CCIE Enterprise Infrastructure v1.0

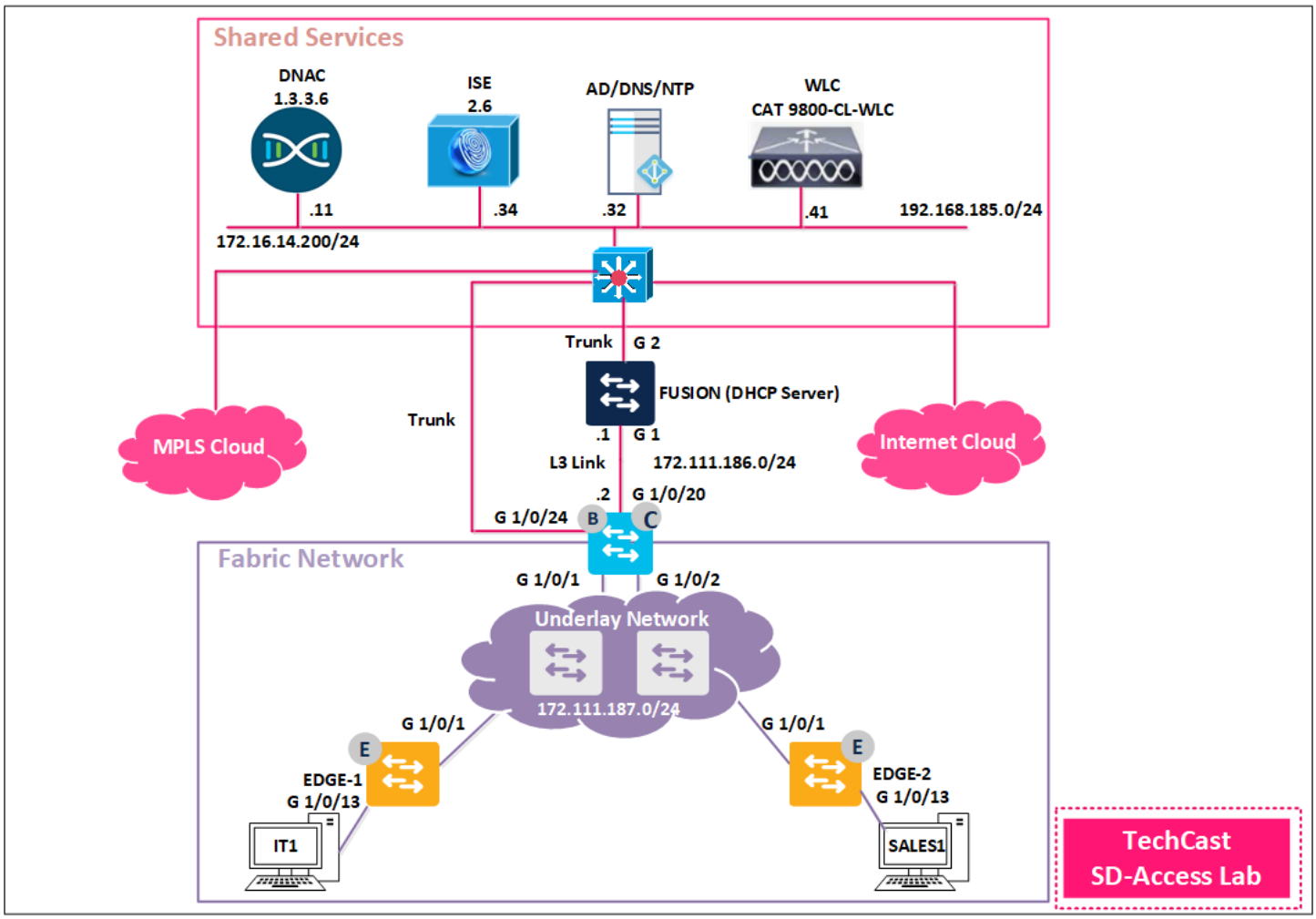
SD-Access

https://www.techcast.io

The above table of content is the exact workbook outlines!
هذه قائمة المحتوى الفعلي للكتاب العملي لهذه الدورة!

All below sections are sample of how our workbooks looks like!
هذا الملف يحتوي على أمثلة مقتبسة من الكتاب العملي الفعلي!

