HPE Aruba Networking

EdgeConnect and Zscaler Internet Access IPSec Integration Guide

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Related Documentation

- **Release Notes** provide information on new software features, system bugs, and software compatibility.
- All HPE Aruba Networking EdgeConnect SD-WAN user documentation is available at https://www.arubanetworks.com/website/techdocs/sdwan/.
- Visit the following websites for more information about Zscaler.
    - Zscaler documentation and knowledge base: https://help.zscaler.com/zia?filter=documentation
    - ZIA test page: http://ip.zscaler.com/

About Zscaler Integration with EdgeConnect

This guide explains how to service chain traffic from HPE Aruba Networking EdgeConnect in a branch to Zscaler Internet Access (ZIA) to enable advanced security inspection.

You can service chain EdgeConnect with ZIA by setting up interoperable site-to-site IPSec tunnels between EdgeConnect and ZIA.

ZIA uses Zscaler Endpoint Nodes (ZENs) to inspect web traffic and enforce security policies.

CAUTION This guide represents the **manual** configuration of IPsec tunnels from EdgeConnect to the Zscaler cloud. Refer to the Zscaler Internet Access section on the HPE Aruba Networking EdgeConnect SD-WAN Documentation site if you want to automate this process.

Zscaler Prerequisites

Before you can service chain traffic from EdgeConnect to Zscaler Internet Access, complete the following prerequisites.

- Create a Zscaler Internet Access account.
- For FQDN-based authentication, provision your organization domain and user names in Zscaler.

Find the IP Address of Primary and Secondary ZENs

To establish IPsec tunnels from an EdgeConnect appliance to your primary and secondary ZENs, first identify the public IP address of your ZENs.

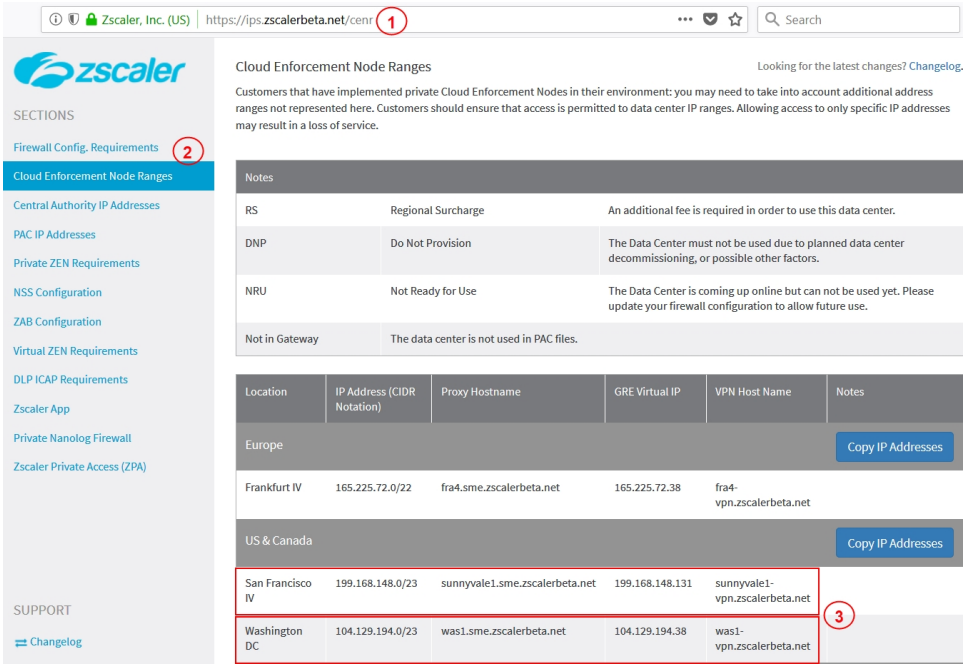
1. In your browser address bar, enter `ips.<Your Zscaler cloud name>.net`.

   TIP Find the name of your cloud portal in the URL that your administrator uses to sign in to the Zscaler service. For example, if your administrator signs in to **admin.zscalertwo.net**, your organization's cloud name is **zscalertwo**. In this case, enter `ips.zscalertwo.net`.

