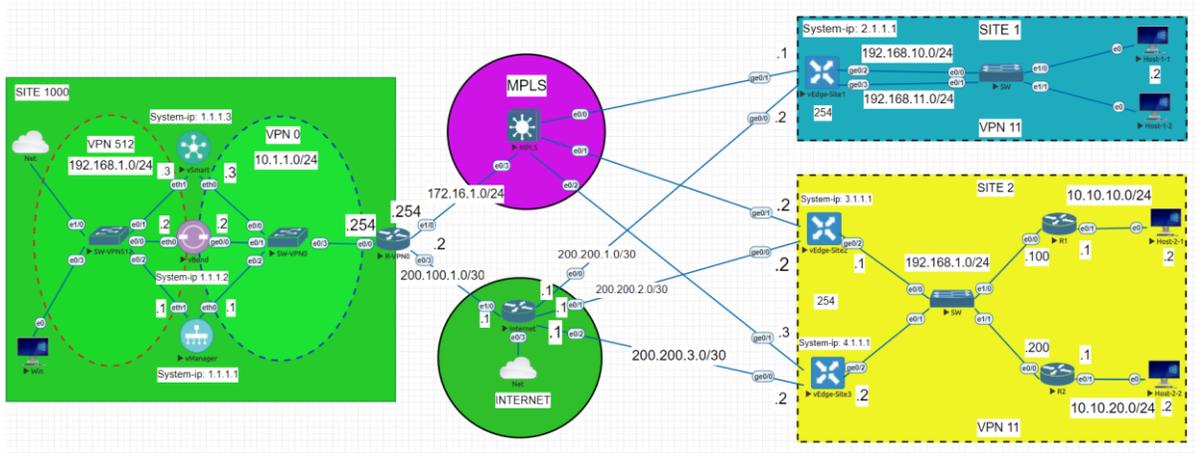


LAB - VIẾT TEMPLATE CẤU HÌNH GIAO THỨC DỰ PHÒNG ĐỊNH TUYẾN VRRP TRÊN SD-WAN

I. Sơ đồ



II. Yêu cầu kỹ thuật

Viết Template cấu hình VRRP trên cổng Ge0/2 thuộc VPN11 của Site 2

Tạo Device Template có chứa các Template VRRP

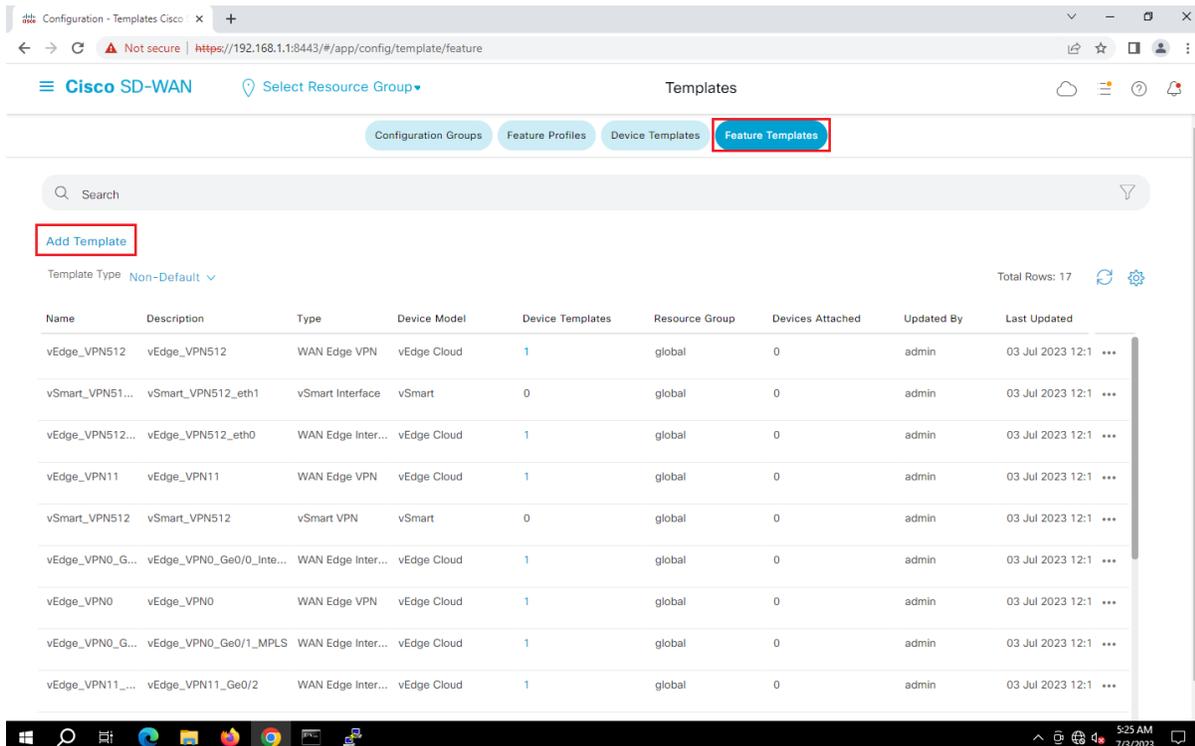
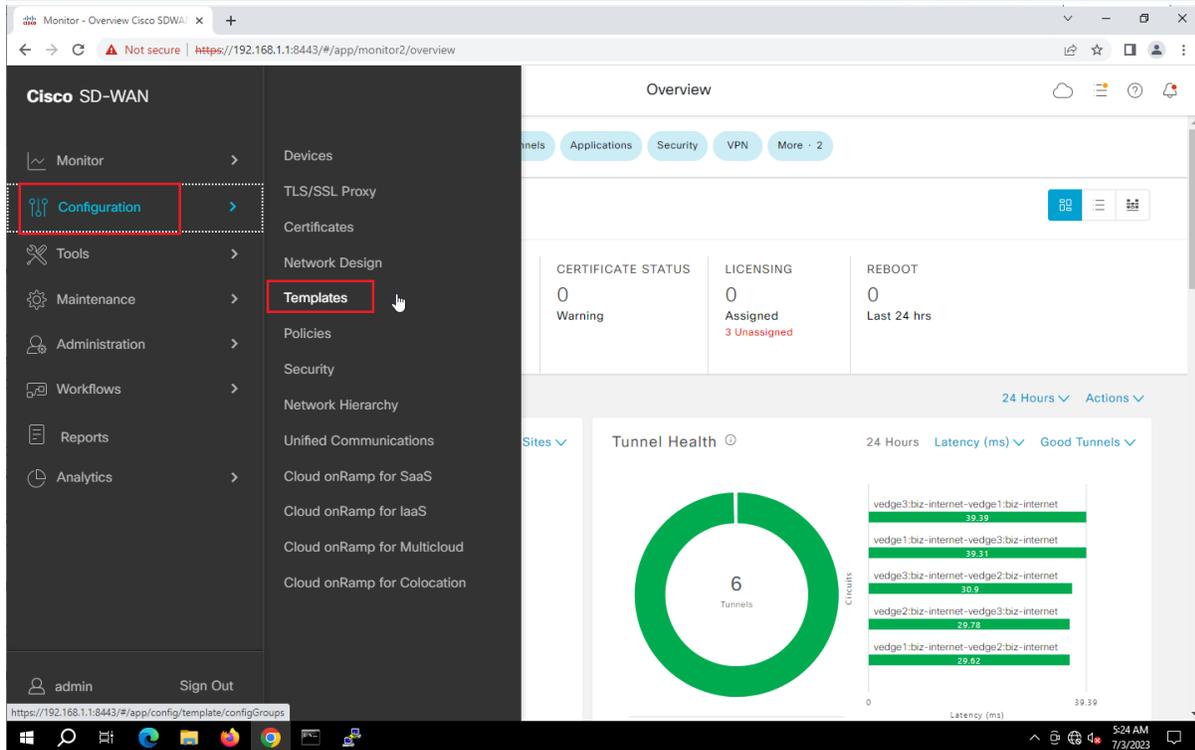
Đẩy cấu hình Device Template vừa viết xong.

Thực hiện kiểm tra bài Lab đã làm đúng như yêu cầu.

III. Các bước thực hiện

Viết Template cấu hình VRRP trên cổng Ge0/2 thuộc VPN11 của Site 2

Tạo Feature Template: `vEdge_VPN11_Ge0/2_VRRP`. 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 Interface Ethernet**

Configuration - Templates Cisco

Not secure | <https://192.168.1.1:8443/#/app/config/template/feature?display=add>

Cisco SD-WAN Select Resource Group Templates

Configuration Groups Feature Profiles Device Templates Feature Templates

Feature Template > Add Template

Select Devices

Search by device name

- ISRV
- vEdge 100
- vEdge 100 B
- vEdge 100 M
- vEdge 100 WM
- vEdge 1000
- vEdge 2000
- vEdge 5000
