# Integrate SASE and SSE Solutions with Cisco Secure Firewall Threat Defense

September 2025

# Integrate SASE and SSE Solutions with Threat Defense

Secure Access Service Edge (SASE) brings network and security services closer to users and devices, using the cloud.
To improve security without changing the whole network, use Security Service Edge (SSE). It delivers important security functions from the cloud, making security simpler and improving the user experience.

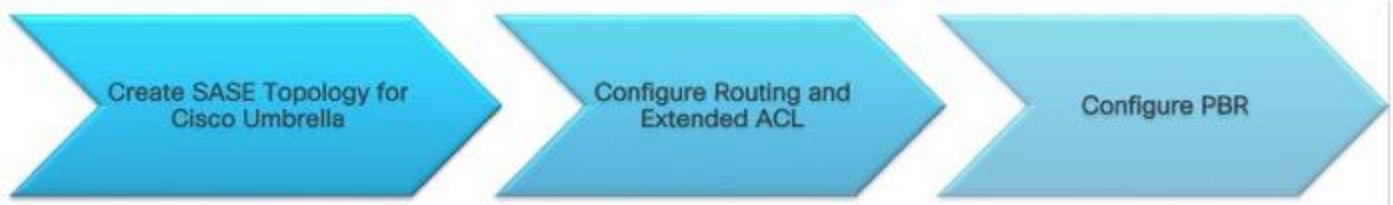
## Cisco SASE Solution: Secure Internet Traffic Using Cisco Umbrella and Threat Defense

Cisco Umbrella is a cloud-based secure internet gateway platform that provides multi-layered protection against internet threats. It integrates DNS layer security, SWG, cloud-delivered firewall, DLP, CASB, and threat intelligence to deliver highly scalable security for all branches. Internet-bound traffic from remote or on-prem users is automatically routed from the branches to the nearest Umbrella point of presence for inspection before access is granted or denied.

Cisco Firewall can integrate with Umbrella in two ways:

- Secure internet traffic for all branches with a consistent DNS policy.
- Secure internet traffic for all branches using Umbrella auto tunnel.

### Workflow for Configuring Umbrella SASE Auto Tunnel


Create SASE Topology for Cisco Umbrella
Configure Routing and Extended ACL
Configure PBR

### Prerequisites for Configuring Umbrella SASE Tunnels

- Management Center must be Version 7.3 or later.
- Threat Defense device must be Version 7.1 or later.
- Base license must be enabled with export-controlled features in the Management Center.
- Cisco Umbrella Secure Internet Gateway (SIG) Essentials subscription or a free SIG trial version must be available.

Configuration Steps:

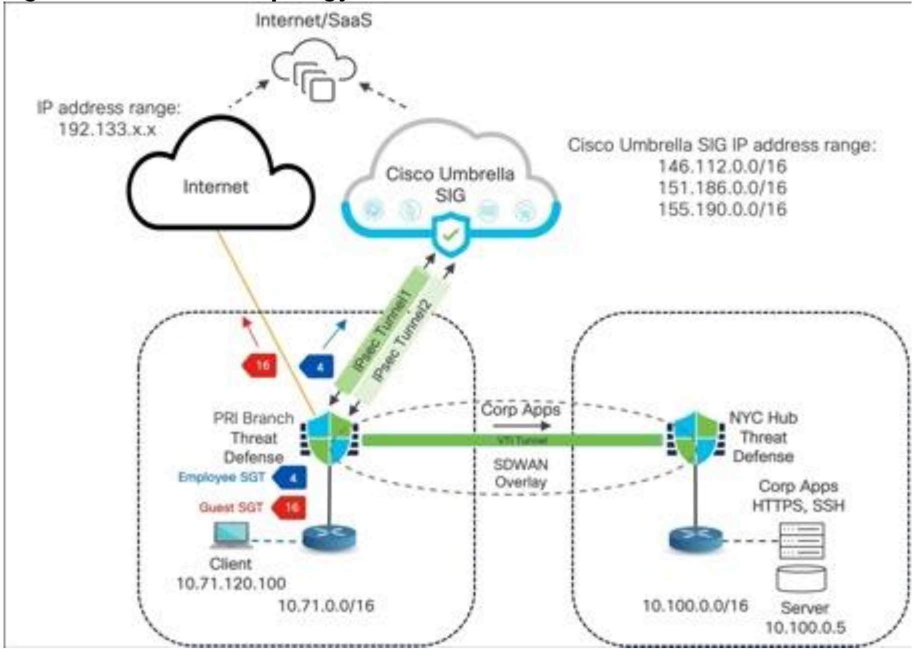
- Log into Umbrella at http://login.umbrella.com, and obtain the required information (organization ID, Key and secret, API keys) to establish a connection to Cisco Umbrella. This configuration is explained later in this guide.
- Umbrella data center must be reachable from the Threat Defense device. See IPs associated with Umbrella data centers.

### Network Topology for Umbrella SASE Auto Tunnel

In this example, we use Providence, RI (PRI-FW-01) branch with Firepower 1010 for the SASE integration.

For ease of understanding, we use only the New York City, NY (NYC) hub device in this example.

Figure 1. Network Topology for Umbrella SASE Auto Tunnel



- PRI-FW-01 has an SD-WAN connection with the NYC hub device.
- PRI-FW-01 has an interface connected to the Internet.
- Using the Umbrella SASE Auto Tunnel wizard in the Management Center, we will configure two tunnels to Umbrella from PRI-FW-01.
- IPsec Tunnel1 is the primary tunnel to Umbrella.
- IPsec Tunnel2 is the secondary tunnel to Umbrella.
- Employees are assigned an SGT of 4 and guests are assigned an SGT of 16

> **Note:** This SD-WAN architecture is not integrated with Cisco ISE. SGTs are assigned locally in Management Center; if you use Cisco ISE, define SGTs there.

- PBR policy for this example:
  - Block traffic from 10.74.0.0/16 to 10.0.0.0/8 with SGT 4, so all Employee overlay traffic defaults to normal routing.
  - Permit Employee DNS/HTTP/HTTPS traffic with SGT 4 to be routed to Umbrella SIG services for inspection and filtering.
  - Permit all Guest traffic with SGT 16 to be routed directly out to the internet.
  - All non-SGT traffic will automatically use normal routing.
- PRI-FW-01 interface details:
  - Ethernet1/1 (outside1) is the underlay interface.
  - Tunnel 1 (outside1_static_vti_1) and Tunnel 2 (outside1_static_vti_2) are static VTI interfaces under Ethernet1/1.

## Map Management Center Umbrella Parameters and Cisco Umbrella API Keys

You must register Cisco Umbrella with the Management Center and configure the Umbrella parameters in the Management Center.

Step 1. Log in to Cisco Umbrella.

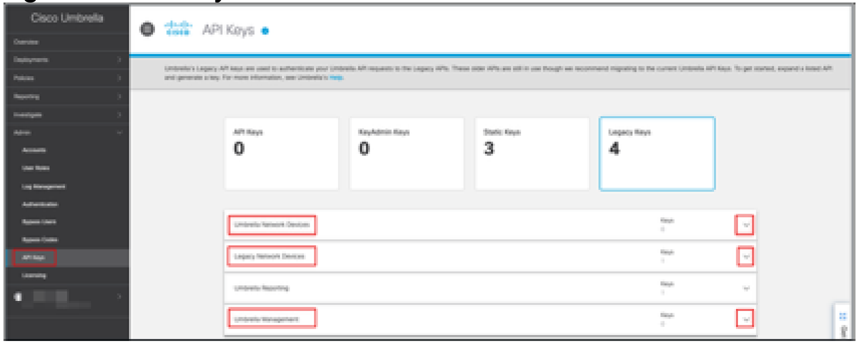
Step 2. Note the **Organization ID** from the URL.

In this example, the URL is **https://dashboard.umbrella.com/o/abcde/#/overview**. Here, **abcde** is the Organization ID.

Step 3. Choose **Admin** > **API Keys** > **Legacy Keys**.

Step 4. Expand the arrow corresponding to each API, then generate and copy the required API keys.

**Figure 2. API Keys in Cisco Umbrella**



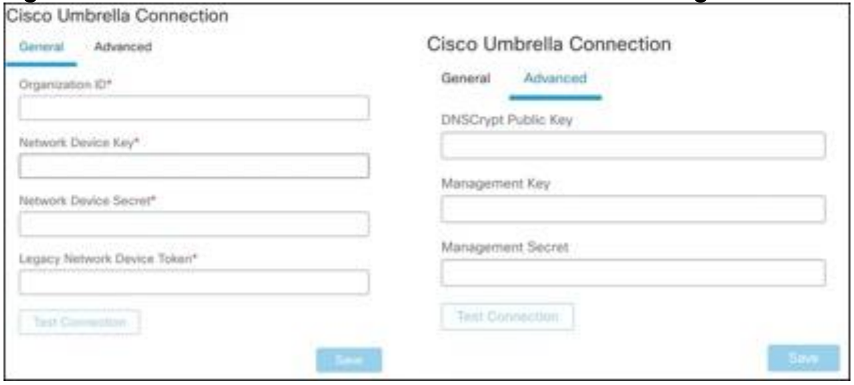
Step 5. Log in to Management Center.

Step 6. Choose **Integration > Other Integrations > Cloud Services > Cisco Umbrella Connection** to configure Cisco Umbrella connection parameters using the API keys.

**Table 1.** Mapping of Management Center Umbrella Parameters and Umbrella API Keys

| Management Center Parameter | Cisco Umbrella API Keys |
|---|---|
| Network Device Key<br>Network Device Secret | Umbrella Network Devices |
| Legacy Network Device Token | Legacy Network Devices |
| Management Key<br>Management Secret | Umbrella Management |

**Figure 3. Cisco Umbrella Connection Parameters in Management Center**



**Note:** DNSCrypt Public Key is an optional parameter.

Step 7. After adding the organization ID, token, and keys, click **Test Connection** to check the API integration with Umbrella.

If the connection is fine, a **Connection Successful** message is displayed.

### Configure a SASE Topology for Umbrella

High availability is achieved using different Umbrella data centers.

Step 1. Log in to the Management Center.

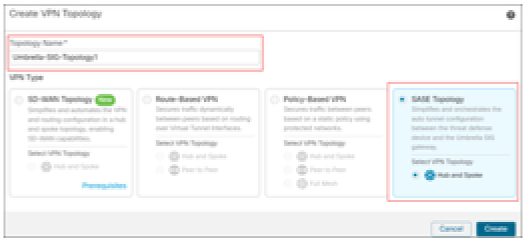
Step 2. Choose **Devices > VPN > Site To Site**.

Step 3. Click **Add**.

Step 4. Click the **SASE Topology** radio button to open the **SASE topology** wizard.

Step 5. In the **Topology Name** field, enter a unique topology name.

In this example, the name is **Umbrella-SIG-Topology1**.



Create VPN Topology

Topology Name*

Umbrella-SIG-Topology1

VPN Type

○ SD-WAN Topology New
Simplifies and automates the VPN and routing configuration in a hub and spoke topology, enabling SD-WAN capabilities.
Select VPN Topology
○ Hub and Spoke
Prerequisites

○ Route-Based VPN
Secures traffic dynamically between peers based on routing over Virtual Tunnel Interfaces.
Select VPN Topology
○ Hub and Spoke
○ Peer to Peer

○ Policy-Based VPN
Secures traffic between peers based on a static policy using protected networks.
Select VPN Topology
○ Hub and Spoke
○ Peer to Peer
○ Full Mesh

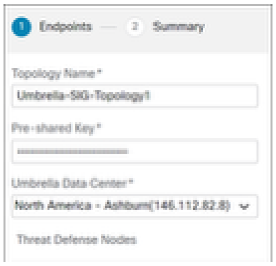
● SASE Topology
Simplifies and orchestrates the auto tunnel configuration between the threat defense device and the Umbrella SIG gateway.
Select VPN Topology
● Hub and Spoke

Step 6. Click **Create**.

Step 7. In the **Pre-shared Key** field, the wizard adds an auto-generated key according to the **Umbrella PSK** requirements.

The device and Umbrella share this secret key, and IKEv2 uses it for authentication. You can override the auto-generated key. If you want to configure this key, it must be between 16 and 64 characters in length, include at least one uppercase letter, one lowercase letter, one numeral, and have no special characters. Each topology must have a unique pre-shared key. If a topology has multiple tunnels, all the tunnels have the same pre-shared key.

Step 8. From the **Umbrella Data** center drop-down list, choose a data center.



Topology Name*
Umbrella-SIG-Topology1

Pre-shared Key*
••••••••••••••••••••••••

Umbrella Data Center*
North America - Ashburn(146.112.82.8)

Threat Defense Nodes

Step 9. Click **Add** to add a Threat Defense device as an endpoint in the SASE topology.

Step 10. In the **Add Endpoint** dialog box, configure these parameters:

i. From the **Device** drop-down list, choose a Threat Defense device (**PRI-FW-01**).

ii. From the **VPN Interface** drop-down list, click **+** to create a new static VTI interface.

iii. In the **Add Virtual Tunnel Interface** dialog box, you can view pre-populated default configurations. A few parameters must be configured as explained in the next steps.

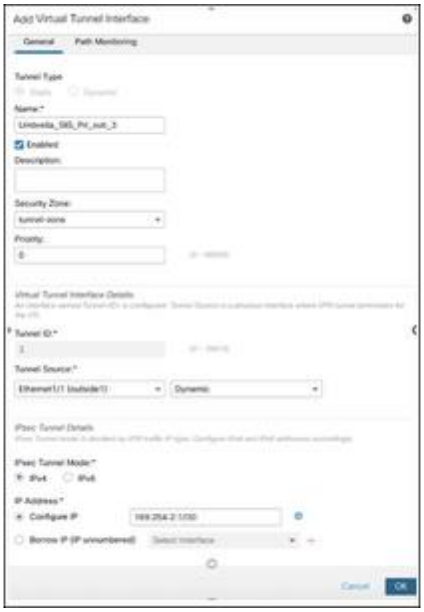
iv. In the **Name** field, enter the name for the static VTI. In this example, it is **Umbrella_SIG_Pri_svti_3**.

v. From the **Security Zone** drop-down list, choose a security zone. In this example, it is **tunnel-zone**.

vi. From the **Tunnel Source** drop-down list, choose an interface. In this example, it is the underlay interface **Ethernet1/1 (outside1)** and set the value as **Dynamic**.

vii. In the **IP Address** area, select the **Configure IP** radio button and enter an IP for the static VTI interface. In this example, it is **169.254.2.5/30**.

viii. Click **OK**.



Tunnel Type
○ Static ○ Dynamic

Name:* Umbrella_SIG_Pri_svti_3

☑ Enabled

Description:

Security Zone: tunnel-zone

Priority: 0 (0 - 65535)

Virtual Tunnel Interface Details

Tunnel ID:* 3

Tunnel Source:* Ethernet1/1 (outside1) Dynamic

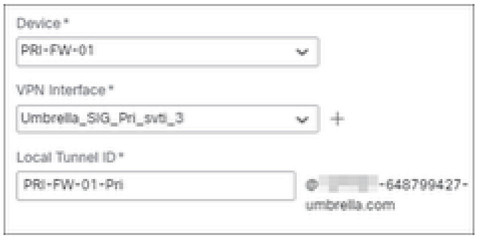
IPsec Tunnel Details

IPsec Tunnel Mode:* ● IPv4 ○ IPv6

IP Address:*
● Configure IP 169.254.2.1/30
○ Borrow IP (IP unnumbered) Select Interface

Step 11. In the **Local Tunnel ID** field, enter a prefix for the local tunnel ID. In this example, it is **PRI-FW-01-Pri**.

The prefix can have a minimum of eight characters and a maximum of 100 characters. Umbrella generates the complete tunnel ID (**<prefix>@<umbrella-generated-ID>-umbrella.com**) after the Management Center deploys the tunnel on Umbrella. The Management Center then retrieves and updates the complete tunnel ID and deploys it on the Threat Defense device. Each tunnel has a unique local tunnel ID.



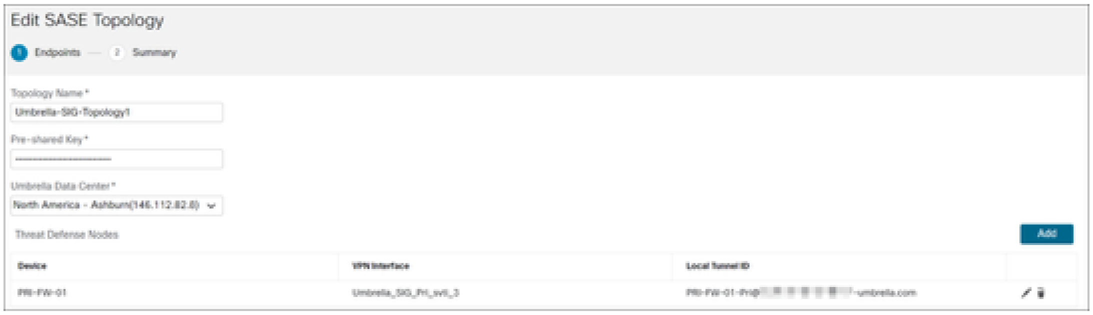
Device* PRI-FW-01

VPN Interface* Umbrella_SIG_Pri_svti_3 +

Local Tunnel ID* PRI-FW-01-Pri @[redacted]-648799427-umbrella.com

Step 12. Click **Save**.