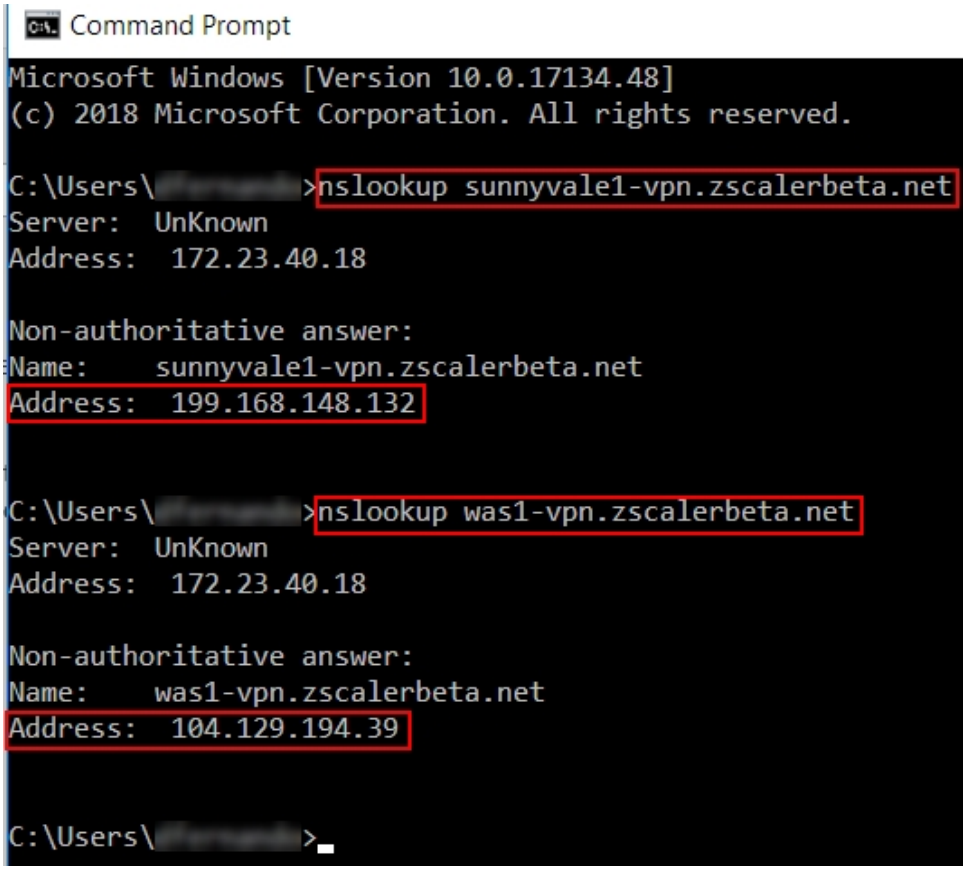
   NOTE Refer to the "What is my cloud name"? page on the Zscaler website.

2. From the left pane, select **Cloud Enforcement Node Ranges**.
3. From the **VPN Host Name** column, find the two ZENs that are the closest to your EdgeConnect application's location.

4. Choose one of the two Zscaler locations as your primary ZEN and the other as your secondary ZEN.



5. After you identify your location and the VPN host name, use `nslookup` or `ping` to find the public IP address of the primary and secondary ZENs.



Create a VPN Credential in Zscaler

Follow these steps to create a VPN credential in Zscaler. Add your VPN credentials and link the VPN credentials to a location.

1. Sign in to the Zscaler cloud portal.

   The Dashboard screen opens.

2. Select **Administration**, and under Resources, select **VPN Credentials**.

   The VPN Credentials screen opens.

3. Select **+Add VPN Credential**.

   The Add VPN Credential screen opens.

