

使用vManage功能模板配置TLOC擴展

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簡介

本文檔介紹如何使用vManage功能模板配置TLOC Extension。

必要條件

需求

思科建議您瞭解以下主題：

- vManage功能模板的使用
- 必須在vManage上成功登入兩(2)個vEdge裝置

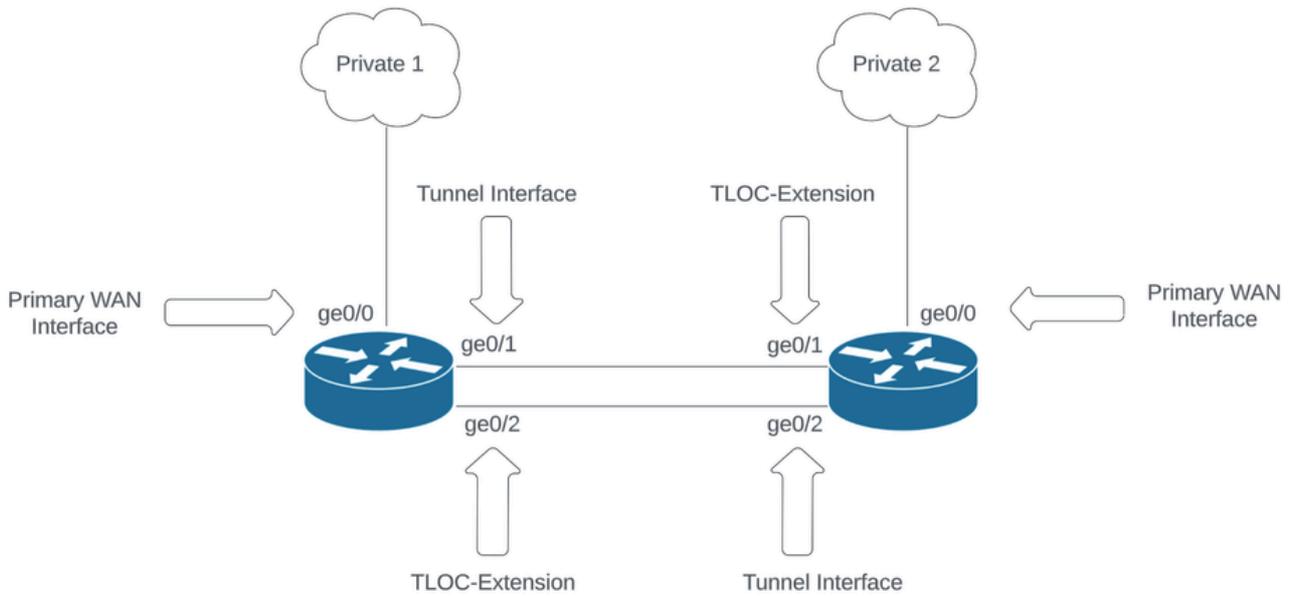
採用元件

本文中的資訊係根據以下軟體和硬體版本：

- 思科vManage 20.6.3版
- vEdge 20.6.3

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

網路圖表



網路拓撲

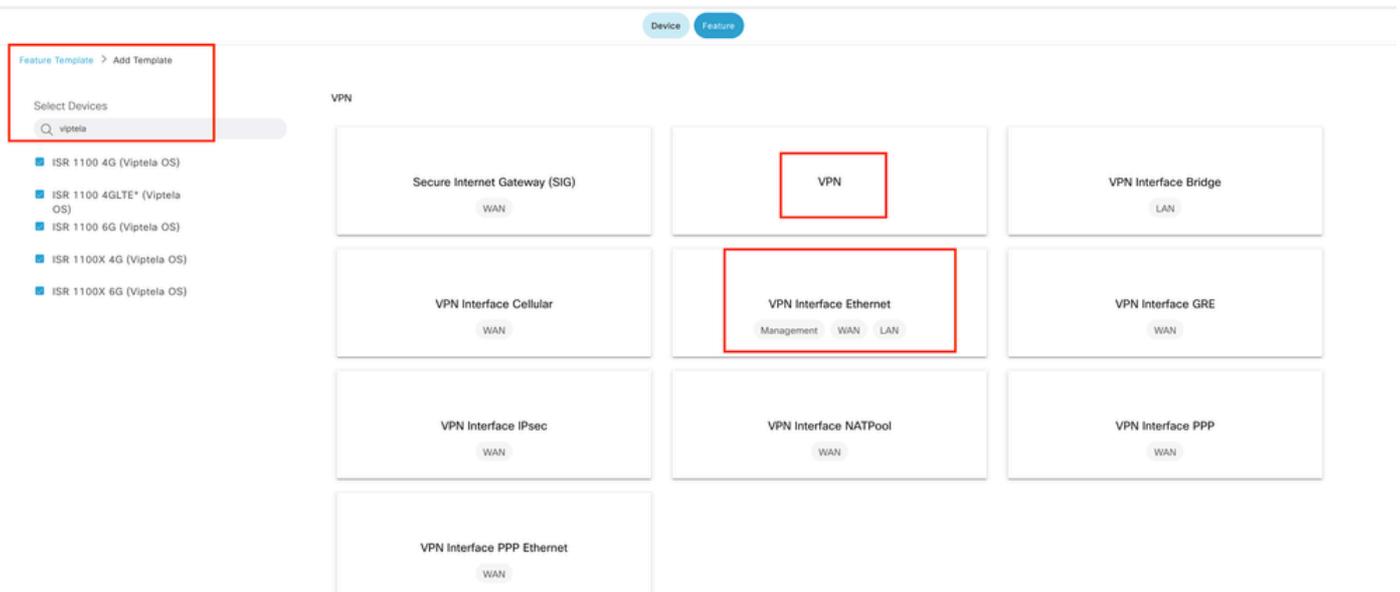
組態

本文檔假定您已配置了其餘功能模板。相同的功能模板工作流適用於Cisco IOS® XE SD-WAN裝置。

共建立4個功能模板以應用於vEdge裝置模板。

VPN功能模板

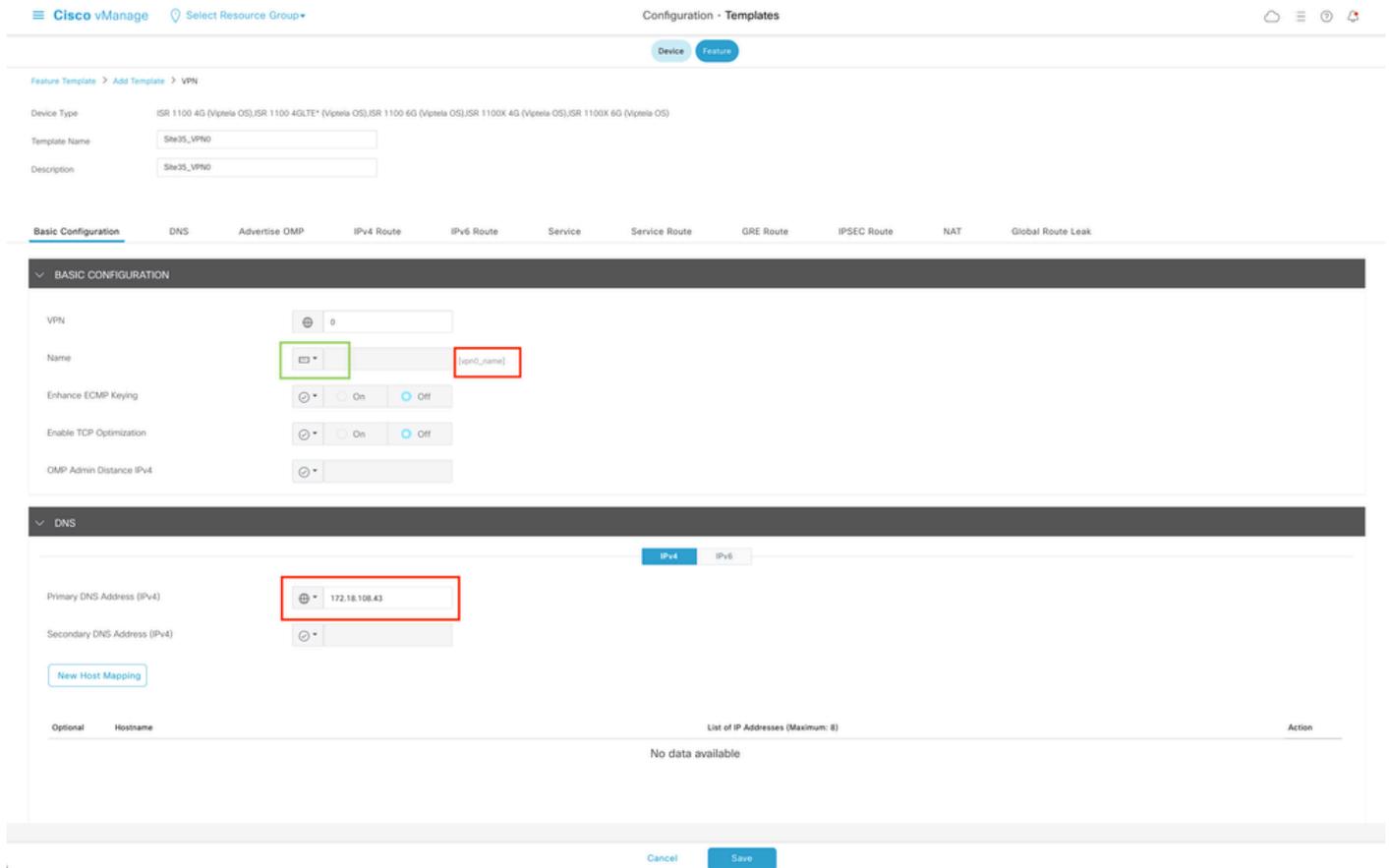
此功能模板包括VPN 0、VPN介面乙太網 (主WAN連線)、VPN介面乙太網 (隧道/NoTlocExt) 和VPN介面乙太網(TlocExt/NoTunnel)：