- vEdge Cloud
- vManage
- vSmart

VPN

- Secure Internet Gateway (SIG) WAN
- VPN WAN
- VPN Interface Bridge LAN
- VPN Interface Cellular WAN
- VPN Interface Ethernet** Management WAN LAN
- VPN Interface GRE WAN
- VPN Interface IPsec WAN
- VPN Interface NATPool WAN
- VPN Interface PPP WAN

Tiếp theo vào mục **VPN Interface Ethernet** ta cấu hình như sau:

Template Name: *vEdge_Site2_Ge0/2_VRRP*

Description: *vEdge_Site2_Ge0/2_VRRP*

Configuration - Templates Cisco

Not secure | <https://192.168.1.1:8443/#/app/config/template/feature?display=add&deviceType=vedge-cloud&templateType=vpn-vedge-interface>

Cisco SD-WAN Select Resource Group Templates

Configuration Groups Feature Profiles Device Templates Feature Templates

Feature Template > Add Template > VPN Interface Ethernet

Device Type vEdge Cloud

Template Name* vEdge_Site2_Ge0/2_VRRP

Description* vEdge_Site2_Ge0/2_VRRP

Basic Configuration Tunnel NAT VRRP ACL/QoS ARP 802.1X Advanced

BASIC CONFIGURATION

Shutdown Yes No

Interface Name

Description

Cancel Save

Sau đó, ở **BASIC CONFIGURATION** ta cấu hình như sau:

Configuration - Templates Cisco

Configuration Groups Feature Profiles Device Templates Feature Templates

Feature Template > Add Template > VPN Interface Ethernet

BASIC CONFIGURATION

Shutdown Yes No

Interface Name

Description

IPv4 IPv6

Dynamic Static

IPv4 Address

Secondary IP Address (Maximum: 4)

DHCP Helper

Cancel Save

Tiếp theo tới mục **VRRP** ta chọn **NEW VRRP** để tạo thêm VRRP

Configuration - Templates Cisco

Configuration Groups Feature Profiles Device Templates Feature Templates

Feature Template > Add Template > VPN Interface Ethernet

VRRP

IPv4 IPv6

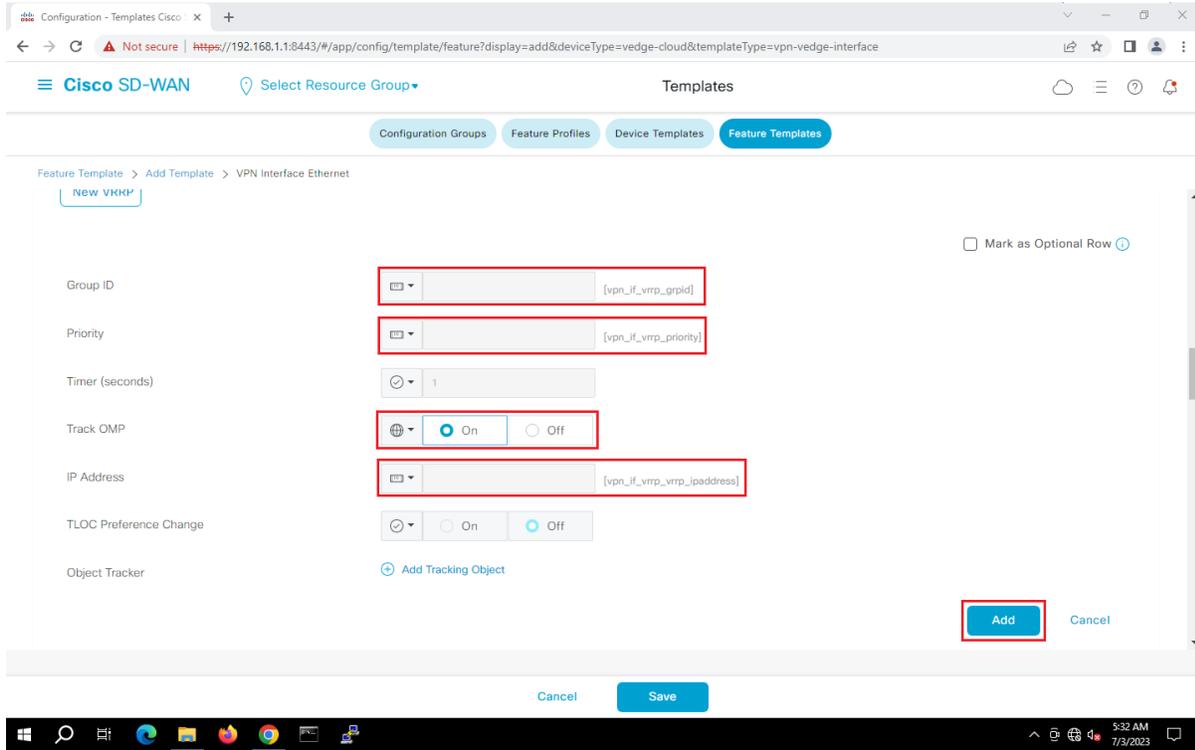
New VRRP

Optional	Group ID	Priority	Timer	Track OMP	Track Prefix List	IP Address	TL0C Preference Change	Action
No data available								

Cancel Save

Sau đó lần lượt cấu hình theo các thông số sau:

Group ID, Priority và IP Address lần lượt chọn Device Specific Track OMP >> ON



The screenshot shows the Cisco SD-WAN configuration interface for adding a new feature template. The interface is titled "Configuration - Templates Cisco" and shows the "Feature Templates" tab. The "Track OMP" field is set to "On". The "Group ID", "Priority", and "IP Address" fields are highlighted with red boxes, indicating they should be set to "Device Specific". The "Add" button is also highlighted with a red box.

Cuối cùng chọn **Save** để lưu template lại.

Viết Device Template

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

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

Chọn **Device Model (vEdge Cloud)**.

Name ...	Description	Type ...	Device Mode...	Device Role ...	Resource Group	Feature Templates	Draft Mode	Devices Attached	Updated By	Last Updated
vEdge...	vEdge_Site1	Feature	vEdge Cloud	SDWAN Edge	global	16	Disabled	1	admin	03 Jul 2023 12:1...

Nhập **Template Name** (vEdge_Site2_VRRP), **Description** (vEdge_Site2_VRRP).

Device Model* vEdge Cloud

Device Role* SDWAN Edge

Template Name* vEdge_Site2_VRRP

Description* vEdge_Site2_VRRP

Basic Information

System * Factory_Default_vEdge_System_Templ...