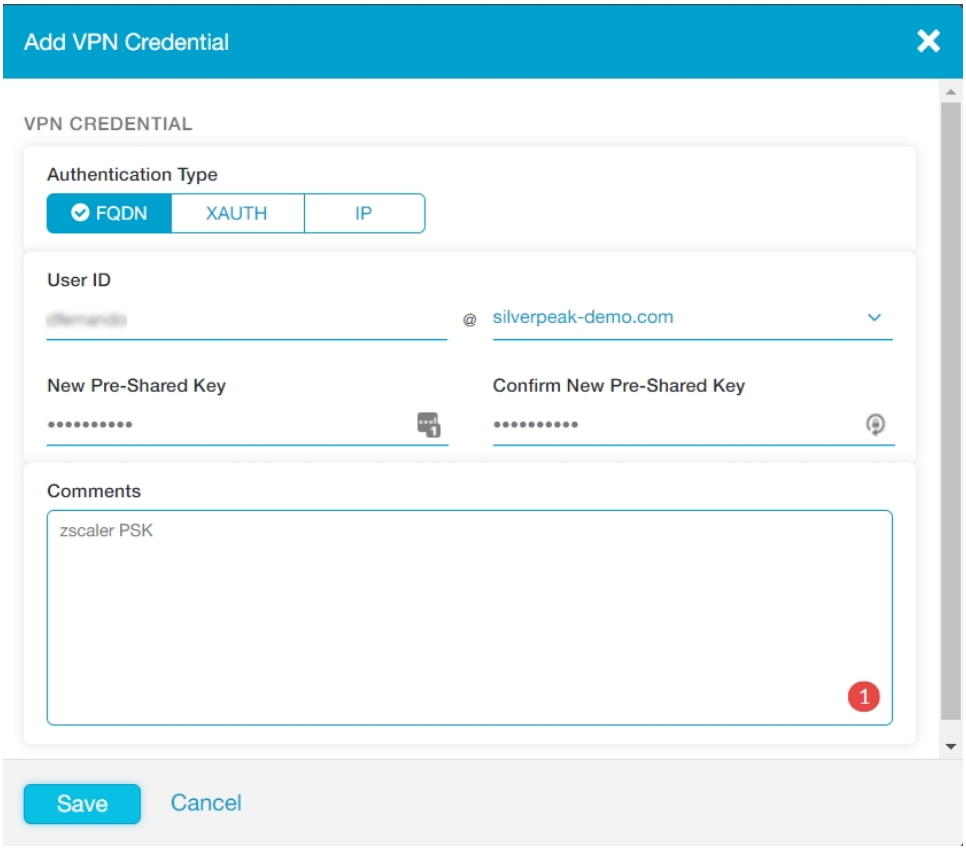
4. For **Authentication Type**, select FQDN to identify your peer, and specify the following menu items based on your selection.

   NOTE Do not use **Xauth** as an authentication type.

FQDN-based authentication	Task
User ID	Enter a user name and select the FQDN from the list.
New Pre-Shared Key	Enter a pre-shared key.
Confirm New Pre-Shared Key	Re-enter the pre-shared key.
Comments	Any additional information about the credential.

IP address-based authentication	Task
IP Address	Select the EdgeConnect static public IP address from the list. First ask Zscaler support to provide the EdgeConnect's static public IP address so it displays in the list.
New Pre-Shared Key	Enter a pre-shared key.
Confirm New Pre-Shared Key	Re-enter the pre-shared key.
Comments	Any additional information about the credential.

5. Select **Save**.



Create a Location in Zscaler

Follow the steps to create a location.

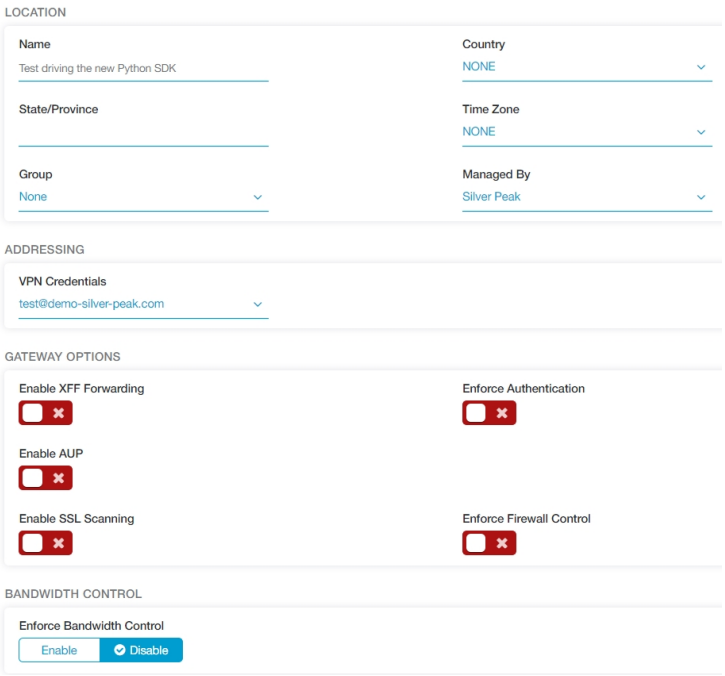
1. Select **Administration**.
2. Under **Resources**, select **Locations**.