Step 13. Review the information.



Edit SASE Topology

1 Endpoints — 2 Summary

Topology Name *
Umbrella-SIG-Topology1

Pre-shared Key *
••••••••••••••••••••••

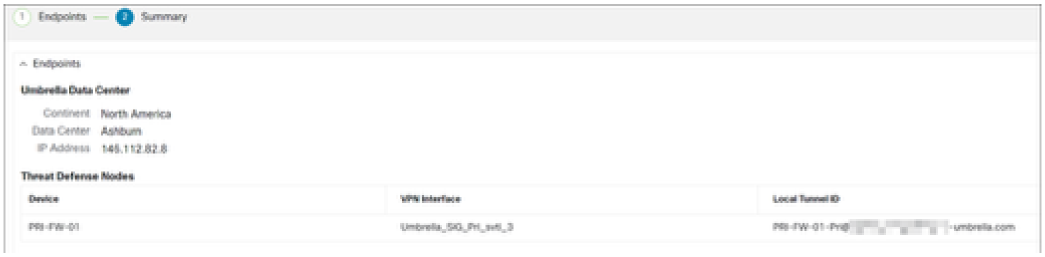
Umbrella Data Center *
North America - Ashburn(146.112.82.8)

Threat Defense Nodes

| Device | VPN Interface | Local Tunnel ID |
|---|---|---|
| PRI-FW-01 | Umbrella_SIG_Pri_svti_3 | PRI-FW-01-Pri@[redacted]-umbrella.com |

Step 14. Click **Next** to view the summary of the Umbrella SASE tunnel configuration.

- **Endpoints pane**: Displays the summary of the configured threat defense endpoints.



1 Endpoints — 2 Summary

Endpoints

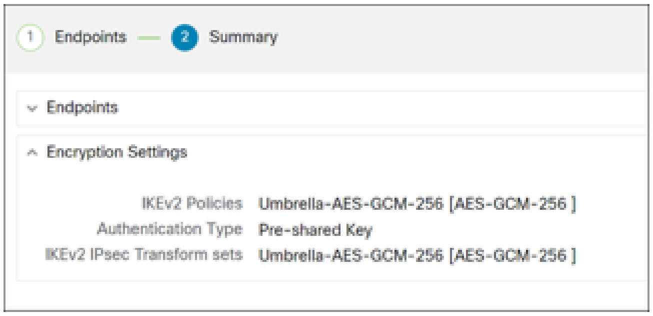
Umbrella Data Center

Continent North America
Data Center Ashburn
IP Address 146.112.82.8

Threat Defense Nodes

| Device | VPN Interface | Local Tunnel ID |
|---|---|---|
| PRI-FW-01 | Umbrella_SIG_Pri_svti_3 | PRI-FW-01-Pri@[redacted]-umbrella.com |

- **Encryption Settings pane**: Displays the encryption settings for the SASE tunnel.



1 Endpoints — 2 Summary

Endpoints

Encryption Settings

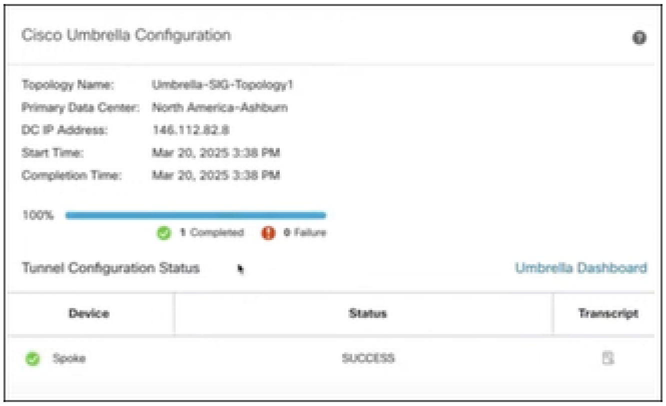
IKEv2 Policies Umbrella-AES-GCM-256 [AES-GCM-256 ]
Authentication Type Pre-shared Key
IKEv2 IPsec Transform sets Umbrella-AES-GCM-256 [AES-GCM-256 ]

Step 15. Check the **Deploy configuration on threat defense nodes** check box to trigger deployment of network tunnels to the Threat Defense device.

This deployment only occurs after the tunnels are deployed on Umbrella. Local tunnel ID is required for the threat defense deployment.

Step 16. Click **Save** to perform these actions:

- Saves the SASE topology in the Management Center.
- Triggers deployment of the network tunnels for the threat defense device to Umbrella.
- Triggers deployment of the network tunnels to the threat defense device, if the option is enabled. This action deploys all the updated configurations and policies, including non-VPN policies, since the last deployment on the device.
- Opens the **Cisco Umbrella Configuration** dialog box and displays the status of the tunnel deployment on Umbrella.



Cisco Umbrella Configuration

Topology Name: Umbrella-SIG-Topology1
Primary Data Center: North America-Ashburn
DC IP Address: 146.112.82.8
Start Time: Mar 20, 2025 3:38 PM
Completion Time: Mar 20, 2025 3:38 PM

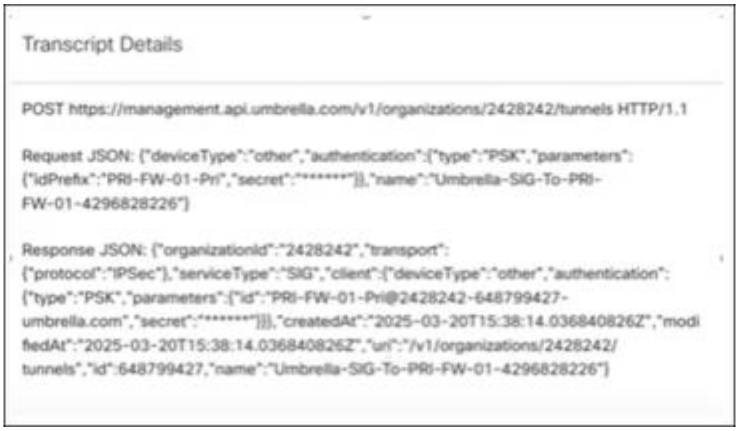
100%
✓ 1 Completed ● 0 Failure

Tunnel Configuration Status

| Device | Status | Transcript |
|---|---|---|
| ✓ Spoke | SUCCESS | ▯ |

Step 17. Click **Umbrella Dashboard** to view the network tunnels in Umbrella.

Step 18. Click the **Transcript** icon to view transcript details such as the APIs, request payload, and the response received from Umbrella.



Transcript Details

```
POST https://management.api.umbrella.com/v1/organizations/2428242/tunnels HTTP/1.1

Request JSON: {"deviceType":"other","authentication":{"type":"PSK","parameters":
{"idPrefix":"PRI-FW-01-Pri","secret":"*******"}},"name":"Umbrella-SIG-To-PRI-
FW-01-4296828226"}

Response JSON: {"organizationId":"2428242","transport":
{"protocol":"IPSec"},"serviceType":"SIG","client":{"deviceType":"other","authentication":
{"type":"PSK","parameters":{"id":"PRI-FW-01-Pri@2428242-648799427-
umbrella.com","secret":"*******"}}},"createdAt":"2025-03-20T15:38:14.036840826Z","modi
fiedAt":"2025-03-20T15:38:14.036840826Z","uri":"/v1/organizations/2428242/
tunnels","id":648799427,"name":"Umbrella-SIG-To-PRI-FW-01-4296828226"}
```

Step 19. Repeat Step 3 to Step 18 to configure the secondary tunnel to Umbrella (**Umbrella-SIG-Topology2**).

Step 20. Follow these guidelines when you configure the secondary tunnel:

- Choose a different Umbrella data center for this tunnel.
- Create a new static VTI interface (**Umbrella_SIG_Sec_svti_4**).
- Choose the **Tunnel Source** as **Ethernet1/1 (outside1).**
- Configure a new **Local Tunnel ID (PRI-FW-01-Sec)**.

## Configure Security Group Tags

A Security Group Tag (SGT) object specifies a single SGT value. You can use SGT objects in rules to control traffic with SGT attributes that are not assigned by Cisco ISE.

**Note:** You cannot create custom SGT objects if you use Cisco ISE as an identity source.

Step 1. Choose **Objects > Object Management**.

Step 2. In the left pane, click External Attributes > Security Group Tag.

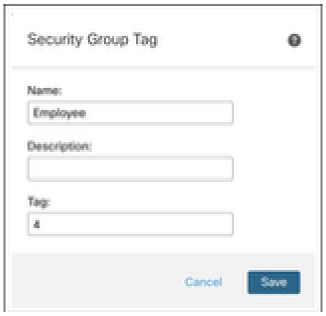
Step 3. Click **Add Security Group Tag**.

Step 4. In the **Name** field, enter a name. In this example, we use **Employee**.

Step 5. (Optional) In the **Description** field, enter the description.

Step 6. In the **Tag** field, enter a single SGT.

Step 7. Click **Save**. An SGT named **Employee** with a tag value of **4** is created.



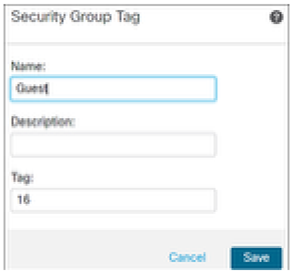
Security Group Tag

Name: Employee

Description:

Tag: 4

Step 8. Repeat Step 3 to Step 7 to create a **Guest** SGT of value **16**.



Security Group Tag

Name: Guest

Description:

Tag: 16

## Configure Extended ACL Objects

You must configure extended ACLs for applications to direct their traffic to the Internet through different egress interfaces using PBR.

In this example, we create ACLs with these rules:

- Block traffic from 10.71.0.0/16 to 10.0.0.0/8 with SGT 4, so that all employee overlay traffic uses normal routing.
- Permit employee DNS/HTTP/HTTPS traffic with SGT 4 to be routed to Umbrella SIG services for inspection and filtering.
- Permit all guest traffic with SGT 16 to be routed directly out to the internet.

Step 1. Choose **Objects > Object Management**.

Step 2. In the left pane, click **Access Lists** > **Extended**.

Step 3. Click **Add Extended Access List**.

Step 4. In the **New Extended ACL Object** dialog box, configure these parameters:

i. In the **Name** field, enter a name for the object (**Umbrella-SIG-employee-sgt4-acl**).

ii. Click **Add** to create a new extended access list.

iii. From the **Action** drop-down list, choose **Block**.

iv. Click the **Network** tab.

v. Search for **PRI-inside-10.71.0.0-16**, and click **Add to Source**.

vi. Search for **IPv4-Private- 10.0.0.0-8**, and click **Add to Destination**.

vii. Click the **Security Group Tag** tab.

viii. Search for **Employee**, and click **Add**.

ix. Click **Save**.

x. Click **Add** to add the next extended access list.

xi. From the **Action** drop-down list, choose **Allow**.

xii. Click the **Network** tab.

xiii. Search for **PRI-inside-10.71.0.0-16**, and click **Add to Source**.

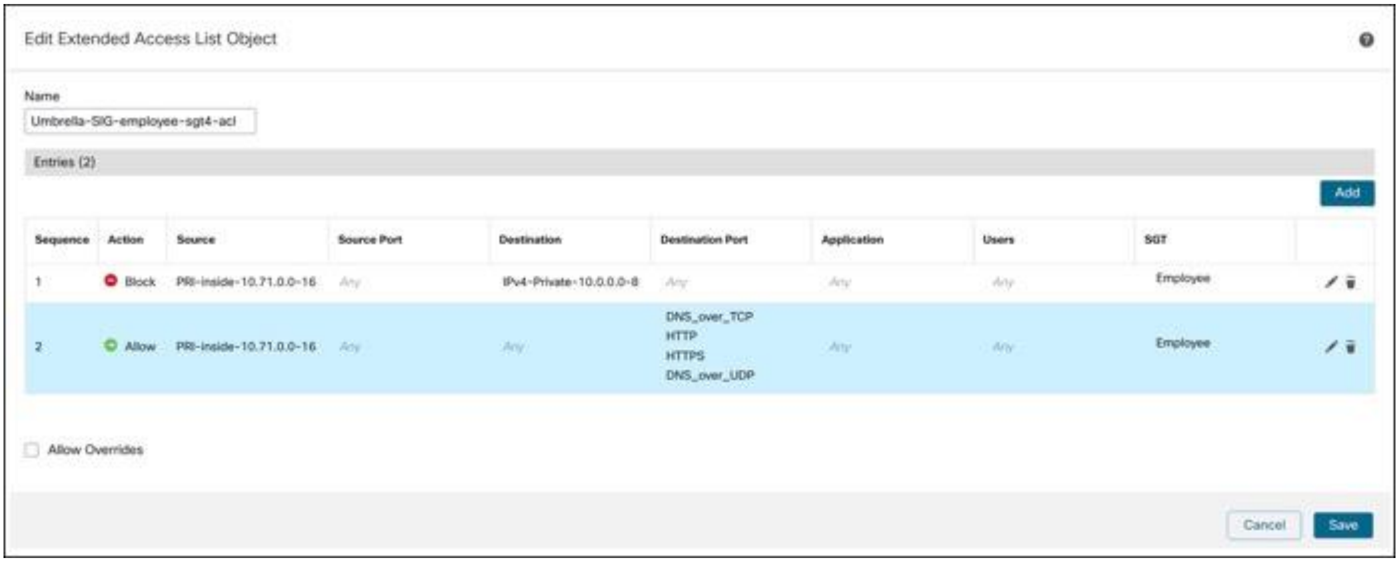
xiv. Search for **any**, and click **Add to Destination**.

xv. Click the **Security Group Tag** tab.

xvi. Search for **Employee**, and click **Add**.

xvii. Click **Save**.

Step 5. Click **Save**. The extended ACL is displayed in the **Extended ACL** page.



Edit Extended Access List Object

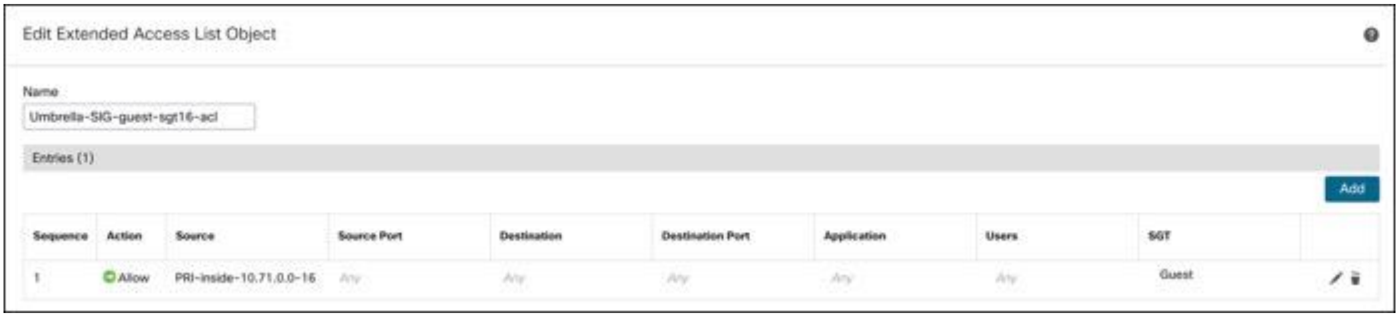
Name: Umbrella-SIG-employee-sgt4-acl

Entries (2)

| Sequence | Action | Source | Source Port | Destination | Destination Port | Application | Users | SGT |
|---|---|---|---|---|---|---|---|---|
| 1 | Block | PRI-inside-10.71.0.0-16 | Any | IPv4-Private-10.0.0.0-8 | Any | Any | Any | Employee |
| 2 | Allow | PRI-inside-10.71.0.0-16 | Any | Any | DNS_over_TCP<br>HTTP<br>HTTPS<br>DNS_over_UDP | Any | Any | Employee |

□ Allow Overrides

Step 6. Create an extended access list (**Umbrella-SIG-guest-sgt16-acl**) with Source network as **PRI-inside-10.71.0.0-16** and SGT as **Guest**.



Edit Extended Access List Object

Name: Umbrella-SIG-guest-sgt16-acl

Entries (1)

| Sequence | Action | Source | Source Port | Destination | Destination Port | Application | Users | SGT |
|---|---|---|---|---|---|---|---|---|
| 1 | Allow | PRI-inside-10.71.0.0-16 | Any | Any | Any | Any | Any | Guest |

## Configure a Static Route

You must configure a static default route for Cisco Umbrella with the next hop IP address as the other end of the static VTI tunnel **169.254.2.x**.

