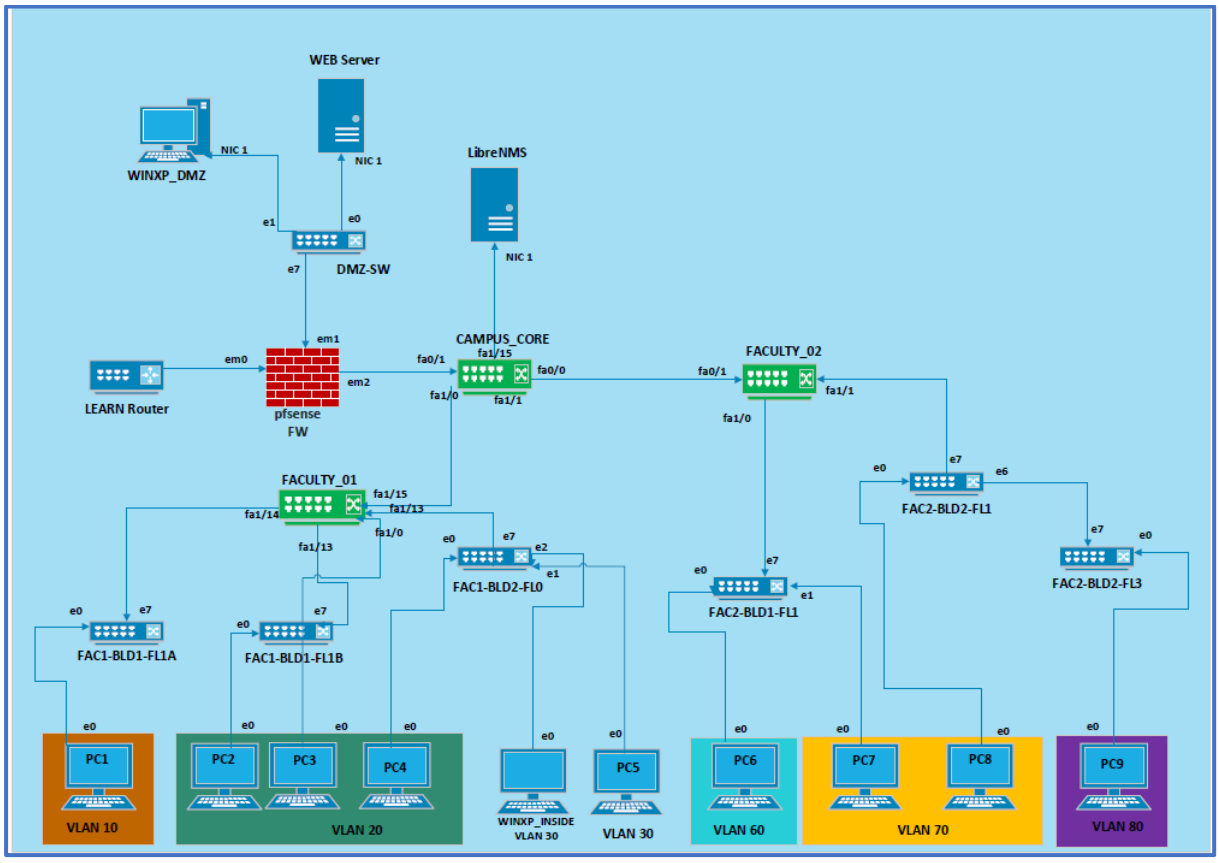
NetBox Lab

In this lab we are going to document the Campus Network we configured in our workshop.



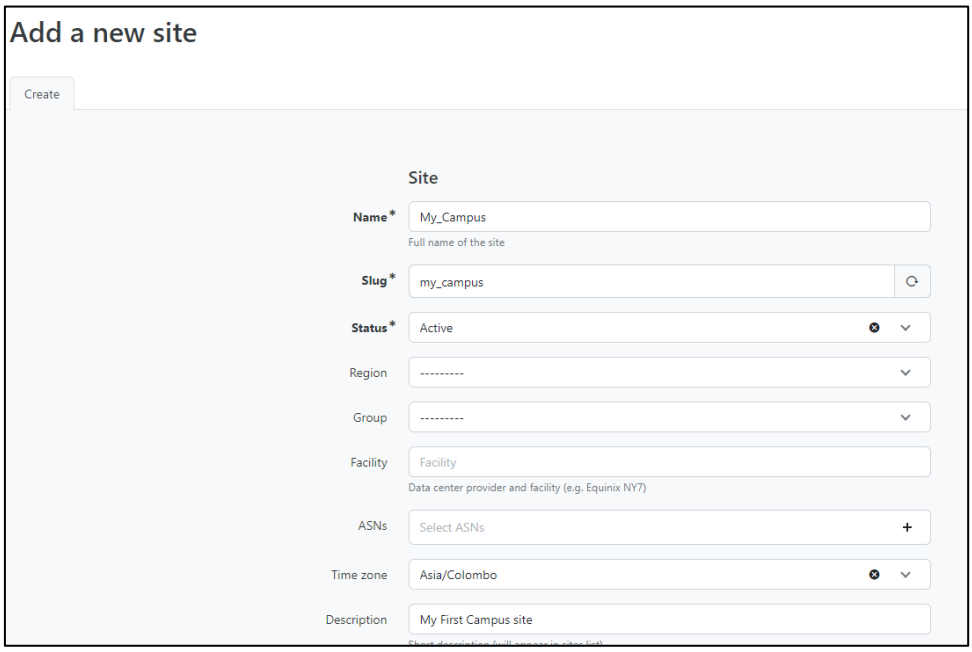
We will practice the following steps to explore NetBox application.

- Create the first site
- Create the first region
- Connect the region with the site
- Create the tenant to define the department
- Connect the tenant with the site
- Add Locations
- Add new Rack
- Define device role
- Define device type
- Add devices
- Add Vlans
- Setting up IPs

Create a Site

For this lab we will create a Site call **"My_Campus"**

- Go to the homepage and click ***Sites*** under the ***Organization tab***. New page will come up, click on the ***+Add*** button and fill in the form.

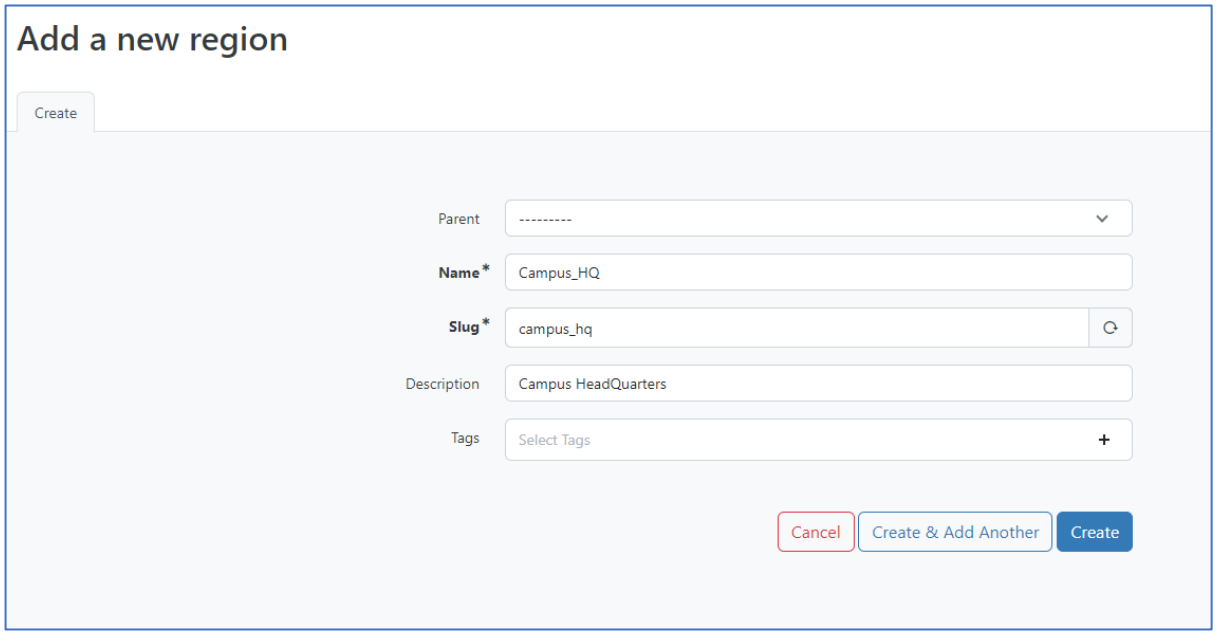


Create a region

Next, we have to create the region to complete the first part of the Organization tab. To do that, again go to the homepage and click ***Regions*** under the ***Organization tab***.

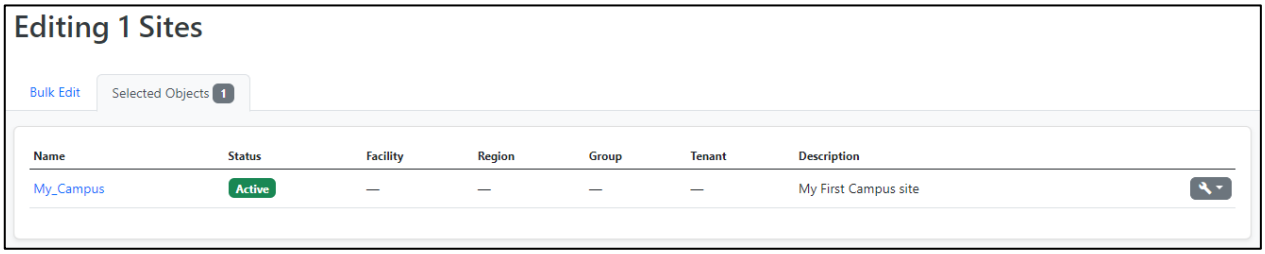
New page will come up, click on the ***+Add*** button and fill in the form.

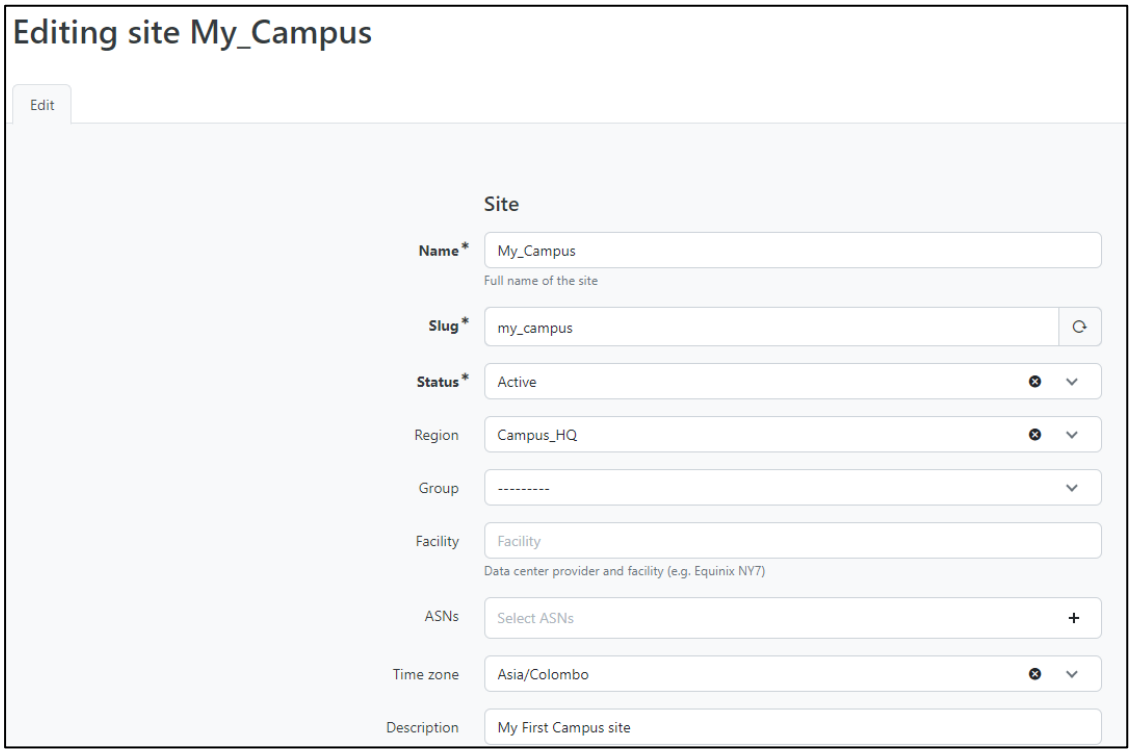
For this lab we will create a Region call **"Campus_HQ"**



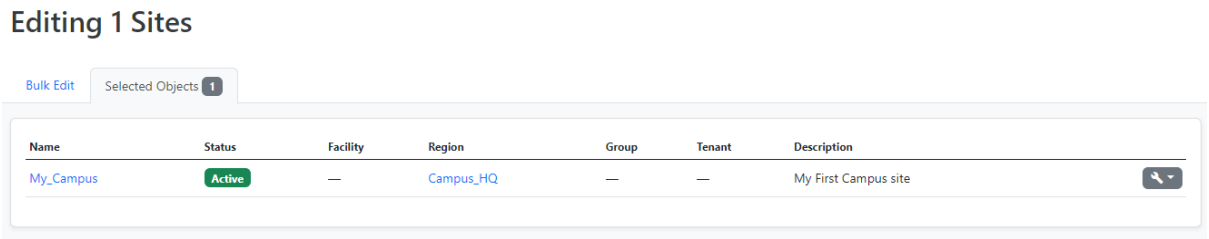
Connect the region with the site:

Now we need connect Regions to Sites. Go to Sites from the ***Organization tab***, Select the ***My_Campus*** and click on ***Edit Selected***. A new window come up. Next, right side of the window there are few options, select ***Campus-HQ*** from the drop-down menu at ***Region field***, and click on ***Apply***.





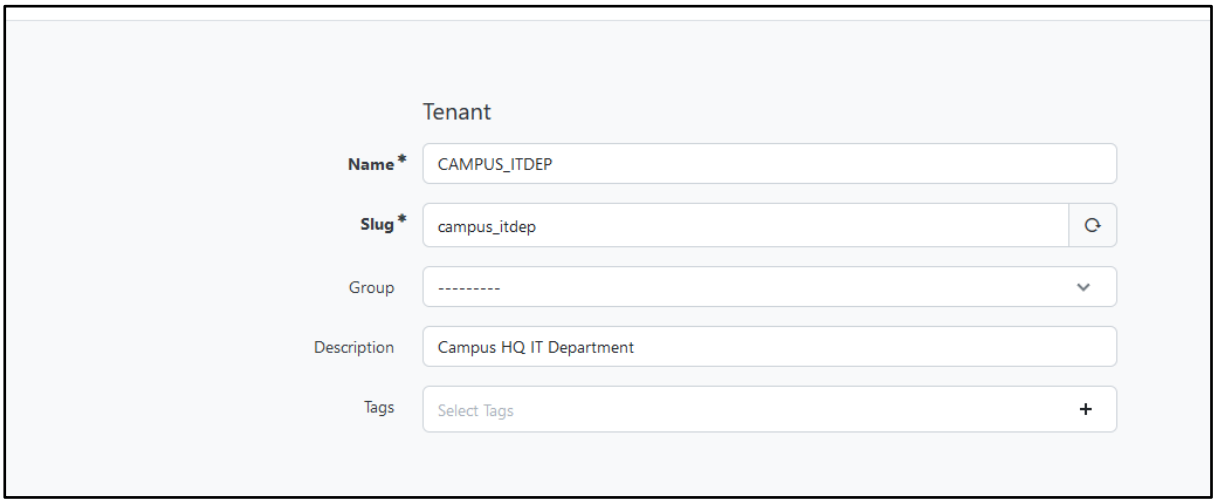
Now it should look like this.



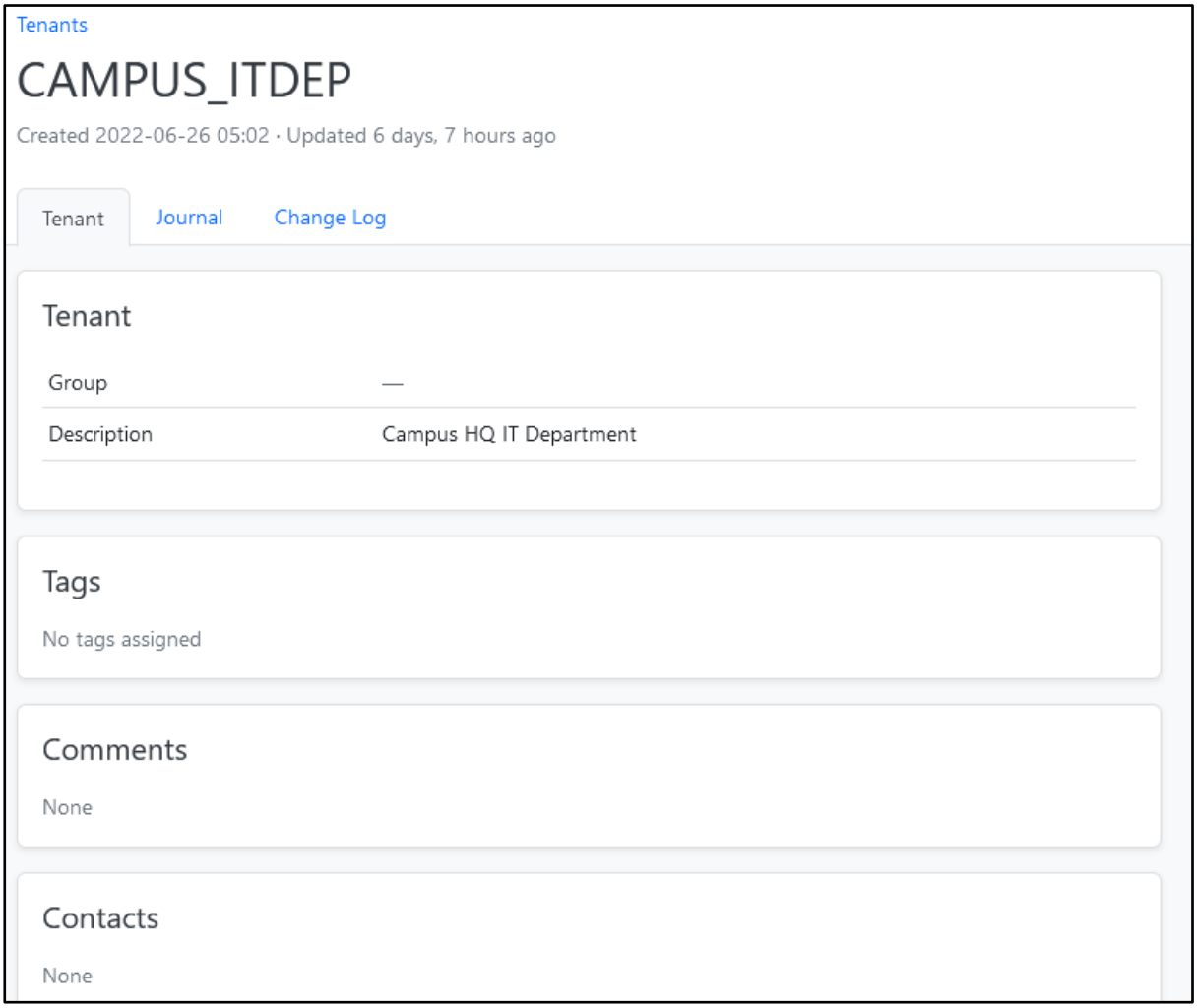
Create a tenant:

Let's create a ***tenant*** to define the department.

Go to the **home page** and navigate ***Tenants*** option from the **Organization** block. Click it, new window will popup, click on the ***+Add*** button to add a new one. Fill up the gap and click on ***Create*** button.



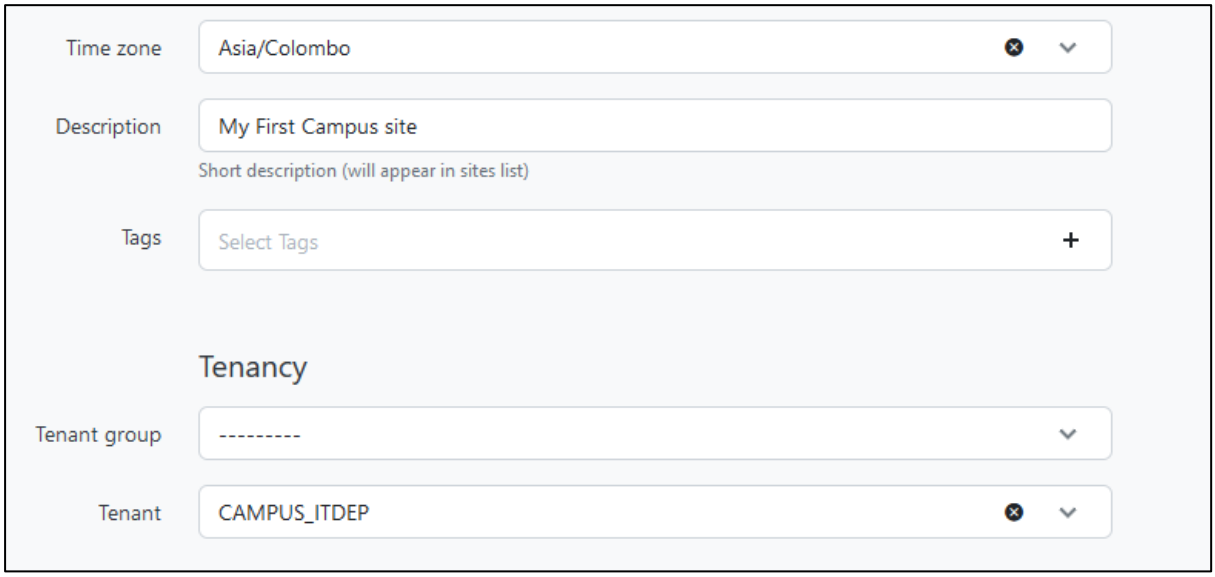
Now it should look like this.



Connect the tenant with the site:

Go to Sites from the ***Organization*** tab, ***Sites***, Select the **My_Campus** and click on ***Edit Selected.***

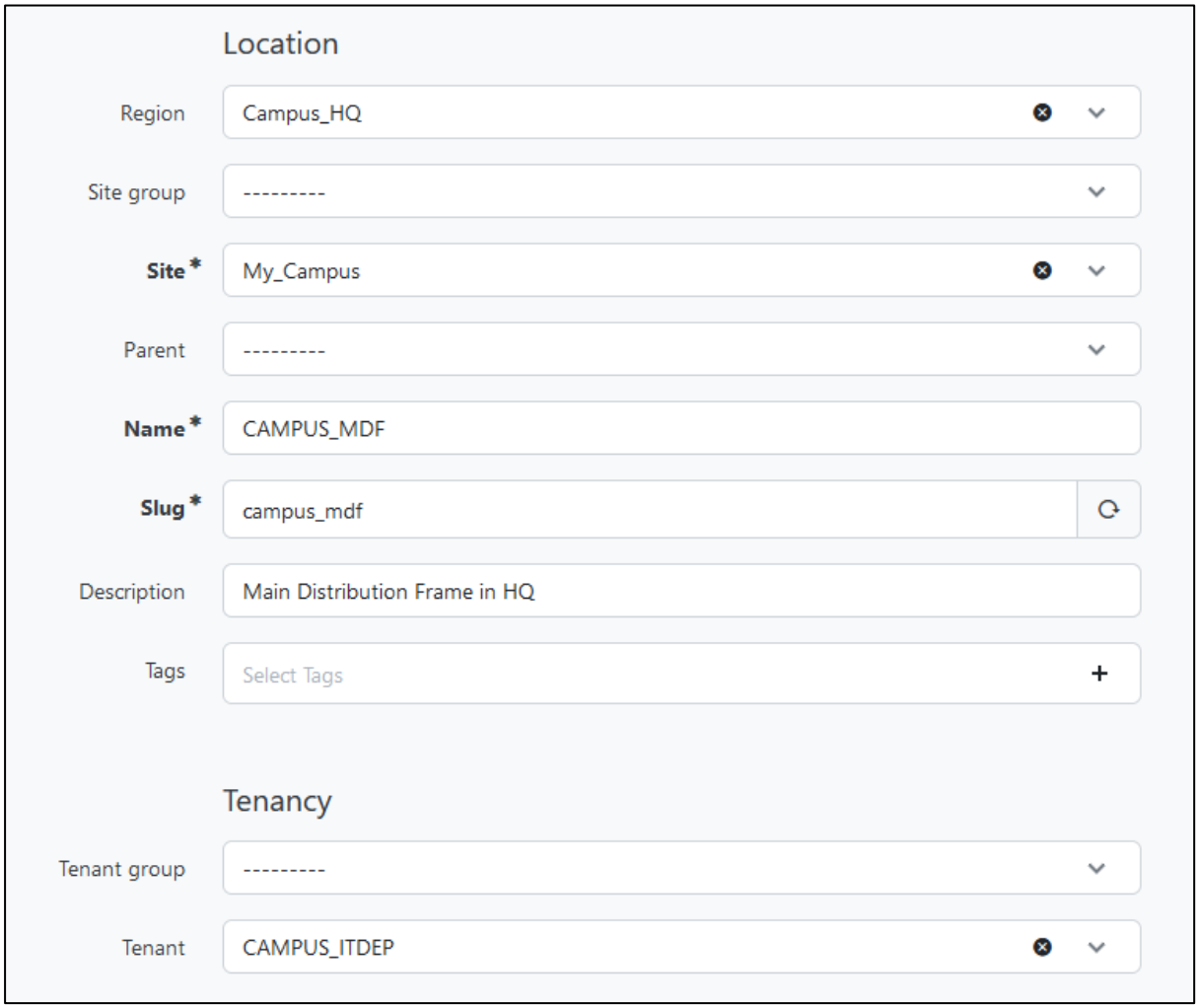
Next, right side of the window there are few options, select **IT Department** from the drop-down menu at ***Tenant field***, and click on ***Apply.***



Create a Location:

Let's create a Location.

Go to the **home page** and navigate ***Locations*** option from the **Organization** block. Click it, new window will popup, click on the ***+Add*** button to add a new one. Fill up the gap and click on ***Create*** button. Select ***CAMPUS_ITDEP*** from the drop-down menu at ***Tenancy field*** and click on ***Apply***.



Add new RACKS:

To add a new rack, go to the **home page**, and navigate ***Racks option***. Click it, new window will popup, click on the ***+Add*** button to add a new one. Fill up the gap, use **My_Campus** site, use **Campus-HQ** for region, **CAMPUS _ITDEP** for tenant, **HQ-MDF** for Location from the drop-down option respectively; use default rack **dimensions** and name of the rack as **CAMPUS_ServerRack_01** and click on ***Create*** button.

