Import External Router** -> Select: **DC1-R1->** and **Import External Router**

The screenshot shows the Apstra DCI interface with the following components:

- Top Navigation Bar:** Physical, Virtual, Policies, Catalog, Settings, Tasks.
- Search Bars:** Nodes: All, Links: All.
- Topology View:** Layer: Build: External Routers. Shows nodes grouped by rack (spines, leafs) and their status (Assigned or Not Assigned).
- Modal Window:** Manage External Routers. It has tabs for Import External Router and External Router Links. The External Router Links tab shows 1-1 of 1 link between router0001 and jnpr\_border\_leaf\_001\_leaf1.
- Left Panel:** Shows the pod1 structure with spines and leaf nodes.

### Import External Router from Global Catalog

The form for importing an external router is displayed:

External Router *	
DC1-R1	
Name	DC1-R1
IPv4 Loopback Address	100.100.11.1
IPv6 Loopback Address	Not assigned
ASN	65002

**Import External Router** button is present at the bottom right.

Now go to -> Actions (**Edit Links**) -> Select: **DC1-R1** -> and **Update**

The screenshot shows the Apstra DCI interface with the following components:

- Top Navigation Bar:** Physical, Virtual, Policies, Catalog, Settings, Tasks.
- Search Bars:** Nodes: All, Links: All.
- Topology View:** Layer: Build: External Routers. Shows nodes grouped by rack (spines, leafs) and their status (Assigned or Not Assigned).
- Modal Window:** Manage External Routers. It has tabs for Import External Router and External Router Links. The External Router Links tab shows 1-1 of 1 link between router0001 and jnpr\_border\_leaf\_001\_leaf1. The "Edit links" button is highlighted.
- Left Panel:** Shows the pod1 structure with spines and leaf nodes.

### Edit External Router Links

**External Router**

DC1-R1

ASN: 65002 Address: 100.100.11.1

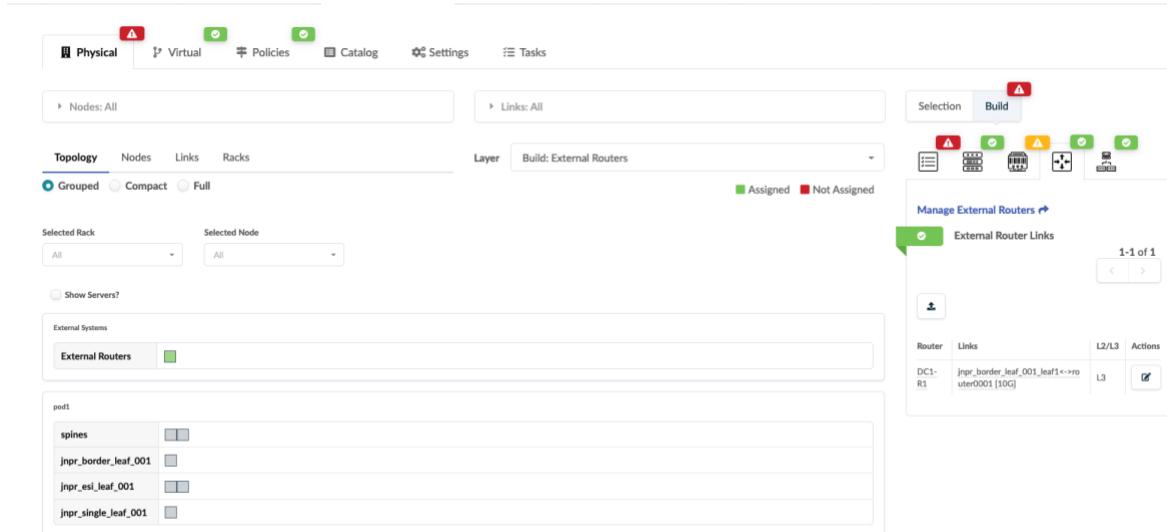
**Connectivity Type**

L2  L3

**Links**

jnpr_border_leaf_001_leaf1: xe-0/0/6	
<input type="button" value="Select..."/> <input type="button" value="Add"/>	

You can see the result below:



Now go to -> Uncommitted -> and **Commit**

Type	Action	Name
Link	ADDED	jnpr_single_leaf_001_leaf1<->jnpr_single_leaf_001_server002(single-link-2)[1]
Link	ADDED	spine1<->jnpr_esi_leaf_001_leaf2[1]
Link	ADDED	spine1<->jnpr_esi_leaf_001_leaf1[1]
Link	ADDED	spine2<->jnpr_esi_leaf_001_leaf1[1]
Link	ADDED	jnpr_esi_leaf_001_leaf2<->jnpr_esi_leaf_001_server001(dual-link)[1]
Link	ADDED	jnpr_esi_leaf_001_leaf2<->jnpr_esi_leaf_001_server003(single-link-2)[1]
Link	ADDED	jnpr_single_leaf_001_leaf1<->jnpr_single_leaf_001_server003(single-link-3)[1]
Link	ADDED	jnpr_border_leaf_001_leaf1<->router0001
Link	ADDED	spine1<->jnpr_single_leaf_001_leaf1[1]
Link	ADDED	spine2<->jnpr_single_leaf_001_leaf1[1]
Link	ADDED	jnpr_single_leaf_001_leaf1<->jnpr_single_leaf_001_server001(single-link-1)[1]
Link	ADDED	jnpr_esi_leaf_001_leaf1<->jnpr_esi_leaf_001_server001(dual-link)
Link	ADDED	spine1<->jnpr_border_leaf_001_leaf1[1]

## Add Revision Description: DC1 Basic Configuration

Commit changes from Staged to Active?



This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

DC1 Basic Configuration

**Commit**

## 12.2. DC2

Go to Blueprints -> +Create Blueprint

Name	DC2
Template	JNPR-5-STAGE-TEMPLATE

**Create**

**Create Blueprint**

**Blueprint parameters**

Name*	DC2
Template*	JNPR-5-STAGE-TEMPLATE

**Intent preview**

Expanded View    Compact View

**Template Parameters**

Name	JNPR-5-STAGE-TEMPLATE
Type	<input checked="" type="checkbox"/> POD BASED

**Topology Preview**

Expand Nodes?    Show Links?

⚠ Superspine links are hidden

Create Another?  

## 12.2.1. Resources

Go to Blueprints -> **DC2** -> Staged -> Physical -> **Build** -> **Resources**

Add the right resources as shown below:

<b>ASNs - Superspines</b>	DC2-ASN-POOL
<b>ASNs – Spines</b>	DC2-ASN-POOL
<b>ASNs – Leafs</b>	DC2-ASN-POOL
<b>Loopback IPs – Superspines</b>	DC2-SUPERSPINE-LOOPBACK
<b>Loopback IPs – Spines</b>	DC2-SPINE-LOOPBACK
<b>Loopback IPs – Leafs</b>	DC2-LEAF-LOOPBACK
<b>Link IPs – Spines&lt;&gt;Superspines</b>	DC2-SPINE-SUPERSPINE
<b>Link IPs – Spines&lt;&gt;Leafs</b>	DC2-SPINE-LEAF
<b>Link IPs – To External Router</b>	DC2-EXTERNAL-ROUTER

Go to -> ASNs – Spines -> Update assignments: Select **DC1-ASN-POOL** and **SAVE**

Nodes: All      Links: All

Topology    Nodes    Links    Racks    Pods    Layer: Build: ASNs - Superspines    Selection    Build

Selected Plane: All    Selected Pod: All    Selected Rack: All    Selected Node: All

Show Servers?

Superspine Planes: superspine\_plane1

pod1: spines  
jnrp\_border\_leaf\_001\_001  
jnrp\_single\_leaf\_001\_001

pod2: spines  
jnrp\_border\_leaf\_002\_001  
jnrp\_single\_leaf\_002\_001

Assigned    Not Assigned

Update assignments

- 0/2 ASNs - Spines
- 0/4 ASNs - Leafs
- 0/1 Loopback IPs - Superspines
- 0/2 Loopback IPs - Spines
- 0/4 Loopback IPs - Leafs
- 0/4 Link IPs - Spines<>Superspines
- 0/8 Link IPs - Spines<>Leafs
- 0/4 Link IPs - To External Router

Nodes: All      Links: All

Topology    Nodes    Links    Racks    Pods    Layer: Build: ASNs - Superspines    Selection    Build

Selected Plane: All    Selected Pod: All    Selected Rack: All    Selected Node: All

Show Servers?

Superspine Planes: superspine\_plane1

pod1: spines  
jnrp\_border\_leaf\_001\_001

Assigned    Not Assigned

1 selected

Pool Name: DC2-ASN-POOL

- 1-4 of 4
- 1 selected
- Private-4200000000-4294967294
- DC2-ASN-POOL
- DC1-ASN-POOL
- Private-64512-65534

Nodes: All      Links: All

Topology    Nodes    Links    Racks    Pods    Layer: Build: ASNs - Superspines    Selection    Build

Selected Plane: All    Selected Pod: All    Selected Rack: All    Selected Node: All

Show Servers?

Superspine Planes: superspine\_plane1

Assigned    Not Assigned

1 selected

Pool Name: DC2-ASN-POOL

- 1-1 of 1

You can see the result below:

## 12.2.2. Device Profiles

Go to Blueprints -> DC2 -> Staged -> Physical -> Build -> **Device Profiles**

Add the right resources as shown below:

**JNPR-7x10-SuperSpine**

**JNPR-7x10-Spine**

**JNPR-7x10-Leaf**

**JNPR-7x10-BorderLeaf**

**JNPR\_vQFX-7x10-SuperSpine**

**JNPR\_vQFX-7x10-Spine**

**JNPR\_vQFX-10x10-Leaf**

**JNPR\_vQFX-8x10-BorderLeaf**

Go to -> JNPR-7x10-SuperSpine -> Change Interface Maps Assignments: **Select JNPR\_vQFX\_AOS-7x10-Spine -> and UPDATE ASSIGNMENTS**

The screenshot shows the Apstra DCI Demo interface with the 'Manage Interface Maps' dialog open. The dialog title is 'JNPR-7x10-SuperSpine' and it displays '1-1 of 1'. It shows a table with one row for 'spine001\_1' which is assigned to 'Juniper vQFX' with a device profile of 'Not assigned'. Below the table, there are four interface profiles: 'JNPR-7x10-Spine', 'JNPR-10x10-Leaf', 'JNPR-7x10-BorderLeaf', and 'AOS-1x10-1 (optional)'. The main interface has tabs for Physical, Virtual, Policies, Catalog, Settings, and Tasks. It also includes filters for Nodes: All, Links: All, and a Layer dropdown set to 'Build: Device Profiles - JNPR-7x10-SuperSpine'. The interface is divided into Topology, Nodes, Links, Racks, and Pods sections.

### Update interface map for JNPR-7x10-SuperSpine

This screenshot shows the 'Update interface map' dialog for the JNPR-7x10-SuperSpine device profile. It lists a single entry: 'spine001\_1' assigned to 'JNPR\_vQFX-7x10-SuperSpine' with a device profile of 'Juniper vQFX'. A teal 'Assign Selected' button is visible above the table. At the bottom right is a large teal 'Update Assignments' button.

This screenshot shows the Apstra DCI Demo interface after the update. The 'Manage Interface Maps' dialog now shows '1-1 of 1' for the JNPR-7x10-SuperSpine device profile. The table now shows 'spine001\_1' assigned to 'Juniper vQFX' with a device profile of 'Juniper vQFX'. The main interface remains largely the same, with the 'Update Assignments' dialog still visible at the bottom right.