Topology

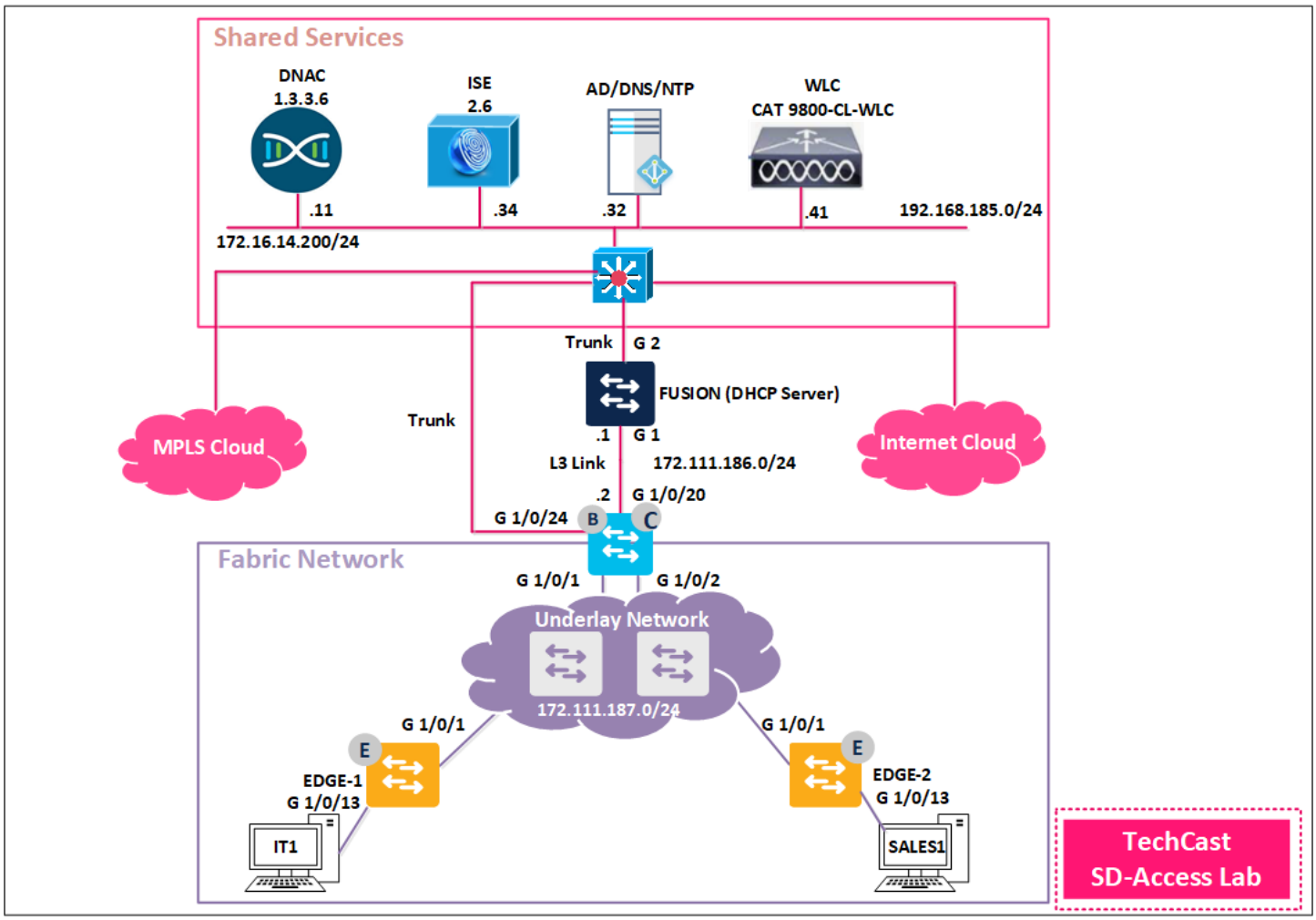


Subnets	Interface & IPv4 Address	Device	Gateway IPv4 Address
Shared Services Network	Ent. 172.16.14.200/24 192.168.185.11/24	DNAC	172.16.14.1
	G 0 192.168.185.34	ISE	192.168.185.1
	192.168.185.32	DNS/NTP/AD	192.168.185.1
Fusion Node			
Border Node	G 1/0/20 172.111.186.0/24	To Fusion Node G1	L3 Link
	G 1/0/24	To Core SW-To Fusion	Trunk (L3HANDOFF)

	G 1/0/1	To Edge-1	Edge-1's G 1/0/1
	G 1/0/2	To Edge-2	Edge-2's G 1/0/1
Fabric Edge-1	G 1/0/1	To Border	Border's G 1/0/1
	G 1/0/13	To IT1-Wired PC	-
Fabric Edge-2	G 1/0/1	To Border	Border's G 1/0/2
	G 1/0/13	To SALES1-Wired PC	-
SDA Fabric Network			

1 SD-Access Network Preparation

1.1 Lab 01 – Configuring DNAC & ISE Integration



Before we start integration between DNAC and ISE; we need to enable few services such such as REST API and PxGRID services. In addition, because of the lab only we need to suppress few RADIUS services. According to that, we will configure integration between them and migrate the policies.

1.1.1 Step 1 – Disable RADIUS services on ISE (Not in Production Network)

Radius

Administration → System → Settings → Protocols → RADIUS

- Uncheck the following services.
  - *"Reject RADIUS requests from clients with repeated failures"*
  - *"Suppress repeated failed clients"*
  - *"Suppress repeated successful authentications*"
- Click "**Save"**

1.1.2 Step 2 – Enable REST API and PxGRID Services on ISE

ERS

Administration > **System** > **Settings** > **ERS Settings**

- Check "Enable for ERS for Read/Write"
- Click **"Save"**

PxGrid

Administration > **System** > **Deployment** > **ISE**

- Check "Enable for PxGrid"
- Click **"Save"**

1.1.3 Step 3 – Configure ISE's parameters in DNAC to establish communication.

Settings "icon" > **System Settings** > **Settings** > **Authemtications & Policy Servers**

- Click **"Add"**
  - Server IP Address: 192.168.185.34
  - Shared Secret: Cisco@123
  - Cisco ISE Server: Slide to Enable
  - Username: admin
  - Password: 1234QWer
  - FQDN: ISE.sda.local **(copy it from ISE).**
  - Subscriber Name: DNAC-TechCast **(this name will appear for DNAC in ISE).**