   The **Locations** screen opens.
3. Select **+Add Location**.

   The Add Location screen opens.
4. Configure the **Location** settings.

Location Settings	Task
Name	Enter a name for your location setting.
State/Province	Enter your state or province.

Group	Select the default group.
Country	Select your country.
TimeZone	Select your time zone.



TIP If you select **FQDN** as the authentication method, instead of selecting the EdgeConnect's public IP address as the VPN Credential, select the **user_FQDN** IKE identifier.

5. Select **Save**.

Tunnel Capacity Limits

Zscaler supports a soft limit of 200 Mbps per tunnel. If you require more bandwidth, create multiple tunnels in Zscaler. For example, two tunnels to a single ZEN provide 400 Mbps. Three tunnels provide 600 Mbps. On the EdgeConnect appliance, the tunnel capacity depends on the appliance model and the available WAN bandwidth. If you configure parallel tunnels, each IPsec tunnel must source from a unique IP address.

Deployment Scenarios with EdgeConnect

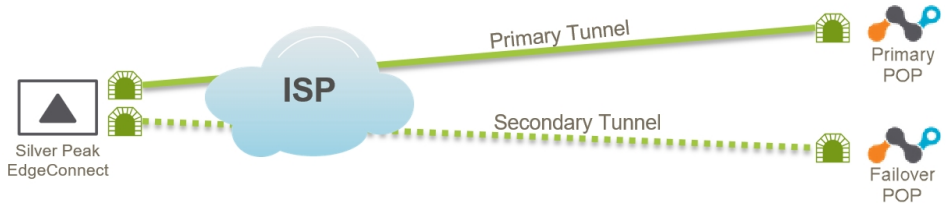
HPE Aruba Networking supports two ways to configure and deploy an EdgeConnect appliance with Zscaler Internet Access.

- Internet Breakout with One Internet Service Provider (ISP) below
- Internet Breakout with Two ISPs on page 18

NOTE Use ECOS version 8.1.8.0 or later and Orchestrator version 8.4.0 or later.

Internet Breakout with One Internet Service Provider (ISP)

When an EdgeConnect appliance has access to the Internet using a single internet service provider (ISP), the appliance can create two IPsec VPN tunnels to a primary ZEN and secondary ZEN as shown in the following figure. Only the primary tunnel carries traffic to the primary ZEN. If the primary tunnel is inactive, EdgeConnect automatically routes the traffic to the secondary ZEN.



Configure Business Intent Overlay Policies

Complete the following steps to configure BIO policies to associate with Zscaler.

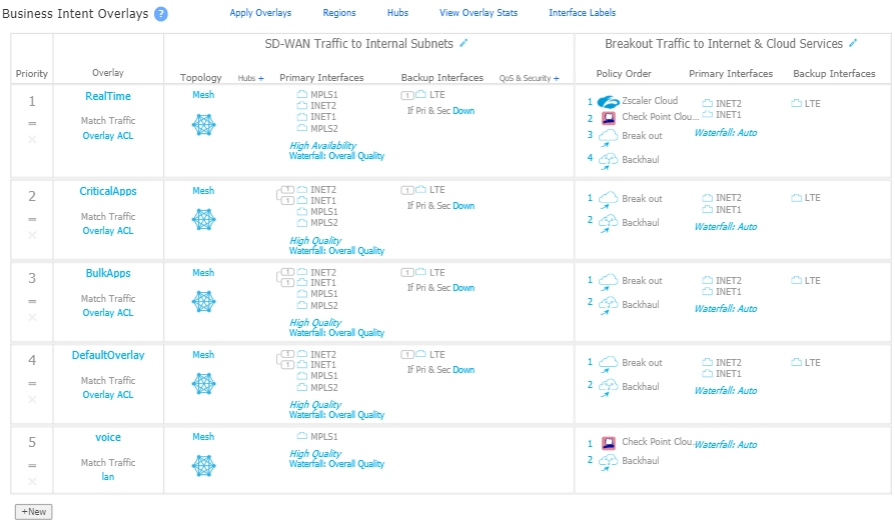
Before creating the IPsec tunnels from the EdgeConnect appliance to the primary and secondary ZENs, create a business intent overlay (BIO) on the Orchestrator system that points to the IPsec tunnels. Using access control lists (ACL), specify the applications that you want to forward to Zscaler on the BIO screen.