Repeat the process for every single one but ignore **AOS-1x10-1(Optional)**. You can see the result below:

The screenshot shows the Apstra DCI Demo interface. At the top, there are tabs for Topology, Nodes, Links, Racks, and Pods. Below these are dropdown menus for Selected Plane (All), Selected Pod (All), Selected Rack (All), and Selected Node (All). There is also a checkbox for Show Servers? which is unchecked. Under the Topology tab, there is a section for Superspine Planes with a list containing "superspine\_plane1". Below this are two sections for pods: "pod1" and "pod2". Each pod section contains a table for "spines" and three leaf nodes: "jnpr\_border\_leaf\_001\_001", "jnpr\_single\_leaf\_001\_001", and "jnpr\_single\_leaf\_002\_001". To the right of the main interface is a sidebar titled "Manage Interface Maps" which lists four items: "JNPR-7x10-SuperSpine" (1/1), "JNPR-7x10-Spine" (2/2), "JNPR-10x10-Leaf" (2/2), and "AOS-1x10-1 (optional)" (0/6). A yellow status bar at the bottom indicates "Assigned System IDs".

### 12.2.3. Device

Go to Blueprints -> DC2 -> Staged -> Physical -> Build -> **Devices**

This screenshot shows the "Devices" tab within the "Build" section of the Apstra DCI Demo interface. At the top, there are tabs for Physical, Virtual, Policies, Catalog, Settings, and Tasks. Below these are dropdown menus for Nodes (All), Links (All), and a "Topology" section with tabs for Nodes, Links, Racks, and Pods. A sidebar on the right shows assigned system IDs for various Juniper devices across different planes and pods. The main interface is identical to the one shown in the previous screenshot, displaying the topology view with pods, spines, and leaf nodes.

Go to -> Assigned System IDs -> **Change System IDs Assignments** -> Select the right System ID for your Spines, Leafs and BorderLeaf

The screenshot shows the Cisco Network Design tool interface. At the top, there are three tabs: 'Nodes: All', 'Links: All', and 'Selection' (which is currently selected). Below the tabs, there are two main sections: 'Topology' and 'Build'. The 'Topology' section includes buttons for 'Grouped' (selected), 'Compact', and 'Full' views. It also has dropdown menus for 'Selected Plane' (All), 'Selected Pod' (All), 'Selected Rack' (All), and 'Selected Node' (All). A checkbox labeled 'Show Servers?' is checked. The 'Selected Plane' dropdown shows 'super-spine\_plane1' with a yellow square icon. The 'Selected Pod' dropdown shows 'pod01' with a yellow square icon. The 'Selected Rack' dropdown shows 'spines' with a yellow square icon. The 'Selected Node' dropdown shows 'spine001\_1' with a yellow square icon. On the right side, there is a 'Build' tab with a sub-tab 'System IDs'. A legend indicates that green squares represent 'Assigned' and yellow squares represent 'Not Assigned'. A callout box points to a row of nodes with the label 'Assigned System IDs'. A button labeled 'Change System IDs assignments' is present. To the right, a panel displays '1-13 of 13' nodes, each with a 'Node' name and a 'System ID' status (all marked as 'Not assigned').

## Assign Systems

You can see the result below:

The screenshot shows the Apstra DCI Demo interface with the 'Build' tab selected. On the left, there's a topology view with sections for Selected Plane, Selected Pod, Selected Rack, and Selected Node. Under 'Selected Plane', 'Superspine Planes' contains 'superspine\_plane1'. Under 'Selected Pod', 'pod1' and 'pod2' both have 'spines' listed. On the right, a table titled 'Assigned System IDs' lists 13 entries, each with a 'Node' name and a 'System ID'. A legend indicates that green squares represent 'Assigned' and orange squares represent 'Not Assigned'. The status for most nodes is 'Not assigned'.

Node	System ID
spine001_1	500000250000
spine001_001_1	5000001B0000
spine002_001_1	500000200000
leaf001_001_1	500000280000
leaf001_002_1	5000001C0000
leaf002_001_1	5000002A0000
leaf002_002_1	500000210000
server001_002_001	Not assigned
server001_002_002	Not assigned
server001_002_003	Not assigned
server002_002_001	Not assigned
server002_002_002	Not assigned
server002_002_003	Not assigned

## 12.2.4. External Routers

Go to Blueprints -> DC2 -> Staged -> Physical -> Build -> **External Routers**

The screenshot shows the Apstra DCI Demo interface with the 'Physical' tab selected. The interface includes sections for Nodes, Links, Racks, and Pods. Under 'Selected Plane', 'Superspine Planes' contains 'superspine\_plane1'. Under 'Selected Pod', 'pod1' and 'pod2' both have 'spines' listed. On the right, a panel titled 'Manage External Routers' shows a red button labeled 'External Router Links'. A legend indicates that yellow squares represent 'Has Uncommitted Changes'.

Go to -> Manage External Routers -> Import External Router -> Select: **DC2-R2->** and **Import External Router**

### Import External Router from Global Catalog

Name	DC2-R2
IPv4 Loopback Address	100.100.12.1
IPv6 Loopback Address	Not assigned
ASN	65002

Now go to -> Actions (Edit Links) -> Select: DC2-R2 -> and Update

## Edit External Router Links

You can see the result below:

Now go to -> Uncommitted -> and **Commit**

Type	Action	Name
Link	ADDED	spine001_001_1<->sspine001_1
Link	ADDED	leaf002_002_1<->server002_002_003(single-link-3)[1]
Link	ADDED	leaf001_002_1<->server001_002_002(single-link-2)[1]
Link	ADDED	leaf002_001_1<->router0001
Link	ADDED	spine002_001_1<->leaf002_002_1[1]
Link	ADDED	spine001_001_1<->leaf001_002_1[1]
Link	ADDED	spine002_001_1<->leaf002_001_1[1]
Link	ADDED	spine001_001_1<->leaf001_001_1[1]
Link	ADDED	leaf001_001_1<->router0001
Link	ADDED	spine002_001_1<->sspine001_1
Link	ADDED	leaf002_002_1<->server002_002_002(single-link-2)[1]

Add Revision Description: **DC2 Basic Configuration**

### Commit changes from Staged to Active?

This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)  
DC2 Basic Configuration|

**Commit**

## 13. Remote EVPN Gateways

### 13.1. DC1

#### 13.1.1. DC2 BorderLeaf 1

Go to Blueprints -> **DC1** -> Staged -> Virtual -> Remote EVPN Gateways -> +Create Remote EVPN Gateway

The screenshot shows the Apstra UI interface for creating a new Remote EVPN Gateway. The top navigation bar indicates the path: Blueprints > DC1 > Staged > Virtual > Remote EVPN Gateways. Below the navigation, there are tabs for Physical, Virtual, Policies, Catalog, Settings, and Tasks. The Virtual tab is selected, and the sub-tab 'Remote EVPN Gateways' is highlighted. A prominent blue button at the top right says '+ Create Remote EVPN Gateway'. Below this, there is a search bar labeled 'Query: All' and a page size selector set to '25'. A table below lists items with columns for Name, Remote IP Address, Connected Nodes, ASN, TTL, and Actions. The table shows 'No items'.

Add the relevant configurations and **Create**

Name	<b>DC2-BL1</b>
IP Address	<b>20.20.30.0</b>
ASN	<b>203</b>
TTL	<b>20</b>
Select	<b>jnpr_border_leaf_001_leaf1</b>

### Create Remote EVPN Gateway

#### Parameters

Name \*

IP Address \*

ASN \*

TTL

Password

( )

Keep-alive Timer

Hold-time Timer

#### Local Gateway Nodes

--	--	--	--	--	--	--

1-6 of 6 < >

<input type="checkbox"/>	Label	Role	Group Label	ASN	Hostname
<input type="checkbox"/>	spine1	Spine	N/A	100	spine1
<input type="checkbox"/>	spine2	Spine	N/A	101	spine2
<input checked="" type="checkbox"/>	jnpr_border_leaf_001_leaf1	Leaf	JNPR-BORDER-LEAF	102	jnpr-border-leaf-001-leaf1
<input type="checkbox"/>	jnpr_esi_leaf_001_leaf1	Leaf	JNPR-ESI-LEAF	103	jnpr-esi-leaf-001-leaf1
<input type="checkbox"/>	jnpr_esi_leaf_001_leaf2	Leaf	JNPR-ESI-LEAF	104	jnpr-esi-leaf-001-leaf2
<input type="checkbox"/>	jnpr_single_leaf_001_leaf1	Leaf	JNPR-SINGLE-LEAF	105	jnpr-single-leaf-001-leaf1

Create Another?

**Create**

### 13.1.2. DC2 BorderLeaf 2

Go to Blueprints -> **DC1** -> Staged -> Virtual -> Remote EVPN Gateways -> +**Create Remote EVPN Gateway**

Add the relevant configurations and **Create**

<b>Name</b>	<b>DC2-BL2</b>
<b>IP Address</b>	<b>20.20.30.2</b>
<b>ASN</b>	<b>205</b>
<b>TTL</b>	<b>20</b>
<b>Select</b>	<b>jnpr_border_leaf_001_leaf1</b>

### Create Remote EVPN Gateway

Parameters	
<b>Name *</b>	DC2-BL2
<b>IP Address *</b>	20.20.30.2
<b>ASN *</b>	205
<b>TTL</b>	20
<b>Password</b>	<input type="password"/>
<b>Keep-alive Timer</b>	
<input type="text"/>	
<b>Hold-time Timer</b>	
<input type="text"/>	
<b>Local Gateway Nodes</b>	
<input type="text"/> Query: All	
1-6 of 6 < >	

1 selected	Label	Role	Group Label	ASN	Hostname
<input type="checkbox"/>	spine1	Spine	N/A	100	spine1
<input type="checkbox"/>	spine2	Spine	N/A	101	spine2
<input checked="" type="checkbox"/>	jnpr_border_leaf_001_leaf1	Leaf	JNPR-BORDER-LEAF	102	jnpr-border-leaf-001-leaf1
<input type="checkbox"/>	jnpr_esi_leaf_001_leaf1	Leaf	JNPR-ESI-LEAF	103	jnpr-esi-leaf-001-leaf1
<input type="checkbox"/>	jnpr_esi_leaf_001_leaf2	Leaf	JNPR-ESI-LEAF	104	jnpr-esi-leaf-001-leaf2
<input type="checkbox"/>	jnpr_single_leaf_001_leaf1	Leaf	JNPR-SINGLE-LEAF	105	jnpr-single-leaf-001-leaf1

Create Another? Create

You can see the result below:

Blueprints > DC1 > Staged > Virtual > Remote EVPN Gateways

Dashboard Analytics Staged Uncommitted Active Time Voyager

Physical Virtual Policies Catalog Settings Tasks

Virtual Networks Security Zones Remote EVPN Gateways Virtual Infra Endpoints

Create Remote EVPN Gateway

Query: All 1-2 of 2 Page Size: 25

Name	Remote IP Address	Connected Nodes	ASN	TTL	Actions
DC2-BL1	20.20.30.0	1 nodes	203	20	
DC2-BL2	20.20.30.2	1 nodes	205	20	

Now go to -> Uncommitted -> and **Commit**

Add Revision Description: **DC2 Remote EVPN Gateway** -> and Commit

**Commit changes from Staged to Active?**

This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

DC2 Remote EVPN Gateway

Commit

## 13.2. DC2

### 13.2.1. POD1 - DC1 BorderLeaf 1

Go to Blueprints -> **DC2** -> Staged -> Virtual -> Remote EVPN Gateways -> +Create Remote EVPN Gateway

