Configure Active/Standby Hub and Spoke Topology on SD-WAN

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Introduction

This document describes the steps to configure and validate an Active Standby Hub and Spoke Topology on Cisco SD-WAN.

Prerequisites

Requirements

Cisco recommends knowledge of these topics:

- Cisco SD-WAN
- Basic Cisco IOS-XE® Command Line Interface (CLI)

Components Used

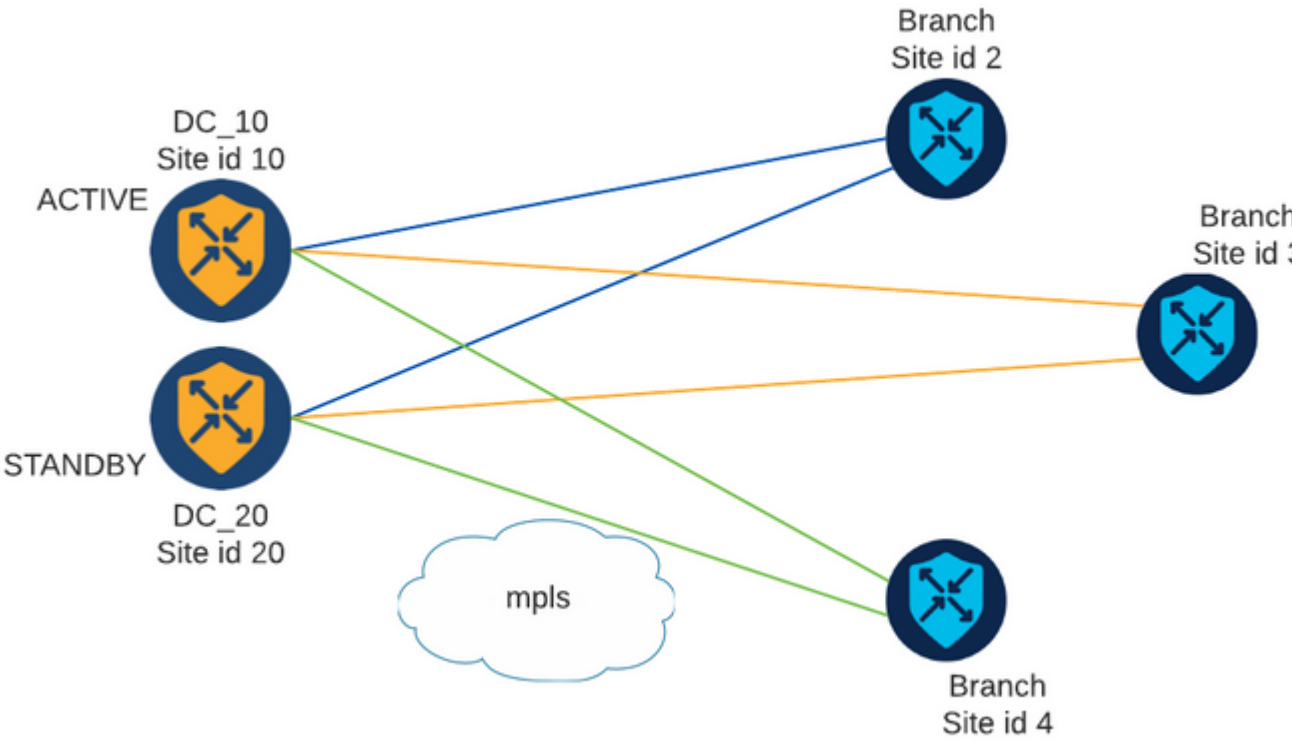
This document is based on these software and hardware versions:

- C8000V version 17.6.3a
- vManage version 20.6.3.1
- vSmart version 20.6.3

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure

Network Diagram

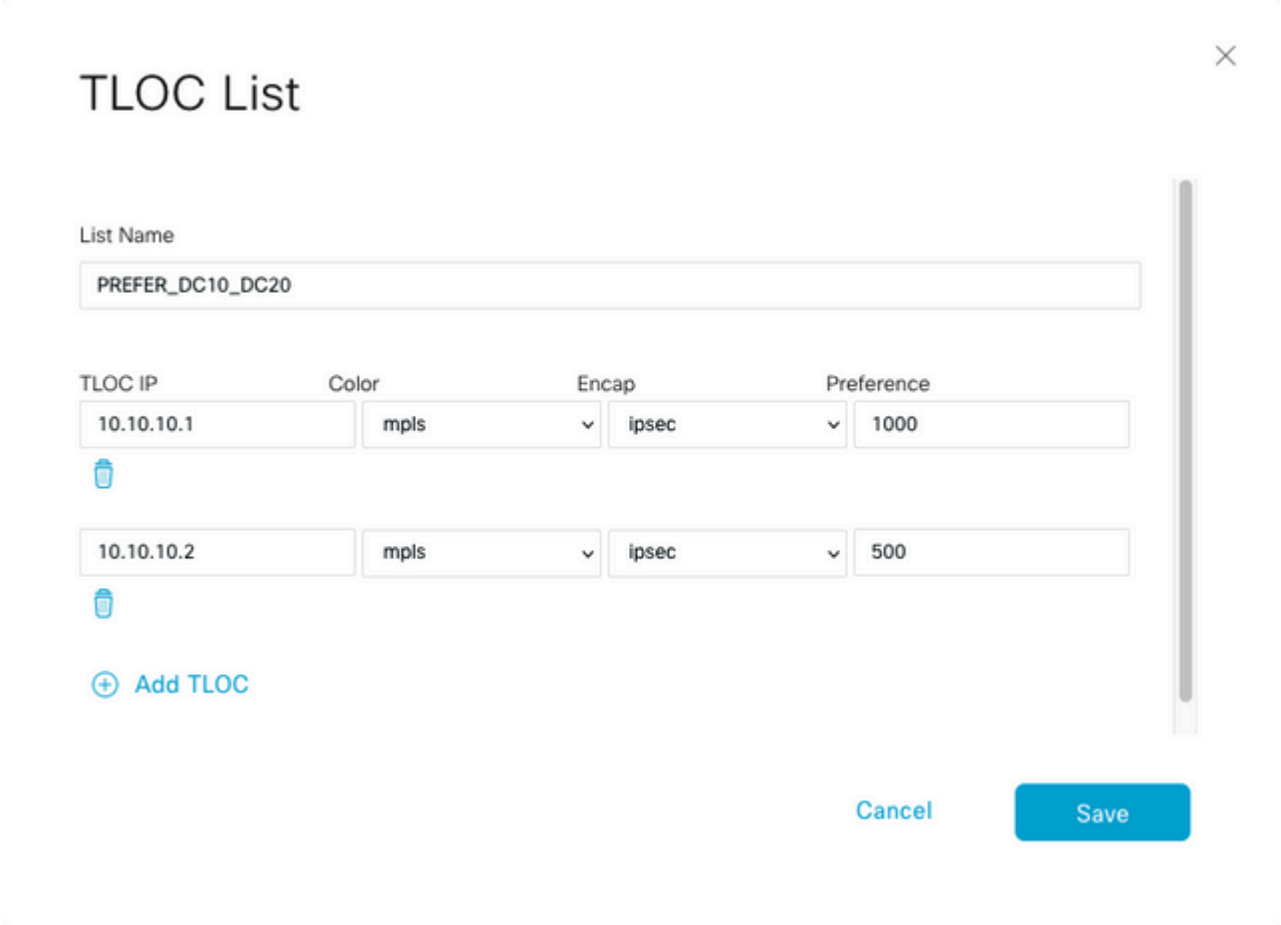


There are two Hubs with Site ID 10 and 20. Site ID 10 acts as Active Hub and Site ID 20 as the Standby Hub. The Branches can communicate with each other, but all communication must go through the Hub. No tunnels must be created between Branch Sites.

Configurations

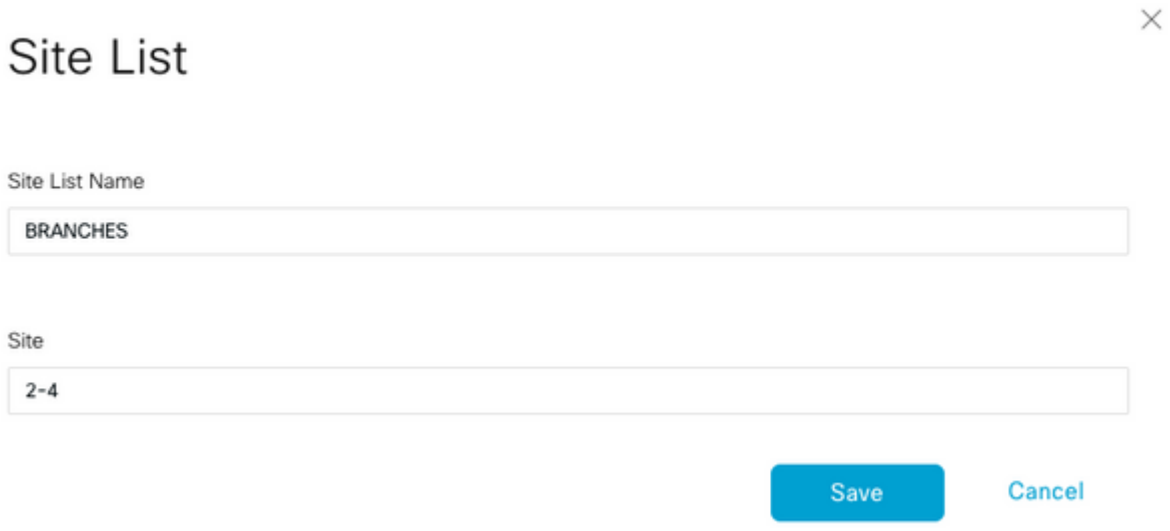
1. Log into vManage and navigate to **Configuration > Policies** and click **Add Policy**.