Rack

Region: Campus_HQ

Site group: ---------

Site *: My_Campus

Location: CAMPUS_MDF

Name *: CAMPUS_ServerRack_01

Organizational rack name

Status *: Active

Role: ---------

Tags: Select Tags +

Inventory Control

Facility ID: Facility ID

The unique rack ID assigned by the facility

Serial number: 3RAW0460D0G

Asset tag: Asset tag

A unique tag used to identify this rack

Tenancy

Tenant group: ---------

Tenant: CAMPUS_ITDEP

Dimensions

Type: ---------

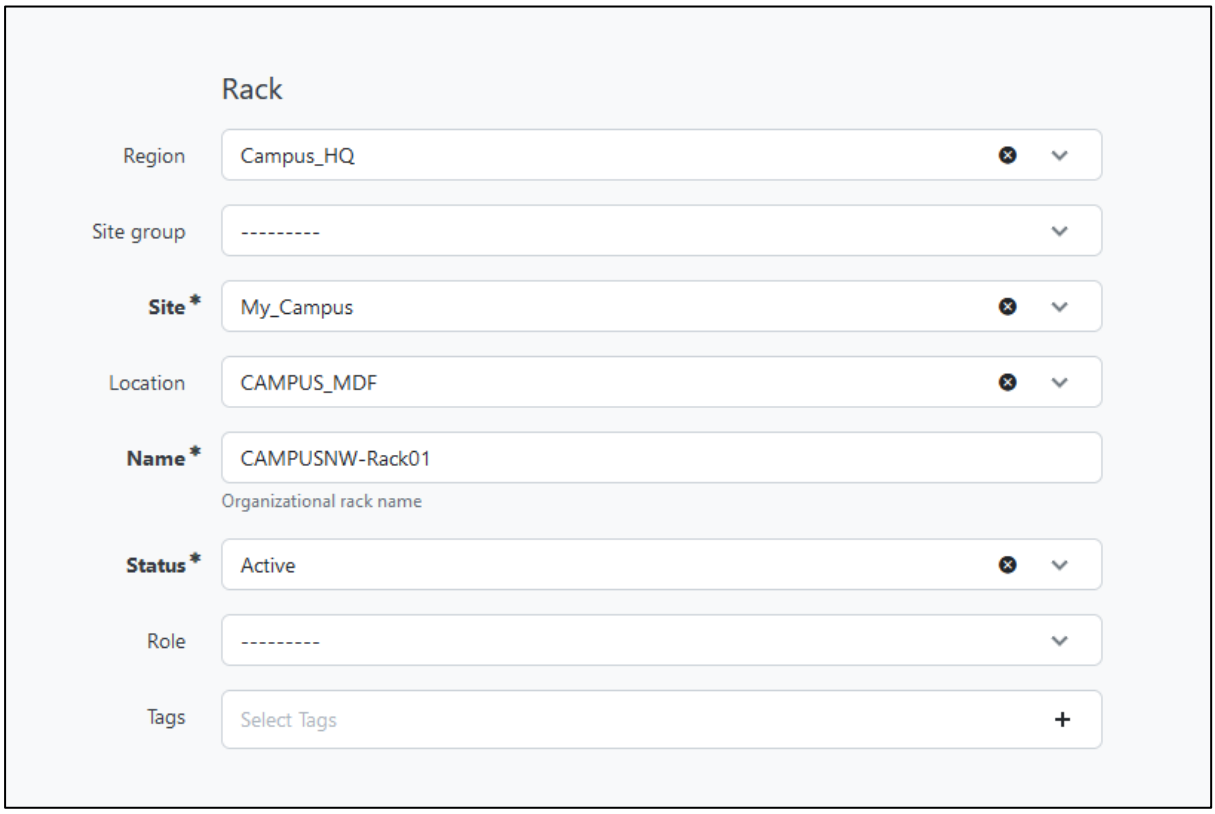
Width *: 19 inches

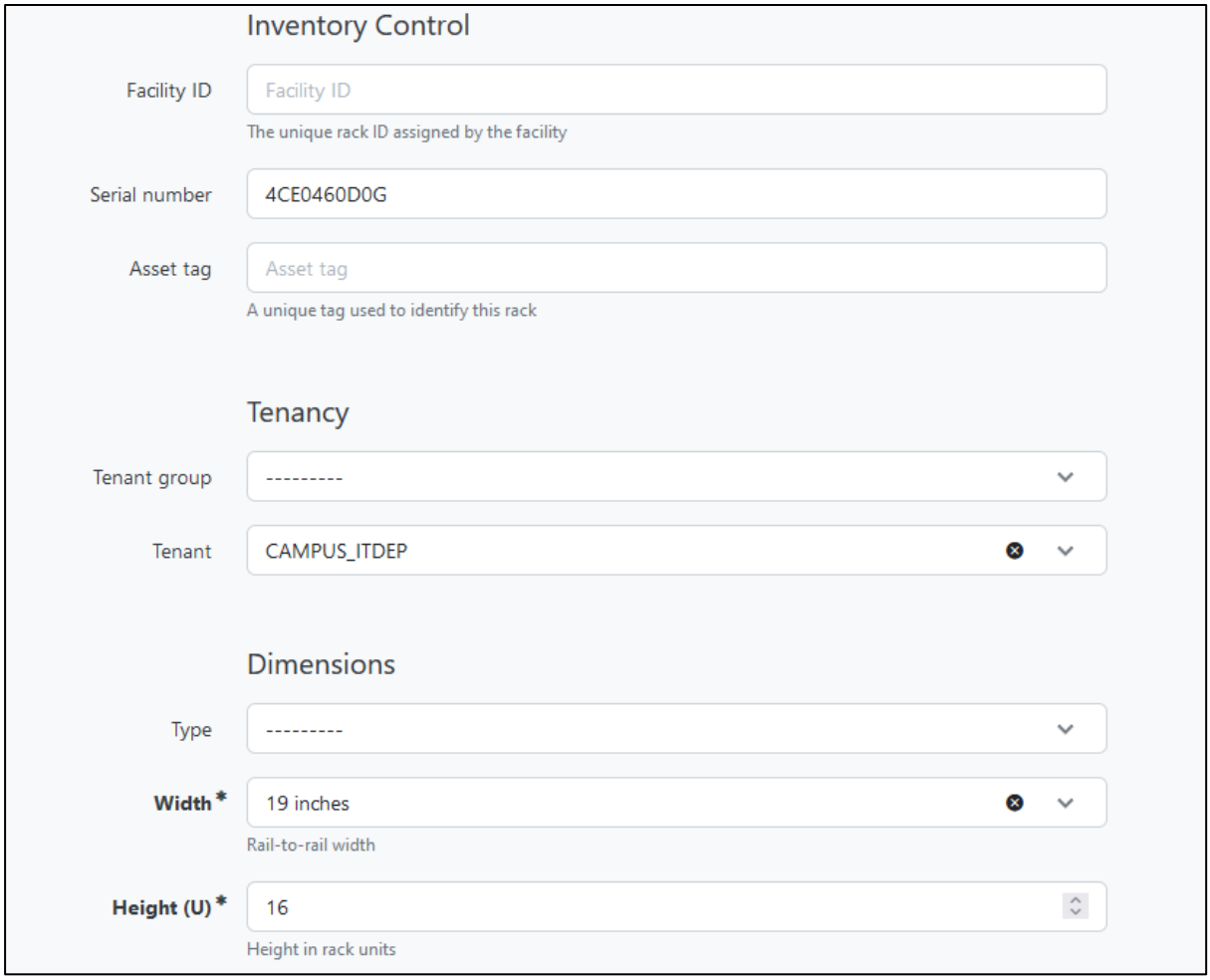
Rail-to-rail width

Height (U) *: 12

Height in rack units

Add Another Rack for Network Devices.





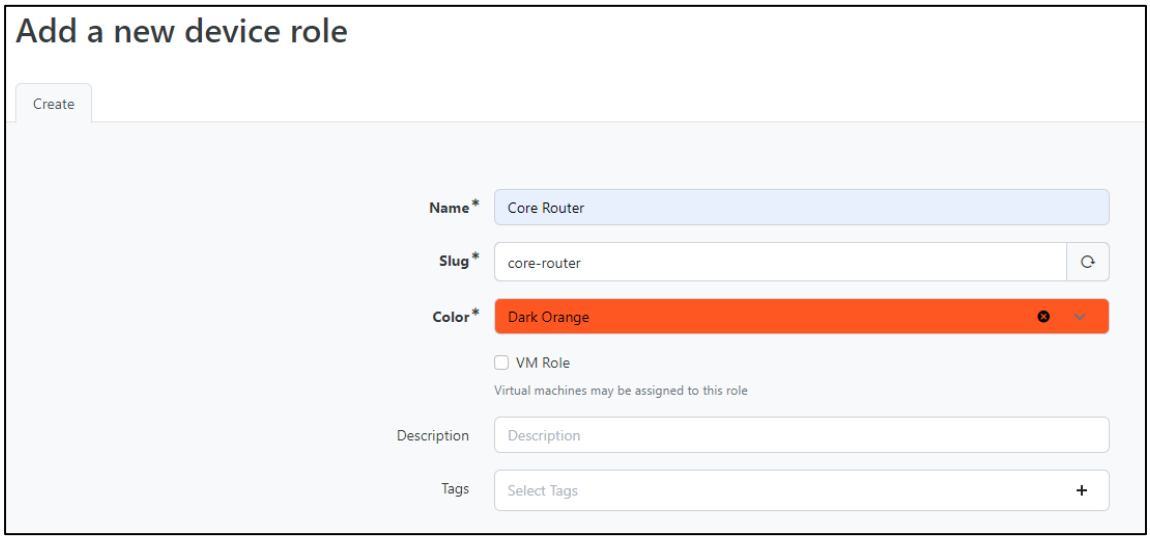
You can add more racks as above as per your requirement.

Define device role:

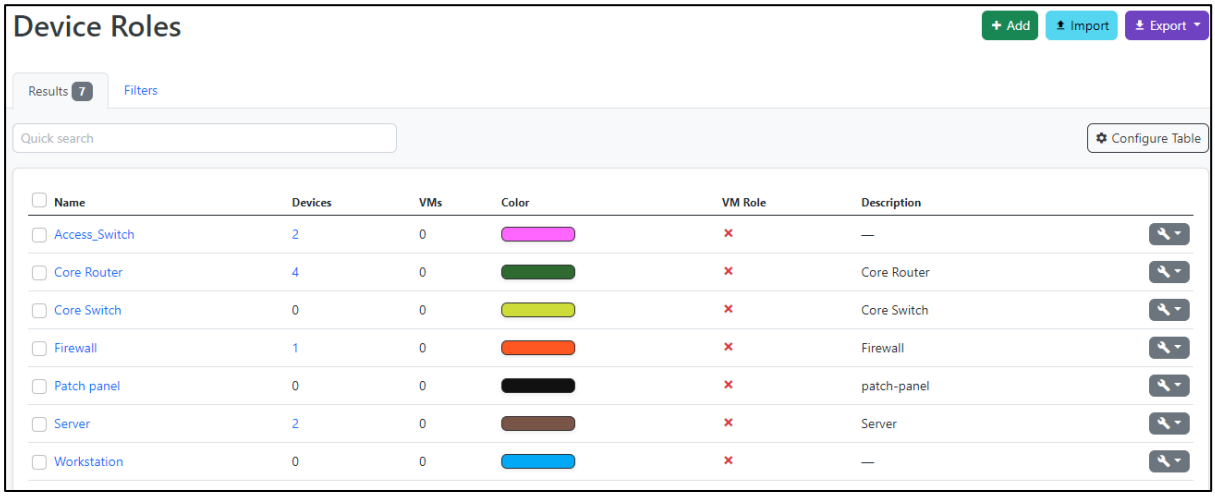
Before adding new device, we must create few necessary **definitions for devices.**

To create device role, navigate **Device Roles option** from the drop-down menu Devices. Click it, new window will popup, click on the ***+Add*** button to add a new one. **Add Core_Router, Core_Switch, Access_Switch,Server, Workstaion ..etc** with assigning the colour code.

Note: make sure you uncheck the option VM Role



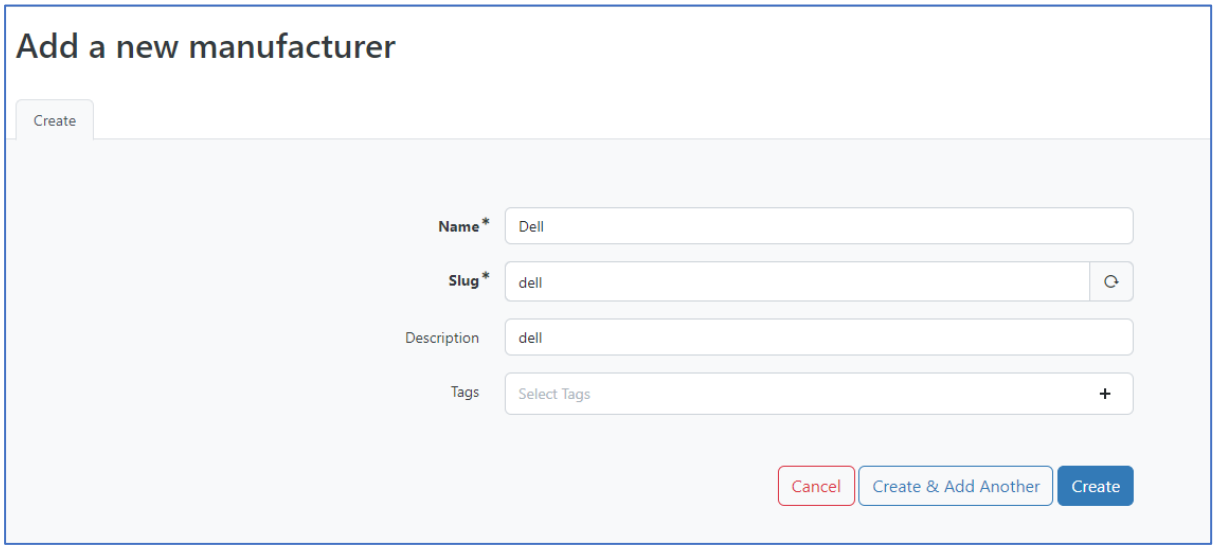
it should look like this.



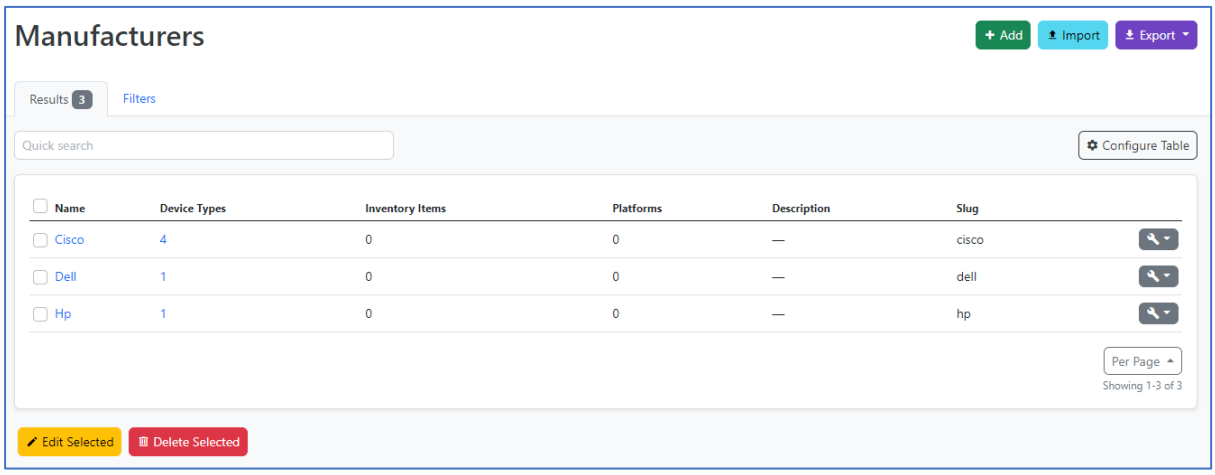
Add Manufacturers

Need to create the ***Manufacturers*** first, before creating device types.

From the ***Devices*** drop down menu, select ***Manufacturers*** and then click **+Add** from the new window. Create **Cisco and Dell,** by fill in the gap, and it will look like below.



After adding it should look like this.



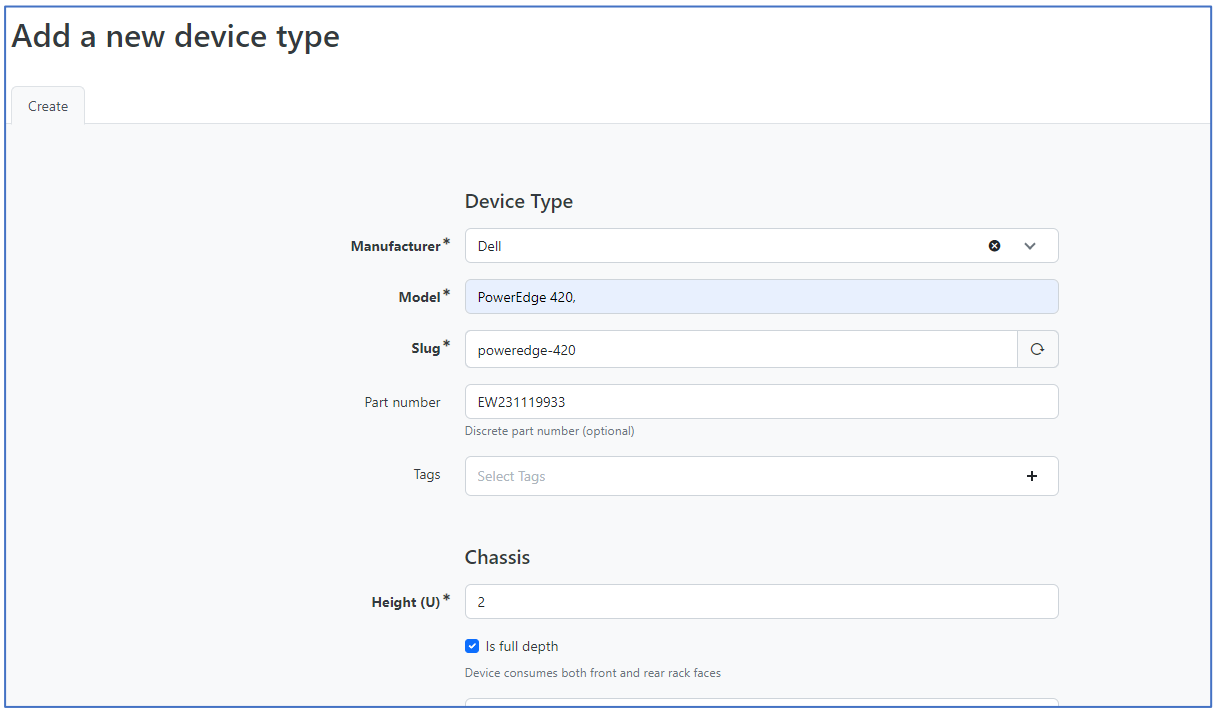
Define device type:

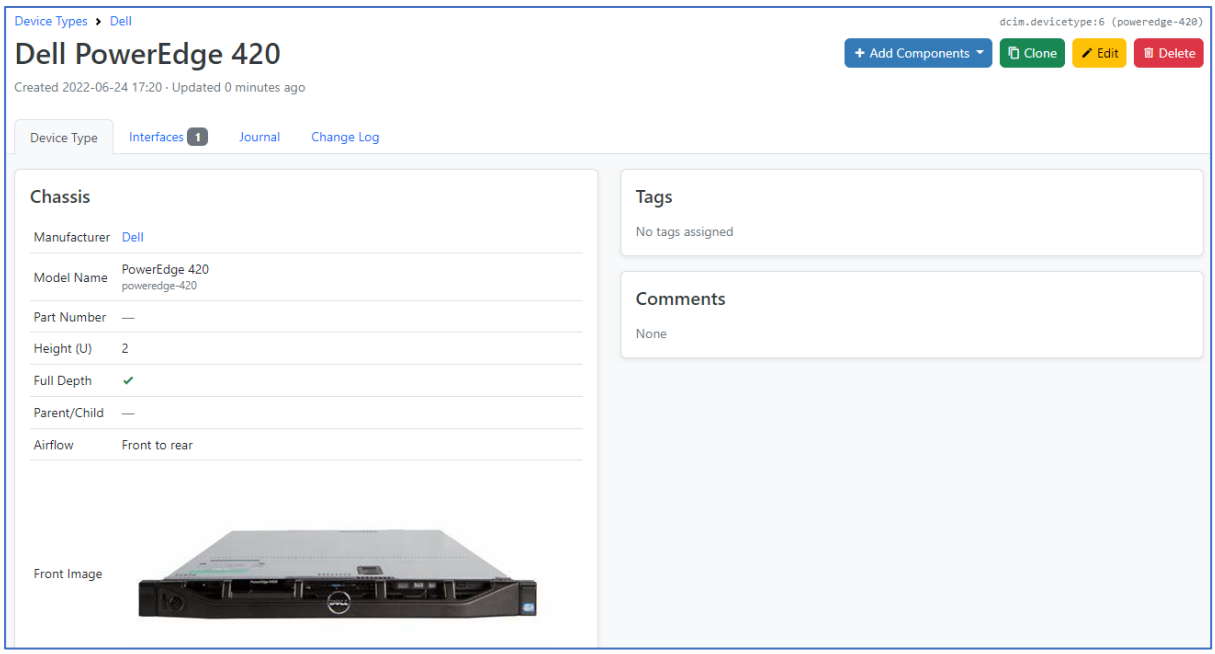
Next, from the ***Devices*** drop down menu, select ***Device Types*** and then click ***+Add*** from the new window. Fill the gap with sample specification of Dell.

Assuming the server is **Dell PowerEdge 420**, which is **2U rack.**

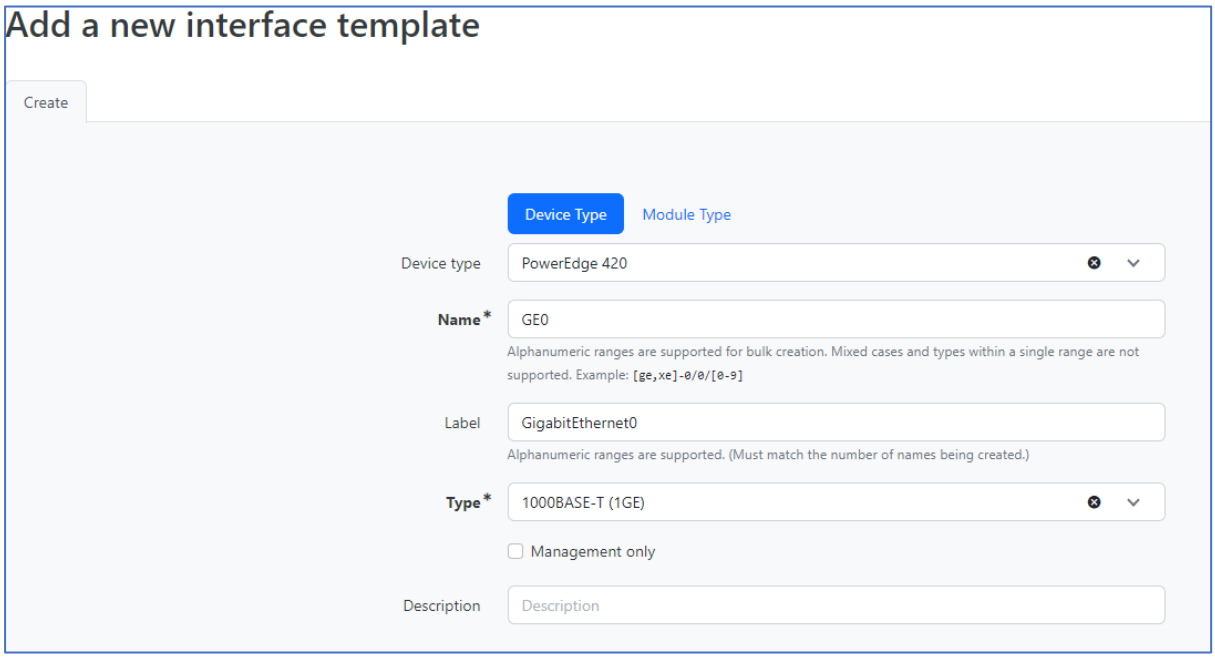
Note: As this is 2U rack server, it will cover from Front to Rear, and that is why option Full Depth should be checked. But for the Cisco switch, Full Depth option should be unchecked.

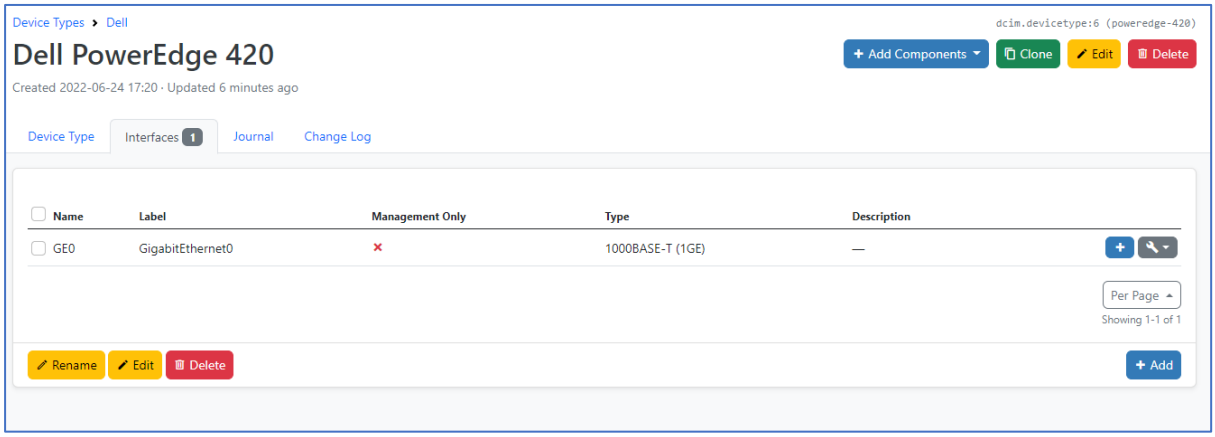
Add a Server


Add a new device type
Create
Device Type
Manufacturer *
Dell
Model *
PowerEdge 420,
Slug *
poweredge-420
Part number
EW231119933
Discrete part number (optional)
Tags
Select Tags
Chassis
Height (U) *
2
Is full depth
Device consumes both front and rear rack faces

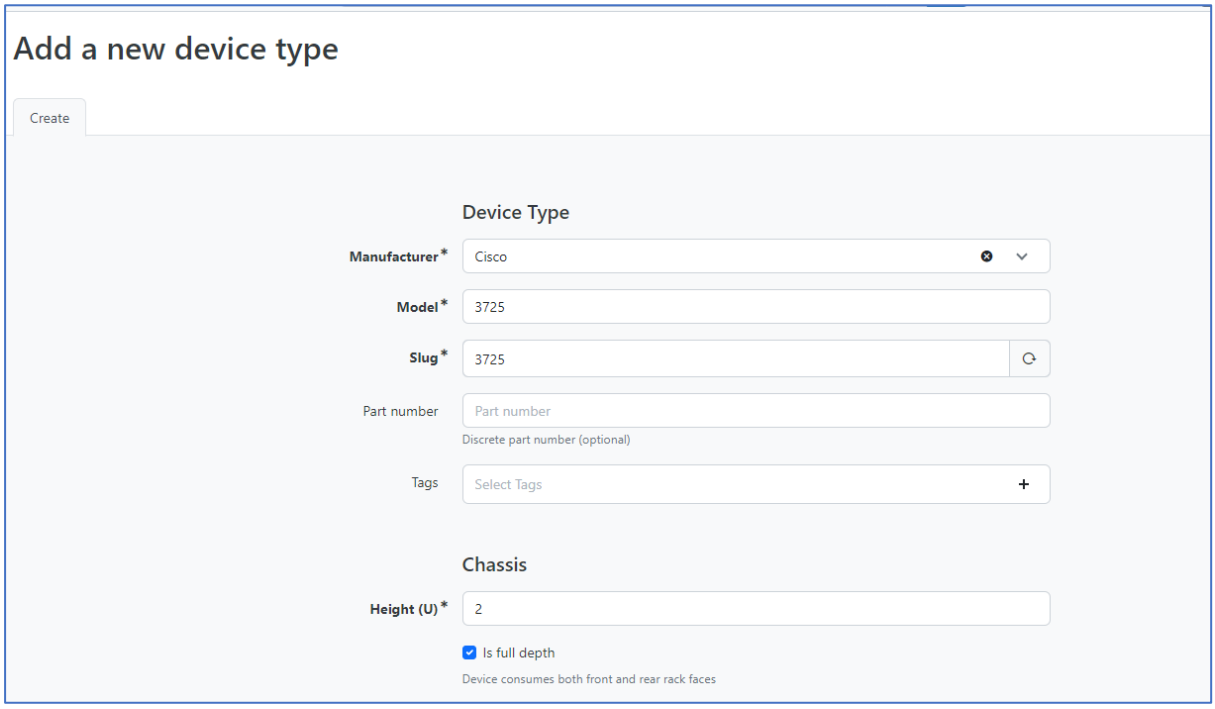

Device Types › Dell
dcim.devicetype:6 (poweredge-420)
Dell PowerEdge 420
Created 2022-06-24 17:20 · Updated 0 minutes ago
+ Add Components
Clone
Edit
Delete
Device Type
Interfaces 1
Journal
Change Log
Chassis
Manufacturer Dell
Model Name PowerEdge 420
poweredge-420
Part Number —
Height (U) 2
Full Depth ✔
Parent/Child —
Airflow Front to rear
Front Image
Tags
No tags assigned
Comments
None

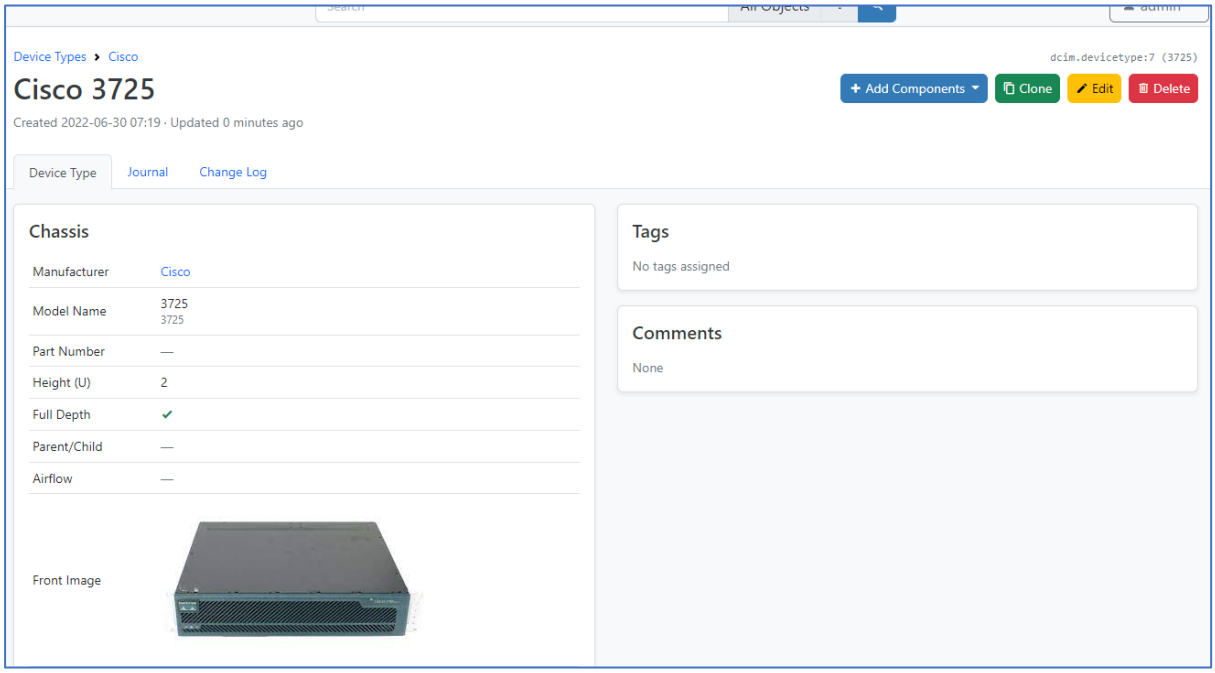
Add Network interface to Server.