Name	Connected Nodes	ASN	TTL	Actions
				No items

Add the relevant configurations and **Create**

<b>Name</b>	DC1-BL1
<b>IP Address</b>	10.20.30.0
<b>ASN</b>	102
<b>TTL</b>	20
<b>Select</b>	leaf001_001_1   JNPR-BORDER-LEAF
<b>Select</b>	eaf002_001_1   JNPR-BORDER-LEAF

## Create Remote EVPN Gateway

### Parameters

**Name \***

**IP Address \***

**ASN \***

**TTL**

**Password**

✖️ 🗑️ ⌂
**Keep-alive Timer**

✖️
**Hold-time Timer**

✖️

### Local Gateway Nodes

1-7 of 7

&lt;

&gt;

<input type="checkbox"/>	Label ▾	Role ▾	Group Label ▾	ASN ▾	Hostname ▾
<input type="checkbox"/>	sspine001_1	Superspine	N/A	200	sspine001-1
<input type="checkbox"/>	spine001_001_1	Spine	N/A	201	spine001-001-1
<input type="checkbox"/>	spine002_001_1	Spine	N/A	202	spine002-001-1
<input checked="" type="checkbox"/>	leaf001_001_1	Leaf	JNPR-BORDER-LEAF	203	leaf001-001-1
<input type="checkbox"/>	leaf001_002_1	Leaf	JNPR-SINGLE-LEAF	204	leaf001-002-1
<input checked="" type="checkbox"/>	leaf002_001_1	Leaf	JNPR-BORDER-LEAF	205	leaf002-001-1
<input type="checkbox"/>	leaf002_002_1	Leaf	JNPR-SINGLE-LEAF	206	leaf002-002-1

 Create Another?

You can see the result below:

Name	Remote IP Address	Connected Nodes	ASN	TTL	Actions
DC1-BL1	10.20.30.0	2 nodes	102	20	

Now go to -> Uncommitted -> and Commit  
Add Revision Description: **DC1 Remote EVPN Gateway** -> and Commit

**Commit changes from Staged to Active?**

This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

DC1 Remote EVPN Gateway

**Commit**

At this stage you should see that status on your blueprint page:

DC1	DC2
L3 Clos	L3 Clos
Structure: 2 spines, 4 leafs, 6 L2 servers	Structure: 1 superspines, 2 spines, 4 leafs, 6 L2 servers
Analytics	Analytics
Deployment Status 4	Deployment Status 7
Service Anomalies 0	Service Anomalies 3
Probe Anomalies 0	Probe Anomalies 3
Root Causes: 0	Root Causes: 0
Version 26	Version 32
Last modified 14 minutes ago	Last modified 3 minutes ago

## 14. DC1 -Virtual Networks

### 14.1. Security Zones

Go to Blueprints -> DC1 -> Staged -> Virtual -> Security Zones -> +Create Security Zone

VRF Name	Type	VLAN ID	Route Target	VNI	DHCP Servers
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

Add the relevant configurations and **Create**

**VRF Name**

customer-1

**VNI**

10010

### Create Security Zone

**VRF Name \***

customer-1

**VLAN ID**

**VNI**

10010

#### Routing Policies

**Import Policy**

Default  All  Extra Only

**Extra Import Routes**

No routes specified

**Add**

**Export Policy**

Spine Leaf Links

1:1 Edge Server Links

Create Another?

**Create**

Go to -> customer-1: Leaf Loopback IPs -> Update Assignments and select **DC1-LEAF-LOOPBACK** and **SAVE**

Query: All

VRF Name	Type	VLAN ID	Route Target	VNI	DHCP Servers
customer-1	EVPN	2	10010:1	10010	DHCP Relay not configured
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

Create Security Zone

customer-1: Leaf Loopback IPs

No pools assigned

1/1 EVPN L3 VNIs

Query: All

VRF Name	Type	VLAN ID	Route Target	VNI	DHCP Servers
customer-1	EVPN	2	10010:1	10010	DHCP Relay not configured
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

Create Security Zone

customer-1: Leaf Loopback IPs

6-10 of 17

1 selected Pool Name

- DC1-LEAF-LOOPBACK
- VIRTUAL-NETWORKS
- Private-192.168.0.0/16
- DC2-SPINE-LOOPBACK
- DC1-SPINE-LEAF

1/1 EVPN L3 VNIs

Repeat the same process for **customer-2** but with the parameters below:

**VRF Name**

customer-2

**VNI**

10020

## Create Security Zone

**VRF Name \***  
customer-2

**VLAN ID**

**VNI**  
10020

**Routing Policies**

Import Policy<sup>?</sup>  
 Default  All  Extra Only

Extra Import Routes<sup>?</sup>  
No routes specified

**Add**

**Export Policy**

Spine Leaf Links<sup>?</sup>

1-2 Edge-Spine Links<sup>?</sup>

Create Another? **Create**

Go to -> customer-2: Leaf Loopback IPs -> Update Assignments and select DC1-LEAF-LOOPBACK and **SAVE**

You can see the result below:

Physical Virtual Policies Catalog Settings Tasks

Virtual Networks **Security Zones** Remote EVPN Gateways Virtual Infra Endpoints

**Create Security Zone**

Query: All 1-3 of 3 Page Size: 25 Build

VRF Name	Type	VLAN ID	Route Target <sup>?</sup>	VNI	DHCP Servers
customer-1	EVPN	2	10010:1	10010	DHCP Relay not configured
customer-2	EVPN	3	10020:1	10020	DHCP Relay not configured
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

4/4 customer-1: Leaf Loopback IPs  
4/4 customer-2: Leaf Loopback IPs  
2/2 EVPN L3 VNIs

## 14.2. Virtual Networks

### 14.2.1. Customer 1 – VLAN10

Go to Blueprints -> DC1 -> Staged -> Virtual -> Virtual Networks -> +Create Virtual Networks

Add the relevant configurations and **Create**

Type	VXLAN
Name	VLAN10
Security Zone	customer-1
VNI(s)	5010
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.10.0/24
Virtual Gateway IPv4	192.168.10.1
Assigned To:	Select all devices and add VLAN ID: 10

Create Virtual Network

Virtual Network Parameters

Type:  VXLAN  VLAN

Will create single VXLAN for all selected nodes

Name *	VLAN10	Security Zone	customer-1
VNI(s) *	5010	Set same VLAN ID on all leafs?	
Route Target *	<span style="background-color: red;">Not assigned</span>	IPv4 Connectivity	IPv4 Subnet
DHCP Service	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	192.168.10.0/24
		Virtual Gateway IPv4	192.168.10.1

Default Endpoint Types

Logical Link	Tag Type
--------------	----------

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
dual-link	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

Query: All		1-3 of 3	Page Size: 25
<input checked="" type="checkbox"/>	Bound To		
<input checked="" type="checkbox"/>	jnpr_border_leaf_001_leaf1	10	From resource pool
<input checked="" type="checkbox"/>	jnpr_esi_leaf_001_leaf1	10	jnpr_esi_leaf_001_leaf1 From resource pool
<input checked="" type="checkbox"/>	jnpr_esi_leaf_001_leaf2	10	jnpr_esi_leaf_001_leaf2 From resource pool
<input checked="" type="checkbox"/>	jnpr_single_leaf_001_leaf1	10	From resource pool

## Route Target Policies

Import Route Targets

Create

Go to the virtual network VLAN10, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

Unassigned
or
Untagged
or
VLAN Tagged

Select All
Reset

<input type="checkbox"/>	jnpr_single_leaf_001_leaf1	xe-0/0/4	jnpr_single_leaf_001_server001	Server1	single-link-1	<input checked="" type="checkbox"/> Untagged	<input type="checkbox"/>
--------------------------	----------------------------	----------	--------------------------------	---------	---------------	--	--------------------------

Port Maps:

Create

Ports: Unassigned Untagged VLAN Tagged Partial

1-2 of 2 Page Size: 5

jnpr\_esi\_leaf\_001\_leaf\_pair1 jnpr\_esi\_leaf\_001\_leaf1 + jnpr\_esi\_leaf\_001\_leaf2

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #5 Tr. #1 (10 Gbps, default) xe-0/0/4

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

jnpr\_single\_leaf\_001\_leaf1

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #5 Tr. #1 (10 Gbps, default) xe-0/0/4

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged  Select All

**Port Maps:**

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial

1-2 of 2 Page Size: 5

jnpr\_esi\_leaf\_001\_leaf\_pair1 [jnpr\_esi\_leaf\_001\_leaf1 + jnpr\_esi\_leaf\_001\_leaf2]

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

jnpr\_single\_leaf\_001\_leaf1

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

### 14.2.2. Customer 1 – VLAN20

Go to Blueprints -> DC1 -> Staged -> Virtual -> Virtual Networks -> +Create Virtual Networks

Add the relevant configurations and **Create**

Type	VXLAN
Name	VLAN20
Security Zone	customer-1
VNI(s)	5020
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.20.0/24
Virtual Gateway IPv4	192.168.20.1
Assigned To:	Select all devices and add VLAN ID: 20

Virtual Network Parameters

Type  VLAN  VXLAN

Will create single VXLAN for all selected nodes

Name *	Security Zone		
VLAN20	customer-1		
VNI(s) *	Set same VLAN ID on all leafs?		
5020	<input type="checkbox"/>		
Route Target *	<input type="checkbox"/> Not assigned		
DHCP Service	IPv4 Connectivity	IPv4 Subnet	Virtual Gateway IPv4
<input checked="" type="radio"/> Disabled	<input type="radio"/> Disabled	192.168.20.0/24	192.168.20.1
<input type="radio"/> Enabled	<input checked="" type="radio"/> Enabled		

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
dual-link	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

Query: All		1-3 of 3 < >	Page Size: 25
<input checked="" type="checkbox"/>	Bound To		
<input checked="" type="checkbox"/>	jnpr_border_leaf_001_leaf1	VLAN ID	20 From resource pool jnpr_esi_leaf_001_leaf1
<input checked="" type="checkbox"/>	jnpr_esi_leaf_001_leaf_pair1	dual-link, single-link-1, single-link-2	20 From resource pool jnpr_esi_leaf_001_leaf2
<input checked="" type="checkbox"/>	jnpr_single_leaf_001_leaf1	single-link-2, single-link-3, single-link-1	20 From resource pool

## Route Target Policies

Import Route Targets Create

Go to the virtual network VLAN20, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

Unassigned  Untagged  VLAN Tagged  Select All

Port Maps:

Query: All

Ports:  Unassigned  Untagged  VLAN Tagged  Partial

1-2 of 2 < > Page Size: 5

jnpr_esi_leaf_001_leaf_pair1	jnpr_esi_leaf_001_leaf1 + jnpr_esi_leaf_001_leaf2
1 2 3 4 5 6 7 8 9 10 11 12	
1 2 3 4 5 6 7 8 9 10 11 12	
jnpr_single_leaf_001_leaf1	
1 2 3 4 5 6 7 8 9 10 11 12	
Port #6 Tr. #1 (10 Gbps, default)	xe-0/0/5

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged  Select All

**Port Maps:**

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial 1-2 of 2 < > Page Size: 5

**jnpr\_esi\_leaf\_001\_leaf\_pair1** jnpr\_esi\_leaf\_001\_leaf1 + jnpr\_esi\_leaf\_001\_leaf2

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

**jnpr\_single\_leaf\_001\_leaf1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #6 Tr. #1 (10 Gbps, default)

### 14.2.3. Customer 2 – VLAN100

Go to Blueprints -> DC1 -> Staged -> Virtual -> Virtual Networks -> **+Create Virtual Networks**