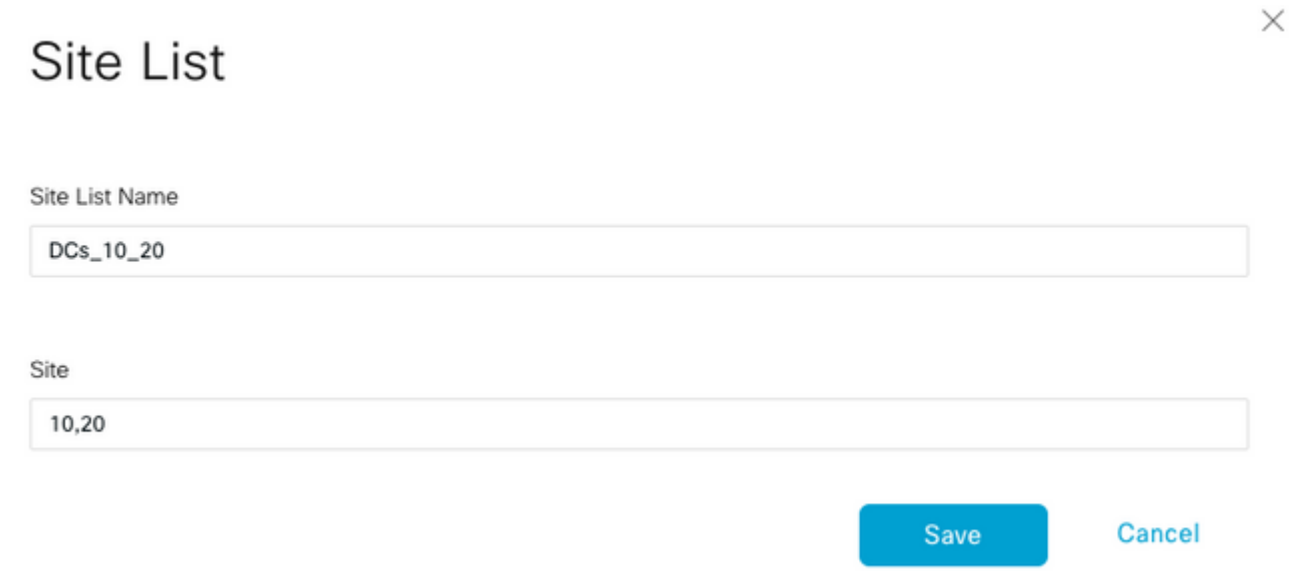
2. In the Create Groups of Interest section click **TLOC > New TLOC List** and add an one entry for the Active Hub and one for the Standby Hub on the same list:



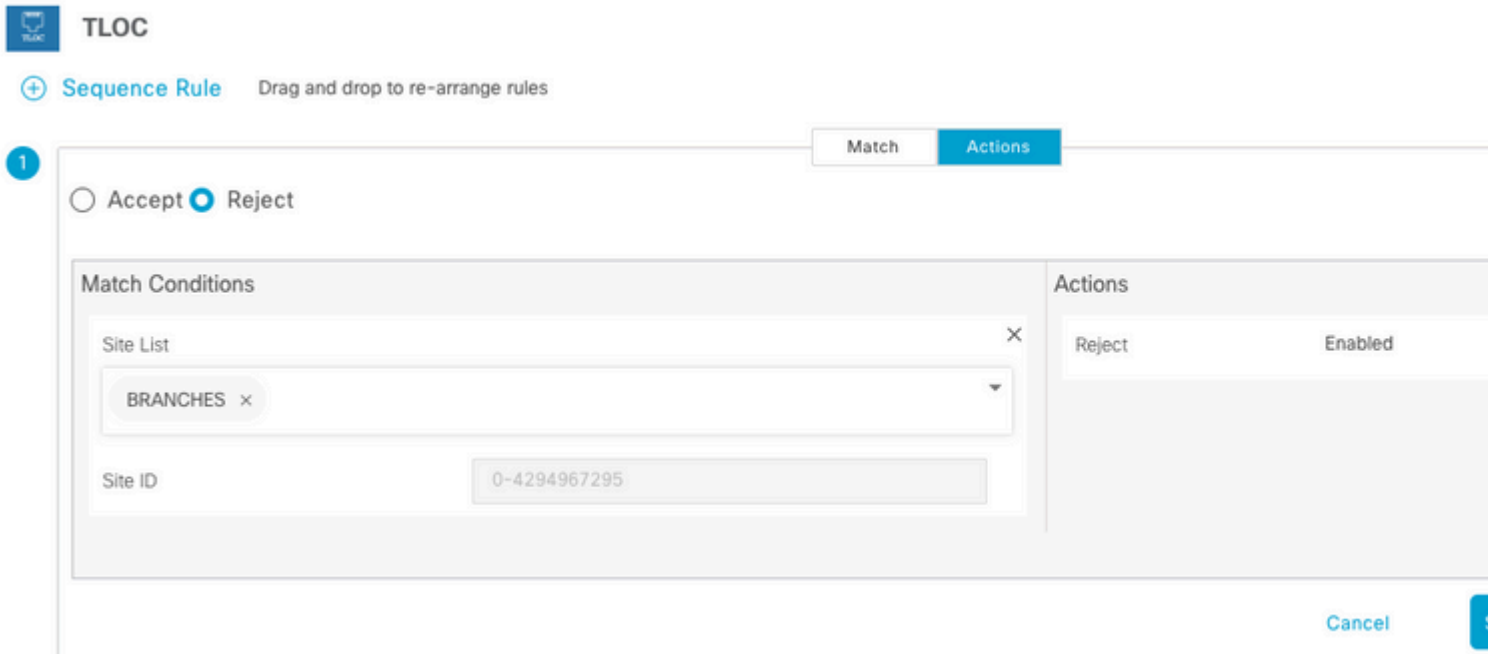
Make sure to set a higher preference for the active Hub and a lower preference for the Standby Hub.