VPN功能模板

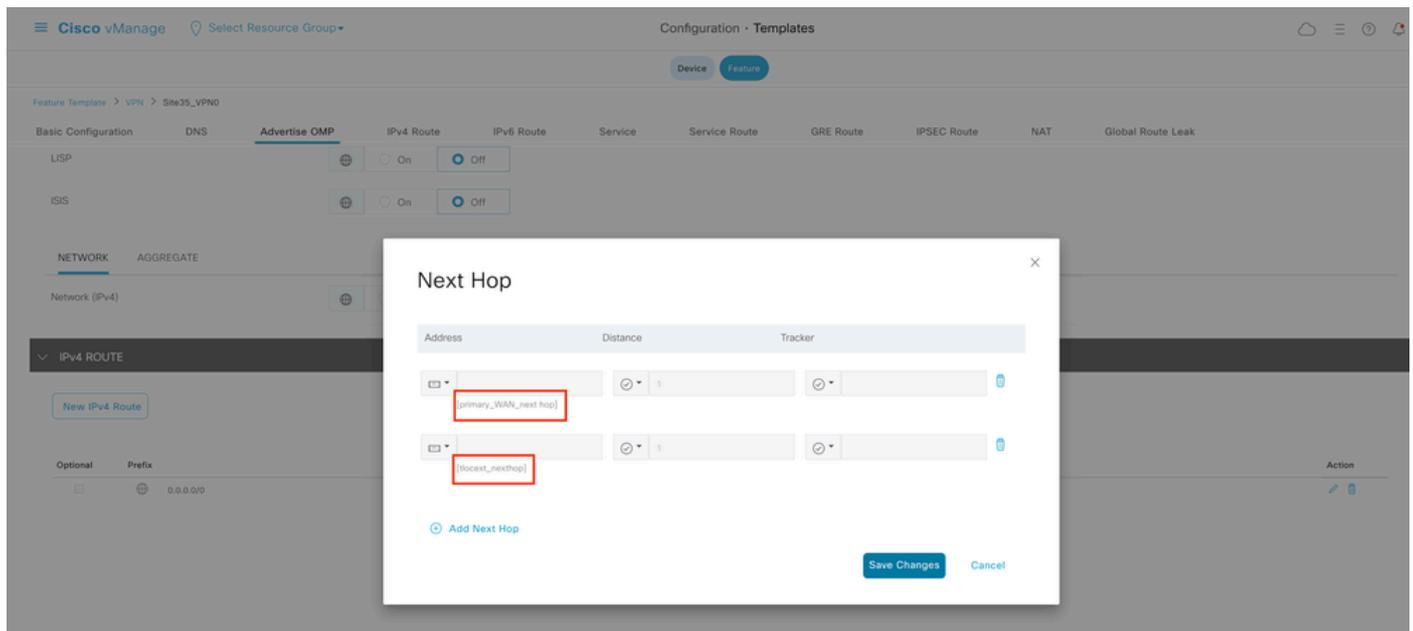
建立特徵範本的步驟：

1. VPN 0：在基本配置部分選擇傳輸VPN的特定裝置值，並在DNS部分增加DNS伺服器地址：

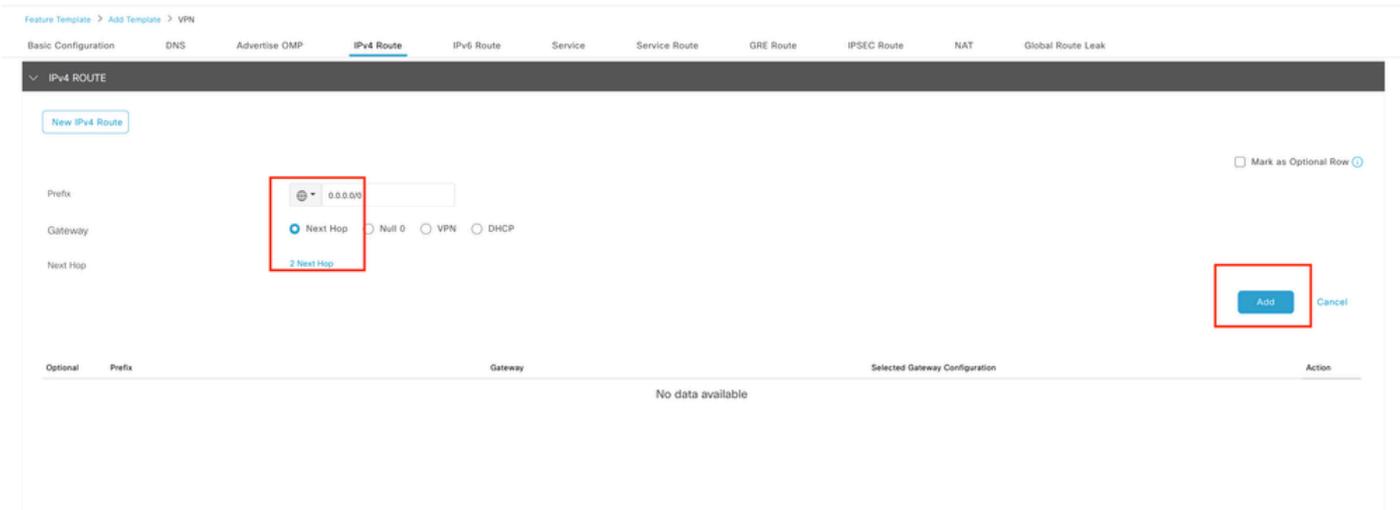


VPN 0功能模板基本配置

在IPv4路由部分中，為2個下一跳地址（主WAN和TLOC-EXT）增加帶有特定裝置值的字首：

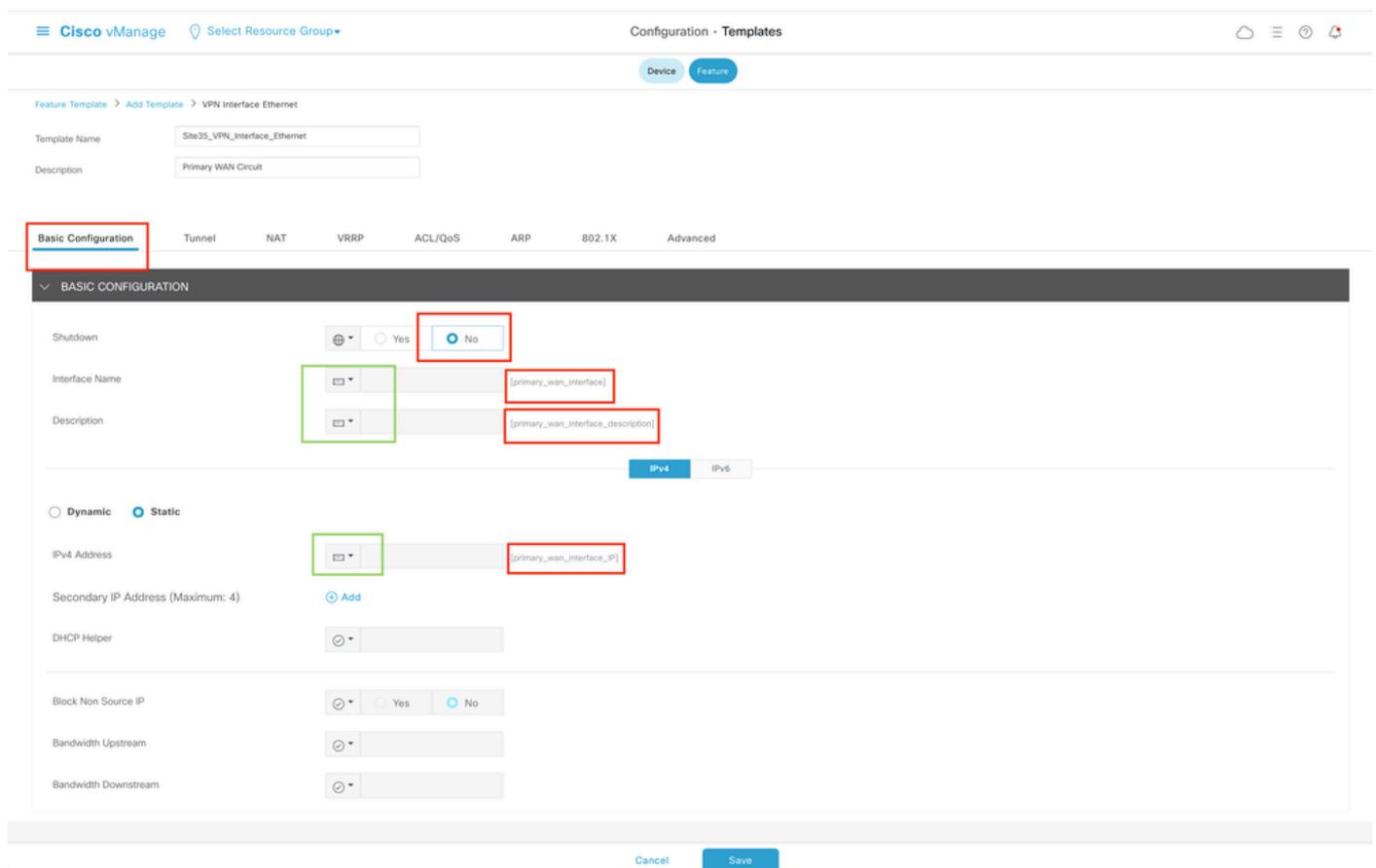


VPN 0功能模板IPv4路由



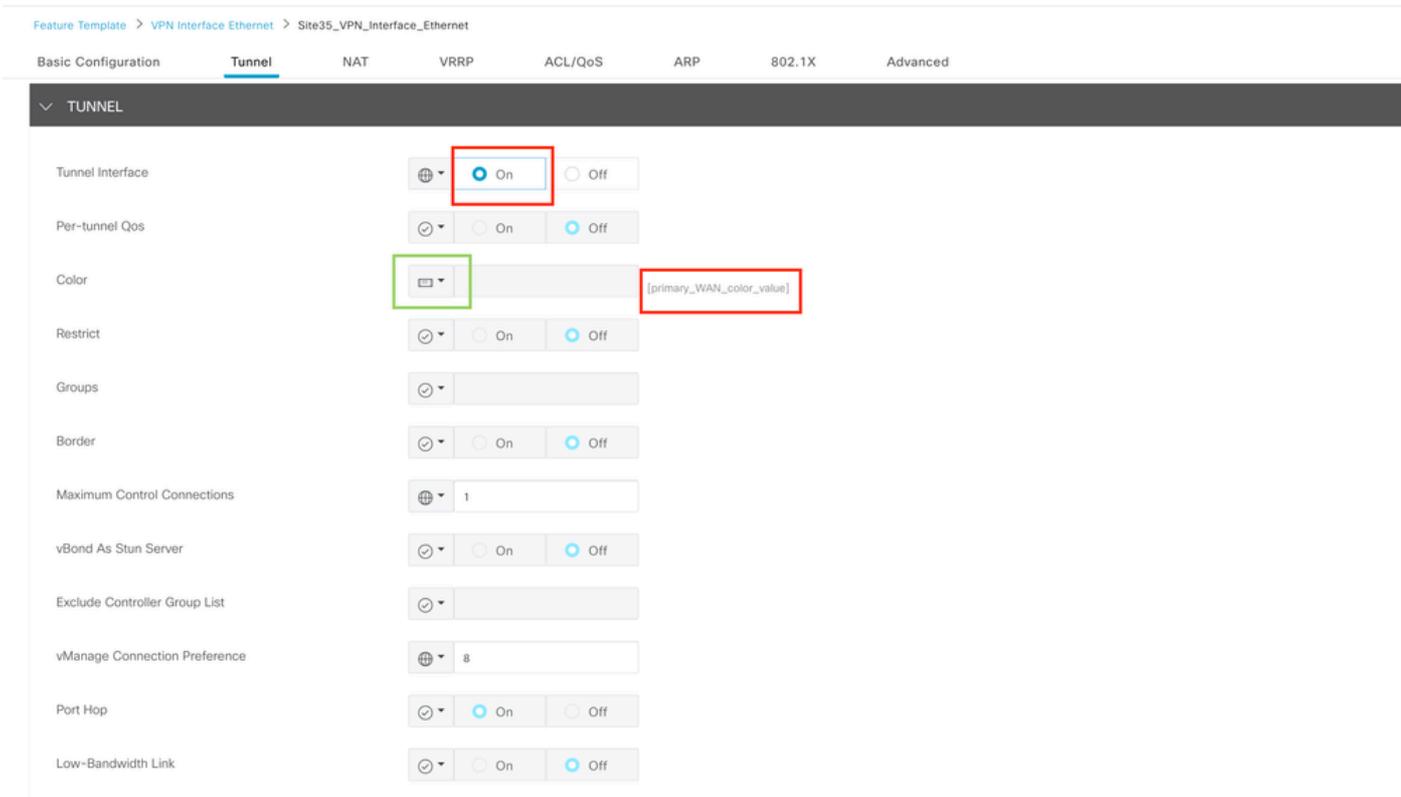
VPN 0 功能模板 IPv4 路由由下一跳

2. VPN 介面乙太網 (主 WAN 連線) : 確保介面處於 no shutdown 狀態。為介面名稱、說明和 IP 地址選擇特定的裝置值 :



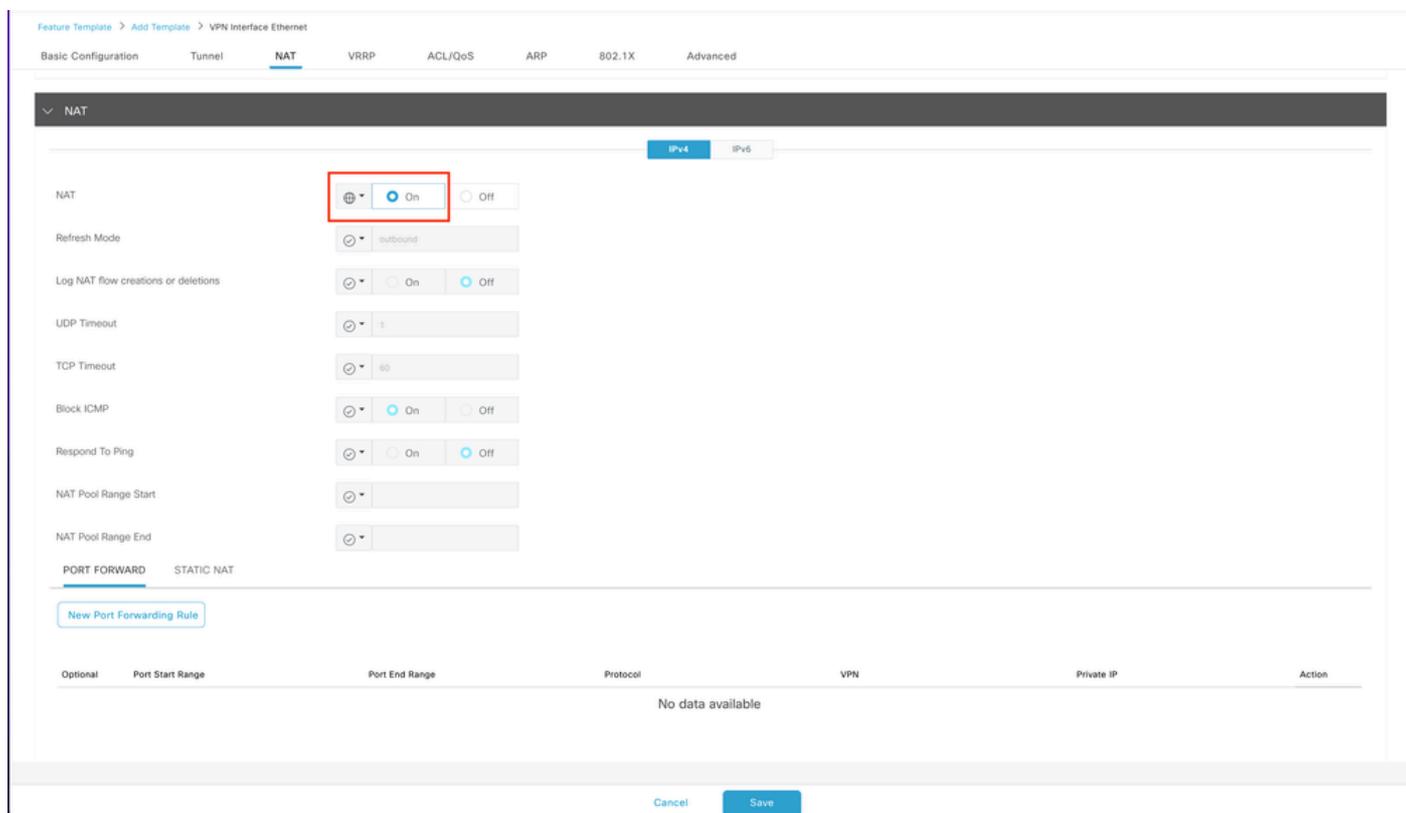