Logging* Factory_Default_Logging_Template_V01

Additional System Templates

- Archive
- NTP

Create Cancel

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

Ở phần **Transport and Management VPN** ta chọn các thông số như sau:

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

VPN: vEdge_VPN11

VPN Interface: vEdge_Site2_Ge0/2_VRRP

Configuration - Templates Cisco

Not secure | https://192.168.1.1:8443/#/app/config/template/device/feature

Cisco SD-WAN | Select Resource Group

Templates

Configuration Groups | Feature Profiles | **Device Templates** | Feature Templates

Service VPN

Search

0 Rows Selected **Add VPN** Remove VPN

Total Rows: 0

ID	Template Name	Sub-Templates
No data available		

Additional Templates

Create Cancel

5:38 AM 7/3/2023

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
a6127b89-5b47-4bb8-bbbc-cb16f... vEdge_VPN11	
56ee0c7d-b981-41d1-9e50-aa31... 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:

VPN Interface: vEdge_Site2_Ge0/2_VRRP + Sub-Templates

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 tạo template

Tiến hành **Attach Devices** và chọn các vEdge tương ứng.

Configuration - Templates Cisco

Not secure | https://192.168.1.1:8443/#/app/config/template/device

Cisco SD-WAN Select Resource Group Templates

Configuration Groups Feature Profiles **Device Templates** Feature Templates

Search

Create Template

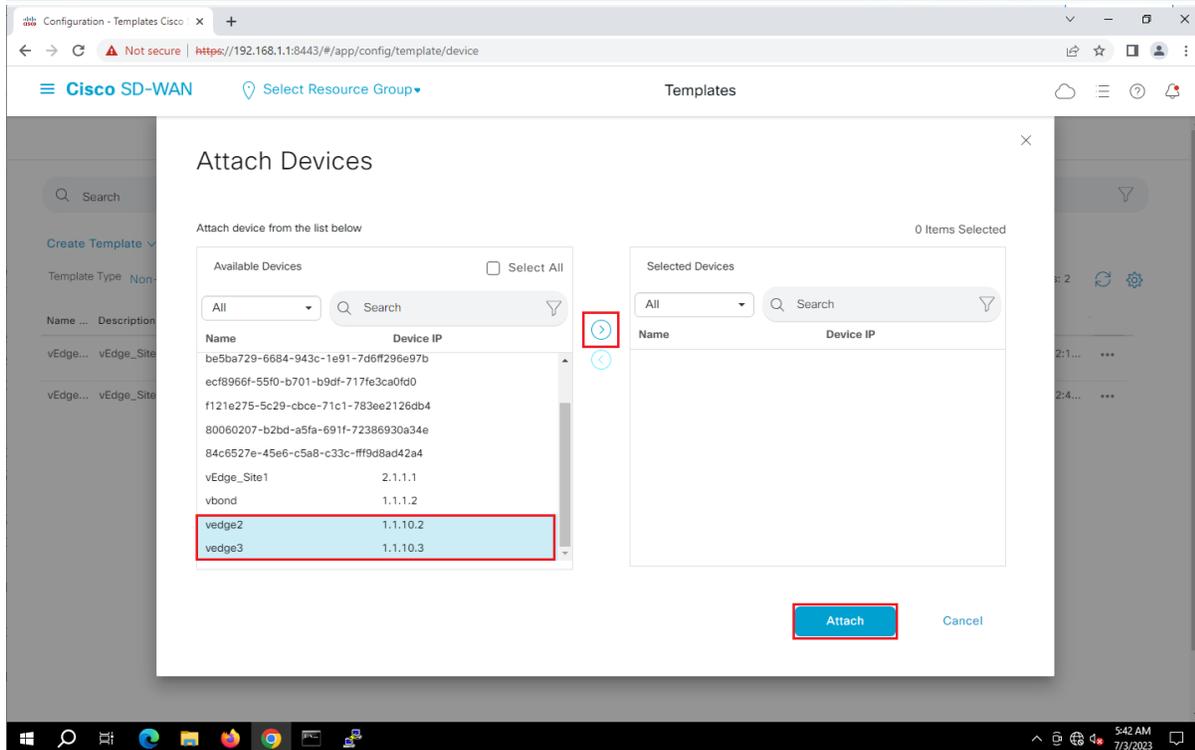
Template Type: Non-Default

Total Rows: 2

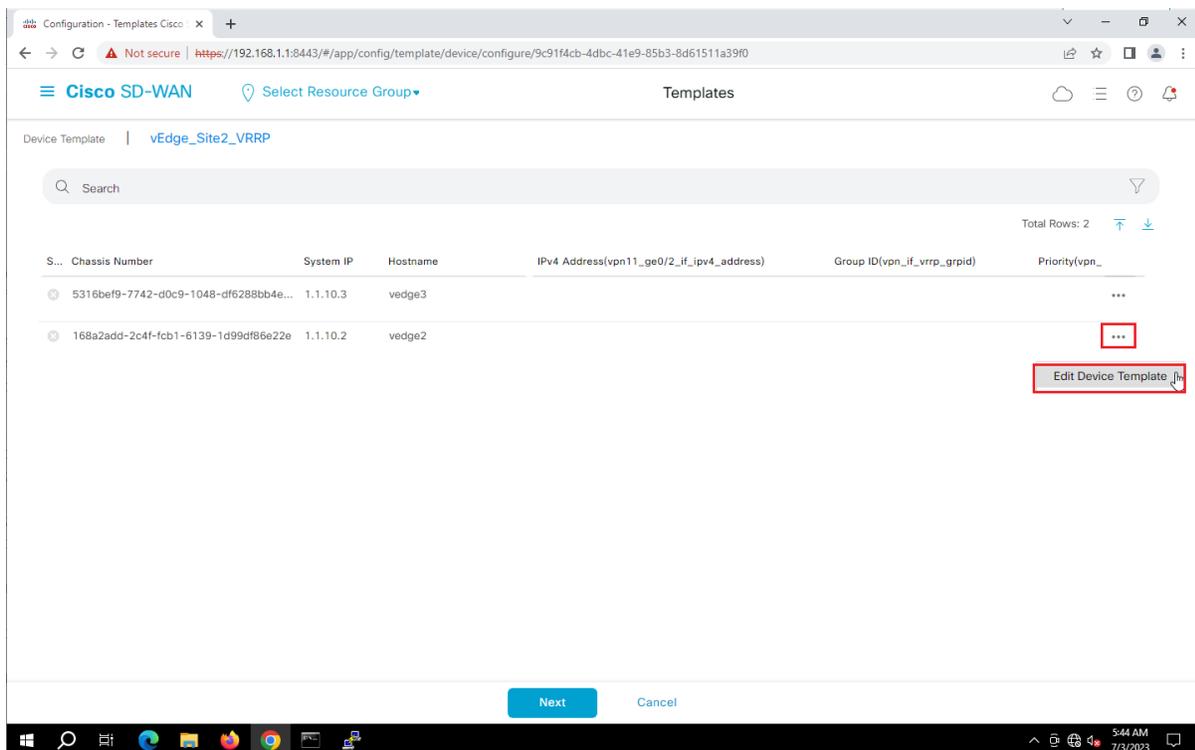
Name	Description	Type	Device Mode	Device Role	Resource Group	Feature Templates	Draft Mode	Devices Attached	Updated By	Last Updated
vEdge...	vEdge_Site1	Feature	vEdge Cloud	SDWAN Edge	global	16	Disabled	1	admin	03 Jul 2023 12:1...
vEdge...	vEdge_Site2_V...	Feature	vEdge Cloud	SDWAN Edge	global	13	Disabled	0	admin	03 Jul 2023 12:4...

Attach Devices

5:41 AM 7/3/2023