Step 1. Choose **Devices** > **Device Management**, and edit the Threat Defense device. In this example, we use **PRI-FW-01**.

Step 2. Click the **Routing** tab.

Step 3. In the left pane, click **Static Route**.

Step 4. Click **Add Route**.

Step 5. In the **Add Static Route Configuration** dialog box, configure these parameters:

i. Click the **IPv4** radio button.

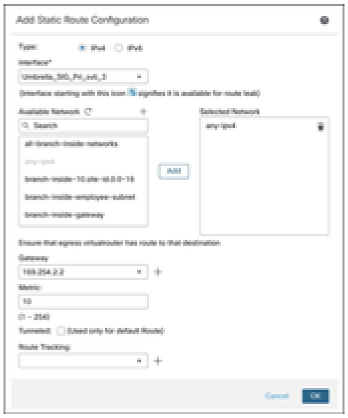
ii. From the **Interface** drop-down list, choose **Umbrella_SIG_Pri_svti_3**.

iii. Select the **Network** as **any-ipv4**.

iv. In the **Gateway** field, enter **169.254.2.2**. This IP address is derived from the tunnel IP address subnet defined in the Configure a SASE Topology for Umbrella section.

v. In the **Metric** field, enter a value greater than 1, because 1 has been used for the underlay network. In this example, it is **10**.

vi. Click **OK**.



Add Static Route Configuration

Type: ● IPv4 ○ IPv6

Interface*

Umbrella_SIG_Pri_svti_3

(Interface starting with this icon signifies it is available for route leak)

Available Network

Search

all-branch-inside-networks

any-ipv4

branch-inside-10.site-id.0.0-16

branch-inside-employee-subnet

branch-inside-gateway

Selected Network

any-ipv4

Ensure that egress virtualrouter has route to that destination

Gateway

169.254.2.2

Metric:

10

(1 - 254)

Tunneled: □ (Used only for default Route)

Route Tracking:

Step 6. Configure another static route for the secondary tunnel to Umbrella.

i. From the **Interface** drop-down list, choose **Umbrella_SIG_Sec_svti_4**.

ii. Select the **Network** as **any-ipv4**.

iii. In the **Gateway** field, enter **169.254.2.6**.

iv. In the **Metric** field, enter a value of **11**.

v. Click **OK**.

Step 7. Click **Save**.

## Configure a Policy Based Routing Policy

Step 1. Choose **Devices > Device Management**.

Step 2. Click the Edit icon adjacent to the device (**PRI-FW-01**).

Step 3. Click the **Routing** tab.

Step 4. In the left pane, click **Policy Based Routing**.

Step 5. Click **Add**.

Step 6. In the **Add Policy Based Route** dialog box, from the **Ingress Interface** drop-down list, choose an interface.

> **Note:** Only interfaces that have logical names and that belong to a global virtual router are listed in the drop-down.

In this example, the ingress interface is **inside-employee**.

Step 7. Click **Add** to specify a match criteria and a forward action in the policy.

Step 8. In the **Add Forwarding Actions** dialog box, configure these parameters:

i. From the **Match ACL** drop-down list, choose an extended ACL (**Umbrella-SIG-employee-sgt4-acl**).

ii. From the **Send To** drop-down list, choose **Egress Interfaces**.

iii. From the **Interface Ordering** drop-down list, choose **Order**.

iv. In the **Available Interfaces** box, click **+** adjacent to an interface to add the selected egress interface. In this example, select **Umbrella_SIG_Pri_svti_3** and **Umbrella_SIG_Sec_svti_4**.

v. Click **Save**.

Step 9. Click **Add** to configure a forwarding action for the guest traffic.

Step 10. In the **Add Forwarding Actions** dialog box, configure these parameters:

i. From the **Match ACL** drop-down list, choose an extended ACL (**Umbrella-SIG-guest-sgt16-acl**).

ii. From the **Send To** drop-down list, choose **Egress Interfaces**.

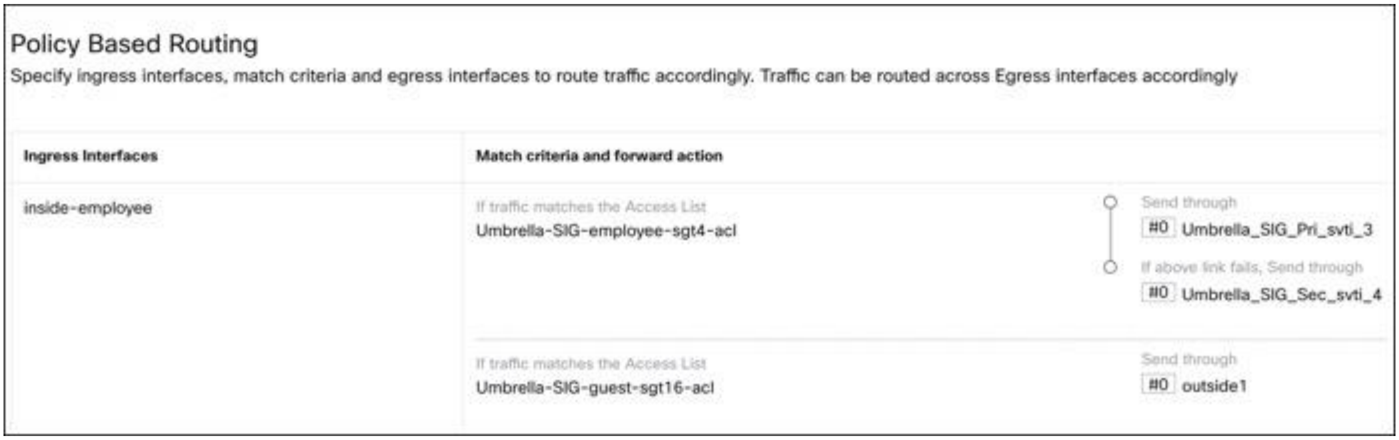
iii. From the **Interface Ordering** drop-down list, choose **Interface Priority**.

iv. In the **Available Interfaces** box, click **+** adjacent to an interface to add the selected egress interface. In this example, select **outside1**.

**Note:** Ensure that you have an access policy and a NAT policy for your Internet traffic.

Step 11. Click **Save**.

Here's an example of the configuration.



Policy Based Routing

Specify ingress interfaces, match criteria and egress interfaces to route traffic accordingly. Traffic can be routed across Egress interfaces accordingly

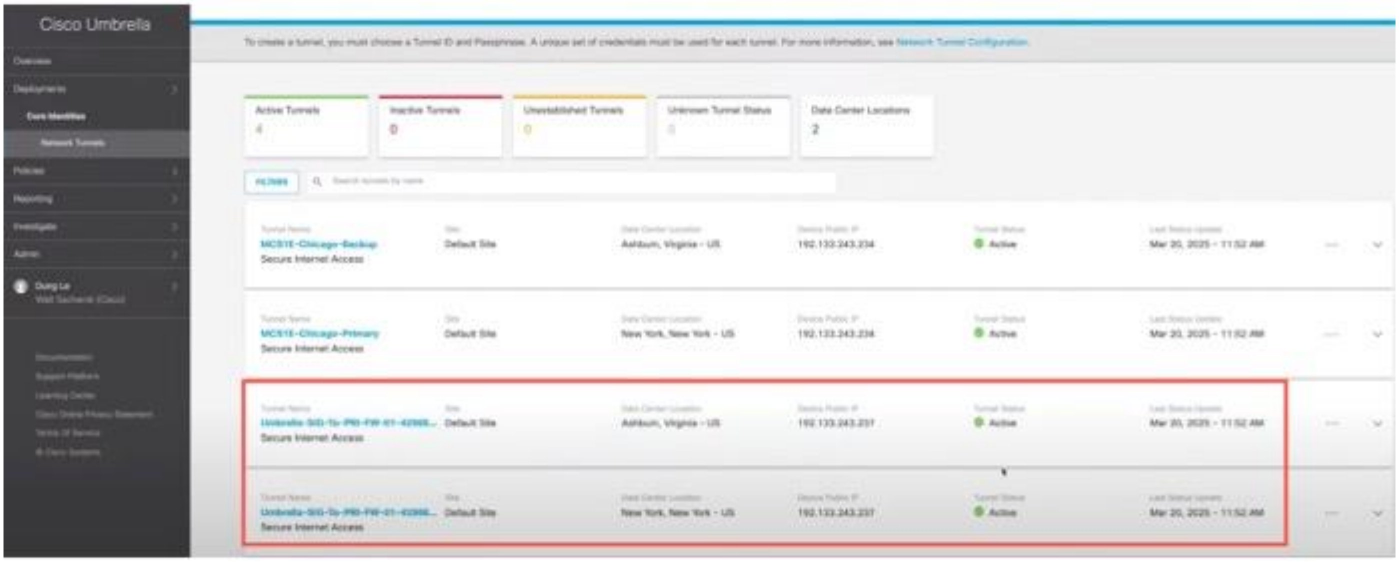
| Ingress Interfaces | Match criteria and forward action | |
|---|---|---|
| inside-employee | If traffic matches the Access List<br>Umbrella-SIG-employee-sgt4-acl | Send through<br>#0 Umbrella_SIG_Pri_svti_3<br>If above link fails, Send through<br>#0 Umbrella_SIG_Sec_svti_4 |
| | If traffic matches the Access List<br>Umbrella-SIG-guest-sgt16-acl | Send through<br>#0 outside1 |

Step 12. Deploy the PBR policy on the device.

## Verify SASE Umbrella Tunnel Deployment

### View SASE Tunnels in Umbrella

To view the SASE tunnel in Umbrella, log in to Cisco Umbrella and choose **Deployments > Core Identities > Network Tunnels**. The network tunnels from the Threat Defense device to Umbrella is displayed.



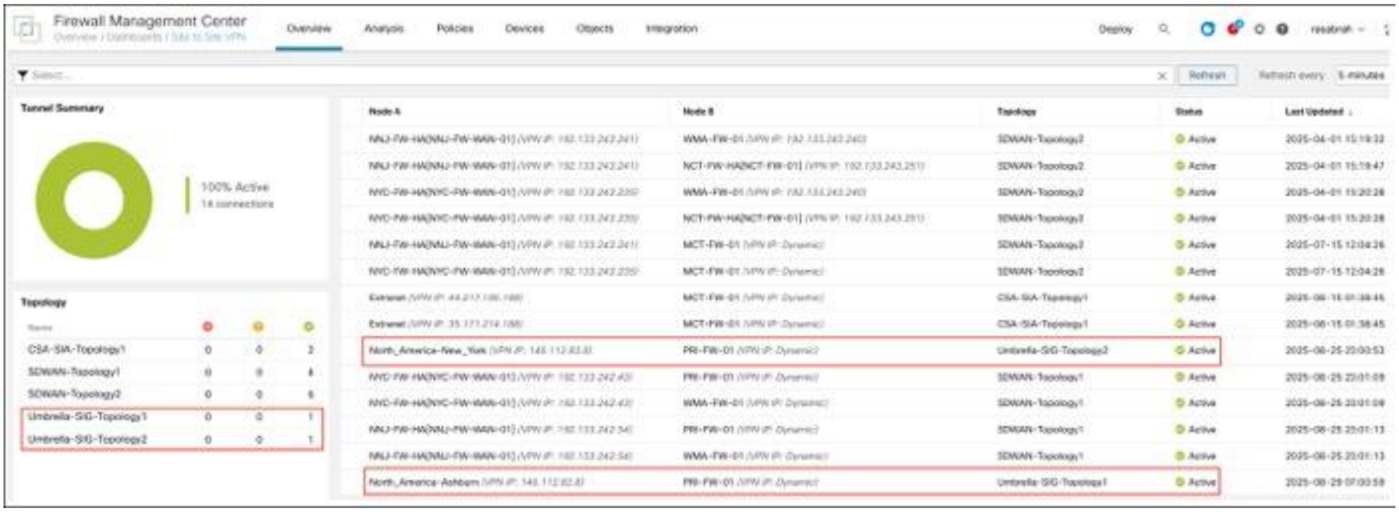
To create a tunnel, you must choose a Tunnel ID and Passphrase. A unique set of credentials must be used for each tunnel. For more information, see Network Tunnel Configuration.

| Active Tunnels | Inactive Tunnels | Unestablished Tunnels | Unknown Tunnel Status | Data Center Locations |
|---|---|---|---|---|
| 4 | 0 | 0 | 0 | 2 |

| Tunnel Name | Site | Data Center Location | Device Public IP | Tunnel Status | Last Status Update |
|---|---|---|---|---|---|
| MCS1E-Chicago-Backup<br>Secure Internet Access | Default Site | Ashburn, Virginia - US | 192.133.243.234 | Active | Mar 20, 2025 - 11:52 AM |
| MCS1E-Chicago-Primary<br>Secure Internet Access | Default Site | New York, New York - US | 192.133.243.234 | Active | Mar 20, 2025 - 11:52 AM |
| Umbrella-SIG-To-PRI-FW-01-42988...<br>Secure Internet Access | Default Site | Ashburn, Virginia - US | 192.133.243.237 | Active | Mar 20, 2025 - 11:52 AM |
| Umbrella-SIG-To-PRI-FW-01-42988...<br>Secure Internet Access | Default Site | New York, New York - US | 192.133.243.237 | Active | Mar 20, 2025 - 11:52 AM |

### View SASE Tunnels in Management Center

To view the SASE tunnels in the **Site To Site VPN** dashboard in the Management Center, choose **Overview** > **Dashboard** > **Site to Site VPN**.



Topology

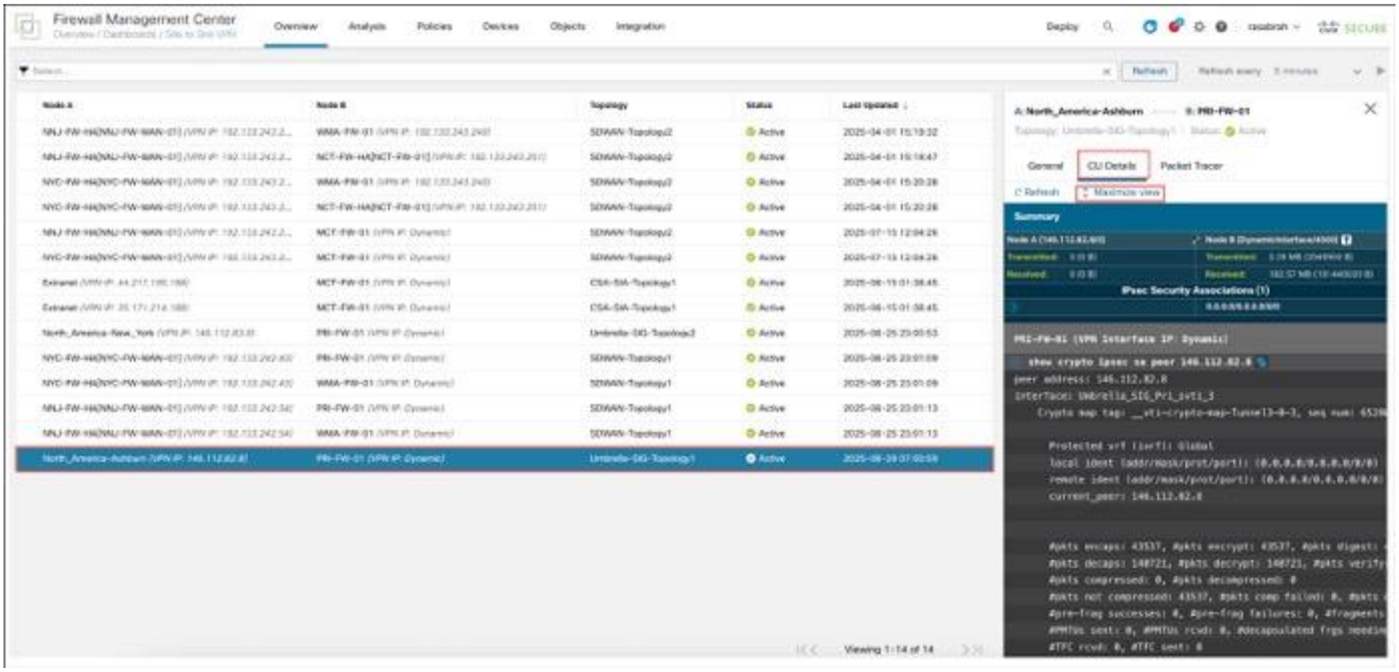
| Name | 🔴 | 🟡 | 🟢 |
|---|---|---|---|
| CSA-SIA-Topology1 | 0 | 0 | 2 |
| SDWAN-Topology1 | 0 | 0 | 4 |
| SDWAN-Topology2 | 0 | 0 | 6 |
| Umbrella-SIG-Topology1 | 0 | 0 | 1 |
| Umbrella-SIG-Topology2 | 0 | 0 | 1 |

