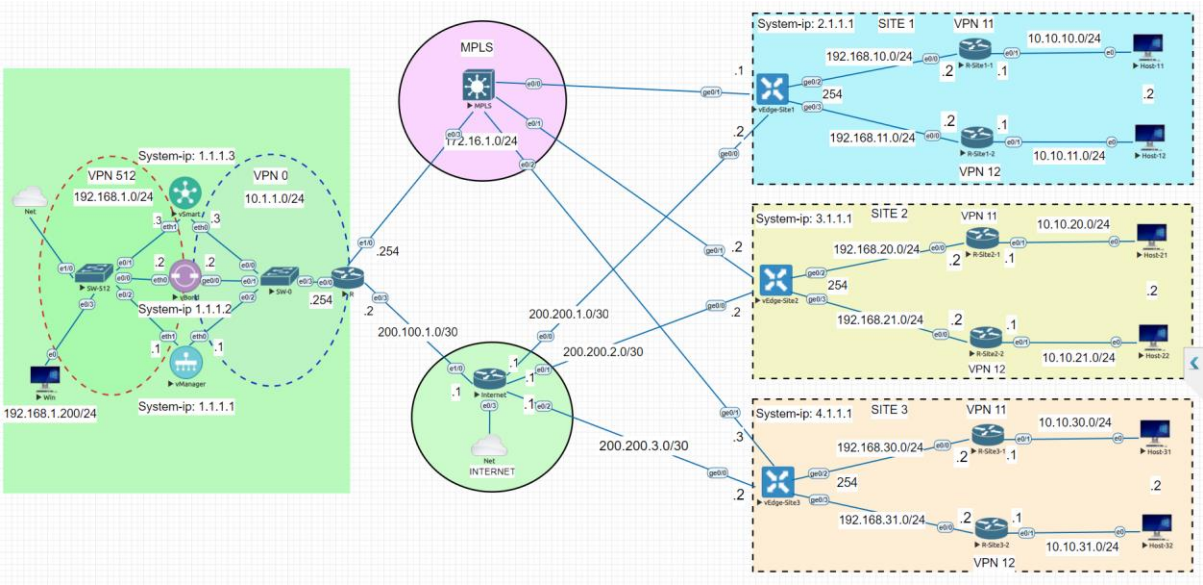
LAB - VIẾT CENTRALIZED POLICY ĐỂ CÔ LẬP GUEST USER GIỮA CÁC CHI NHÁNH

I. Sơ đồ



II. Yêu cầu kỹ thuật

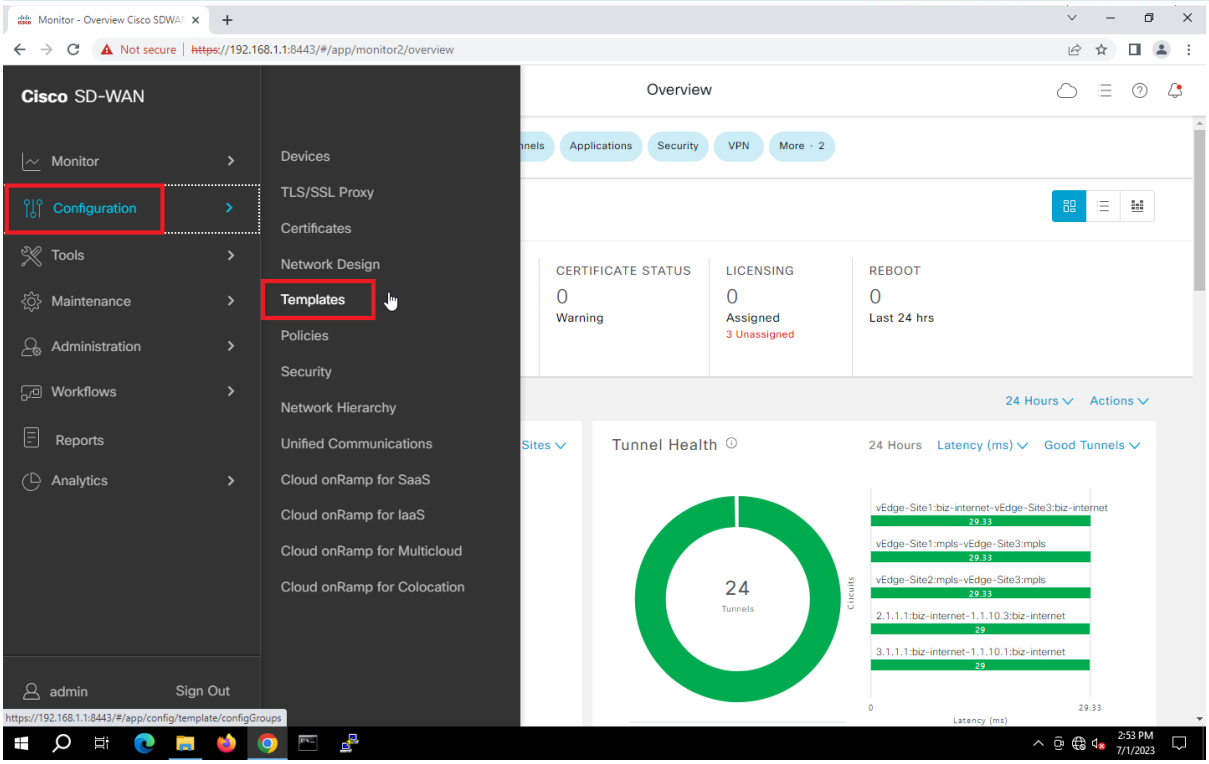
- Viết ba Feature Template có tên là *vEdge_VPN12*, *vEdge_VPN12_GE0/3 và vEdge_VPN12.*
- Viết một Device Template từ ba Feature Template trên và dùng lại các Feature Template cũ (*vEdge_VPN0, vEdge_VPN0_GE0/0, vEdge_VPN0_GE0/1, vEdge_VPN512, vEdge_VPN512_eth0, vEdge_VPN11, vEdge_OSPF*) để tạo thêm một VPN12 dành cho khách ở các site.
- Đẩy cấu hình Device Template vừa viết xong.
- Viết Centralized Policy để cô lập VPN12 không cho giao tiếp được giữa các site.

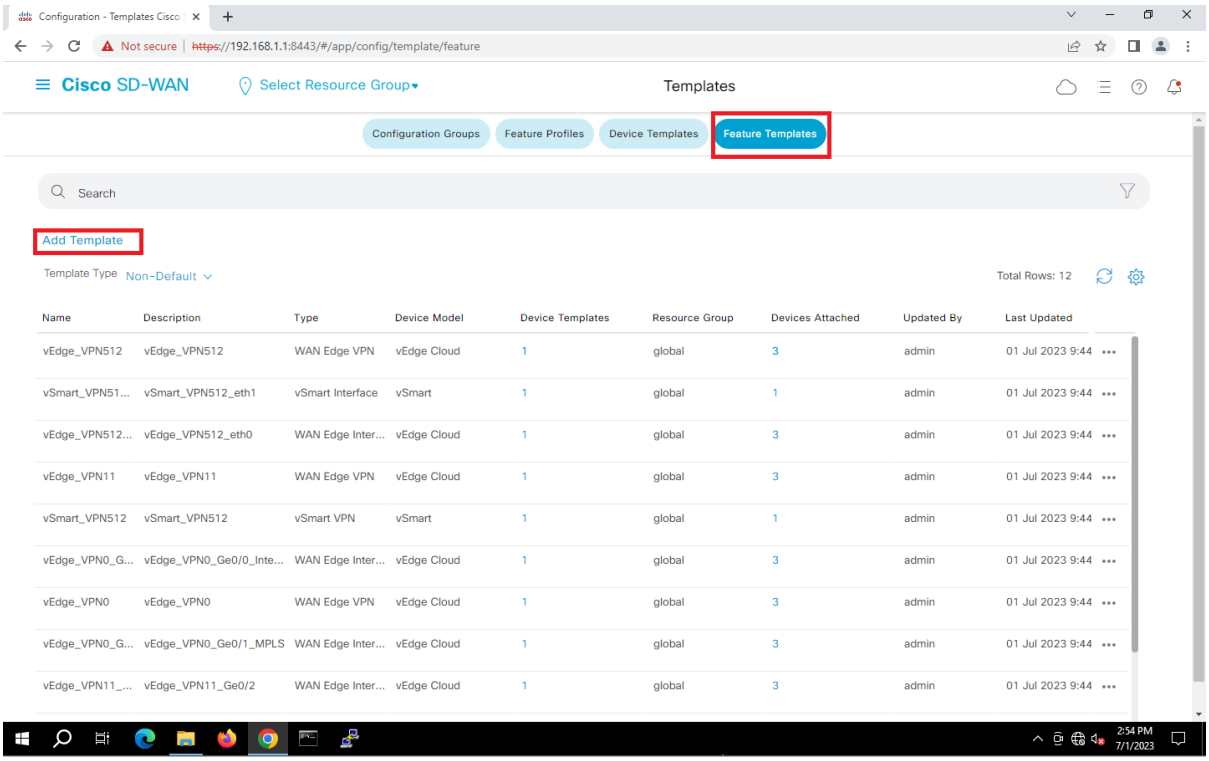
III. Các bước thực hiện

3.1. Viết ba Feature Template cho VPN12 dành cho khách hàng

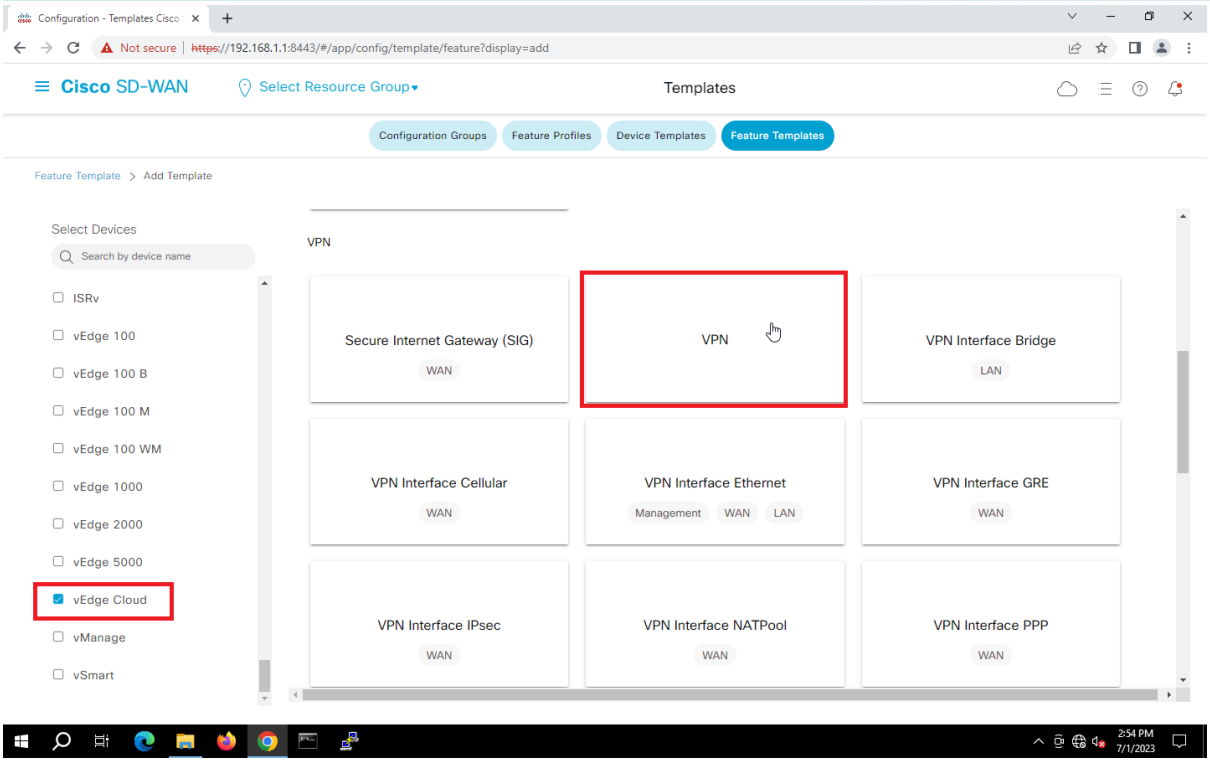
Tạo Feature Template: *vEdge_VPN12*

Đầu tiên ta vào giao diện **vManage > Configuration > Template > Feature > Add Template.**





Ở phần **Select Devices** ta chọn thiết bị **vEdge cloud** rồi chọn mục **VPN**

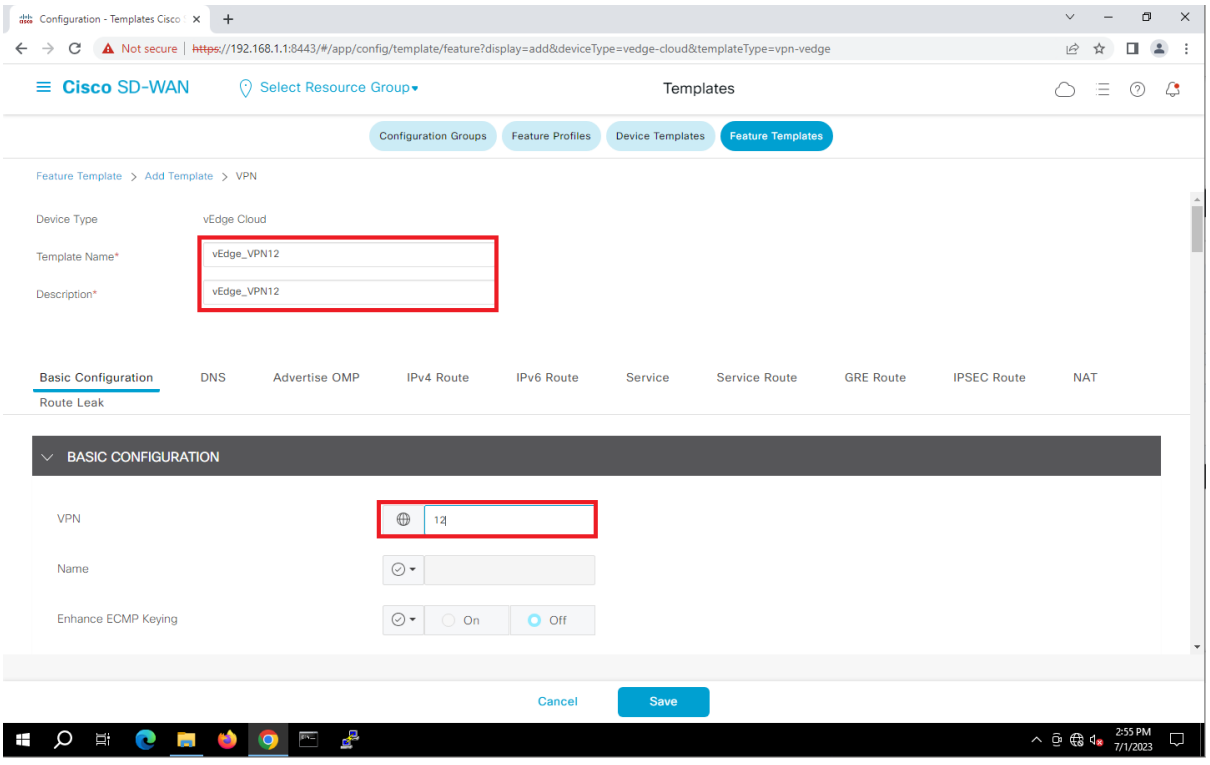


Tiếp theo vào mục VPN ta cấu hình như sau:

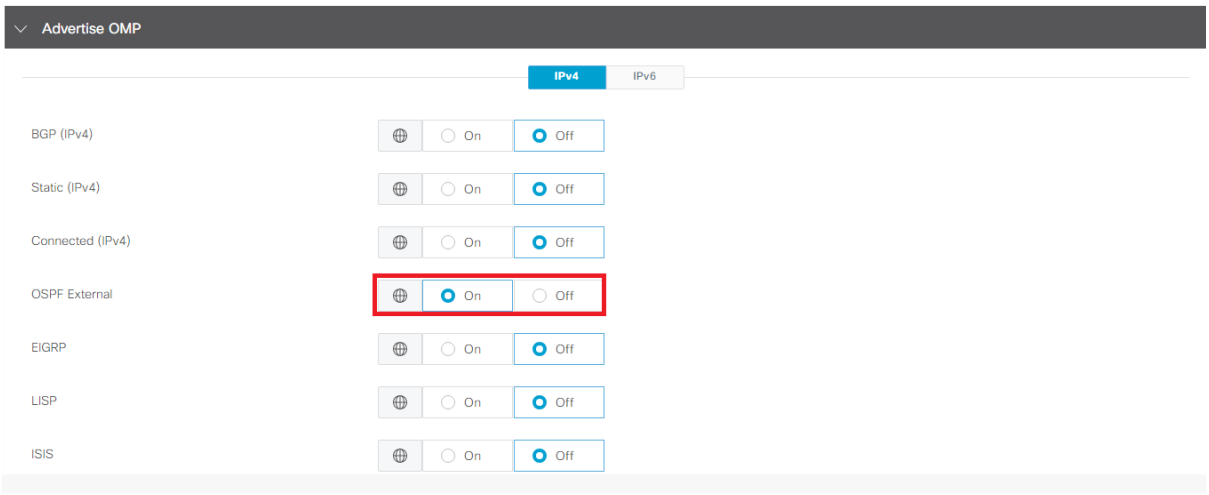
Template Name: *vEdge_VPN12*

Description: *vEdge_VPN12*

VPN: 12



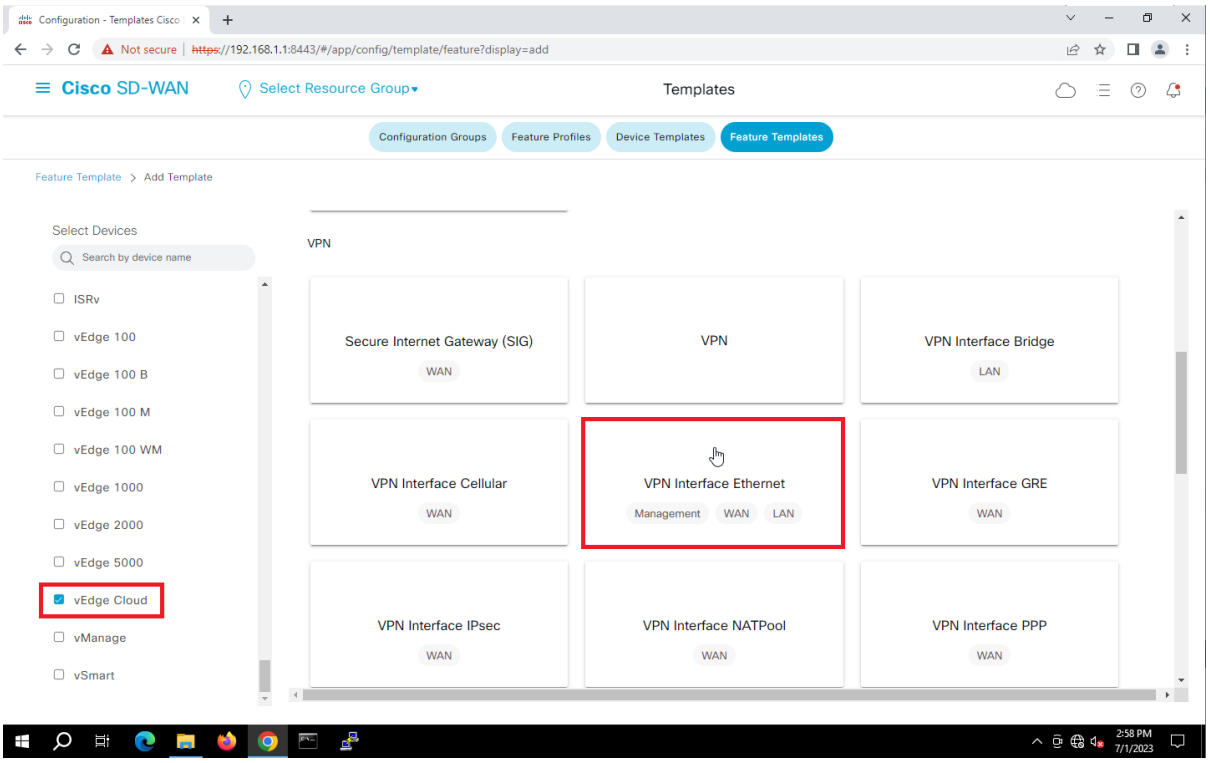
Sau đó, ở **Advertise OMP** thì ta chỉnh như sau:



Cuối cùng chọn **Save** để tạo được cái Feature Template đầu tiên

Tạo Feature Template: *vEdge_VPN12_GE0/3* (để cấu hình cổng ge0/3 cho VPN12)

Chọn **vManage > Configuration > Template > Feature > Add Template.**



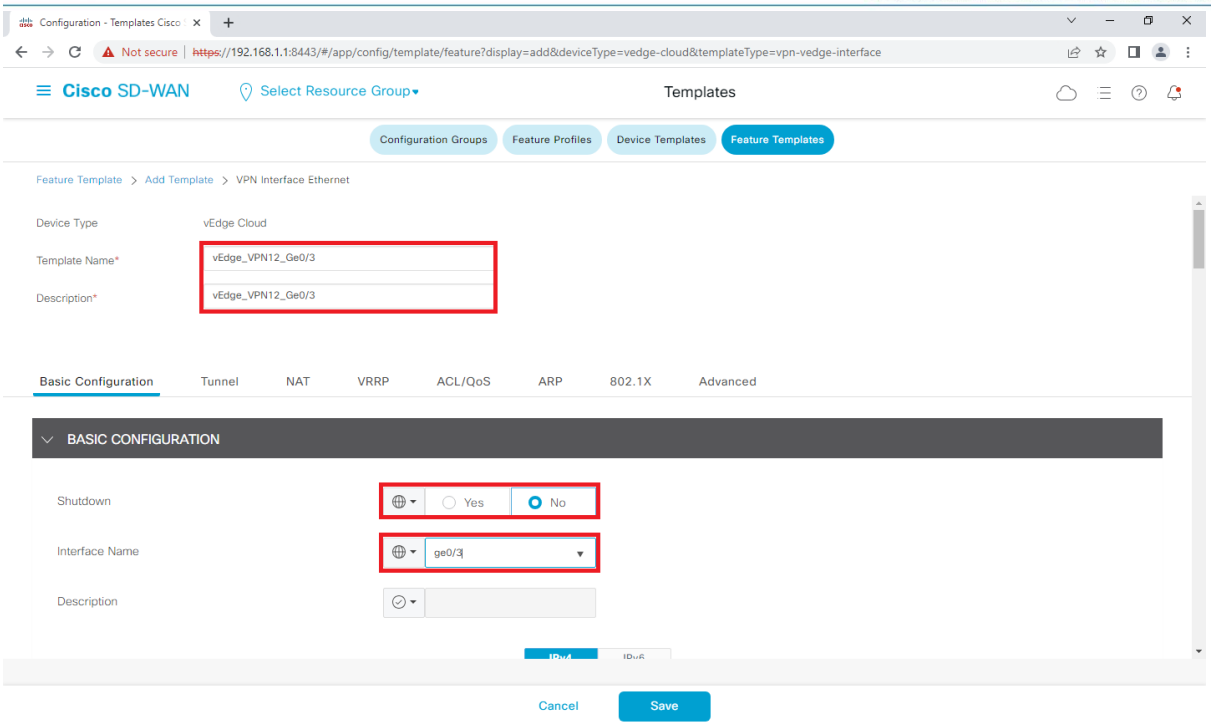
Tạo template cho VPN 11 interface như bên dưới:

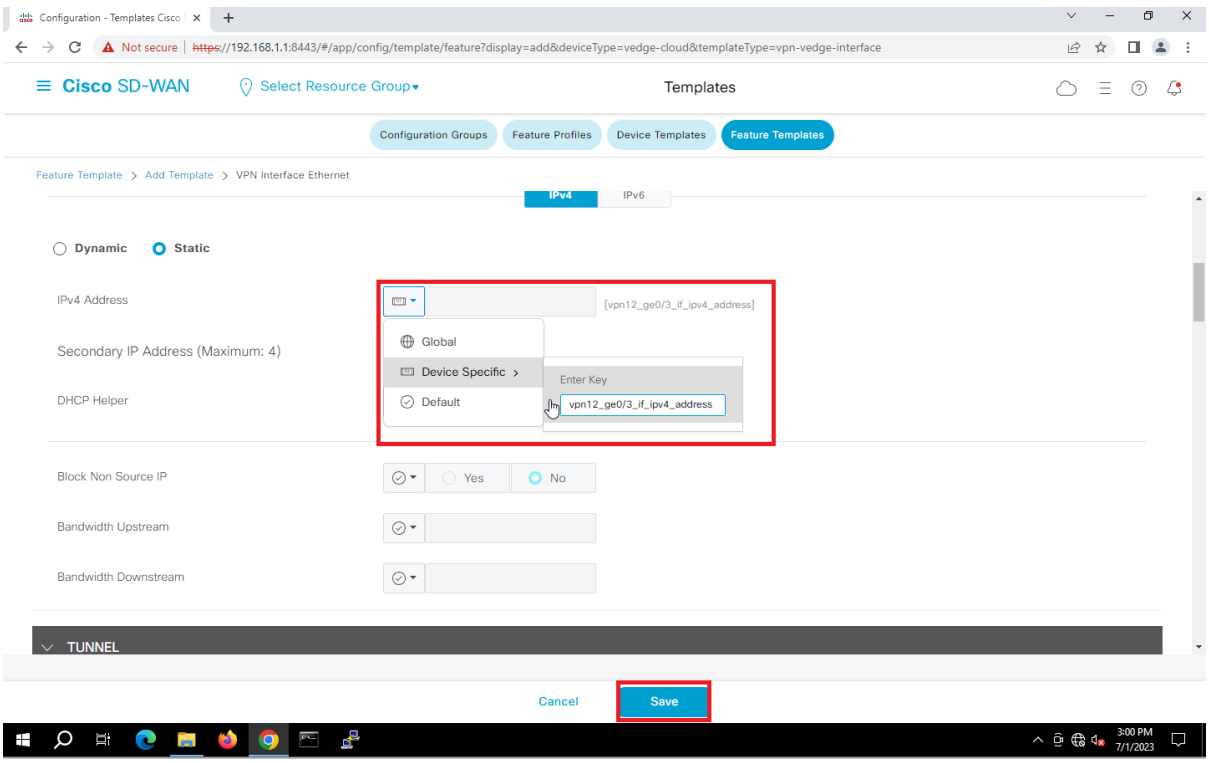
Select Devices: vEdge Cloud

Template: VPN/VPN Interface Ethernet

Template Name: *vEdge_VPN12_Ge0/3*

Description: *vEdge_VPN12_Ge0/3*

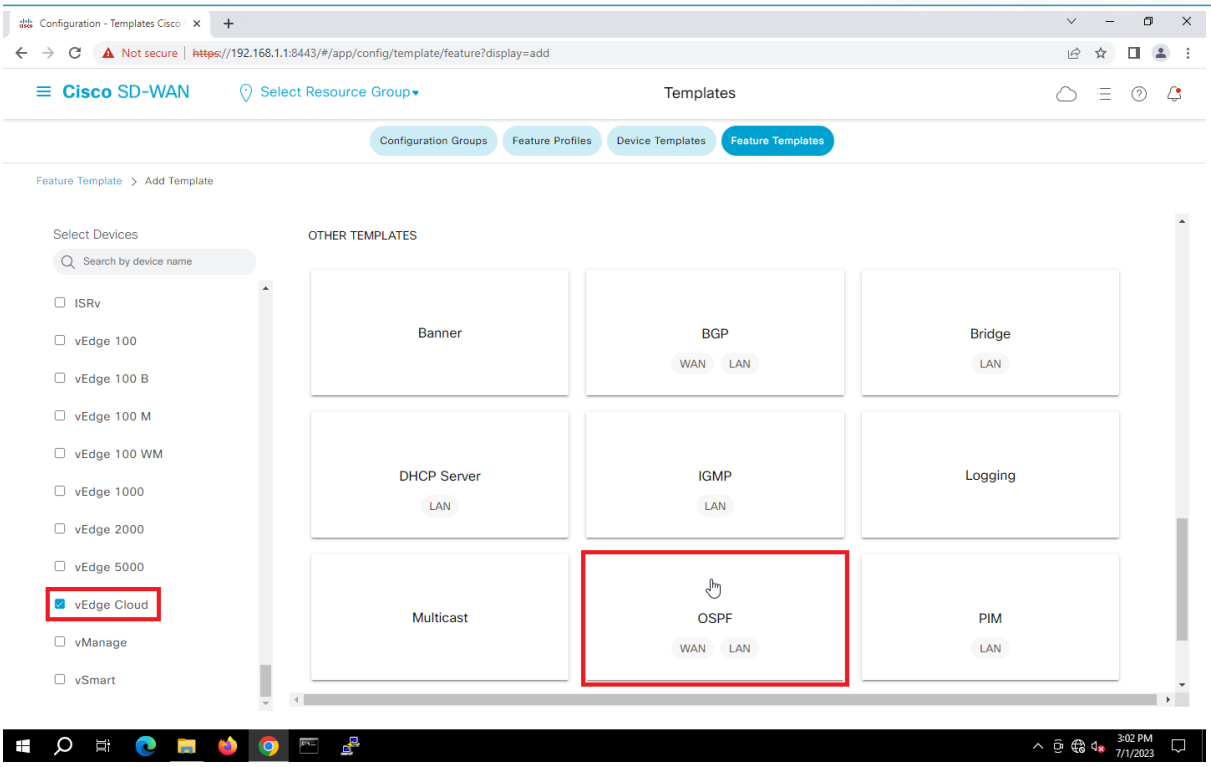




Chọn **Save** để tạo Template

Tạo Feature Template: vEdge_OSPF_VPN12 (để định tuyến cho VPN12)

Chọn **vManage > Configuration > Template > Feature > Add Template.**

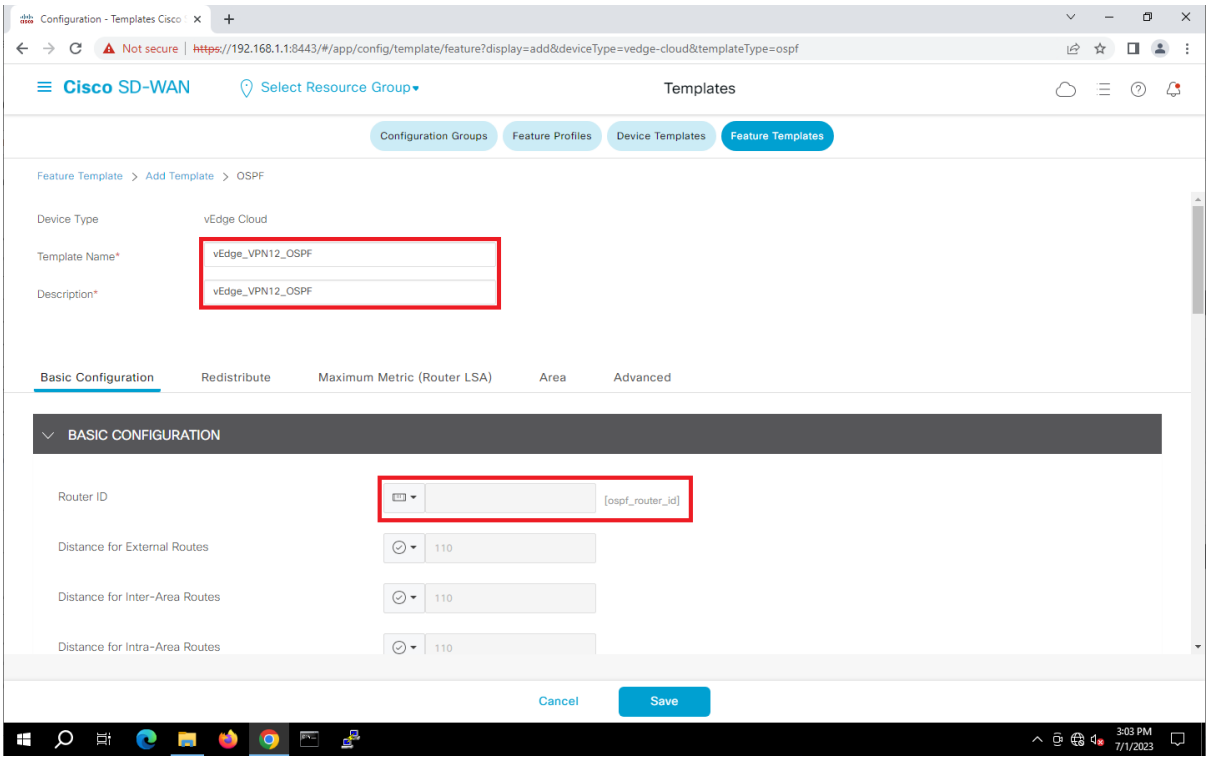


Sau đó cấu hình các thông số như hình sau:

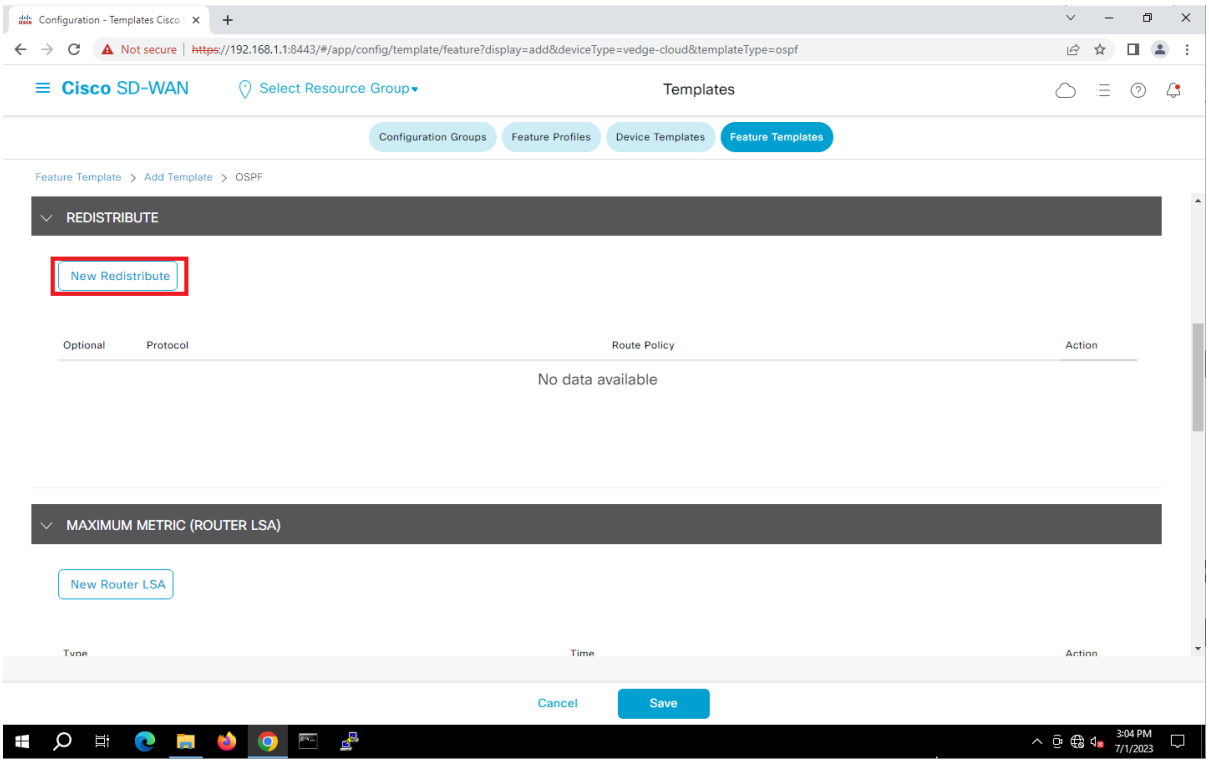
Template Name: *vEdge_OSPF_VPN12*

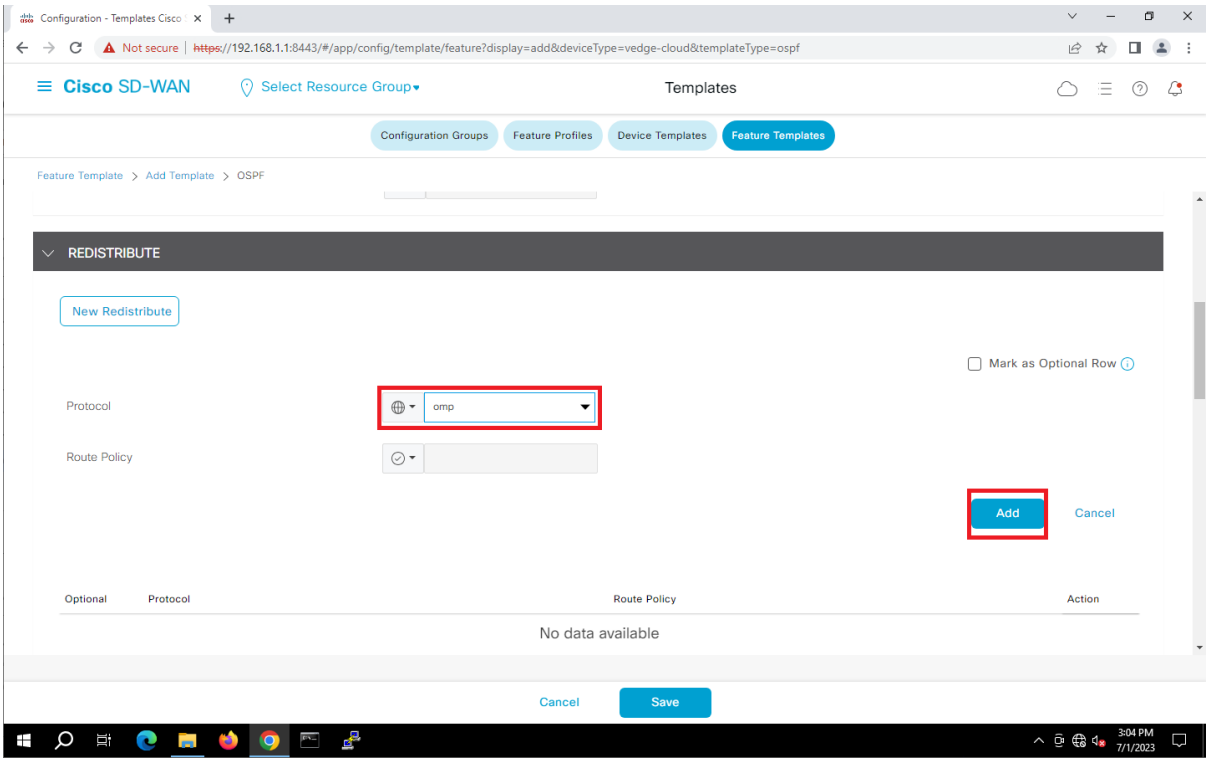
Description: *vEdge_OSPF_VPN12*

Router ID chọn **Device Specific**

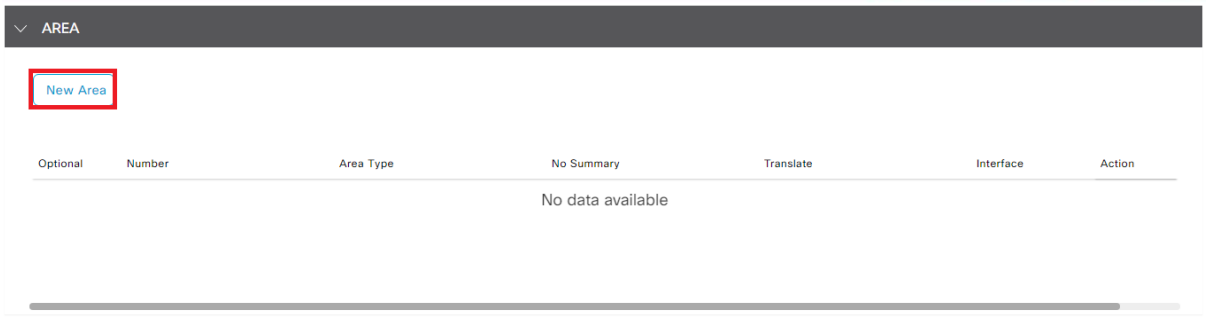


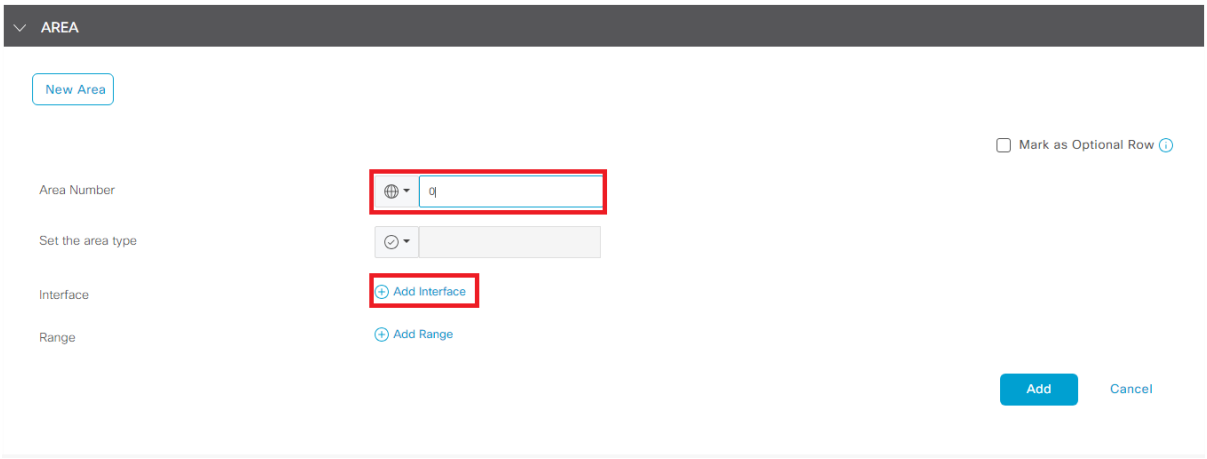
Tiếp theo đến phần **REDISTRIBUTE** ta chọn **OMP**

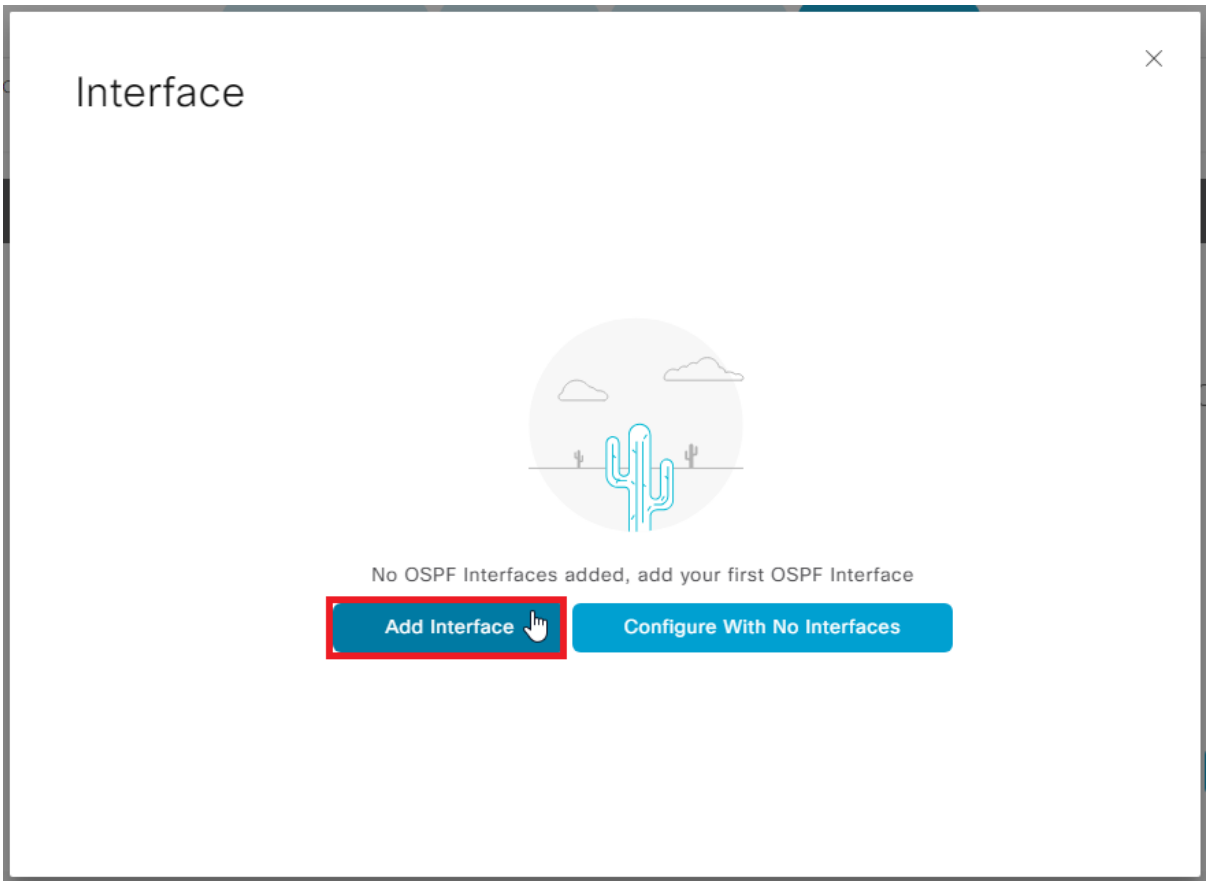




Tiếp tục đến phần **AREA** ta chọn number là **0** sau đó ta add interface

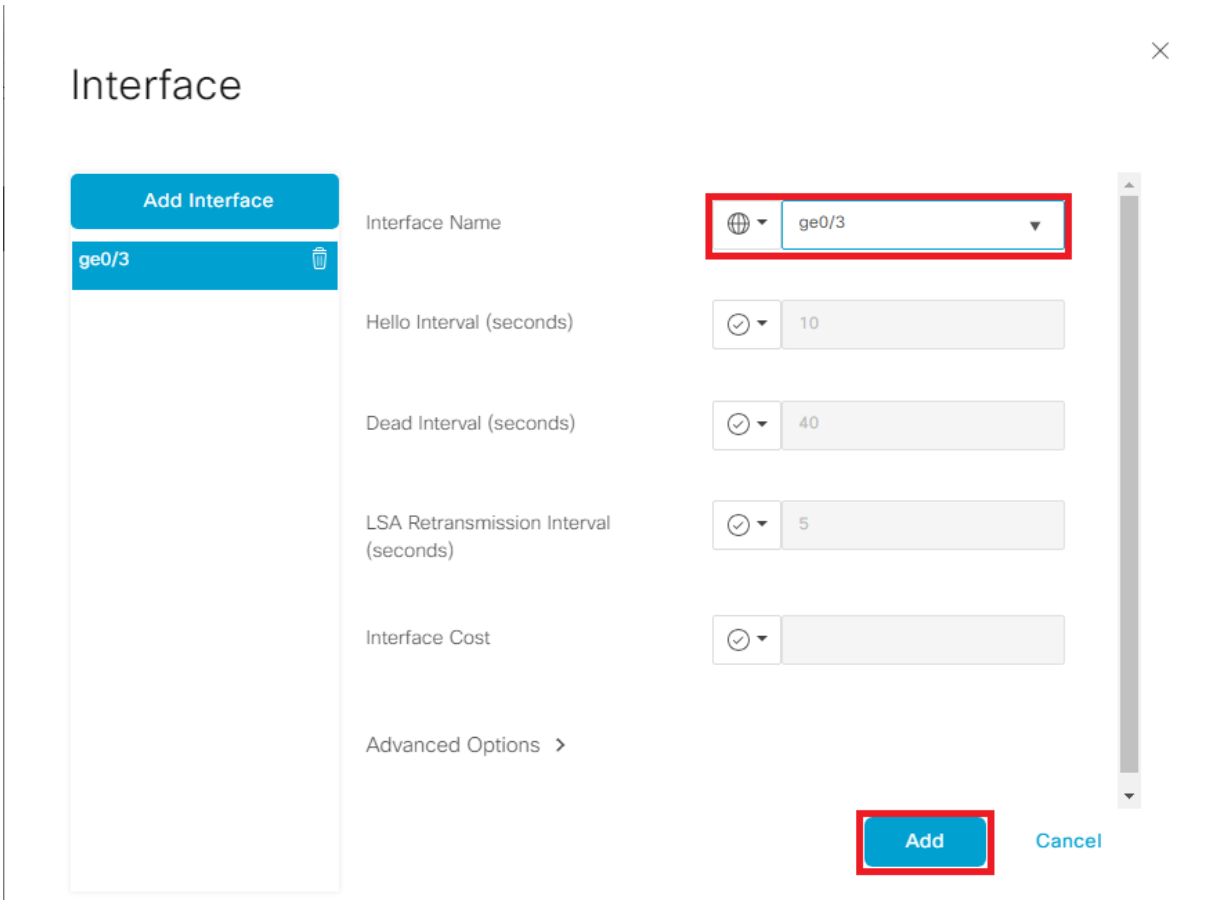


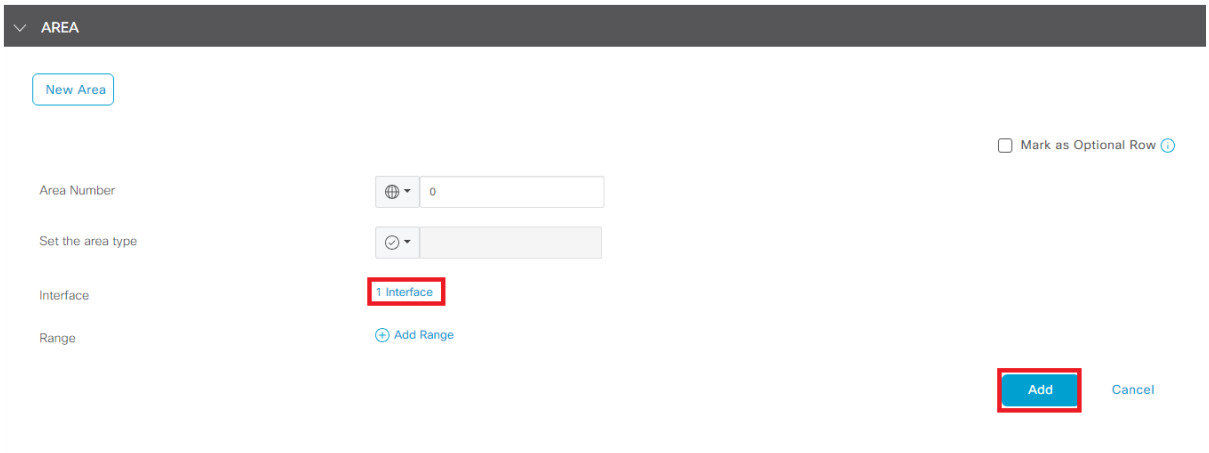




Một cửa sổ hiện ra, ta chỉnh thông số như sau:

Interface Name: *ge0/3*
Và chọn add để thêm interface





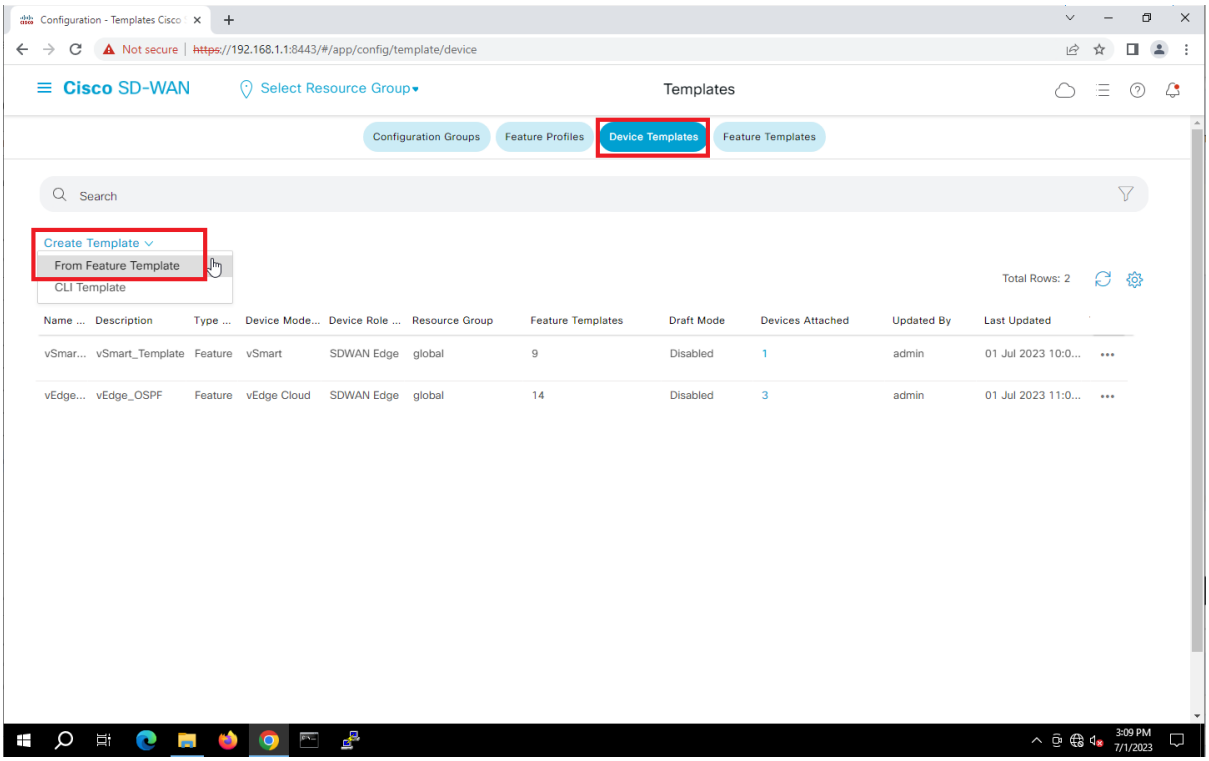
Cuối cùng ta chọn **Save** để tạo Template

3.2. Tạo một Device Template

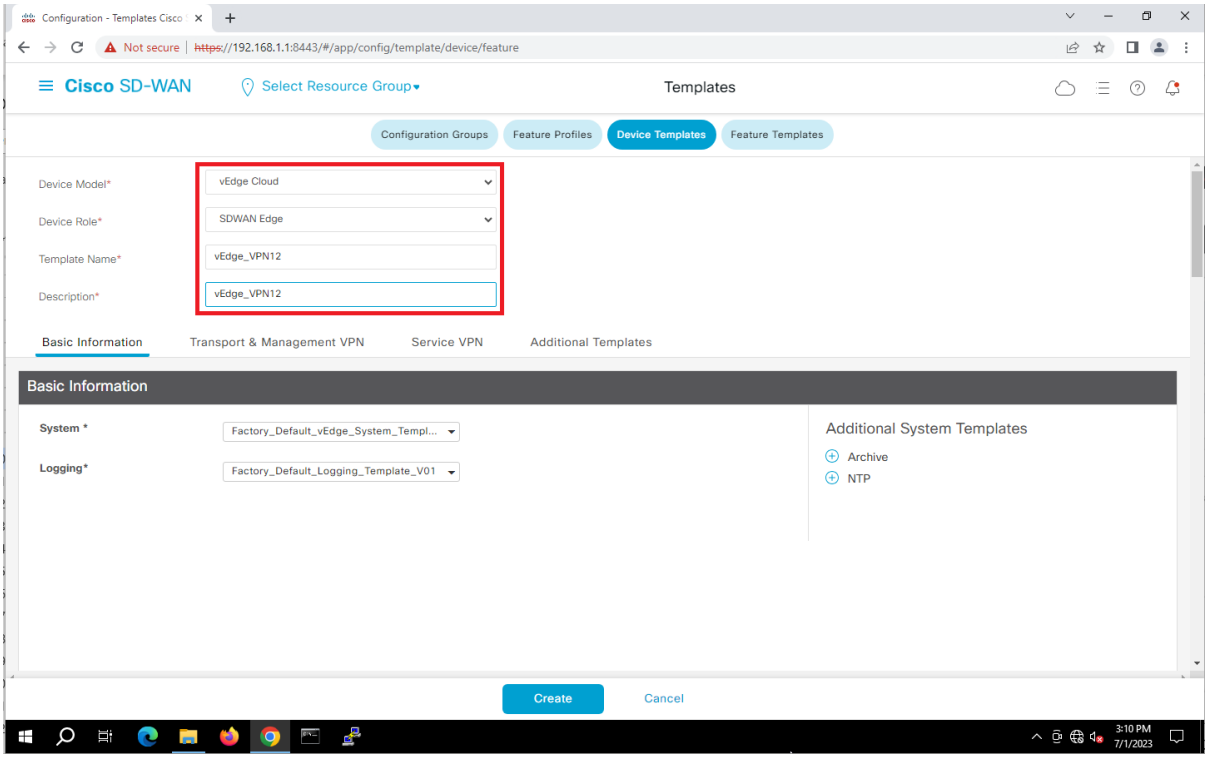
Ở giao diện vManage, **Configuration > Templates** (tab Device).

Chọn **Create Template > From Feature Template.**

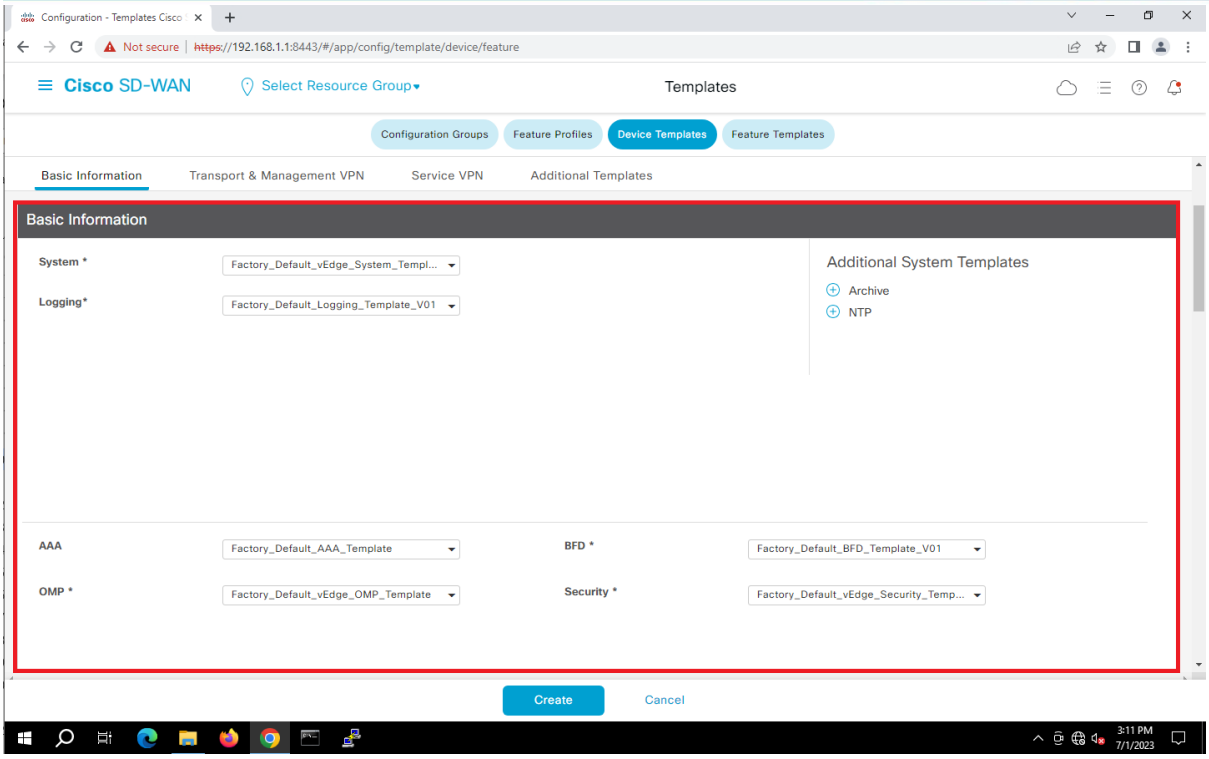
Chọn **Device Model (vEdge Cloud).**



Nhập **Template Name** (vEdge_VPN12), **Description** (vEdge_VPN12).



Trong phần Basic Information thì để mặc định nếu có những template tương ứng thì có thể chọn vào.



Đối với phần Transport & Management VPN, ta chọn lần lượt các Feature Template cũ sau:

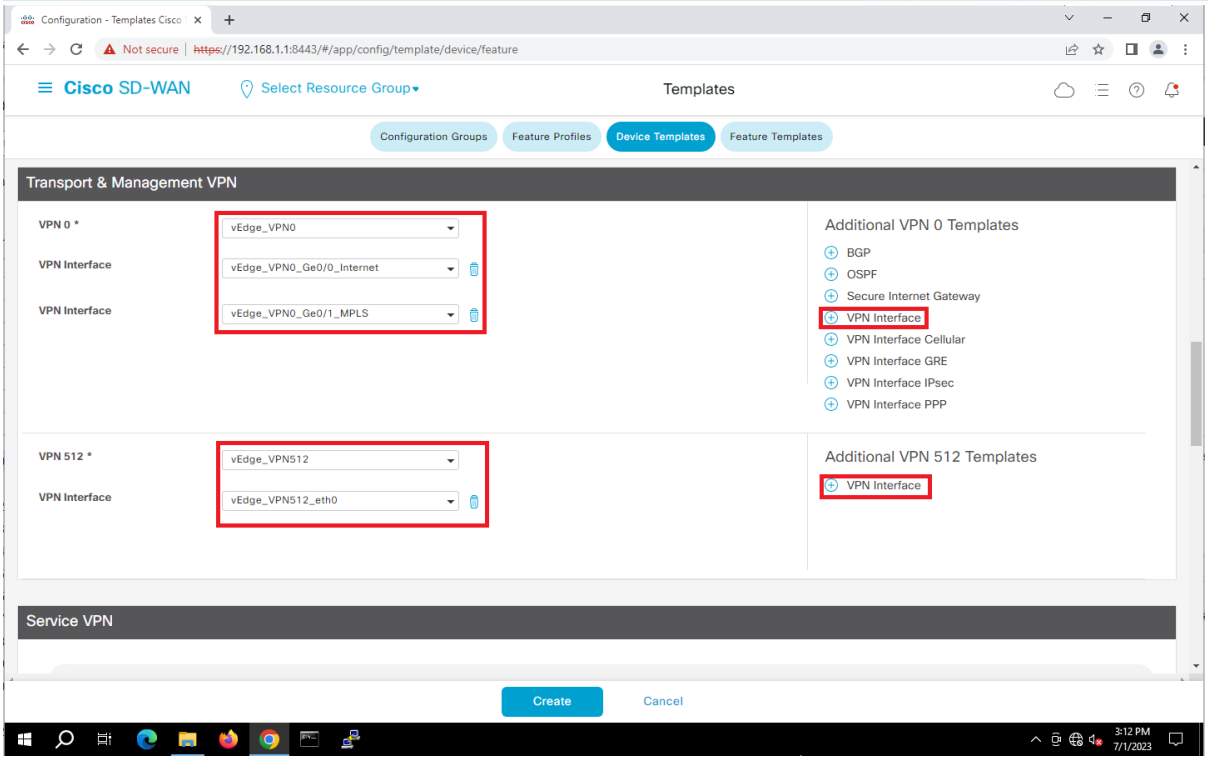
VPN0: *vEdge_VPN0*

VPN Interface: *vEdge_VPN0_GE0/0*

VPN Interface: *vEdge_VPN0_GE0/1*

VPN512: *vEdge_VPN512*

VPN Interface: *vEdge_VPN_eth0*

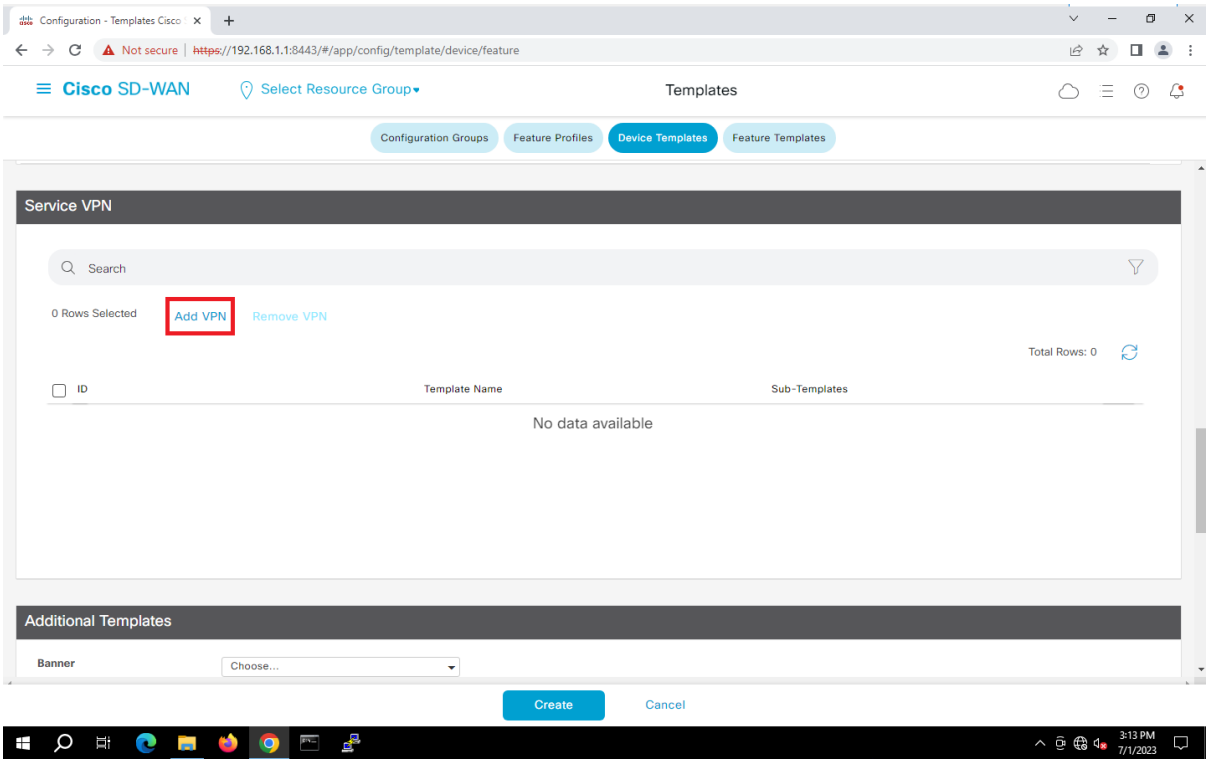


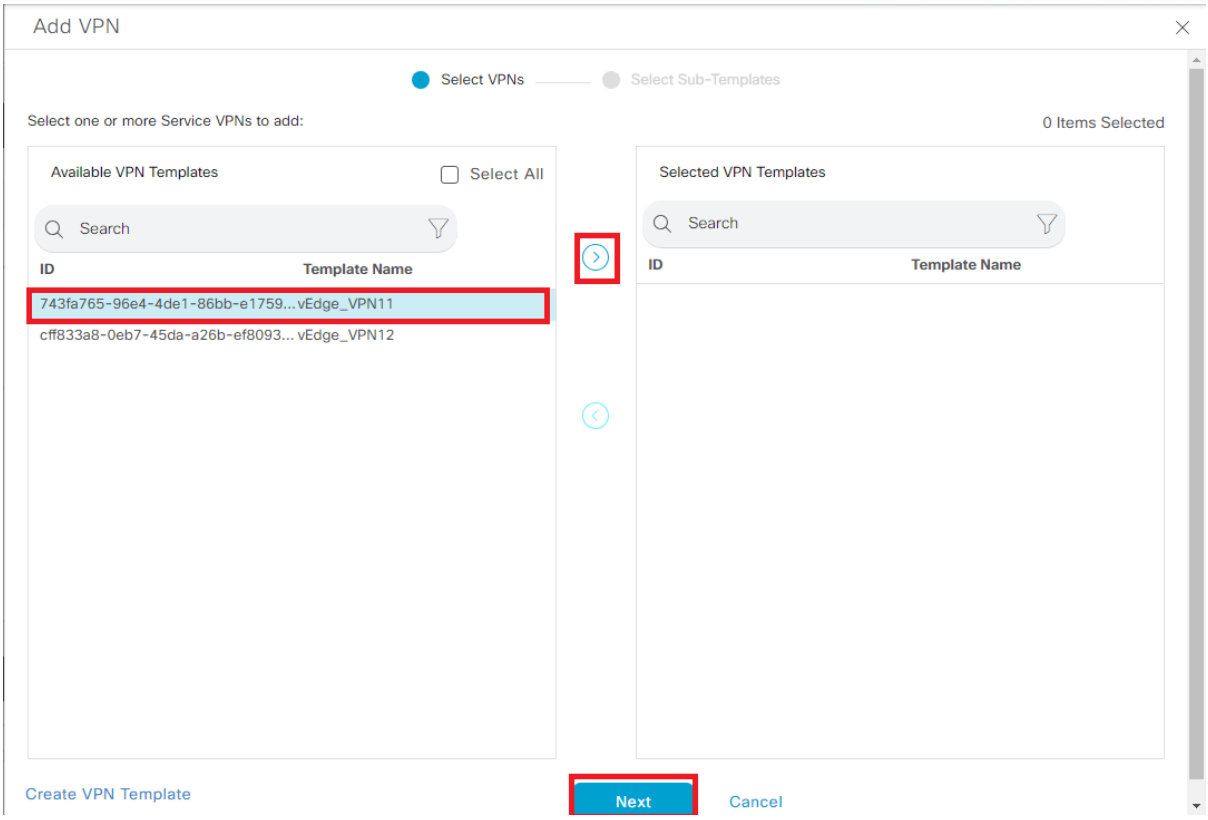
Ở Service VPN, ta lần lượt chọn các template tương ứng với các mục như sau:

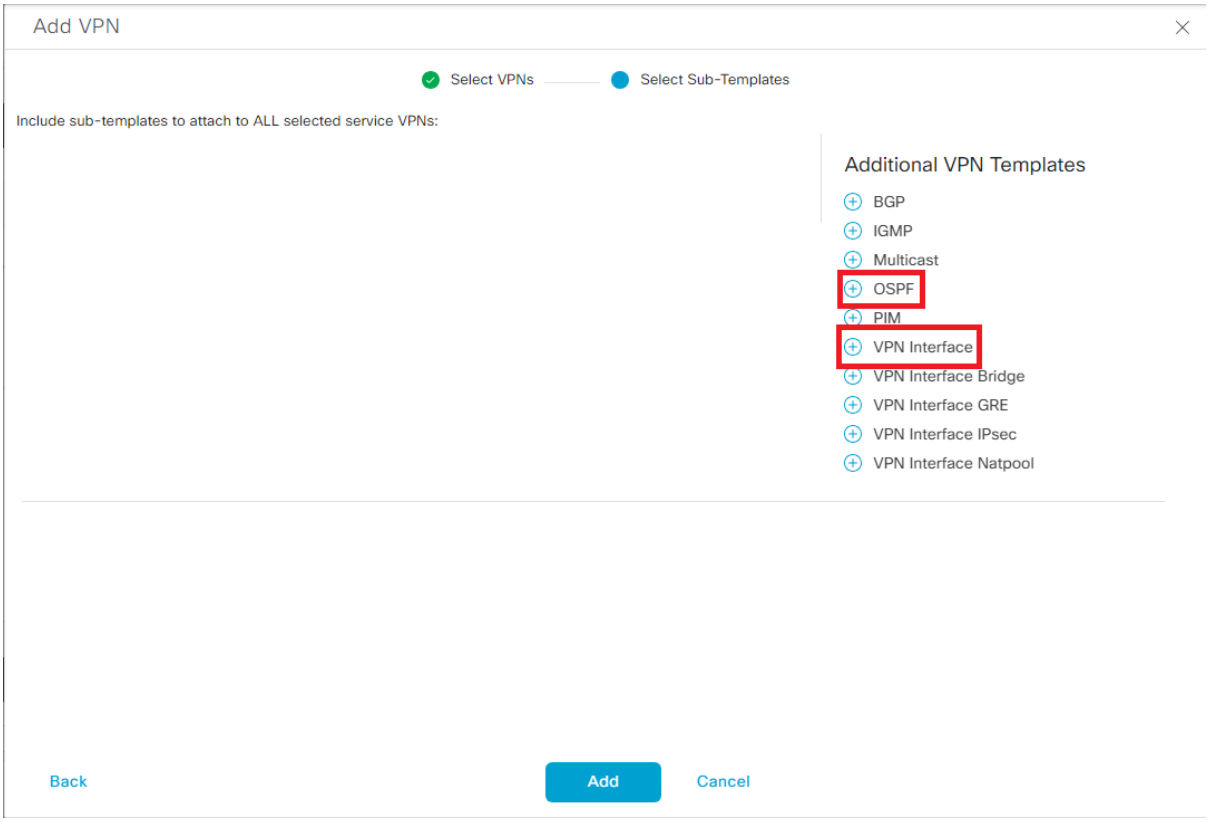
VPN: *vEdge_VPN11*

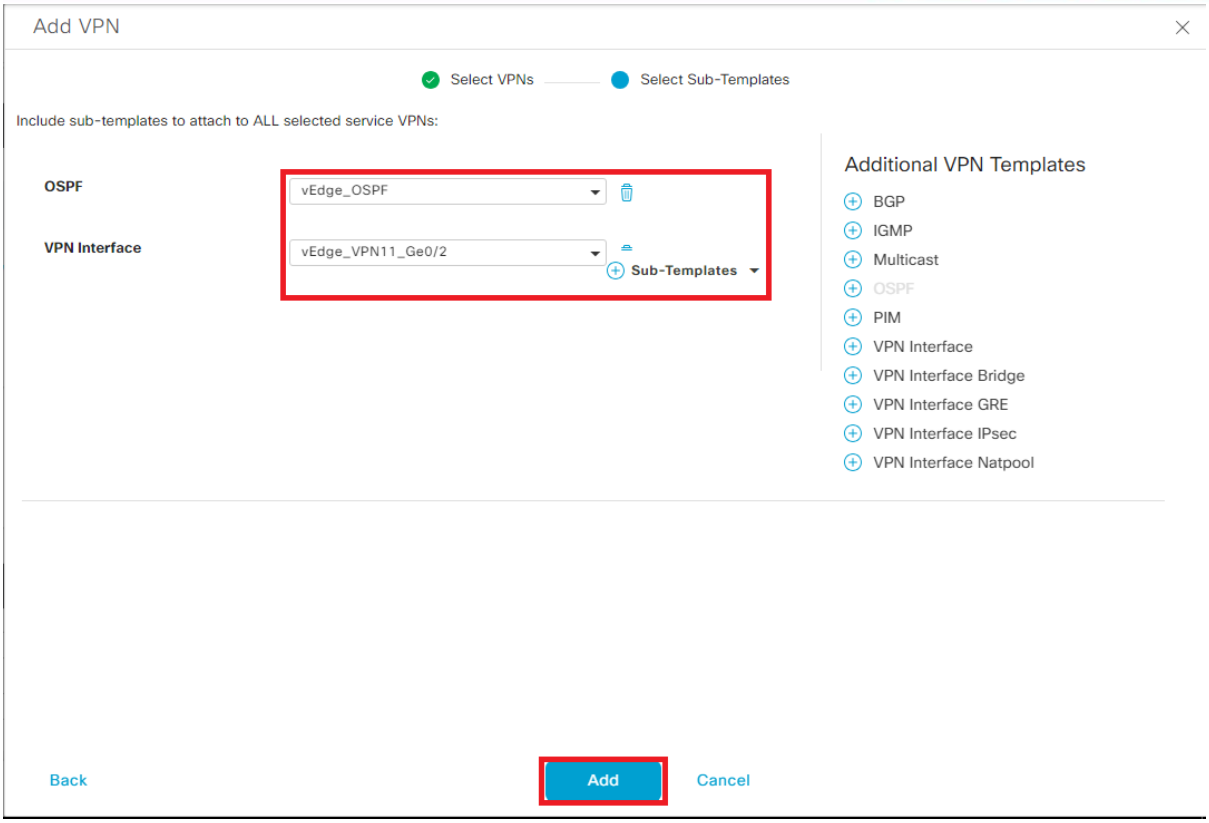
OSPF: *vEdge_OSPF*

VPN Interface: *vEdge_VPN11_GE0/2*




Add VPN
Select VPNs
Select Sub-Templates
Select one or more Service VPNs to add:
0 Items Selected
Available VPN Templates
Select All
Search
ID
Template Name
743fa765-96e4-4de1-86bb-e1759... vEdge_VPN11
cff833a8-0eb7-45da-a26b-ef8093... vEdge_VPN12
Selected VPN Templates
Search
ID
Template Name
Create VPN Template
Next
Cancel