- Click **“Apply”**

1.1.4 Step 4 – Verify and Approve the Integration on ISE

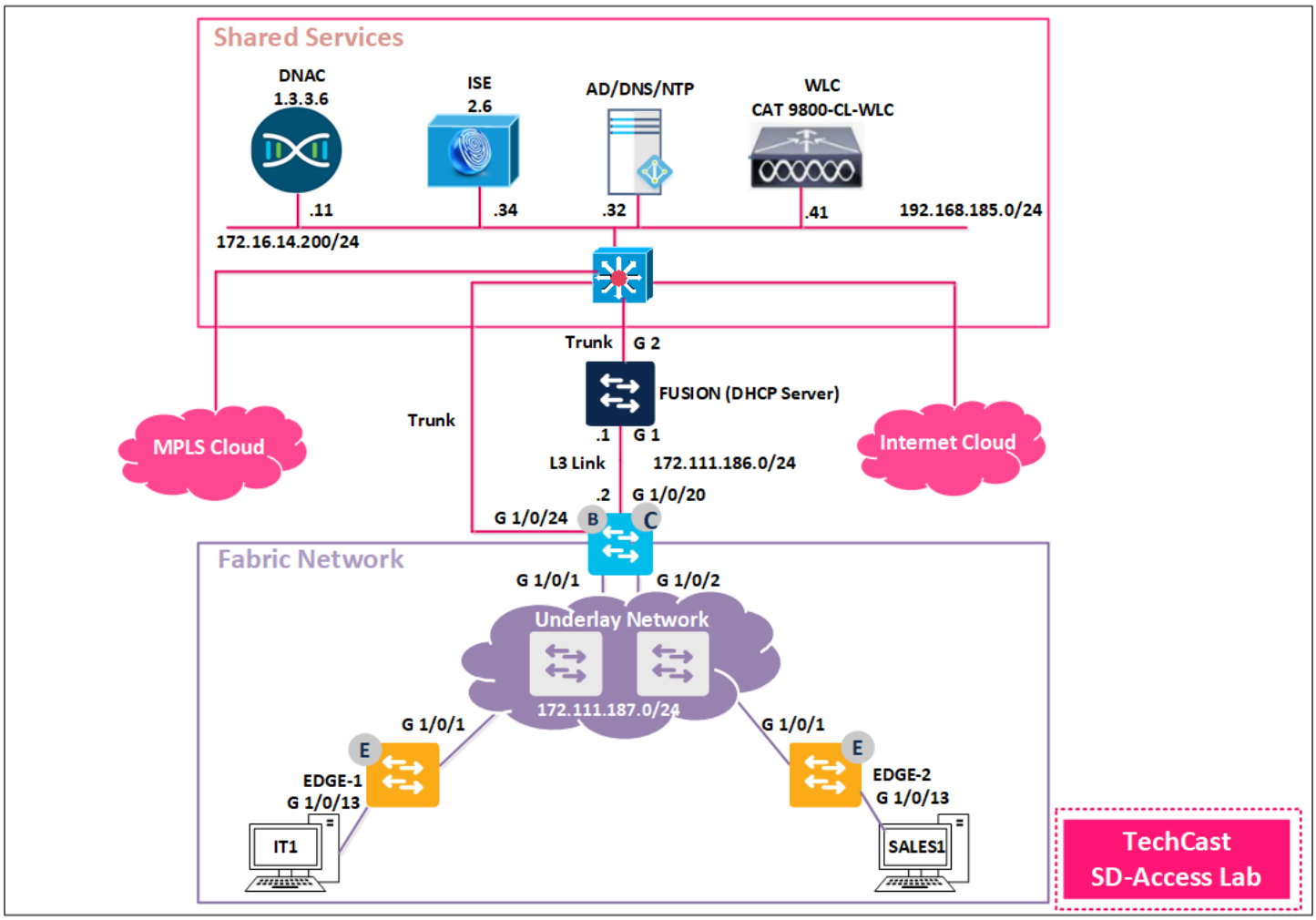
- Click **“Approve All”**
- You should see this green color message on the left bottom corner “**Connected via XMPP ISE.sda.local**”

1.1.5 Step 5 – Migrate Policy from ISE to DNAC

- Click **“Yes”** to accept.
- Waite for the integration to complete which might takes few minutes.

2 DNAC Design

2.1 Lab 04 – Network Hierarchy – Site & Building



2.1.1 Step 1 – Add an Area under Global

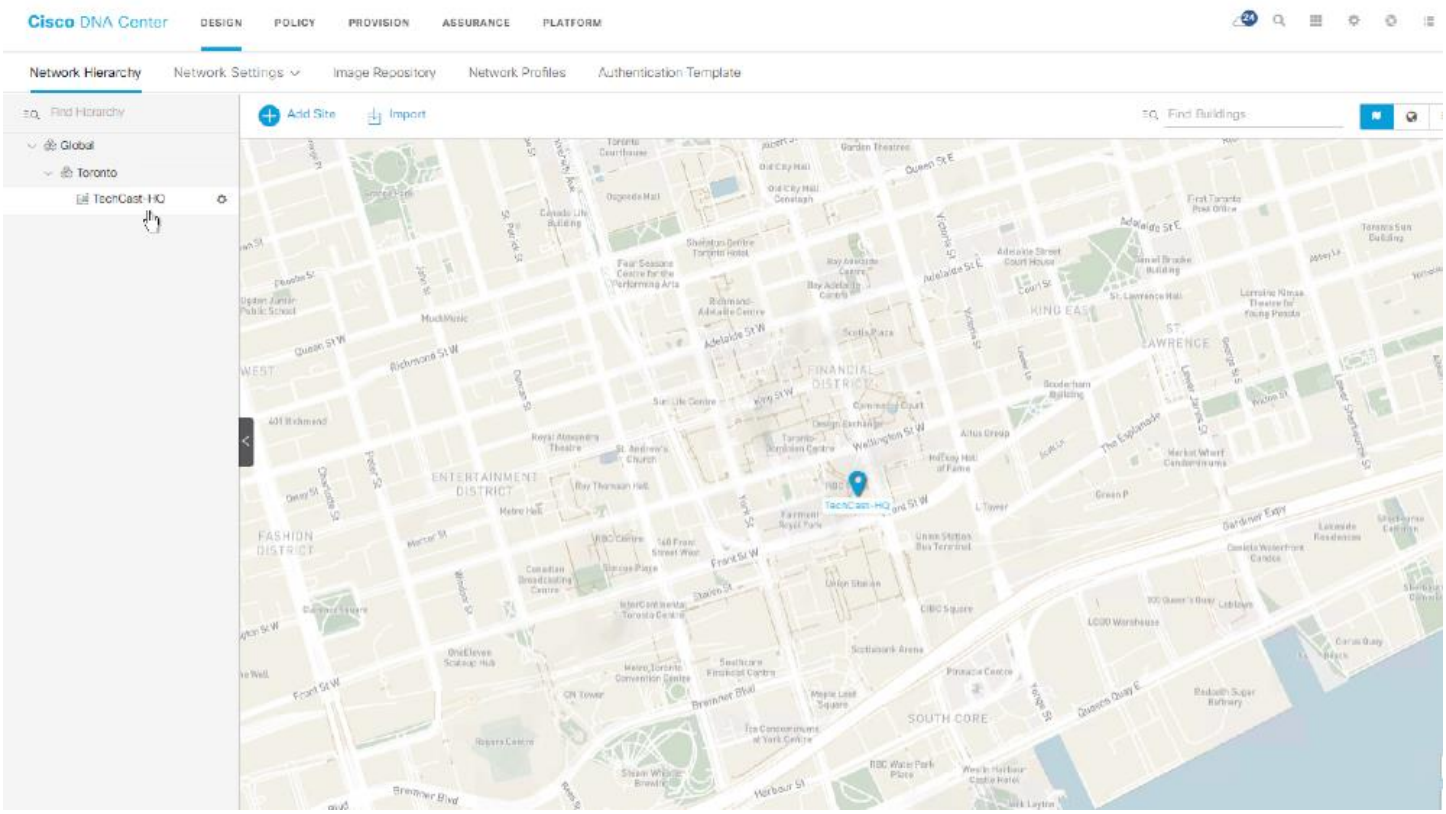
Design > Network Hierarchy > Add Site > Add Area