主要 WAN 介面功能模板基本配置

確保將隧道介面設定為 ON。選擇主要 WAN 顏色的特定裝置值 :



VPN 0功能模板隧道介面

確保公共WAN介面的NAT設定為ON：



VPN 0介面模板NAT

3. VPN介面乙太網 (TLOC-EXT/NO隧道介面)：確保TLOC-Ext介面處於no shutdown狀態。選擇介面、說明和IP地址的特定裝置值。確保將隧道介面設定為Off：

Feature Template > VPN Interface Ethernet > Site35_TLOC_Ext_NoTunnel

Device Type: ISR 1100 6G (Viptela OS),ISR 1100X 6G (Viptela OS),ISR 1100 4GLTE* (Viptela OS),ISR 1100 4G (Viptela OS),ISR 1100X 4G (Viptela OS)

Template Name: Site35_TLOC_Ext_NoTunnel

Description: Site 35 TLOC Extension Template without Tunnel Config

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

BASIC CONFIGURATION

Shutdown: Yes No

Interface Name: [TLOC_NoTunnel_Interface]

Description: [TLOC_NoTunnel_Interface_Description]

IPv4 IPv6

Dynamic Static

IPv4 Address: [TLOC_NoTunnel_Interface_IP]

Secondary IP Address (Maximum: 4): [Add](#)

DHCP Helper:

Block Non Source IP: Yes No

Bandwidth Upstream:

Bandwidth Downstream:

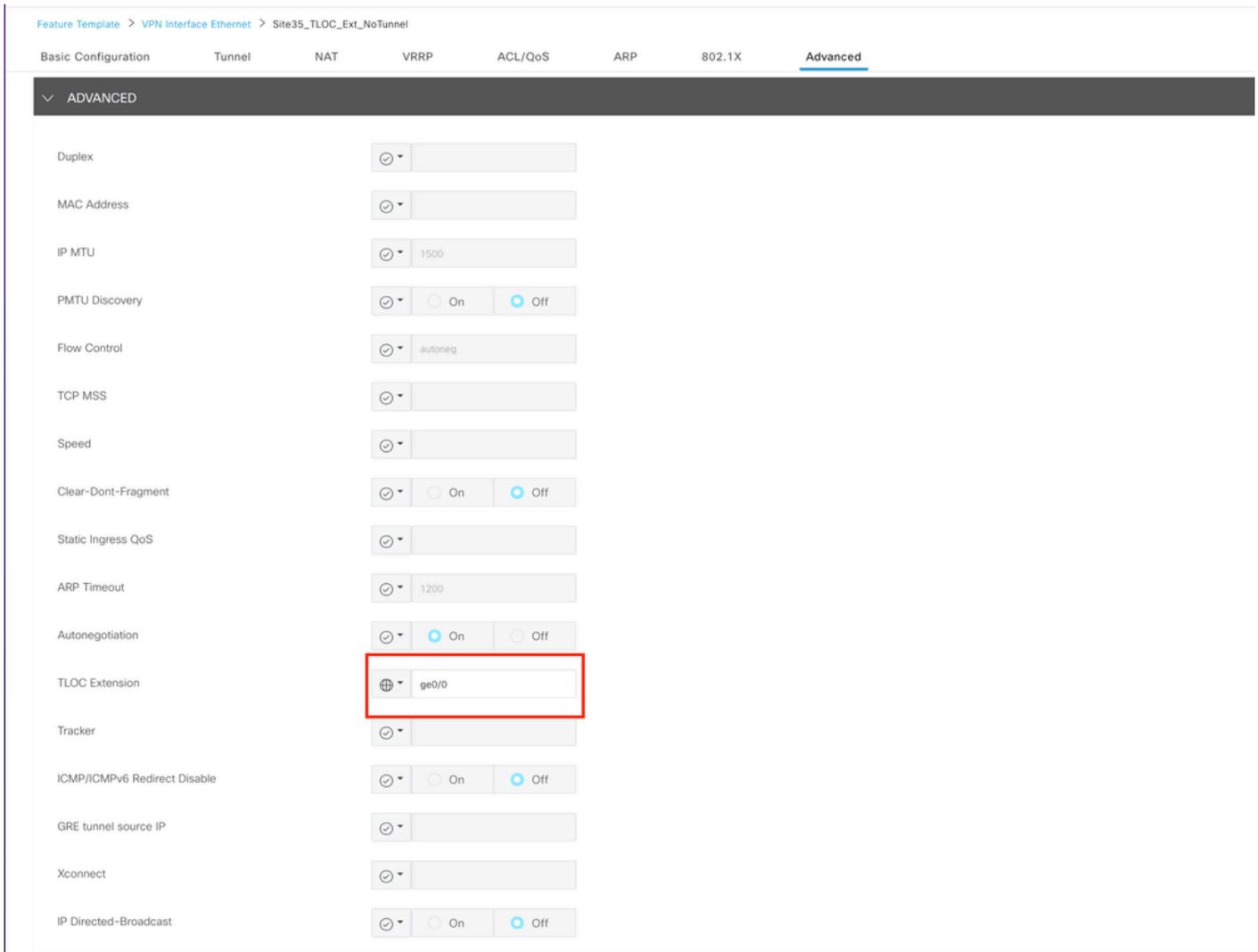
TUNNEL

Tunnel Interface: On Off

Cancel Update

TLOC-EXT/NO隧道介面基本配置

在進階區段中新增TLOC-Ext介面：



TLOC-Ext介面

4. VPN介面乙太網 (隧道介面/無Tloc-ext) : 確保介面處於no shutdown狀態。選擇介面、說明和IP地址的特定裝置值 :

Device Type: ISR 1100 4G (Viptela OS),ISR 1100 4GLTE* (Viptela OS),ISR 1100 6G (Viptela OS),ISR 1100X 4G (Viptela OS),ISR 1100X 6G (Viptela OS)

Template Name: Site35_Tunnel_NoTlocExt

Description: Site 35 TLOC Tunnel Configuration No TLOC-Ext

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

▼ BASIC CONFIGURATION

Shutdown: Yes No

Interface Name: [dropdown] [interface_tunn_notlocext]

Description: [dropdown] [interface_description_tunn_notlocext]

IPv4 | IPv6

Dynamic Static

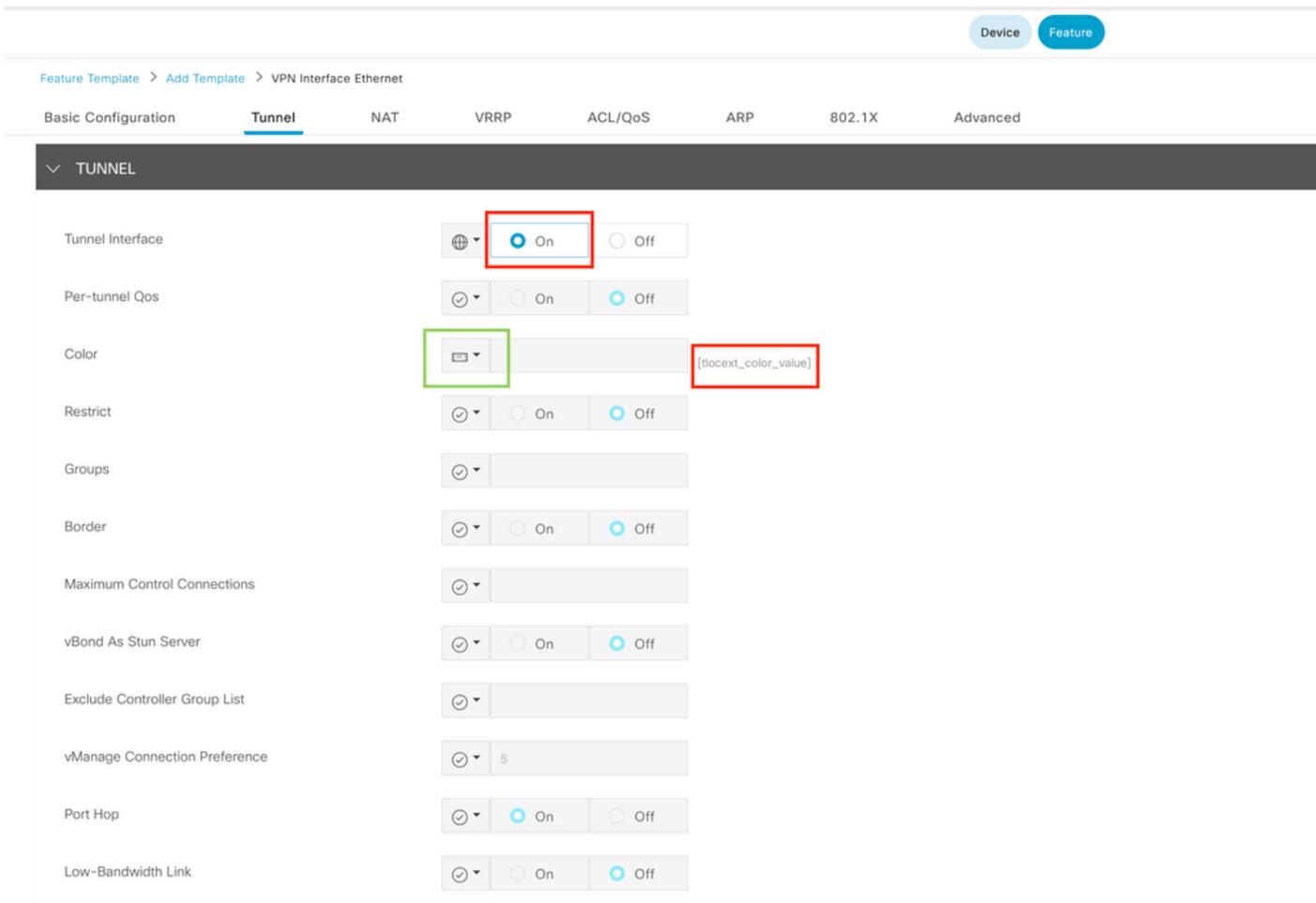
IPv4 Address: [dropdown] [interface_ip_tunn_notlocext]