3. Navigate to **Site > New Site List** and create a list for the Branch Sites and a list for the Hub Sites:

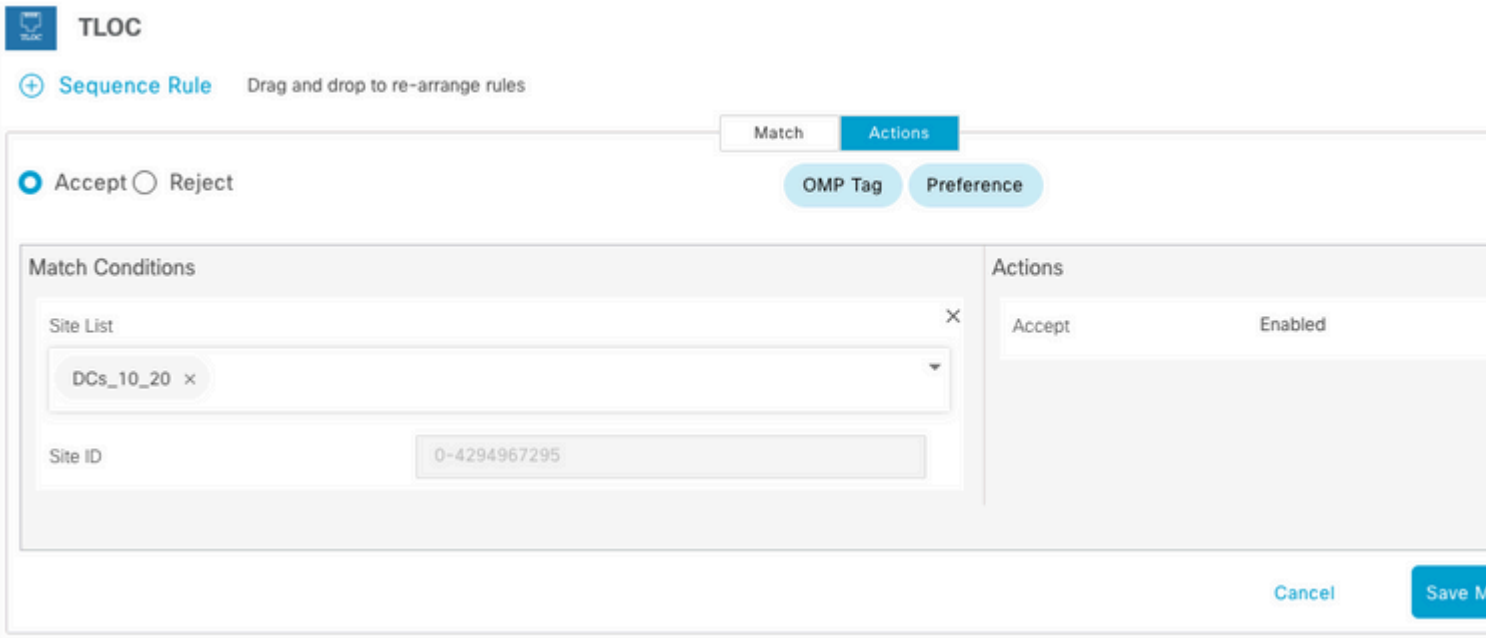




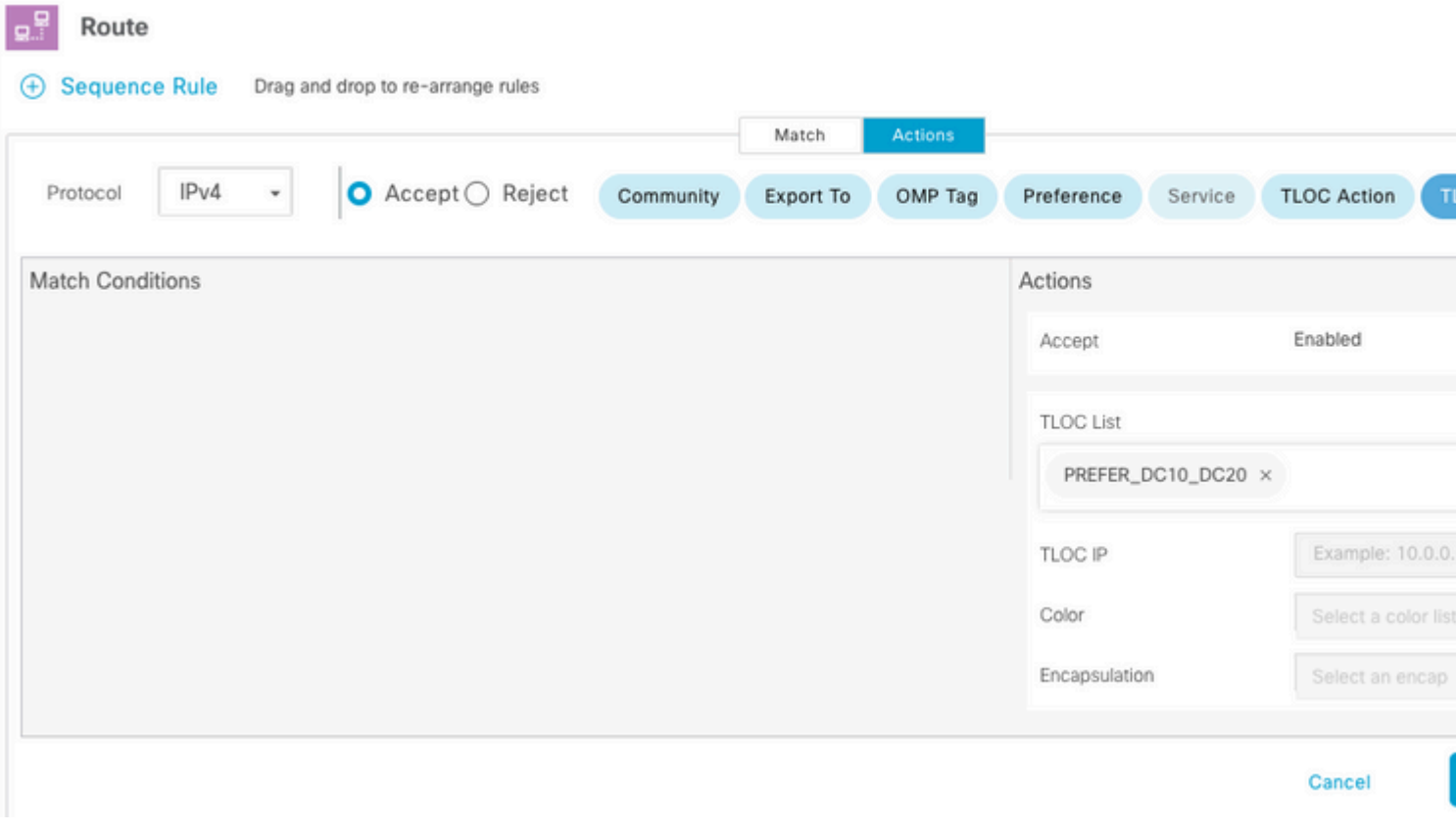
4. Click **Next**. In the Configure Topology and VPN Membership section, navigate to **Add Topology > Custom Control**.
5. Add a Name and Description for the Policy.
6. Click **Sequence Type > TLOC**, add a **Sequence Rule.**
7. Choose **Match > Site** and add the Site list for the Branches, then choose **Actions > Reject** and click **Save Match And Actions**:



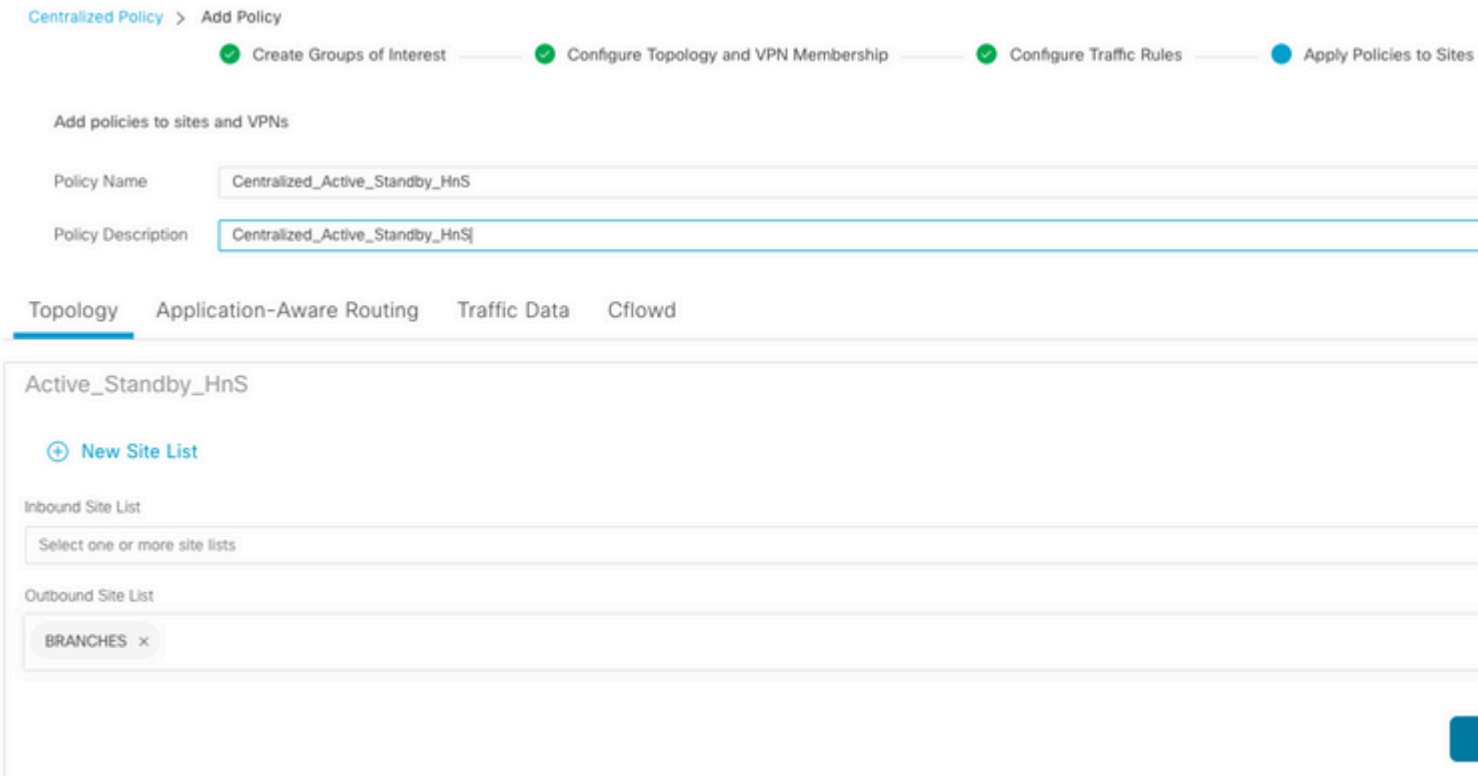
8. Click **Sequence Rule**, and add an entry to match the Hub Sites and Accept:



9. Navigate to **Sequence Type > Route**, add **Sequence Rule.**
10. Leave the match section in blank, set the Action as **Accept**, choose **TLOC**, add the TLOC list created earlier and click **Save Match And Actions**:



11. Click **Save Control Policy.**
12. Click **Next** until the Apply Policies to Sites and VPNs section.
13. In the Topology section, your Control Policy shows up, click **New Site List**, choose the Branches list for the Outbound Site List and click **Add**:

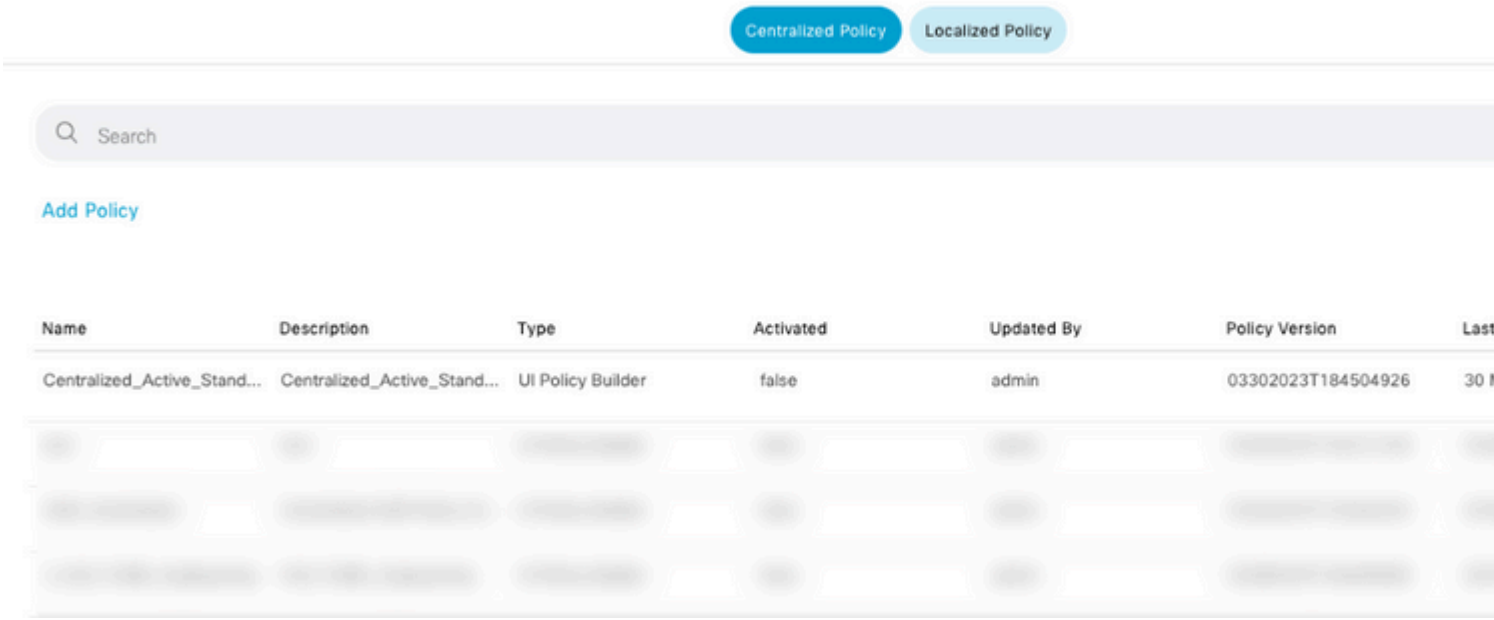


14. Click **Preview** and review the Policy.

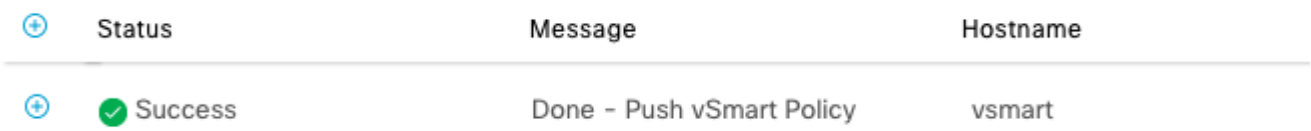
```
viptela-policy:policy
 control-policy Active_Standby_HnS
    sequence 1
     match tloc
      site-list BRANCHES
     !
     action reject
     !
    !
    sequence 11
     match tloc
      site-list DCs_10_20
     !
     action accept
     !
    !
    sequence 21
     match route
      prefix-list _AnyIpv4PrefixList
     !
     action accept
      set
       tloc-list PREFER_DC10_DC20
      !
     !
    !
  default-action reject
 !
 lists
  site-list BRANCHES
   site-id 2-4
  !
```

```
  site-list DCs_10_20
   site-id 10
   site-id 20
  !
  tloc-list PREFER_DC10_DC20
   tloc 10.10.10.1 color mpls encap ipsec preference 1000
   tloc 10.10.10.2 color mpls encap ipsec preference 500
  !
  prefix-list _AnyIpv4PrefixList
   ip-prefix 0.0.0.0/0 le 32
  !
 !
!
apply-policy
 site-list BRANCHES
  control-policy Active_Standby_HnS out
 !
!
```