- Add the following parameters;
  - Area Name: Toronto
  - Parent: Global
- Click "**Add**"

2.1.2 Step 2 – Add a Building under Toronto

Design > **Network Hierarchy** > **Add Site** > **Add Building**

- Add the following parameters;
  - BUILDING NAME: TECHCAST-HQ
  - PARENT: TORONTO
  - ADDRESS: 3400-181 BAY ST, TORONTO ON M5J 2T3
- Click "**Save**".



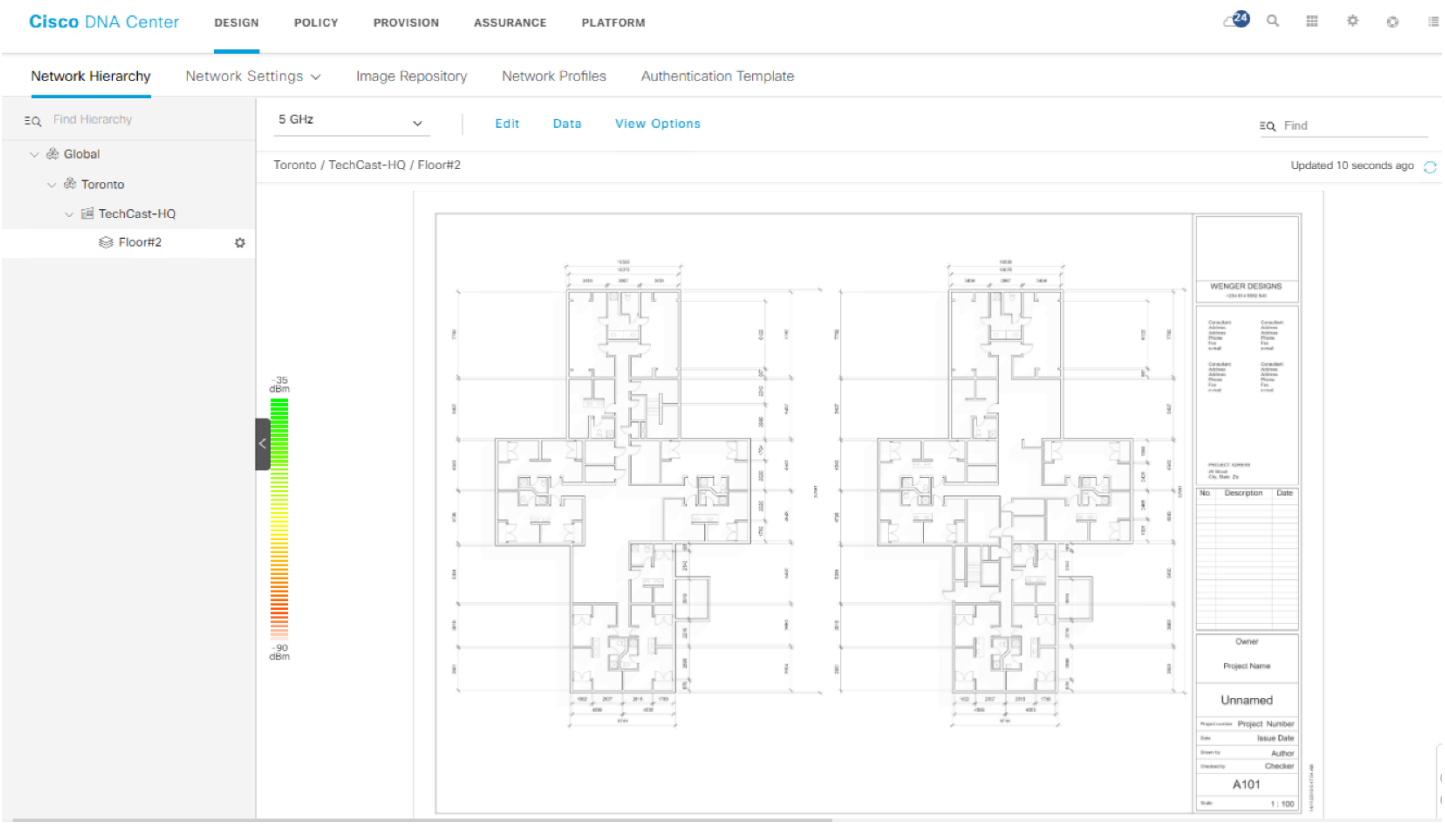
2.1.3 Step 2 – Add Floor under TechCast-HQ