Secondary IP Address (Maximum: 4): [Add](#)

DHCP Helper: [dropdown]

隧道介面/無Tloc-ext基本配置

確保將隧道介面設定為ON。選取Tloc-Ext顏色的特定裝置值：

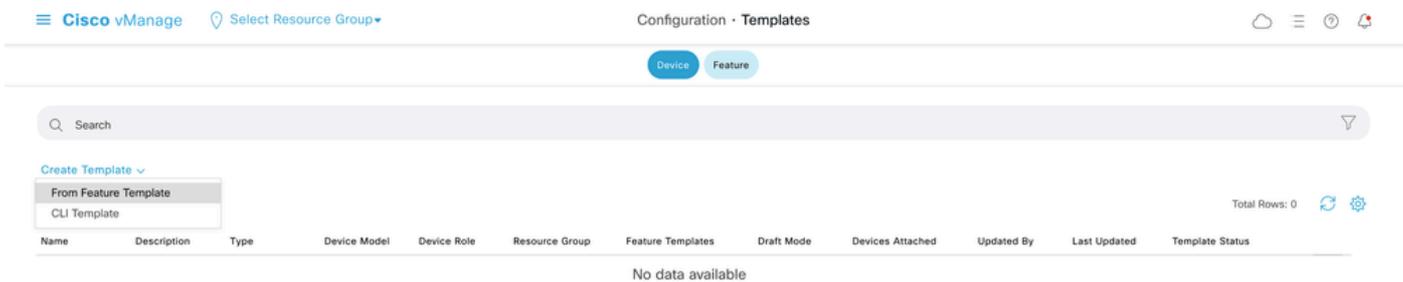


通道介面

裝置範本

建立裝置範本的步驟：

1. 從功能模板建立裝置模板：



功能模板中的裝置模板

2. 植入所有必要的功能樣版：

Device Feature

Device Model: ISR 1100 4G LTE* (Vipteta OS)

Device Role: SDWAN Edge

Template Name: Site35_FeatureTemplate

Description: Template used for Site 35

Basic Information Transport & Management VPN Service VPN Cellular Additional Templates

Basic Information

System * Site35_System Additional System Templates

Logging* Site35_Logging

NTP Site35_NTP

AAA Site35_AAA BFD * Site35_BFD OMP * Site35_OMP

Security * Site35_Security

裝置模板詳細資訊及功能模板基本配置

Cisco vManage Select Resource Group Configuration - Templates

Device Feature

Basic Information Transport & Management VPN Service VPN Cellular Additional Templates

Transport & Management VPN

VPN 0 * Site35_VPN0 Additional VPN 0 Templates

VPN Interface Site35_VPN_Interface_Ethernet

VPN Interface Site35_TLOC_Ext_NoTunnel

VPN Interface Site35_Tunnel_NoTlocExt

VPN 512 * Site35_VPN512 Additional VPN 512 Templates

裝置模板詳細資訊及功能模板傳輸和管理

3. 將兩台裝置都連線到裝置模板：

Cisco vManage Select Resource Group Configuration - Templates

Device Feature

Q Search

Create Template v

Template Type Non-Default v

Total Rows: 1

Name	Description	Type ...	Device Model	Device Role ...	Resource Group	Feature Templates	Draft Mode	Devices Attached	Updated By	Last Updated	Template Status
Site35_FeatureTemplate	Template used ...	Feature	ISR 1100 4G LTE* (Vipteta OS)	SDWAN Edge	global	12	Disabled	0	admin	25 Jul 2022 12:2...	In Sync

- Edit
- View
- Delete
- Copy
- Attach Devices
- Change Resource Group
- Export CSV

將裝置附加至範本

4. 將兩台裝置從可用裝置移至選定裝置頁籤：

Attach Devices ×

Attach device from the list below

Available Devices

All

Name	Device IP
------	-----------

>
<

Selected Devices 2 Items Selected

All Select All

Name	Device IP
vEdge	10.10.10.17
vEdge	10.10.10.19

Attach Cancel

將裝置從可用裝置移動到選定裝置

5. 輸入兩個裝置的所有必要明細：

站點35_vEdge1

Update Device Template



Variable List (Hover over each field for more information)

Status	complete
Chassis Number	ISR1100-4GLTEGB-FGL2347LHT6
System IP	10.10.10.17
Hostname	vEdge
Name(vpn0_name)	<input type="text" value="Transport"/>
Address(primary_WAN_next_hop)	<input type="text" value="10.201.237.1"/>
Address(tlocext_nexthop)	<input type="text" value="192.168.30.5"/>
Interface Name(interface_tunn_notlocext)	<input type="text" value="ge0/1"/>
Description(interface_description_tunn_notlocext)	<input type="text" value="TunnellInterface_NoTLOCExt"/>
IPv4 Address(interface_ip_tunn_notlocext)	<input type="text" value="192.168.30.4/24"/>
Color(tlocext_color_value)	<input type="text" value="private2"/>
Interface Name(TLOC_NoTunnel_Interface)	<input type="text" value="ge0/2"/>
Description(TLOC_NoTunnel_Interface_Description)	<input type="text" value="TLOC_NoTunnellInterface"/>
IPv4 Address(TLOC_NoTunnel_Interface_IP)	<input type="text" value="192.168.40.4/24"/>
Interface Name(primary_wan_interface)	<input type="text" value="ge0/0"/>
Description(primary_wan_interface_description)	<input type="text" value="Primary WAN connection"/>
IPv4 Address(primary_wan_interface_IP)	<input type="text" value="10.201.237.120/24"/>
Color(primary_WAN_color_value)	<input type="text" value="private1"/>
Hostname(system_host_name)	<input type="text" value="Site35_vEdge1"/>
System IP(system_system_ip)	<input type="text" value="10.10.10.17"/>
Site ID(system_site_id)	<input type="text" value="35"/>

Generate Password

Update

Cancel

更新值1

站點35_vEdge2

Update Device Template

Variable List (Hover over each field for more information)

Status	complete
Chassis Number	ISR1100-4GLTENA-FGL2347LJ1G
System IP	10.10.10.19
Hostname	vEdge
Name(vpn0_name)	Transport
Address(primary_WAN_next_hop)	10.201.237.1
Address(tlocext_nexthop)	192.168.40.4
Interface Name(interface_tunn_notlocext)	ge0/2
Description(interface_description_tunn_notlocext)	TunnelInterface_NoTLOCExt
IPv4 Address(interface_ip_tunn_notlocext)	192.168.40.5/24
Color(tlocext_color_value)	private1
Interface Name(TLOC_NoTunnel_Interface)	ge0/1
Description(TLOC_NoTunnel_Interface_Description)	TLOC_NoTunnelInterface
IPv4 Address(TLOC_NoTunnel_Interface_IP)	192.168.30.5/24
Interface Name(primary_wan_interface)	ge0/0
Description(primary_wan_interface_description)	Primary WAN connection
IPv4 Address(primary_wan_interface_IP)	10.201.237.66/24
Color(primary_WAN_color_value)	private2
Hostname(system_host_name)	Site35_vEdge2
System IP(system_system_ip)	10.10.10.19
Site ID(system_site_id)	35