TIP Before creating a BIO, create ACLs on the **Configuration** > **Template** screen and apply them on the EdgeConnect appliance.

NOTE Refer to the BIO and ACL online help for more information.

1. From the Orchestrator home screen, select **Configuration** > **Business Intent Overlays**.

   The **Business Intent Overlays** tab opens.



NOTE In this example, the BIO references a **CriticalApps** ACL that already exists on the EdgeConnect appliance.

2. Click any cell in the column **SD-WAN Traffic to Internal Subnets**. This opens the BIO edit dialog.
3. Select the **Link Bonding Policy** you want to apply to your ACL.
4. Navigate to the tab to the right, **Breakout Traffic to Internet & Cloud Services**.
5. Select the pencil icon next to **Available Policies**.

   The Services screen opens.
6. For **Service Name**, enter a name for the first ZEN, such as **Primary_ZEN**.

   NOTE This service references the traffic sent to the primary ZEN.
7. Select **Add**.
8. For **Service Name**, enter a name for the second ZEN, such as **Secondary_ZEN**.
9. Select **Add**.
10. Select **Save**.

    The two services display in the **Available Policies** section.
11. Drag the services to the **Preferred Policy Order** section.
12. In the **Preferred Policy Order** section, move the primary ZEN service above the secondary ZEN service.

    NOTE By moving the primary ZEN to the top of the list, traffic is automatically forwarded to the primary ZEN.
13. Select **OK**. Your changes are highlighted in the BIO table, but have not been applied.
14. Select **Save and Apply changes to Overlay**.

You configured a business intent overlay that points to the IPsec VPN tunnels.

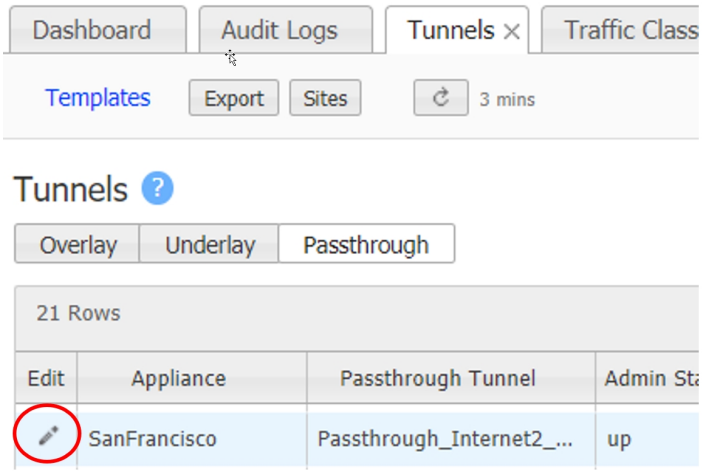
Configure IPsec Tunnels

Follow the steps below to configure IPsec tunnels. You will need to create an IPsec VPN tunnel to the primary Zscaler Endpoint Node (ZEN) and an IPsec VPN tunnel to the secondary ZEN.

Create Tunnel to Primary ZEN

1. Sign in to Orchestrator.
2. From the home screen, select **Configuration > Networking** > **Tunnels** > **Tunnels**.

   The Tunnels screen opens.
3. Click the pencil icon to edit the tunnel.



4. Select the **Passthrough** tab, then select **Add Tunnel**.

   The Add Passthrough Tunnel screen opens.
5. Select the **General** tab.
6. Fill in the following fields.

General	Task
Alias	Enter a name for the tunnel.
Mode	Select **IPsec**.
Admin	Select **up**.
Local IP	Enter the EdgeConnect internet WAN interface IP address.
Remote IP	Enter the ZEN IP address that you discovered using an **nslookup** command.