Design > **Network Hierarchy** > **Add Site** > **Add Floor**

- Add the following parameters;

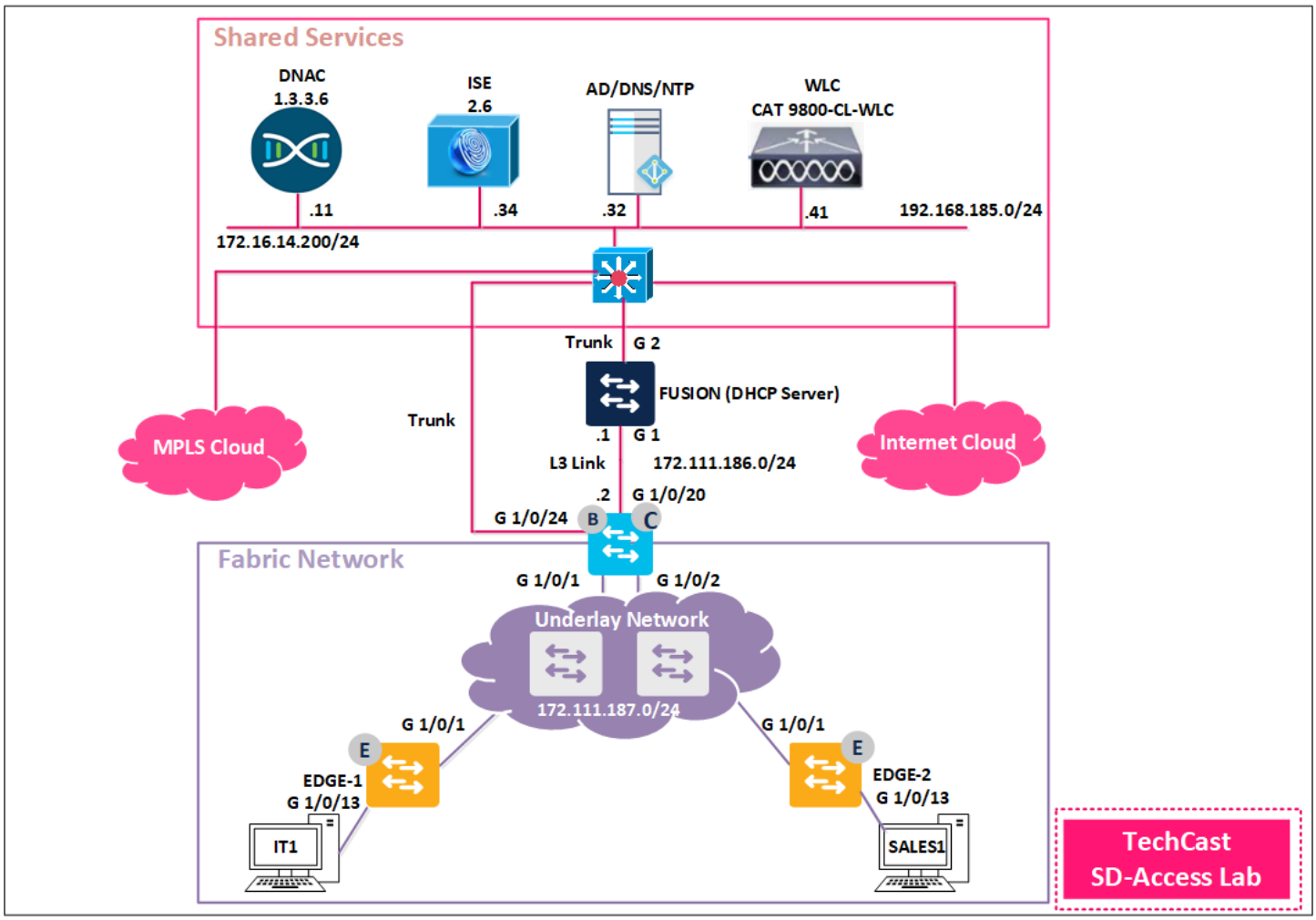
- Floor Name: Floor#2
- Type: Cubed and Walled Offices
- Floor Image: Import Floor Plan File
- Width: 300ft
- Length: 300ft
- Height: 15

- Click "**Save**".



3 Fabric Network Infrastructure –Underlay Manual Configuration

3.1 Lab 10 – Device Discovery & Provisioning



3.1.1 Step 1 – Discover the Underlay

Tools > **Discovery** > **Add Discovery**

- In Global level; click "**Add**" to add the following;
  - DISCOVERY NAME: **TECHCAST-FABRIC-UNDERLAY**

Note: tools button on the top left corner.

IP Address/Range

- Discovery Type: IP Address/Range
- IP Address Space: 172.111.111.1 – 172.111.111.3

Credentials

- CLI: techcast/TechCast-dnac
- SNMPv2c Read: RO
- SNMPv2c Write: RW
- Uncheck **SNMPv3**

- Click "**Discover**" to start discovery.
- Wait for the fabric devices to be discovered which might take few minutes.