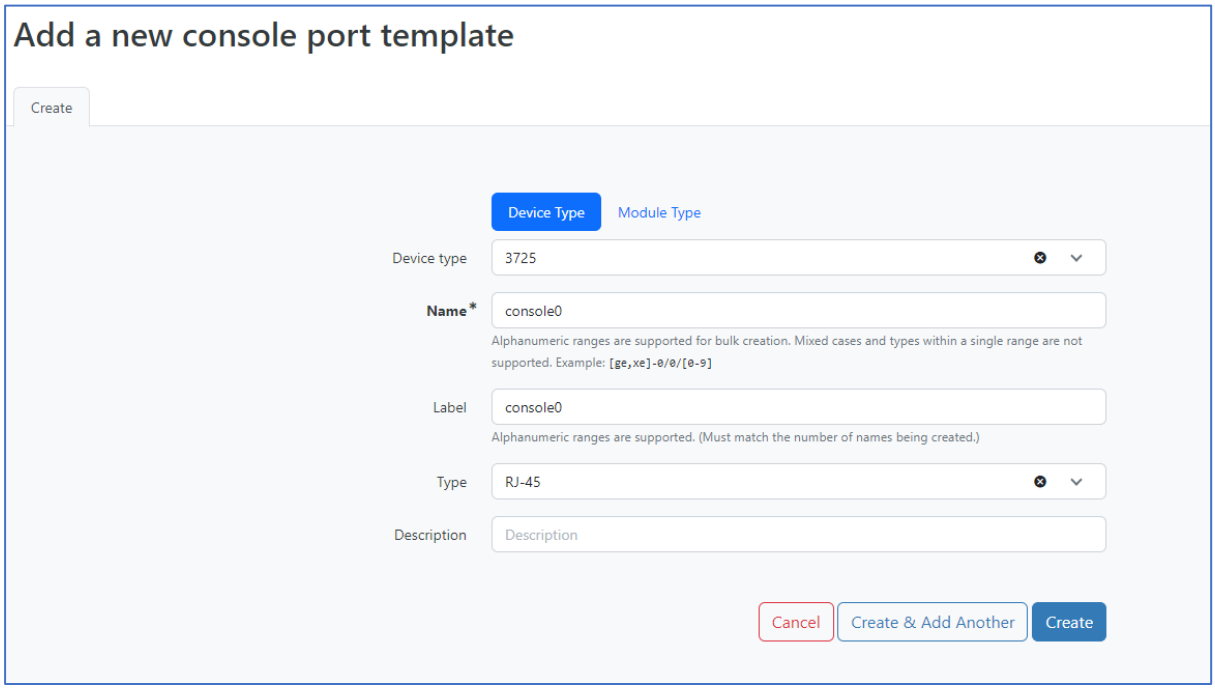


Add cisco 3725 Switch;

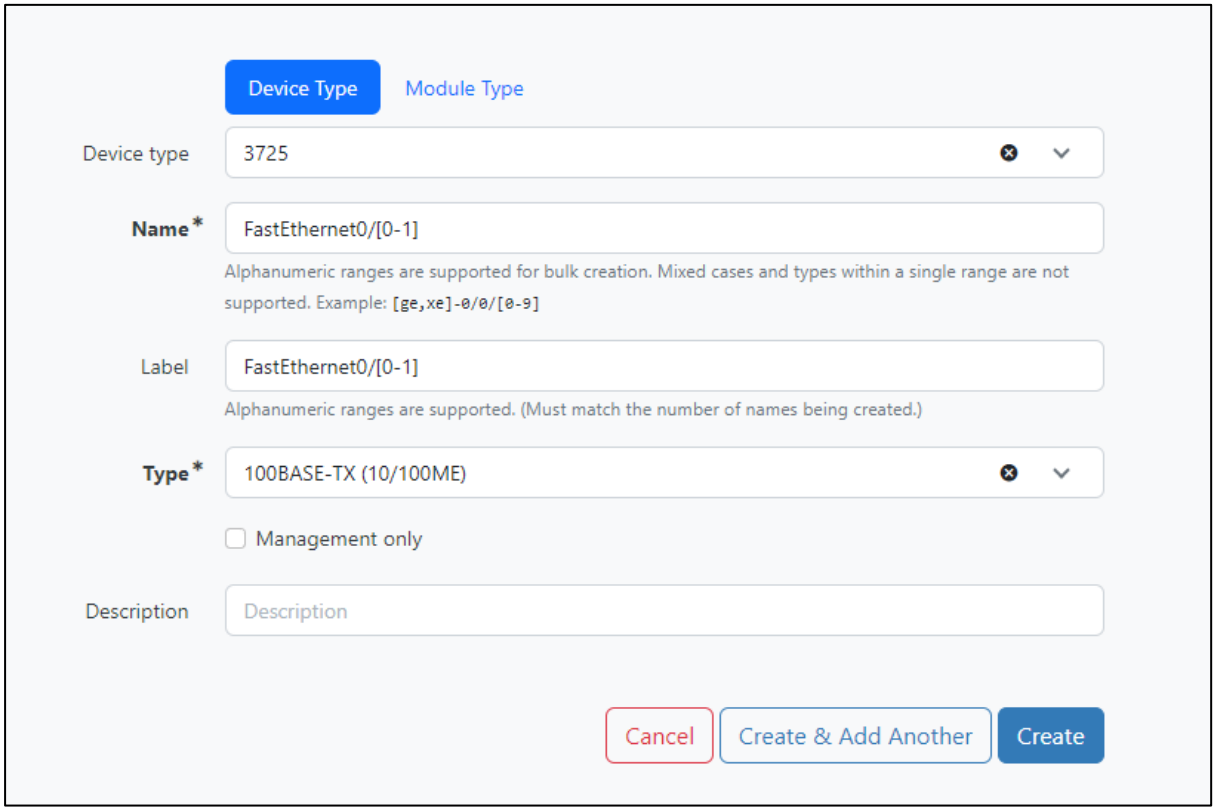


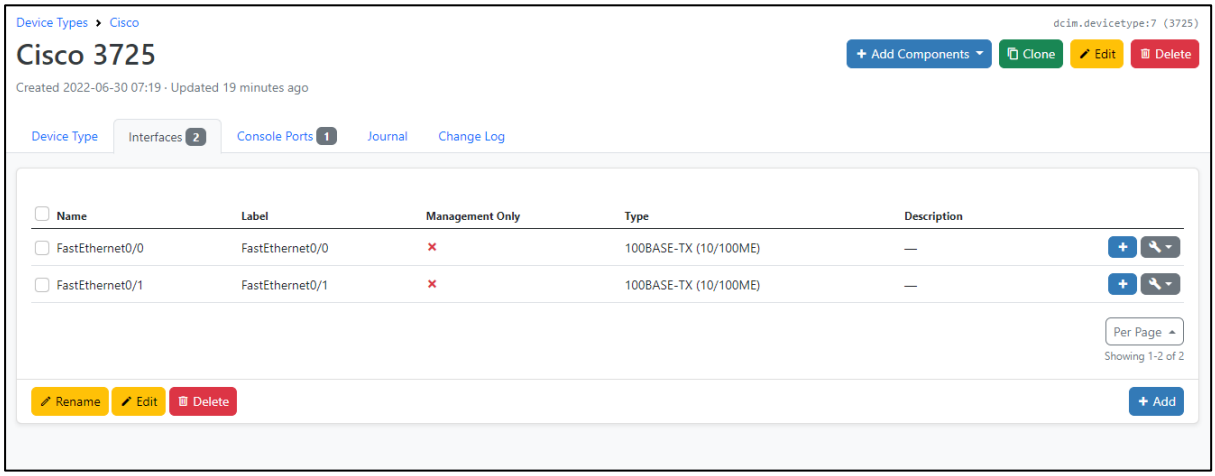


Now you can add components to the Switch using +Add Components button. We will add console port Ethernet interfaces.

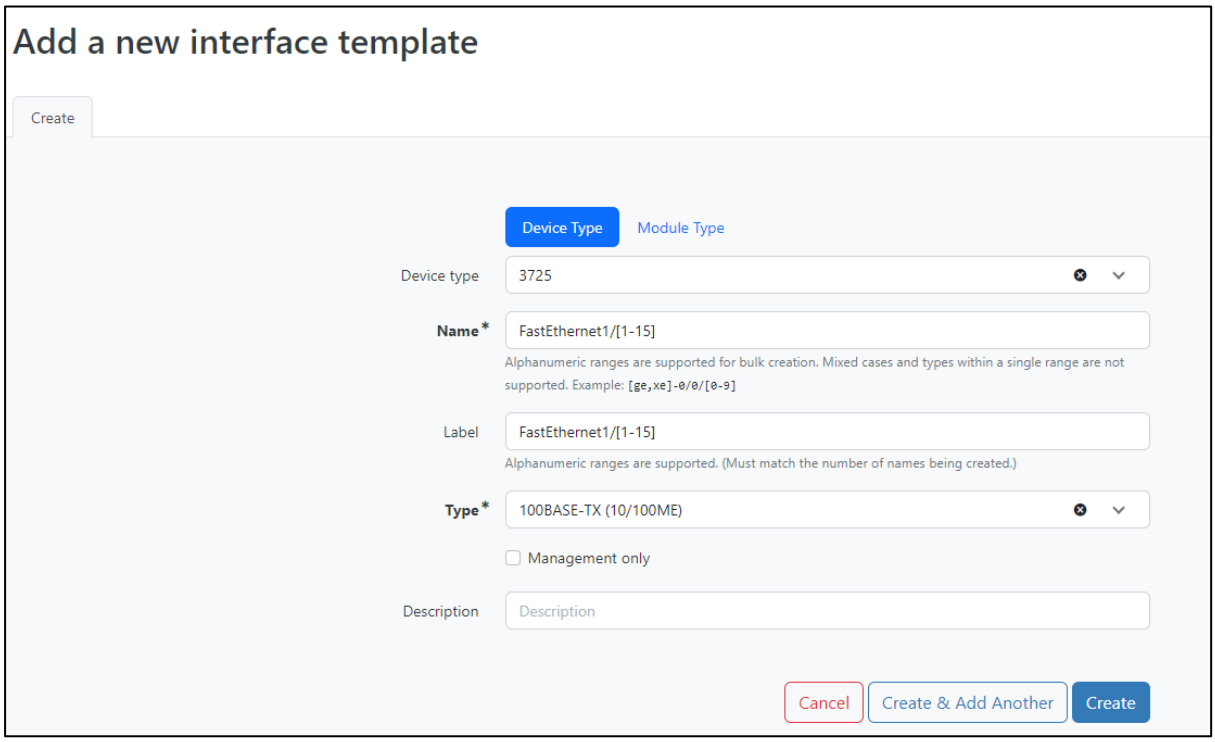


Add Network interfaces.

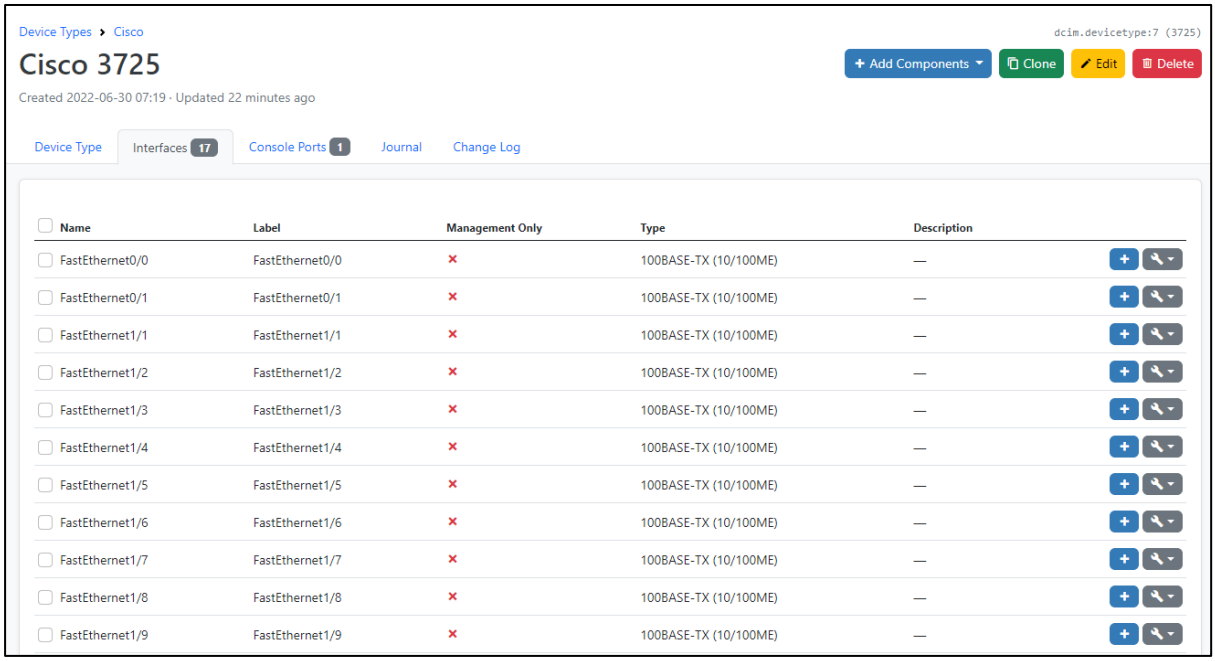




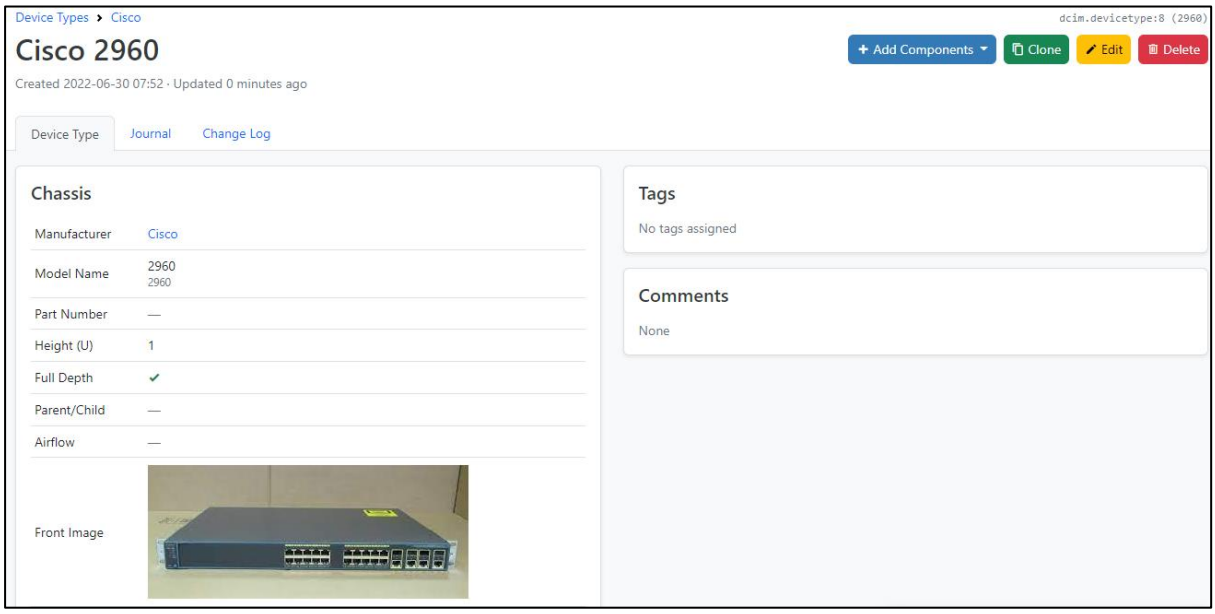
Now add Switch ports.



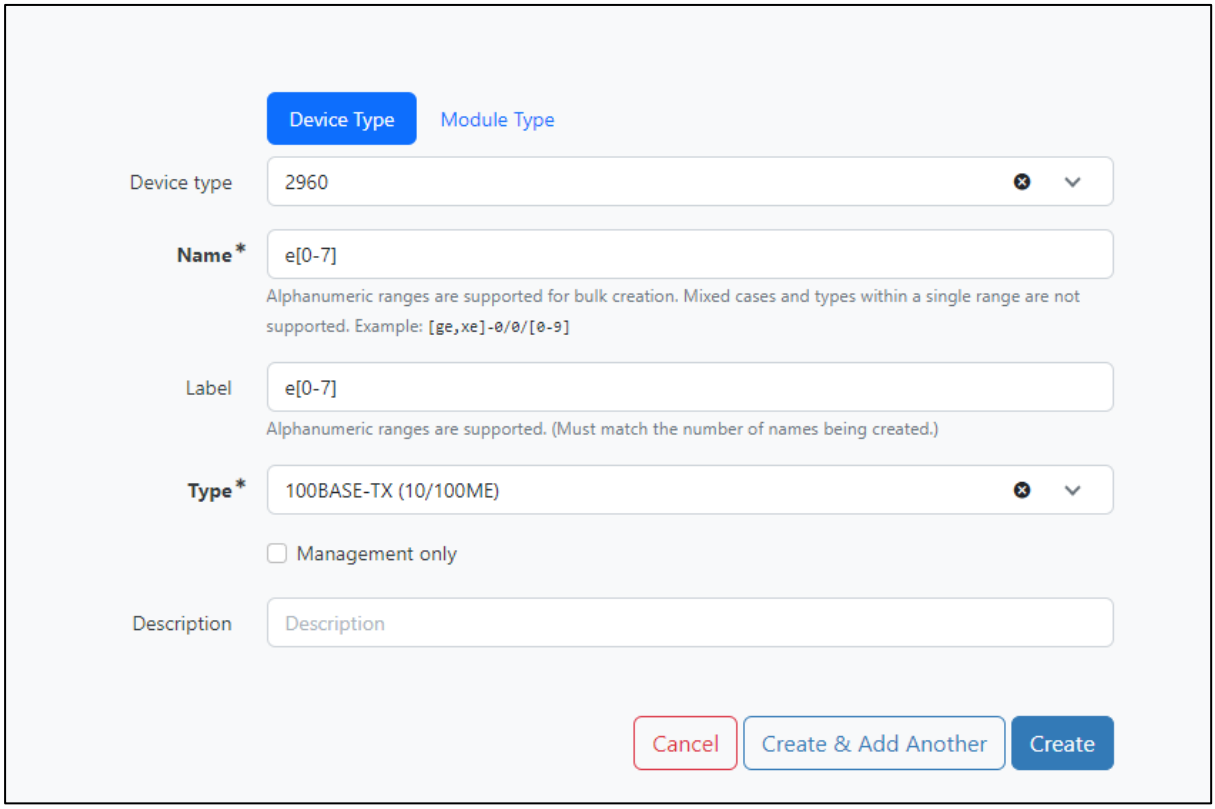
After adding Swich ports.

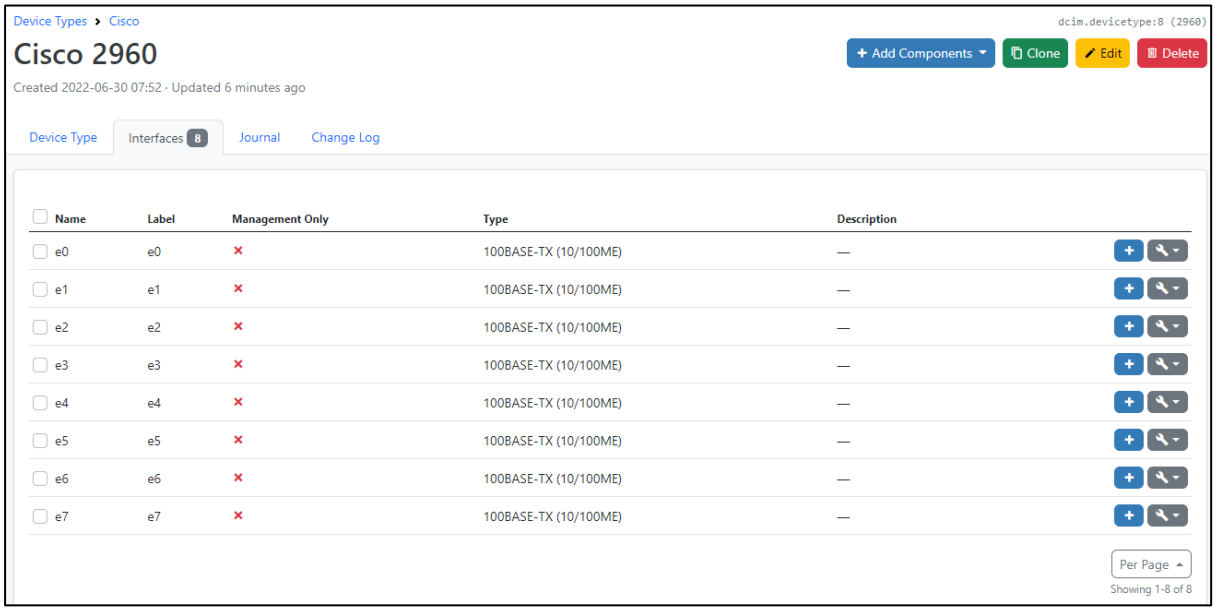


Define Access Switch

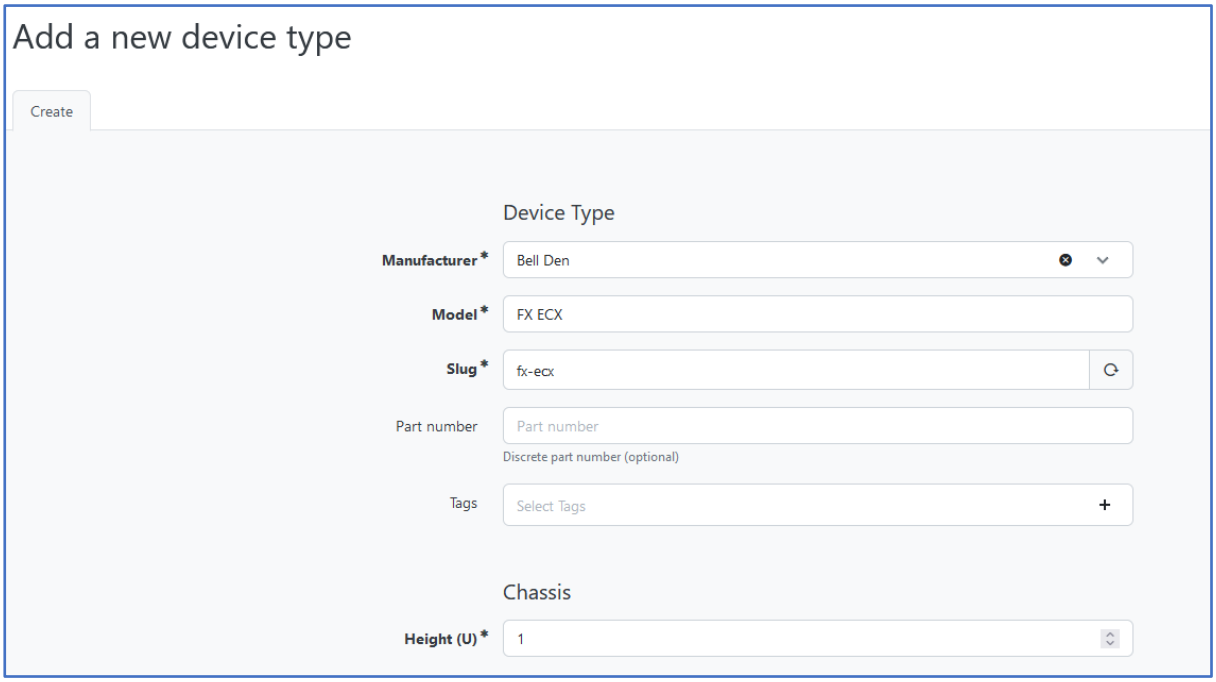


Add console port and interfaces using the same steps used in 3725.

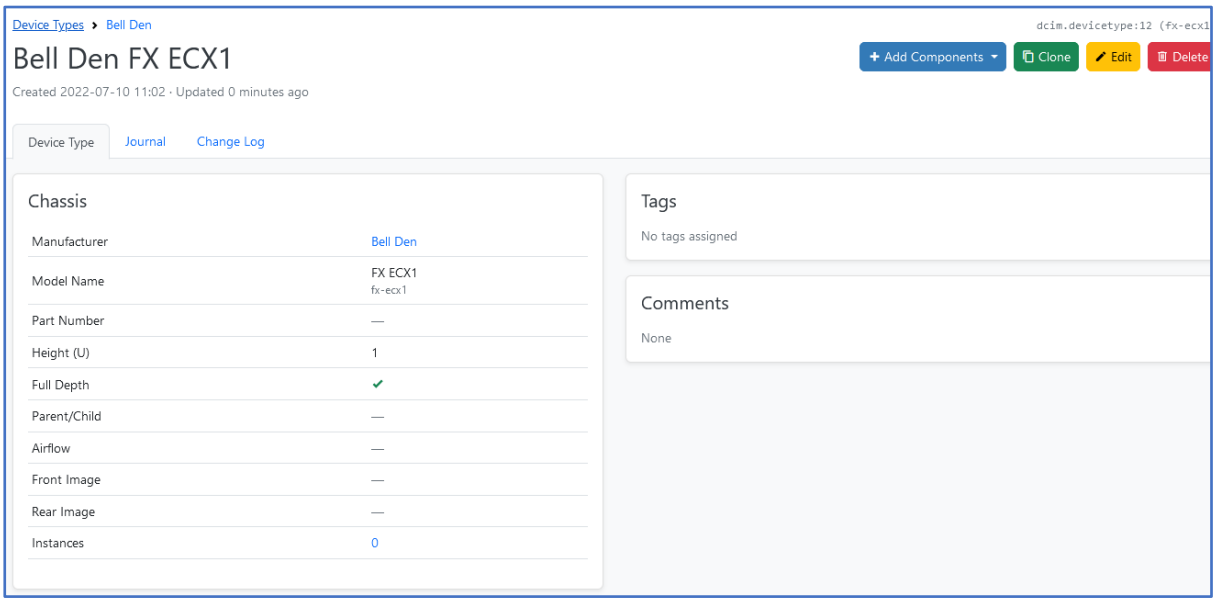




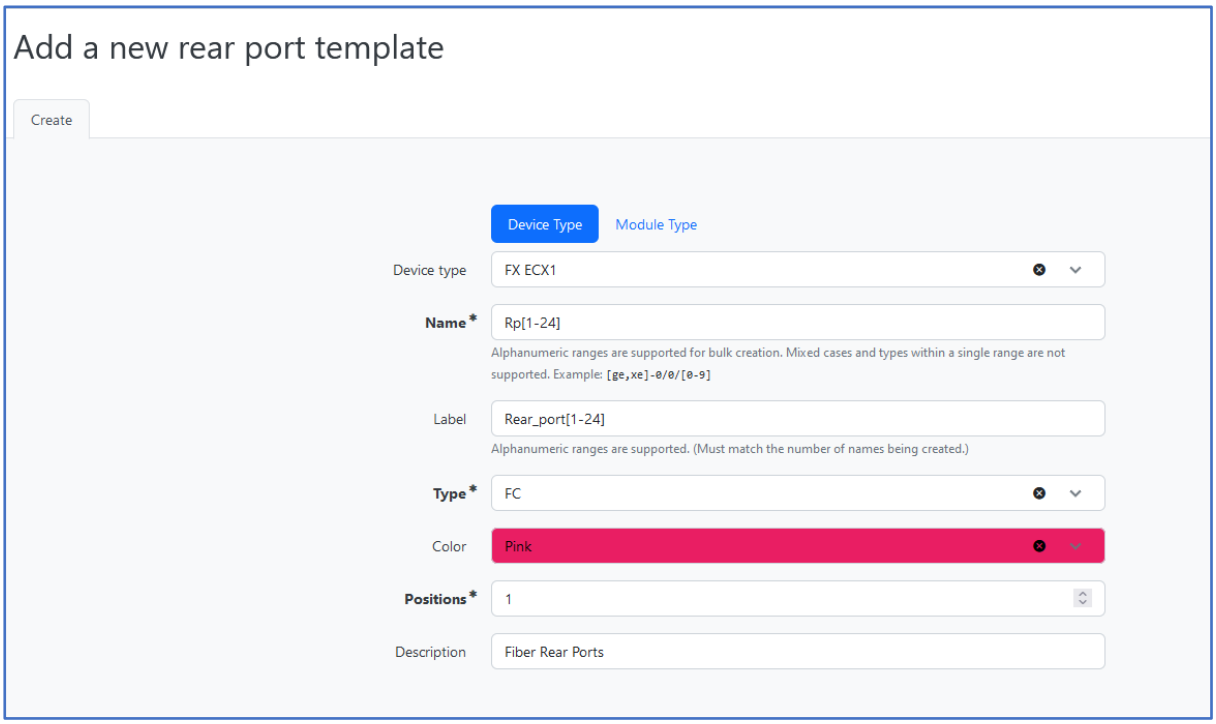
Define patch panels



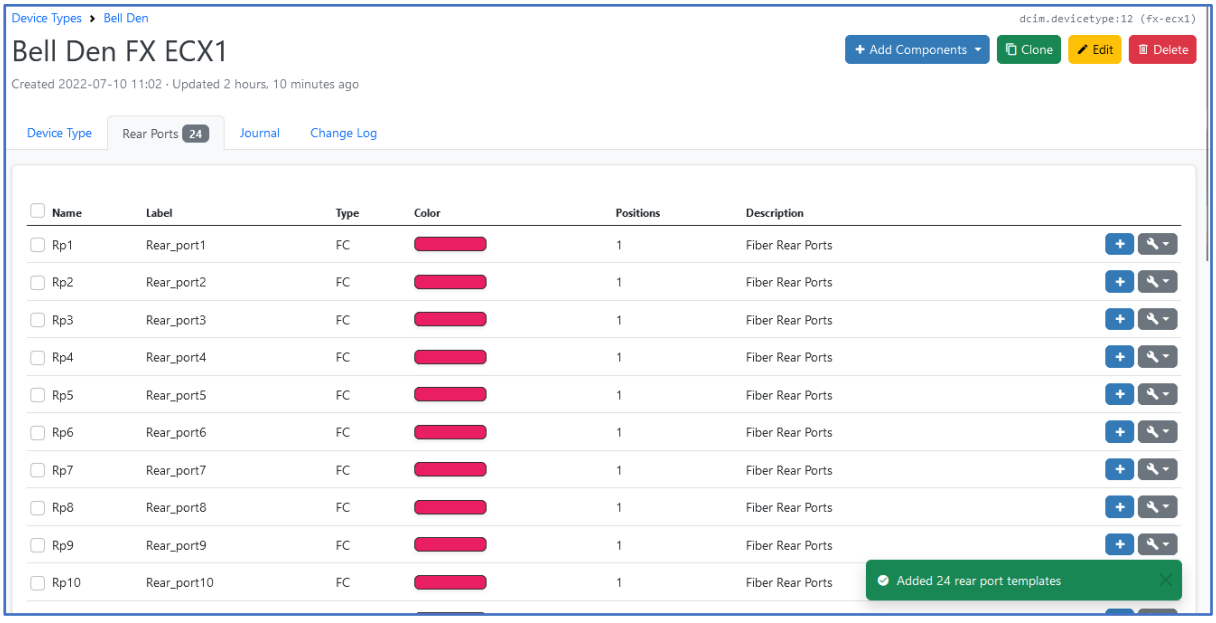
After creating



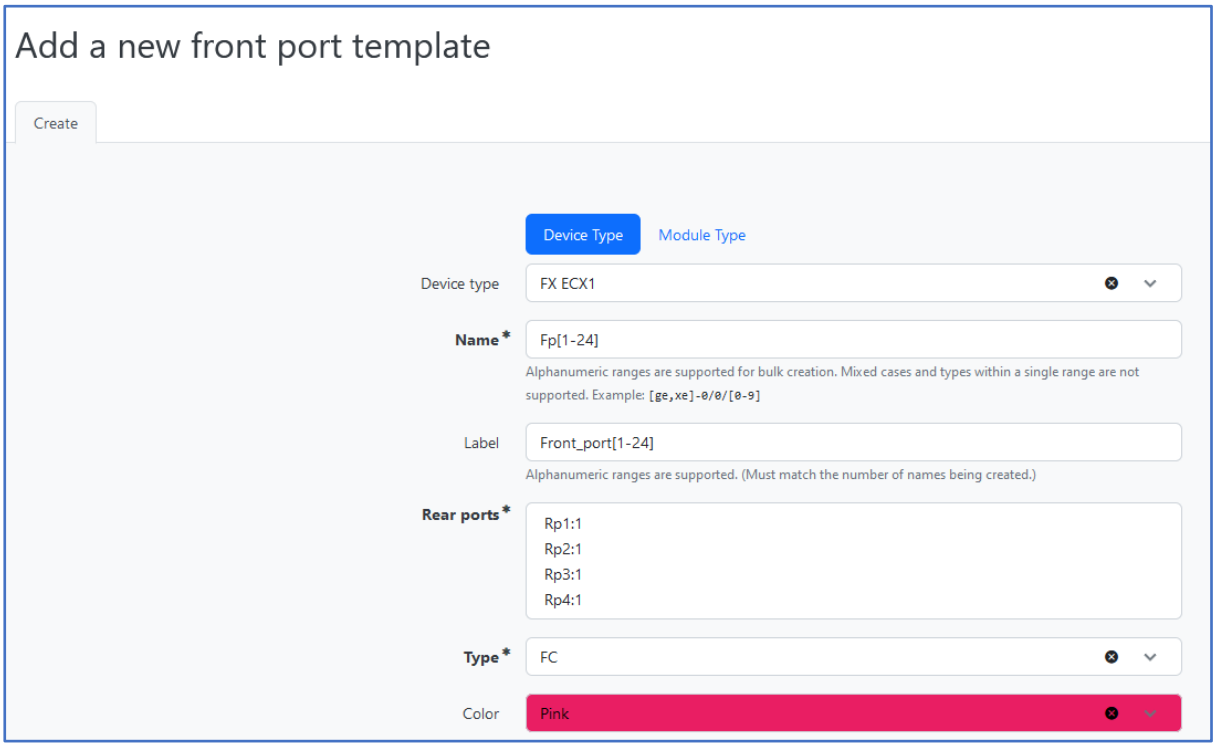
Now add Front **ports and Rear ports** using ***+Add component*** button. Select **Rear ports** first. Then add as follows.