Tiến hành thêm các thông số lần lượt cho vEdge2 và vEdge3 như sau:



Configuration - Templates Cisco x +

Not secure | <https://192.168.1.1:8443/#/app/config/template/device/configure/9c91f4cb-4dbc-41e9-85b3-8d61511a39f0>

Cisco SD-WAN Select Resource Group Templates

Update Device Template

Device Template | vEdge_Site2_V

Search

S... Chassis Number

- 5316bef9-7742-d0c9-1048-df62
- 168a2add-2c4f-fcb1-6139-1d99

Variable List (Hover over each field for more information)

Chassis Number	168a2add-2c4f-fcb1-6139-1d99df86e22e
System IP	1.1.10.2
Hostname	vedge2
IPv4 Address(vpn11_ge0/2_if_ipv4_address)	192.168.1.1/24
Group ID(vpn_if_vrrp_grpid)	100
Priority(vpn_if_vrrp_priority)	120
IP Address(vpn_if_vrrp_ipaddress)	192.168.1.254
Address(vpn0_Internet_next_hop_ip_address_1)	200.200.2.1
IPv4 Address(vpn0_ge0/1_MPLS_if_ipv4_address)	172.16.1.2/24
IPv4 Address(vpn0_ge0/0_Internet_if_ipv4_address)	200.200.2.2/30
Hostname	vEdge1_Site2
System IP	3.1.1.1
Site ID	2

Generate Password Update Cancel

5:46 AM 7/3/2023

Configuration - Templates Cisco x +

Not secure | <https://192.168.1.1:8443/#/app/config/template/device/configure/9c91f4cb-4dbc-41e9-85b3-8d61511a39f0>

Cisco SD-WAN Select Resource Group Templates

Update Device Template

Device Template | vEdge_Site2_V

Search

S... Chassis Number

- 5316bef9-7742-d0c9-1048-df62
- 168a2add-2c4f-fcb1-6139-1d99

Variable List (Hover over each field for more information)

Chassis Number	5316bef9-7742-d0c9-1048-df6288bb4e56
System IP	1.1.10.3
Hostname	vedge3
IPv4 Address(vpn11_ge0/2_if_ipv4_address)	192.168.1.2/24
Group ID(vpn_if_vrrp_grpid)	100
Priority(vpn_if_vrrp_priority)	150
IP Address(vpn_if_vrrp_ipaddress)	192.168.1.254
Address(vpn0_Internet_next_hop_ip_address_1)	200.200.3.1
IPv4 Address(vpn0_ge0/1_MPLS_if_ipv4_address)	172.16.1.3/24
IPv4 Address(vpn0_ge0/0_Internet_if_ipv4_address)	200.200.3.2/30
Hostname	vEdge2_Site2
System IP	4.1.1.1
Site ID	2