Add VPN
Select VPNs
Select Sub-Templates
Include sub-templates to attach to ALL selected service VPNs:
Additional VPN Templates
BGP
IGMP
Multicast
OSPF
PIM
VPN Interface
VPN Interface Bridge
VPN Interface GRE
VPN Interface IPsec
VPN Interface Natpool
Back
Add
Cancel

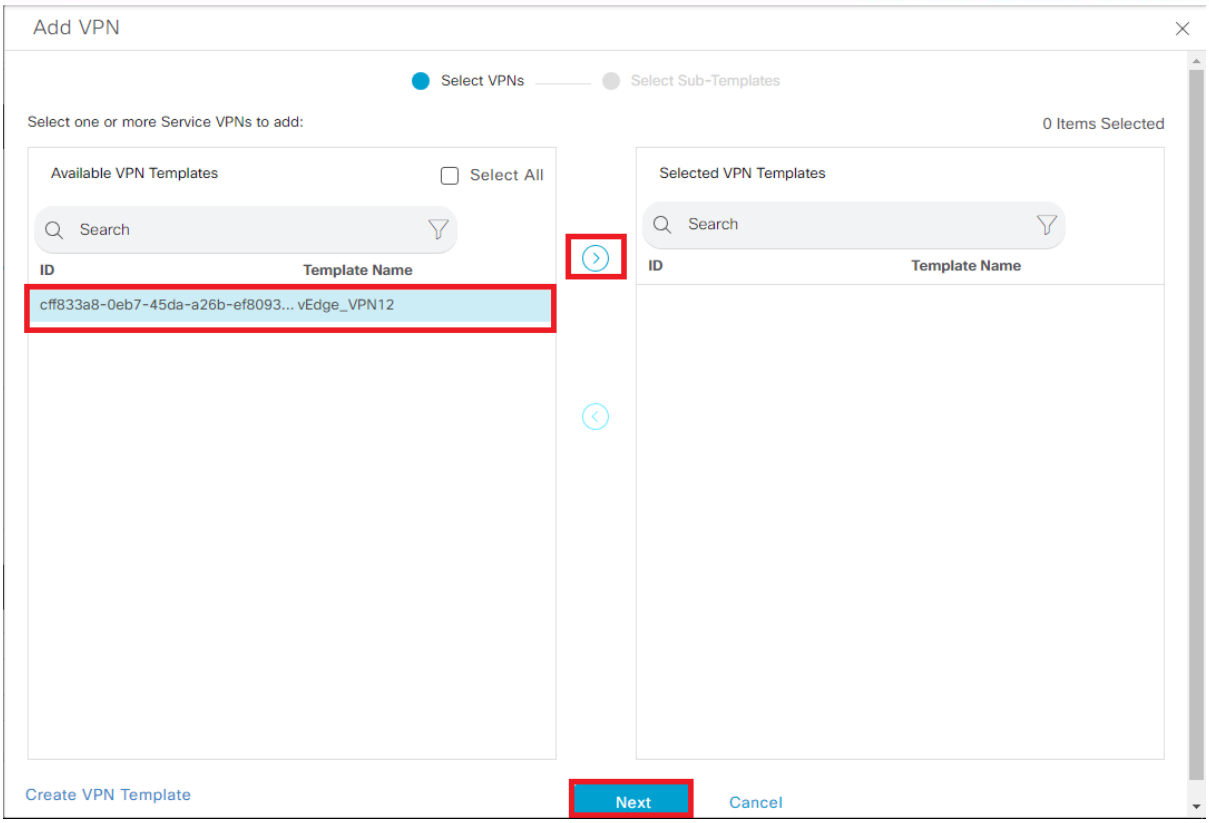


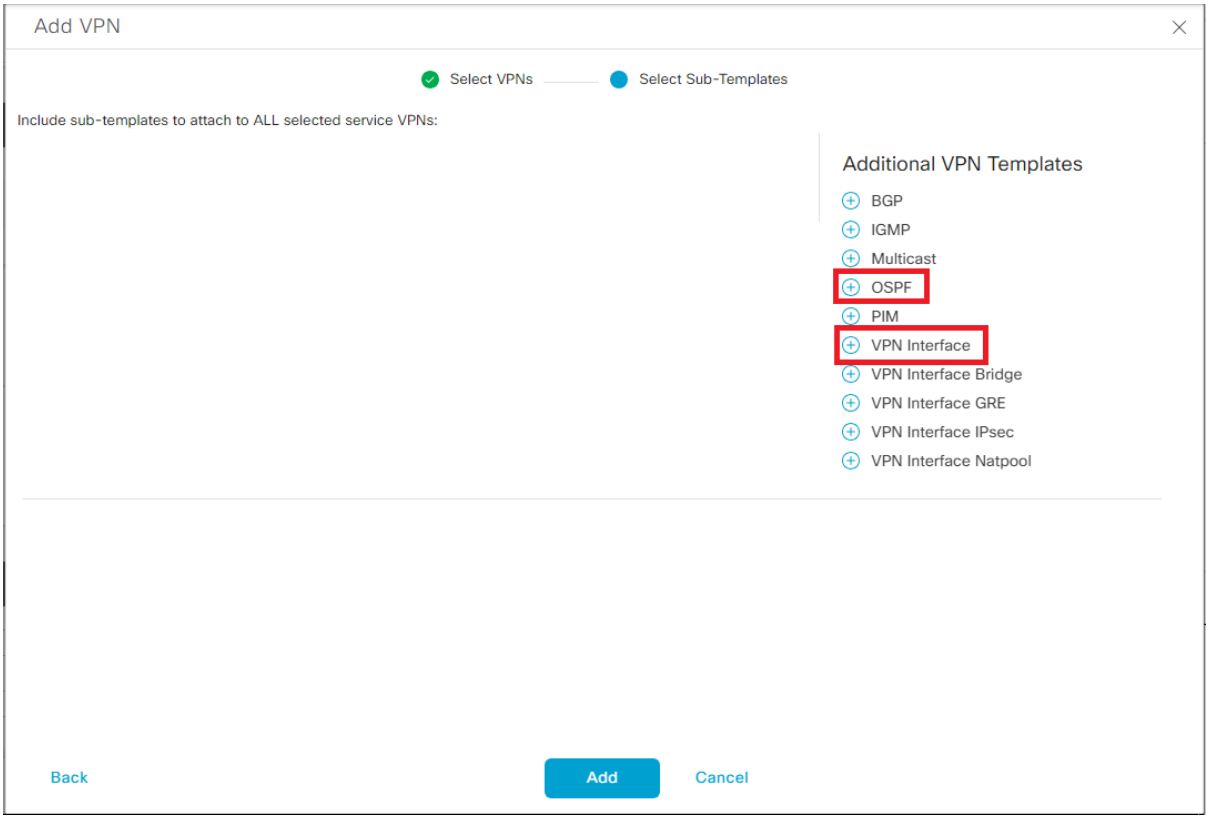
Tương tự cho cổng GE0/3

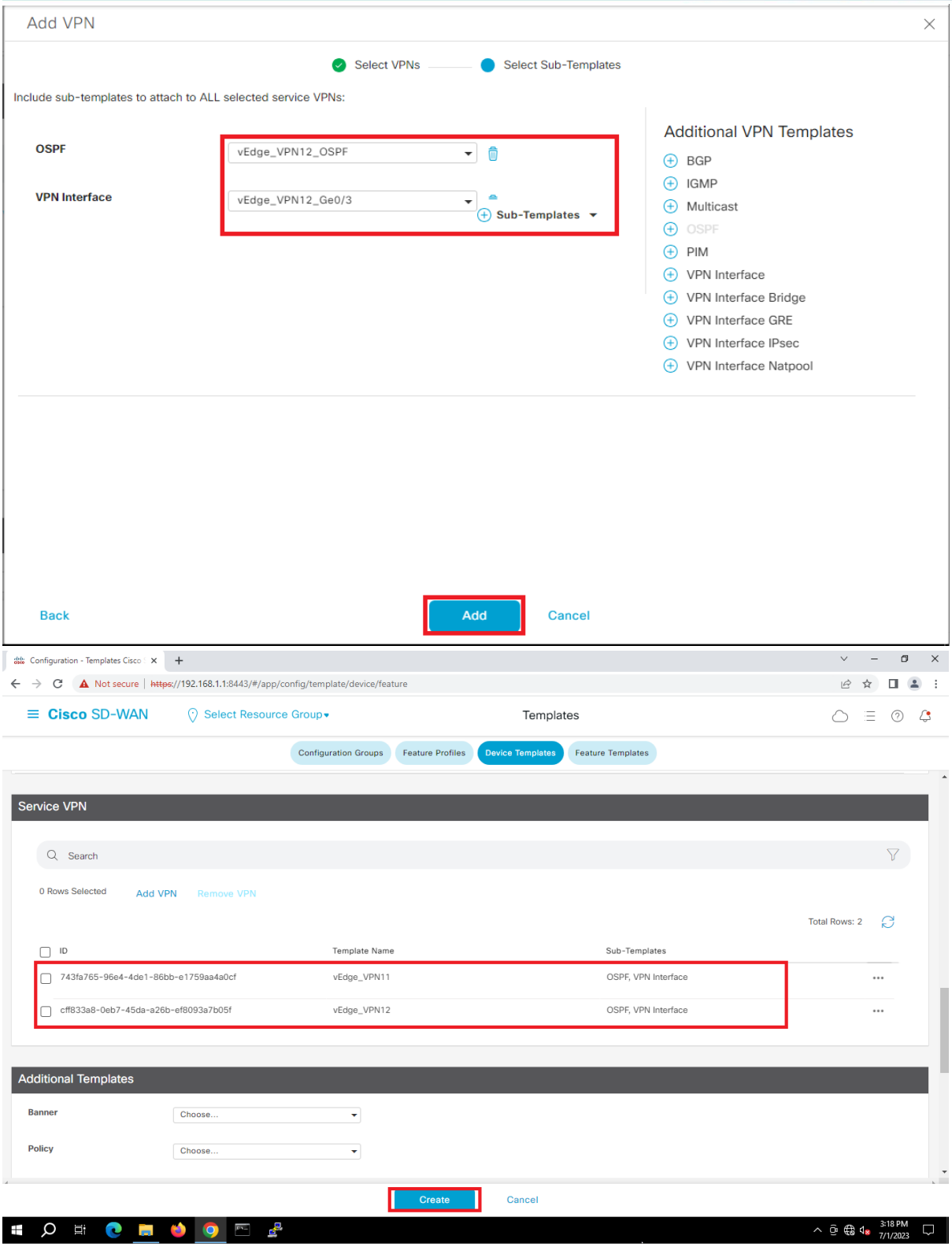
VPN: *vEdge_VPN12*

OSPF: *vEdge_OSPF_VPN12*

VPN Interface: *vEdge_VPN12_GE0/3*

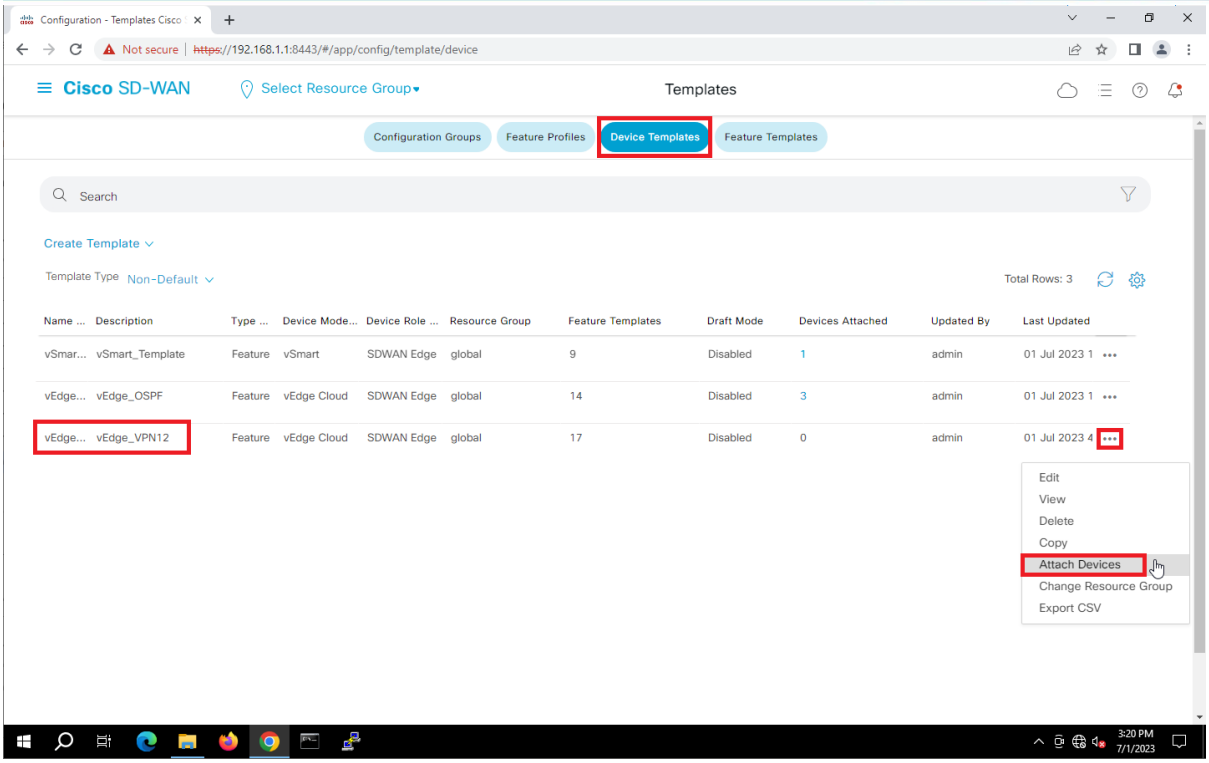

Add VPN
Select VPNs
Select Sub-Templates
Select one or more Service VPNs to add:
0 Items Selected
Available VPN Templates
Select All
Search
ID
Template Name
cff833a8-0eb7-45da-a26b-ef8093... vEdge_VPN12
Selected VPN Templates
Search
ID
Template Name
Create VPN Template
Next
Cancel


Add VPN
Select VPNs
Select Sub-Templates
Include sub-templates to attach to ALL selected service VPNs:
Additional VPN Templates
BGP
IGMP
Multicast
OSPF
PIM
VPN Interface
VPN Interface Bridge
VPN Interface GRE
VPN Interface IPsec
VPN Interface Natpool
Back
Add
Cancel

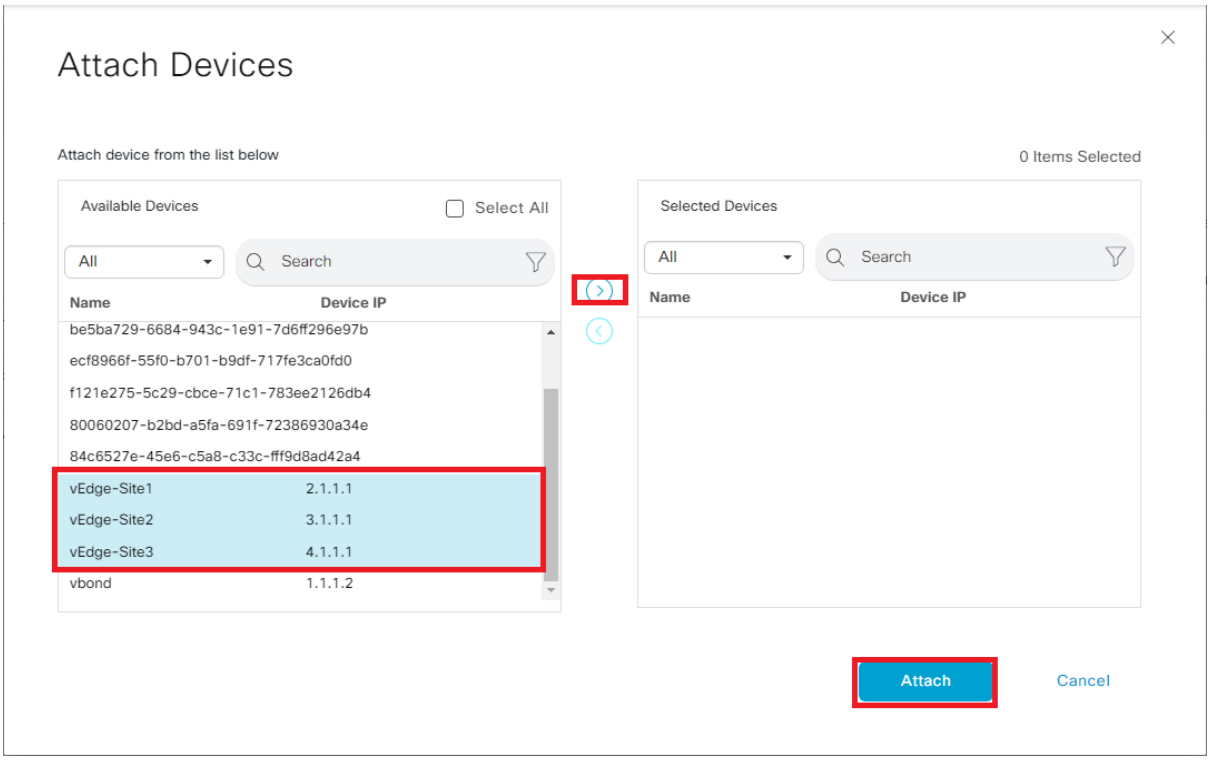


Chọn **Create** để hoành thành **Device Template**

Tiến hành cấu hình thiết bị vEdge bằng cách **Attach Devices**

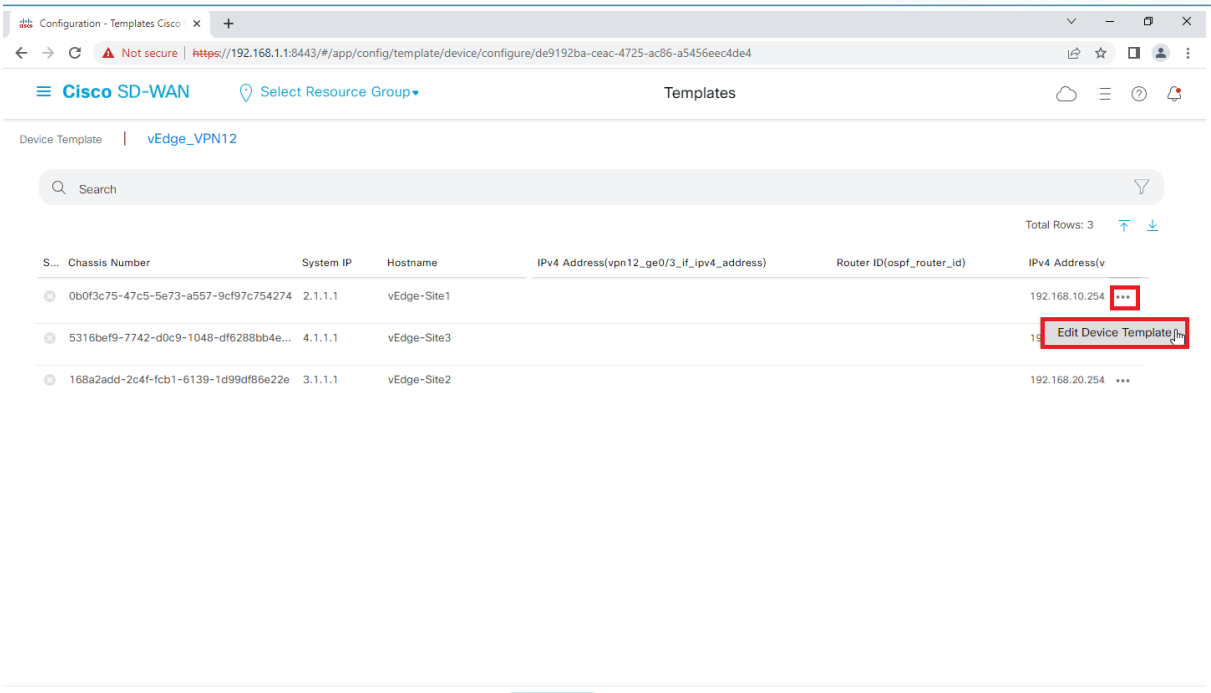


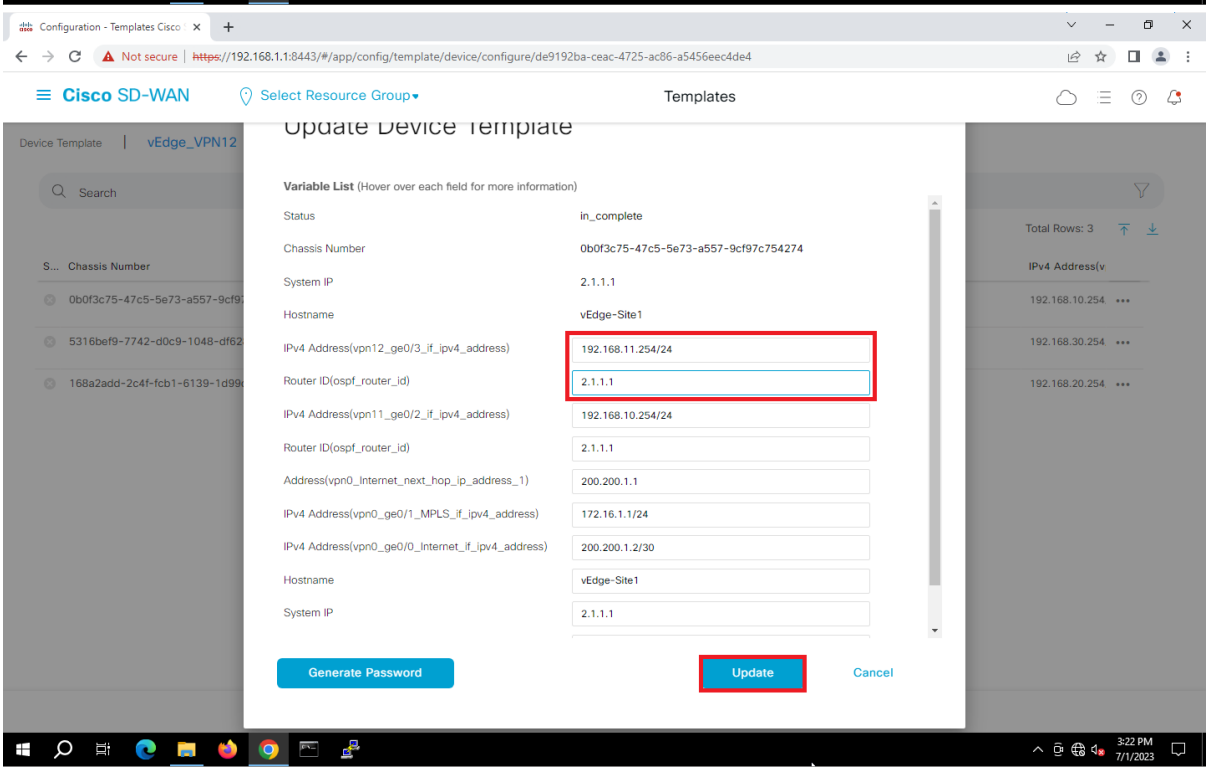
Chọn thiết bị vEdge ở ba site: SITE1, SITE2, SITE3.