Add the relevant configurations and **Create**

Type	VXLAN
Name	VLAN100
Security Zone	customer-2
VNI(s)	5100
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.100.0/24
Virtual Gateway IPv4	192.168.100.1
Assigned To:	Select all devices and add VLAN ID: 100

Virtual Network Parameters

Type  VLAN  VXLAN

Will create single VXLAN for all selected nodes

Name <input type="text" value="VLAN100"/>	Security Zone <input type="text" value="customer-2"/>
VNI(s) <input type="text" value="5100"/>	Set same VLAN ID on all leafs? <input type="checkbox"/>
Route Target <input type="text" value="Not assigned"/>	IPv4 Connectivity <input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
DHCP Service <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled	IPv4 Subnet <input type="text" value="192.168.100.0/24"/>
	Virtual Gateway IPv4 <input type="text" value="192.168.100.1"/>

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
dual-link	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

	Bound To	Link Labels	VLAN ID	IPv4 Address
<input checked="" type="checkbox"/>	jnpr_border_leaf_001_leaf1		100	From resource pool jnpr_esi_leaf_001_leaf1 From resource pool
<input checked="" type="checkbox"/>	jnpr_esi_leaf_001_leaf_pair1	dual-link, single-link-1, single-link-2	100	From resource pool jnpr_esi_leaf_001_leaf2 From resource pool
<input checked="" type="checkbox"/>	jnpr_single_leaf_001_leaf1	single-link-2, single-link-3, single-link-1	100	From resource pool

Go to the virtual network VLAN100, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

Unassigned  Untagged  VLAN Tagged  Partial  Select All  Reset

Port Maps:

Query: All

Ports:  Unassigned  Untagged  VLAN Tagged  Partial 1-2 of 2 Page Size: 5

jnpr_esi_leaf_001_leaf_pair1	jnpr_esi_leaf_001_leaf1 + jnpr_esi_leaf_001_leaf2
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12
Port #6 Tr. #1 (10 Gbps, default)	xe-0/0/5
jnpr_single_leaf_001_leaf1	
1 2 3 4 5 6 7 8 9 10 11 12	

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged

Select All Reset

Port Maps:

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial

1-2 of 2 Page Size: 5

jnpr\_esi\_leaf\_001\_leaf\_pair1 jnpr\_esi\_leaf\_001\_leaf1 + jnpr\_esi\_leaf\_001\_leaf2

1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	10	11	12

Port #6 Tr. #1 (10 Gbps, default) xe-0/0/5

jnpr\_single\_leaf\_001\_leaf1

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Route Target Policies

#### 14.2.4. Customer 2 – VLAN200

Go to Blueprints -> DC1 -> Staged -> Virtual -> Virtual Networks -> +Create Virtual Networks

Add the relevant configurations and Create

Type	VXLAN
Name	VLAN200
Security Zone	customer-2
VNI(s)	5200
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.200.0/24
Virtual Gateway IPv4	192.168.200.1
Assigned To:	Select all devices and add VLAN ID: 200

Virtual Network Parameters

Type  
 VLAN  VXLAN

Will create single VXLAN for all selected nodes

Name *	VLAN200	Security Zone	customer-2
VNI(s) *	5200	Set same VLAN ID on all leafs?	
Route Target *	Not assigned	IPv4 Connectivity	IPv4 Subnet
DHCP Service	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	192.168.200.0/24
			Virtual Gateway IPv4
			192.168.200.1

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
dual-link	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

	Bound To	Link Labels	VLAN ID	IPv4 Address
<input checked="" type="checkbox"/>	jnpr_border_leaf_001_leaf1		200	From resource pool jnpr_esi_leaf_001_leaf1 From resource pool
<input checked="" type="checkbox"/>	jnpr_esi_leaf_001_leaf_pair1	dual-link, single-link-1, single-link-2	200	From resource pool jnpr_esi_leaf_001_leaf2 From resource pool
<input checked="" type="checkbox"/>	jnpr_single_leaf_001_leaf1	single-link-2, single-link-3, single-link-1	200	From resource pool

Go to the virtual network VLAN200, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

Unassigned  Untagged  VLAN Tagged  Select All  Reset

Port Maps:

Query: All

Ports:  Unassigned  Untagged  VLAN Tagged  Partial

1-2 of 2 Page Size: 5

jnpr_esi_leaf_001_leaf_pair1 jnpr_esi_leaf_001_leaf1 + jnpr_esi_leaf_001_leaf2											
1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	10	11	12

jnpr_single_leaf_001_leaf1											
1	2	3	4	5	6	7	8	9	10	11	12

Port #7 Tr. #1 (10 Gbps, default)	xe-0/0/6
-----------------------------------	----------

Device Tenant Details

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged  Select All  Reset

Port Maps:

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial

1-2 of 2 Page Size: 5

jnpr\_esi\_leaf\_001\_leaf\_pair1 jnpr\_esi\_leaf\_001\_leaf1 + jnpr\_esi\_leaf\_001\_leaf2

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #7 Tr. #1 (10 Gbps, default) xe-0/0/6

You can see the result below:

Physical Virtual Policies Catalog Settings Tasks

Virtual Networks Security Zones Remote EVPN Gateways Virtual Infra Endpoints

Create Virtual Networks

Query: All

1-4 of 4 Page Size: 25 Build

Name	Security Zone	Type	VN ID	Assigned to	DHCP Service	L3 Connectivity	IPv4 Connectivity	IPv4 Subnet	IPv6 Connectivity	IPv6 Subnet	Actions
VLAN10	customer-1	VXLAN	5010	3 nodes	Disabled	Enabled	Enabled	192.168.10.0/24	Disabled	N/A	
VLAN20	customer-1	VXLAN	5020	3 nodes	Disabled	Enabled	Enabled	192.168.20.0/24	Disabled	N/A	
VLAN100	customer-2	VXLAN	5100	3 nodes	Disabled	Enabled	Enabled	192.168.100.0/24	Disabled	N/A	
VLAN200	customer-2	VXLAN	5200	3 nodes	Disabled	Enabled	Enabled	192.168.200.0/24	Disabled	N/A	

2/2 customer-1: Virtual Network SVI Subnets  
2/2 customer-2: Virtual Network SVI Subnets  
4/4 VNI Virtual Network IDs

Now go to -> Uncommitted -> and Commit

Add Revision Description: **Customer-1 and Customer-2 Virtual Networks** -> and Commit

**Commit changes from Staged to Active?**



This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

Customer-1 and Customer-2 Virtual Networks

**Commit**

## 15. DC2 -Virtual Networks

### 15.1. Security Zones

Go to Blueprints -> DC2 -> Staged -> Virtual -> Security Zones -> +Create Security Zone

VRF Name	Type	VLAN ID	Route Target	VNI	DHCP Servers
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

Add the relevant configurations and **Create**

<b>VRF Name</b>	customer-1
<b>VNI</b>	10010

## Create Security Zone

**VRF Name \***  
customer-1

**VLAN ID**

**VNI**  
10010

**Routing Policies**

Import Policy<sup>?</sup>  
 Default  All  Extra Only

Extra Import Routes<sup>?</sup>  
No routes specified

**Add**

**Export Policy**

Spine Leaf Links<sup>?</sup>  
 L3 Edge Server Links<sup>?</sup>

**Create Another?**  **Create**

Go to -> customer-1: Leaf Loopback IPs -> Update Assignments and select DC2-LEAF-LOOPBACK and **SAVE**

VRF Name	Type	VLAN ID	Route Target <sup>?</sup>	VNI	DHCP Servers
customer-1	EVPN	2	10010:1	10010	DHCP Relay not configured
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

Update assignments  
customer-1: Leaf Loopback IPs

No pools assigned

1/1 EVPN L3 VNIs

VRF Name	Type	VLAN ID	Route Target	VNI	DHCP Servers
customer-1	EVPN	2	10010:1	10010	DHCP Relay not configured
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

Repeat the same process for customer-2 but with the parameters below:

**VRF Name**

customer-2

**VNI**

10020

### Create Security Zone

**VRF Name \***

customer-2

**VLAN ID**

**VNI**

10020

#### Routing Policies

Import Policy

Default  All  Extra Only

Extra Import Routes

No routes specified

Add

Export Policy

Spine Leaf Links

L3 Edge Server Links

L3 Edge Sub-links

Create Another?

**Create**

Go to -> customer-2: Leaf Loopback IPs -> Update Assignments and select DC2-LEAF-LOOPBACK and **SAVE**

You can see the result below:

VRF Name	Type	VLAN ID	Route Target	VNI	DHCP Servers
customer-1	EVPN	2	10010:1	10010	DHCP Relay not configured
customer-2	EVPN	3	10020:1	10020	DHCP Relay not configured
default	L3 Fabric	N/A	N/A	N/A	DHCP Relay not configured

## 15.2. Virtual Networks

### 15.2.1. Customer 1 – VLAN10

Go to Blueprints -> DC2 -> Staged -> Virtual -> Virtual Networks -> +Create Virtual Networks

Name	Security Zone	Type	VN ID	Assigned to	DHCP Service	L3 Connectivity	IPv4 Connectivity	IPv4 Subnet	IPv6 Connectivity	IPv6 Subnet	Actions
No items											

Add the relevant configurations and **Create**

Type	VXLAN
Name	VLAN10
Security Zone	customer-1
VNI(s)	5010

<b>IPv4 Connectivity</b>	Enabled
<b>IPv4 Subnet</b>	192.168.10.0/24
<b>Virtual Gateway IPv4</b>	192.168.10.1
<b>Assigned To:</b>	Select all devices and add VLAN ID: <b>10</b>

Virtual Network Parameters

Type  
 VLAN  VXLAN

Will create single VXLAN for all selected nodes

Name <b>*</b> VLAN10	Security Zone customer-1		
VNI(s) 5010	Set same VLAN ID on all leafs?		
Route Target <b>Not assigned</b>			
DHCP Service <input checked="" type="radio"/> Disabled <input type="radio"/> Enabled	IPv4 Connectivity <input type="radio"/> Disabled <input checked="" type="radio"/> Enabled	IPv4 Subnet 192.168.10.0/24	Virtual Gateway IPv4 192.168.10.1

Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

Assigned To

Query: All

1-4 of 4 Page Size: 25

#	Pod Name	Bound To	Link Labels	VLAN ID	IPv4 Address
<input checked="" type="checkbox"/>	pod1	leaf001_001_1		10	From resource pool
<input checked="" type="checkbox"/>	pod1	leaf001_002_1	single-link-1, single-link-2, single-link-3	10	From resource pool
<input checked="" type="checkbox"/>	pod2	leaf002_001_1		10	From resource pool
<input checked="" type="checkbox"/>	pod2	leaf002_002_1	single-link-2, single-link-3, single-link-1	10	From resource pool

Go to the virtual network VLAN10, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
<input type="checkbox"/> 0 selected	leaf001_002_1	xe-0/0/4	server001_002_001	Server1	single-link-1	Untagged	
<input type="checkbox"/>	leaf002_002_1	xe-0/0/4	server002_002_001	Server1	single-link-1	Untagged	

Select All  

Port Maps:

Ports:  Unassigned  Untagged  VLAN Tagged  Partial   Page Size: 5

leaf001\_002\_1  
1 2 3 4 5 6 7 8 9 10 11 12  
 Port #5 Tr. #1 (10 Gbps, default)   xe-0/0/4

leaf002\_002\_1  
1 2 3 4 5 6 7 8 9 10 11 12  
 Port #5 Tr. #1 (10 Gbps, default)   xe-0/0/4

Click on ports to select endpoints and make them:

	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
<input type="checkbox"/> 0 selected	leaf001_002_1	xe-0/0/4					No endpoints selected

Select All  

Port Maps:

Ports:  Unassigned  Untagged  VLAN Tagged  Partial   Page Size: 5

leaf001\_002\_1  
1 2 3 4 5 6 7 8 9 10 11 12  
 Port #5 Tr. #1 (10 Gbps, default)   xe-0/0/4

leaf002\_002\_1  
1 2 3 4 5 6 7 8 9 10 11 12  
 Port #5 Tr. #1 (10 Gbps, default)   xe-0/0/4

## 15.2.2. Customer 1 – VLAN20

Go to Blueprints -> DC2 -> Staged -> Virtual -> Virtual Networks -> +**Create Virtual Networks**

Add the relevant configurations and **Create**

Type	VXLAN
Name	VLAN20
Security Zone	customer-1
VNI(s)	5020
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.20.0/24

## Virtual Gateway IPv4 Assigned To:

192.168.20.1

Select all devices and add VLAN ID: 20

## Virtual Network Parameters

Type  
 VLAN  VXLAN

Will create single VXLAN for all selected nodes

Name \*

VLAN20

Security Zone

customer-1

VNI(s) \*

5020

Set same VLAN ID on all leafs?