Generate Password

Update

Cancel

更新值2

6. 驗證所選值是否適用於以下裝置：

站點35_vEdge1

Cisco vManage Configuration - Templates

Device Template	Total	76	allow-service sshd	78	allow-service sshd
Site35_FeatureTemplate	1	77	no allow-service netconf	79	no allow-service netconf
Device list (Total: 2 devices)		78	no allow-service ntp	80	no allow-service ntp
Filter/Search		79	no allow-service ospf	81	no allow-service ospf
ISR1100-4GLTEGB-FGL2347LHT6		80	no allow-service stun	82	no allow-service stun
vEdge10.10.10.17		81	allow-service https	83	allow-service https
ISR1100-4GLTENA-FGL2347LJ10		82	:	84	:
vEdge10.10.10.19		83	no shutdown	85	no shutdown
		84	:	86	:
				87	interface ge0/1
				88	description TunnelInterface_NoTLOCExt
				89	ip address 192.168.30.4/24
				90	tunnel-interface
				91	encapsulation ipsec
				92	color private2
				93	max-control-connections 1
				94	no allow-service bgp
				95	allow-service dhcp
				96	allow-service dns
				97	allow-service icmp
				98	no allow-service sshd
				99	no allow-service netconf
				100	no allow-service ntp
				101	no allow-service ospf
				102	no allow-service stun
				103	allow-service https
				104	:
				105	no shutdown
				106	:
				107	interface ge0/2
				108	description TLOC_NoTunnelInterface
				109	ip address 192.168.40.4/24
				110	no shutdown
				111	:
				112	ip route 0.0.0.0/0 10.201.237.1 1
				113	ip route 0.0.0.0/0 192.168.30.5 1
				114	:
				115	vpn 512
				116	:
				117	:
				118	:
				119	:

Configure Device Rollback Timer

Back Configure Devices Cancel

配置預覽1

站點35_vEdge2

Cisco vManage Configuration - Templates

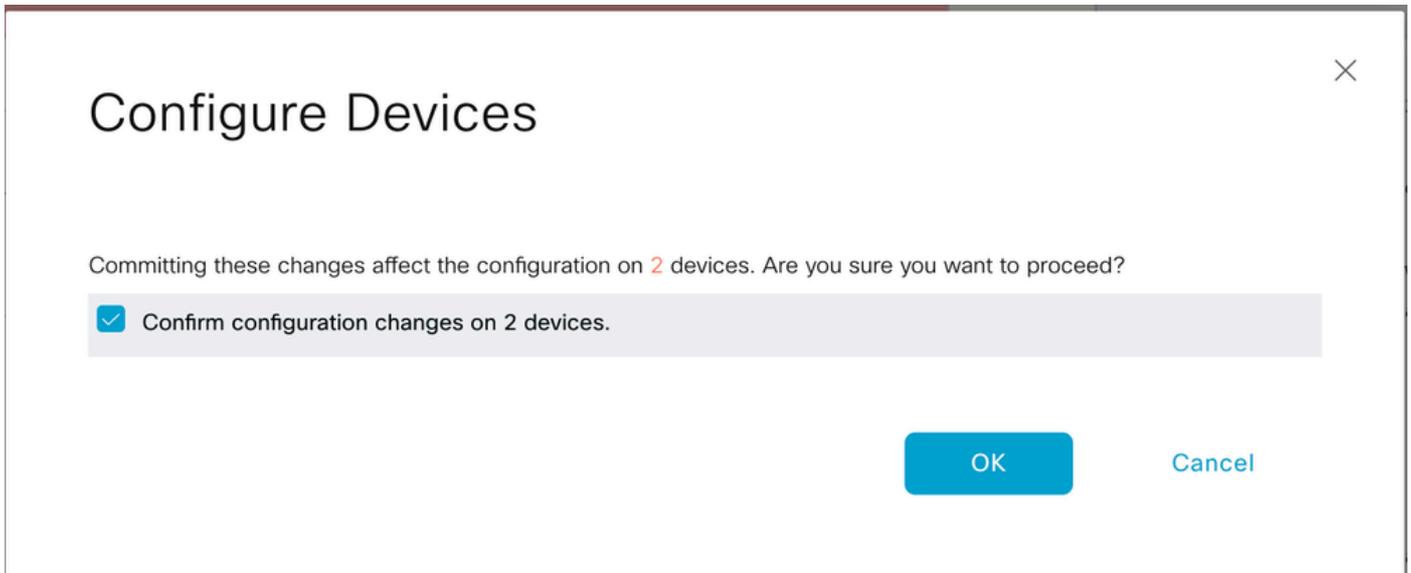
Device Template	Total	75	allow-service sshd	78	allow-service sshd
Site35_FeatureTemplate	1	76 <td>no allow-service netconf</td> <td>79 <td>no allow-service netconf</td> </td>	no allow-service netconf	79 <td>no allow-service netconf</td>	no allow-service netconf
Device list (Total: 2 devices)		77 <td>no allow-service ntp</td> <td>80 <td>no allow-service ntp</td> </td>	no allow-service ntp	80 <td>no allow-service ntp</td>	no allow-service ntp
Filter/Search		78 <td>no allow-service ospf</td> <td>81 <td>no allow-service ospf</td> </td>	no allow-service ospf	81 <td>no allow-service ospf</td>	no allow-service ospf
ISR1100-4GLTEGB-FGL2347LHT6		79 <td>no allow-service stun</td> <td>82 <td>no allow-service stun</td> </td>	no allow-service stun	82 <td>no allow-service stun</td>	no allow-service stun
vEdge10.10.10.17		80 <td>allow-service https</td> <td>83 <td>allow-service https</td> </td>	allow-service https	83 <td>allow-service https</td>	allow-service https
ISR1100-4GLTENA-FGL2347LJ10		81 <td>:</td> <td>84 <td>:</td> </td>	:	84 <td>:</td>	:
vEdge10.10.10.19		82 <td>no shutdown</td> <td>85 <td>no shutdown</td> </td>	no shutdown	85 <td>no shutdown</td>	no shutdown
		83 <td>:</td> <td>86 <td>:</td> </td>	:	86 <td>:</td>	:
				87 <td>interface ge0/1</td>	interface ge0/1
				88 <td>description TLOC_NoTunnelInterface</td>	description TLOC_NoTunnelInterface
				89 <td>ip address 192.168.30.5/24</td>	ip address 192.168.30.5/24
				90 <td>no shutdown</td>	no shutdown
				91 <td>:</td>	:
				92 <td>interface ge0/2</td>	interface ge0/2
				93 <td>description TunnelInterface_NoTLOCExt</td>	description TunnelInterface_NoTLOCExt
				94 <td>ip address 192.168.40.5/24</td>	ip address 192.168.40.5/24
				95	tunnel-interface
				96 <td>encapsulation ipsec</td>	encapsulation ipsec
				97 <td>color private1</td>	color private1
				98 <td>max-control-connections 1</td>	max-control-connections 1
				99 <td>no allow-service bgp</td>	no allow-service bgp
				100 <td>allow-service dhcp</td>	allow-service dhcp
				101 <td>allow-service dns</td>	allow-service dns
				102 <td>allow-service icmp</td>	allow-service icmp
				103 <td>no allow-service sshd</td>	no allow-service sshd
				104 <td>no allow-service netconf</td>	no allow-service netconf
				105 <td>no allow-service ntp</td>	no allow-service ntp
				106 <td>no allow-service ospf</td>	no allow-service ospf
				107 <td>no allow-service stun</td>	no allow-service stun
				108 <td>allow-service https</td>	allow-service https
				109 <td>:</td>	:
				110 <td>no shutdown</td>	no shutdown
				111 <td>:</td>	:
				112 <td>ip route 0.0.0.0/0 10.201.237.1 1</td>	ip route 0.0.0.0/0 10.201.237.1 1
				113 <td>ip route 0.0.0.0/0 192.168.40.4 1</td>	ip route 0.0.0.0/0 192.168.40.4 1
				114 <td>:</td>	:
				115 <td>vpn 512</td>	vpn 512
				116 <td>:</td>	:
				117 <td>:</td>	:
				118 <td>:</td>	:
				119 <td>:</td>	:

Configure Device Rollback Timer

Back Configure Devices Cancel

配置預覽2

6. 最後，將這些配置推送到裝置：



配置配置

下面的輸出捕獲了成功推送模板後vpn 0的運行配置：

站點35_vEdge1

```
Site35_vEdge1# show run vpn 0
vpn 0
interface ge0/0
ip address 10.201.237.120/24
ipv6 dhcp-client
nat
!
tunnel-interface
encapsulation ipsec
color private1
max-control-connections 1
no allow-service bgp
allow-service dhcp
allow-service dns
allow-service icmp
allow-service sshd
no allow-service netconf
no allow-service ntp
no allow-service ospf
no allow-service stun
allow-service https
!
no shutdown
!
interface ge0/1
description TunnelInterface_NoTLOExt
ip address 192.168.30.4/24
tunnel-interface
encapsulation ipsec
color private2
max-control-connections 1
no allow-service bgp
allow-service dhcp
allow-service dns
```

```
allow-service icmp
no allow-service sshd
no allow-service netconf
no allow-service ntp
no allow-service ospf
no allow-service stun
allow-service https
!
no shutdown
!
interface ge0/2
description TL0C_NoTunnelInterface
ip address 192.168.40.4/24
tloc-extension ge0/0
no shutdown
!

ip route 0.0.0.0/0 10.201.237.1
ip route 0.0.0.0/0 192.168.30.5
!
Site35_vEdge1#
```

站點35_vEdge2

```
Site35_vEdge2#
Site35_vEdge2#
Site35_vEdge2#
Site35_vEdge2# sh run vpn 0
vpn 0
interface ge0/0
ip address 10.201.237.66/24
ipv6 dhcp-client
nat
!
tunnel-interface
encapsulation ipsec
color private2
max-control-connections 1
no allow-service bgp
allow-service dhcp
allow-service dns
allow-service icmp
allow-service sshd
no allow-service netconf
no allow-service ntp
no allow-service ospf
no allow-service stun
allow-service https
!
no shutdown
!
interface ge0/1
description TL0C_NoTunnelInterface
ip address 192.168.30.5/24
tloc-extension ge0/0
no shutdown
!
interface ge0/2
```

```

description TunnelInterface_NoTLOExt
ip address 192.168.40.5/24
tunnel-interface
encapsulation ipsec
color private1
max-control-connections 1
no allow-service bgp
allow-service dhcp
allow-service dns
allow-service icmp
no allow-service sshd
no allow-service netconf
no allow-service ntp
no allow-service ospf
no allow-service stun
allow-service https
!
no shutdown
!
ip route 0.0.0.0/0 10.201.237.1
ip route 0.0.0.0/0 192.168.40.4
!
Site35_vEdge2#

```

驗證

1. 範本已成功附加至兩個裝置：

The screenshot shows the 'Push Feature Template Configuration' page in vManage. The page title is 'Push Feature Template Configuration' with a green checkmark and 'Validation Success'. The top right corner indicates 'Initiated By: admin' and 'From: 10.24.227.28'. Below the title, it says 'Total Task: 2 | Success: 2'. There is a search bar and a 'Total Rows: 2' indicator. The main content is a table with columns: Status, Message, Chassis Number, Device Model, Hostname, System IP, Site ID, and vManage IP. Two rows are visible, both with a green 'Success' status. Each row has a detailed log of the configuration push process, including steps like 'Checking and creating device in vManage', 'Generating configuration from template', 'Device is online', 'Updating device configuration in vManage', 'Sending configuration to device', 'Completed template push to device', and 'Template successfully attached to device'.

Status	Message	Chassis Number	Device Model	Hostname	System IP	Site ID	vManage IP
Success	Done - Push Feature Template Con...	ISR1100-4GLTEGB-FGL2347LHT6	ISR 1100 4GLTE* (Viptela OS)	vEdge	10.10.10.17	35	10.10.10.1
Success	Done - Push Feature Template Con...	ISR1100-4GLTENA-FGL2347LJ1G	ISR 1100 4GLTE* (Viptela OS)	vEdge	10.10.10.19	35	10.10.10.1

模板推送成功

2. 透過主WAN和TLOC-Ext介面控制連線：

```
Site35_vEdge1# show control connections
```

PEER TYPE	PEER PROT	PEER SYSTEM IP	SITE ID	DOMAIN ID	PEER PRIVATE IP	PEER PRIV PORT	PEER PUBLIC IP	PEER PUB PORT	ORGANIZATION	LOCAL COLOR	CONTROLLER GROUP PROXY	STATE	UPTIME	ID
vsmart	dtls	10.10.10.3	1	1	10.201.237.137	12446	10.201.237.137	12446	rcdn_sdwan_lab	private1	No	up	0:00:01:47	0
vsmart	dtls	10.10.10.3	1	1	10.201.237.137	12446	10.201.237.137	12446	rcdn_sdwan_lab	private2	No	up	0:00:01:42	0
vmanage	dtls	10.10.10.1	1	0	10.201.237.91	12446	10.201.237.91	12446	rcdn_sdwan_lab	private1	No	up	0:00:01:52	0

```
Site35_vEdge1#
```

控制連線驗證1

```
Site35_vEdge2# show control connections
```

PEER TYPE	PEER PROT	PEER SYSTEM IP	SITE ID	DOMAIN ID	PEER PRIVATE IP	PEER PRIV PORT	PEER PUBLIC IP	PEER PUB PORT	LOCAL COLOR	PROXY	STATE	UPTIME	CONTROLLER GROUP ID
vsmart	dtls	10.10.10.3	1	1	10.201.237.137	12446	10.201.237.137	12446	private2	No	up	0:00:00:25	0
vsmart	dtls	10.10.10.3	1	1	10.201.237.137	12446	10.201.237.137	12446	private1	No	up	0:00:00:15	0
vmanage	dtls	10.10.10.1	1	0	10.201.237.91	12446	10.201.237.91	12446	private2	No	up	0:00:00:20	0

控制連線驗證2

使用案例

根據本地站點設計，也可以使用L2或L3 TLOC擴展來實施TLOC擴展。

1. L2 TLOC擴展：這些擴展位於同一廣播域或同一子網中。
2. L3 TLOC擴展：這些擴展由L3裝置分隔，可以運行任何路由協定（僅在Cisco IOSXE SD-WAN裝置上受支援）

注意：請參閱[Cisco SD-WAN設計手冊](#)的「廣域網邊緣部署」一章中的「TLOC擴展」部分。

限制

僅•L3路由介面支援TLOC和TLOC擴展介面。L2交換機埠/SVI不能用作WAN/隧道介面，並且只能在服務端使用。

- LTE也不用作WAN邊緣路由器之間的TLOC擴展介面。
- 僅Cisco IOSXE SD-WAN路由器支援L3 TLOC擴展，而vEdge路由器不支援這些擴展。
- TLOC擴展在繫結到環回隧道介面的傳輸介面上不起作用。

相關資訊

- [思科技術支援與下載](#)

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。