Generate Password Update Cancel

5:48 AM 7/3/2023

Sau khi xong tiến hành đẩy cấu hình xuống cho thiết bị

Configuration - Templates Cisco x +

Not secure | https://192.168.1.1:8443/#/app/config/template/device/configure/9c91f4cb-4dbc-41e9-85b3-8d61511a39f0

Cisco SD-WAN Select Resource Group Templates

Device Template | vEdge_Site2_VRRP

Search

Total Rows: 2

S...	Chassis Number	System IP	Hostname	IPv4 Address(vpn11_ge0/2_if_ipv4_address)	Group ID(vpn_if_vrrp_grpid)	Priority(vpn_	
✓	5316bef9-7742-d0c9-1048-df6288bb4e...	1.1.10.3	vedge3	192.168.1.2/24	100	150	...
✓	168a2add-2c4f-fcb1-6139-1d99df86e22e	1.1.10.2	vedge2	192.168.1.1/24	100	120	...

Next Cancel

5:49 AM 7/3/2023

Configuration - Templates Cisco x +

Not secure | https://192.168.1.1:8443/#/app/config/template/device/configure/preview/9c91f4cb-4dbc-41e9-85b3-8d61511a39f0

Cisco SD-WAN Select Resource Group Templates

Device Template vEdge_Site2_VRRP Total 1

Device list (Total: 2 devices)

Filter/Search

5316bef9-7742-d0c9-1048-df6288bb4e56
vedge31.1.10.3

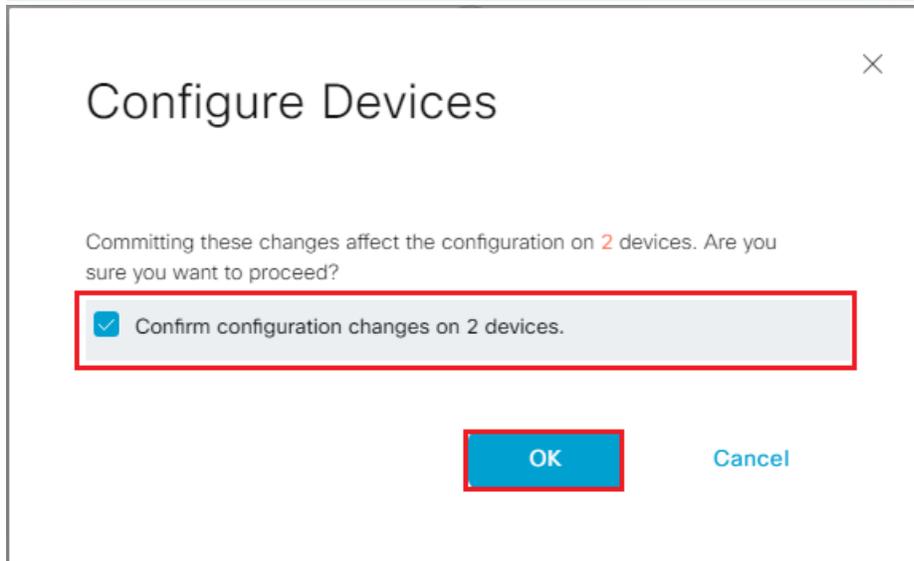
168a2add-2c4f-fcb1-6139-1d99df86e22e
vedge21.1.10.2