| Node A | Node B | Topology | Status | Last Updated |
|---|---|---|---|---|
| NNJ-FW-HA[NNJ-FW-WAN-01] (VPN IP: 192.133.242.241) | WMA-FW-01 (VPN IP: 192.133.243.240) | SDWAN-Topology2 | Active | 2025-04-01 15:19:32 |
| NNJ-FW-HA[NNJ-FW-WAN-01] (VPN IP: 192.133.242.241) | NCT-FW-HA[NCT-FW-01] (VPN IP: 192.133.243.251) | SDWAN-Topology2 | Active | 2025-04-01 15:19:47 |
| NYC-FW-HA[NYC-FW-WAN-01] (VPN IP: 192.133.242.235) | WMA-FW-01 (VPN IP: 192.133.243.240) | SDWAN-Topology2 | Active | 2025-04-01 15:20:28 |
| NYC-FW-HA[NYC-FW-WAN-01] (VPN IP: 192.133.242.235) | NCT-FW-HA[NCT-FW-01] (VPN IP: 192.133.243.251) | SDWAN-Topology2 | Active | 2025-04-01 15:20:28 |
| NNJ-FW-HA[NNJ-FW-WAN-01] (VPN IP: 192.133.242.241) | MCT-FW-01 (VPN IP: Dynamic) | SDWAN-Topology2 | Active | 2025-07-15 12:04:26 |
| NYC-FW-HA[NYC-FW-WAN-01] (VPN IP: 192.133.242.235) | MCT-FW-01 (VPN IP: Dynamic) | SDWAN-Topology2 | Active | 2025-07-15 12:04:28 |
| Extranet (VPN IP: 44.217.106.188) | MCT-FW-01 (VPN IP: Dynamic) | CSA-SIA-Topology1 | Active | 2025-08-15 01:38:45 |
| Extranet (VPN IP: 35.171.214.188) | MCT-FW-01 (VPN IP: Dynamic) | CSA-SIA-Topology1 | Active | 2025-08-15 01:38:45 |
| North_America-New_York (VPN IP: 145.112.83.8) | PRI-FW-01 (VPN IP: Dynamic) | Umbrella-SIG-Topology2 | Active | 2025-08-25 20:00:53 |
| NYC-FW-HA[NYC-FW-WAN-01] (VPN IP: 192.133.242.43) | PRI-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 20:01:08 |
| NYC-FW-HA[NYC-FW-WAN-01] (VPN IP: 192.133.242.43) | WMA-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 20:01:08 |
| NNJ-FW-HA[NNJ-FW-WAN-01] (VPN IP: 192.133.242.54) | PRI-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 20:01:13 |
| NNJ-FW-HA[NNJ-FW-WAN-01] (VPN IP: 192.133.242.54) | WMA-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 20:01:13 |
| North_America-Ashburn (VPN IP: 146.112.82.8) | PRI-FW-01 (VPN IP: Dynamic) | Umbrella-SIG-Topology1 | Active | 2025-08-29 07:00:58 |

To see more details about each tunnel:

Step 1. For each tunnel, hover your cursor over a topology and click the View (👁) icon.

Step 2. Click the **CLI Details** tab.



| Node A | Node B | Topology | Status | Last Updated ↓ |
|---|---|---|---|---|
| NNJ-FW-HA(NNJ-FW-WAN-01) (VPN IP: 192.133.242.2... | WMA-FW-01 (VPN IP: 192.133.243.240) | SDWAN-Topology2 | Active | 2025-04-01 15:19:32 |
| NNJ-FW-HA(NNJ-FW-WAN-01) (VPN IP: 192.133.242.2... | NCT-FW-HA(NCT-FW-01) (VPN IP: 192.133.242.251) | SDWAN-Topology2 | Active | 2025-04-01 15:18:47 |
| NYC-FW-HA(NYC-FW-WAN-01) (VPN IP: 192.133.243.2... | WMA-FW-01 (VPN IP: 192.133.243.240) | SDWAN-Topology2 | Active | 2025-04-01 15:20:28 |
| NYC-FW-HA(NYC-FW-WAN-01) (VPN IP: 192.133.243.2... | NCT-FW-HA(NCT-FW-01) (VPN IP: 192.133.242.251) | SDWAN-Topology2 | Active | 2025-04-01 15:20:28 |
| NNJ-FW-HA(NNJ-FW-WAN-01) (VPN IP: 192.133.242.2... | MCT-FW-01 (VPN IP: Dynamic) | SDWAN-Topology2 | Active | 2025-07-15 12:04:26 |
| NYC-FW-HA(NYC-FW-WAN-01) (VPN IP: 192.133.243.2... | MCT-FW-01 (VPN IP: Dynamic) | SDWAN-Topology2 | Active | 2025-07-15 12:04:26 |
| Extranet (VPN IP: 44.217.195.198) | MCT-FW-01 (VPN IP: Dynamic) | CSA-SIA-Topology1 | Active | 2025-08-15 01:38:45 |
| Extranet (VPN IP: 35.171.214.188) | MCT-FW-01 (VPN IP: Dynamic) | CSA-SIA-Topology1 | Active | 2025-08-15 01:38:45 |
| North_America-New_York (VPN IP: 146.112.83.8) | PRI-FW-01 (VPN IP: Dynamic) | Umbrella-SIG-Topology2 | Active | 2025-08-25 23:00:53 |
| NYC-FW-HA(NYC-FW-WAN-01) (VPN IP: 192.133.242.43) | PRI-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 23:01:09 |
| NYC-FW-HA(NYC-FW-WAN-01) (VPN IP: 192.133.242.43) | WMA-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 23:01:09 |
| NNJ-FW-HA(NNJ-FW-WAN-01) (VPN IP: 192.133.242.34) | PRI-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 23:01:13 |
| NNJ-FW-HA(NNJ-FW-WAN-01) (VPN IP: 192.133.242.34) | WMA-FW-01 (VPN IP: Dynamic) | SDWAN-Topology1 | Active | 2025-08-25 23:01:13 |
| North_America-Ashburn (VPN IP: 146.112.82.8) | PRI-FW-01 (VPN IP: Dynamic) | Umbrella-SIG-Topology1 | Active | 2025-08-28 07:00:59 |

Viewing 1-14 of 14

A: North_America-Ashburn — B: PRI-FW-01

Topology: Umbrella-SIG-Topology1 | Status: Active

Summary

| Node A (146.112.82.8/0) | | Node B (Dynamic Interface/4500) | |
|---|---|---|---|
| Transmitted: | 0 (0 B) | Transmitted: | 3.39 MB (3549900 B) |
| Received: | 0 (0 B) | Received: | 182.57 MB (191440020 B) |

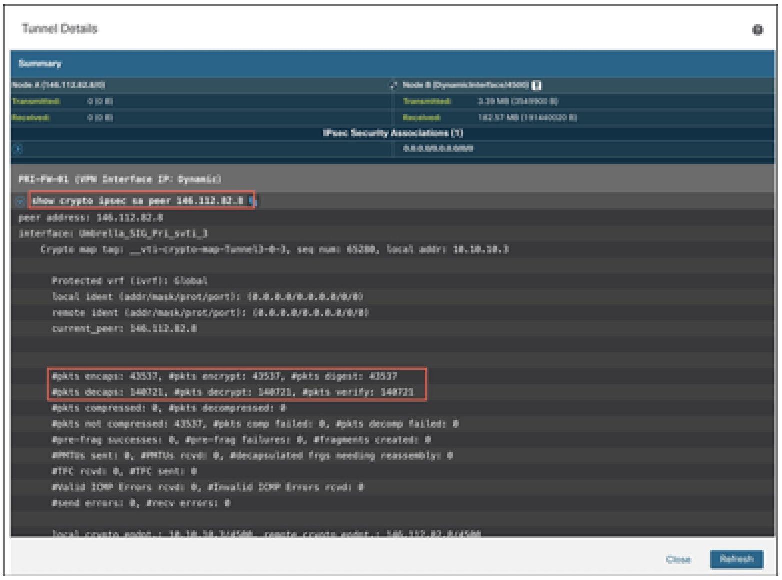
IPsec Security Associations (1)

0.0.0.0/0.0.0.0/0/0

```
PRI-FW-01 (VPN Interface IP: Dynamic)
show crypto ipsec sa peer 146.112.82.8
peer address: 146.112.82.8
interface: Umbrella_SIG_Pri_svti_3
    Crypto map tag: __vti-crypto-map-Tunnel3-0-3, seq num: 6528

      Protected vrf (ivrf): Global
      local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      remote ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      current_peer: 146.112.82.8


      #pkts encaps: 43537, #pkts encrypt: 43537, #pkts digest:
      #pkts decaps: 140721, #pkts decrypt: 140721, #pkts verify
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 43537, #pkts comp failed: 0, #pkts
      #pre-frag successes: 0, #pre-frag failures: 0, #fragments
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs needin
      #TFC rcvd: 0, #TFC sent: 0
```

Step 3. Click **Maximize View.** You can view the output of the following commands:

- **show crypto ipsec sa peer**: Shows the number of packets that are transmitted through the tunnel. In this example, the specified peer IP is **146.112.82.8**, which allows us to view the exact tunnel statistics for SASE, as there are multiple tunnels involved.



Tunnel Details

Summary

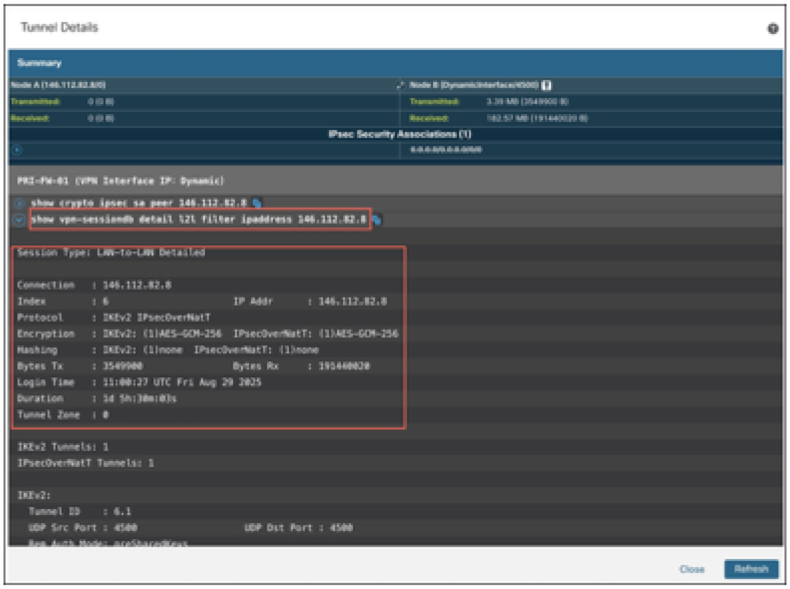
| Node A (146.112.82.8/0) | | Node B (Dynamic Interface/4500) | |
|---|---|---|---|
| Transmitted: | 0 (0 B) | Transmitted: | 3.39 MB (3549900 B) |
| Received: | 0 (0 B) | Received: | 182.57 MB (191440020 B) |

IPsec Security Associations (1)

0.0.0.0/0.0.0.0/0/0

```
PRI-FW-01 (VPN Interface IP: Dynamic)
show crypto ipsec sa peer 146.112.82.8
peer address: 146.112.82.8
interface: Umbrella_SIG_Pri_svti_3
    Crypto map tag: __vti-crypto-map-Tunnel3-0-3, seq num: 65280, local addr: 10.10.10.3

      Protected vrf (ivrf): Global
      local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      remote ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      current_peer: 146.112.82.8


      #pkts encaps: 43537, #pkts encrypt: 43537, #pkts digest: 43537
      #pkts decaps: 140721, #pkts decrypt: 140721, #pkts verify: 140721
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 43537, #pkts comp failed: 0, #pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0, #fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs needing reassembly: 0
      #TFC rcvd: 0, #TFC sent: 0
      #Valid ICMP Errors rcvd: 0, #Invalid ICMP Errors rcvd: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 10.10.10.3/4500, remote crypto endpt.: 146.112.82.8/4500
```

- **show vpn-sessiondb detail l2l filter ipaddress**: Shows more detailed data for the VPN connection.



Tunnel Details

Summary

| Node A (146.112.82.8/0) | | Node B (Dynamic/interface/4500) | |
|---|---|---|---|
| Transmitted: | 0 (0 B) | Transmitted: | 3.39 MB (3549900 B) |
| Received: | 0 (0 B) | Received: | 182.57 MB (191440020 B) |

IPsec Security Associations (1)

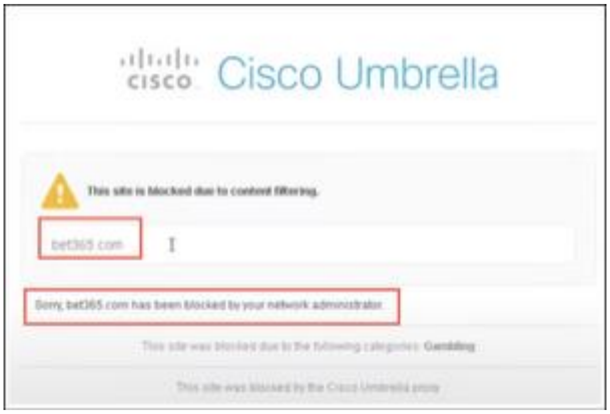
0.0.0.0/0/0.0.0.0/0/0

PRI-FW-01 (VPN Interface IP: Dynamic)

```
show crypto ipsec sa peer 146.112.82.8
show vpn-sessiondb detail l2l filter ipaddress 146.112.82.8

Session Type: LAN-to-LAN Detailed

Connection   : 146.112.82.8
Index        : 6                       IP Addr      : 146.112.82.8
Protocol     : IKEv2 IPsecOverNatT
Encryption   : IKEv2: (1)AES-GCM-256  IPsecOverNatT: (1)AES-GCM-256
Hashing      : IKEv2: (1)none  IPsecOverNatT: (1)none
Bytes Tx     : 3549900                 Bytes Rx     : 191440020
Login Time   : 11:00:27 UTC Fri Aug 29 2025
Duration     : 1d 5h:30m:03s
Tunnel Zone  : 0

IKEv2 Tunnels: 1
IPsecOverNatT Tunnels: 1

IKEv2:
  Tunnel ID    : 6.1
  UDP Src Port : 4500                    UDP Dst Port : 4500
  Rem Auth Mode: preSharedKeys
```

## Verify Traffic to Umbrella

From a client with IP address **10.71.120.100** (See Figure 1. for details), when you log in as an employee with SGT 4, you can browse the Internet. If you try to access any sites that are blocked such as betting sites, you will notice that Umbrella blocks these sites.



Cisco Umbrella

This site is blocked due to content filtering.

bet365.com

Sorry, bet365.com has been blocked by your network administrator.

This site was blocked due to the following categories: Gambling

This site was blocked by the Cisco Umbrella proxy

If you verify the IP address of the client, you can see that the assigned IP address is **155.190.18.5**, which is within the Umbrella SIG IP address range: **155.190.0.0/16**. Here, the employee will be able to access the internet using the Umbrella SIG IP range.

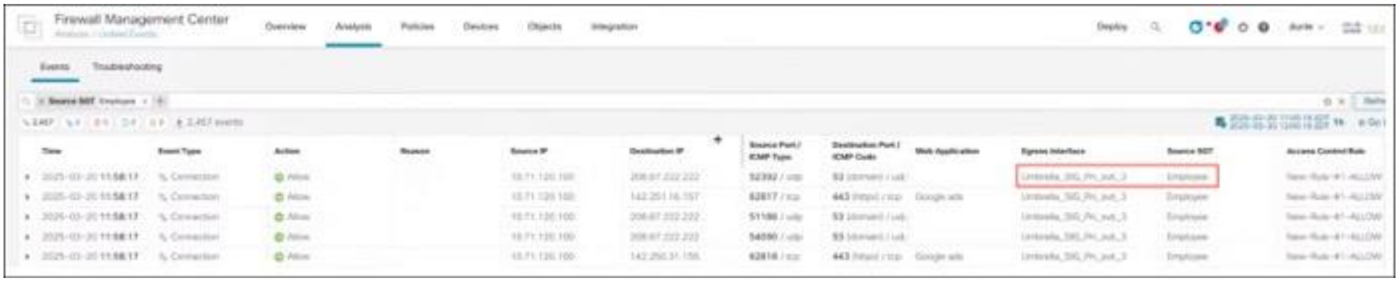
From the client with the IP address **10.71.120.100**, when you log in as a guest with SGT 16, you can verify that you cannot access the internal network. However, you can access the internet and blocked sites. The guest will be able to access the internet directly without going through Umbrella.

## Verify Traffic Flow in Management Center

Step 1. Choose **Analysis > Unified Events**.