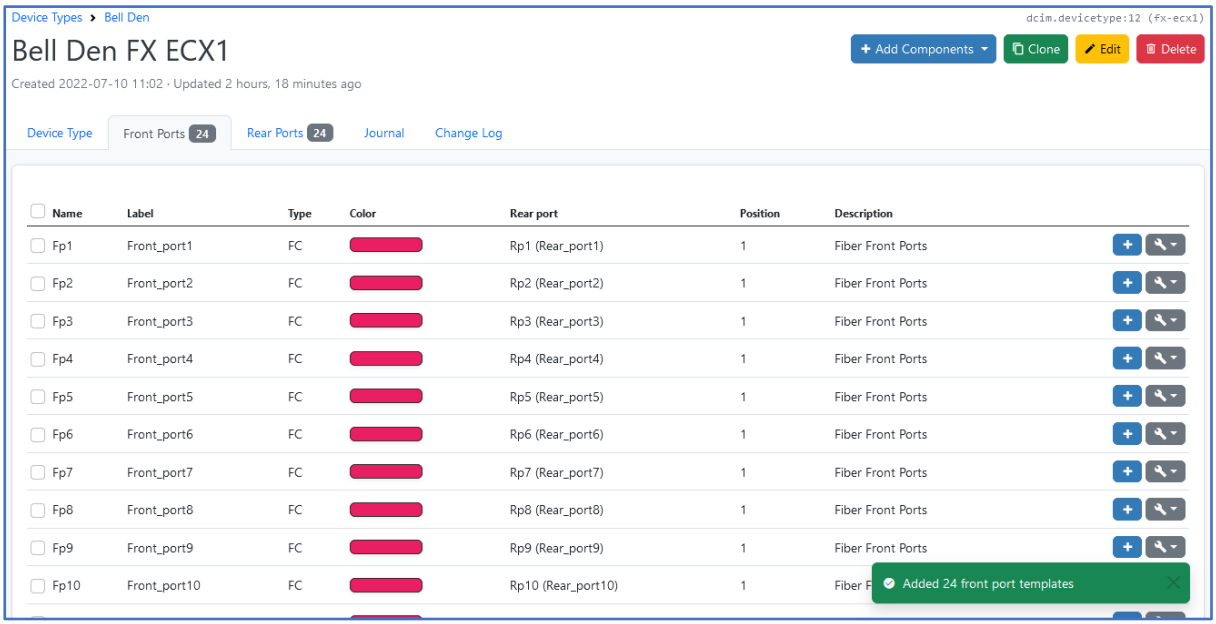
Then press **Create.**



Then add **Front Ports** using ***+Add component*** button.



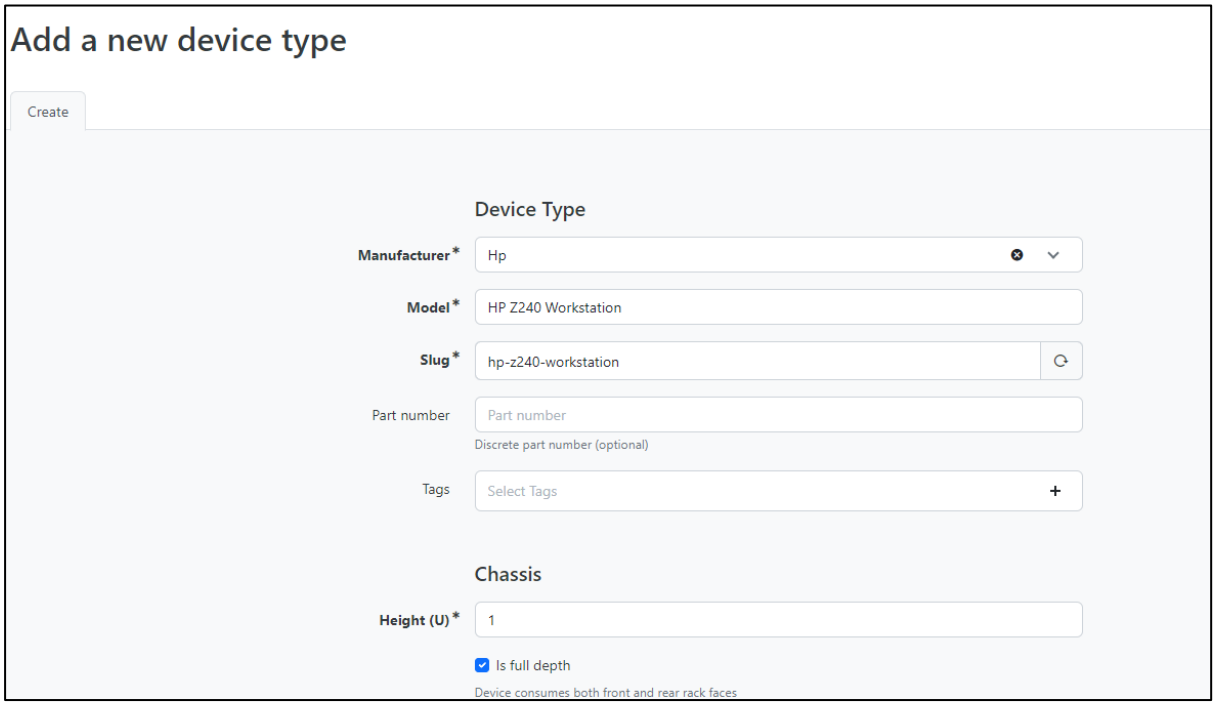
select all **Rear ports** and click **Create.**

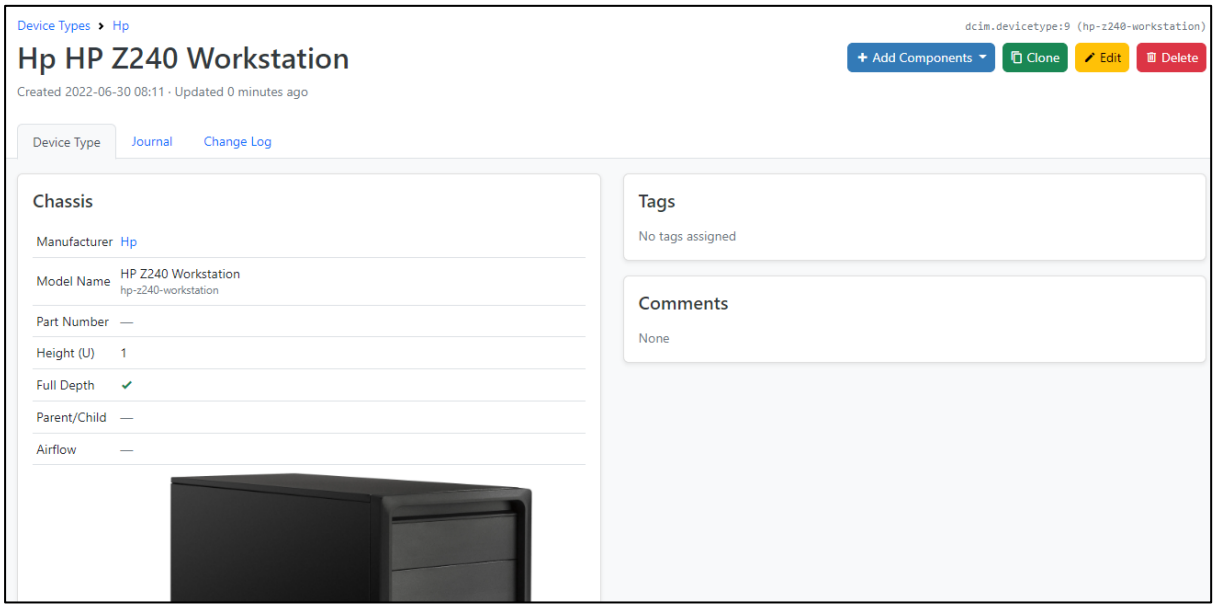


Now it will show both front ports and Rear ports

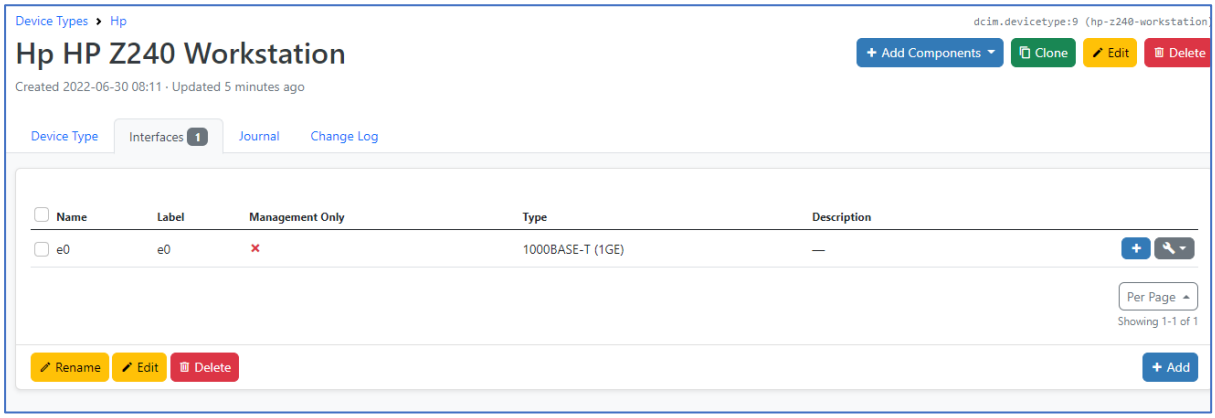
You can add CAT 6 path panels in the same way.

Define User Workstation

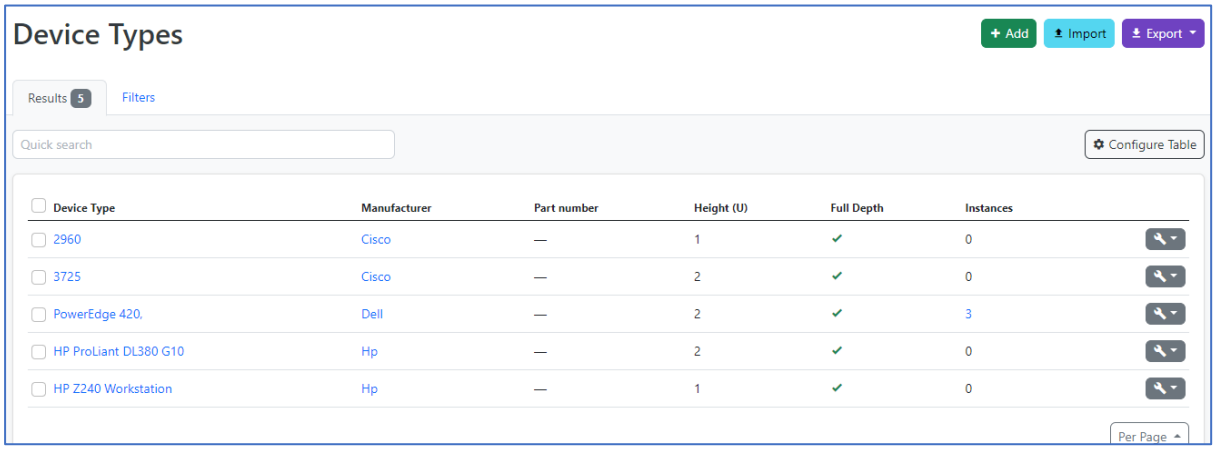




Add a Network interface to Workstation



After adding device types, it should look like this.



Add devices:

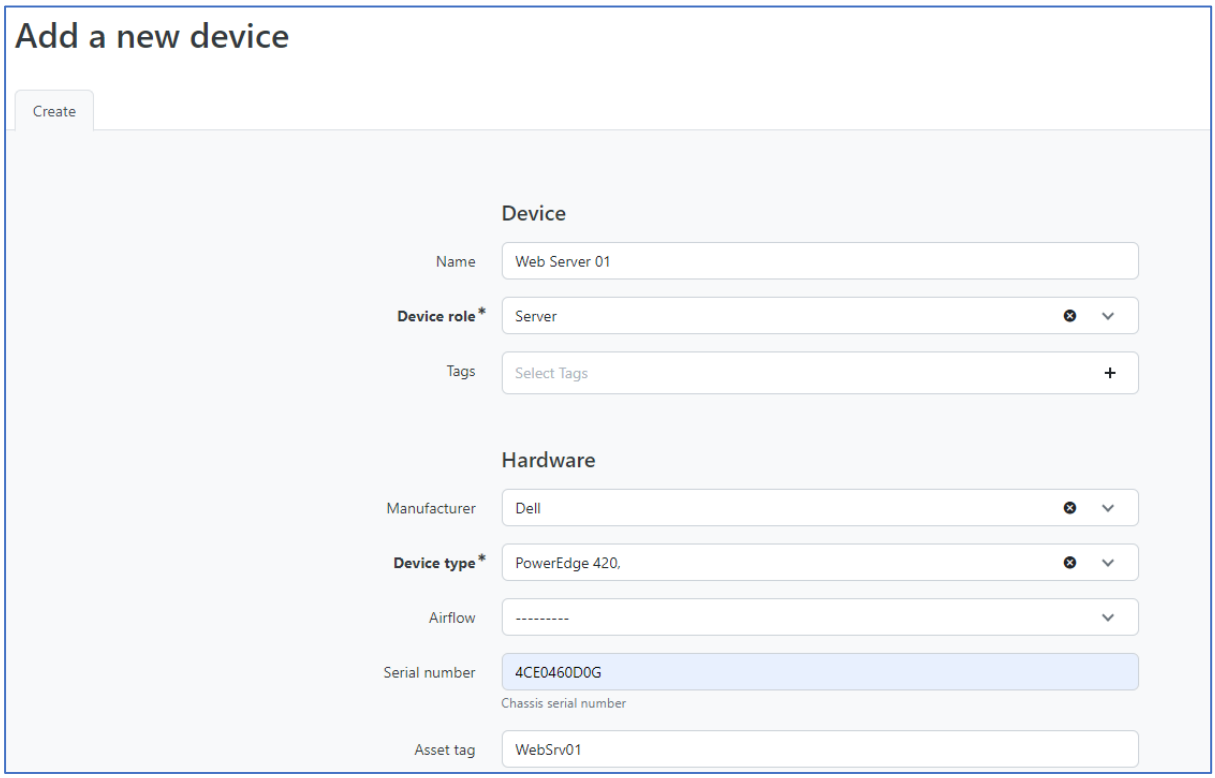
Finally, we are adding devices now.

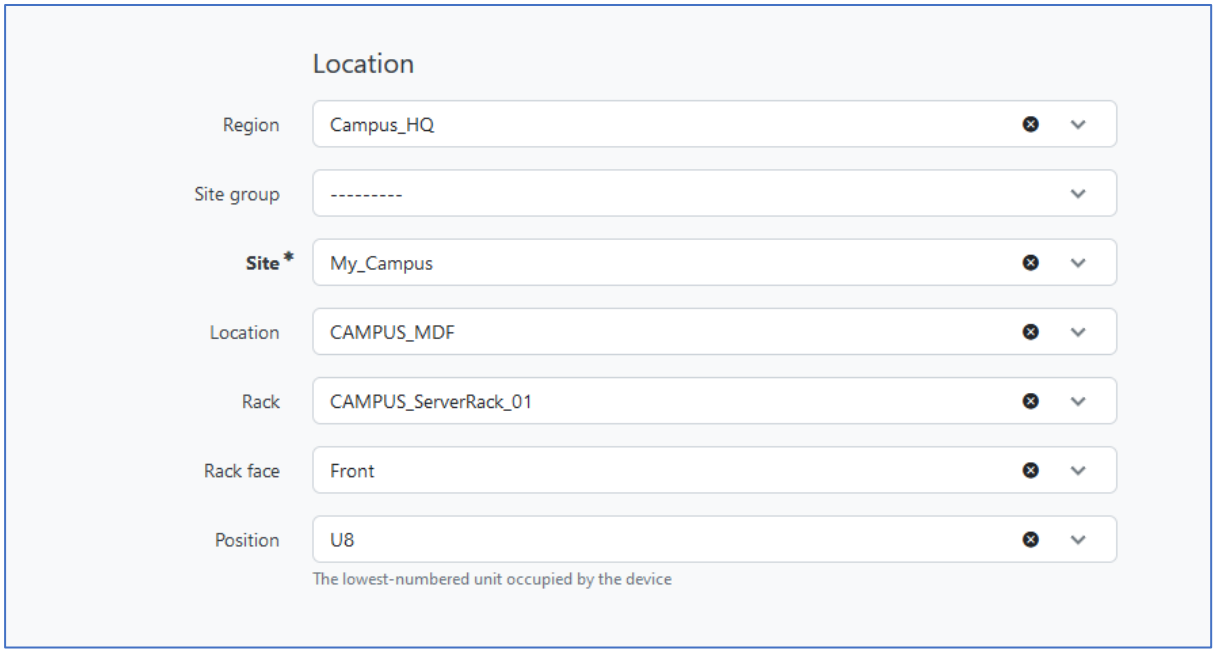
Select ***Devices*** option from the drop-down menu ***Devices***. New window will popup, click on the ***+Add*** button to add a new one. Add switch and server and select all the option from the drop-down menu, accordingly, keep in mind to check, Hardware, Location Tenancy.

For this Network we need to add following devices.

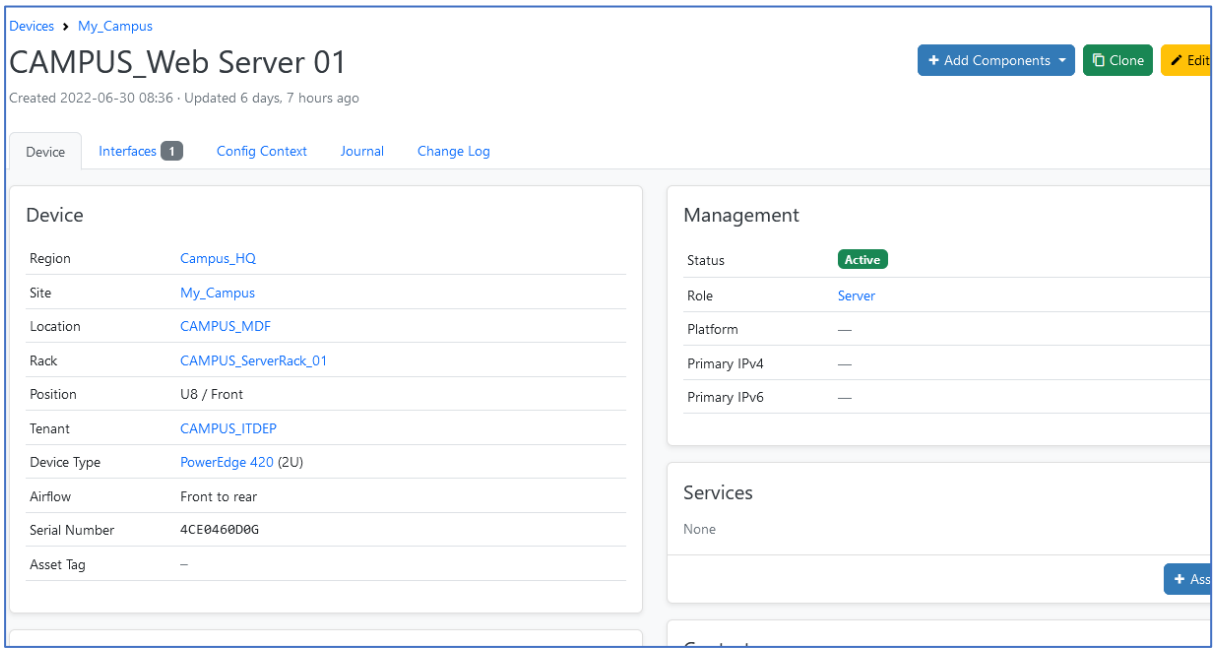
- Three Servers (including Firewall)
- 2 fibre patch panels
- 2 Cat 6 path panels
- Four 3725 Routers
- Seven 2960 Access Switches
- Ten workstations

Now we will add those devices, Starting from Servers.



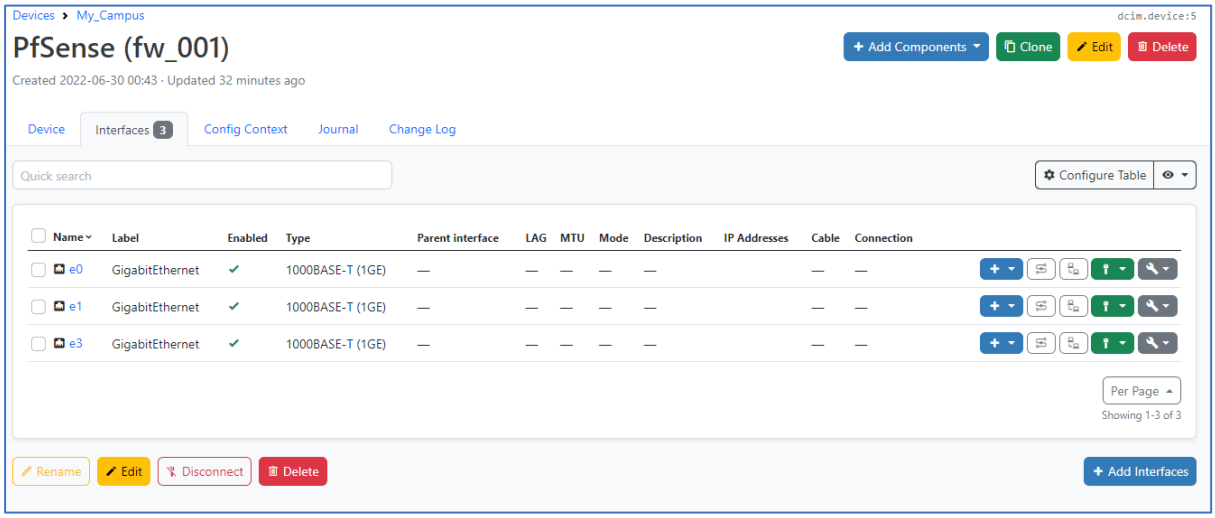


Now it should look like this.



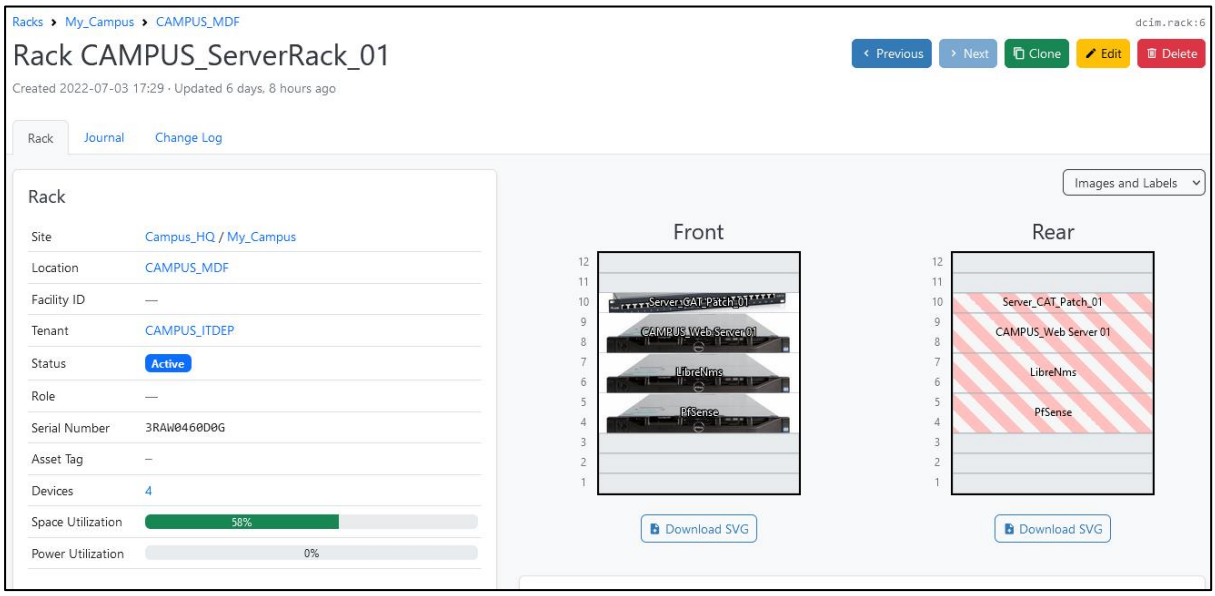
For this workshop network we need to add 2 more servers for **Pfsense** and **LibreNMS .** Repeat the same steps to add servers **or click on Clone** button and fill the gaps accordingly.

Note: you need to add 3 network interfaces to Pfsense.