Please select a device from the device list

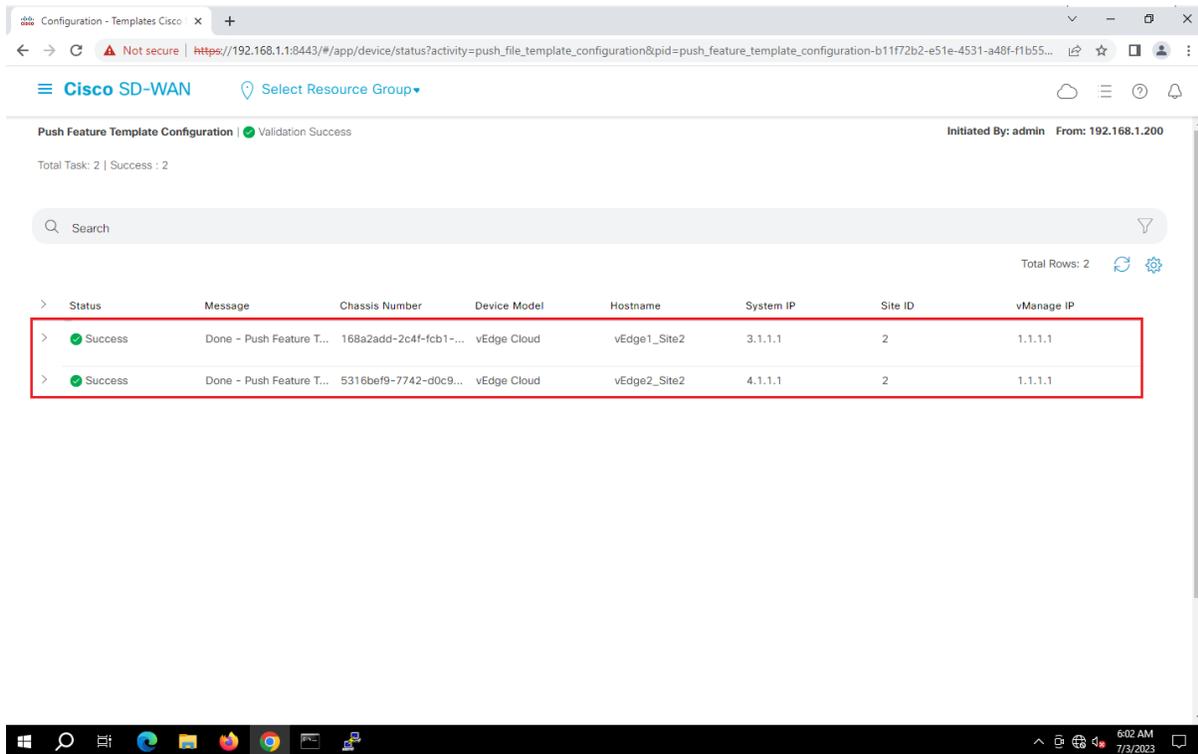
Configure Device Rollback Timer

Back Configure Devices Cancel

5:49 AM 7/3/2023



Quá trình áp cấu hình xuống cho thiết bị đã thành công



Tiến hành cấu hình cho thiết bị R1, R2 ở Site 2

R1:

ena

conf t

hostname R1

!

interface Ethernet0/0

```
ip address 192.168.1.100 255.255.255.0
duplex auto
!
interface Ethernet0/1
ip address 10.10.10.1 255.255.255.0
duplex auto
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
do wr
```

R2:

```
ena
conf t
hostname R2
!
interface Ethernet0/0
ip address 192.168.1.200 255.255.255.0
duplex auto
!
interface Ethernet0/1
ip address 10.10.20.1 255.255.255.0
duplex auto
!
ip route 0.0.0.0 0.0.0.0 192.168.1.254
do wr
```

Kiểm tra

Vào Monitor > Network > vEdge1_Site2 > Real Time > VRRP

Monitor - Devices Cisco SDWAN

Not secure | https://192.168.1.1:8443/#/app/monitor2/devices

Cisco SD-WAN

- Monitor
- Configuration
- Tools
- Maintenance
- Administration
- Workflows
- Reports
- Analytics

- Overview
- Devices
- Tunnels
- Applications
- Security
- VPN
- Logs
- Multicloud
- Geography
- SD-AVC Cloud Connector

admin Sign Out

Items per page: 25 1 - 13 of 13

Status	Count 1	Count 2	Count 3	Date	Progress	Percentage
↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-	...
↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-	...
↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-	...
↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-	...
↑	1/1	0/-	Jul 01, 2023 09:15 PM	3.54%	...	
↑	0/0	0/-	Jul 01, 2023 09:15 PM	1.45%	...	
↑	0/0	0/-	Jul 01, 2023 09:15 PM	0.36%	...	
↑	2/2	4/4	Jul 01, 2023 09:15 PM	2.16%	...	
↑	2/2	2/2	Jul 01, 2023 09:15 PM	2.03%	...	
↑	2/2	2/2	Jul 01, 2023 09:15 PM	2.03%	...	

Monitor - Devices Cisco SDWAN

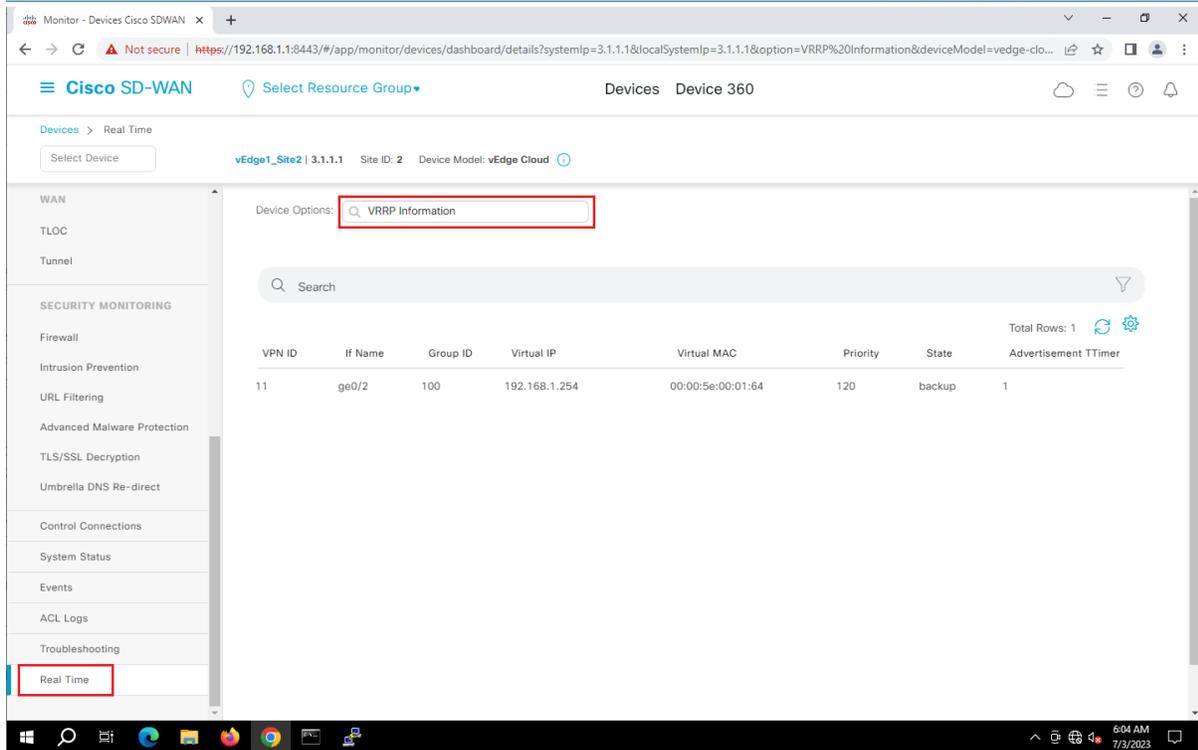
Not secure | https://192.168.1.1:8443/#/app/monitor2/devices