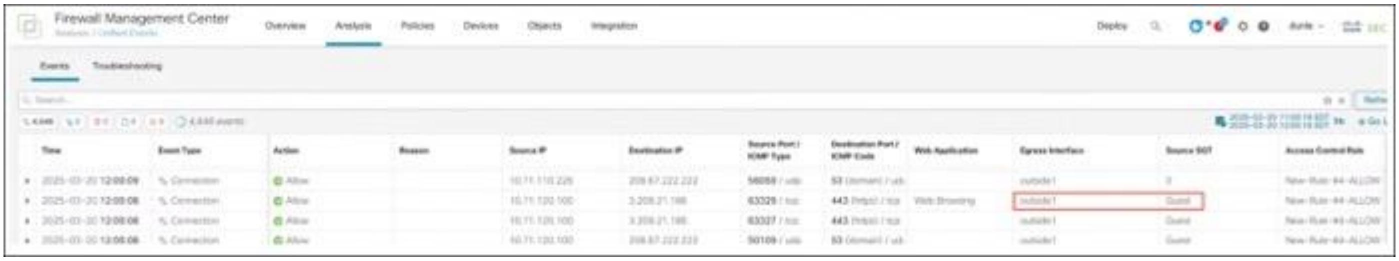
Step 2. Within the **Source SGT** filter, enter **Employee**.

Traffic with source **SGT 4** goes through the **Umbrella_SIG_Pri_svti_3 interface**.



| Time | Event Type | Action | Reason | Source IP | Destination IP | Source Port / ICMP Type | Destination Port / ICMP Code | Web Application | Egress Interface | Source SGT | Access Control Rule |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2025-03-20 11:58:17 | Connection | Allow | | 10.71.120.100 | 208.67.222.222 | 52392 / udp | 53 (domain) / udp | | Umbrella_SIG_Pri_tun_3 | Employee | New-Rule-#1-ALLOW |
| 2025-03-20 11:58:17 | Connection | Allow | | 10.71.120.100 | 142.251.16.157 | 62817 / tcp | 443 (https) / tcp | Google ads | Umbrella_SIG_Pri_tun_3 | Employee | New-Rule-#1-ALLOW |
| 2025-03-20 11:58:17 | Connection | Allow | | 10.71.120.100 | 208.67.222.222 | 51186 / udp | 53 (domain) / udp | | Umbrella_SIG_Pri_tun_3 | Employee | New-Rule-#1-ALLOW |
| 2025-03-20 11:58:17 | Connection | Allow | | 10.71.120.100 | 208.67.222.222 | 54090 / udp | 53 (domain) / udp | | Umbrella_SIG_Pri_tun_3 | Employee | New-Rule-#1-ALLOW |
| 2025-03-20 11:58:17 | Connection | Allow | | 10.71.120.100 | 142.250.31.156 | 62816 / tcp | 443 (https) / tcp | Google ads | Umbrella_SIG_Pri_tun_3 | Employee | New-Rule-#1-ALLOW |

Traffic with source **SGT 16** goes through the **outside1** interface.



| Time | Event Type | Action | Reason | Source IP | Destination IP | Source Port / ICMP Type | Destination Port / ICMP Code | Web Application | Egress Interface | Source SGT | Access Control Rule |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2025-03-20 12:08:09 | Connection | Allow | | 10.71.110.226 | 208.67.222.222 | 56058 / udp | 53 (domain) / udp | | outside1 | 0 | New-Rule-#4-ALLOW |
| 2025-03-20 12:08:08 | Connection | Allow | | 10.71.120.100 | 3.208.21.186 | 63329 / tcp | 443 (https) / tcp | Web Browsing | outside1 | Guest | New-Rule-#4-ALLOW |
| 2025-03-20 12:08:08 | Connection | Allow | | 10.71.120.100 | 3.208.21.186 | 63327 / tcp | 443 (https) / tcp | | outside1 | Guest | New-Rule-#4-ALLOW |
| 2025-03-20 12:08:08 | Connection | Allow | | 10.71.120.100 | 208.67.222.223 | 50109 / udp | 53 (domain) / udp | | outside1 | Guest | New-Rule-#4-ALLOW |

### Verify Traffic Flow in Umbrella

The **Activity Search** report includes details about traffic from Firewall that has been allowed or blocked by Umbrella.

Choose **Reporting** > **Core Reports** > **Activity Search.**

**Figure 4.** **Allowed Traffic**

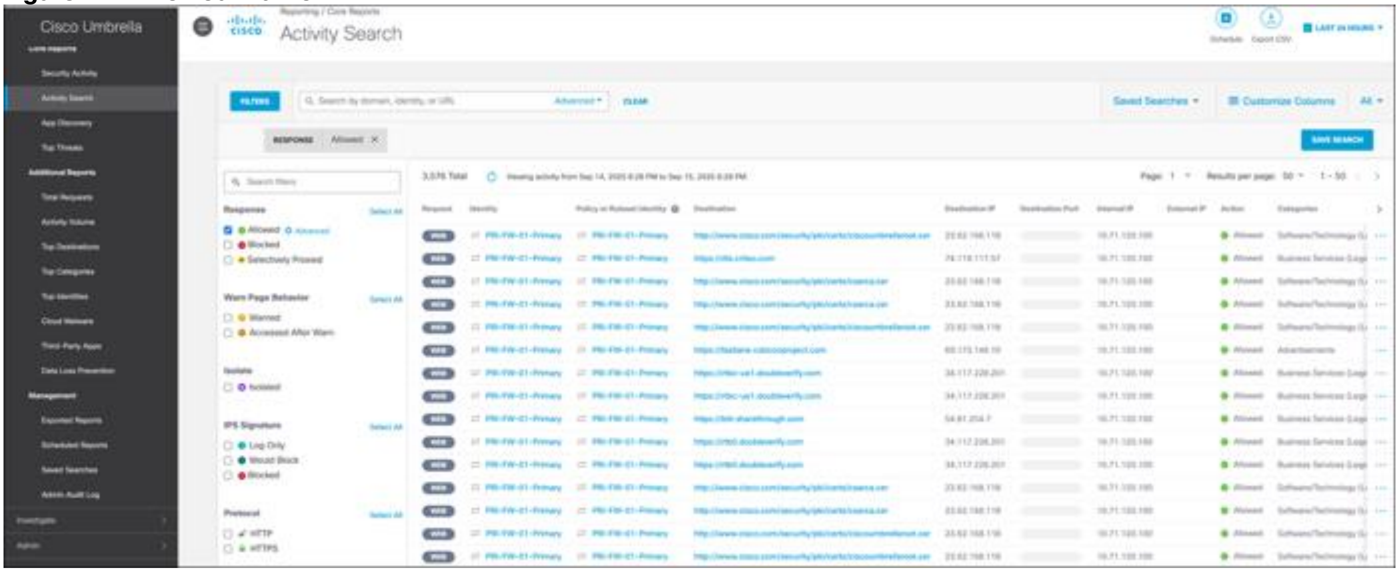
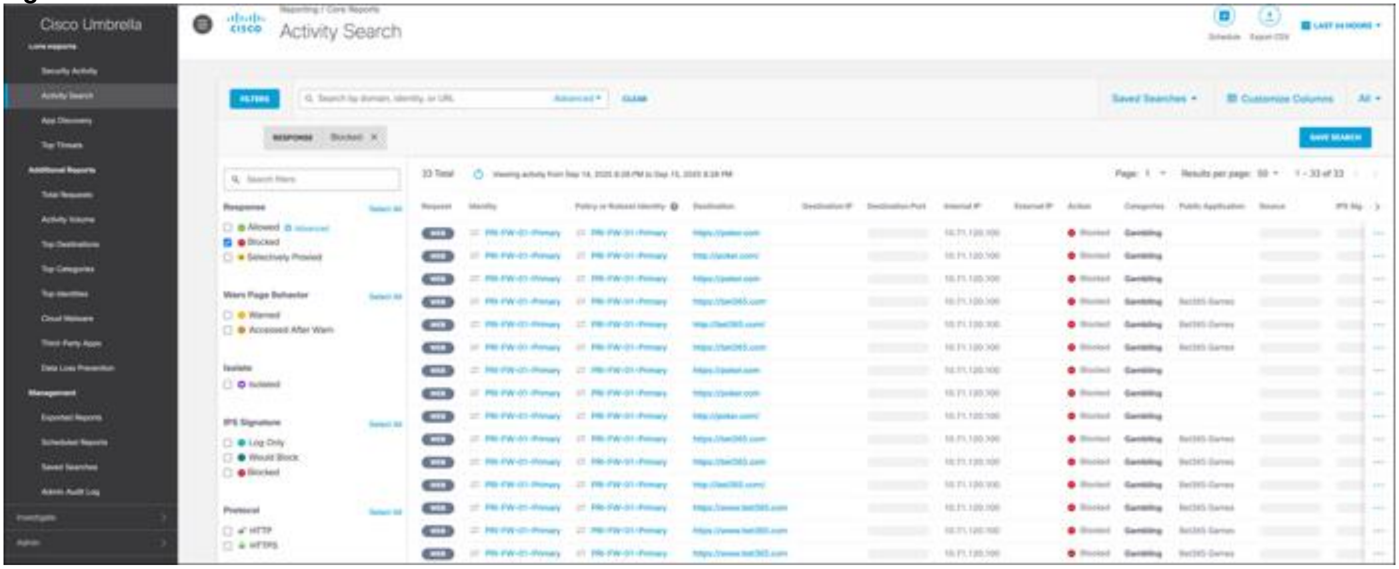


**Figure 5. Blocked Traffic**



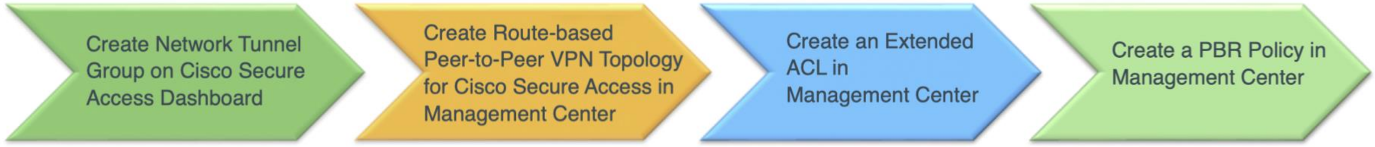
## Cisco SSE Solution: Secure Branch Using Cisco Secure Access and Threat Defense

Cisco Secure Access is Cisco's cloud-based platform that provides you with multiple levels of defense against internet-based threats. Connect securely to the internet, integrate with SaaS apps, and your private digital resources, whether you connect from your organization's network or roaming off a network.

Secure Firewall seamlessly integrates with Secure Access for various use cases primarily for:

- **Enhanced visibility and control for remote users**: Secure Access extends security policies beyond the physical branch perimeter to protect users regardless of location, providing the same level of threat protection and access controls equivalent to on-premises, creating consistent security enforcement.
- **Simplified security architecture**: Secure Access integrates with a Threat Defense device to consolidate multiple security functions such as Secure Web Gateway, CASB, DLP, and cloud firewall. This consolidation provides a single-pane-of-glass experience for policy management across branch deployments and cloud-delivered security services.

### Workflow for Integrating Secure Access with Threat Defense


Create Network Tunnel Group on Cisco Secure Access Dashboard
Create Route-based Peer-to-Peer VPN Topology for Cisco Secure Access in Management Center
Create an Extended ACL in Management Center
Create a PBR Policy in Management Center

This section outlines the configuration process for Cisco Secure Access integration, which primarily involves setting up manual tunnels from the Threat Defense platform to Cisco Secure Access.

1. Create a Network Tunnel Group on the Cisco Secure Access dashboard.

   This initial step involves creating the tunnel group and gathering the necessary configuration details from the Cisco Secure Access Dashboard.

2. Configure the tunnel using the Route-Based VPN wizard in the Management Center.

After creating the network tunnel group on Cisco Secure Access, proceed to the Management Center to establish the route-based VPN topology connecting to Cisco Secure Access.

3. Create an extended Access Control List (ACL).

   This ACL defines the specific DNS and web traffic intended for routing through the tunnel to Cisco Secure Access. This approach aligns with the Cisco Umbrella integrations.

4. Create a policy-based routing (PBR) policy

   Use the previously created ACL within policy-based routing to direct the defined DNS and web traffic through the tunnel to Cisco Secure Access for security inspection.

5. Verification and Troubleshooting

   Similar to Cisco Umbrella integrations, verification and troubleshooting commands are available. A key difference is the ability to log into the Cisco Secure Access Dashboard to check tunnel status and view additional statistics.

The integration of Cisco Secure Access is supported with Management Center Version 7.1 and later. It also allows for the manual creation of tunnels for Cisco Secure Access.

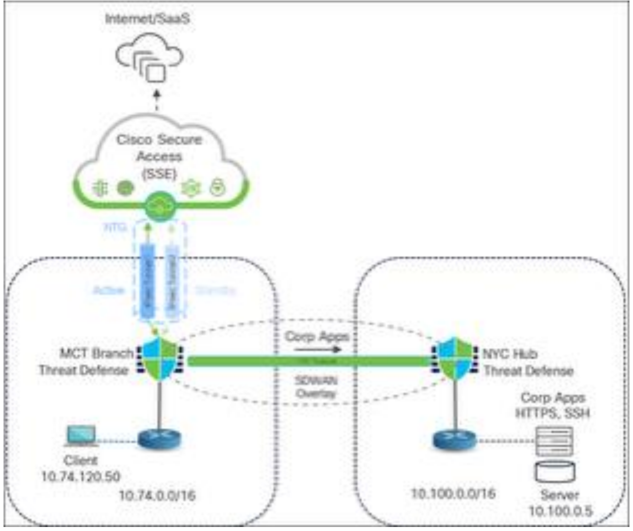
### Prerequisites for Integrating Secure Access with Threat Defense

- Management Center must be Version 7.1 and later.
- Threat Defense device must be Version 7.1 and later.
- Base license must be enabled with export-controlled features in the Management Center.
- Cisco Secure Access Essentials subscription license must be available.

### Integrate Cisco Secure Access with Threat Defense for Branch Network Security

In this example, we use the this topology for Secure Access integration for network security of the branch:

**Figure 6. Network Topology for Cisco Secure Access Integration**



- MCT Branch Setup: The MCT branch uses a single Threat Defense device, which already has an established SD-WAN overlay tunnel. This tunnel provides connectivity to the internal resources at the New York City (NYC) hub site, where corporate applications reside (10.100.0.0/16).
- Tunnels to Cisco Secure Access: For secure internet access and cloud security enforcement, two IPsec tunnels are configured from the MCT branch Threat Defense to Cisco Secure Access. One tunnel is

designated as active, while the other serves as a standby for redundancy, ensuring high availability in case of a primary connection failure.

- Policy-Based Routing (PBR): The core of this integration lies in the Policy-Based Routing (PBR) configuration on the device, which explicitly dictates how different types of traffic are handled:
    - Internal Traffic (Overlay Traffic): A PBR rule is set up to block traffic originating from the MCT branch's 10.74.0.0/16 IP block and directed to internal networks (represented as 10.0.0.0/8, which includes the 10.100.0.0/16 corporate application subnet at the NYC Hub). This explicit block ensures that all internal or " overlay traffic"  bypasses the PBR policy and reverts to normal routing. This traffic then utilizes the existing SD-WAN overlay tunnels to access internal corporate applications and services.
    - Internet Traffic (SSE Services): Conversely, a second PBR rule is configured to permit all other traffic. This ensures that any traffic not destined for internal corporate networks (internet-bound traffic) is explicitly routed through the established IPsec tunnels to Cisco Secure Access. Cisco Secure Access, acting as a Security Service Edge (SSE) solution, provides comprehensive cloud-based security capabilities such as inspection, filtering, DNS security, Layer 3/Layer 4 firewalling, and Secure Web Gateway services. The primary intent is to ensure all internet-bound traffic originating from the branch is secured and thoroughly inspected by the cloud security platform.

### Configure a Network Tunnel Group

Step 1. Sign in to Secure Access through the Cisco Security Cloud Sign On portal.

Step 2. In Security Cloud Sign On, enter the email address where you received the invitation to join a Secure Access organization and click **SIGN IN**.

Your Secure Access account and the Security Cloud sign on account must use the same email address.

Step 3. Choose to **Connect** > **Network Connections** > **Network Tunnel Groups**.

Step 4. Click **Add**.

Step 5. Enter the **General Settings** for your tunnel group:

- **Tunnel Group Name**: Enter a name. In this example, we use **MCT-FW-01**.
- **Region**: In this example, we choose **US (Virginia)**.
- **Device Type**: In this example, we choose **FTD**.

Step 6. Click **Next**.

Step 7. In the **Tunnel ID** and **Passphrase** area, configure the tunnel ID and passphrase for the **MCT-FW-01** device that will be used to connect to this tunnel group:

- **Tunnel ID Format**: In this example, we use the name you gave the tunnel group in Step 2, **MCT-FW-01**. The format is **<tunnel name>@<org><hub>.sse.cisco.com**.
- **Passphrase**: Enter a passphrase for the tunnel between 16 and 64 characters in length. The passphrase must contain at least one upper case letter, one lower case letter, and one number. The passphrase cannot include any special characters.
- Reenter your passphrase to confirm.