Route Target \*

Not assigned

DHCP Service  
 Disabled  
 Enabled

IPv4 Connectivity  
 Disabled  
 Enabled

IPv4 Subnet

192.168.20.0/24

Virtual Gateway IPv4

192.168.20.1

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

Query: All

1-4 of 4

Page Size: 25

<input checked="" type="checkbox"/>	Pod Name	Bound To	Link Labels	VLAN ID	IPv4 Address
<input checked="" type="checkbox"/>	pod1	leaf001_001_1		20	From resource pool
<input checked="" type="checkbox"/>	pod1	leaf001_002_1	single-link-1, single-link-2, single-link-3	20	From resource pool
<input checked="" type="checkbox"/>	pod2	leaf002_001_1		20	From resource pool
<input checked="" type="checkbox"/>	pod2	leaf002_002_1	single-link-2, single-link-3, single-link-1	20	From resource pool

## Route Target Policies

Import Route Targets

 Add Import Route Target

Export Route Targets

 Add Export Route Target

Create

Go to the virtual network VLAN20, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

0 selected	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
<input type="checkbox"/>	leaf001_002_1	xe-0/0/5	server001_002_002	Server2	single-link-2	<span>Unassigned</span>	
<input type="checkbox"/>	leaf002_002_1	xe-0/0/5	server002_002_002	Server2	single-link-2	<span>Unassigned</span>	

Select All  

Port Maps:

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial   Page Size: 5

1-2 of 2 < >

**leaf001\_002\_1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #6 Tr. #1 (10 Gbps, default)   xe-0/0/5

**leaf002\_002\_1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #6 Tr. #1 (10 Gbps, default)   xe-0/0/5

Click on ports to select endpoints and make them:

0 selected	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
No endpoints selected							

Select All  

Port Maps:

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial   Page Size: 5

1-2 of 2 < >

**leaf001\_002\_1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #6 Tr. #1 (10 Gbps, default)   xe-0/0/5

**leaf002\_002\_1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #6 Tr. #1 (10 Gbps, default)   xe-0/0/5

Route Target Policies

### 15.2.3. Customer 1 – VLAN30

Go to Blueprints -> DC2 -> Staged -> Virtual -> Virtual Networks -> +Create Virtual Networks

Add the relevant configurations and **Create**

Type	VXLAN
Name	VLAN30
Security Zone	customer-1
VNI(s)	5030
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.30.0/24

**Virtual Gateway IPv4  
Assigned To:**

192.168.30.1

Select all devices and add VLAN ID: 30

## Virtual Network Parameters

Type	<input type="radio"/> VLAN <input checked="" type="radio"/> VXLAN
Will create single VXLAN for all selected nodes	
Name *	customer-1
VNI(s) *	5030
Route Target *	Not assigned
DHCP Service	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
IPv4 Connectivity	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
IPv4 Subnet	192.168.30.0/24
Virtual Gateway IPv4	192.168.30.1

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

Query: All 1-4 of 4 < > Page Size: 25

<input type="checkbox"/>	Pod Name	Bound To	Link Labels	VLAN ID	IPv4 Address
<input checked="" type="checkbox"/>	pod1	leaf001_001_1		30	From resource pool
<input checked="" type="checkbox"/>	pod1	leaf001_002_1	single-link-1, single-link-2, single-link-3	30	From resource pool
<input checked="" type="checkbox"/>	pod2	leaf002_001_1		30	From resource pool
<input checked="" type="checkbox"/>	pod2	leaf002_002_1	single-link-2, single-link-3, single-link-1	30	From resource pool

Go to the virtual network VLAN30, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged Select All Reset

Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
leaf002_002_1	xe-0/0/6	server002_002_003	Server3	single-link-3	<input checked="" type="checkbox"/> Untagged	

Port Maps:

Query: All 1-2 of 2 < > Page Size: 5

Ports:  Unassigned  Untagged  VLAN Tagged  Partial

leaf001_002_1											
1	2	3	4	5	6	7	8	9	10	11	12
leaf002_002_1											
1	2	3	4	5	6	7	8	9	10	11	12

Port #7 Tr. #1 (10 Gbps, default) xe-0/0/6

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged

Select All Reset

0 selected	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
No endpoints selected							

Port Maps:

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial

Page Size: 5

leaf001\_002\_1

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

leaf002\_002\_1

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #7 Tr. #1 (10 Gbps, default) xe-0/0/6

#### 15.2.4. Customer 2 – VLAN200

Go to Blueprints -> DC2 -> Staged -> Virtual -> Virtual Networks -> +Create Virtual Networks

Add the relevant configurations and Create

Type	VXLAN
Name	VLAN200
Security Zone	customer-2
VNI(s)	5200
IPv4 Connectivity	Enabled
IPv4 Subnet	192.168.200.0/24
Virtual Gateway IPv4	192.168.200.1
Assigned To:	Select all devices and add VLAN ID: 200

Virtual Network Parameters

Type:  VLAN  VXLAN

Will create single VXLAN for all selected nodes

Name: VLAN200	Security Zone: customer-2
VNI(s): 5200	Set same VLAN ID on all leafs?
Route Target: Not assigned	IPv4 Connectivity: Enabled
DHCP Service: Disabled	IPv4 Subnet: 192.168.200.0/24
	Virtual Gateway IPv4: 192.168.200.1

## Default Endpoint Types

Logical Link	Tag Type
single-link-2	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-3	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned
single-link-1	<input type="radio"/> VLAN Tagged <input type="radio"/> Untagged <input checked="" type="radio"/> Unassigned

## Assigned To

Query: All		1-4 of 4	Page Size:	25
<input checked="" type="checkbox"/>	Pod Name			
<input checked="" type="checkbox"/>	leaf001_001_1	200	From resource pool	
<input checked="" type="checkbox"/>	leaf001_002_1	200	From resource pool	
<input checked="" type="checkbox"/>	leaf002_001_1	200	From resource pool	
<input checked="" type="checkbox"/>	leaf002_002_1	200	From resource pool	

## Route Target Policies

Import Route Targets  
 Add Import Route Target  
Export Route Targets

**Create**

Go to the virtual network VLAN200, Scroll Down, Select the ports as below and click on **Untagged**. You can see the result below

Click on ports to select endpoints and make them:

<input type="radio"/> Unassigned	<input type="radio"/> Untagged	<input type="radio"/> VLAN Tagged	<input checked="" type="radio"/> Select All	<input type="radio"/> Reset			
0 selected	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
<input type="checkbox"/>	leaf001_002_1	xe-0/0/6	server001_002_003	Server3	single-link-3	<input type="button" value="Unassigned"/>	<input type="button"/>

Port Maps:

Query: All

Ports:  Unassigned  Untagged  VLAN Tagged  Partial

1-2 of 2 Page Size: 5

**leaf001\_002\_1**

1 2 3 4 5 6 7 8 9 10 11 12

Port # Tr. # (10 Gbps, default) xe-0/0/6

**leaf002\_002\_1**

1 2 3 4 5 6 7 8 9 10 11 12

Click on ports to select endpoints and make them:

Unassigned or Untagged or VLAN Tagged

Select All Reset

0 selected	Switch	Interface Name(s)	Server	Server Group	Logical Link	Endpoint	Actions
No endpoints selected							

Port Maps:

Query: All

Ports: Unassigned Untagged VLAN Tagged Partial

1-2 of 2 Page Size: 5

**leaf001\_002\_1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

Port #7 Tr. #1 (10 Gbps, default) xe-0/0/6

**leaf002\_002\_1**

1	2	3	4	5	6	7	8	9	10	11	12
---	---	---	---	---	---	---	---	---	----	----	----

You can see the result below:

Blueprints > DC2 > Staged > Virtual > Virtual Networks

Dashboard Analytics Staged Uncommitted Active Time Voyager

Physical Virtual Policies Catalog Settings Tasks

Virtual Networks Security Zones Remote EVPN Gateways Virtual Infra Endpoints

Create Virtual Networks

Query: All

1-4 of 4 Page Size: 25

Name	Security Zone	Type	VN ID	Assigned to	DHCP Service	L3 Connectivity	IPv4 Connectivity	IPv4 Subnet	IPv6 Connectivity	IPv6 Subnet	Actions
VLAN10	customer-1	VXLAN	5010	4 nodes	Disabled	Enabled	Enabled	192.168.10.0/24	Disabled	N/A	
VLAN20	customer-1	VXLAN	5020	4 nodes	Disabled	Enabled	Enabled	192.168.20.0/24	Disabled	N/A	
VLAN30	customer-1	VXLAN	5030	4 nodes	Disabled	Enabled	Enabled	192.168.30.0/24	Disabled	N/A	
VLAN200	customer-2	VXLAN	5200	4 nodes	Disabled	Enabled	Enabled	192.168.200.0/24	Disabled	N/A	

Build

- 3/3 customer-1: Virtual Network SVI Subnets
- 1/1 customer-2: Virtual Network SVI Subnets
- 4/4 VNI Virtual Network IDs

Now go to -> Uncommitted -> and Commit

Add Revision Description: **Customer-1 and Customer-2 Virtual Networks** -> and Commit

### Commit changes from Staged to Active?

**i** This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

Customer-1 and Customer-2 Virtual Networks

**Commit**

## 16. Configlets Example

### Ref. Apstra Documentation

Go to Design -> Configlets -> +Create Configlet

Name	Generators	Actions
No items		

**Create Configlet**

```
system {
    ntp {
        boot-server 192.168.122.180;
        server 192.168.122.180;
    }
}
```

### Create Configlet

**Name \***  
NTP Server

**Generators \***

**Config Style \***  
 Cumulus    NXOS    EOS    Junos    SONIC

**Section \***  
 SYSTEM

**Template Text \***

```
system {
    ntp {
        boot-server 192.168.0.180;
        server 192.168.0.180;
    }
}
```

[Add a style](#)

Create Another? **Create**

Now go to your blueprint -> Staged -> Configlets

Click Manage Configlets -> +Import Configlet -> Add the information below and Import Configlet

<b>Configlet</b>	NTP Server
<b>Role</b>	Spine

## Import Configlet from Global Catalog

**Configlet \***

**Junos: system**

**Template Text**

**Configlet Scope**

```
role in ["spine"]
```

**Role**

Spine  Leaf  Access

**Predicate**

or  and

**Individual Nodes**

<input type="checkbox"/>	Name	Role	Hostname
Query: All <span style="float: right;">1-6 of 6 &lt; &gt;</span>			

**Page Size:** 25

**Import Configlet**

Now go to -> Uncommitted -> and Commit  
Add Revision Description: **NTP Server Spines** -> and Commit

### Commit changes from Staged to Active?



This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

NTP Server Spines

**Commit**

You can also check the configuration:

```
{master:0}
lab@spine1> show configuration system ntp
boot-server 192.168.122.180;
server 192.168.122.180;
```

## 17. Time Voyager

### Ref. Apstra Documentation

Go to Blueprints -> DC1 -> **Time Voyager**

Description	Created At	User	Actions
NTP Server Spines	2021-03-08, 10:14:57	admin	
Customer-1 and Customer-2 Virtual Networks	2021-03-05, 20:51:49	admin	
removing customers vrf5	2021-03-05, 20:17:28	admin	
(empty)	2021-03-05, 15:21:01	admin	
ESI MAC MSB	2021-03-05, 14:22:15	admin	

Click **Jump to this Revision** and Click **Rollback**

**Rollback Staged blueprint to this revision**

Staged blueprint will be rolled back to revision "Customer-1 and Customer-2 Virtual Networks". All uncommitted changes currently in the Staged area will be discarded.