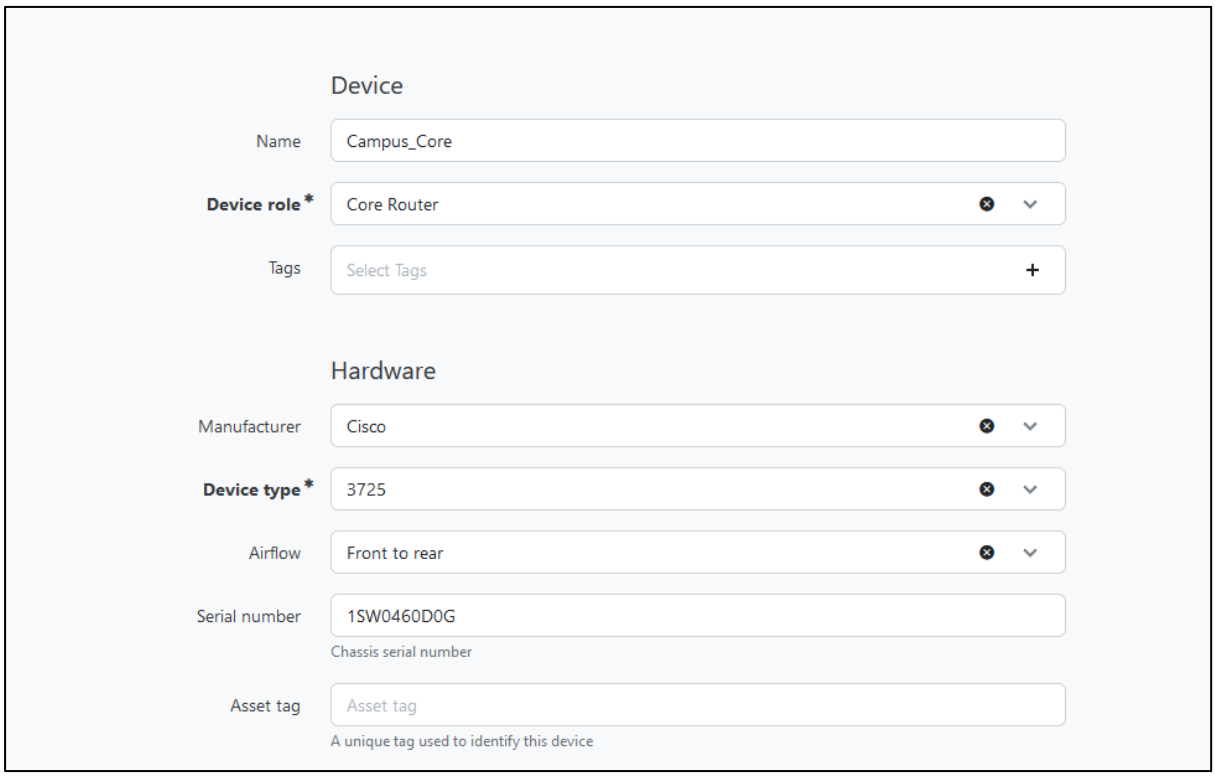


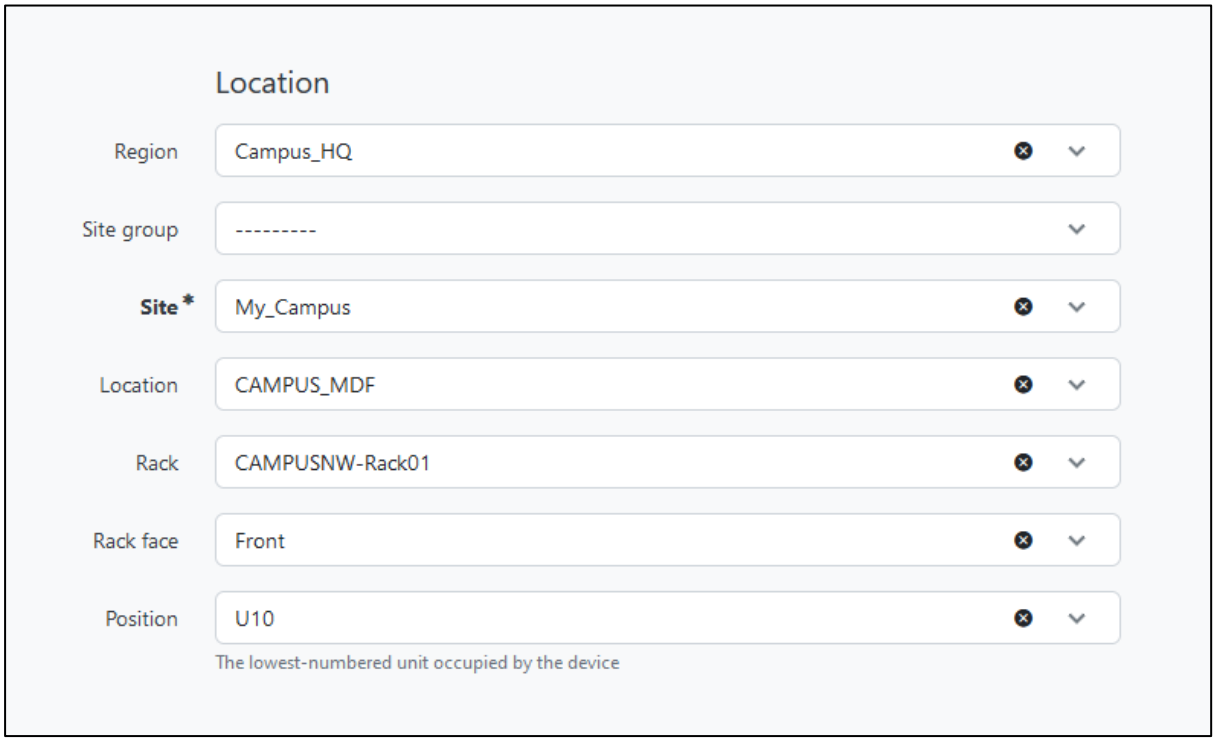
All the Servers should be added **to CAMPUS_ServerRack_01.**

Now server Rack should be like this.



Now add Routers and other devices to CAMPUSNW-Rack01




Location
Region
Campus_HQ
Site group

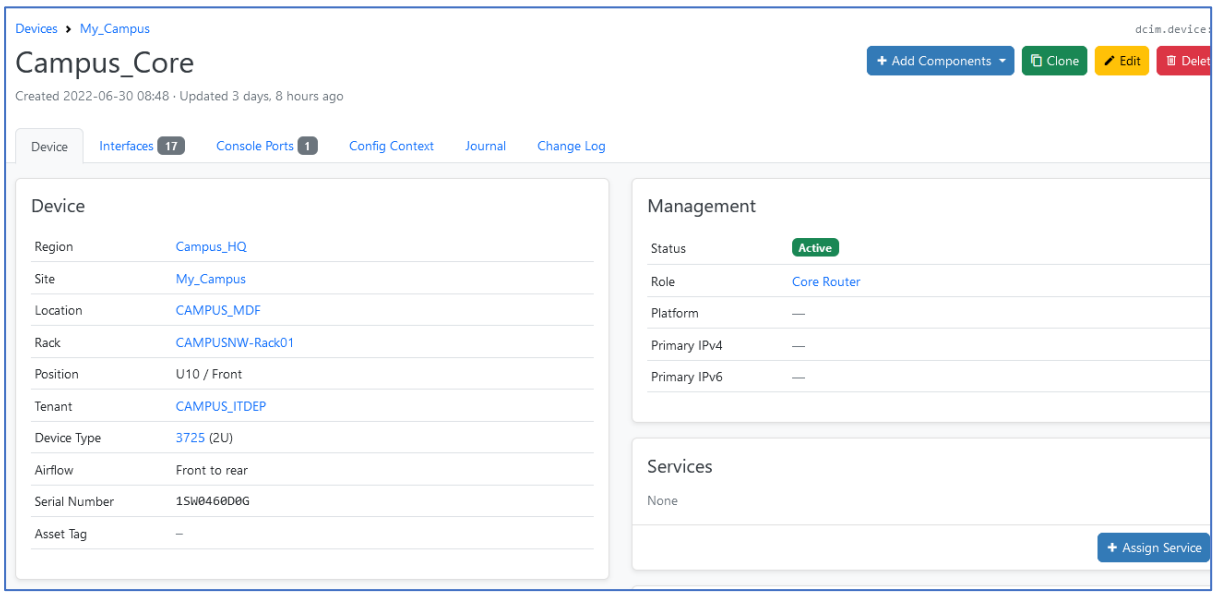
Site *
My_Campus
Location
CAMPUS_MDF
Rack
CAMPUSNW-Rack01
Rack face
Front
Position
U10
The lowest-numbered unit occupied by the device

Virtualization
Cluster group

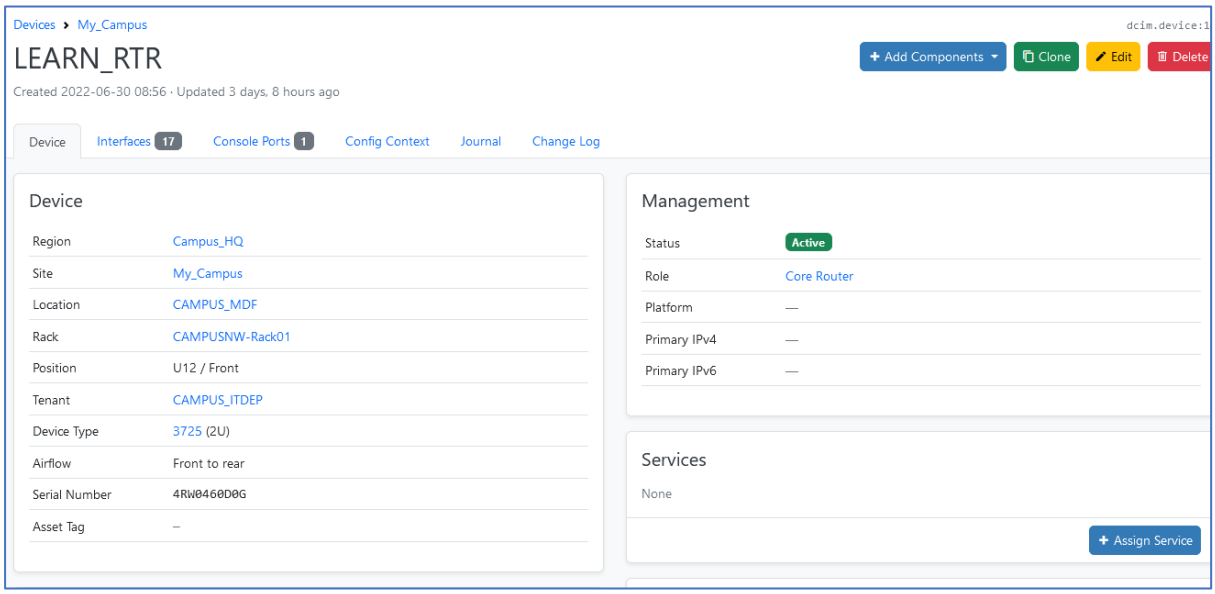
Cluster

Tenancy
Tenant group

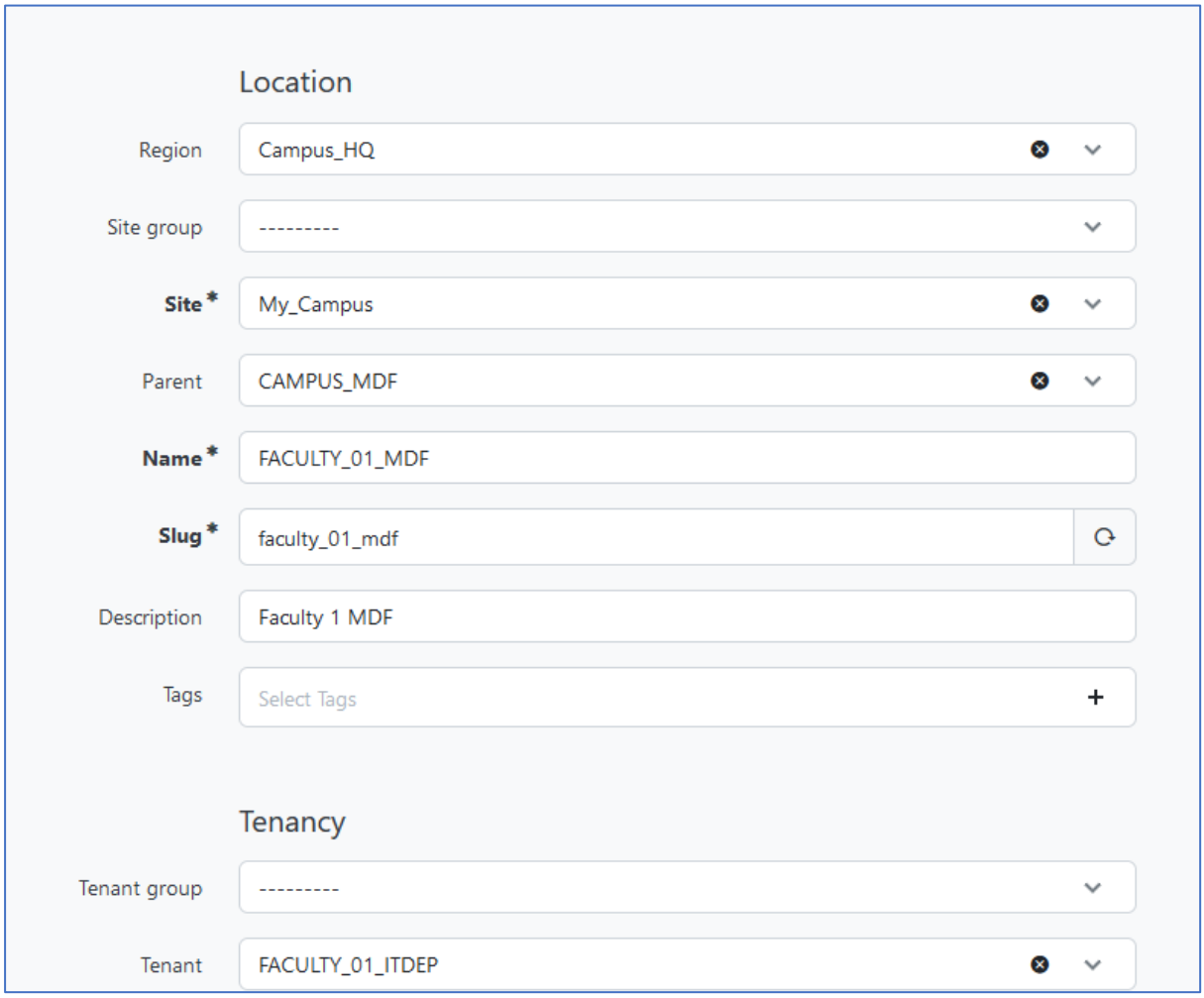
Tenant
CAMPUS_ITDEP


Devices › My_Campus
Campus_Core
+ Add Components
Clone
Edit
Created 2022-06-30 08:48 · Updated 3 days, 8 hours ago
Device
Interfaces 17
Console Ports 1
Config Context
Journal
Change Log
Device
Region Campus_HQ
Site My_Campus
Location CAMPUS_MDF
Rack CAMPUSNW-Rack01
Position U10 / Front
Tenant CAMPUS_ITDEP
Device Type 3725 (2U)
Airflow Front to rear
Serial Number 1SW0460D0G
Asset Tag –
Management
Status Active
Role Core Router
Platform —
Primary IPv4 —
Primary IPv6 —
Services
None
+ Assign Service

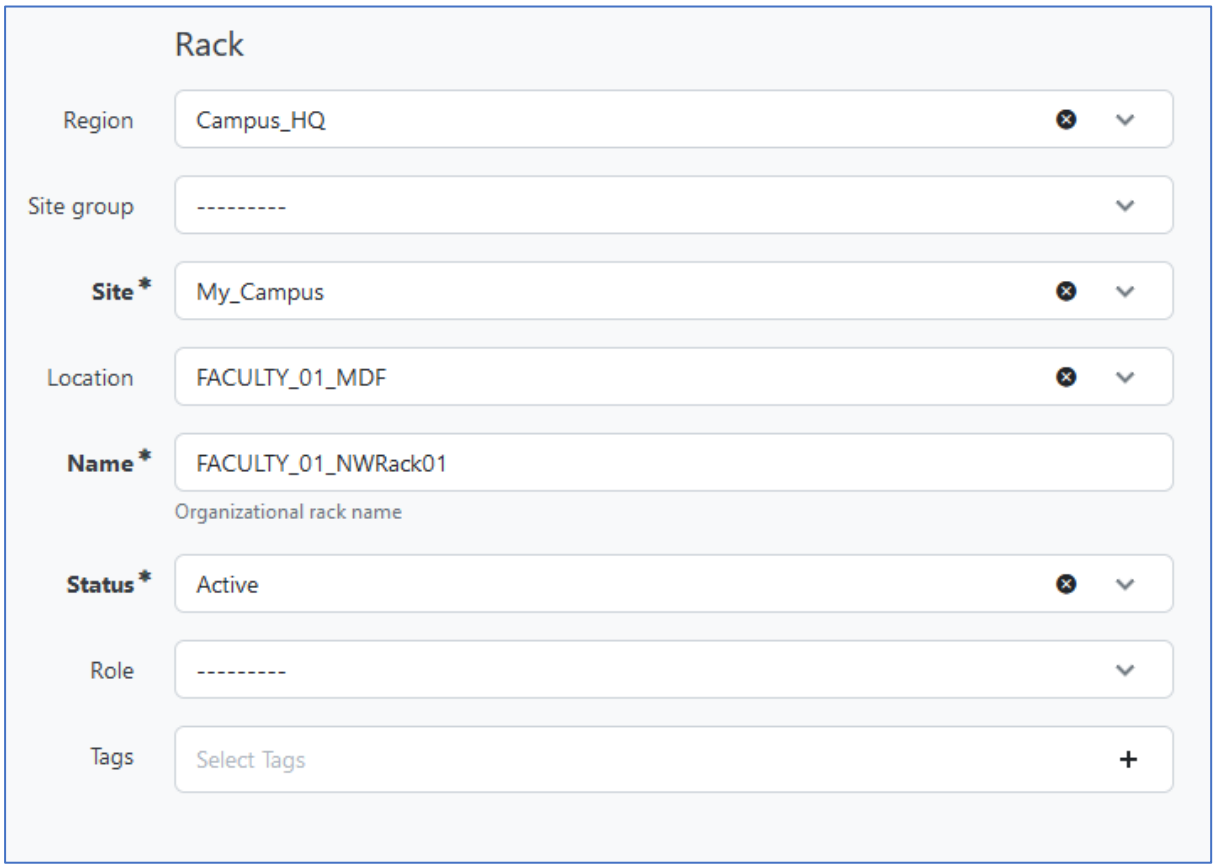
Use the above steps or use *Clone button* to create other Routers

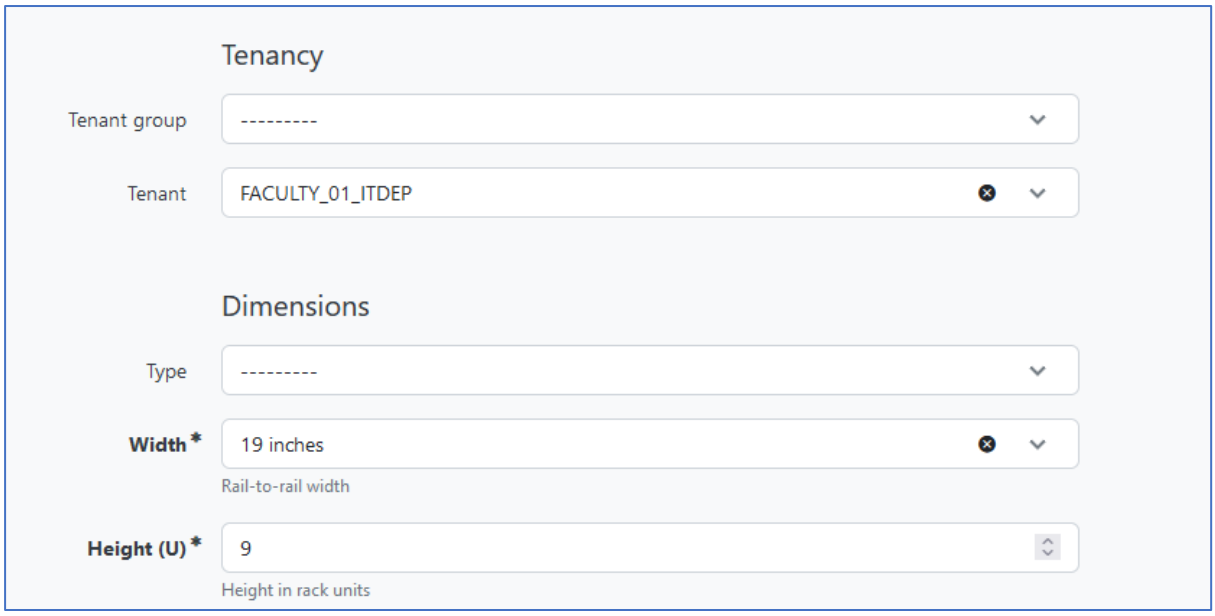


First, we add new Location for ***Faculty 1*** and Add devices for that location. We can repeat the same steps for other locations as well.

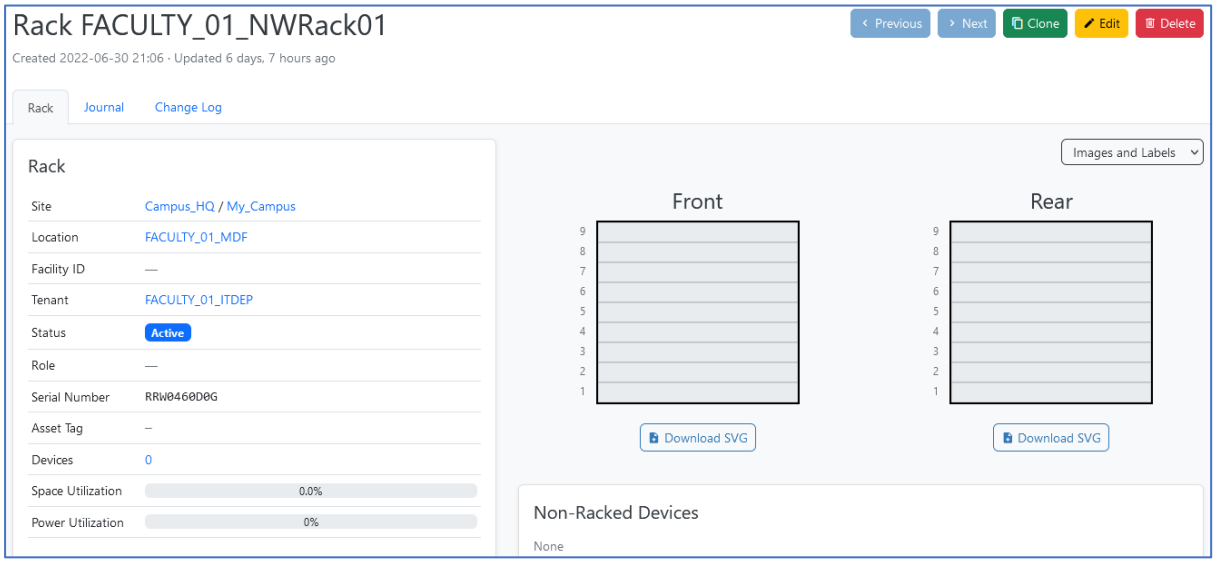


now we add a 9U Rack for above location.



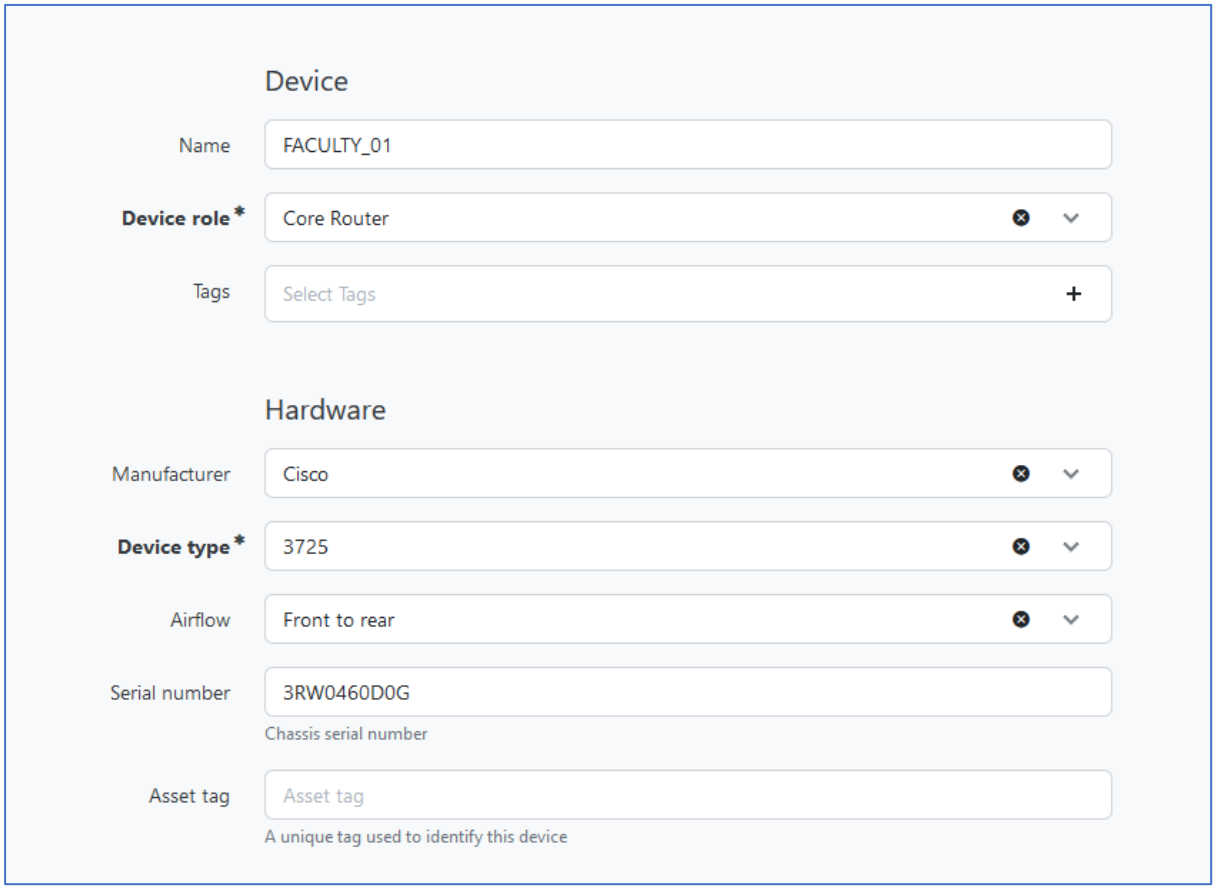


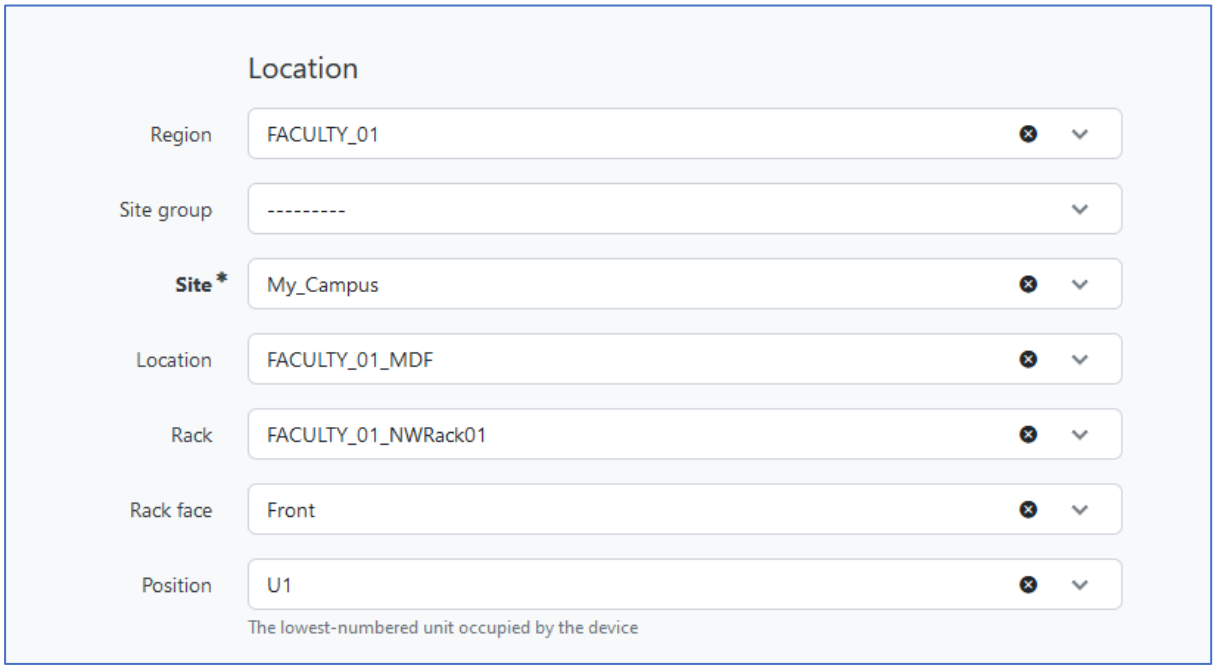
It should look like this.



Now we add ***Faculty_01 Router*** to this Rack.

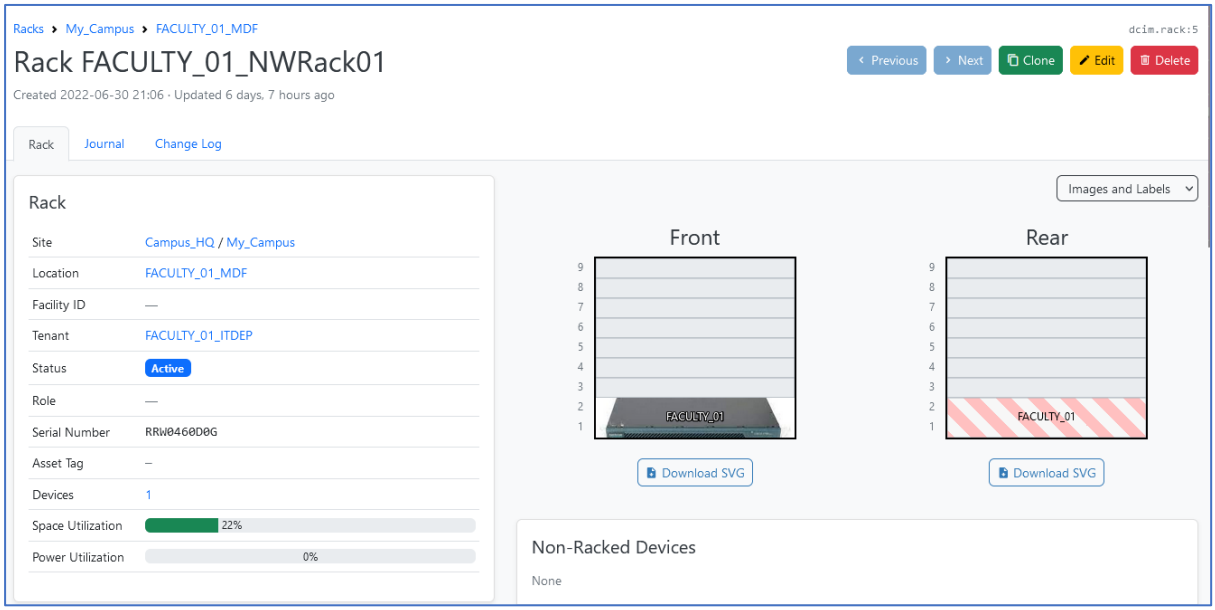
Go to devices and select previously created ***Faculty_01 Router*** and assign it to this Rack.