15. Click **Save Policy.**
16. In the Centralized Policy menu, click the 3 dots at the right of the new created Policy and select **Activate.**



17. Once task is completed, a Success status shows.



Verify

Verify the policy is created on vSmart with these commands:

<#root>

vsmart#

show running-config policy

```
policy
lists
tloc-list PREFER_DC10_DC20
tloc 10.10.10.1 color mpls encap ipsec preference 1000
tloc 10.10.10.2 color mpls encap ipsec preference 500
!
site-list BRANCHES
site-id 2-4
!
site-list DCs_10_20
site-id 10
site-id 20
!
prefix-list _AnyIpv4PrefixList
ip-prefix 0.0.0.0/0 le 32
!
!
control-policy Active_Standby_HnS
sequence 1
match tloc
site-list BRANCHES
!
action reject
!
!
sequence 11
match tloc
site-list DCs_10_20
!
action accept
!
!
sequence 21
match route
prefix-list _AnyIpv4PrefixList
!
action accept
set
tloc-list PREFER_DC10_DC20
!
!
!
default-action reject
!
!
vsmart#
```

show running-config apply-policy

```
apply-policy
site-list BRANCHES
control-policy Active_Standby_HnS out
```

```
!
!
vsmart#
```

> **Note**: This is a Control Policy. It is applied and executed on the vSmart and it is not pushed into the edge devices. "**show sdwan policy from-vsmart**" command does not show the policy on the Edge Devices.

Troubleshoot

Useful commands to troubleshoot.

On vSmart:

```
show running-config policy
show running-config apply-policy
show omp routes vpn <vpn> advertised <detail>
show omp routes vpn <vpn> received <detail>
show omp tlocs advertised <detail>
show omp tlocs received <detail>
```

On cEdge:

```
show sdwan bfd sessions
show ip route vrf <service vpn>
show sdwan omp routes vpn <vpn>  <detail>
show sdwan omp tlocs
```

Example:

Confirm only the BFD session is formed from Branch to the Hubs:

<#root>

```
Branch_02#
```

show sdwan bfd sessions

```
                          SOURCE TLOC REMOTE TLOC              DST PUBLIC   DST PUBLIC        DETECT
SYSTEM IP   SITE ID STATE COLOR       COLOR       SOURCE IP    IP           PORT       ENCAP  MULTIPLIER
------------------------------------------------------------------------------------------------------
10.10.10.1  10      up    mpls        mpls        192.168.1.36 192.168.1.30 12386      ipsec  7
10.10.10.2  20      up    mpls        mpls        192.168.1.36 192.168.1.33 12366      ipsec  7
```

Verify routes from other branches are preferred via Active Hub with preference 1000:

<#root>

Branch_02#

show sdwan omp route vpn 10 172.16.1.0/24 detail

Generating output, this might take time, please wait ...

---
omp route entries for vpn 10 route 172.16.1.0/24

RECEIVED FROM:
peer 10.1.1.3
path-id 8
label 1002

status C,I,R **<-- Chosen, Installed, Received**

loss-reason not set
lost-to-peer not set
lost-to-path-id not set
Attributes:
originator 10.3.3.3
type installed

tloc 10.10.10.1, mpls, ipsec **<-- Active Hub**

ultimate-tloc not set
domain-id not set
overlay-id 1
site-id 3

preference 1000

tag not set
origin-proto connected
origin-metric 0
as-path not set
community not set
unknown-attr-len not set
RECEIVED FROM:
peer 10.1.1.3
path-id 9
label 1003

status R **<-- Received**

loss-reason preference
lost-to-peer 10.1.1.3
lost-to-path-id 8
Attributes:
originator 10.3.3.3
type installed

tloc 10.10.10.2, mpls, ipsec **<-- Backup Hub**

```
ultimate-tloc not set
domain-id not set
overlay-id 1
site-id 3
```

preference 500

```
tag not set
origin-proto connected
origin-metric 0
as-path not set
community not set
unknown-attr-len not set
```

Related Information

Cisco SD-WAN Policies Configuration Guide, Cisco IOS XE Release 17.x