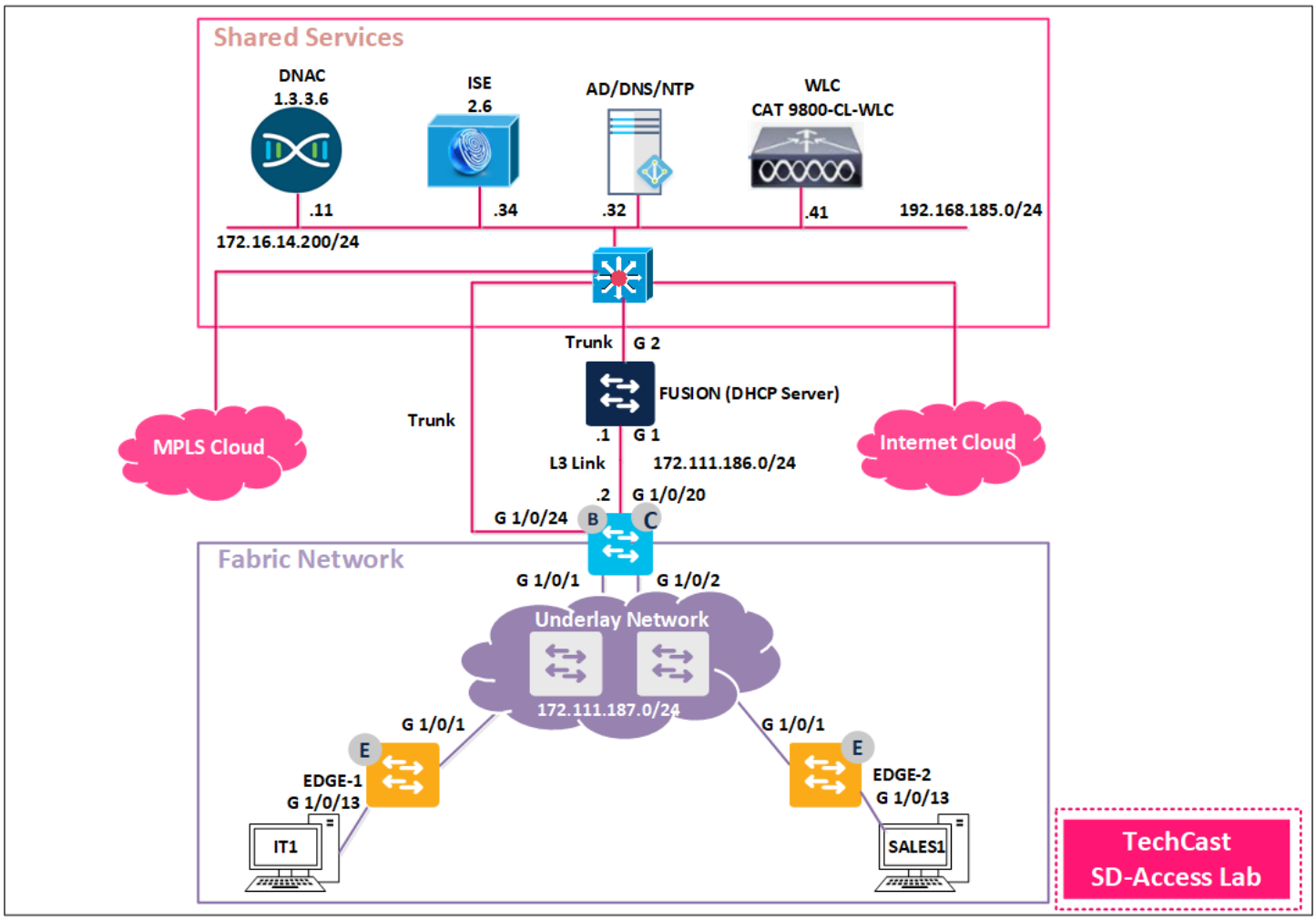
3.1.2 Step 2 – Assign Underlay Devices to the Site

Provision > **Unassigned Devices** > **Inventory**

- Select the following devices "**TechCast-9300CB", "TechCast-9300E1" and "TechCast-9300E2**".
- Click "**Action**" >> "**Provision**" >> "**Assign Devices to Site**"
- Select "**Global"** >> "**Toronto"** >> "**HQ"**
- Click "**Assign**". You will notice that all switches moved under HQ.

4 Fabric Network Infra – LAN Automation

4.1 Lab 14 – DNAC Provisioning – Provision Fabric Devices to HQ Site



4.1.1 Step 1 – Provision Fabric devices as HQ devices.

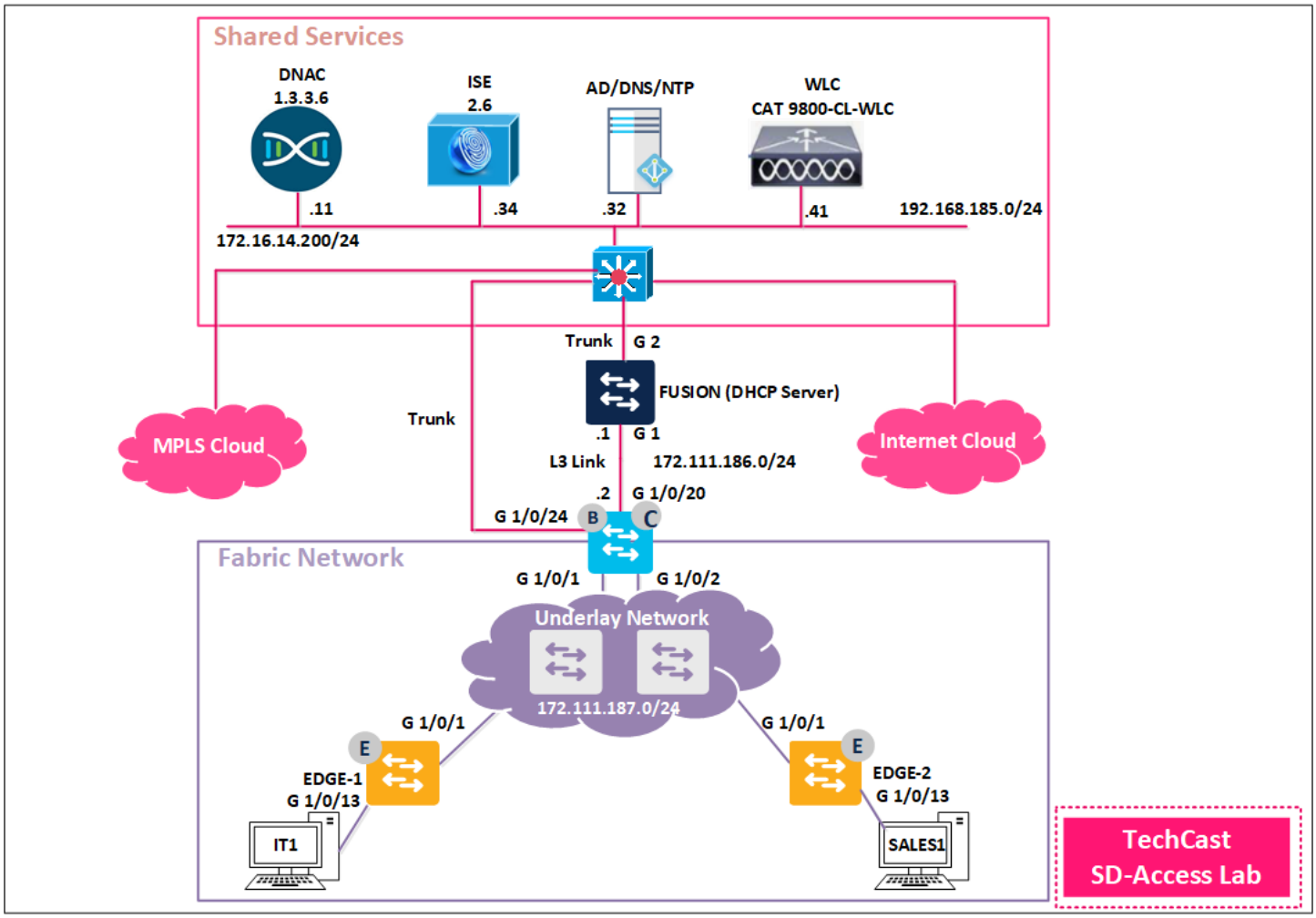
Provision > **Global** > **Toronto** > **TechCast-HQ**