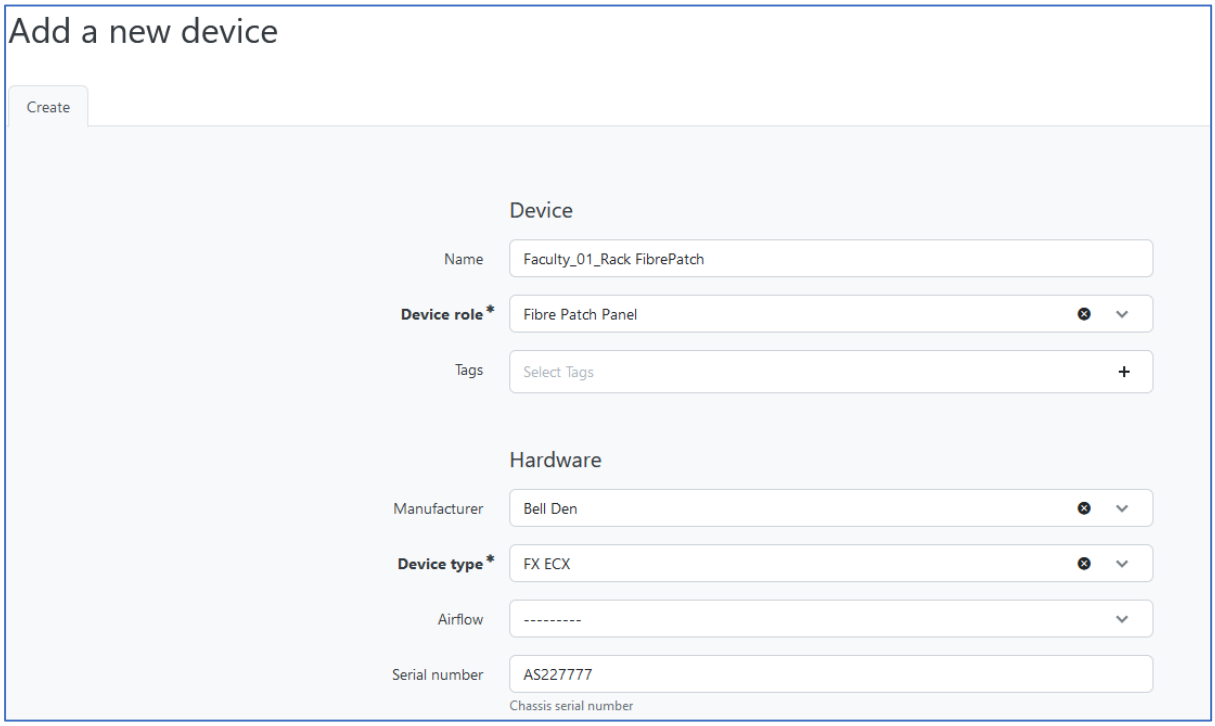


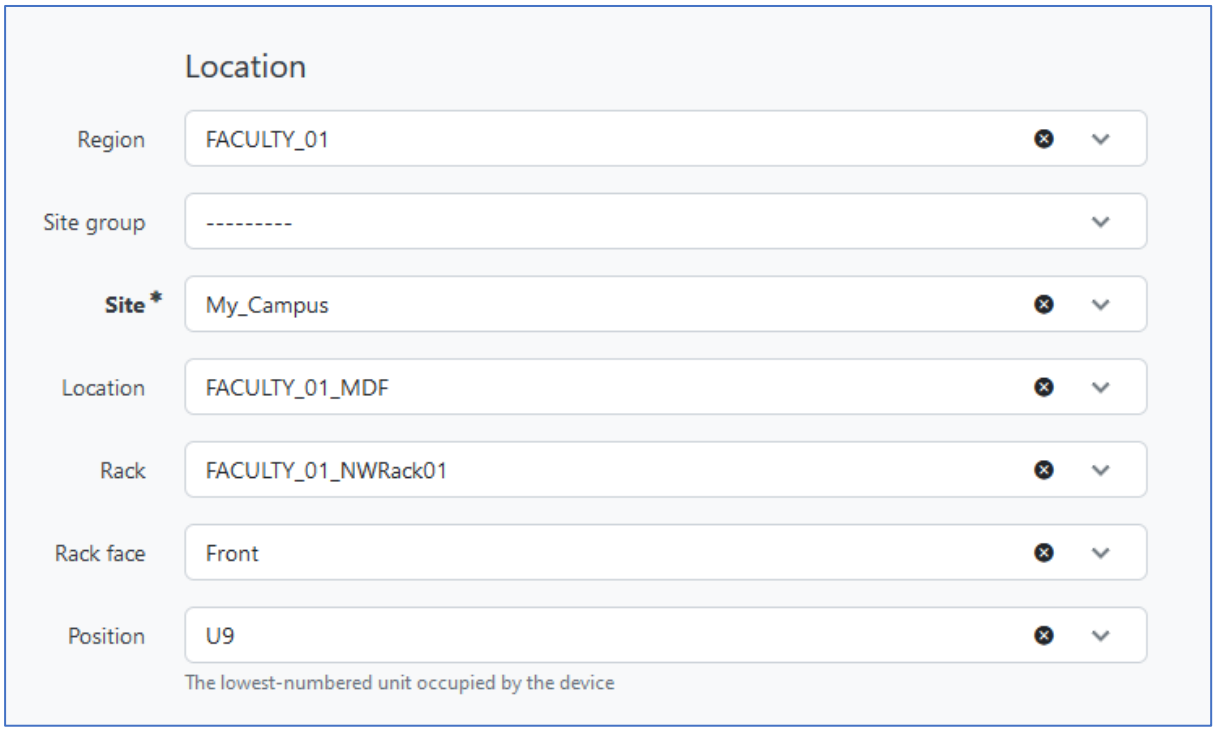
We need another **Fibre patch Panel** and **CAT 6 Patch Panel** to this Rack.

You can **click on the Rack position** and add Devices. Go to Racks and select **Faculty_01 Rack.**

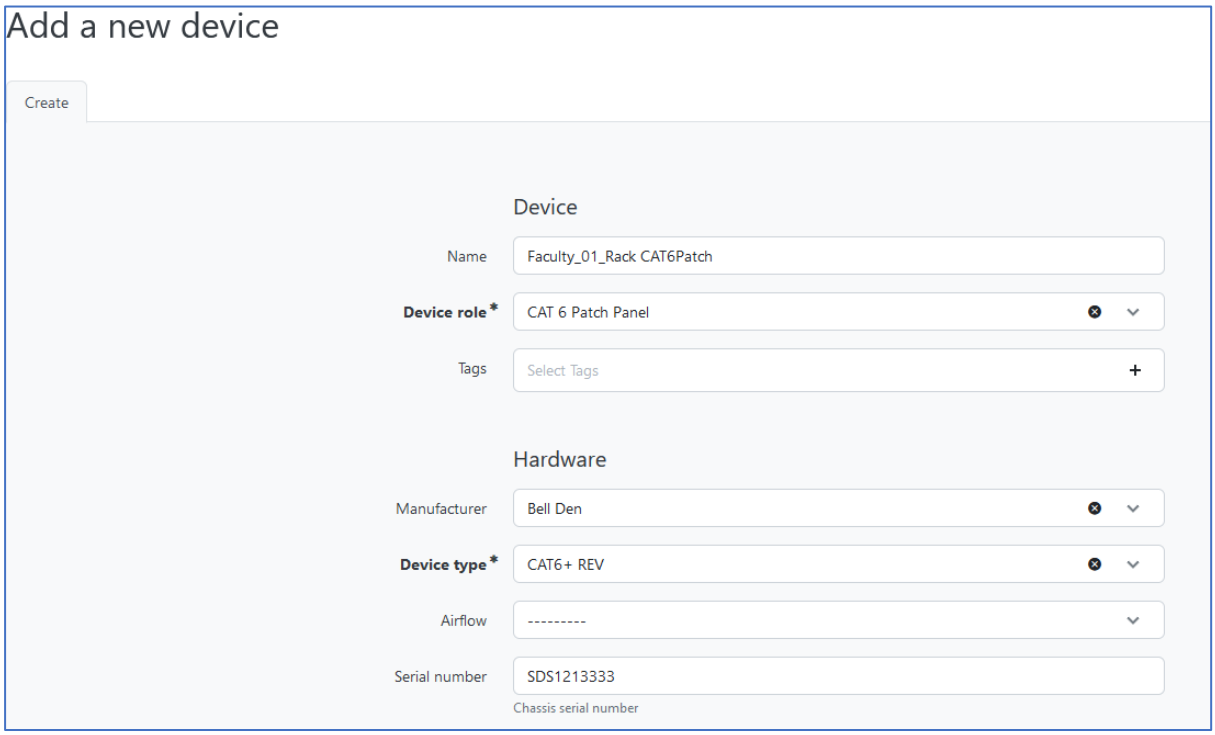


Click on the **position 9** and add **Fibre Patch panel.**

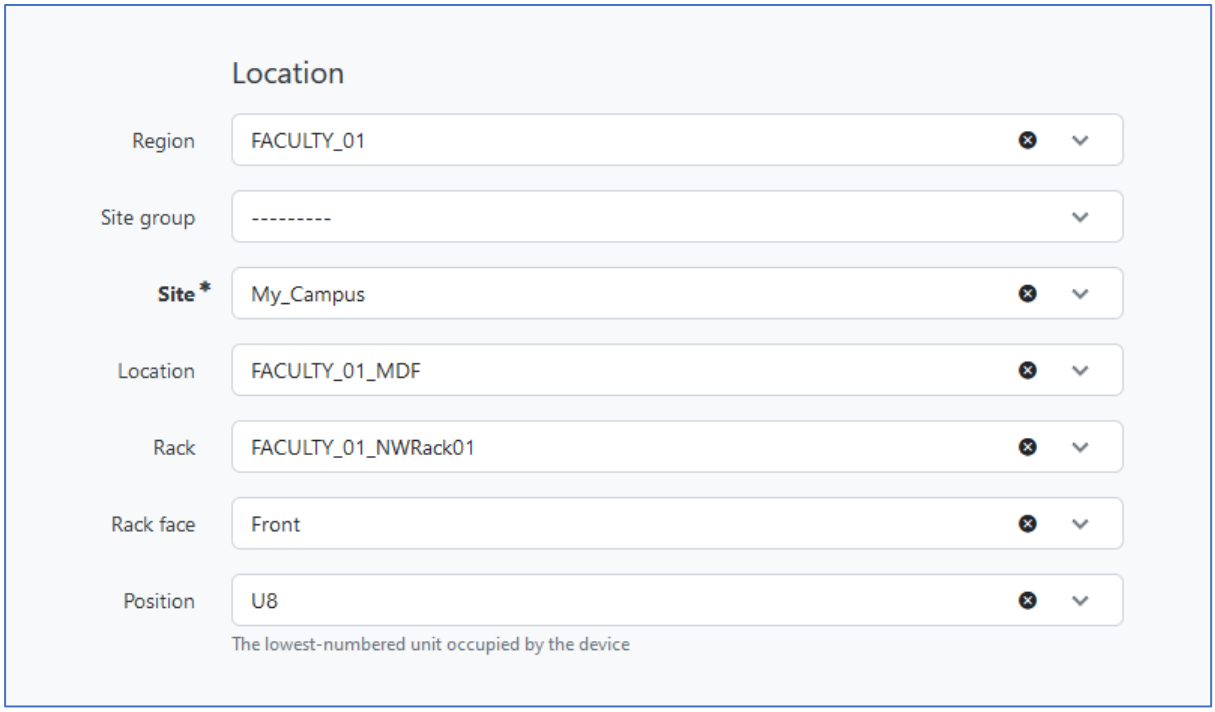




Add **CAT 6 patch panel** to position 8 by clicking on it.


Add a new device
Create
Device
Name
Faculty_01_Rack CAT6Patch
Device role *
CAT 6 Patch Panel
Tags
Select Tags
Hardware
Manufacturer
Bell Den
Device type *
CAT6+ REV
Airflow

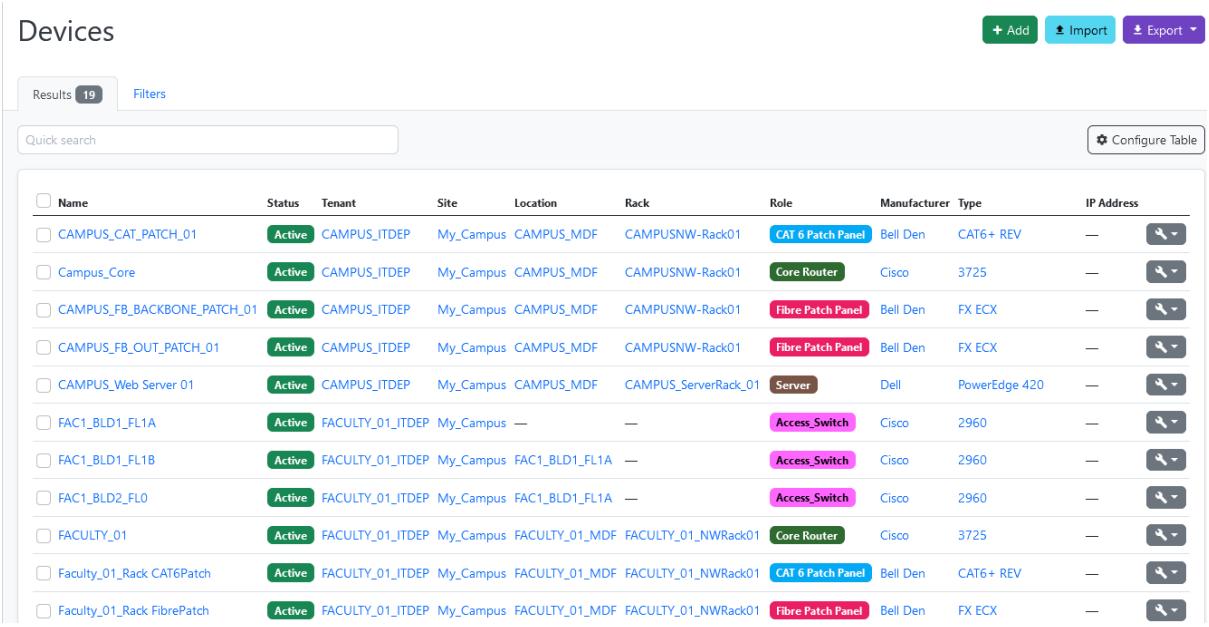
Serial number
SDS1213333
Chassis serial number


Location
Region
FACULTY_01
Site group

Site *
My_Campus
Location
FACULTY_01_MDF
Rack
FACULTY_01_NWRack01
Rack face
Front
Position
U8
The lowest-numbered unit occupied by the device

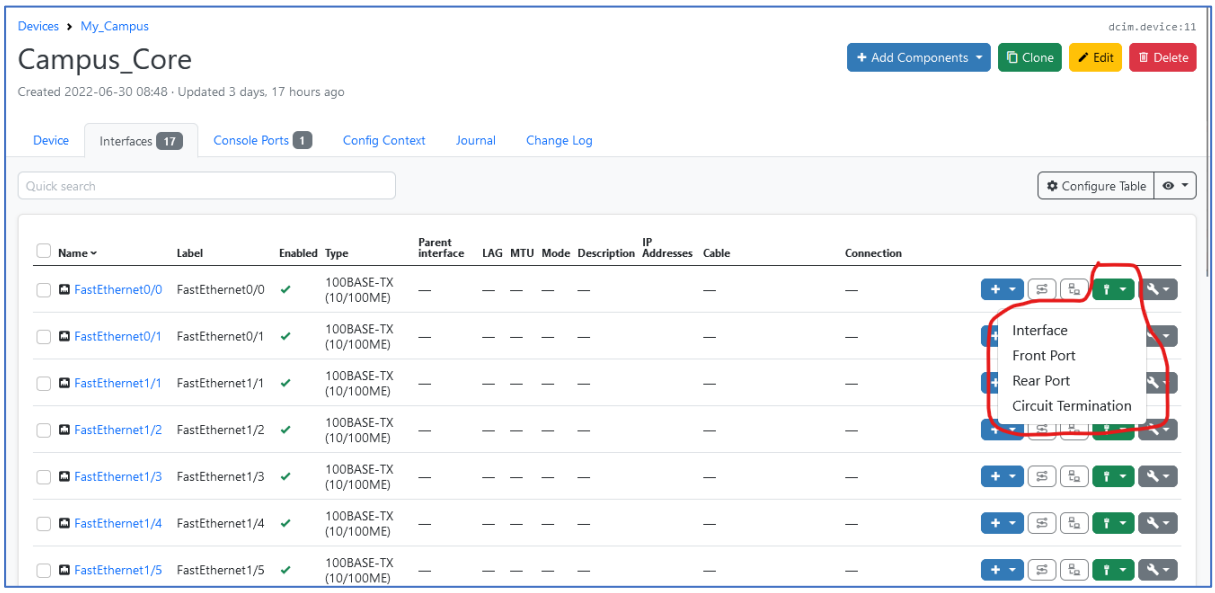
Now we can start with cabling the devices.

First go to the Devices menu and it will show you all the devices you added previously.



For Example we will connect ***Campus core routers' Fa1/0 to Faculty_01s ' Fa1/15***

Select Campus core router and go to intarfaces tab.Now select the interface you want to connect and click on ***green colour connection drop-down icon*** and select ***Front Port from drop-down.***



It will open the following window with ***source device (A Side) and destination device (B Side) and cable type for the connection. Fill the gaps according to your configurations.***

Here we are connecting devices via fibre patch panels which are in **CAMPUSNW-Rack01**

and FACULTY_01_NWRack01.

Cable path as follows.

Campus core Routers' Fa1/0

↓

CAMPUSNW-Rack01 Fibre Patch Panel Front port 10

↓

CAMPUSNW-Rack01 Fibre Patch Panel Rear port 10

↓

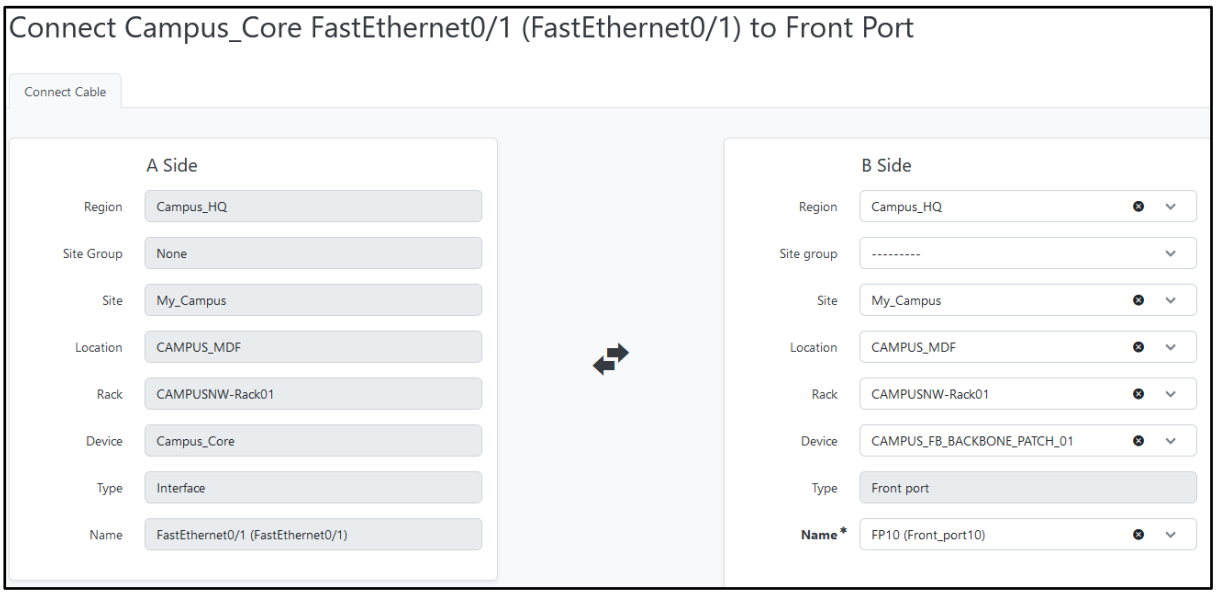
FACULTY_01_NWRack01 Fibre Patch panel Rear port 10

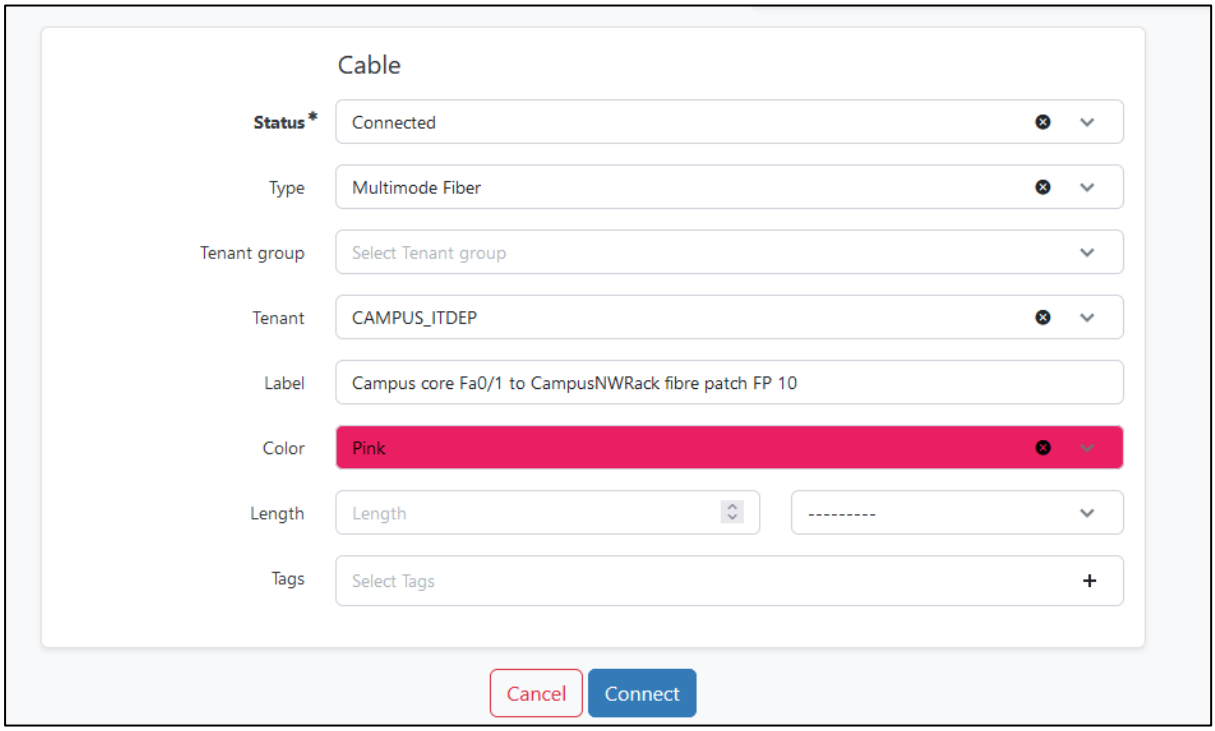
↓

FACULTY_01_NWRack01 Fibre Patch panel Front port 10

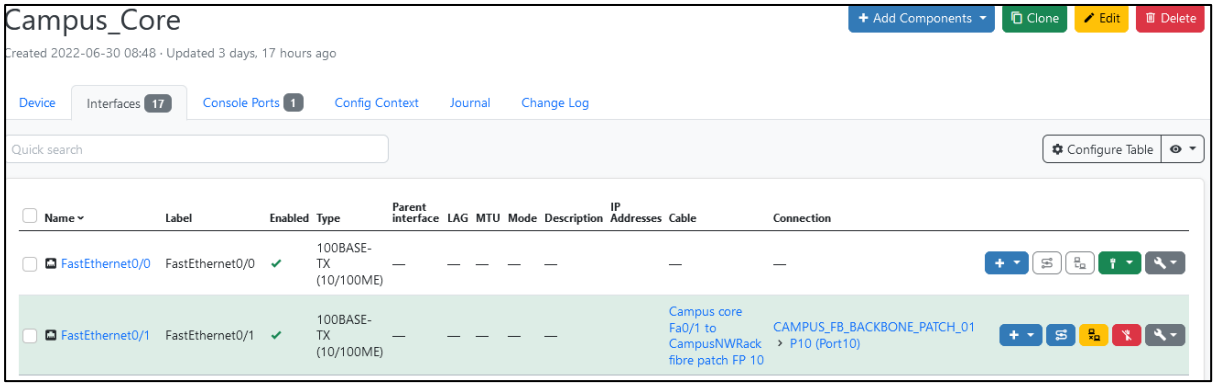
↓

FACULTY_01 Routers' Fa1/15



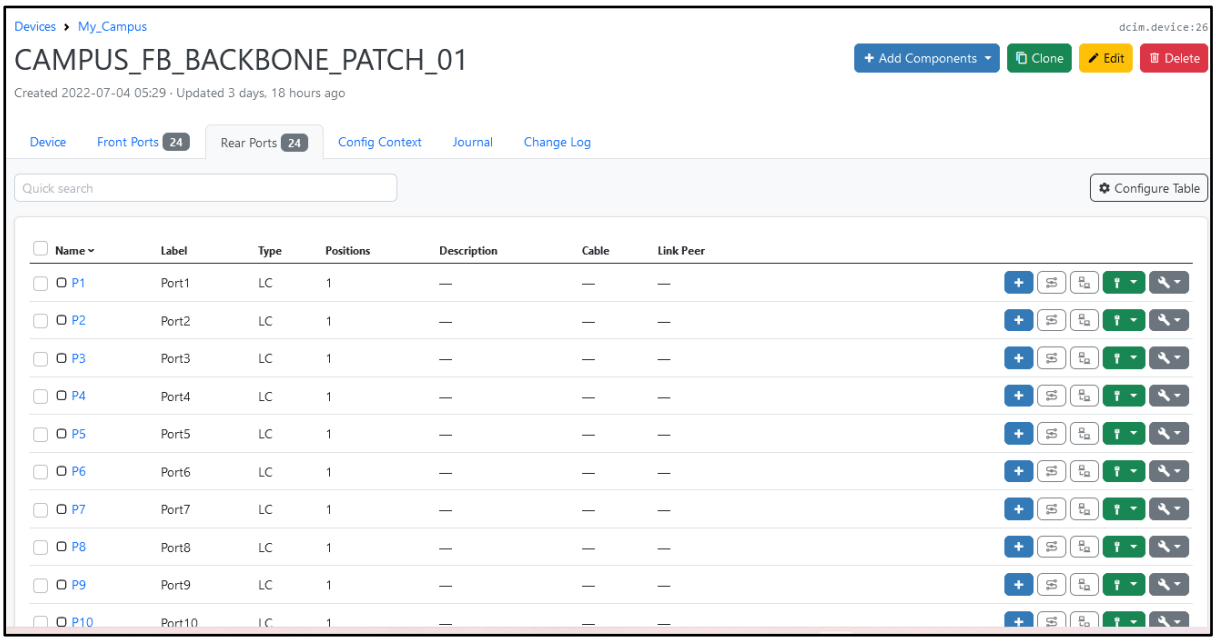


Press Connect.