Cisco SD-WAN Select Resource Group All Sites

Devices

Name	Type	Count 1	Count 2	IP	Status	Count 3	Count 4	Date	Progress	Percentage
vEdge Cloud	vEdge Cloud	-	-		↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-
vEdge Cloud	vEdge Cloud	-	-		↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-
vEdge Cloud	vEdge Cloud	-	-		↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-
vEdge Cloud	vEdge Cloud	-	-		↓	-/-	-/-	Jan 01, 1970 07:00 AM	-	-
vmanage	vManage	1000	1.1.1.1		↑	1/1	0/-	Jul 01, 2023 09:15 PM	3.54%	...
vbond	vBond (vEdge Cloud)	1000	1.1.1.2		↑	0/0	0/-	Jul 01, 2023 09:15 PM	1.45%	...
vsmart	vSmart	1000	1.1.1.3		↑	0/0	0/-	Jul 01, 2023 09:15 PM	0.36%	...
vEdge_Site1	vEdge Cloud	1	2.1.1.1		↑	2/2	4/4	Jul 01, 2023 09:15 PM	2.16%	...
vEdge1_Site2	vEdge Cloud	2	3.1.1.1		↑	2/2	2/2	Jul 01, 2023 09:15 PM	2.03%	...
vEdge2_Site2	vEdge Cloud	2	4.1.1.1		↑	2/2	2/2	Jul 01, 2023 09:15 PM	2.03%	...

Items per page: 25 1 - 13 of 13



The screenshot shows the Cisco SD-WAN Monitor interface for Device 360. The left sidebar contains navigation options: WAN, TLOC, Tunnel, SECURITY MONITORING (Firewall, Intrusion Prevention, URL Filtering, Advanced Malware Protection, TLS/SSL Decryption, Umbrella DNS Re-direct, Control Connections, System Status, Events, ACL Logs, Troubleshooting, and Real Time). The main content area displays 'Device Options' with a search bar containing 'VRRP Information'. Below this is a table with the following data:

VPN ID	If Name	Group ID	Virtual IP	Virtual MAC	Priority	State	Advertisement TTimer
11	ge0/2	100	192.168.1.254	00:00:5e:00:01:64	120	backup	1

Trên CLI

Ta dùng lệnh *Show VRRP*

```
vEdge1_Site2# show vrrp
vrrp vpn 11
  interfaces ge0/2
  groups 100
  virtual-ip          192.168.1.254
  virtual-mac         00:00:5e:00:01:64
  priority             120
  real-priority        120
  vrrp-state           backup
  omp-state            up
  advertisement-timer 1
  primary-down-timer  3
  last-state-change-time 2023-07-03T05:50:59+00:00
vEdge1_Site2#
```

```
vEdge2_Site2# show vrrp
vrrp vpn 11
  interfaces ge0/2
  groups 100
  virtual-ip          192.168.1.254
  virtual-mac        00:00:5e:00:01:64
  priority            150
  real-priority       150
  vrrp-state          primary
  omp-state           up
  advertisement-timer 1
  primary-down-timer  3
  last-state-change-time 2023-07-03T05:51:00+00:00
vEdge2_Site2#
```

Từ Router **R1** ping tới IP của router ảo với địa chỉ là **192.168.1.254**

```
R1#ping 192.168.1.254
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.254, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 21/32/56 ms
R1#
```

Traceroute trên R11 cũng đang đi qua vEdge2_Site2 đang vai trò là Master

```
R1#traceroute 192.168.10.254
Type escape sequence to abort.
Tracing the route to 192.168.10.254
VRF info: (vrf in name/id, vrf out name/id)
 1 192.168.1.2 17 msec 16 msec 20 msec
 2 192.168.10.254 61 msec 66 msec 72 msec
R1#
```