- Select "**All the devices**"
- Click **Action** >> **Provision** >> **Provision Device**
- Select **Global** >> **Toronto** >> **TechCast-HQ**
- Check the box "**Apply to All**"
- Click **Next**
- Click **Next**

- Review summary information and click **Deploy**
- When "**Now**" then click **Apply**
- At this stage, the TechCast-HQ fabric devices are ready now for Device Role Assignment.

5 Configure Fabric Network Itself

5.1 Lab 20 – Configuring Fabric – HQ Site – Provision Fabric Edges Nodes



5.1.1 Step 1 – Provision TechCast-HQ Fabric Edge Device (Edge1)

Provision > Fabric > TechCast_HQ_FABRIC > Toronto > TechCast-HQ

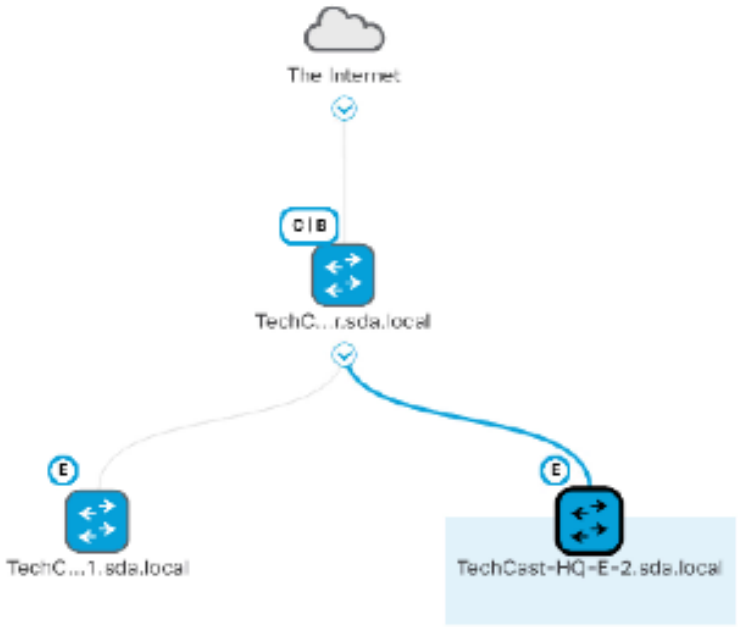
- Select **TechCast-HQ-E-1**
- Slide to select the role **Edge**
- Click **Add**
- Click **Save** and click "Now" **Apply**