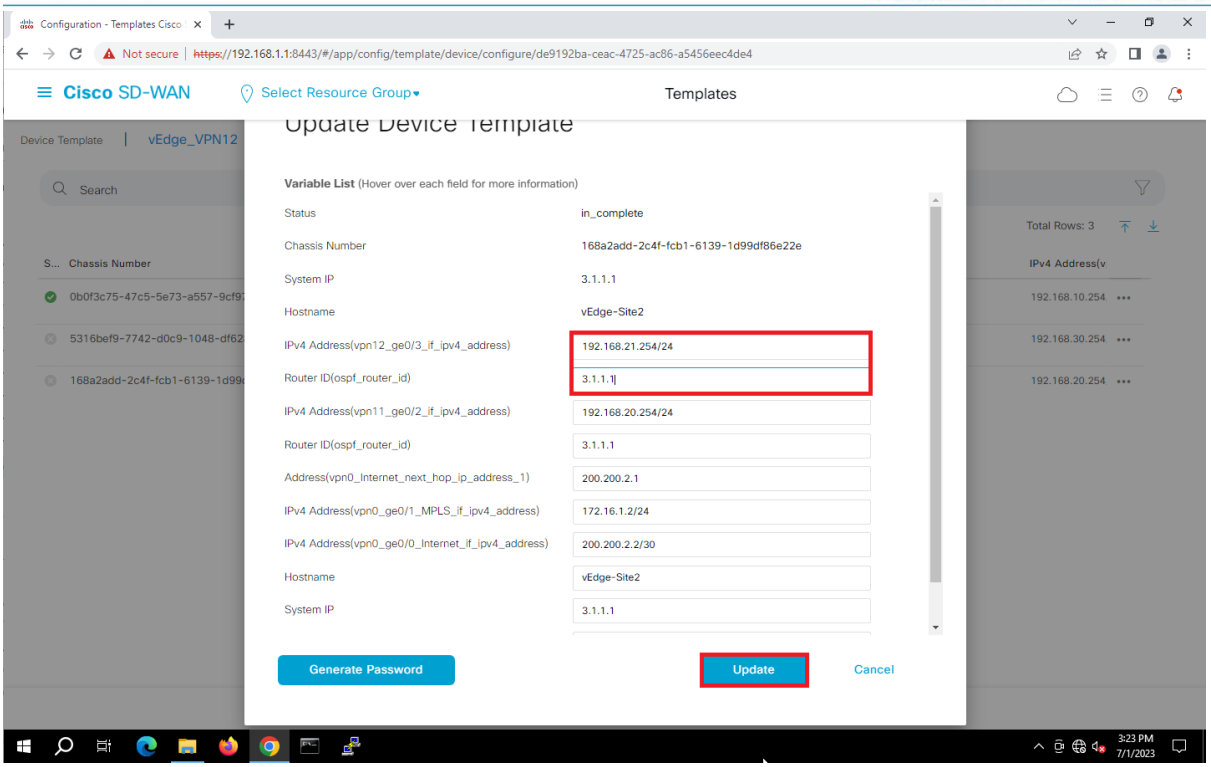
Chọn **Attach**

Các thông số cấu hình cho thiết bị vEdge ở Site1 như sau:

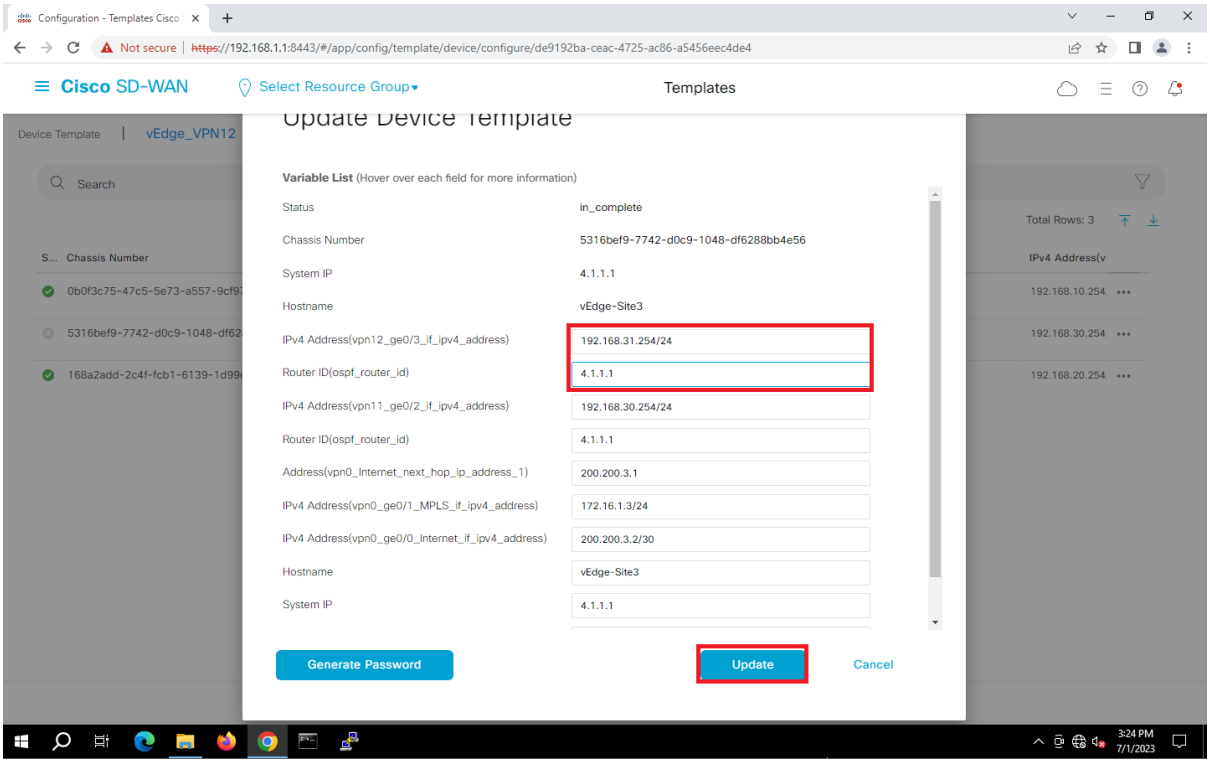

Configuration - Templates Cisco
Not secure | https://192.168.1.1:8443/#/app/config/template/device/configure/de9192ba-ceac-4725-ac86-a5456eec4de4
Cisco SD-WAN
Select Resource Group
Templates
Device Template | vEdge_VPN12
Search
Total Rows: 3
S... Chassis Number System IP Hostname IPv4 Address(vpn12_ge0/3_if_ipv4_address) Router ID(ospf_router_id) IPv4 Address(v
0b0f3c75-47c5-5e73-a557-9cf97c754274 2.1.1.1 vEdge-Site1 192.168.10.254
5316bef9-7742-d0c9-1048-df6288bb4e... 4.1.1.1 vEdge-Site3
Edit Device Template
168a2add-2c4f-fcb1-6139-1d99df86e22e 3.1.1.1 vEdge-Site2 192.168.20.254
Next
Cancel
3:21 PM
7/1/2023


Configuration - Templates Cisco
Not secure | https://192.168.1.1:8443/#/app/config/template/device/configure/de9192ba-ceac-4725-ac86-a5456eec4de4
Cisco SD-WAN
Select Resource Group
Templates
Update Device Template
Variable List (Hover over each field for more information)
Status in_complete
Chassis Number 0b0f3c75-47c5-5e73-a557-9cf97c754274
System IP 2.1.1.1
Hostname vEdge-Site1
IPv4 Address(vpn12_ge0/3_if_ipv4_address) 192.168.11.254/24
Router ID(ospf_router_id) 2.1.1.1
IPv4 Address(vpn11_ge0/2_if_ipv4_address) 192.168.10.254/24
Router ID(ospf_router_id) 2.1.1.1
Address(vpn0_Internet_next_hop_ip_address_1) 200.200.1.1
IPv4 Address(vpn0_ge0/1_MPLS_if_ipv4_address) 172.16.1.1/24
IPv4 Address(vpn0_ge0/0_Internet_if_ipv4_address) 200.200.1.2/30
Hostname vEdge-Site1
System IP 2.1.1.1
Generate Password
Update
Cancel
3:22 PM
7/1/2023

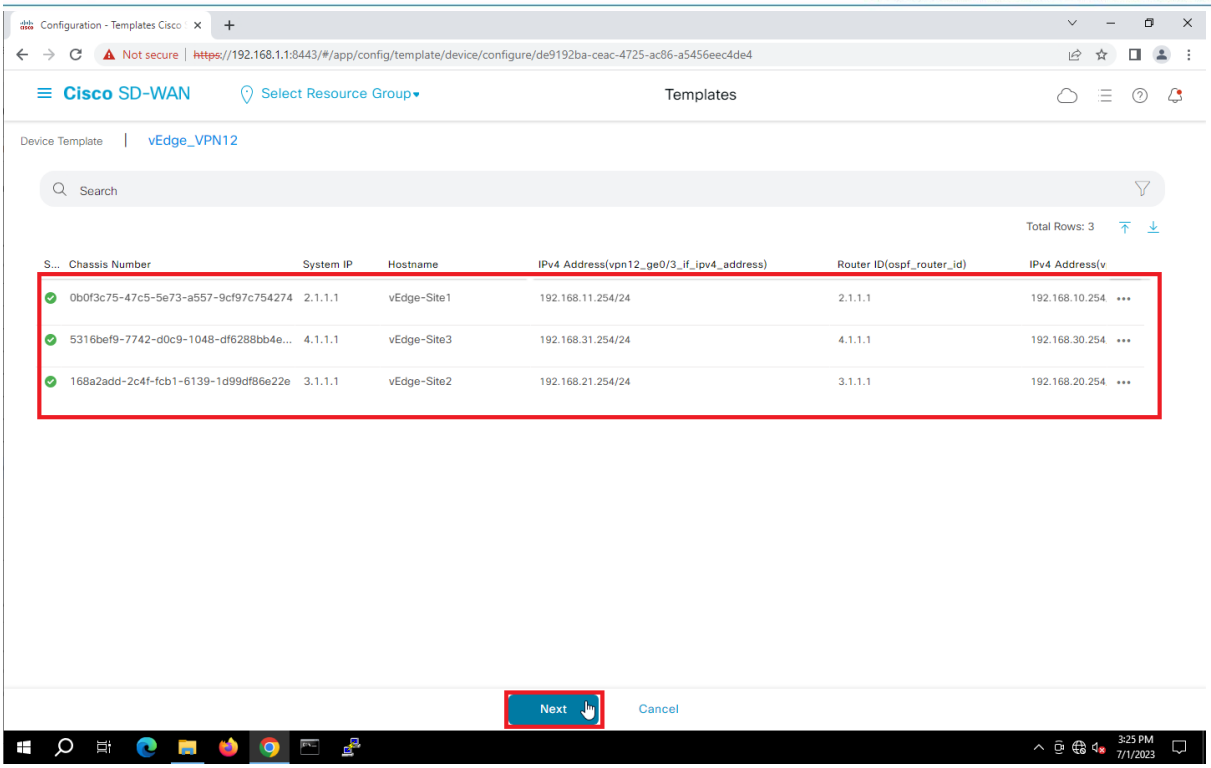
Site2:

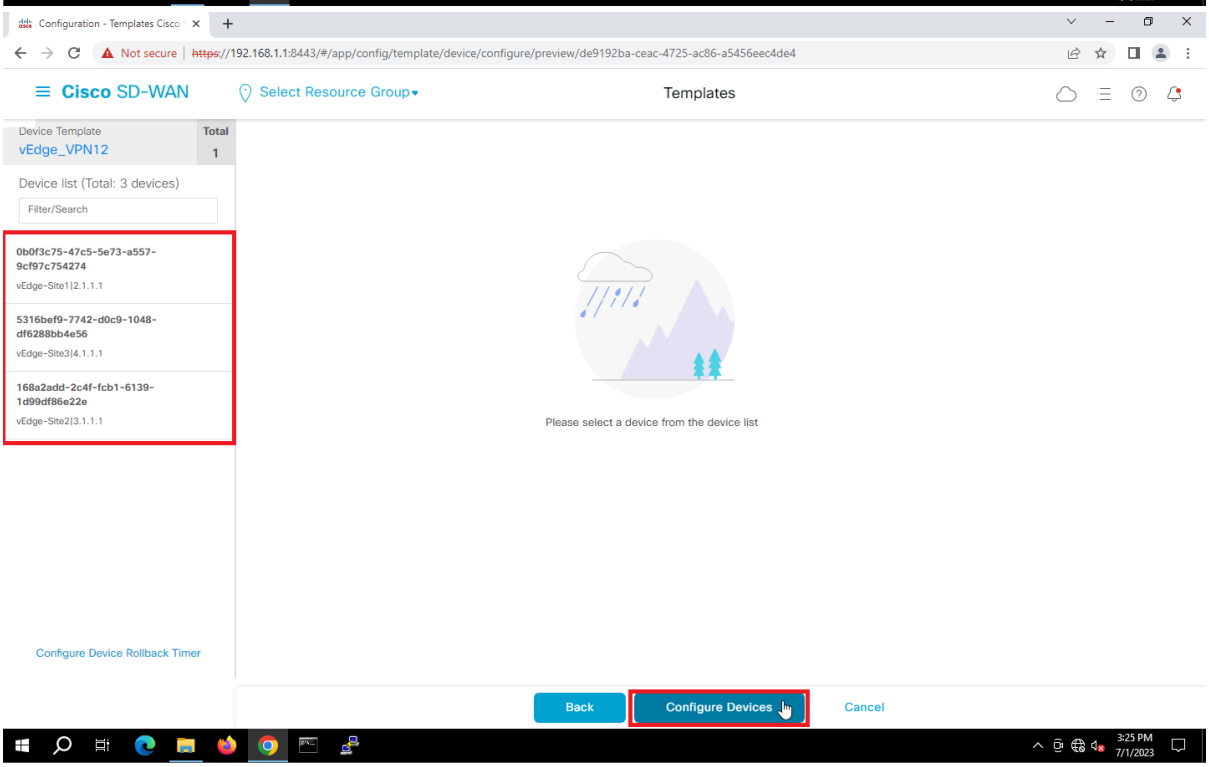


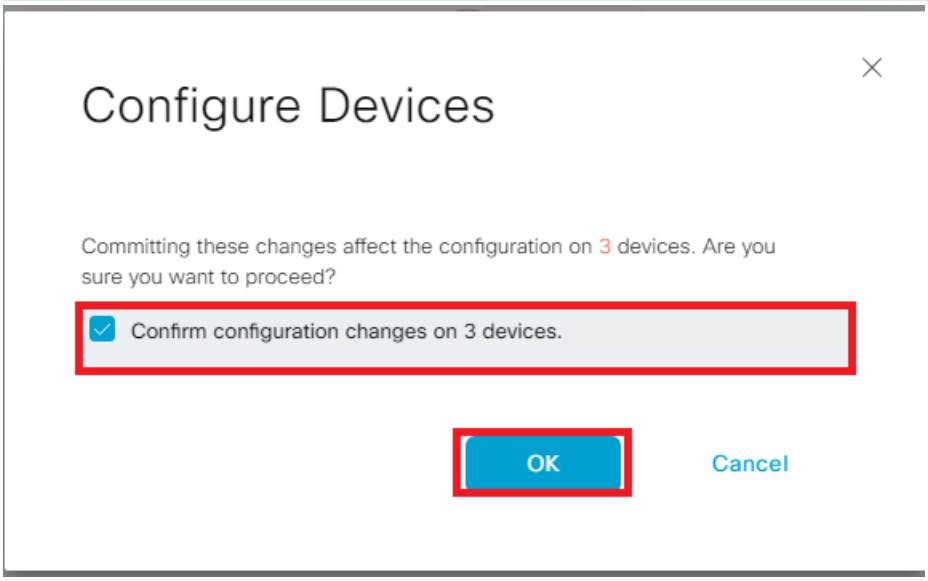
Site3:

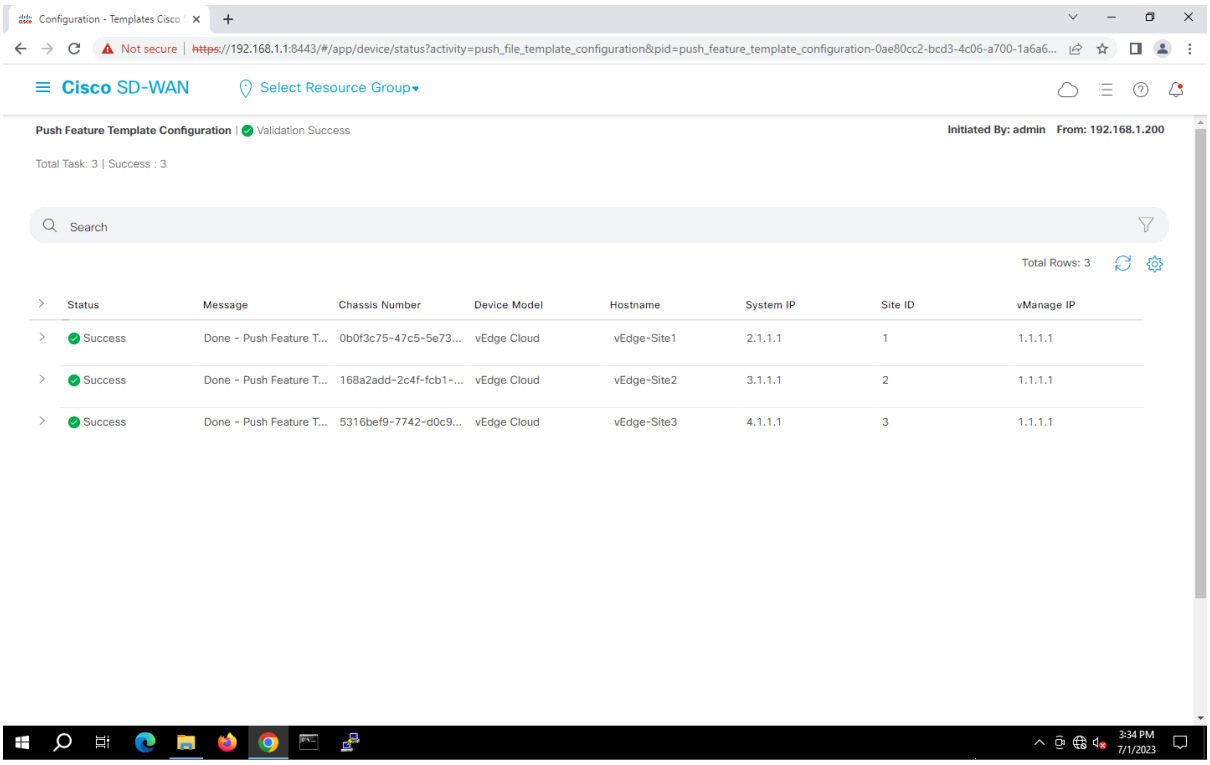


Chọn **Update > Next > Configure Device**


Configuration - Templates Cisco
Not secure | https://192.168.1.1:8443/#/app/config/template/device/configure/de9192ba-ceac-4725-ac86-a5456eec4de4
Cisco SD-WAN
Select Resource Group
Templates
Device Template | vEdge_VPN12
Search
Total Rows: 3
S... Chassis Number System IP Hostname IPv4 Address(vpn12_ge0/3_if_ipv4_address) Router ID(ospf_router_id) IPv4 Address(v
0b0f3c75-47c5-5e73-a557-9cf97c754274 2.1.1.1 vEdge-Site1 192.168.11.254/24 2.1.1.1 192.168.10.254
5316bef9-7742-d0c9-1048-df6288bb4e... 4.1.1.1 vEdge-Site3 192.168.31.254/24 4.1.1.1 192.168.30.254
168a2add-2c4f-fcb1-6139-1d99df86e22e 3.1.1.1 vEdge-Site2 192.168.21.254/24 3.1.1.1 192.168.20.254
Next
Cancel
3:25 PM
7/1/2023


Configuration - Templates Cisco
Not secure | https://192.168.1.1:8443/#/app/config/template/device/configure/preview/de9192ba-ceac-4725-ac86-a5456eec4de4
Cisco SD-WAN
Select Resource Group
Templates
Device Template
vEdge_VPN12
Total
1
Device list (Total: 3 devices)
Filter/Search
0b0f3c75-47c5-5e73-a557-9cf97c754274
vEdge-Site1|2.1.1.1
5316bef9-7742-d0c9-1048-df6288bb4e56
vEdge-Site3|4.1.1.1
168a2add-2c4f-fcb1-6139-1d99df86e22e
vEdge-Site2|3.1.1.1
Please select a device from the device list
Configure Device Rollback Timer
Back
Configure Devices
Cancel
3:25 PM
7/1/2023





Tiến hành cấu hình cho thiết bị Router ở 3 site ở VPN12

R-Site1-1: ở site1

ena

conf t

hostname R-Site1-1

router ospf 1

exit

int e0/0

```
ip add 192.168.10.2 255.255.255.0
ip ospf 1 area 0
no shut
exit
int e0/1
ip add 10.10.10.1 255.255.255.0
ip ospf 1 area 0
no shut
exit
ip route 0.0.0.0 0.0.0.0 192.168.10.254
do wr
```

R-Site1-2: ở site1

```
ena
conf t
hostname R-Site1-2
router ospf 1
exit
int e0/0
ip add 192.168.11.2 255.255.255.0
ip ospf 1 area 0
no shut
exit
int e0/1
ip add 10.10.11.1 255.255.255.0
ip ospf 1 area 0
no shut
exit
ip route 0.0.0.0 0.0.0.0 192.168.11.254
do wr
```

R-Site2-1: ở site2

```
ena
conf t
hostname R-Site2-1
router ospf 1
exit
int e0/0
```

```
ip add 192.168.20.2 255.255.255.0
ip ospf 1 area 0
no shut
exit
int e0/1
ip add 10.10.20.1 255.255.255.0
ip ospf 1 area 0
no shut
exit
ip route 0.0.0.0 0.0.0.0 192.168.20.254
do wr
```

R-Site2-2: ở site2

```
ena
conf t
hostname R-Site2-2
router ospf 1
exit
int e0/0
ip add 192.168.21.2 255.255.255.0
ip ospf 1 area 0
no shut
exit
int e0/1
ip add 10.10.21.1 255.255.255.0
ip ospf 1 area 0
no shut
exit
ip route 0.0.0.0 0.0.0.0 192.168.21.254
do wr
```

R-Site3-1: ở site3

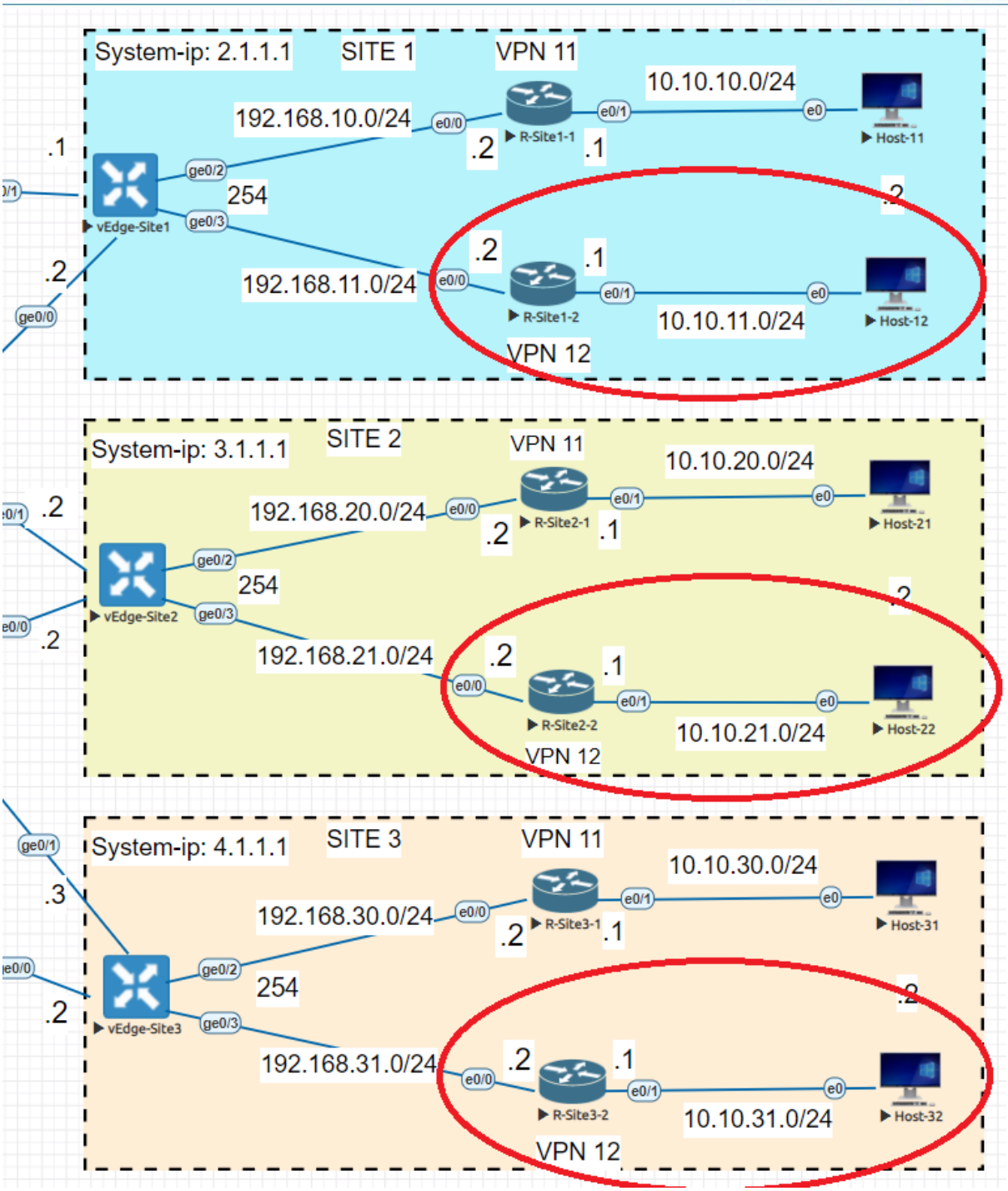
```
ena
conf t
hostname R-Site3-1
router ospf 1
exit
int e0/0
```