**Rollback**

Now go to -> **Uncommitted**

As you can see we are removing the NTP Server that we've just added

Type	Action	Name
Configlet	<span style="background-color: red; color: white; padding: 2px;">REMOVED</span>	NTP Server

Now Click **Commit**:

Add Revision Description: **Removing NTP Server – Rollback Time Voyager ->** and **Commit**

**Commit changes from Staged to Active?**

i This action will commit your changes to the active blueprint and will also automatically create a revision.

**Revision Description (optional)**

Commit

You can also check the configuration:

```
{master:0}
lab@spine1> show configuration system ntp

{master:0}
lab@spine1>
```

## 18. Maintenance Mode

[Ref. Apstra Documentation](#)

### 18.1. IBA Drain Traffic

Let's create an IBA which is going to identify our drain traffic.

Go to Blueprints -> DC1 -> Analytics -> Probes -> +**Create Probe** and **Instantiate Predefined Probe**

Name	Anomalies	State	Updated By	Tags	Enabled	Actions
Device system health	No anomalies	Operational	System 4 days ago		<input checked="" type="checkbox"/>	<i>[Edit]</i> <i>[Delete]</i> <i>[Details]</i>
Device Traffic	No anomalies	Operational	System 4 days ago		<input checked="" type="checkbox"/>	<i>[Edit]</i> <i>[Delete]</i> <i>[Details]</i>
ECMP Imbalance (External Interfaces)	No anomalies	Operational	System 4 days ago		<input checked="" type="checkbox"/>	<i>[Edit]</i> <i>[Delete]</i> <i>[Details]</i>
ECMP Imbalance (Fabric Interfaces)	No anomalies	Operational	System 4 days ago		<input checked="" type="checkbox"/>	<i>[Edit]</i> <i>[Delete]</i> <i>[Details]</i>
ESI Imbalance	No anomalies	Operational	System 4 days ago		<input checked="" type="checkbox"/>	<i>[Edit]</i> <i>[Delete]</i> <i>[Details]</i>
LAG Imbalance	No anomalies	Operational	System 4 days ago		<input checked="" type="checkbox"/>	<i>[Edit]</i> <i>[Delete]</i> <i>[Details]</i>

Add the parameters below and **Create**:

#### Predefined Probe

<b>Drain Traffic Anomaly</b>	Drain Traffic Anomaly
<b>Threshold in bps</b>	5000

#### Drain Traffic Anomaly

<b>Drain Traffic Anomaly</b>
5000

#### Instantiate Predefined Probe

##### Predefined Probe \*

Generate a probe to raise anomaly when there is excess traffic on a node that is being drained.

##### Probe Label \*

##### Threshold

Traffic threshold in bits per second. An anomaly will be raised if a traffic on some interface is in excess of this value.

Create Another?

**Create**

The screenshot shows the Apstra DCI Probes interface. At the top, there are tabs for Dashboards, Anomalies, Widgets, and Probes. The Probes tab is selected. Below the tabs, a breadcrumb navigation shows 'Probes > Drain traffic anomaly'. There are status indicators for Operational (green), No anomalies (green), and admin (green). The probe is Enabled (green switch). On the right, there are icons for edit, delete, and refresh.

The main area displays a probe configuration titled 'Stage: ingress\_intf\_traffic Number Set'. It includes a search bar for stages and a table of stages:

Stage	Description
Collect ingress traffic	Ingress traffic on interfaces specified by system_id and if_name
Average ingress traffic	average_ingress_intf_traffic
Ingress traffic threshold	drain_traffic_threshold
Excess per system	excess_per_system
Excess range	excess_range

Below the table, a message says 'No data.' and there are pagination controls for 'Page Size: 25'.

## 18.2. Drain Leaf

Go to Blueprints -> DC1 -> Staged -> Physical and select **jnpr\_single\_leaf\_001**

The screenshot shows the Juniper Blueprints interface. The left sidebar has sections for Blueprints, Devices, Design, Resources, External Systems, and Platform. The Resources section is currently selected. The main area shows a navigation path: Blueprints > DC1 > Staged > Physical > Build > Resources. Below this, there are tabs for Dashboard, Analytics, and Staged. The Staged tab is selected. There are filters for Nodes: All, Links: All, and a Selection/Build switch. The Selection tab is active. A sidebar on the right lists build status for various components:

- 2/2 ASNs - Spines
- 4/4 ASNs - Leafs
- 2/2 Loopback IPs - Spines
- 4/4 Loopback IPs - Leafs
- 16/16 Link IPs - Spines<->Leafs
- 2/2 Link IPs - To External Router

The main content area shows a topology view with nodes grouped under 'spines' and 'leafs'. One specific node, 'jnpr\_single\_leaf\_001', is highlighted with a tooltip: 'jnpr\_single\_leaf\_001 Hostname: jnpr-single-leaf-001 leaf1'.

Select **Deploy Mode**, select **DRAIN** and **Save**. You will be able to see the difference  
**(Staged: drain | Active: Deploy)**

This screenshot shows the Apstra DCI Demo interface for a single leaf node configuration. The top navigation bar includes tabs for Physical, Virtual, Policies, Catalog, Settings, and Tasks. Below the navigation is a search bar for Nodes: All and Links: All, along with Selection and Build buttons.

The main area displays a topology view with a selected rack (jnpr\_single\_leaf\_001) and a selected node (jnpr\_single\_leaf\_001\_leaf). The topology view shows the node connected to several ports (xe-0/0/0, xe-0/0/1, xe-0/0/4, xe-0/0/5, xe-0/0/6) which are connected to various neighbors (spine1, spine2, and other leaf nodes). There are buttons for Add links and Edit links.

To the right, a detailed device properties panel is open for the selected node. It shows the topology label (jnpr\_single\_leaf\_001\_leaf), deploy mode (Deploy Ready), serial number (500000030000), device info (Management IP: 192.168.0.219, OS: Junos 18.4R2-S2.3, Operation Mode: FULL CONTROL), and hostname (jnpr-single-leaf-001-leaf1).

This screenshot shows the Apstra DCI Demo interface for a staged configuration of the same leaf node. The top navigation bar includes tabs for Dashboard, Analytics, Staged, Uncommitted, Active, and Time Voyager. The Staged tab is active.

The main area displays a topology view with the same selected rack and node as the previous screenshot. The topology view shows the node connected to the same ports and neighbors.

To the right, a detailed device properties panel is open for the selected node. The Deploy Mode is set to Staged, with the value "drain" entered. The device info and hostname sections are identical to the previous screenshot.

In the **Config Section** you can click **Incremental** to see the changes.

The screenshot shows the Juniper Network Manager interface with the following details:

- Top Bar:** Shows the path "Blueprints > DC1 > Staged > Physical > Selection".
- Header:** Includes tabs for "Dashboard", "Analytics", "Staged", "Uncommitted", "Active", and "Time Voyager".
- Left Sidebar:** Lists categories like "Blueprints", "Devices", "Design", "Logical Devices", "Interface Maps", "Rack Types", "Templates", "Configlets", "Property Sets", "TCP/UDP Ports", "Resources", "External Systems", and "Platform".
- Central Preview Area:** Title: "jnpr\_single\_leaf\_001\_leaf1 Incremental Config Preview".

```
1 system {
2     host-name jnpr-single-leaf-001-leaf1;
3 }
4 interfaces {
5     replace: xe-0/0/0 {
6         description "facing_spine1:xe-0/0/3";
7         mtu 9216;
8         unit 0 {
9             family inet {
10                 address 10.10.0.7/31;
11             }
12         }
13     }
14     replace: xe-0/0/1 {
15         description "facing_spine2:xe-0/0/3";
16         mtu 9216;
17         unit 0 {
18             family inet {
19                 address 10.10.0.15/31;
20             }
21         }
22     }
23     replace: xe-0/0/2 {
24         unit 0 {
25             family inet;
26         }
27     }
28     replace: xe-0/0/3 {
29         unit 0 {
30             family inet;
```
- Properties Panel:** Shows "Deploy Mode" set to "N", IP address "192.168.0.219", and "Junos 18.4R2-02.3". It also displays "Role: FULL CONTROL", "Hostname: jnpr-single-leaf-001-leaf1", and "Config: Pristine".

Now go to -> Uncommitted -> Select **jnpr\_single\_leaf\_001\_leaf1** and see the differences:

System Node Preview	
Staged	
Label	jnpr_single_leaf_001_leaf1
Role	Leaf
Deploy Mode	Drain
System ID	500000030000
Hostname	jnpr-single-leaf-001-leaf1
Device Profile	Juniper vQFX
Group Label	JNPR-SINGLE-LEAF
ASN	105
Loopback IPv4	10.20.30.3/32
Loopback IPv6	Not assigned

Active	
Label	jnpr_single_leaf_001_leaf1
Role	Leaf
Deploy Mode	Deploy
System ID	500000030000
Hostname	jnpr-single-leaf-001-leaf1
Device Profile	Juniper vQFX
Group Label	JNPR-SINGLE-LEAF
ASN	105
Loopback IPv4	10.20.30.3/32
Loopback IPv6	Not assigned

Now you can close, click Commit and Add Revision: **Drain Leaf** -> and Commit

## Commit changes from Staged to Active?

 This action will commit your changes to the active blueprint and will also automatically create a revision.

**Revision Description (optional)**

Drain Leaf

**Commit**

As you can see, there is no Anomalies once APSTRA knows the leaf has been drained!

**Deployment Status**

Service Config	Discovery Config	Drain Config
5 SUCCEEDED	0 SUCCEEDED	1 SUCCEEDED
0 PENDING	0 PENDING	0 PENDING
0 FAILED	0 FAILED	0 FAILED

**Anomalies**

All Probes

IP Fabric

External Routing

L2 Connectivity

\*\*\*\*\*Repeat the same process but now select Deploy to have your leaf deployed again!