Step 8. Click **Next** to continue.

Step 9. In the **Routing** area, configure the following:

When configuring Cisco Secure Access (SSE) for branch secure internet access, there are three primary routing options: **Enable NAT/Outbound Only**, **Static routing**, and **Dynamic routing**.

In this example, we will check the **Enable NAT/Outbound Only** checkbox. Use this option to provide secure internet access to users behind the MCT-FW-01 Threat defense device.

The dynamic routing method is specifically used when dealing with secure private application access.

Step 10. Click **Save**.

Step 11. In the **Data for Tunnel Setup** area, review and save the information for use when setting up your network tunnel devices.

**Note:** This is the only time that your passphrase is displayed.

Step 12. Click **Download CSV** to save your tunnel setup information. You can use the information to configure and deploy a tunnel in the Threat Defense device from the Management Center.

Step 13. Click **Done**.

The tunnel group is created without tunnels in the **Network Tunnels** area.

### Create a VPN Tunnel on Threat Defense

Step 1. In the Management Center, choose **Devices** > **Device Management**.

Step 2. Click **MCT-FW-01**.

In this example, we have already created two overlay tunnels for the SDWAN overlay towards **NYC-FW-HA** and **NNJ-FW-HA**.

We will create two additional tunnels directed towards Cisco Secure Access.

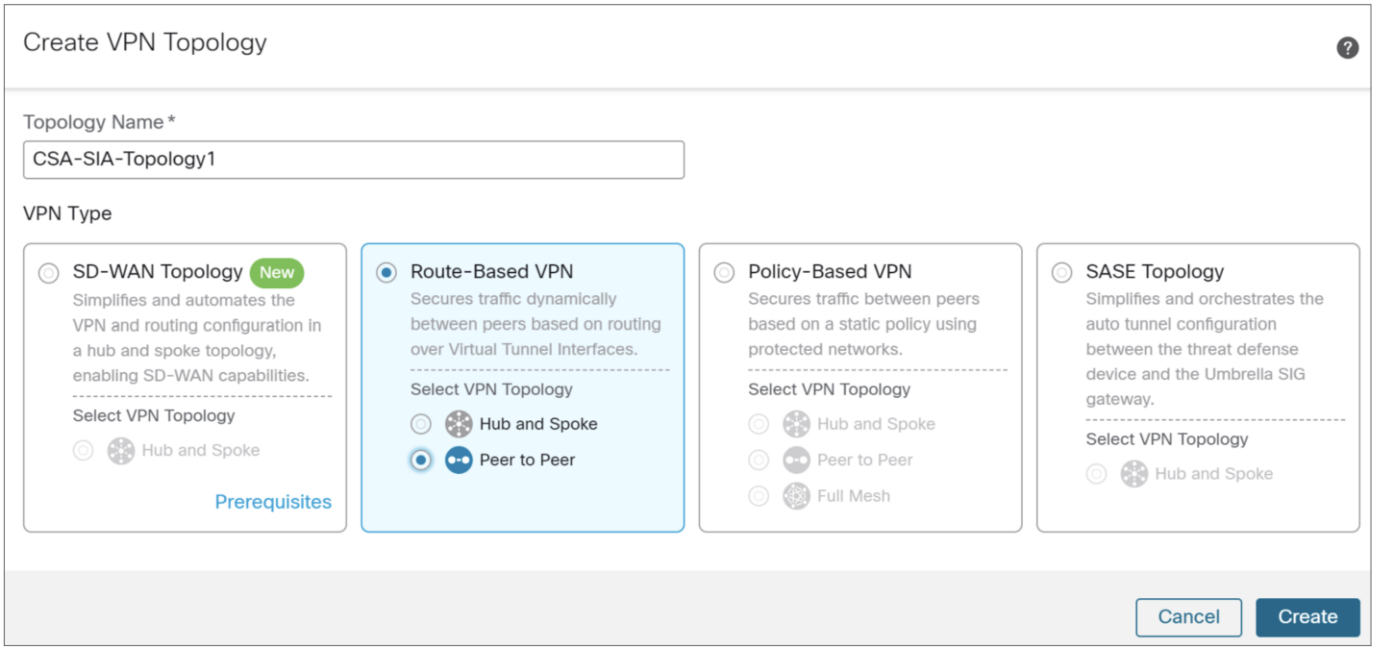
Step 3. Choose **Devices** > **Site To Site**.

Step 4. Click **Add**.

Step 5. In the **Topology Name** field, specify a name. In this example, the name is **CSA-SIA-Topology1**.

Step 6. Click **Route-Based VPN** and select **Peer to Peer**. Although the default selection for this topology is typically Hub and Spoke, a different approach is utilized in this example. We choose a Peer to Peer connection with two devices.

**Figure 7.** Route-Based VPN



Create VPN Topology

Topology Name*: CSA-SIA-Topology1

VPN Type

○ SD-WAN Topology New
Simplifies and automates the VPN and routing configuration in a hub and spoke topology, enabling SD-WAN capabilities.
Select VPN Topology
○ Hub and Spoke
Prerequisites

● Route-Based VPN
Secures traffic dynamically between peers based on routing over Virtual Tunnel Interfaces.
Select VPN Topology
○ Hub and Spoke
● Peer to Peer

○ Policy-Based VPN
Secures traffic between peers based on a static policy using protected networks.
Select VPN Topology
○ Hub and Spoke
○ Peer to Peer
○ Full Mesh

○ SASE Topology
Simplifies and orchestrates the auto tunnel configuration between the threat defense device and the Umbrella SIG gateway.
Select VPN Topology
○ Hub and Spoke

Step 7. Click **Create**.

For this VPN setup, only IKEv2 is supported, and it is selected by default.

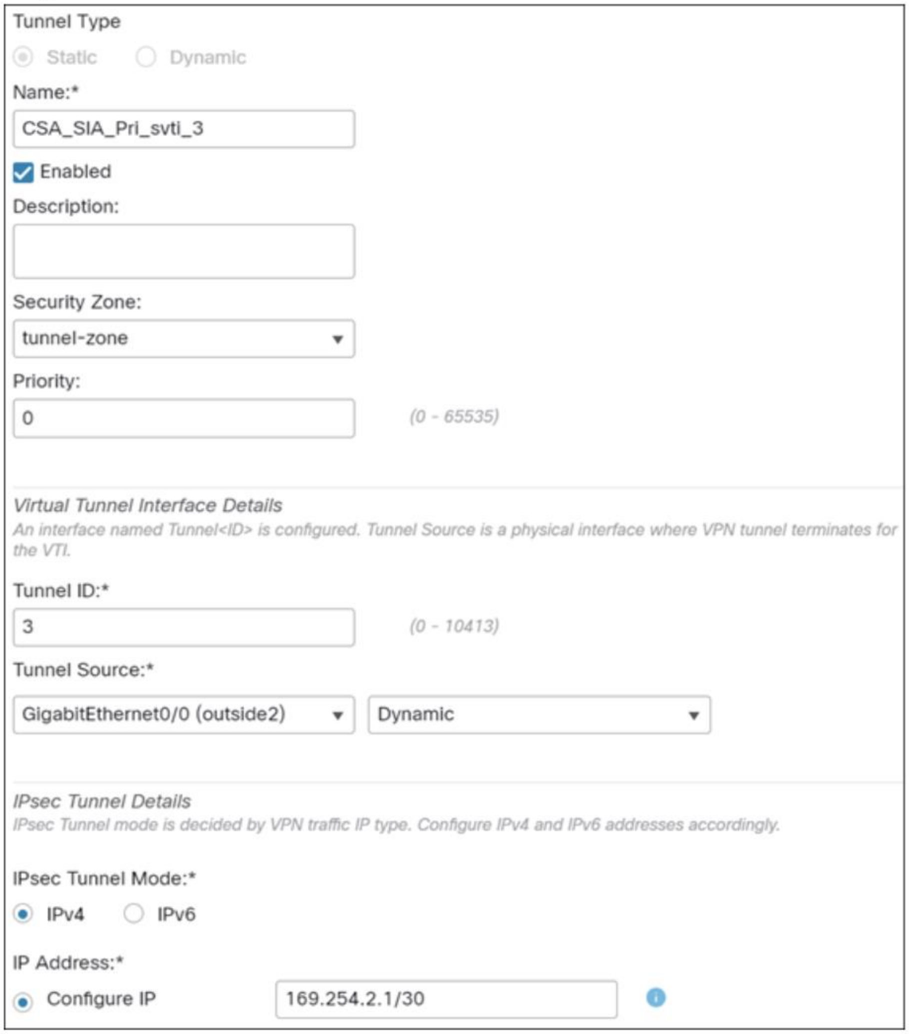
### Configure Endpoints

Step 1. In the **Point to Point** tab, choose **MCT-FW-01** device.

Step 2. Click **+** to add a new static VTI.

The **Add Virtual Tunnel Interface** dialog box is displayed.

**Figure 8. Add Virtual Tunnel Interface**



Tunnel Type

● Static ○ Dynamic

Name:*

CSA_SIA_Pri_svti_3

☑ Enabled

Description:

Security Zone:

tunnel-zone

Priority:

0 (0 - 65535)

*Virtual Tunnel Interface Details*

*An interface named Tunnel<ID> is configured. Tunnel Source is a physical interface where VPN tunnel terminates for the VTI.*

Tunnel ID:*

3 (0 - 10413)

Tunnel Source:*

GigabitEthernet0/0 (outside2) Dynamic

*IPsec Tunnel Details*

*IPsec Tunnel mode is decided by VPN traffic IP type. Configure IPv4 and IPv6 addresses accordingly.*

IPsec Tunnel Mode:*

● IPv4 ○ IPv6

IP Address:*

● Configure IP 169.254.2.1/30

i. In the **Name** field, enter a name. In this example, the name of the interface is **CSA_SIA_Pri_svti_3**.

ii. When configuring a static virtual tunnel interface (VTI) for Cisco Secure Access integration, the process involves selecting the Security Zone as tunnel zone and use default settings for priority and tunnel ID. From the **Security Zone** drop-down list, choose **tunnel-zone**.

iii. From the **Tunnel Source** drop-down list, choose the tunnel source interface. In this example, we choose **GigabitEhternet0/0 (outside2)**, and it is configured as **Dynamic** because it uses DHCP for IP address assignment.

iv. In the **IPsec Tunnel Mode**, we choose **IPv4** and in the **Configure IP** field, we use the provided **IP address**.

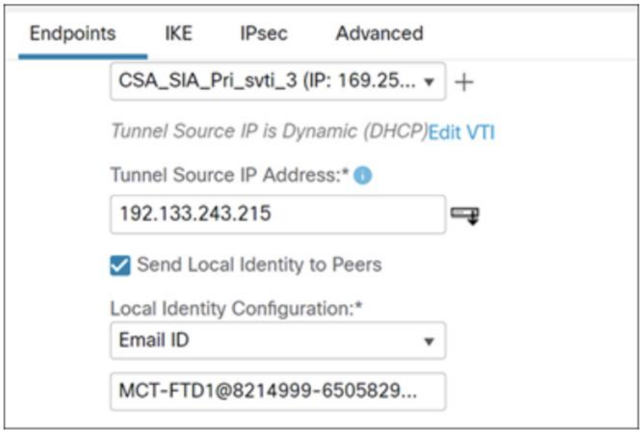
v. Click **OK**. The VTI tunnel is created. The **Tunnel Source IP Address** field obtains the outside interface IP address.

Step 3. Check the **Send Local Identity to Peers** check box.

Step 4. In the **Local Identity Configuration** field, we choose **Email**.

Step 5. Enter the **Primary Tunnel ID** address found in CSV file downloaded from Secure Access.

Figure 9. Configure Endpoints



CSA_SIA_Pri_svti_3 (IP: 169.25... ▾ +

*Tunnel Source IP is Dynamic (DHCP)*Edit VTI

Tunnel Source IP Address:* ⓘ

192.133.243.215

☑ Send Local Identity to Peers

Local Identity Configuration:*

Email ID ▾

MCT-FTD1@8214999-6505829...

Step 6. Click **+** to add a **Backup VTI**.

Step 7. In the **Name** field, enter a name. In this example, the name of the interface is **CSA_SIA_Sec_svti_4**.

i. When configuring a static virtual tunnel interface (VTI) for Cisco Secure Access integration, the process involves selecting the tunnel zone and leaving both the priority and the tunnel ID at their default settings. From the **Security Zone** drop-down list, choose **tunnel-zone**.

ii. From the **Tunnel Source** drop-down list, choose the tunnel source interface. In this example, we choose **GigabitEhternet0/0 (outside2)**, and it is configured as **Dynamic** because it uses **DHCP** for IP address assignment.

iii. In the **IPsec Tunnel Mode**, we choose **IPv4** and in the **Configure IP** field, we use the provided IP address.

iv. Click **OK**. The VTI tunnel is created. The **Tunnel Source IP Address** field obtains the outside interface IP address. In this example, we have **169.254.3.1/30**.

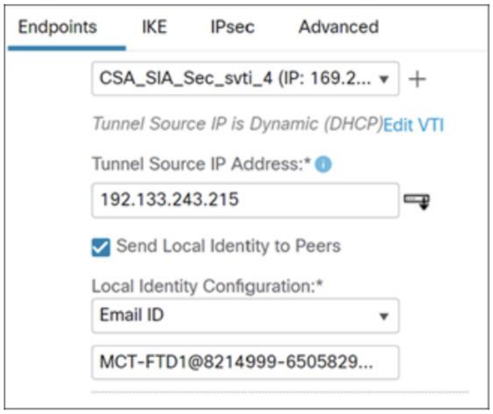
v. Click **OK**. This IP address is important for subsequent routing configurations, specifically for directing traffic to the other end of the tunnel.

Step 8. Check the **Send Local Identity to Peers** check box.

Step 9. In the **Local Identity Configuration** field, we choose **Email**.

Step 10. Enter the **Secondary Tunnel ID** address found in CSV file downloaded from Secure Access.

Figure 10. Secondary Tunnel ID



CSA_SIA_Sec_svti_4 (IP: 169.2... ▾ +

*Tunnel Source IP is Dynamic (DHCP)*Edit VTI

Tunnel Source IP Address:* ⓘ

192.133.243.215

☑ Send Local Identity to Peers

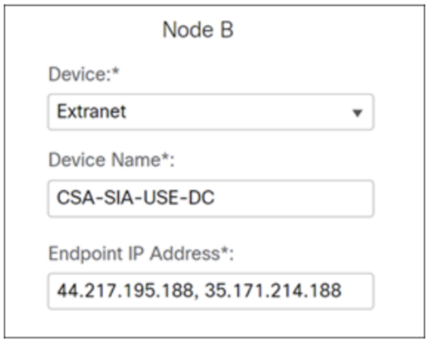
Local Identity Configuration:*

Email ID ▾

MCT-FTD1@8214999-6505829...

Step 11. In the **Node B** area, choose **Extranet** from the **Device** drop-down list.

**Figure 11. Node B Configuration**



Device:*
Extranet

Device Name*:
CSA-SIA-USE-DC

Endpoint IP Address*:
44.217.195.188, 35.171.214.188

Step 12. In the **Device Name** field, enter a name. In this example, we will specify **CSA-USE-DC**.

Step 13. In the **Endpoint IP Address** field, enter the Primary Data Center IP Address, followed by the Secondary Data Center IP Address separated by a comma. This information can be found in the CSV file downloaded from Secure Access in step 12 of the “Add a Network Tunnel Group” topic.

## Configure IKE Settings

Step 1. Click the **IKE** tab to configure the preshared key for IKEv2.

Step 2. From the **Authentication Type** drop-down list, choose **Pre-shared Manual Key**.

Step 3. Manually assign the pre-shared key for this VPN. Specify the **Key** and then reenter the same to **Confirm Key**.

The keys we enter are not displayed, so make sure to remember them.

**Note:** In the **Advanced** tab, under **ISAKMP Settings**, choose **Do not check** from the **Peer Identity Validation** drop-down list and do not alter the other settings. The remaining settings must have their default values.

Step 4. Click **Save**. The topology has been created, but there is no tunnel because we haven't pushed the configuration.

## Create an Extended Access List

Step 1. In the Management Center, choose **Objects** > **Object Management**.

Step 2. Expand **Access List** and click **Extended**.

Step 3. Click **Add Extended Access List**.