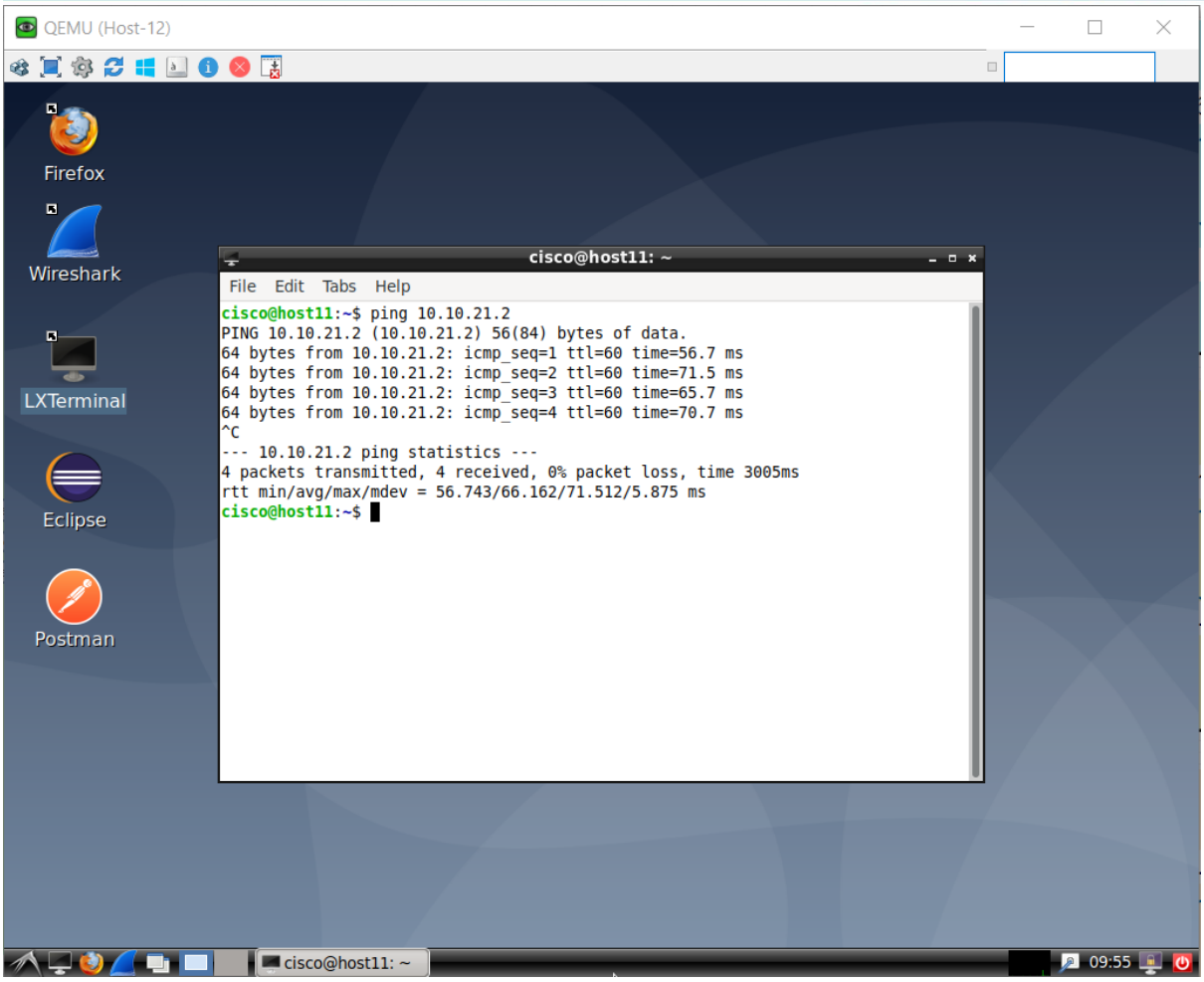
```
ip add 192.168.30.2 255.255.255.0
ip ospf 1 area 0
no shut
exit
int e0/1
ip add 10.10.30.1 255.255.255.0
ip ospf 1 area 0
no shut
exit
ip route 0.0.0.0 0.0.0.0 192.168.30.254
do wr
```

R-Site3-2: ở site3

```
ena
conf t
hostname R-Site3-2
router ospf 1
exit
int e0/0
ip add 192.168.31.2 255.255.255.0
ip ospf 1 area 0
no shut
exit
int e0/1
ip add 10.10.31.1 255.255.255.0
ip ospf 1 area 0
no shut
exit
ip route 0.0.0.0 0.0.0.0 192.168.31.254
do wr
```

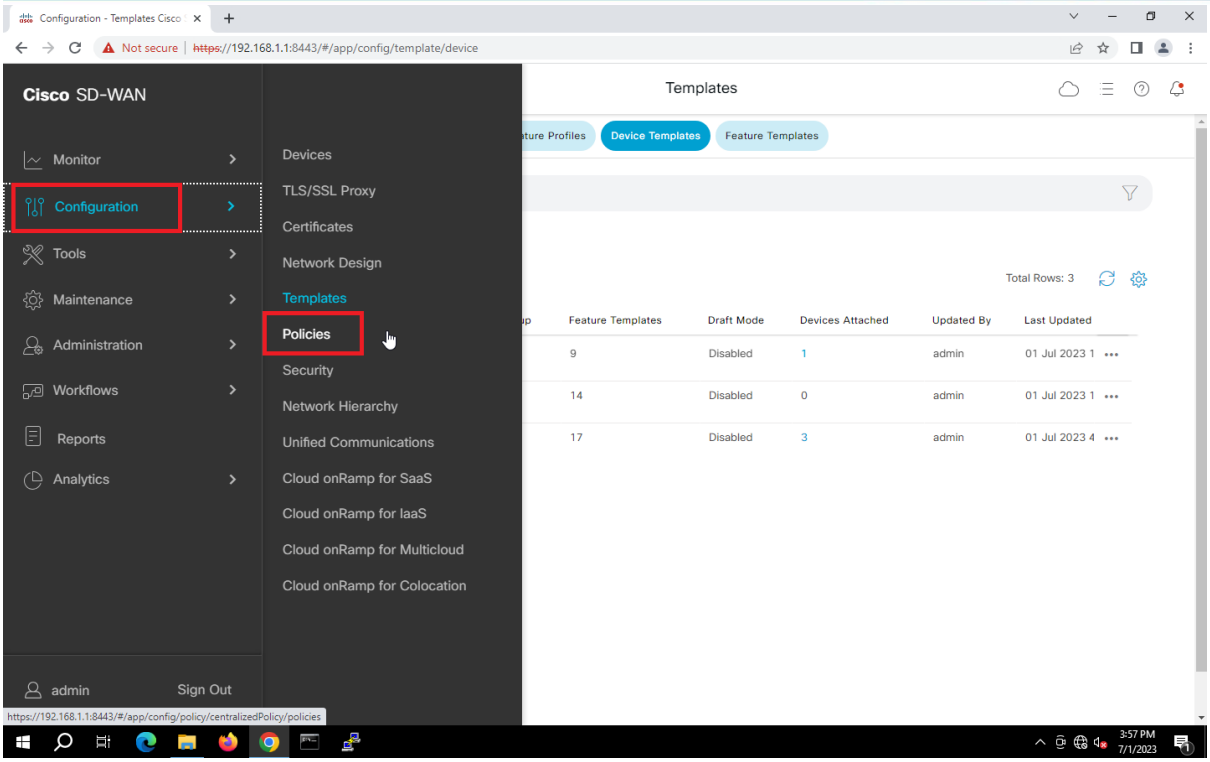
Thực hiện lệnh Ping từ **Host-12** ở site1 của VPN12 sang **Host-22** ở site2 của VPN12 thì thấy ping thành công

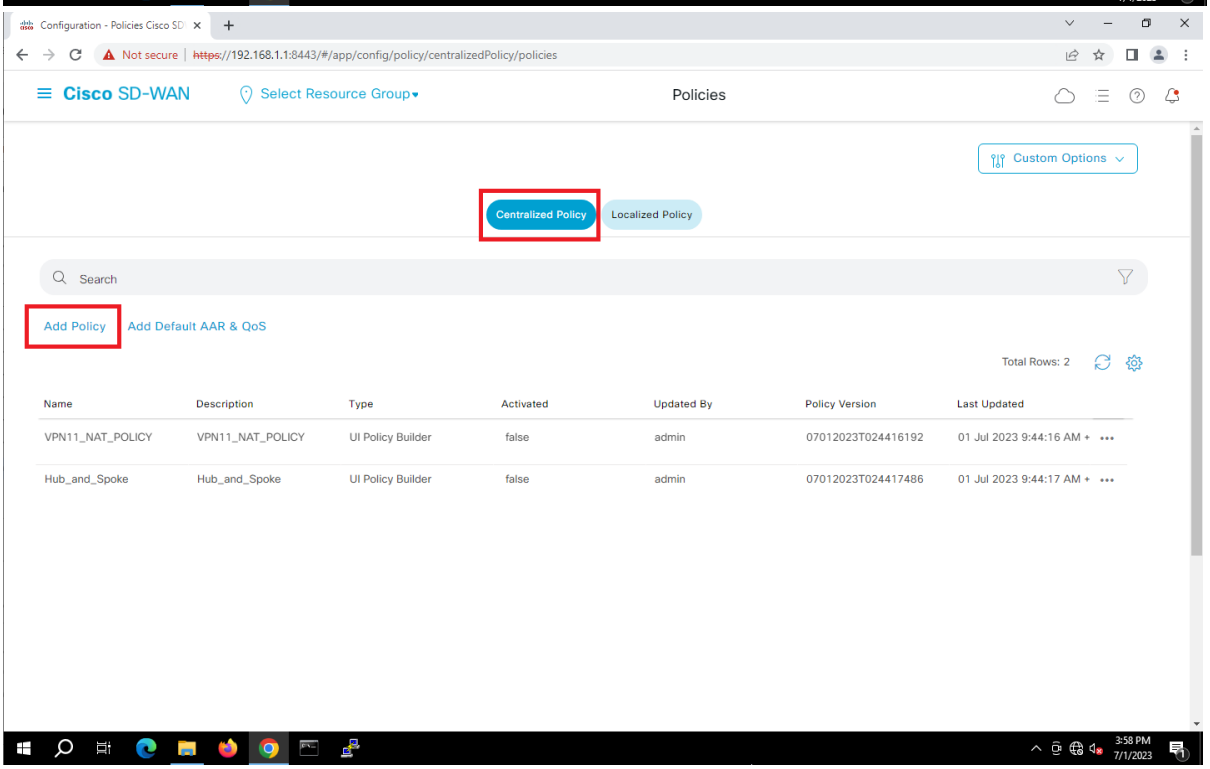

System-ip: 2.1.1.1
SITE 1
VPN 11
10.10.10.0/24
192.168.10.0/24
e0/0
e0/1
e0
R-Site1-1
Host-11
.1
.2
.1
ge0/2
254
.2
vEdge-Site1
ge0/3
.2
.2
.1
192.168.11.0/24
e0/0
e0/1
e0
R-Site1-2
10.10.11.0/24
Host-12
ge0/0
VPN 12
System-ip: 3.1.1.1
SITE 2
VPN 11
10.10.20.0/24
192.168.20.0/24
e0/0
e0/1
e0
R-Site2-1
Host-21
.2
.2
.1
ge0/2
254
.2
vEdge-Site2
ge0/3
.2
.2
.1
192.168.21.0/24
e0/0
e0/1
e0
R-Site2-2
10.10.21.0/24
Host-22
VPN 12
ge0/1
System-ip: 4.1.1.1
SITE 3
VPN 11
.3
10.10.30.0/24
192.168.30.0/24
e0/0
e0/1
e0
R-Site3-1
Host-31
.2
.1
ge0/2
254
.2
vEdge-Site3
ge0/3
.2
.2
.1
192.168.31.0/24
e0/0
e0/1
e0
R-Site3-2
10.10.31.0/24
Host-32
VPN 12



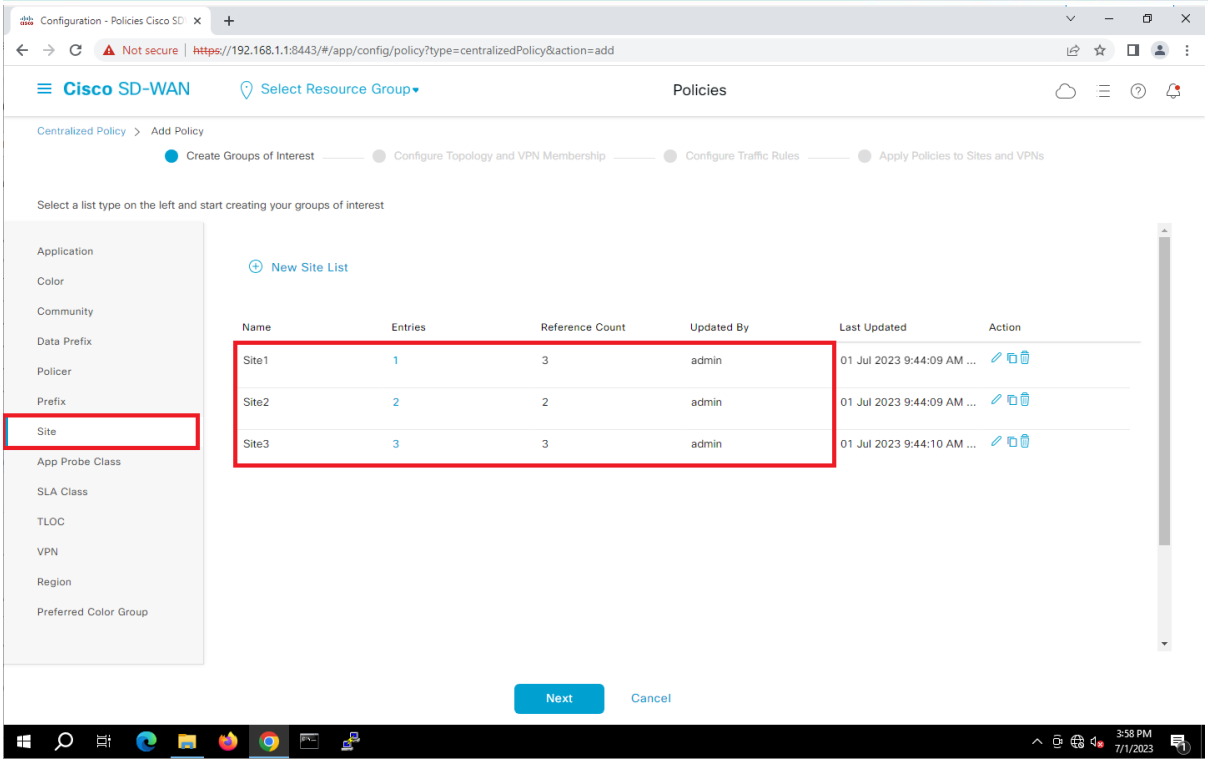
3.3. Viết Centralized Policy để cô lập VPN12 không cho giao tiếp được giữa các site.

Vào giao diện **vManage** > **Configuration** > **Policies** > **Centralized Policy** > **Add Policy**

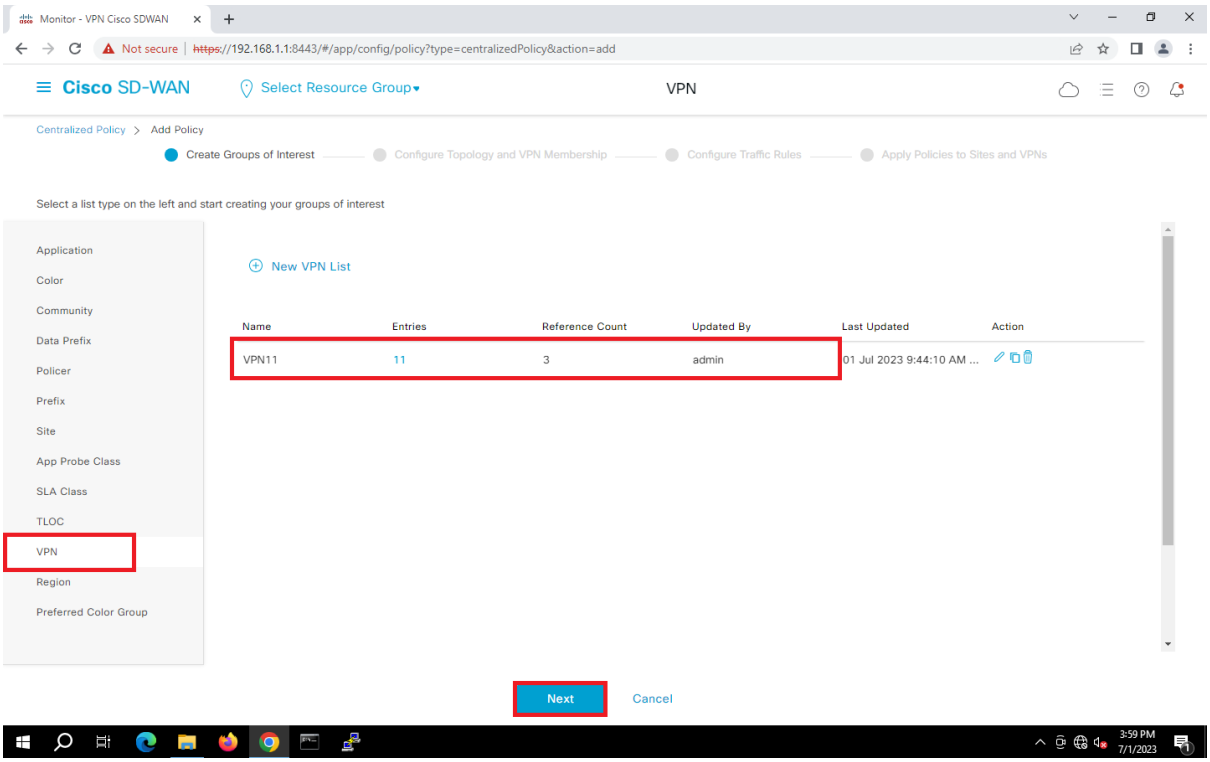




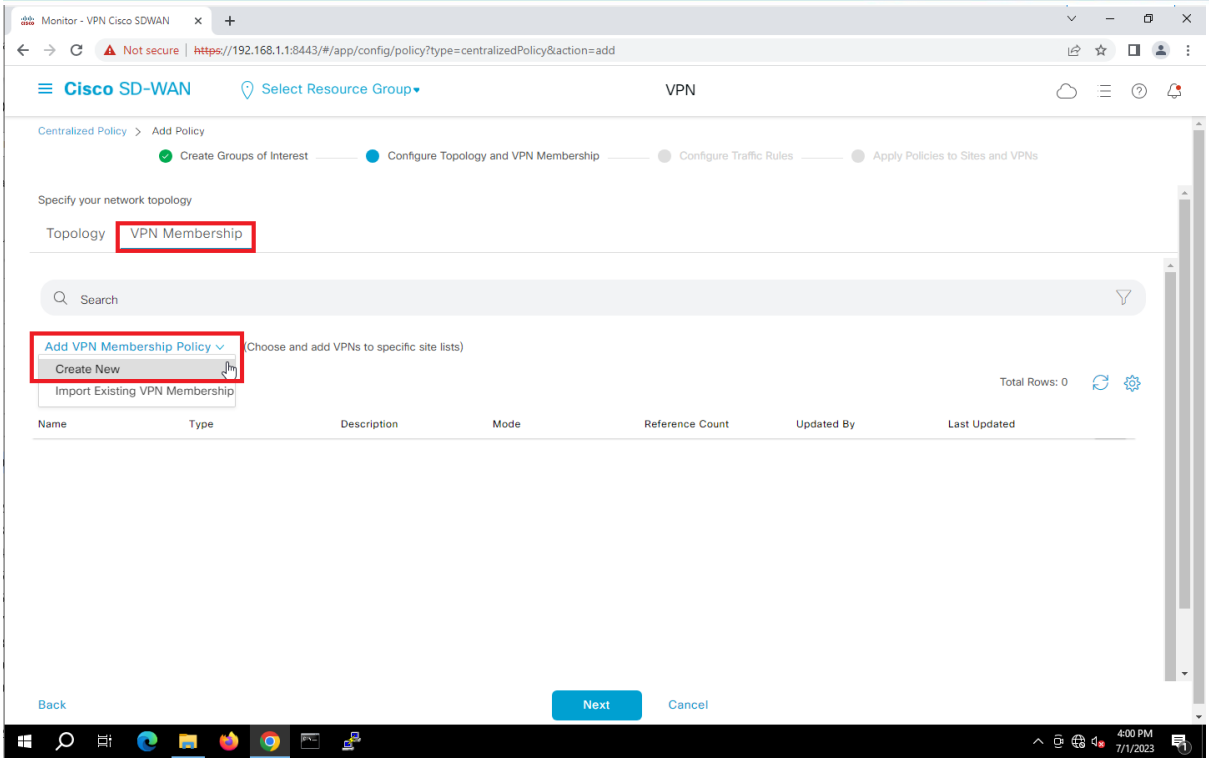
Sau đó ta vào **Site > New Site List** để thêm lần lượt ba site



Bước tiếp theo chọn **VPN** > **New VPN List** để tạo *vpn11*



Sau khi đã tạo xong các **Site** và **VPN**11 thì ta chọn **Next** để qua bước tiếp theo
Tiếp theo xuất hiệu giao diện sau, ta chọn **VPN Membership** > **Add VPN Membership**



Cấu hình lần lượt các thông số như sau:

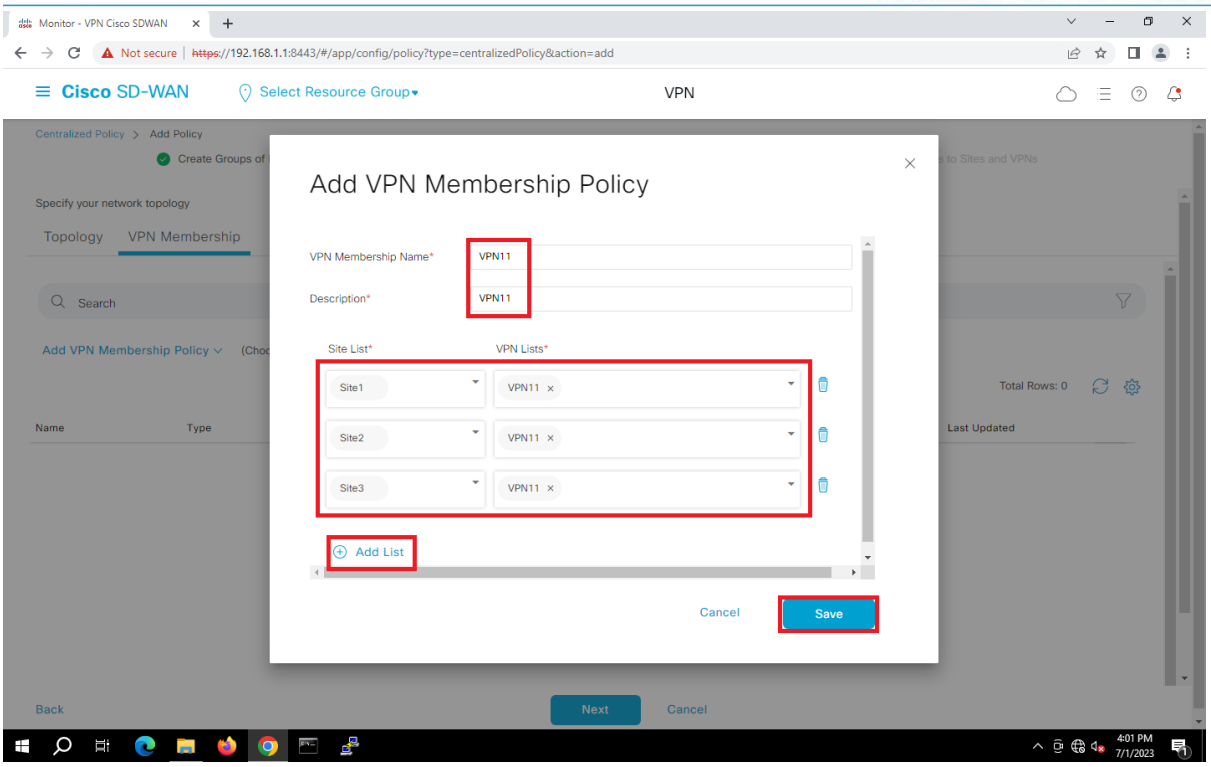
VPN Membership Name: *VPN11*

Description: *VPN11*

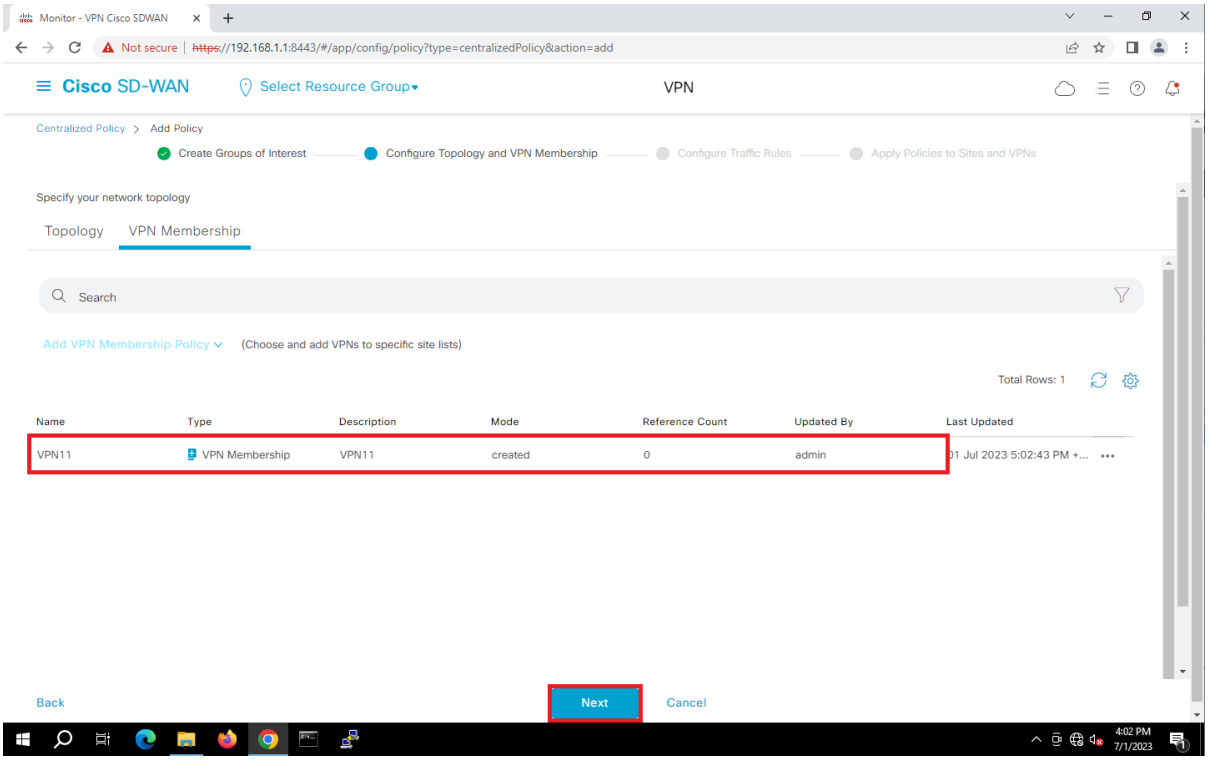
Site List: *site1, site2, site3*

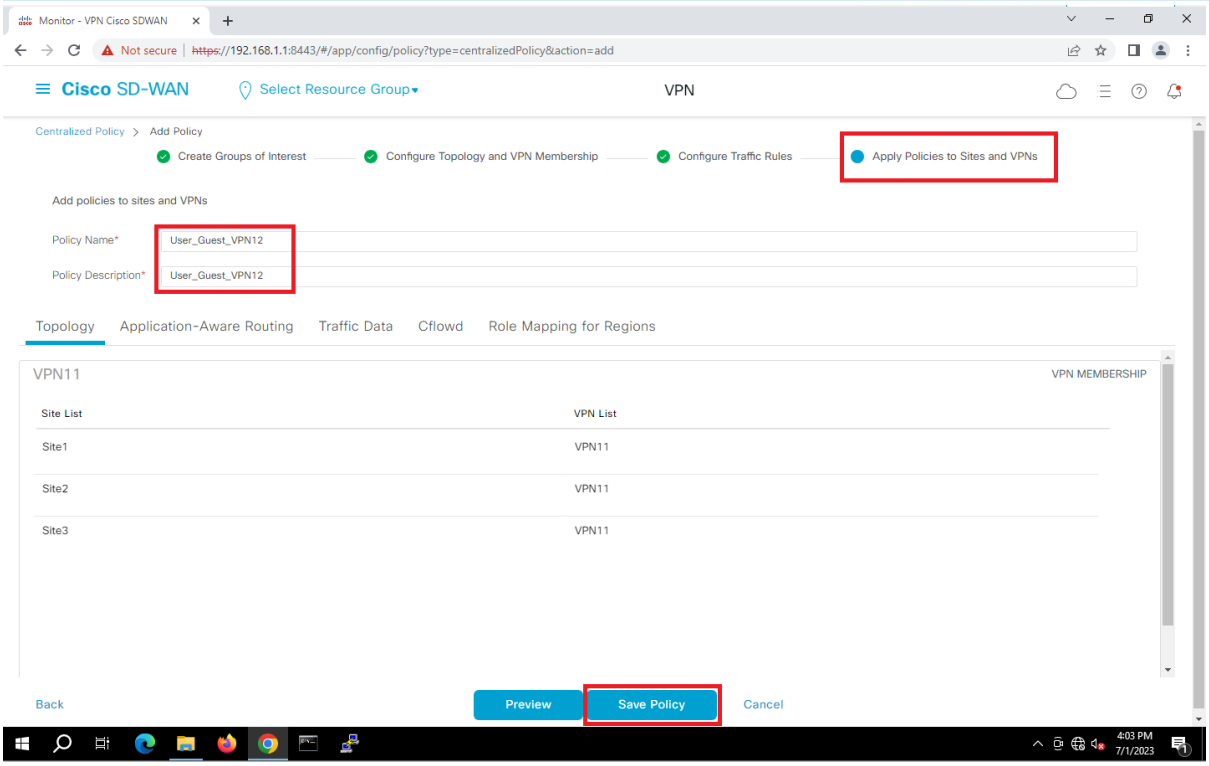
VPN Lists: *vpn11*

Chọn **Save** để lưu policy



Chọn **Next > Next** để tới bước cuối cùng là tạo tên cho policy

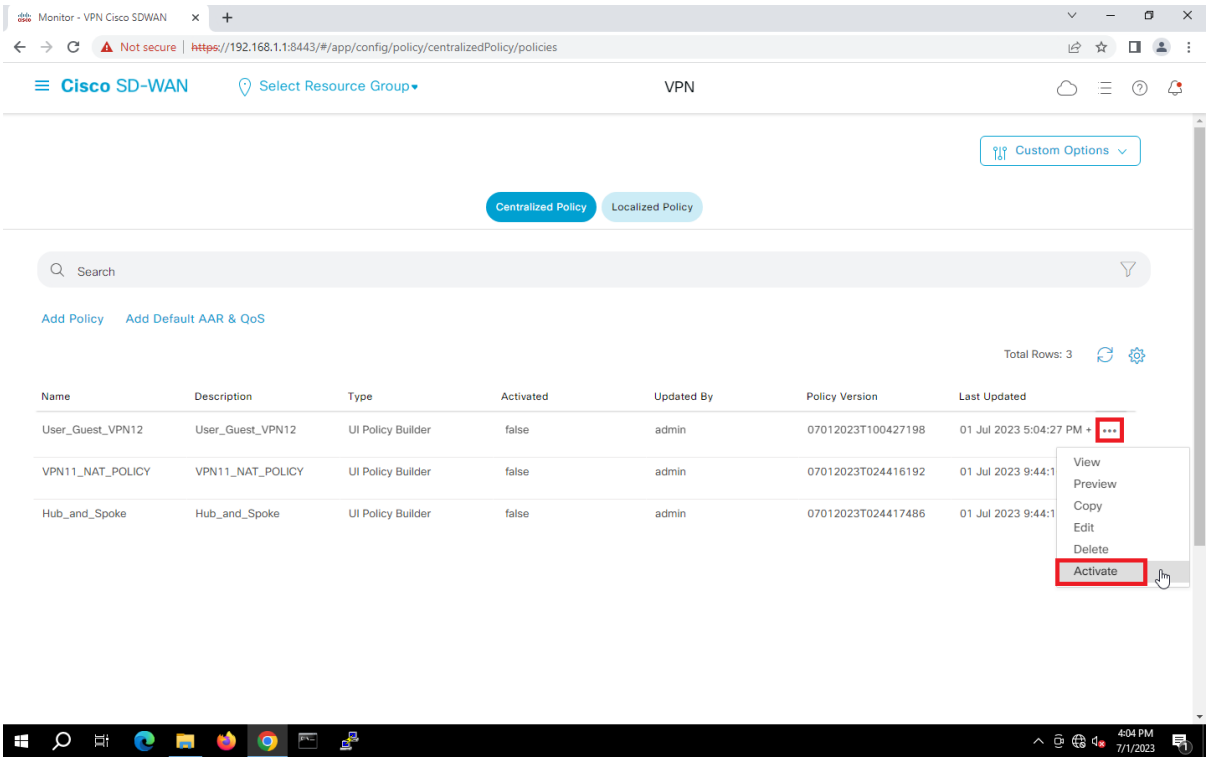


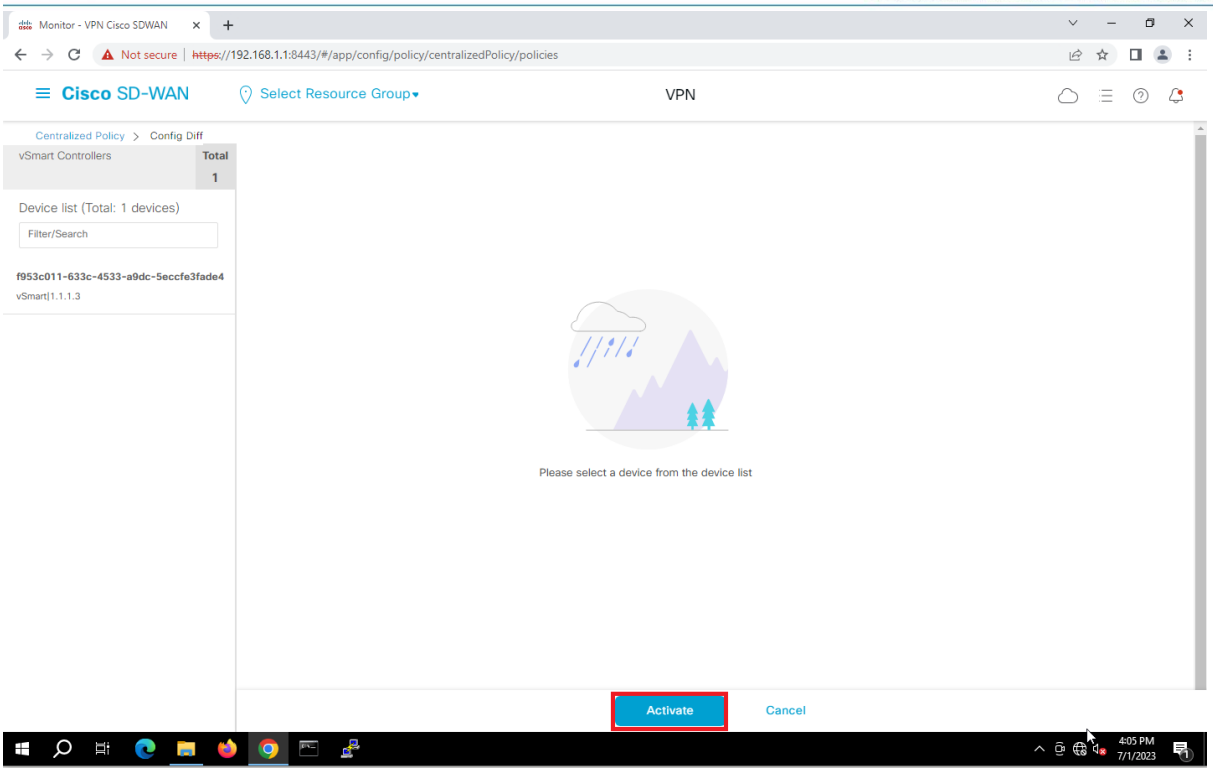


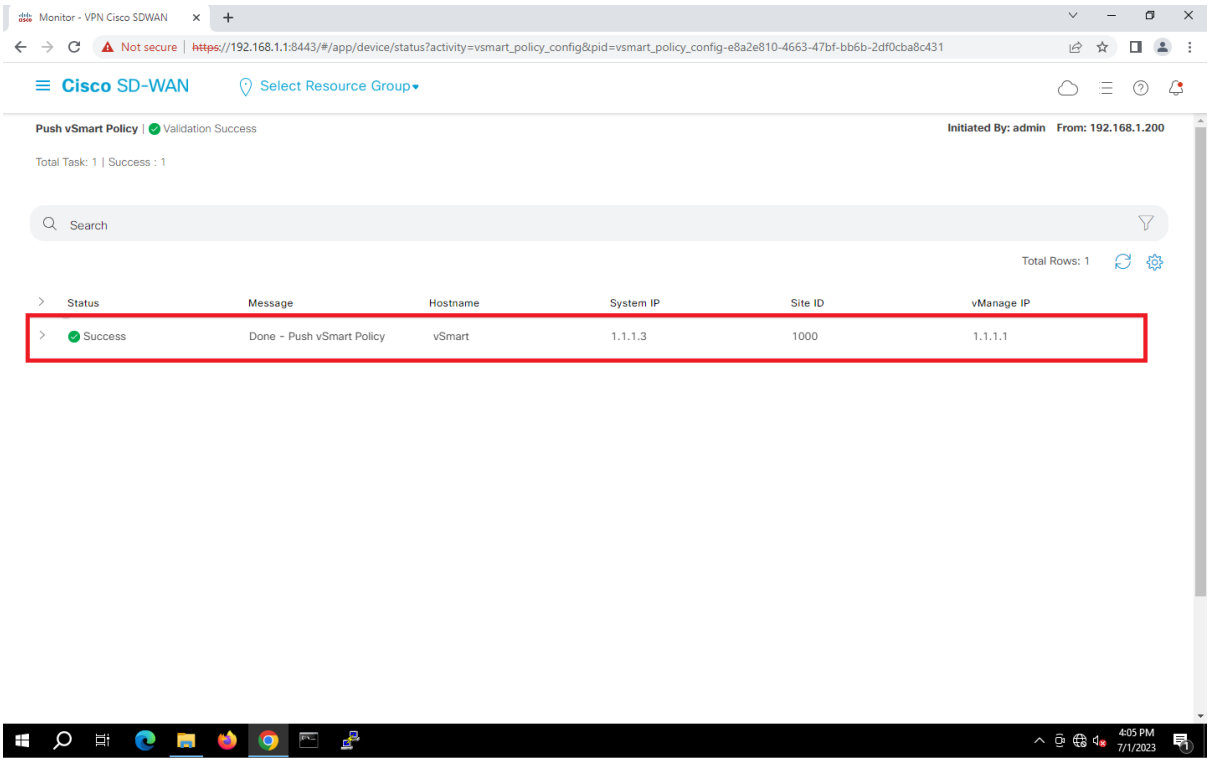
Chọn **Save Policy**

Bước cuối cùng ta kích hoạt policy vừa tạo đến các vEdge ở ba site

Tìm policy vừa tạo *User_Guest_VPN12,* chọn **Activate** để kích hoạt



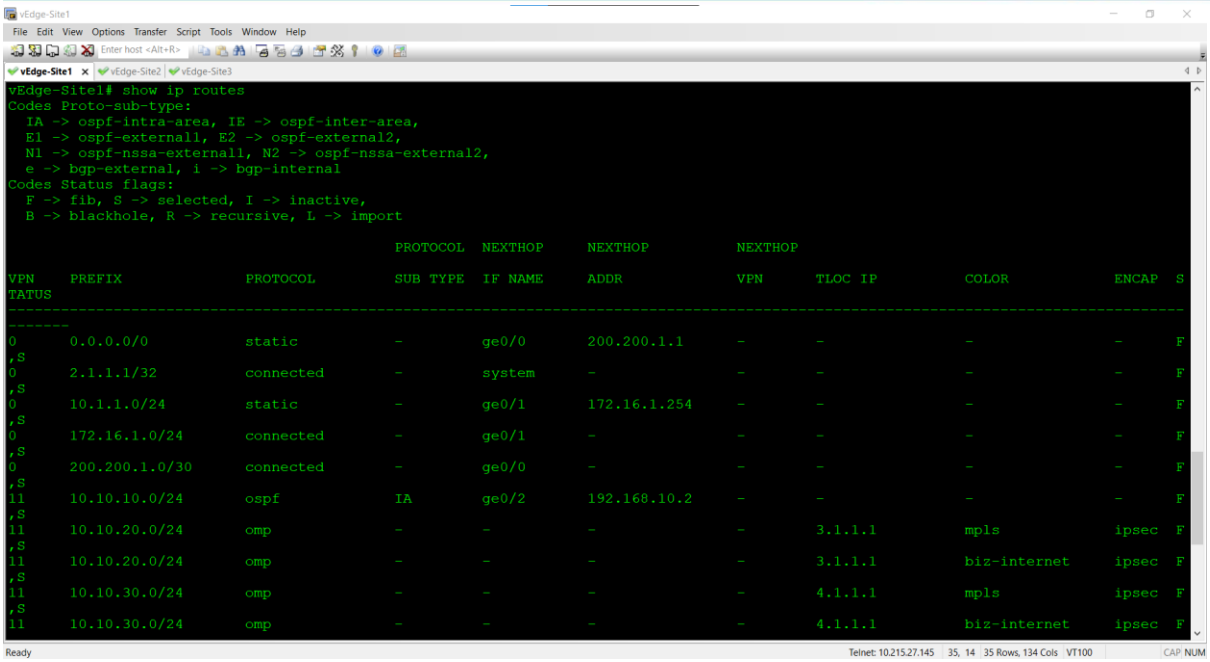




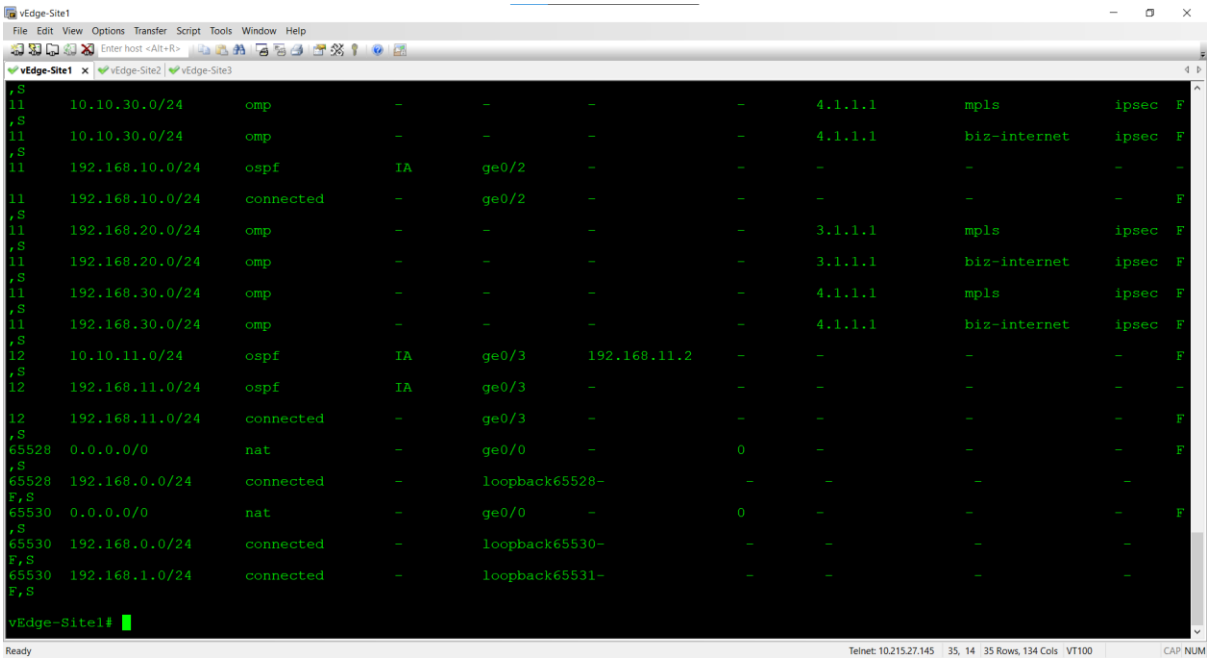
IV. Kiểm tra

Kiểm tra trên thiết bị vEdge ở ba site bằng lệnh **show ip routes**

vEdge SITE1 thì ta không thấy các route của VPN12 từ SITE2 và SITE3

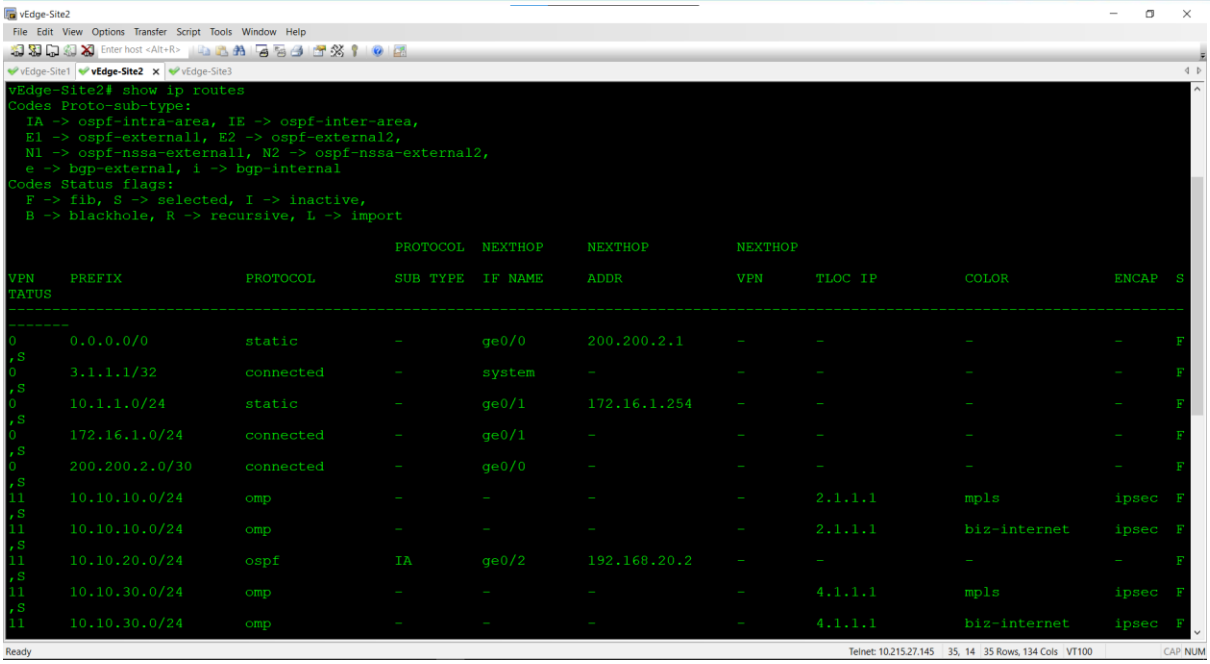


```
vEdge-Site1# show ip routes
Codes Proto-sub-type:
  IA -> ospf-intra-area, IE -> ospf-inter-area,
  E1 -> ospf-external1, E2 -> ospf-external2,
  N1 -> ospf-nssa-external1, N2 -> ospf-nssa-external2,
  e -> bgp-external, i -> bgp-internal
Codes Status flags:
  F -> fib, S -> selected, I -> inactive,
  B -> blackhole, R -> recursive, L -> import

                                    PROTOCOL  NEXTHOP     NEXTHOP          NEXTHOP
VPN     PREFIX              PROTOCOL  SUB TYPE  IF NAME     ADDR             VPN      TLOC IP          COLOR            ENCAP  S
TATUS
-------------------------------------------------------------------------------------------------------------------------------
-------
0       0.0.0.0/0           static    -         ge0/0       200.200.1.1      -        -                -                -      F
,S
0       2.1.1.1/32          connected -         system      -                -        -                -                -      F
,S
0       10.1.1.0/24         static    -         ge0/1       172.16.1.254     -        -                -                -      F
,S
0       172.16.1.0/24       connected -         ge0/1       -                -        -                -                -      F
,S
0       200.200.1.0/30      connected -         ge0/0       -                -        -                -                -      F
,S
11      10.10.10.0/24       ospf      IA        ge0/2       192.168.10.2     -        -                -                -      F
,S
11      10.10.20.0/24       omp       -         -           -                -        3.1.1.1          mpls             ipsec  F
,S
11      10.10.20.0/24       omp       -         -           -                -        3.1.1.1          biz-internet     ipsec  F
,S
11      10.10.30.0/24       omp       -         -           -                -        4.1.1.1          mpls             ipsec  F
,S
11      10.10.30.0/24       omp       -         -           -                -        4.1.1.1          biz-internet     ipsec  F
```