#### System Node Preview

Staged		Active	
Label	jnpr_single_leaf_001_leaf1	Label	jnpr_single_leaf_001_leaf1
Role	Leaf	Role	Leaf
Deploy Mode	Deploy	Deploy Mode	Drain
System ID	500000030000	System ID	500000030000
Hostname	jnpr-single-leaf-001-leaf1	Hostname	jnpr-single-leaf-001-leaf1
Device Profile	Juniper vQFX	Device Profile	Juniper vQFX
Group Label	JNPR-SINGLE-LEAF	Group Label	JNPR-SINGLE-LEAF
ASN	105	ASN	105
Loopback IPv4	10.20.30.3/32	Loopback IPv4	10.20.30.3/32
Loopback IPv6	Not assigned	Loopback IPv6	Not assigned

Commit and Add Revision: **Deploy Leaf ->** and Commit

Commit changes from Staged to Active?



This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

Deploy Leaf

**Commit**

## 18.3. Device Removal

The removing method is the same for **Drain** and **Deploy**, but we need to set to Ready instead of Drain. Setting the deploy mode to **Ready** removes the running configuration from the device and switches it to running only LLDP to discover neighbors.

Go to Blueprints -> DC1 -> Staged -> Physical and select spines (spine1)

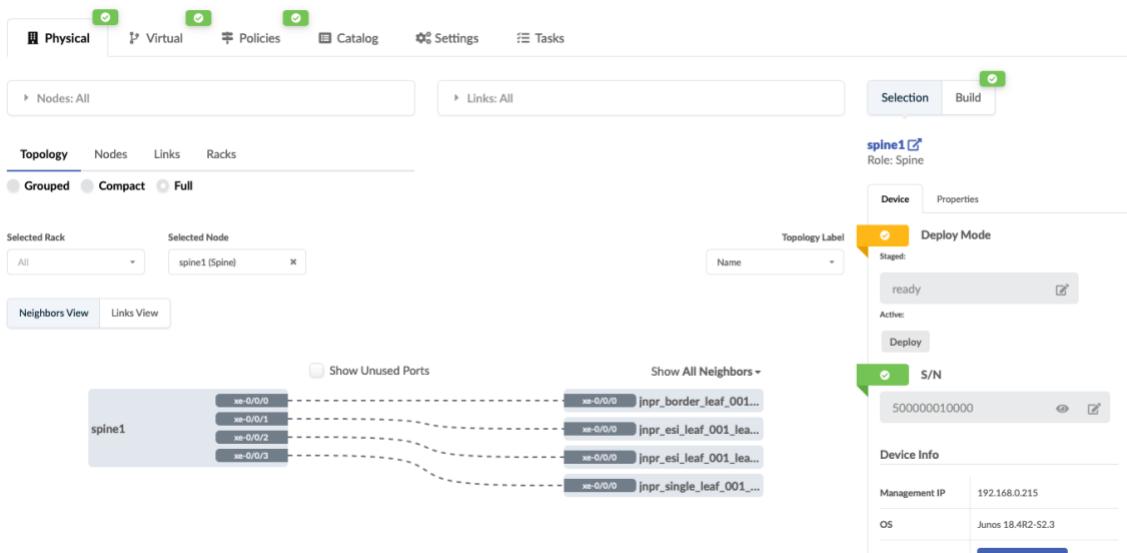
The screenshot shows the Apstra Blueprints interface in the Staged view. The Physical tab is selected. A node named "spine1" is highlighted. On the right, a sidebar displays network configurations with their current status:

- ASNs - Spines: 2/2
- ASNs - Leaf: 4/4
- Loopback IPs - Spines: 2/2
- Loopback IPs - Leaf: 4/4
- Link IPs - Spines <> Leaf: 16/16
- Link IPs - To External Router: 2/2

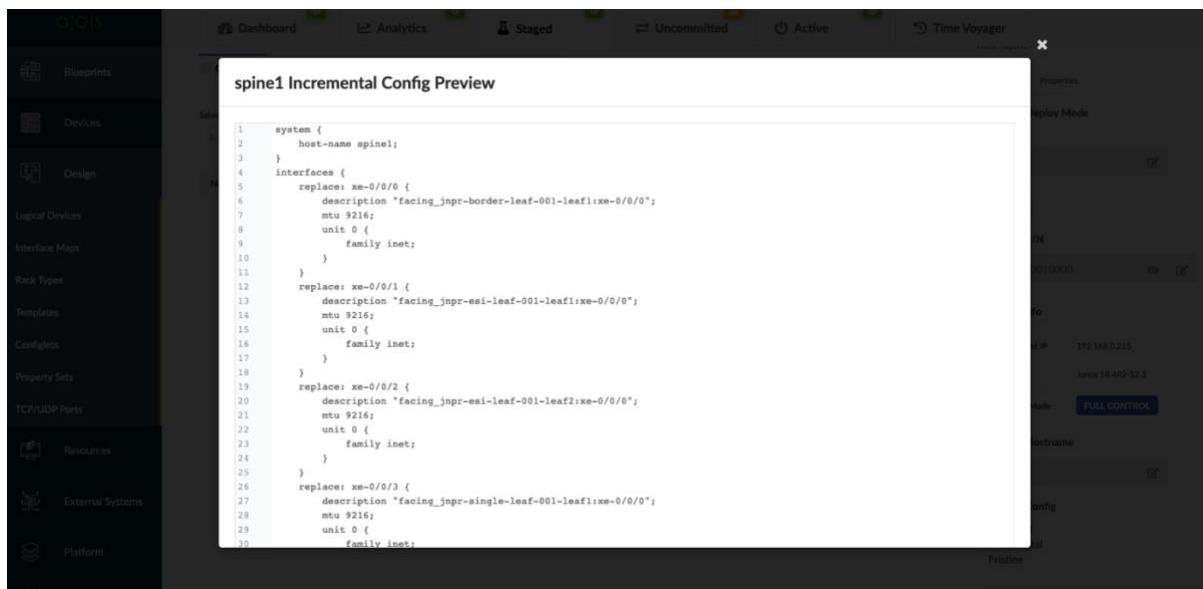
Select **Deploy Mode**, select **Ready** and **Save**. You will be able to see the difference (**Staged**: ready | **Active**: Deploy)

The screenshot shows the Apstra Blueprints interface in the Physical view. A node named "spine1" is selected. A detailed sidebar on the right shows the "Device" tab with the following settings:

- Topology Label:** spine1
- Deploy Mode:** Ready (highlighted)
- S/N:** 500000010000
- Device Info:**
  - Management IP: 192.168.0.215
  - OS: Junos 18.4R2-52.3
  - Operation Mode: FULL CONTROL



In the **Config Section** you can click **Incremental** to see the changes.



Now go to -> Uncommitted -> Select **spine1** and see the differences:

System Node Preview	
Staged	
Label	spine1
Role	Spine
Deploy Mode	Ready
System ID	500000010000
Hostname	spine1
Device Profile	Juniper vQFX
Group Label	N/A
ASN	100
Loopback IPv4	10.20.31.0/32
Loopback IPv6	Not assigned

Active	
Active	
Label	spine1
Role	Spine
Deploy Mode	Deploy
System ID	500000010000
Hostname	spine1
Device Profile	Juniper vQFX
Group Label	N/A
ASN	100
Loopback IPv4	10.20.31.0/32
Loopback IPv6	Not assigned

Now you can close, click Commit and Add Revision: **Drain Spine1** -> and Commit

### Commit changes from Staged to Active?

This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

Commit

After a while, As you can see, there is no Anomalies on Dashboard, once APSTRA knows the leaf has been removed!

Deployment Status		
Service Config	Discovery Config	Drain Config
5 SUCCEEDED	1 SUCCEEDED	0 SUCCEEDED
0 PENDING	0 PENDING	0 PENDING
0 FAILED	0 FAILED	0 FAILED

Anomalies			
All Probes	BGP	Cabling	Interface
0 anomalies	0 anomalies	0 anomalies	0 anomalies
External Routing	Interface	MLAG	LAG
Anomaly History	0 anomalies	0 anomalies	0 anomalies
Now			
L2 Connectivity			
Anomaly History			
Now			

\*\*\*\*\*Repeat the same process but now select Deploy to have your leaf deployed again!

System Node Preview

---

**Staged**

Label	spine1
Role	Spine
Deploy Mode	Deploy
System ID	500000010000
Hostname	spine1
Device Profile	Juniper vQFX
Group Label	N/A
ASN	100
Loopback IPv4	10.20.31.0/32
Loopback IPv6	Not assigned

**Active**

Label	spine1
Role	Spine
Deploy Mode	Ready
System ID	500000010000
Hostname	spine1
Device Profile	Juniper vQFX
Group Label	N/A
ASN	100
Loopback IPv4	10.20.31.0/32
Loopback IPv6	Not assigned

Commit and Add Revision: **Deploy spine1** -> and Commit

**Commit changes from Staged to Active?**

i This action will commit your changes to the active blueprint and will also automatically create a revision.

Revision Description (optional)

Commit

## 18.4. Reverting Changes

Let's edit a hostname from spine1 and revert the configuration to the original state.

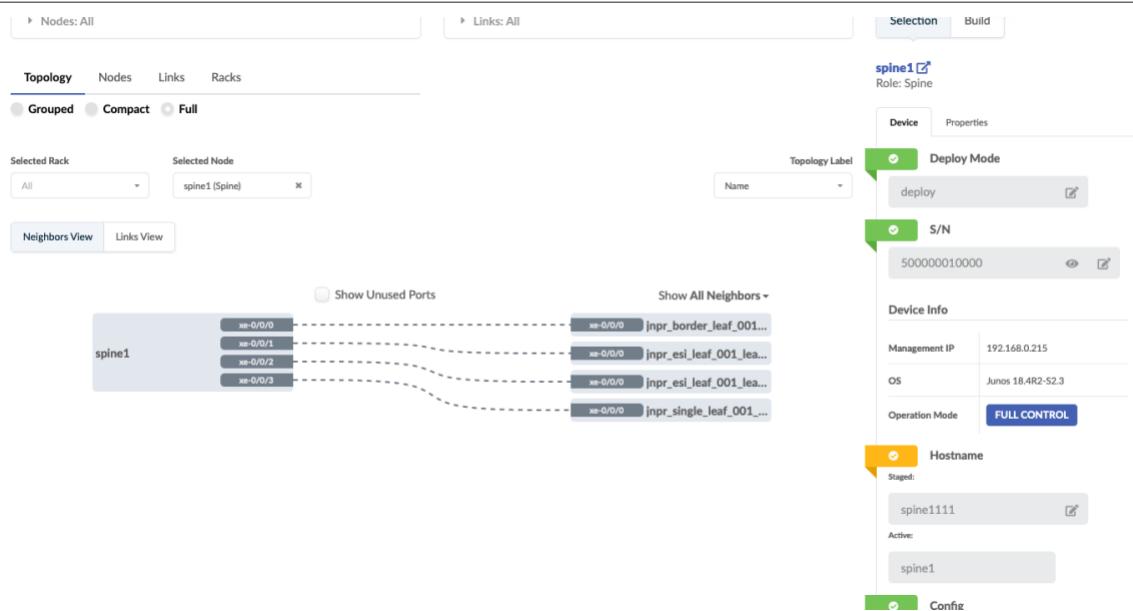
Go to Blueprints -> DC1 -> Staged -> Physical -> **spine1**

The screenshot shows the Apstra DCI Demo interface. On the left is a sidebar with navigation links: Blueprints, Devices, Design, Logical Devices, Interface Maps, Rack Types, Templates, Configlets, Property Sets, TCP/UDP Ports, Resources (selected), External Systems, and Platform. The main area has tabs for Dashboard, Analytics, Staged (selected), Uncommitted, Active, and Time Voyager. Below these are tabs for Physical, Virtual, Policies, Catalog, Settings, and Tasks. A search bar for Nodes: All and Links: All is present. The Topology section shows a grouped view of nodes and links. A sidebar on the right displays various status metrics for network components like ASNs - Spines, ASNs - Leafs, Loopback IPs - Spines, Loopback IPs - Leafs, Link IPs - Spines > Leafs, and Link IPs - To External Router.