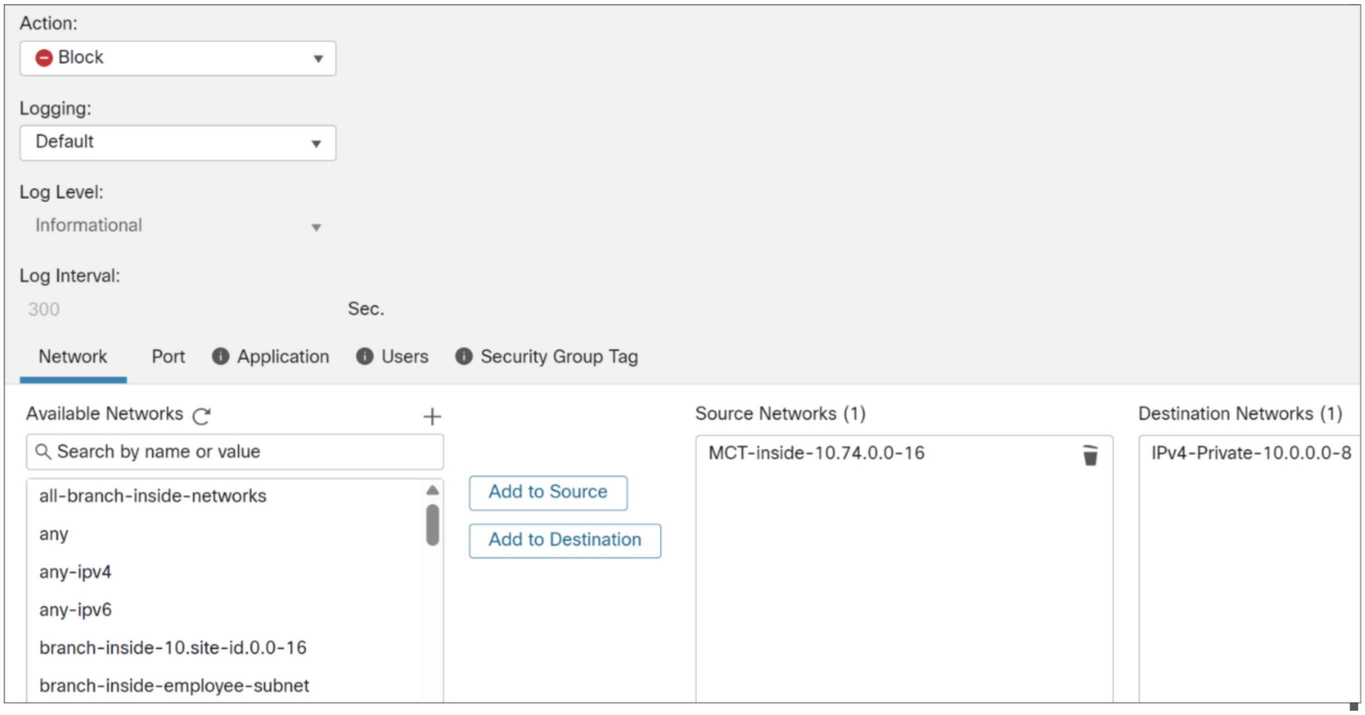
The **New Extended Access List Object** dialog box appears.

Step 4. In the **Name** field, enter a name for the object. In this example, we enter **CSA-SIA-acl**.

Step 5. Click **Add** to add a rule.

The first rule handles the internal traffic. Any traffic originating from the **10.74.0.0/16** IP block, which is allocated to the MCT branch, and directed to **10.0.0.0/8** internal network (representing corporate applications), will " drop out of the policy" . This implies that such internal or overlay traffic is explicitly excluded from these PBR rules and will instead be routed through " normal routing"  or " topology-driven routing,"  leveraging the existing SD-WAN overlay for its routing requirements.

**Figure 12. Add Rule**



Action: Block

Logging: Default

Log Level: Informational

Log Interval: 300 Sec.

Available Networks

- all-branch-inside-networks
- any
- any-ipv4
- any-ipv6
- branch-inside-10.site-id.0.0-16
- branch-inside-employee-subnet

Source Networks (1): MCT-inside-10.74.0.0-16

Destination Networks (1): IPv4-Private-10.0.0.0-8

i. **Action**: Block

ii. **Logging**: Default

iii. **Source Networks**: MCT-inside-10.74.0-16

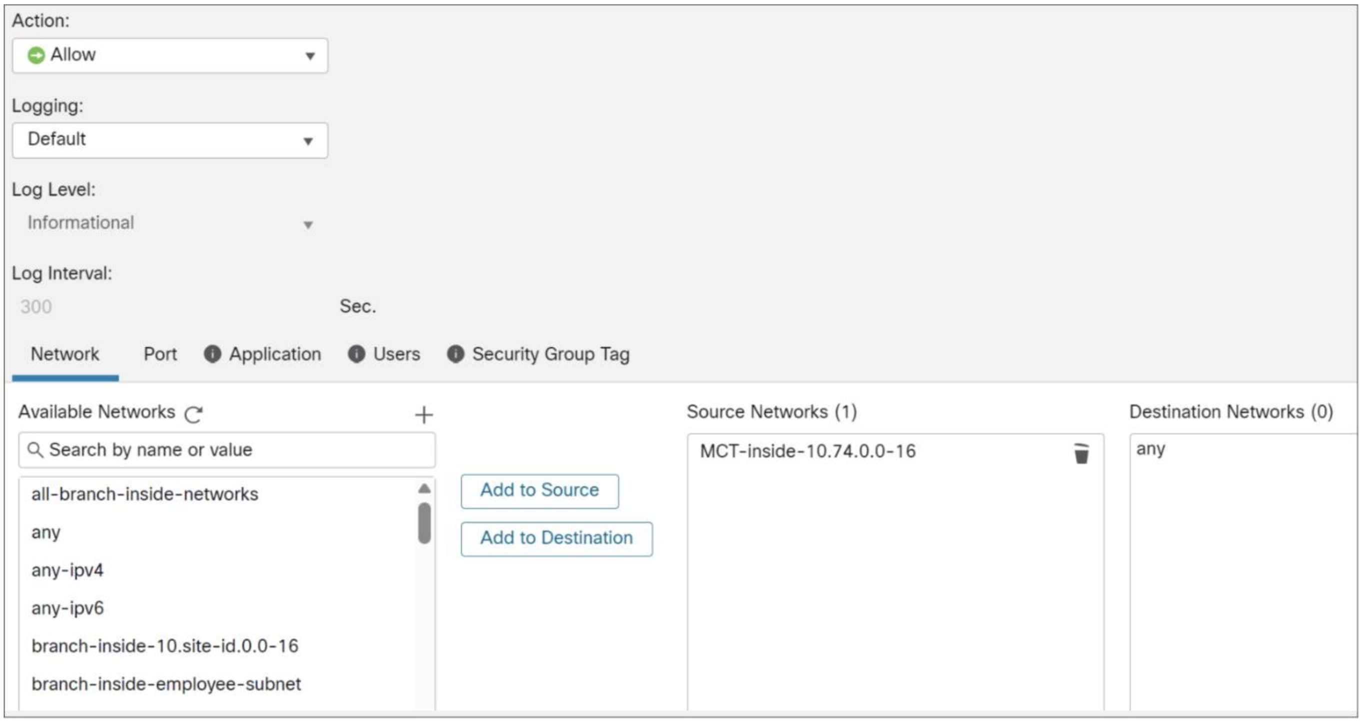
iv. **Destination Networks**: IPv4-Private-10.0.0.0-8

v. Click **Add**.

Step 6. Click **Add** to add another rule.

Any traffic originating from the 10.74.0.0/16 block that is not directed toward the internal 10.0.0.0/8 network is categorized as internet traffic. This internet-bound traffic is then routed directly to Cisco Secure Access. This ensures that all external traffic from the MCT branch undergoes essential SSE services, including inspection and filtering, provided by Cisco Secure Access before proceeding to its external destination.

**Figure 13. Add rule**



Action: Allow

Logging: Default

Log Level: Informational

Log Interval: 300 Sec.

Source Networks (1): MCT-inside-10.74.0.0-16

Destination Networks (0): any

i. **Action**: Allow

ii. **Logging**: Default

iii. **Source Networks**: MCT-inside-10.74.0-16

iv. **Destination Networks**: any

v. Click **Add**.

Step 7. Click **Save**.

The extended ACL is created.

In this example, we will not create a static route, as we intend to demonstrate an alternative method for policy-based routing. While static routing is an option, we will use a different approach.

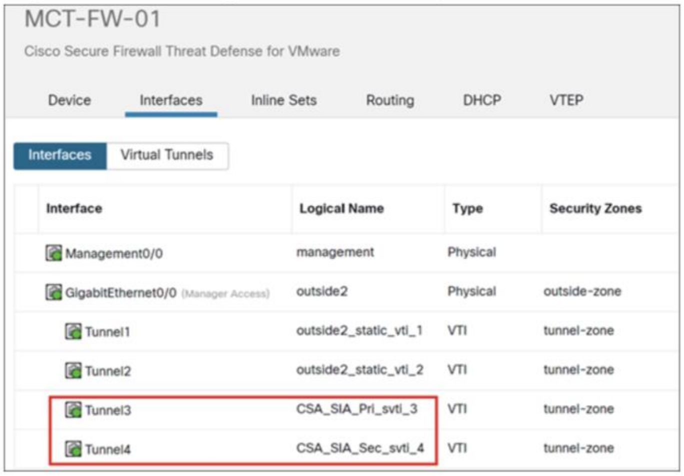
## Create Policy-Based Routing

Step 1. In the Management Center, choose **Devices** > **Device Management**.

Step 2. Click the **MCT-FW-01** device.

The two tunnels have been created, but they are not yet operational.

**Figure 14. Tunnel Interfaces of** MCT-FW-01



MCT-FW-01

Cisco Secure Firewall Threat Defense for VMware

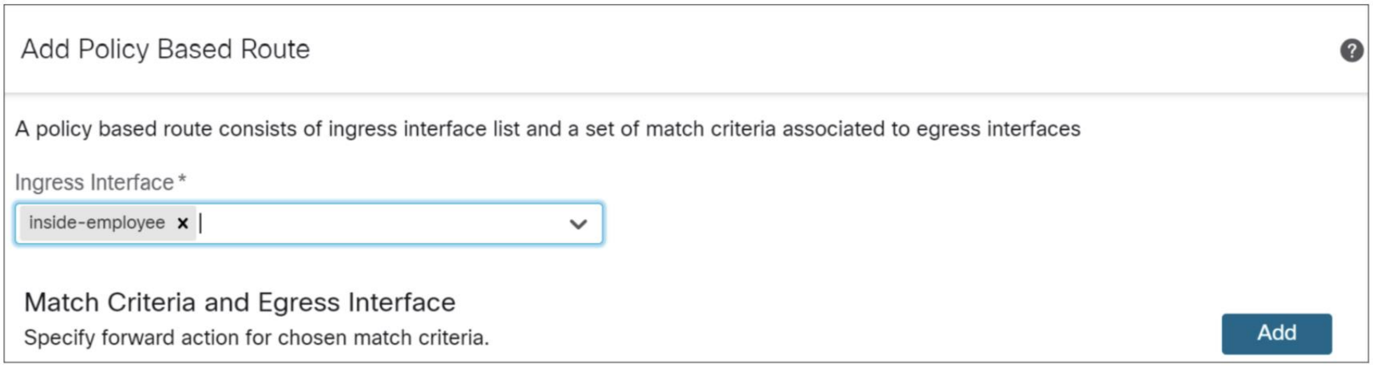
| Interface | Logical Name | Type | Security Zones |
|---|---|---|---|
| Management0/0 | management | Physical | |
| GigabitEthernet0/0 (Manager Access) | outside2 | Physical | outside-zone |
| Tunnel1 | outside2_static_vti_1 | VTI | tunnel-zone |
| Tunnel2 | outside2_static_vti_2 | VTI | tunnel-zone |
| Tunnel3 | CSA_SIA_Pri_svti_3 | VTI | tunnel-zone |
| Tunnel4 | CSA_SIA_Sec_svti_4 | VTI | tunnel-zone |

Step 3. Click the **Routing** tab.

Step 4. Click **Policy Based Routing** and click **Add**.

The **Add Policy Based Route** dialog box is displayed.

Step 5. From the **Ingress Interface** drop-down list, choose the ingress interface. In this example, we choose **inside-employee**.



Add Policy Based Route

A policy based route consists of ingress interface list and a set of match criteria associated to egress interfaces

Ingress Interface *: inside-employee

Match Criteria and Egress Interface

Specify forward action for chosen match criteria.

**Note:** The Policy-Based Routing rules on the Threat Defense devices are applied to the traffic as it enters an interface on a device.

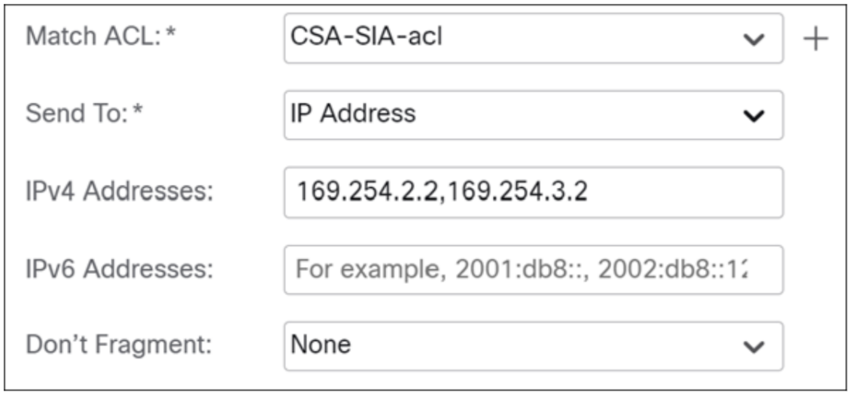
Step 6. Click **Add**.

Step 7. From the **Match ACL** drop-down list, choose the extended access control list object that identifies the traffic you want to use for policy-based routing. The ACL object is predefined in the **Configure Extended List Object** section. In this example, we choose **CSA-SIA-acl**.

Step 8. From the **Send To** drop-down list, choose **IP Address** to specify the **IPv4** next hop address.

Step 9. In the **IPv4 Addresses** field, specify the addresses. The next hop is the IP address of tunnels on the Cisco Secure Access. In this example, we enter **169.254.2.2**, 169.254.3.2.

**Figure 15. Add New Hop IP Address**



Match ACL:* CSA-SIA-acl

Send To:* IP Address

IPv4 Addresses: 169.254.2.2,169.254.3.2

IPv6 Addresses: For example, 2001:db8::, 2002:db8::1:

Don't Fragment: None

The next hop for the primary tunnel is configured as **169.254.2.2**, which resides on the Cisco Secure Access side, while **169.254.2.1** is on the firewall's side of the primary tunnel. If the primary tunnel goes down, traffic is automatically redirected to the secondary tunnel, with its next hop at **169.254.3.2**, also located on the Cisco Secure Access side.

Step 10. Click **Save**.

## Deploy Changes to Device

Step 1. Click **Deploy**.

Step 2. Check the **MCT-FW-01** check box and click **Deploy All**.

## Verify Tunnels on Secure Access

Step 1. Sign in to Secure Access through the Cisco Security Cloud Sign On portal.

Step 2. In Security Cloud Sign On, enter the email address where you received the invitation to join a Secure Access organization and click **SIGN IN**.

Your Secure Access account and the Security Cloud sign on account must use the same email address.

Step 3. Choose **Connect** > **Network Connections** > **Network Tunnel Groups**.

Step 4. Click the **MCT-FW-01** tunnel group.

Step 5. In the **Network Tunnels** area, the primary and secondary tunnels will be displayed. The **Primary1** tunnel originates from the branch's outside2 interface and is destined for the primary Cisco Secure Access data center, while the **Secondary1** tunnel also originates from the branch's **outside2** interface and connects to a secondary data center, serving as a standby for continuous connectivity.

### View Access Policy on Secure Access

**Note:** This document serves as a design guide. The access policies referenced herein are assumed to be already configured within Cisco Secure Access. Detailed steps for policy creation are not covered in this guide.

Step 1. Choose **Connect** > **Policy** > **Access Policy**.

The first rule **mct74-to-internet-block-web-categories** ensures that any traffic originating from MCT site 74 destined for the internet will be subjected to security controls, specifically blocking gambling sites. This is a function of URL filtering or Secure Web Gateway (SWG) services provided by Cisco Secure Access. The intent is to apply security policies such as inspection and filtering to internet-bound traffic from the branch.

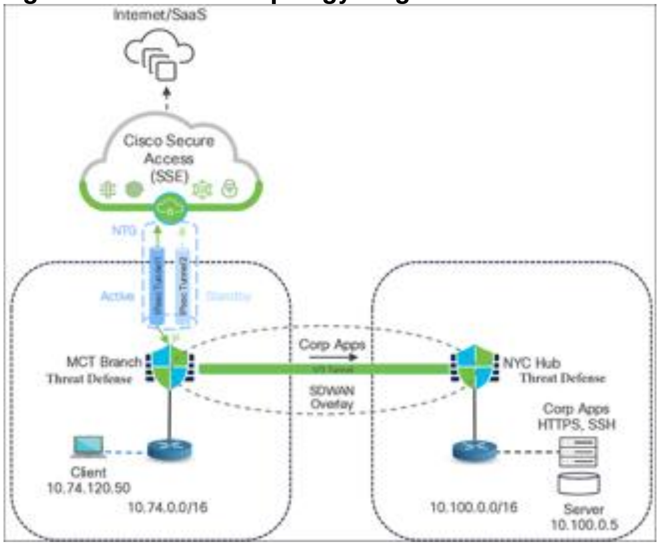
The second rule **mct74-to-internet-block-ping-8.8.8.8** drops any traffic from MCT site 74 that is destined to the IP address 8.8.8.8.