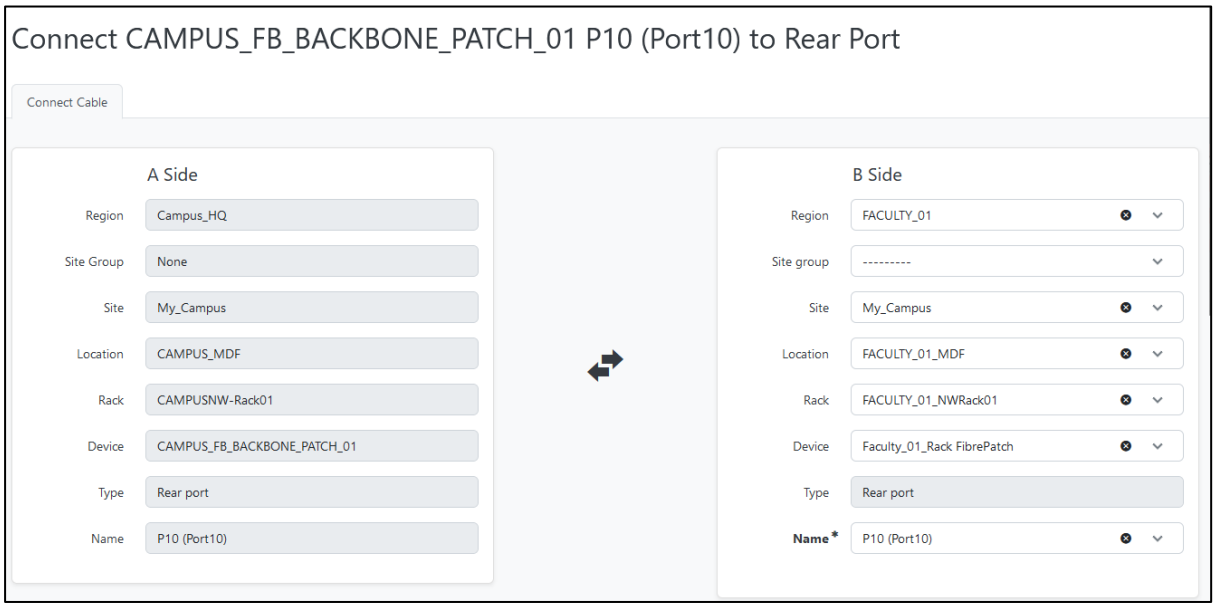


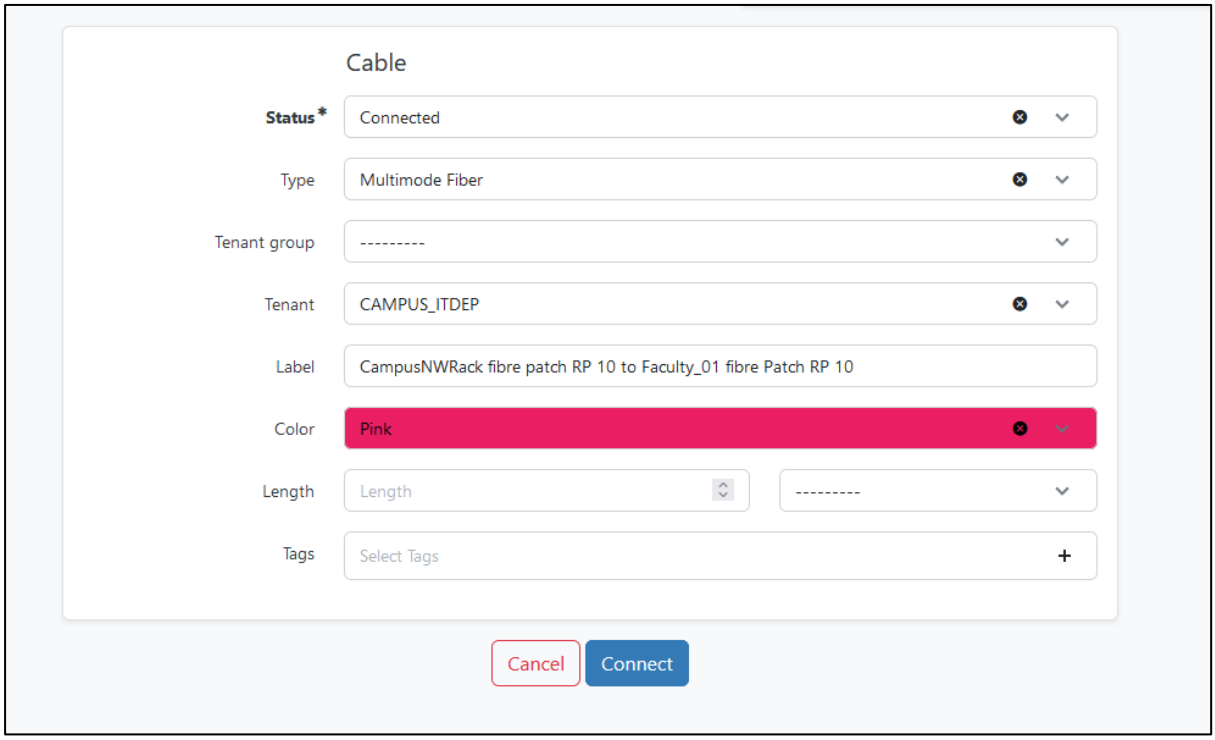
Then Campus Network Rack to Faculty_01 Rack patch panel.

Select CAMPUS_FB_BACKBONE_PATCH_01 and Rear port 10



Connect it to Faculty_01 racks' fibre patch panel Rear port 10.

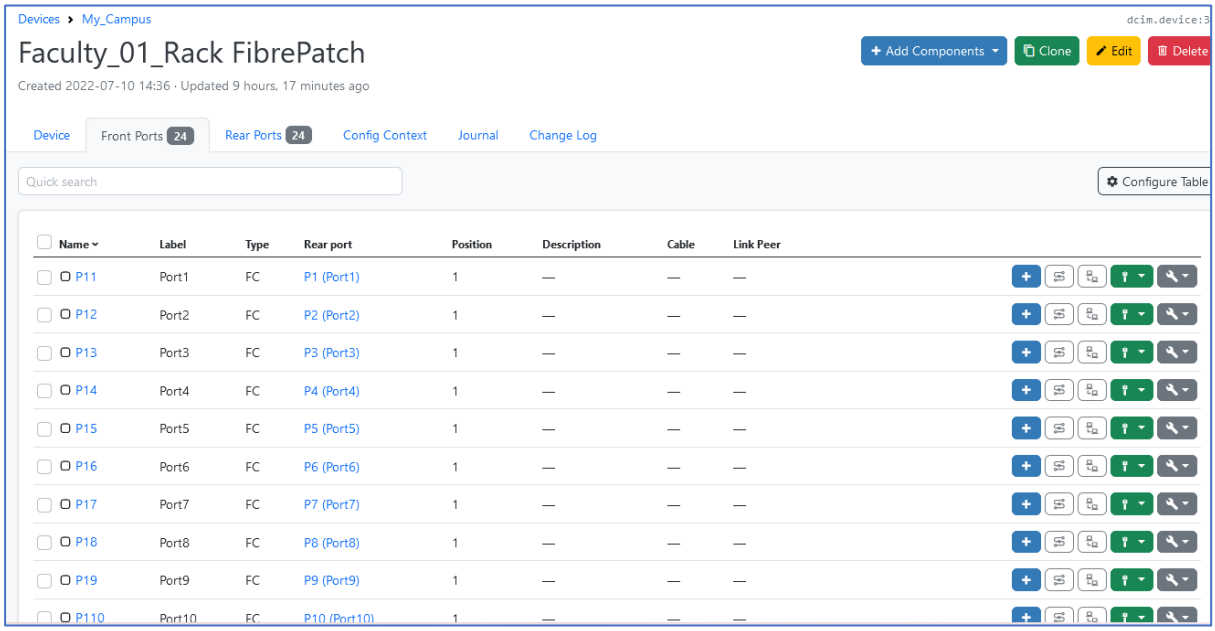


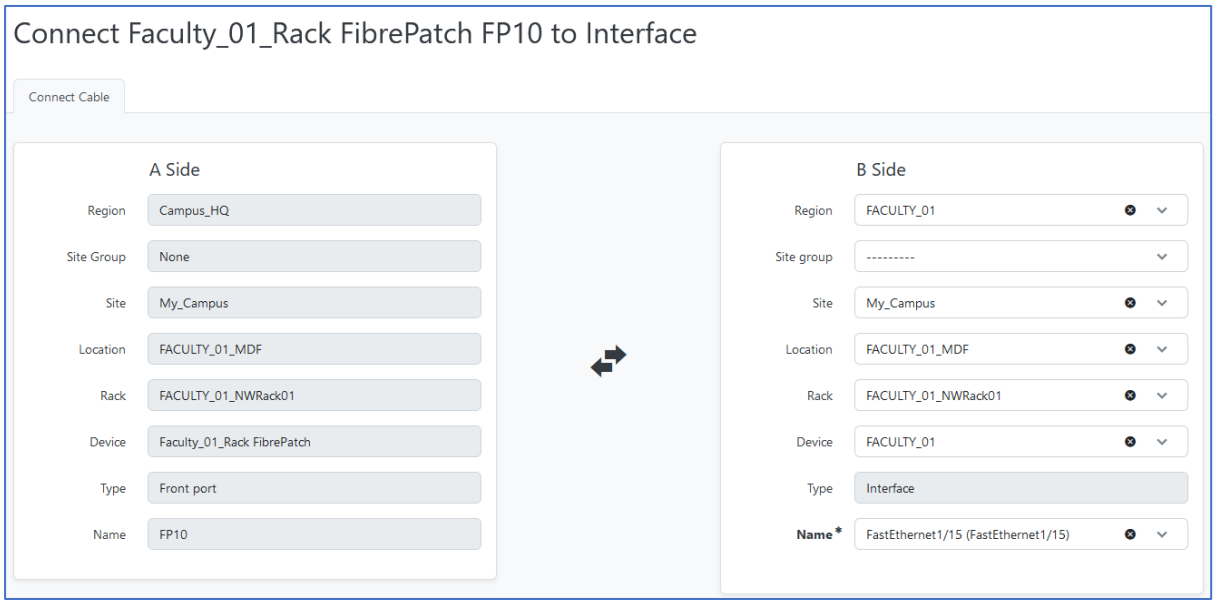


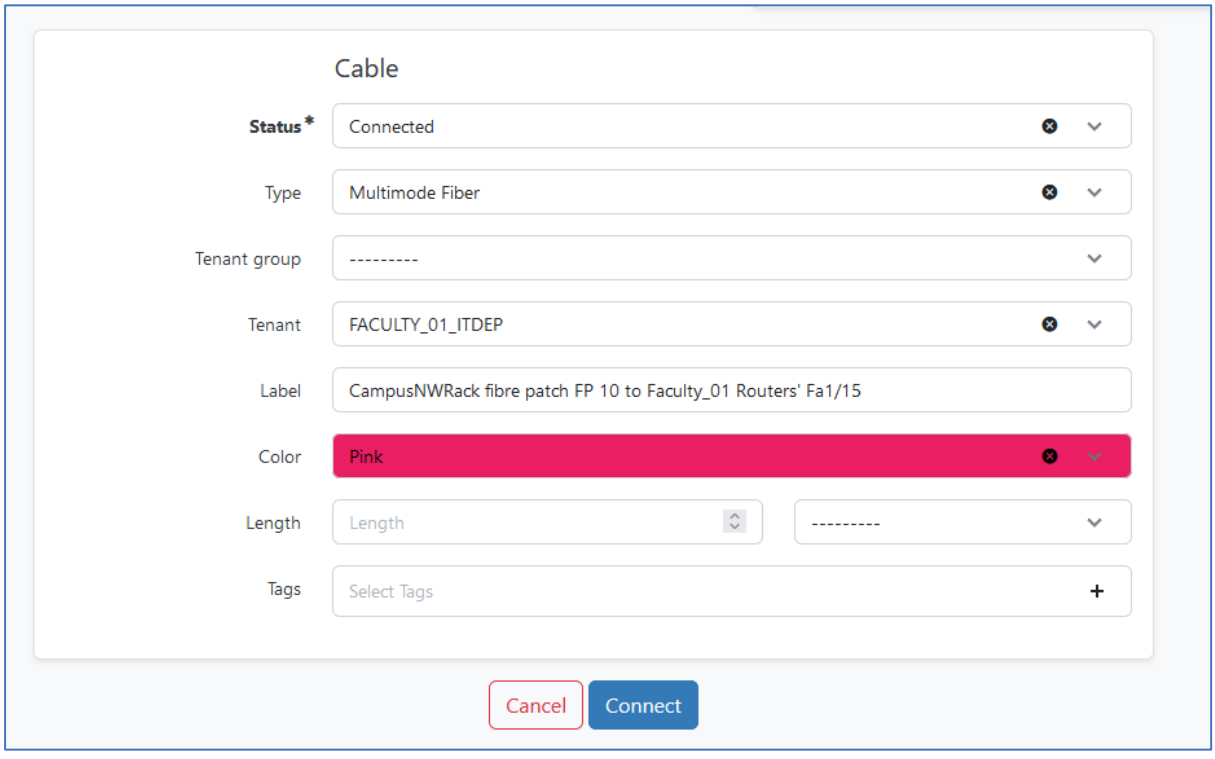
Now click on ***Connect*** Button.

Then Campus Faculty_01 Rack patch panel Front port 10 to FACULTY_01 Routers' Fa1/15 Interface.

Select interface form drop down.

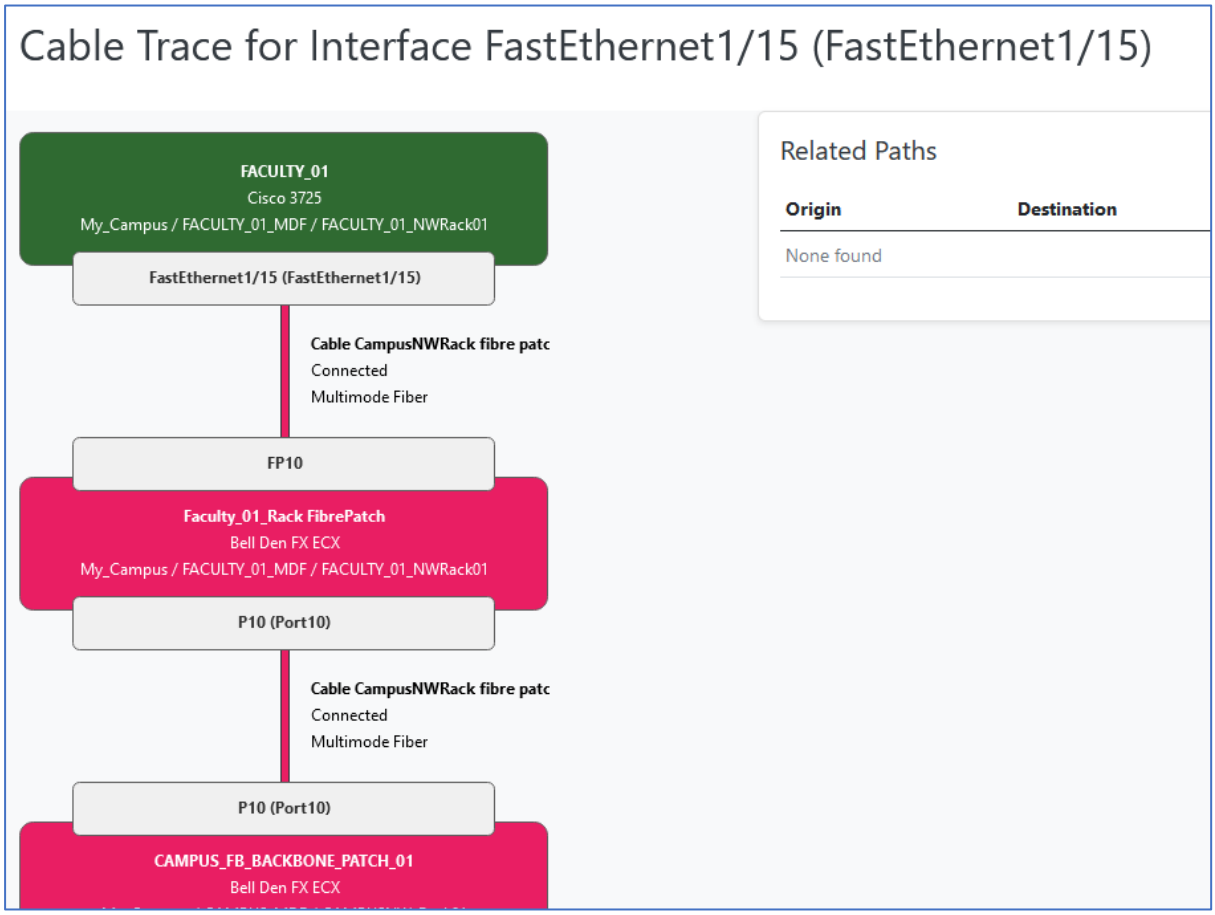

Devices › My_Campus
dcim.device:3
Faculty_01_Rack FibrePatch
+ Add Components
Clone
Edit
Delete
Created 2022-07-10 14:36 · Updated 9 hours, 17 minutes ago
Device
Front Ports 24
Rear Ports 24
Config Context
Journal
Change Log
Quick search
Configure Table
Name
Label
Type
Rear port
Position
Description
Cable
Link Peer
P11 Port1 FC P1 (Port1) 1 — — —
P12 Port2 FC P2 (Port2) 1 — — —
P13 Port3 FC P3 (Port3) 1 — — —
P14 Port4 FC P4 (Port4) 1 — — —
P15 Port5 FC P5 (Port5) 1 — — —
P16 Port6 FC P6 (Port6) 1 — — —
P17 Port7 FC P7 (Port7) 1 — — —
P18 Port8 FC P8 (Port8) 1 — — —
P19 Port9 FC P9 (Port9) 1 — — —
P110 Port10 FC P10 (Port10) 1 — — —


Connect Faculty_01_Rack FibrePatch FP10 to Interface
Connect Cable
A Side
Region Campus_HQ
Site Group None
Site My_Campus
Location FACULTY_01_MDF
Rack FACULTY_01_NWRack01
Device Faculty_01_Rack FibrePatch
Type Front port
Name FP10
B Side
Region FACULTY_01
Site group ---------
Site My_Campus
Location FACULTY_01_MDF
Rack FACULTY_01_NWRack01
Device FACULTY_01
Type Interface
Name * FastEthernet1/15 (FastEthernet1/15)


Cable
Status * Connected
Type Multimode Fiber
Tenant group ---------
Tenant FACULTY_01_ITDEP
Label CampusNWRack fibre patch FP 10 to Faculty_01 Routers' Fa1/15
Color Pink
Length Length ---------
Tags Select Tags
Cancel
Connect

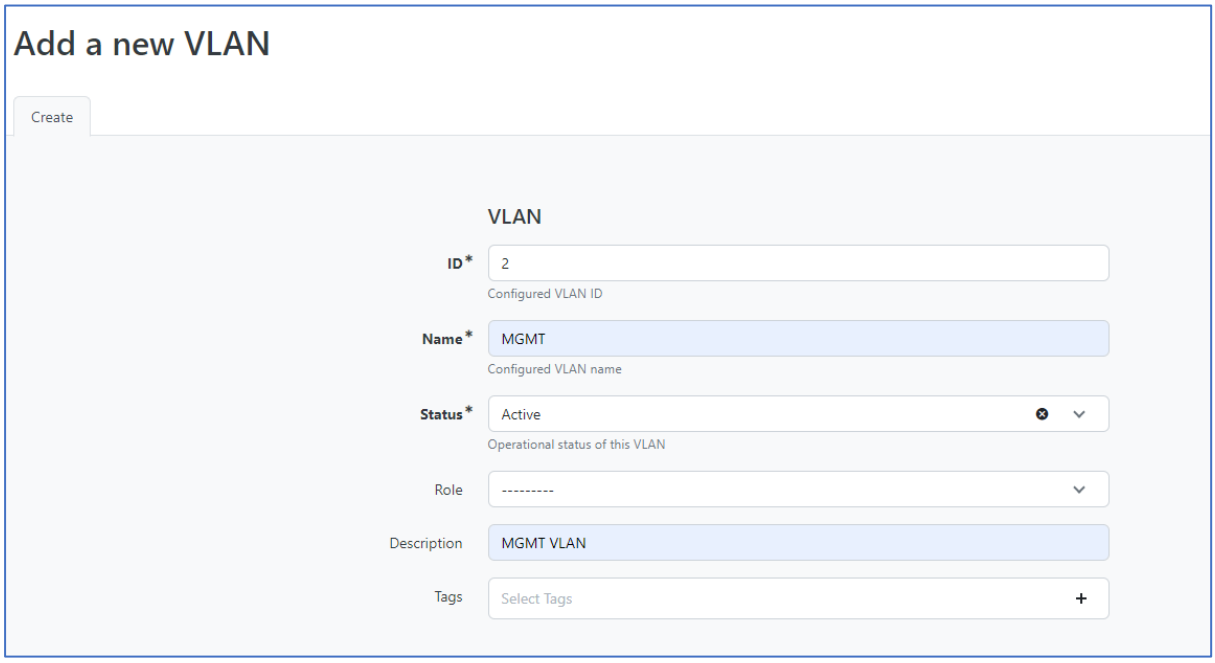
Press **connect.**

To view the cable trace, click on the ***Blue colour Trace button.***

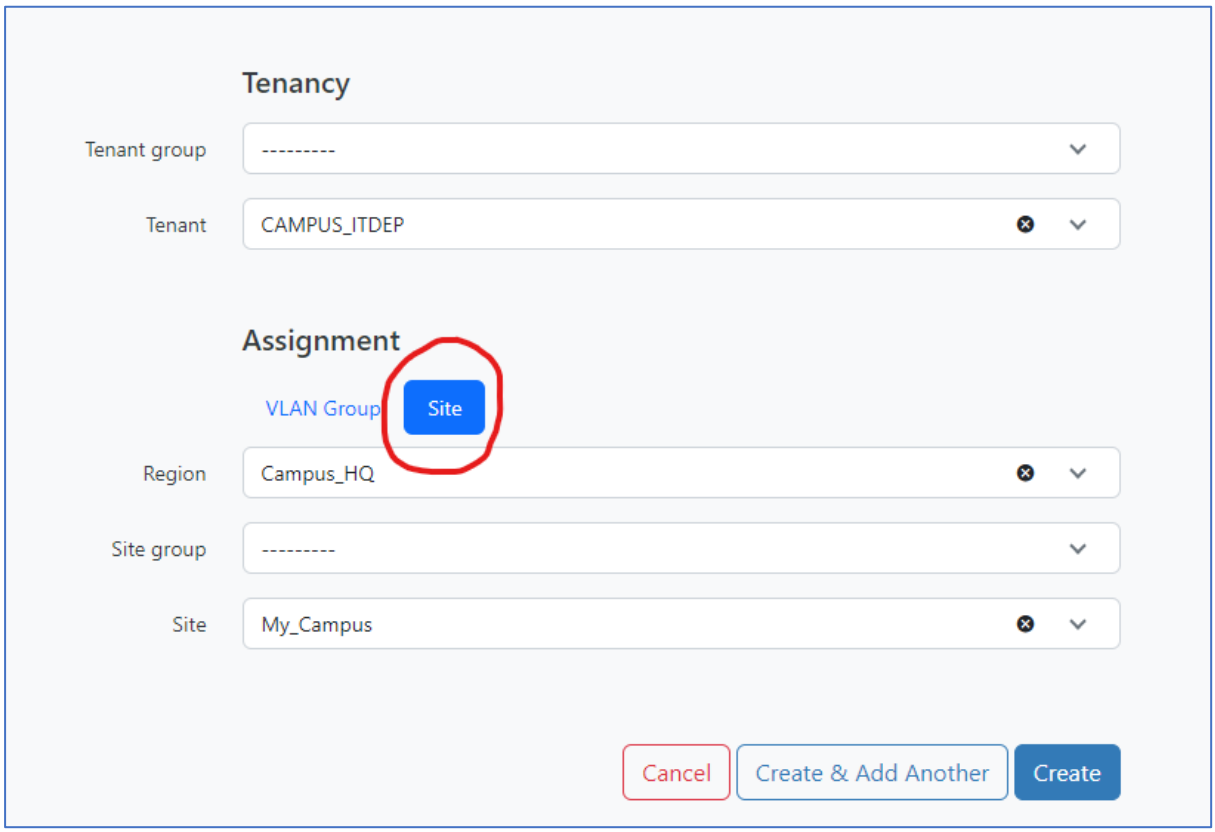


Vlans

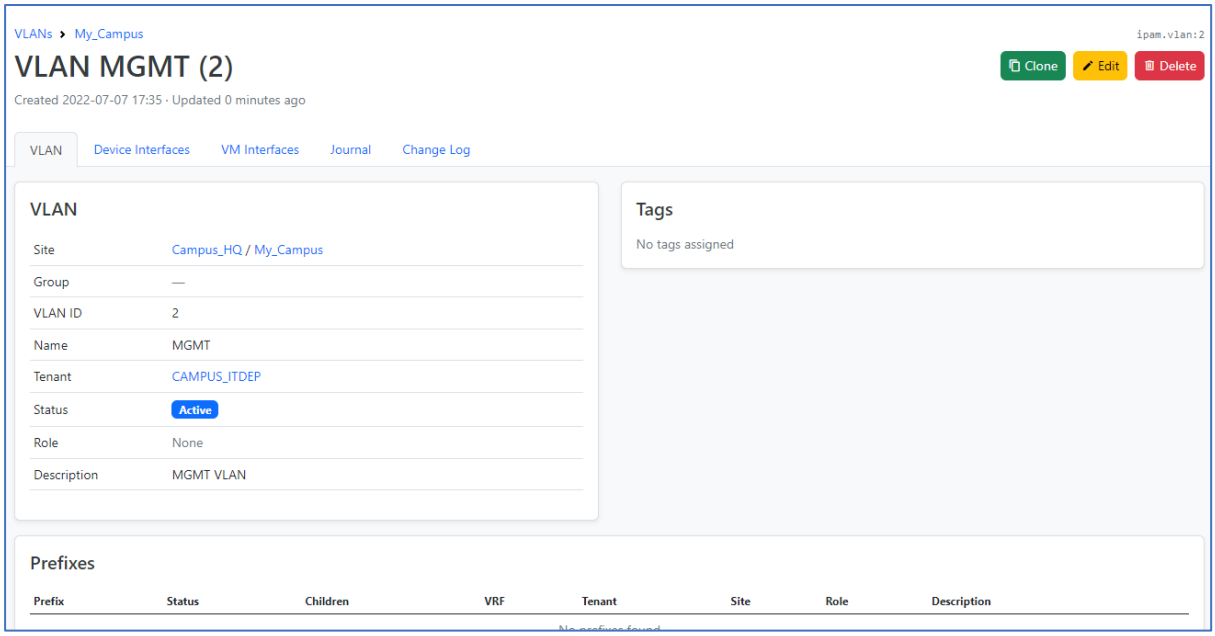
Go to ***VLANS*** under **IPAM** and add VLANS.



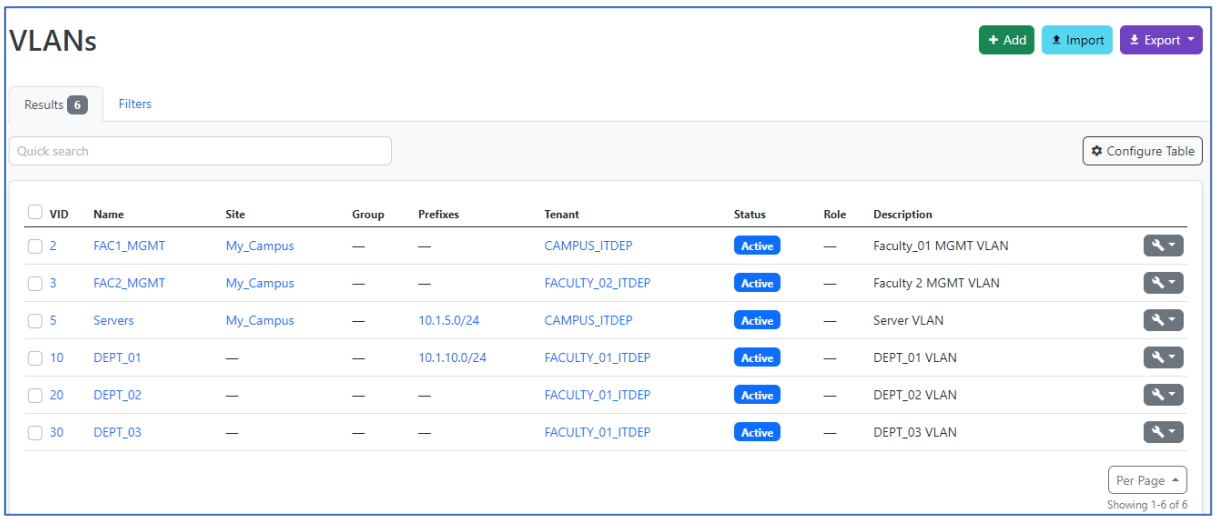
From ***Assignment*** select ***Site*** as follows and fill the gaps.



After adding:



You can clone above or can add vlans by following above steps.



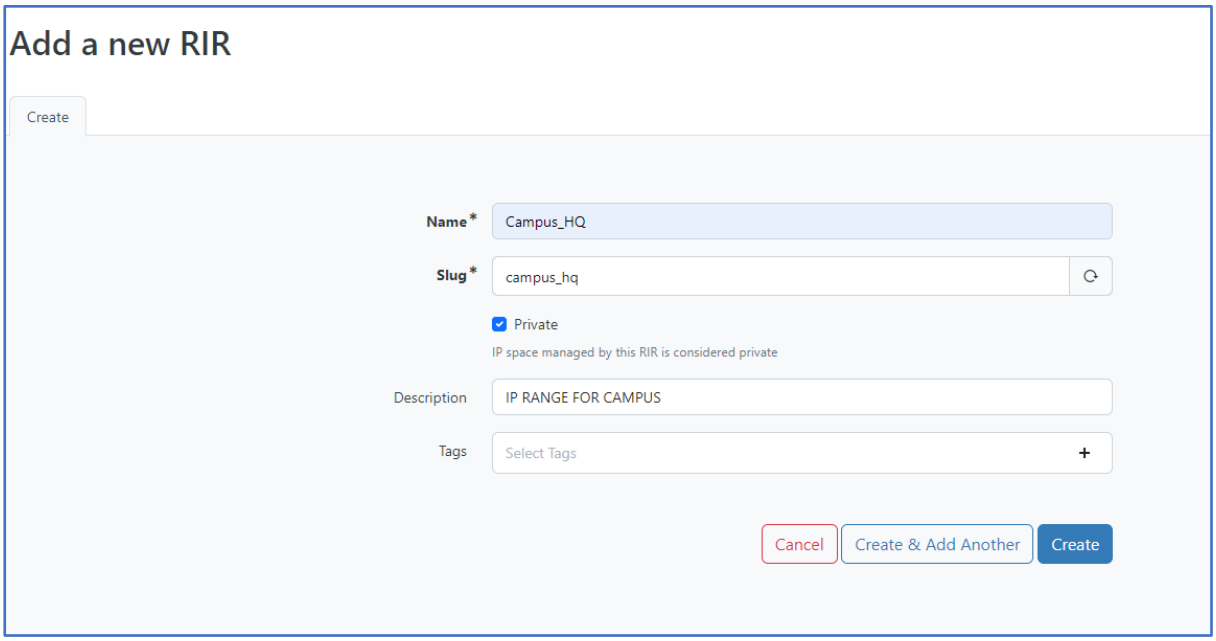
IP Address Management

Now we will work on IPAM, and then go back to DCIM to see the full picture.