Select **Hostname**, change from **spine1** to **spine1111** and **Save**. You will be able to see the difference (**Staged**: spine1 | **Active**: spine1111)

This screenshot shows a detailed view of the selected node 'spine1'. The left panel displays the node's connections to other devices: 'jnp\_border\_leaf\_001', 'jnp\_esl\_leaf\_001', and 'jnp\_single\_leaf\_001'. The right panel is a configuration card for 'spine1' with the following fields:

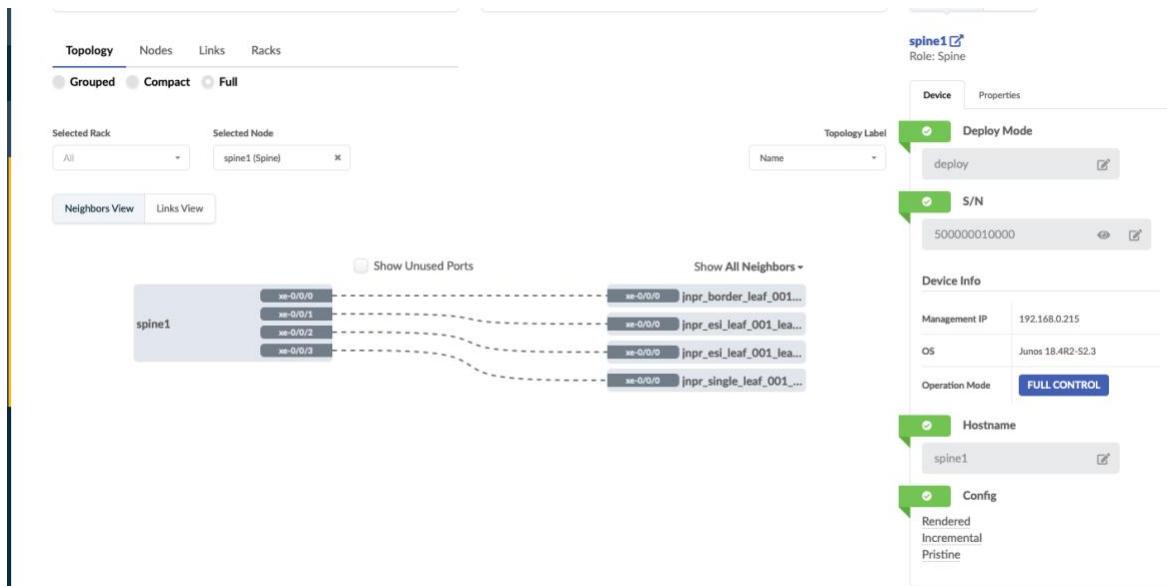
- Topology Label:** Name (dropdown menu)
- Deploy Mode:** deploy
- S/N:** 500000010000
- Device Info:**
  - Management IP: 192.168.0.215
  - OS: Junos 18.4R2-S2.3
  - Operation Mode: FULL CONTROL
- Hostname:** spine1111 (input field with save, cancel, and lock icons)
- Config:** Rendered, Incremental, Pristine



Now go to -> Uncommitted -> Select **spine1** and see the differences:

System Node Preview			
		Staged	Active
Label	spine1	Label	spine1
Role	Spine	Role	Spine
Deploy Mode	Deploy	Deploy Mode	Deploy
System ID	500000010000	System ID	500000010000
Hostname	spine1111	Hostname	spine1
Device Profile	Juniper vQFX	Device Profile	Juniper vQFX
Group Label	N/A	Group Label	N/A
ASN	100	ASN	100
Loopback IPv4	10.20.31.0/32	Loopback IPv4	10.20.31.0/32
Loopback IPv6	Not assigned	Loopback IPv6	Not assigned

Now you can go back to Bluprints -> DC1 -> Staged -> Physical -> Spine1, and see there is no change!



## 19. Connectivity Tests

### 19.1. Customer 1

#### ##### C1-V10-HOST-2

```
lab@lab:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: ens3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 50:00:00:0e:00:00 brd ff:ff:ff:ff:ff:ff
        inet 192.168.10.12/24 brd 192.168.10.255 scope global noprefixroute ens3
            valid_lft forever preferred_lft forever
        inet6 fe80::a563:38f8:8f0:6e2/64 scope link noprefixroute
            valid_lft forever preferred_lft forever
3: ens4: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOWN group default qlen 1000
    link/ether 50:00:00:0e:00:01 brd ff:ff:ff:ff:ff:ff
lab@lab:~$
```

```
lab@lab:~$ ping 192.168.10.11 -c3
PING 192.168.10.11 (192.168.10.11) 56(84) bytes of data.
64 bytes from 192.168.10.11: icmp_seq=1 ttl=64 time=170 ms
64 bytes from 192.168.10.11: icmp_seq=2 ttl=64 time=110 ms
64 bytes from 192.168.10.11: icmp_seq=3 ttl=64 time=285 ms

--- 192.168.10.11 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 109.683/188.344/284.965/72.676 ms
lab@lab:~$ ping 192.168.20.13 -c3
PING 192.168.20.13 (192.168.20.13) 56(84) bytes of data.
64 bytes from 192.168.20.13: icmp_seq=1 ttl=63 time=102 ms
64 bytes from 192.168.20.13: icmp_seq=2 ttl=63 time=101 ms
64 bytes from 192.168.20.13: icmp_seq=3 ttl=63 time=113 ms

--- 192.168.20.13 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 101.278/105.349/112.986/5.403 ms
lab@lab:~$
```

```
lab@lab:~$ ping 192.168.10.14 -c3
PING 192.168.10.14 (192.168.10.14) 56(84) bytes of data.
64 bytes from 192.168.10.14: icmp_seq=1 ttl=64 time=175 ms
64 bytes from 192.168.10.14: icmp_seq=2 ttl=64 time=402 ms
64 bytes from 192.168.10.14: icmp_seq=3 ttl=64 time=269 ms

--- 192.168.10.14 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 175.375/282.093/401.521/92.760 ms
lab@lab:~$ ping 192.168.20.15 -c3
PING 192.168.20.15 (192.168.20.15) 56(84) bytes of data.
64 bytes from 192.168.20.15: icmp_seq=1 ttl=63 time=201 ms
64 bytes from 192.168.20.15: icmp_seq=2 ttl=63 time=202 ms
64 bytes from 192.168.20.15: icmp_seq=3 ttl=63 time=334 ms

--- 192.168.20.15 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 201.390/245.824/334.222/62.506 ms
lab@lab:~$ ping 192.168.10.16 -c3
PING 192.168.10.16 (192.168.10.16) 56(84) bytes of data.
64 bytes from 192.168.10.16: icmp_seq=1 ttl=64 time=214 ms
64 bytes from 192.168.10.16: icmp_seq=2 ttl=64 time=261 ms
64 bytes from 192.168.10.16: icmp_seq=3 ttl=64 time=298 ms

--- 192.168.10.16 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2001ms
rtt min/avg/max/mdev = 213.730/257.483/298.029/34.489 ms
```

```
lab@lab:~$ ping 192.168.20.17 -c3
PING 192.168.20.17 (192.168.20.17) 56(84) bytes of data.
64 bytes from 192.168.20.17: icmp_seq=1 ttl=63 time=336 ms
64 bytes from 192.168.20.17: icmp_seq=2 ttl=63 time=116 ms
64 bytes from 192.168.20.17: icmp_seq=3 ttl=63 time=410 ms

--- 192.168.20.17 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 115.808/287.450/410.153/125.049 ms
lab@lab:~$ ping 192.168.30.18 -c3
PING 192.168.30.18 (192.168.30.18) 56(84) bytes of data.
64 bytes from 192.168.30.18: icmp_seq=1 ttl=63 time=269 ms
64 bytes from 192.168.30.18: icmp_seq=2 ttl=63 time=238 ms
64 bytes from 192.168.30.18: icmp_seq=3 ttl=63 time=308 ms

--- 192.168.30.18 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 237.580/271.341/307.932/28.790 ms
lab@lab:~$
```

## 19.2. Customer 2

### ##### C2-V100-HOST-2

```
lab@lab:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    qlen 1000
        link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: ens3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 50:00:00:0d:00:00 brd ff:ff:ff:ff:ff:ff
    inet 192.168.100.11/24 brd 192.168.100.255 scope global noprefixroute ens3
        valid_lft forever preferred_lft forever
    inet6 fe80::917e:c6fa:69b1:cc7f/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
lab@lab:~$
```

```
lab@lab:~$ ping 192.168.200.12 -c3
PING 192.168.200.12 (192.168.200.12) 56(84) bytes of data.
64 bytes from 192.168.200.12: icmp_seq=1 ttl=63 time=109 ms
64 bytes from 192.168.200.12: icmp_seq=2 ttl=63 time=105 ms
64 bytes from 192.168.200.12: icmp_seq=3 ttl=63 time=270 ms

--- 192.168.200.12 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 105.400/161.191/269.656/76.706 ms
lab@lab:~$
```

```
lab@lab:~$ ping 192.168.200.13 -c3
PING 192.168.200.13 (192.168.200.13) 56(84) bytes of data.
64 bytes from 192.168.200.13: icmp_seq=1 ttl=62 time=440 ms
64 bytes from 192.168.200.13: icmp_seq=2 ttl=62 time=212 ms
64 bytes from 192.168.200.13: icmp_seq=3 ttl=62 time=201 ms

--- 192.168.200.13 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 200.978/284.217/439.874/110.154 ms
lab@lab:~$
```

## 20. Server Bond Configuration – EVE-NG

[https://portal.apstra.com/docs/server\\_lag.html](https://portal.apstra.com/docs/server_lag.html)

lab@lab:~\$ sudo apt -y install ifenslave

Make sure you have the right modules loaded

```
root@ubuntu:~# cat /etc/modules
# /etc/modules: kernel modules to load at boot time.
#
# This file contains the names of kernel modules that should be loaded
# at boot time, one per line. Lines beginning with "#" are ignored.

loop
lp
bonding
```

```
root@ubuntu:~# cat /etc/network/interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto ens5
iface ens5 inet static
    address 192.168.122.23
    netmask 255.255.255.0

allow-hotplug ens3
iface ens3 inet manual
    up ifenslave bond0 $IFACE
    down ifenslave -d bond0 $IFACE
    bond-master bond0

allow-hotplug ens4
iface ens4 inet manual
    up ifenslave bond0 $IFACE
    down ifenslave -d bond0 $IFACE
    bond-master bond0
```

```
auto bond0
iface bond0 inet static
    address 192.168.10.11
    netmask 255.255.255.0
    gateway 192.168.10.1
    up link set $IFACE up
    bond-mode 802.3ad
    bond-slaves ens3 ens4
    bond-lacp-rate fast
    bond-xmit_hash_policy layer3+4
    bond-miimon 100
    bond-downdelay 200
    bond-updelay 200
```

```
# /etc/init.d/networking restart
```

```
# sudo modprobe bonding
```

```
# shutdown -r now
```