The third rule **mct74-to-internet-permit-all** allows all other internet traffic, not explicitly blocked or dropped by the preceding rules, to pass through Cisco Secure Access for further SSE services.

**Note:** User traffic is first subjected to access control policies and inspection on MCT-FW-01. Only traffic that is allowed by these policies is then forwarded to Secure Access for further inspection.

### Verify Connectivity Using CLI

**Figure 16. Network Topology Diagram for Cisco Secure Access Integration**



For testing purposes, a client with an IP address 10.74.120.50 (according to the above figure) is used. The initial test involved verifying traffic flow by attempting to access a server located at 10.100.0.5 in the New York data center.

```
C:\Users\user\>ipconfig
Ethernet adapter Main NIC:
Connection-specific DNS Suffix
IPv4 Address           : 10.74.120.50
Subnet Mask            : 255.255.255.0
Default Gateway        : 10.74.120.1

C:\Users\user> ping 10.100.0.5
Pinging 10.100.0.5 with 32 bytes of data:
Reply from 10.100.0.5: bytes=32 time=2ms TTL=252
Reply from 10.100.0.5: bytes=32 time=2ms TTL=252
Reply from 10.100.0.5: bytes=32 time=2ms TTL=252
Reply from 10.100.0.5: bytes=32 time=2ms TTL=252
Ping statistics for 10.100.0.5:
           Packets: Sent 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
```

```
           Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

According to the defined policy:

- ping request to 8.8.8.8 should be blocked.
- ping request to 8.8.4.4 should be successful
- ping request to cisco.com should be successful

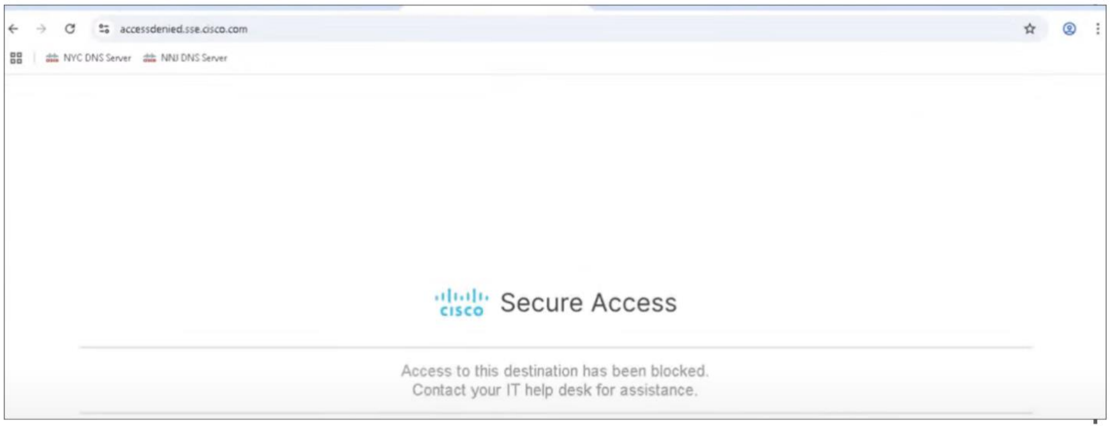
Run the test for the above IPs and urls to validate policy evaluation.

```
C:\Users\user>ping 8.8.8.
Pinging 8.8.8.8 with 32 bytes of data:
Request timed out.

C:\Users\user>ping 8.8.4.4
Pinging 8.8.4.4 with 32 bytes of data:
Reply from 8.8.4.4: bytes=32 time=2ms TTL=45
Reply from 8.8.4.4: bytes=32 time=2ms TTL=45
Reply from 8.8.4.4: bytes=32 time=2ms TTL=45
Reply from 8.8.4.4: bytes=32 time=2ms TTL=45
Ping statistics for 8.8.4.4:
           Packets: Sent 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
           Minimum = 13ms, Maximum = 14ms, Average = 13ms

C:\Users\user>ping cisco.com
Pinging cisco.com [72.163.4.185] with 32 bytes of data:
Reply from 72.163.4.185: bytes=32 time=2ms TTL=38
Reply from 72.163.4.185: bytes=32 time=2ms TTL=38
Reply from 72.163.4.185: bytes=32 time=2ms TTL=38
Reply from 72.163.4.185: bytes=32 time=2ms TTL=38
Ping statistics for 72.163.4.185:
           Packets: Sent 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
           Minimum = 48ms, Maximum = 49ms, Average = 48ms
```

### Test Secure Access SWG Policies

To verify the Secure Web Gateway (SWG) filtering capabilities, conduct the following tests:

- **Permit Web Access**: Access to e-commerce (shopping) website (www.amazon.com) and site for purchasing vehicles (www.ford.com) was successful. This indicates that the traffic flows are permissible through SWG.
- **Block Web Access**: Access to a gambling website (www.bet365.com) is blocked. This confirms the effective enforcement of URL filtering policies.



Access to this destination has been blocked.
Contact your IT help desk for assistance.

### View the Activity Search Report in Secure Access

The **Activity Search** report includes full details about the Firewall requests that have been allowed or blocked by an access policy rule.

Step 1. In the Secure Access application, choose **Monitor** > **Activity Search**.

You can see the traffic originating from MCT-FW-01. This activity includes both allowed and blocked traffic.

Step 2. In the **Response** filter, check the **Blocked** check box to see the blocked activities.

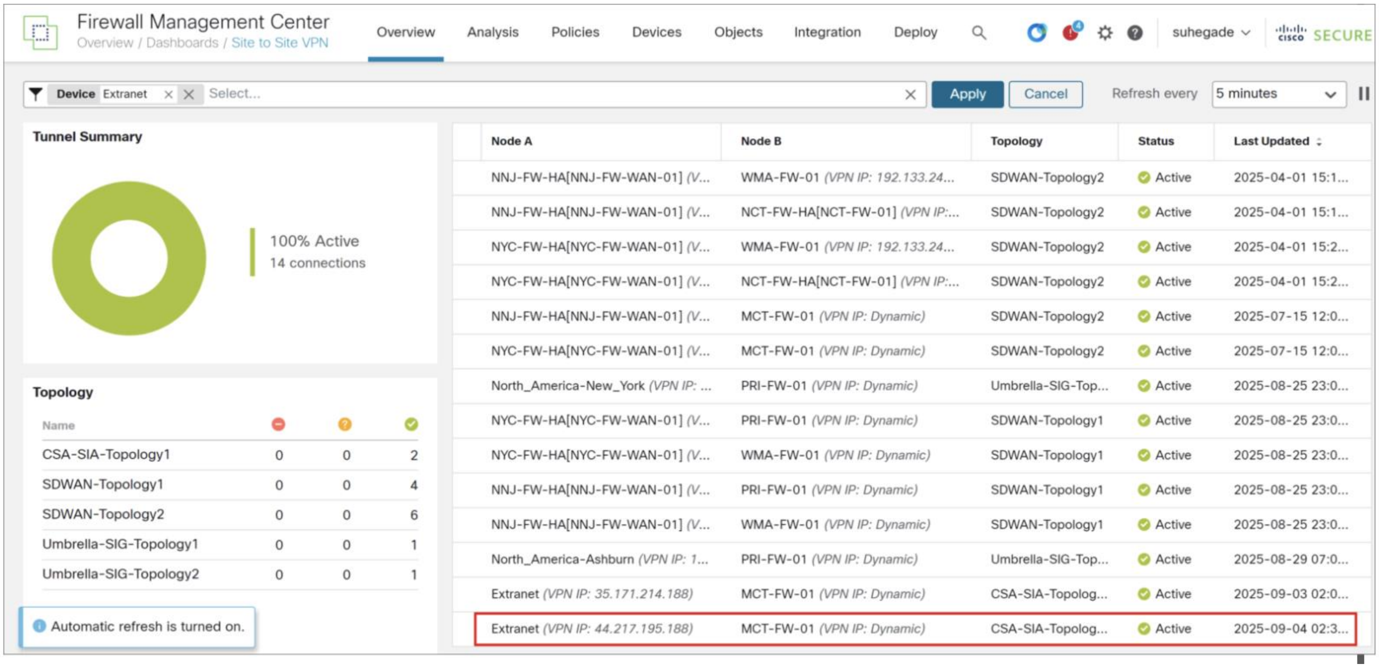
You can see that the gambling site (www.bet365.com) and ping to 8.8.8.8 is blocked.

### View Tunnel Status on Management Center

Step 1. In the Management Center, choose **Overview** > **Dashboards** > **Site to Site VPN**.

Step 2. Click the **View full information** (◉) icon beside **Extranet** tunnel to Cisco Secure Access.

**Figure 17. Site to Site VPN Dashboard**



Device Extranet | Select...

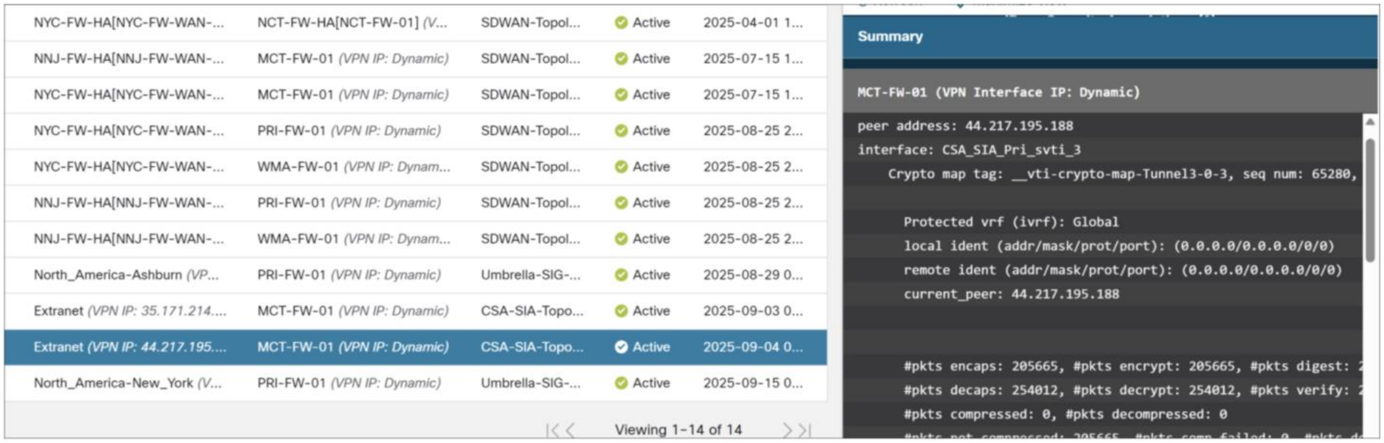
Topology

| Name | ⛔ | ⚠ | ✓ |
|---|---|---|---|
| CSA-SIA-Topology1 | 0 | 0 | 2 |
| SDWAN-Topology1 | 0 | 0 | 4 |
| SDWAN-Topology2 | 0 | 0 | 6 |
| Umbrella-SIG-Topology1 | 0 | 0 | 1 |
| Umbrella-SIG-Topology2 | 0 | 0 | 1 |

| Node A | Node B | Topology | Status | Last Updated |
|---|---|---|---|---|
| NNJ-FW-HA[NNJ-FW-WAN-01] *(V...* | WMA-FW-01 *(VPN IP: 192.133.24...* | SDWAN-Topology2 | ✓ Active | 2025-04-01 15:1... |
| NNJ-FW-HA[NNJ-FW-WAN-01] *(V...* | NCT-FW-HA[NCT-FW-01] *(VPN IP:...* | SDWAN-Topology2 | ✓ Active | 2025-04-01 15:1... |
| NYC-FW-HA[NYC-FW-WAN-01] *(V...* | WMA-FW-01 *(VPN IP: 192.133.24...* | SDWAN-Topology2 | ✓ Active | 2025-04-01 15:2... |
| NYC-FW-HA[NYC-FW-WAN-01] *(V...* | NCT-FW-HA[NCT-FW-01] *(VPN IP:...* | SDWAN-Topology2 | ✓ Active | 2025-04-01 15:2... |
| NNJ-FW-HA[NNJ-FW-WAN-01] *(V...* | MCT-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topology2 | ✓ Active | 2025-07-15 12:0... |
| NYC-FW-HA[NYC-FW-WAN-01] *(V...* | MCT-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topology2 | ✓ Active | 2025-07-15 12:0... |
| North_America-New_York *(VPN IP: ...* | PRI-FW-01 *(VPN IP: Dynamic)* | Umbrella-SIG-Top... | ✓ Active | 2025-08-25 23:0... |
| NYC-FW-HA[NYC-FW-WAN-01] *(V...* | PRI-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topology1 | ✓ Active | 2025-08-25 23:0... |
| NYC-FW-HA[NYC-FW-WAN-01] *(V...* | WMA-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topology1 | ✓ Active | 2025-08-25 23:0... |
| NNJ-FW-HA[NNJ-FW-WAN-01] *(V...* | PRI-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topology1 | ✓ Active | 2025-08-25 23:0... |
| NNJ-FW-HA[NNJ-FW-WAN-01] *(V...* | WMA-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topology1 | ✓ Active | 2025-08-25 23:0... |
| North_America-Ashburn *(VPN IP: 1...* | PRI-FW-01 *(VPN IP: Dynamic)* | Umbrella-SIG-Top... | ✓ Active | 2025-08-29 07:0... |
| Extranet *(VPN IP: 35.171.214.188)* | MCT-FW-01 *(VPN IP: Dynamic)* | CSA-SIA-Topolog... | ✓ Active | 2025-09-03 02:0... |
| Extranet *(VPN IP: 44.217.195.188)* | MCT-FW-01 *(VPN IP: Dynamic)* | CSA-SIA-Topolog... | ✓ Active | 2025-09-04 02:3... |

Step 3. Click the **CLI Details** tab and expand "**show crypto ipsec sa peer**" command.

**Figure 18. CLI Details**



| | | | | |
|---|---|---|---|---|
| NYC-FW-HA[NYC-FW-WAN-... | NCT-FW-HA[NCT-FW-01] *(V...* | SDWAN-Topol... | ✓ Active | 2025-04-01 1... |
| NNJ-FW-HA[NNJ-FW-WAN-... | MCT-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topol... | ✓ Active | 2025-07-15 1... |
| NYC-FW-HA[NYC-FW-WAN-... | MCT-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topol... | ✓ Active | 2025-07-15 1... |
| NYC-FW-HA[NYC-FW-WAN-... | PRI-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topol... | ✓ Active | 2025-08-25 2... |
| NYC-FW-HA[NYC-FW-WAN-... | WMA-FW-01 *(VPN IP: Dynam...* | SDWAN-Topol... | ✓ Active | 2025-08-25 2... |
| NNJ-FW-HA[NNJ-FW-WAN-... | PRI-FW-01 *(VPN IP: Dynamic)* | SDWAN-Topol... | ✓ Active | 2025-08-25 2... |
| NNJ-FW-HA[NNJ-FW-WAN-... | WMA-FW-01 *(VPN IP: Dynam...* | SDWAN-Topol... | ✓ Active | 2025-08-25 2... |
| North_America-Ashburn *(VP...* | PRI-FW-01 *(VPN IP: Dynamic)* | Umbrella-SIG-... | ✓ Active | 2025-08-29 0... |
| Extranet *(VPN IP: 35.171.214....* | MCT-FW-01 *(VPN IP: Dynamic)* | CSA-SIA-Topo... | ✓ Active | 2025-09-03 0... |
| Extranet *(VPN IP: 44.217.195....* | MCT-FW-01 *(VPN IP: Dynamic)* | CSA-SIA-Topo... | ✓ Active | 2025-09-04 0... |
| North_America-New_York *(V...* | PRI-FW-01 *(VPN IP: Dynamic)* | Umbrella-SIG-... | ✓ Active | 2025-09-15 0... |

```
MCT-FW-01 (VPN Interface IP: Dynamic)
peer address: 44.217.195.188
interface: CSA_SIA_Pri_svti_3
    Crypto map tag: __vti-crypto-map-Tunnel3-0-3, seq num: 65280,

      Protected vrf (ivrf): Global
      local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      remote ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      current_peer: 44.217.195.188


      #pkts encaps: 205665, #pkts encrypt: 205665, #pkts digest: 2
      #pkts decaps: 254012, #pkts decrypt: 254012, #pkts verify: 2
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 205665, #pkts comp failed: 0, #pkts de
```

Step 4. You can observe packet encryption and decryption as a verification that the tunnel is up and allowing traffic.

For more details on SD-WAN design and additional use cases, see Cisco Secure Firewall Threat Defense SD-WAN Design and Deployment Guide.

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