5.1.2 Step 2 – Provision TechCast-HQ Fabric Edge Device (Edge2)

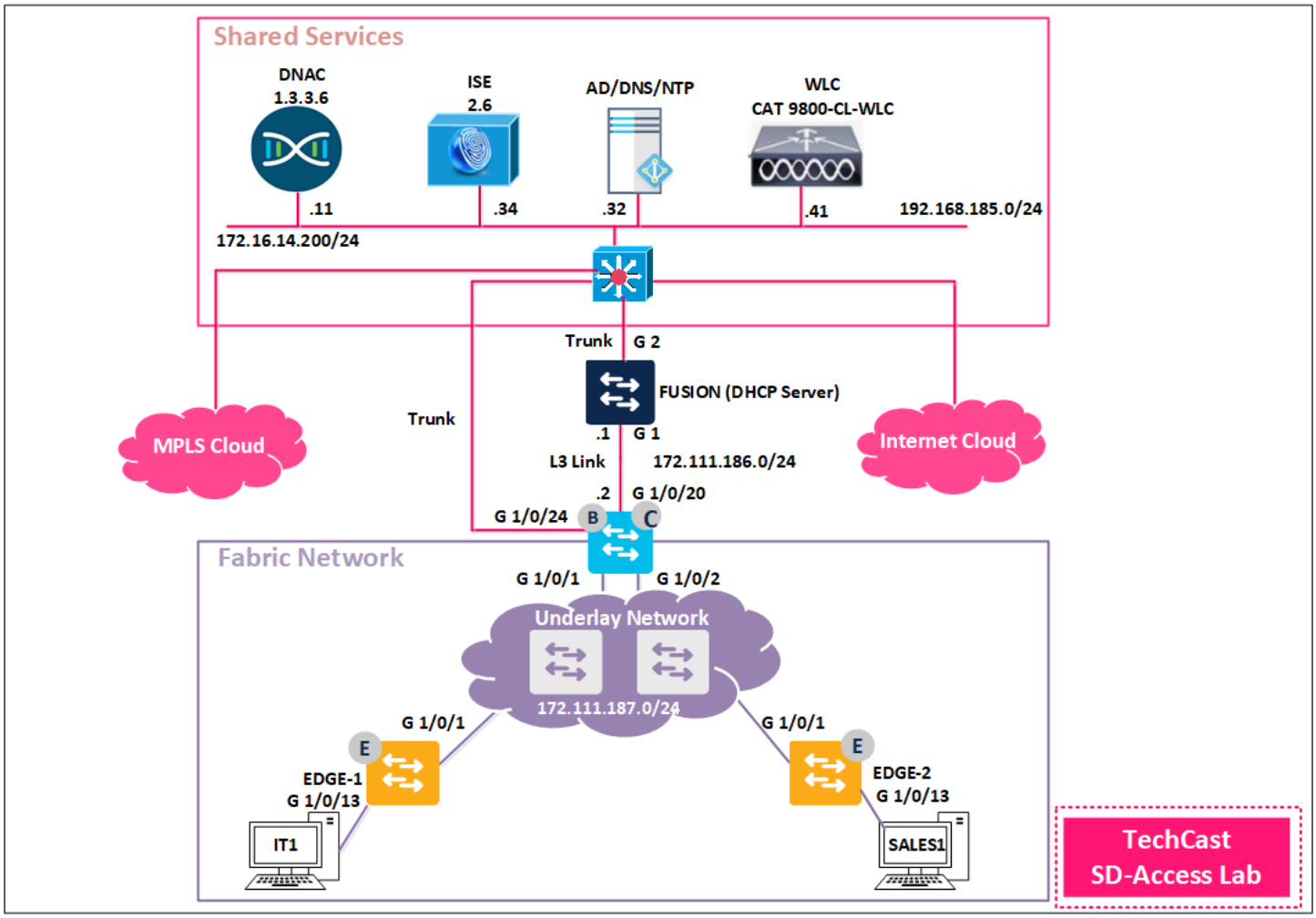
Provision > Fabric > TechCast_HQ_FABRIC > Toronto > TechCast-HQ

- Select **TechCast-HQ-E-1**
- Slide to select the role **Edge**
- Click **Add**
- Click **Save** and click “Now” **Apply**

Now the TechCast-HQ-E-1 & TechCast-HQ-E-1 Fabric Edge devices should be turn with blue color which gives us indication these devices are added to Fabric and provisioned with its role.



5.2 Lab 25 – Verifying MACRO Segmentation



In this lab, we would like to verify the communication within and between VNs. So, we will use 2 Windows PCs which represents 2 end-users (IT1 and SALES1 then we will replace SALES1 to GUEST1 to test MACRO Segmentation between the previous two created VNs.

5.2.1 Step 1 – Devices within same VN should be able to communicate with each other.

- Wired-Employee-IT1 PC and login using IT1 credentials (IT1/Cisco@123)
- Wired-Employee-SALES1 PC and login using SALES1 credentials (SALES1/Cisco@123)

Note; IT1 and SALES1 should be in two different subnets but they should be able to communicate to each other.

Verification

- In **TechCast-HQ-E-1** fabric edge, use **"SHOW VLAN"** to see created VLANs by DNAC;

```
TechCast-HQ-E-1#SHOW VLAN
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
1021 SALES_DATA1                      active    Tu1:8188,
1022 IT_VOICE                         active    Tu1:8189,
1024 IT_DATA1                         active    Tu1:8191, Gi1/0/13
1025 IT_DATA2                         active    Tu1:8192,
1026 SALES_VOICE                      active    Tu1:8193,
1027 GUEST_DATA1                      active    Tu1:8194,
2045 AP_VLAN                          active
2046 VOICE_VLAN                       active    Gi1/0/2, Gi1/0/3, Gi1/0/4

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
                                                Gi1/0/5, Gi1/0/6, Gi1/0/7
                                                Gi1/0/8, Gi1/0/9, Gi1/0/10
```

- In **TechCast-HQ-E-1** fabric edge, use **"SHOW RUN INTERFACE G1/0/13"** to see configuration under this physical interface.

```
TechCast-HQ-E-1#SHOW RUN INTERFACE G1/0/13
interface GigabitEthernet1/0/13
 switchport mode access
 device-tracking attach-policy IPDT_MAX_10
 dot1x timeout tx-period 7
 dot1x max-reauth-req 3
 source template DefaultWiredDot1xClosedAuth
 spanning-tree portfast
end
```

- In **TechCast-HQ-E-1** fabric edge, use **"SHOW RUN INTERFACE VLAN 1024"** to see configuration under this assigned VLAN interface by DNAC.

```
TechCast-HQ-E-1#SH RUN INTER VLAN 1024
BUILDING CONFIGURATION...

CURRENT CONFIGURATION : 386 BYTES
!
INTERFACE VLAN1024
 DESCRIPTION CONFIGURED FROM CISCO DNA-CENTER
 MAC-ADDRESS 0000.0C9F.F45F
 VRF FORWARDING EMP_VN
 IP ADDRESS 172.111.190.1 255.255.255.0
 IP HELPER-ADDRESS 99.111.111.111
```

```
NO IP REDIRECTS
IP ROUTE-CACHE SAME-INTERFACE
NO LISP MOBILITY LIVENESS TEST
LISP MOBILITY IT_DATA1-IPV4
```

TechCast

CCIE Enterprise Infrastructure Workbook