NAT	Keep the default option, **none**. NAT is always none because no source NAT is performed. Zscaler inspects the private branch addresses. If the source NAT is used, all the source addresses have the EdgeConnect's WAN interface IP address. This isn't useful when performing advanced security inspection.
Peer/Service	Enter the service name that you assigned to you tunnel on the BIO screen.
Auto Max BW Enabled	Select the check box.
Max BW Kbps	Leave this field blank.

7. Select the **IKE** tab.
8. Fill in the following fields for IKE.

IKE	Task
Preshared Key	Enter the same pre-shared key that you entered when creating the VPN credential on the Zscaler website.
Authentication Algorithm	Select **SHA1**.
Encryption Algorithm	Select **auto**.
Diffie-Hellman Group	Select **2**.
Rekey Interval/Lifetime	Enter **480**.
Dead Peer Detection	Delay time: the amount of time, in seconds, to wait for traffic from the destination IKE peer. This should be set to **300**. Retry Count: the number of times to retry the connection before determining that the connection is dead. This should be set to **3**. **NOTE:** Dead Peer Detection is only supported on EdgeConnect appliances running VXOA software version 8.2.1 and higher.
IKE Identifier	From the list, select **FQDN**. Select **USER_FQDN** as the IKE identifier.
Phase 1 Mode	Select **Aggressive** as the phase 1 mode.
IKE Version	Select IKEv1.

TIP Make sure the algorithms and pre-shared key match the ones in Zscaler Internet Access.

9. Select the **IPsec** tab.

10. Fill in the following fields.

IPsec	Task
Authentication Algorithm	Select **SHA1**.
Encryption Algorithm	Select **NULL**. For the IPsec tunnels, use null encryption because internet bound traffic is encrypted by the applications themselves using HTTPS protocol. This removes an extra layer of encryption using IPsec null encryption. You can set the IKE encryption to the default **auto** selection.
Enable IPsec Anti-Replay Window	Select the check box.
Rekey Interval/Lifetime	In the **Mins** field, enter **60**. In the **Megabytes** field, enter **0**.
Perfect Forward Secrecy Group	Select **disable**.

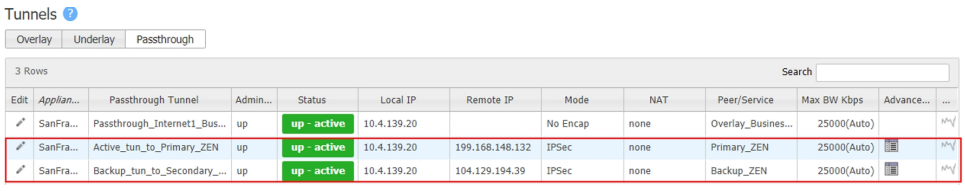
On the Tunnels screen, the IPsec tunnel to the primary ZEN displays.

11. Select **Save**.

You created an IPsec VPN tunnel to the primary ZEN.

Create Tunnel to Secondary ZEN

1. Select the **Passthrough** tab.
2. Select **Add Tunnels**.
3. Create the tunnel to the secondary ZEN by entering the same values that you used for the first tunnel. However, make sure the public IP address and service name of the secondary ZEN are different from the ones you used for the primary ZEN.



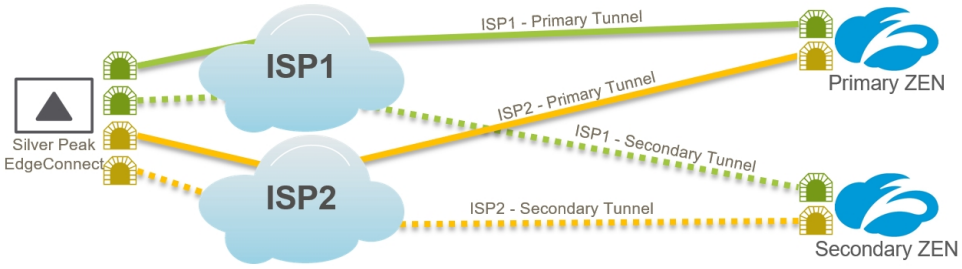
Verify Client Traffic is Sent to ZIA

1. In your web browser address bar, enter http://ip.zscaler.com/.
2. Use the Zscaler Internet Access test page to verify access to the ZIA.