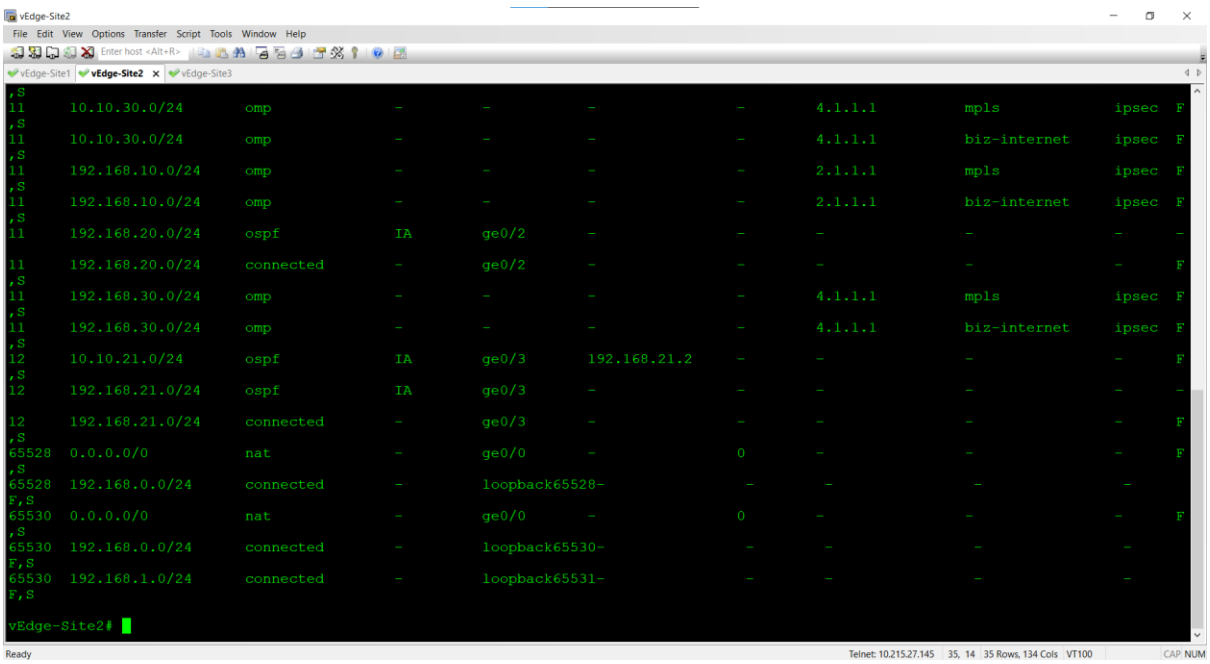


```
,S
11      10.10.30.0/24       omp       -         -           -                -        4.1.1.1          mpls             ipsec  F
,S
11      10.10.30.0/24       omp       -         -           -                -        4.1.1.1          biz-internet     ipsec  F
,S
11      192.168.10.0/24     ospf      IA        ge0/2       -                -        -                -                -      -

11      192.168.10.0/24     connected -         ge0/2       -                -        -                -                -      F
,S
11      192.168.20.0/24     omp       -         -           -                -        3.1.1.1          mpls             ipsec  F
,S
11      192.168.20.0/24     omp       -         -           -                -        3.1.1.1          biz-internet     ipsec  F
,S
11      192.168.30.0/24     omp       -         -           -                -        4.1.1.1          mpls             ipsec  F
,S
11      192.168.30.0/24     omp       -         -           -                -        4.1.1.1          biz-internet     ipsec  F
,S
12      10.10.11.0/24       ospf      IA        ge0/3       192.168.11.2     -        -                -                -      F
,S
12      192.168.11.0/24     ospf      IA        ge0/3       -                -        -                -                -      -

12      192.168.11.0/24     connected -         ge0/3       -                -        -                -                -      F
,S
65528   0.0.0.0/0           nat       -         ge0/0       -                0        -                -                -      F
,S
65528   192.168.0.0/24      connected -         loopback65528-                -        -                -                -
F,S
65530   0.0.0.0/0           nat       -         ge0/0       -                0        -                -                -      F
,S
65530   192.168.0.0/24      connected -         loopback65530-                -        -                -                -
F,S
65530   192.168.1.0/24      connected -         loopback65531-                -        -                -                -
F,S

vEdge-Site1#
```

vEdge SITE2 thì ta không thấy các route của VPN12 từ SITE1 và SITE3

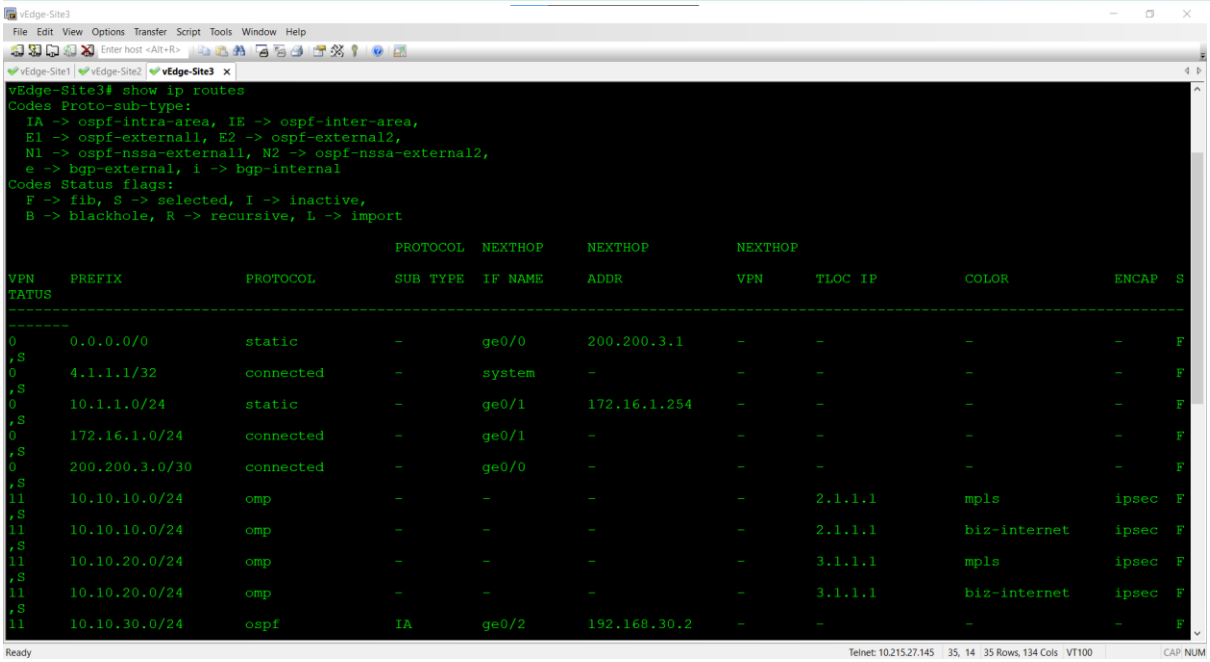


```
vEdge-Site2# show ip routes
Codes Proto-sub-type:
  IA -> ospf-intra-area, IE -> ospf-inter-area,
  E1 -> ospf-external1, E2 -> ospf-external2,
  N1 -> ospf-nssa-external1, N2 -> ospf-nssa-external2,
  e -> bgp-external, i -> bgp-internal
Codes Status flags:
  F -> fib, S -> selected, I -> inactive,
  B -> blackhole, R -> recursive, L -> import

                                    PROTOCOL  NEXTHOP     NEXTHOP          NEXTHOP
VPN     PREFIX              PROTOCOL        SUB TYPE  IF NAME     ADDR             VPN      TLOC IP          COLOR            ENCAP  S
TATUS
-------------------------------------------------------------------------------------------------------------------------------------
-------
0       0.0.0.0/0           static          -         ge0/0       200.200.2.1      -        -                -                -      F
,S
0       3.1.1.1/32          connected       -         system      -                -        -                -                -      F
,S
0       10.1.1.0/24         static          -         ge0/1       172.16.1.254     -        -                -                -      F
,S
0       172.16.1.0/24       connected       -         ge0/1       -                -        -                -                -      F
,S
0       200.200.2.0/30      connected       -         ge0/0       -                -        -                -                -      F
,S
11      10.10.10.0/24       omp             -         -           -                -        2.1.1.1          mpls             ipsec  F
,S
11      10.10.10.0/24       omp             -         -           -                -        2.1.1.1          biz-internet     ipsec  F
,S
11      10.10.20.0/24       ospf            IA        ge0/2       192.168.20.2     -        -                -                -      F
,S
11      10.10.30.0/24       omp             -         -           -                -        4.1.1.1          mpls             ipsec  F
,S
11      10.10.30.0/24       omp             -         -           -                -        4.1.1.1          biz-internet     ipsec  F
```

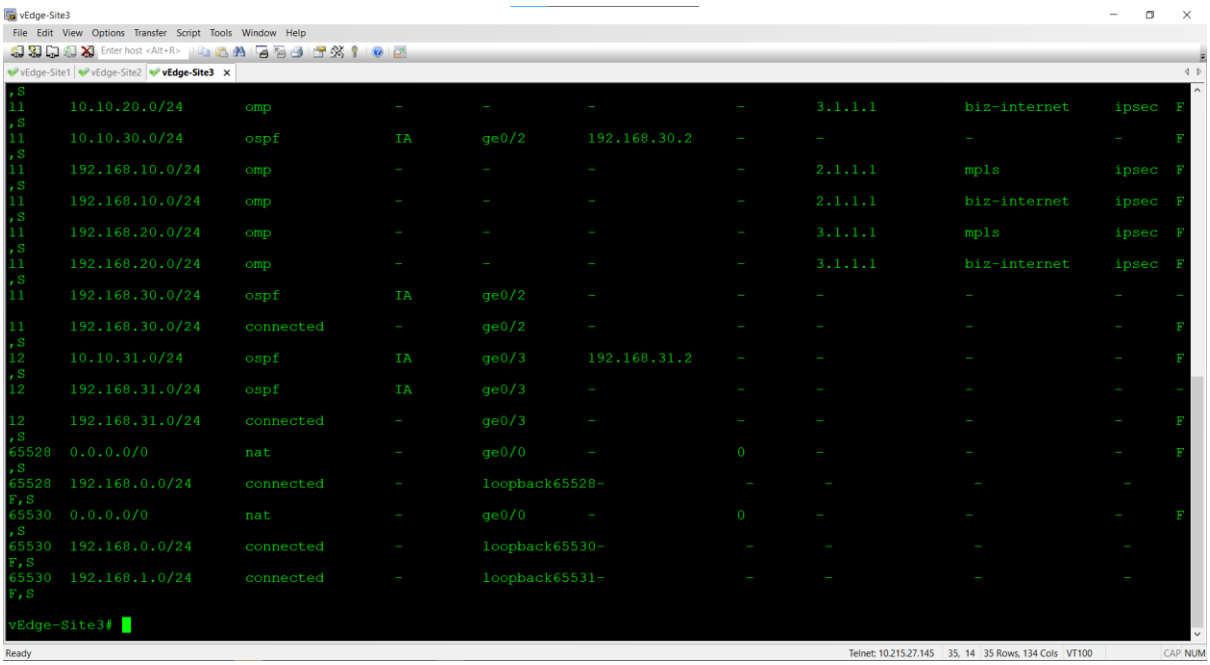


```
,S
11      10.10.30.0/24       omp             -         -           -                -        4.1.1.1          mpls             ipsec  F
,S
11      10.10.30.0/24       omp             -         -           -                -        4.1.1.1          biz-internet     ipsec  F
,S
11      192.168.10.0/24     omp             -         -           -                -        2.1.1.1          mpls             ipsec  F
,S
11      192.168.10.0/24     omp             -         -           -                -        2.1.1.1          biz-internet     ipsec  F
,S
11      192.168.20.0/24     ospf            IA        ge0/2       -                -        -                -                -      -

11      192.168.20.0/24     connected       -         ge0/2       -                -        -                -                -      F
,S
11      192.168.30.0/24     omp             -         -           -                -        4.1.1.1          mpls             ipsec  F
,S
11      192.168.30.0/24     omp             -         -           -                -        4.1.1.1          biz-internet     ipsec  F
,S
12      10.10.21.0/24       ospf            IA        ge0/3       192.168.21.2     -        -                -                -      F
,S
12      192.168.21.0/24     ospf            IA        ge0/3       -                -        -                -                -      -

12      192.168.21.0/24     connected       -         ge0/3       -                -        -                -                -      F
,S
65528   0.0.0.0/0           nat             -         ge0/0       -                0        -                -                -      F
,S
65528   192.168.0.0/24      connected       -         loopback65528-               -        -                -                -
F,S
65530   0.0.0.0/0           nat             -         ge0/0       -                0        -                -                -      F
,S
65530   192.168.0.0/24      connected       -         loopback65530-               -        -                -                -
F,S
65530   192.168.1.0/24      connected       -         loopback65531-               -        -                -                -
F,S

vEdge-Site2#
```

vEdge SITE3 thì ta không thấy các route của VPN12 từ SITE1 và SITE2

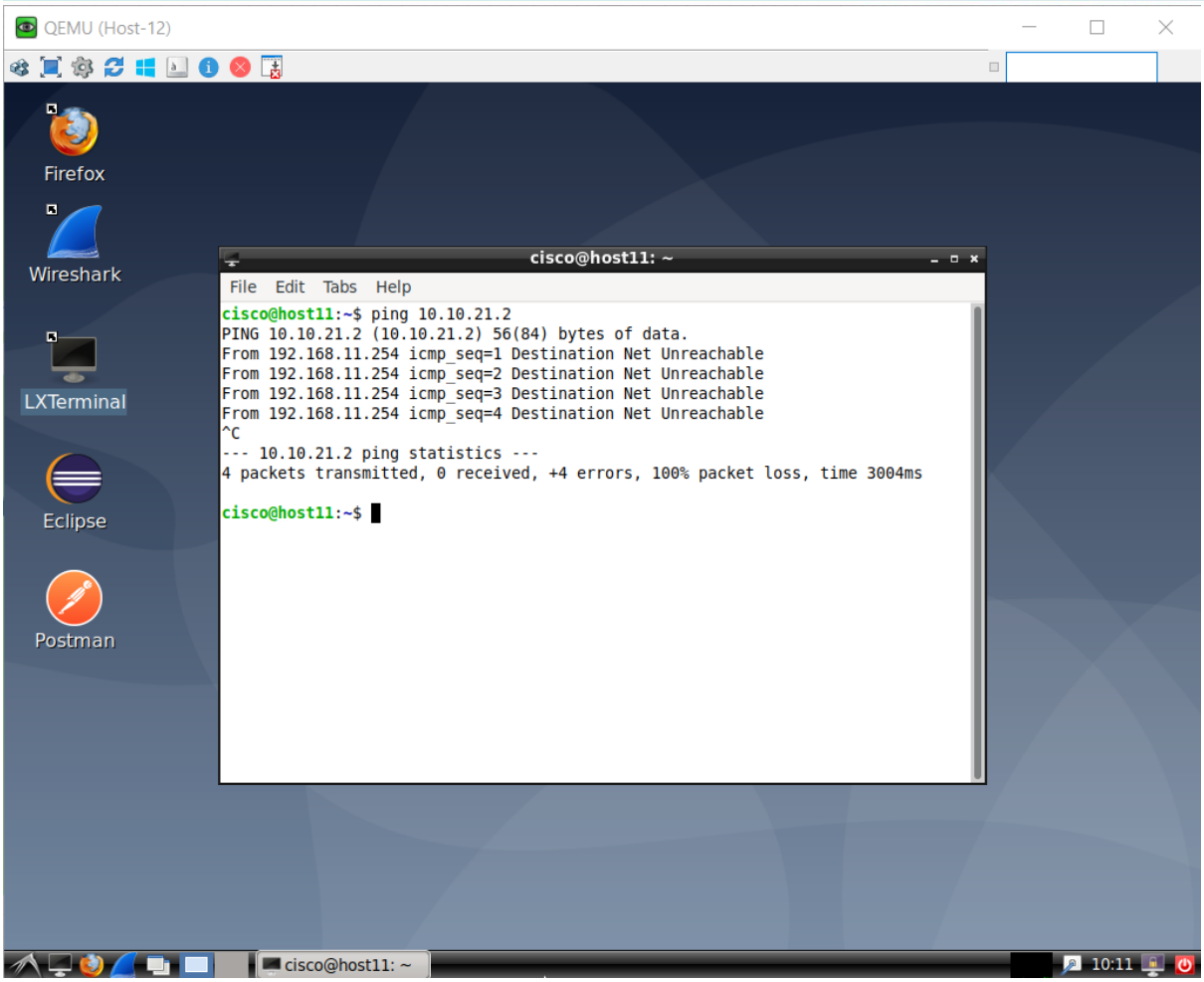


```
vEdge-Site3# show ip routes
Codes Proto-sub-type:
  IA -> ospf-intra-area, IE -> ospf-inter-area,
  E1 -> ospf-external1, E2 -> ospf-external2,
  N1 -> ospf-nssa-external1, N2 -> ospf-nssa-external2,
  e -> bgp-external, i -> bgp-internal
Codes Status flags:
  F -> fib, S -> selected, I -> inactive,
  B -> blackhole, R -> recursive, L -> import

                                    PROTOCOL  NEXTHOP     NEXTHOP          NEXTHOP
VPN     PREFIX              PROTOCOL        SUB TYPE  IF NAME     ADDR             VPN      TLOC IP          COLOR            ENCAP  S
TATUS
-------------------------------------------------------------------------------------------------------------------------------------
-------
0       0.0.0.0/0           static          -         ge0/0       200.200.3.1      -        -                -                -      F
,S
0       4.1.1.1/32          connected       -         system      -                -        -                -                -      F
,S
0       10.1.1.0/24         static          -         ge0/1       172.16.1.254     -        -                -                -      F
,S
0       172.16.1.0/24       connected       -         ge0/1       -                -        -                -                -      F
,S
0       200.200.3.0/30      connected       -         ge0/0       -                -        -                -                -      F
,S
11      10.10.10.0/24       omp             -         -           -                -        2.1.1.1          mpls             ipsec  F
,S
11      10.10.10.0/24       omp             -         -           -                -        2.1.1.1          biz-internet     ipsec  F
,S
11      10.10.20.0/24       omp             -         -           -                -        3.1.1.1          mpls             ipsec  F
,S
11      10.10.20.0/24       omp             -         -           -                -        3.1.1.1          biz-internet     ipsec  F
,S
11      10.10.30.0/24       ospf            IA        ge0/2       192.168.30.2     -        -                -                -      F
```

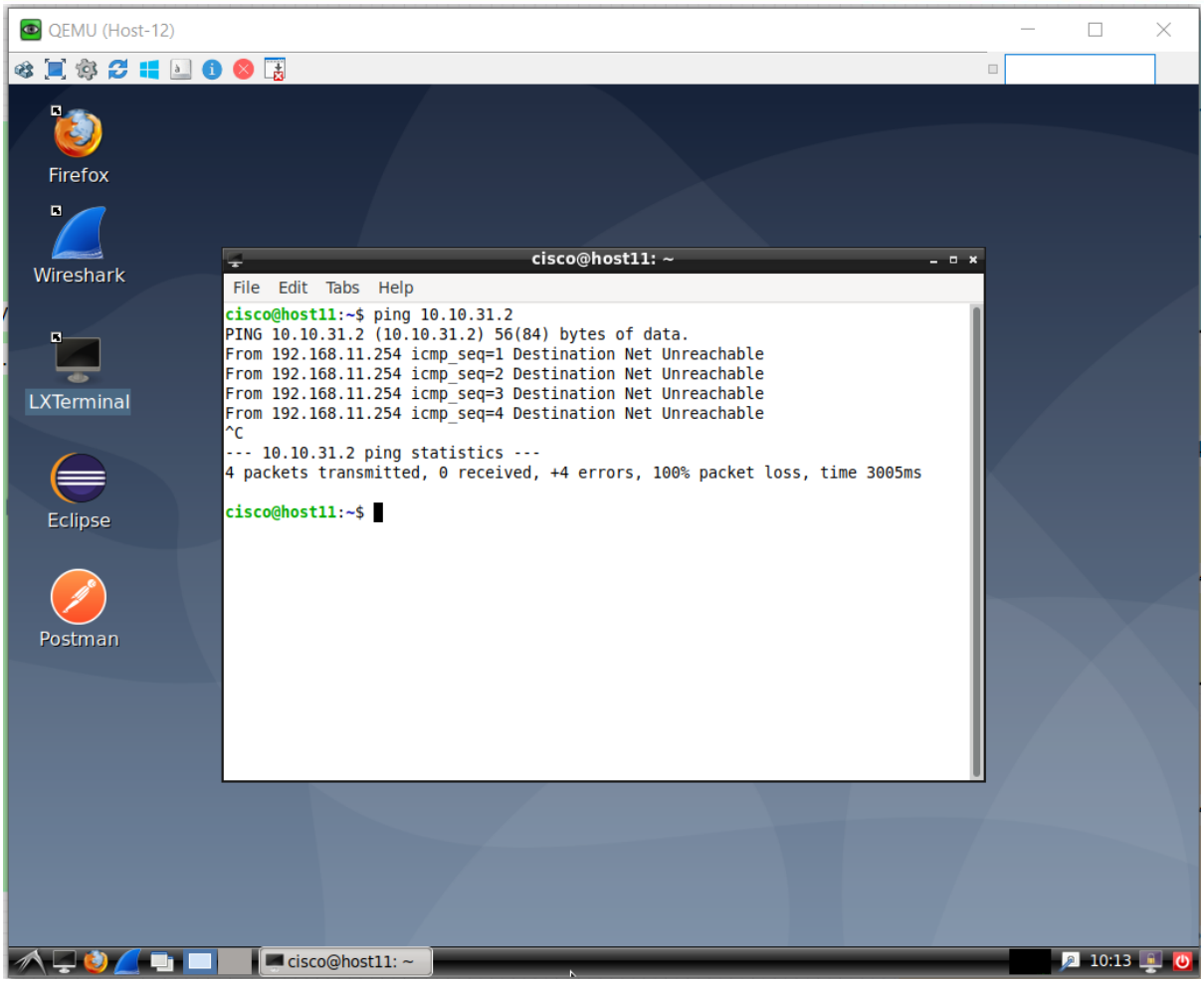


```
,S
11      10.10.20.0/24       omp             -         -           -                -        3.1.1.1          biz-internet     ipsec  F
,S
11      10.10.30.0/24       ospf            IA        ge0/2       192.168.30.2     -        -                -                -      F
,S
11      192.168.10.0/24     omp             -         -           -                -        2.1.1.1          mpls             ipsec  F
,S
11      192.168.10.0/24     omp             -         -           -                -        2.1.1.1          biz-internet     ipsec  F
,S
11      192.168.20.0/24     omp             -         -           -                -        3.1.1.1          mpls             ipsec  F
,S
11      192.168.20.0/24     omp             -         -           -                -        3.1.1.1          biz-internet     ipsec  F
,S
11      192.168.30.0/24     ospf            IA        ge0/2       -                -        -                -                -      -

11      192.168.30.0/24     connected       -         ge0/2       -                -        -                -                -      F
,S
12      10.10.31.0/24       ospf            IA        ge0/3       192.168.31.2     -        -                -                -      F
,S
12      192.168.31.0/24     ospf            IA        ge0/3       -                -        -                -                -      -

12      192.168.31.0/24     connected       -         ge0/3       -                -        -                -                -      F
,S
65528   0.0.0.0/0           nat             -         ge0/0       -                0        -                -                -      F
,S
65528   192.168.0.0/24      connected       -         loopback65528-                -        -                -                -
F,S
65530   0.0.0.0/0           nat             -         ge0/0       -                0        -                -                -      F
,S
65530   192.168.0.0/24      connected       -         loopback65530-                -        -                -                -
F,S
65530   192.168.1.0/24      connected       -         loopback65531-                -        -                -                -
F,S

vEdge-Site3#
```

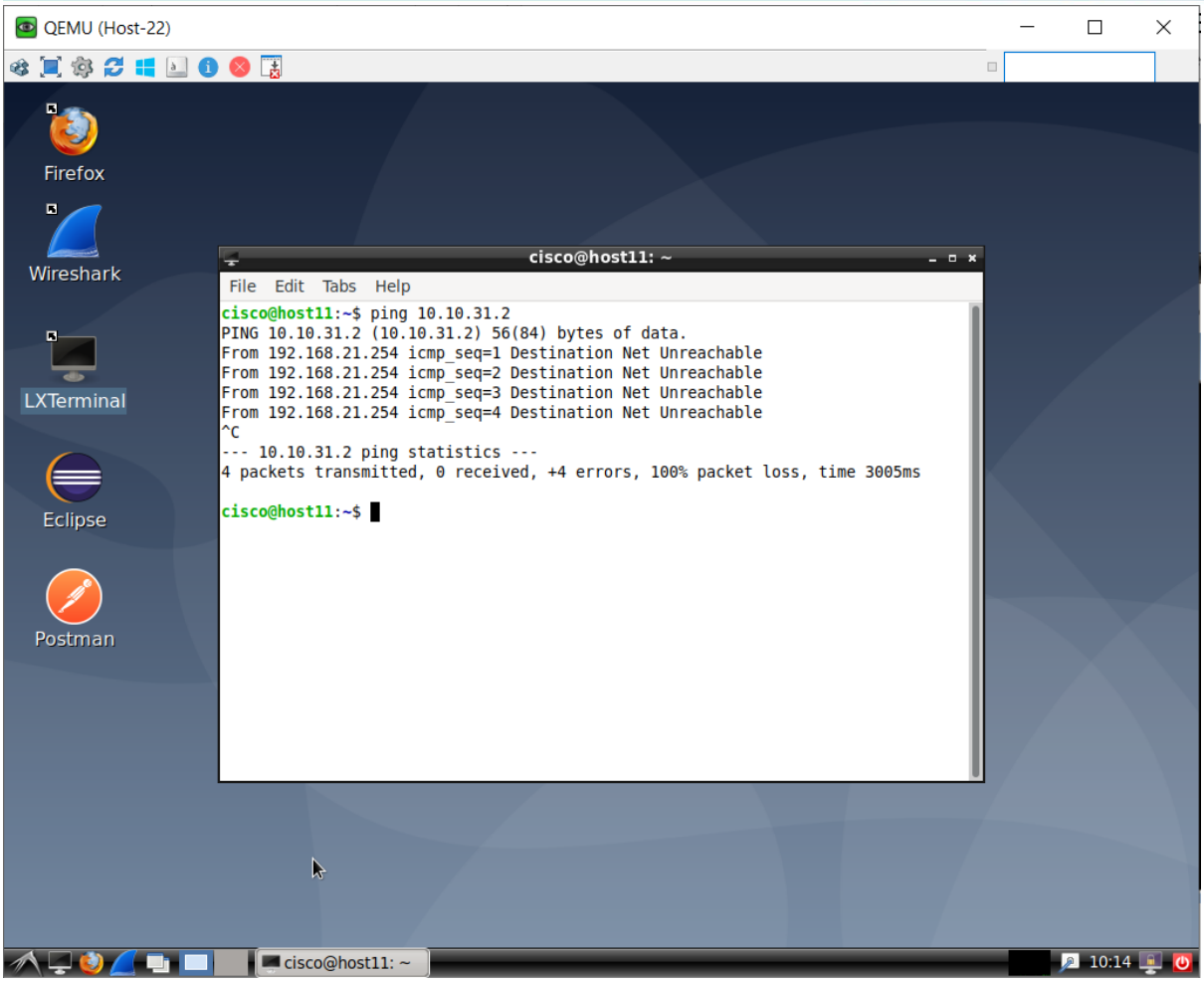
Thực hiện ping từ Host-12 của VPN12 ở site1 và Host-22 của VPN12 ở site2: thì ta thấy không biết đường đi do ta đã chặn giao tiếp giữa các site ở VPN12



Tương tự ping từ Host-12 của VPN12 ở site1 và Host-32 của VPN12 ở site3



Tương tự ping từ Host-22 của VPN12 ở site2 và Host-32 của VPN12 ở site3


QEMU (Host-22)
Firefox
Wireshark
LXTerminal
Eclipse
Postman
cisco@host11: ~
File Edit Tabs Help
cisco@host11:~$ ping 10.10.31.2
PING 10.10.31.2 (10.10.31.2) 56(84) bytes of data.
From 192.168.21.254 icmp_seq=1 Destination Net Unreachable
From 192.168.21.254 icmp_seq=2 Destination Net Unreachable
From 192.168.21.254 icmp_seq=3 Destination Net Unreachable
From 192.168.21.254 icmp_seq=4 Destination Net Unreachable
^C
--- 10.10.31.2 ping statistics ---
4 packets transmitted, 0 received, +4 errors, 100% packet loss, time 3005ms
cisco@host11:~$
cisco@host11: ~
10:14