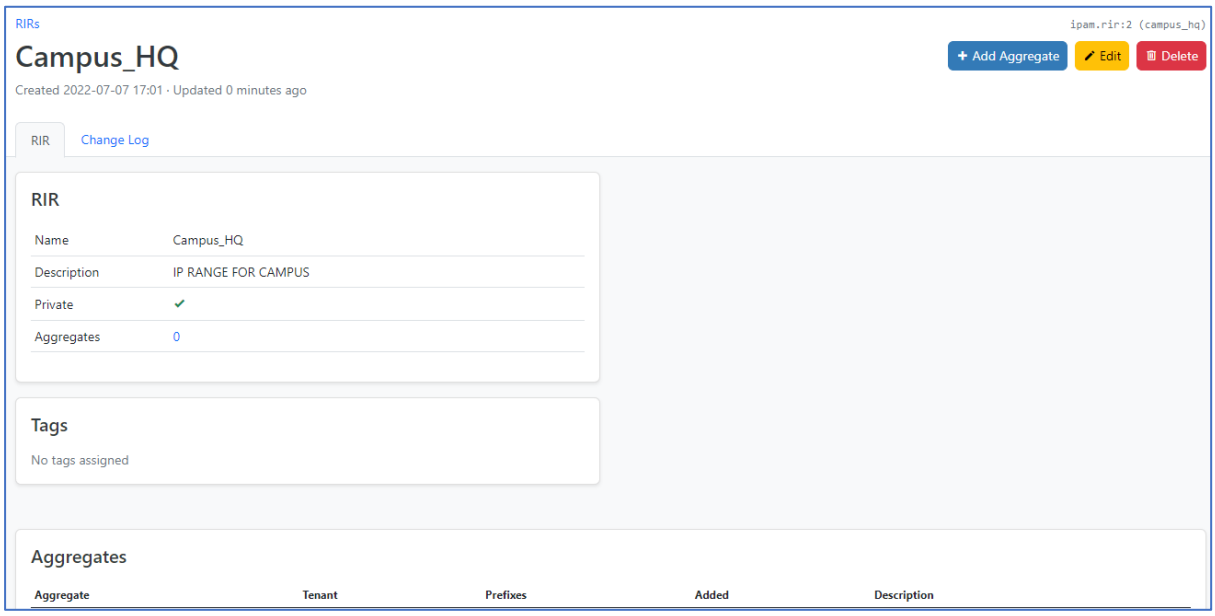
- Create Aggregates
- Create Prefixes
- Create IP address

Create Aggregates:

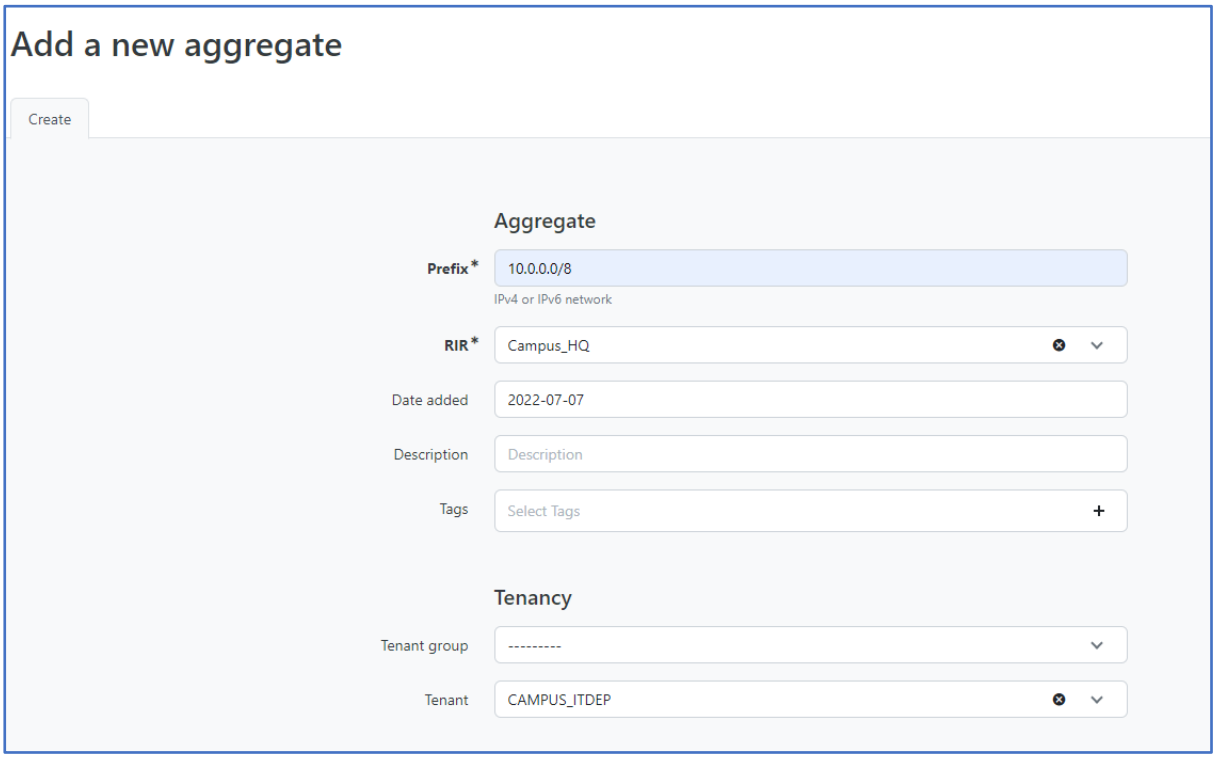
First, select ***RIRs*** *(Regional Internet Registry)* from the ***IPAM*** tab, and create new one with **CAMPUS_HQ**.



It will take you to a new window, where you have to create ***Aggregate IPs***. Here we assume the IP Prefix is **10.0.0.0/8.**

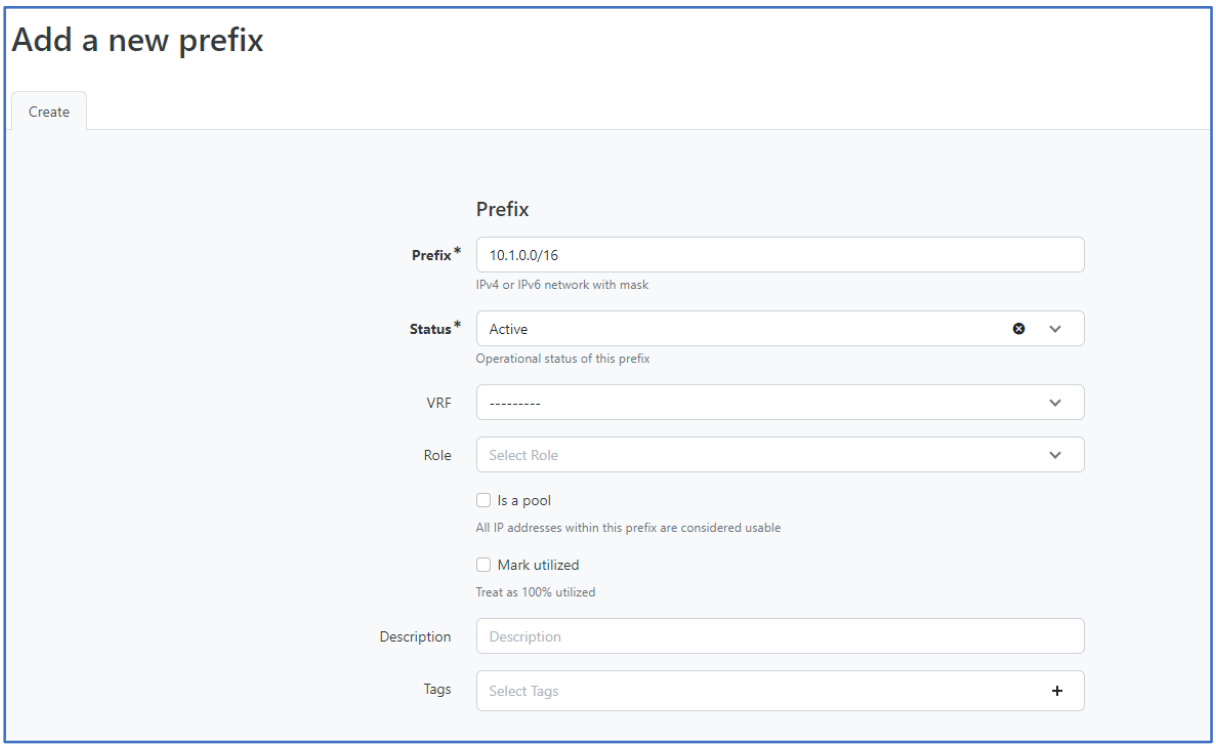


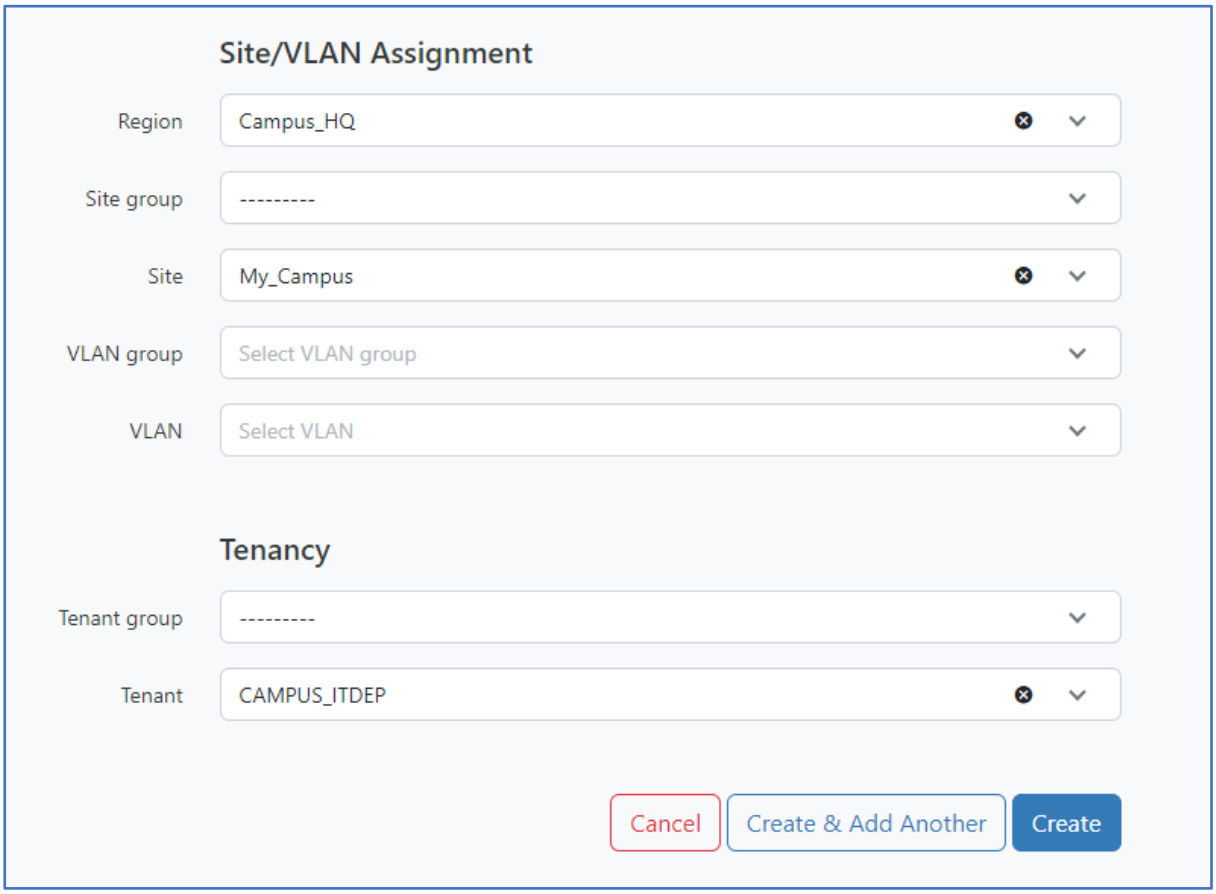
Now ***+ Add Aggregates***



Create Prefixes

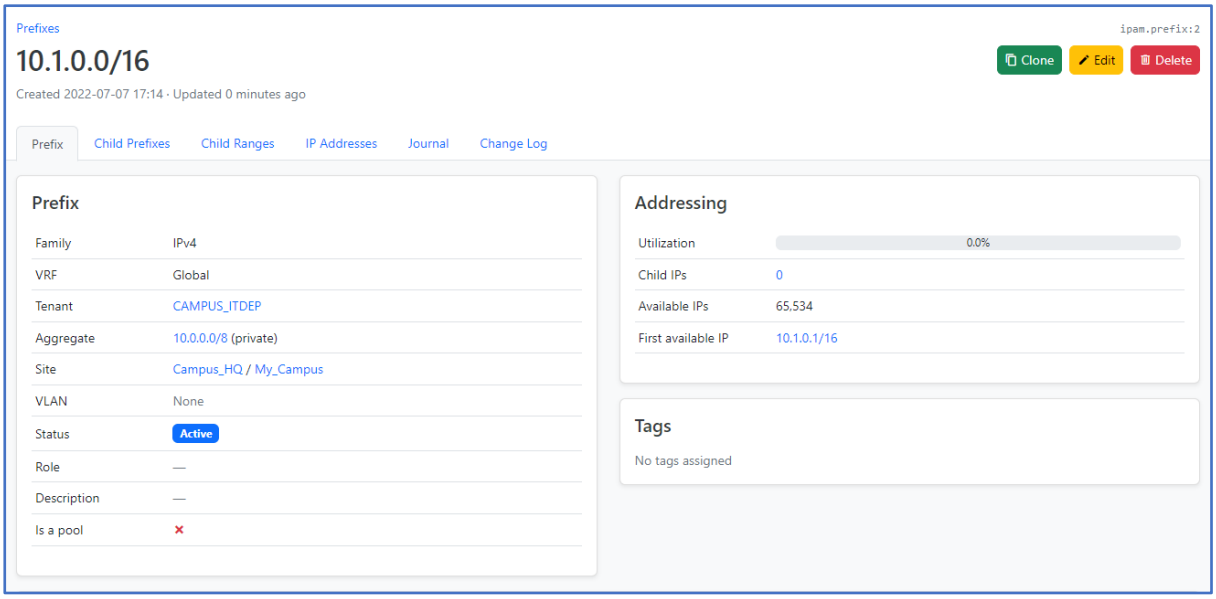
Select Prefixes from the IPAM tab to add new prefixes. we will use 10.1.0.0/16 as our prefix for the campus.



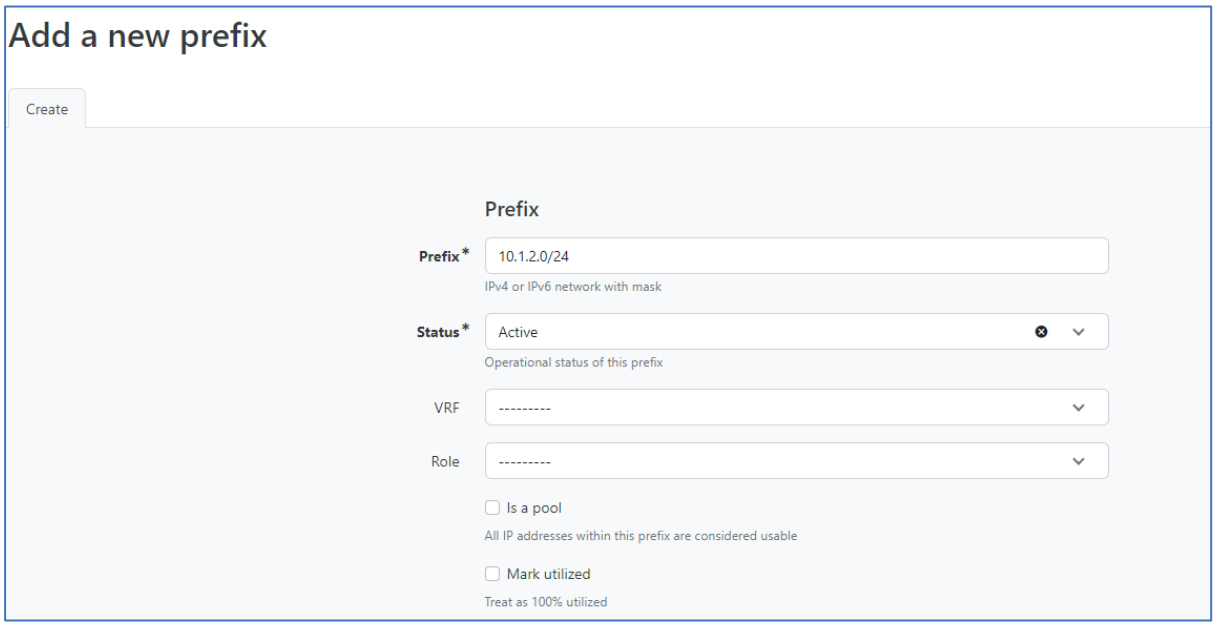

Site/VLAN Assignment
Region
Campus_HQ
Site group

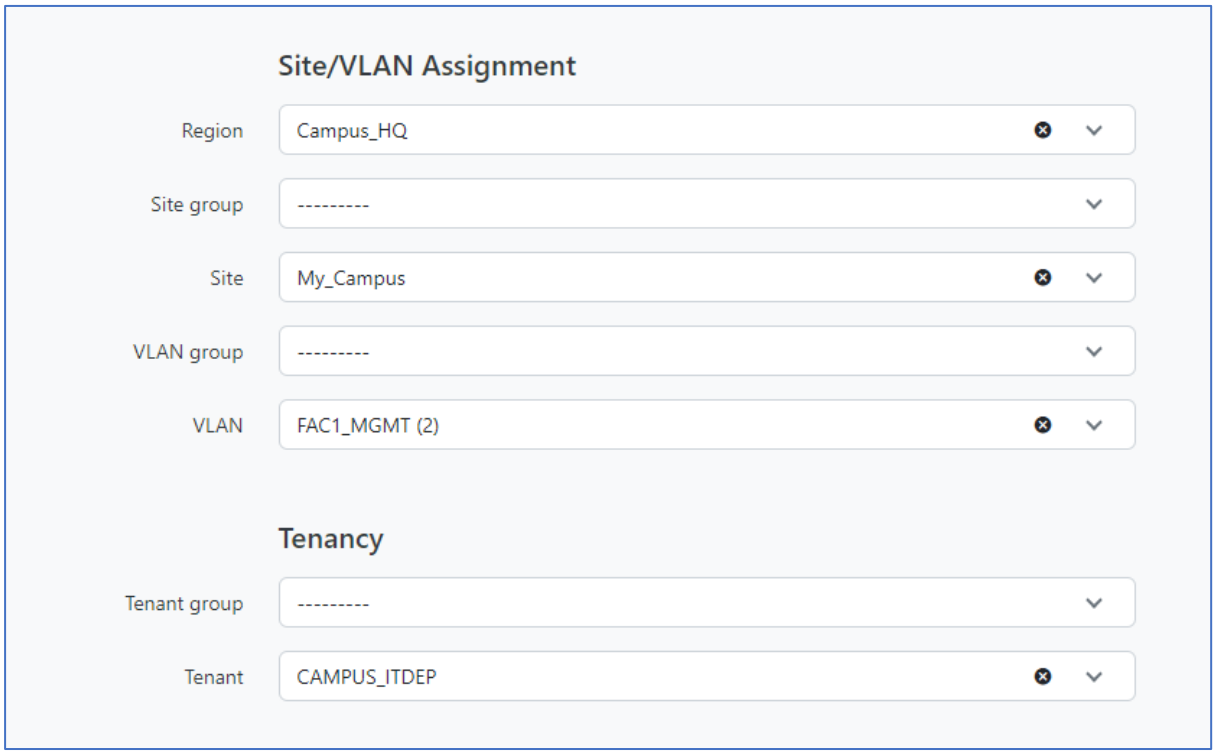
Site
My_Campus
VLAN group
Select VLAN group
VLAN
Select VLAN
Tenancy
Tenant group

Tenant
CAMPUS_ITDEP
Cancel
Create & Add Another
Create


Prefixes
ipam.prefix:2
10.1.0.0/16
Clone
Edit
Delete
Created 2022-07-07 17:14 · Updated 0 minutes ago
Prefix
Child Prefixes
Child Ranges
IP Addresses
Journal
Change Log
Prefix
Family IPv4
VRF Global
Tenant CAMPUS_ITDEP
Aggregate 10.0.0.0/8 (private)
Site Campus_HQ / My_Campus
VLAN None
Status Active
Role —
Description —
Is a pool
Addressing
Utilization 0.0%
Child IPs 0
Available IPs 65,534
First available IP 10.1.0.1/16
Tags
No tags assigned

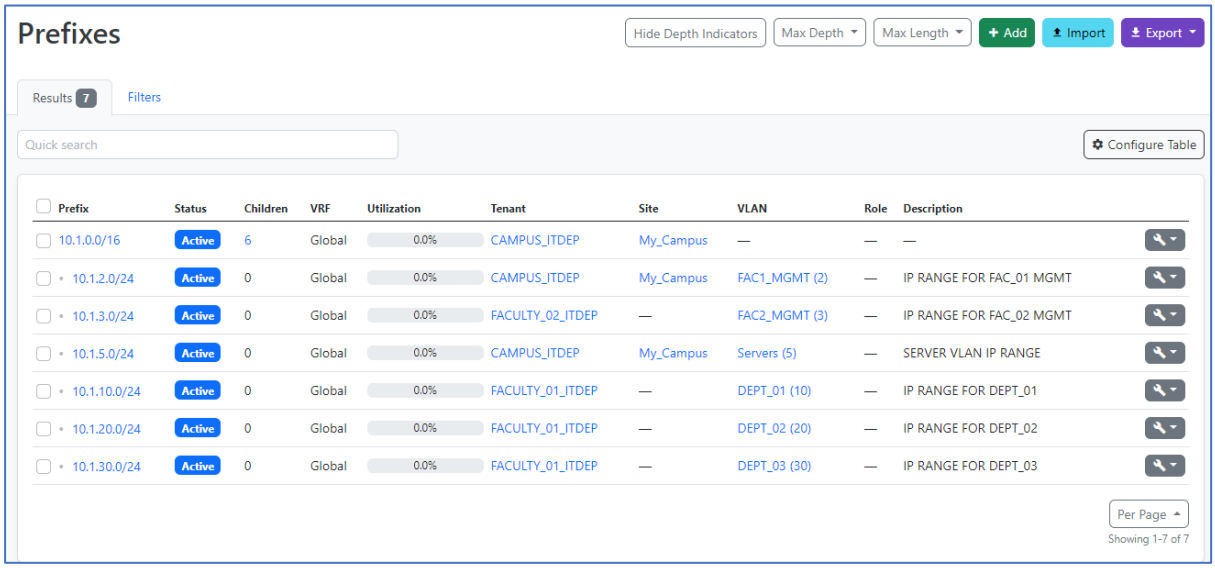
Now add ***child prefixes*** for VLANs.





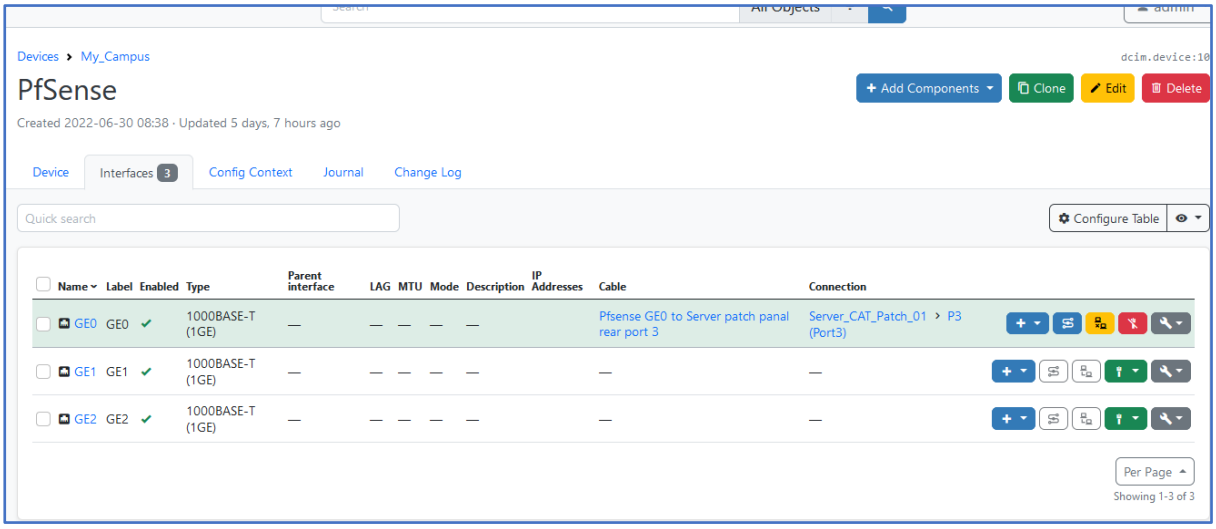
Add child prefixes for all the VLANS with /24 mask.

After adding go to prefixes and it should look like this;

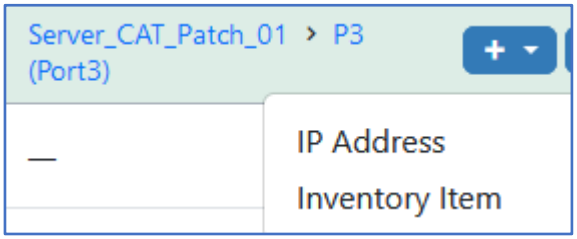


Now we will assign ***ip addresses*** to the devices.

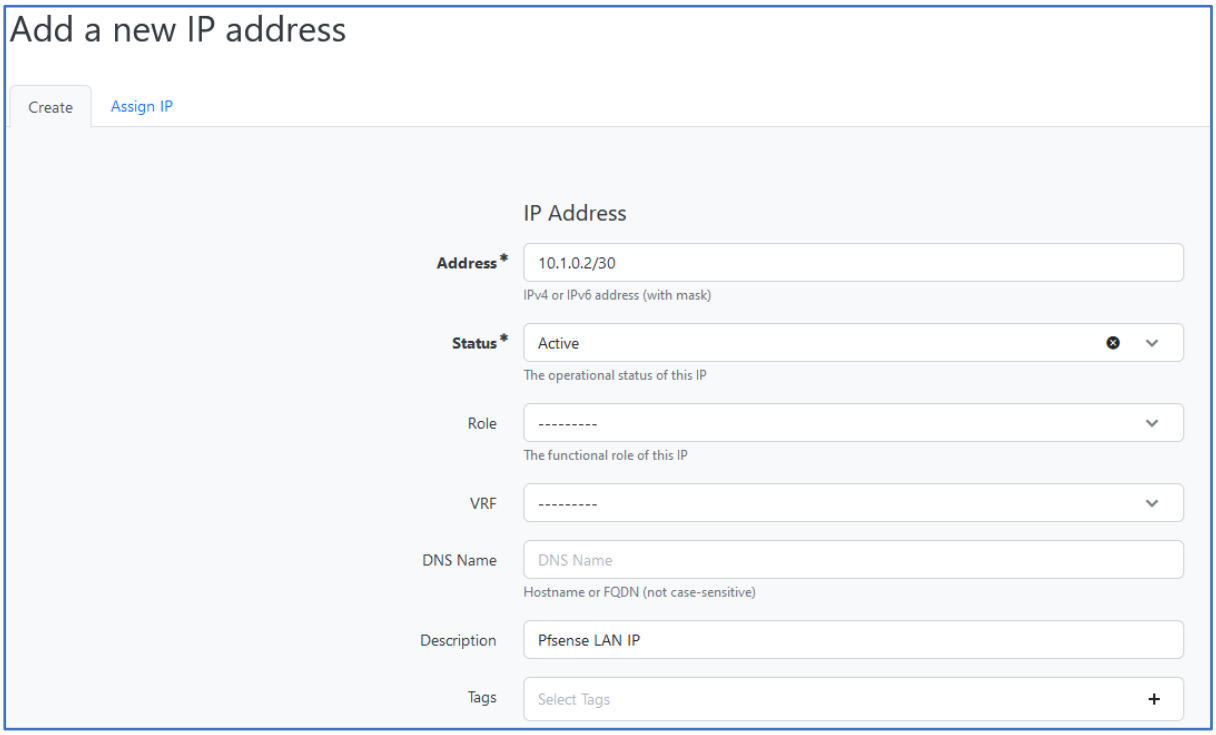
Go to devices and select ***Pfsense firewall*** and go to **interfaces. Select GE0.**



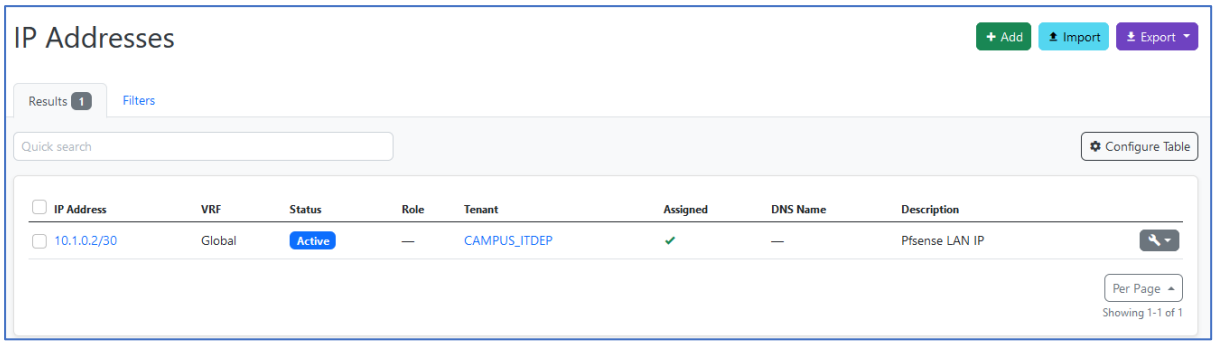
Click on **blue colour "+ button"**



And select ***IP Address***



Now go to IP addresses.



You can Access each Device as above and can set the IP Addresses for their interfaces.