Internet Breakout with Two ISPs

When an EdgeConnect appliance has access to the Internet using two internet service providers, **ISP1** and **ISP2**, the appliance can create four IPsec VPN tunnels to the primary and secondary ZENs as shown in the following figure. Only the primary tunnels from both **ISP1** and **ISP2** carry the traffic to the primary ZEN.

When you create the IPsec tunnels on the Business Intent Overlay screen, you allow the EdgeConnect appliance to load balance traffic to the primary ZEN using **ISP1** and **ISP2** by providing the same service name for the primary tunnels from both ISPs. This is a “flow-based” load balancing mechanism. The IPsec tunnel’s dead peer detection is used to monitor the health of the primary tunnels. If one of the primary tunnels becomes inactive, Orchestrator sends the new sessions from the client devices in your LAN to the Zscaler Cloud Security Service using the remaining primary tunnel.



Failure Scenarios

The following is a table of failure scenarios that can be secured using an EdgeConnect appliance.

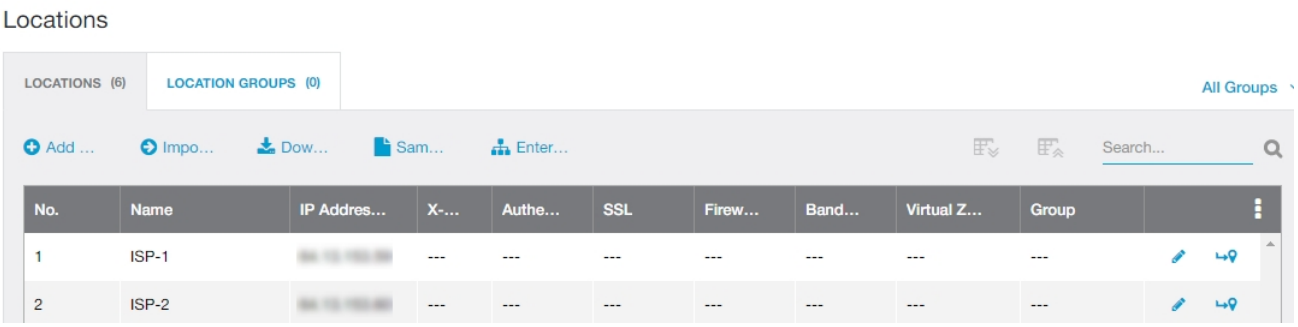
ZEN Availability	ISP Availability	Outcome
Primary ZEN is unavailable. Secondary ZEN is available.	Both ISPs are available.	ISP1-Primary-Tunnel and ISP2-Primary-Tunnel goes down. New sessions from the clients are moved to the secondary ZEN using ISP1-Secondary-Tunnel and ISP2-Secondary-Tunnel.
Primary ZEN is available. Secondary ZEN is available.	ISP1 is unavailable. ISP2 is available.	ISP1-Primary-Tunnel and ISP1-Secondary-Tunnel goes down. New sessions from the clients are served by the remaining ISP2-Primary-Tunnel.
Primary ZEN is available. Secondary ZEN is unavailable.	Both ISPs are available.	No action is performed. The client traffic flows as usual to the primary ZEN from ISP1-Primary-Tunnel and ISP2-Primary-Tunnel.
Primary ZEN is available. Secondary ZEN is available.	ISP1 is available. ISP2 is unavailable.	ISP2-Primary-Tunnel and ISP2-Secondary-Tunnel goes down. New sessions from the clients are served by the remaining ISP1-Primary-Tunnel.
Both ZENs are unavailable	Both ISPs are available.	Traffic follows the sequence of the preferred policy order configured on the Business Intent Overlay screen on Orchestrator. If local breakout is listed as one of the policies, traffic is forwarded directly to the internet by passing the ZEN.

Configure Two Locations in Zscaler Cloud Service

Follow the steps to configure the locations.

Give the Zscaler support team the EdgeConnect appliance's static public IP addresses for **ISP2**. This allows the Zscaler Cloud Security Service to initiate the IPsec tunnel to the appliance's **ISP2** public IP address from Zscaler.

Refer to setting up the location in the Zscaler website to create a new location for **ISP2**, and link it to your existing VPN Credential. After you create the new location, it appears as below.



Configure Business Intent Overlay Policies

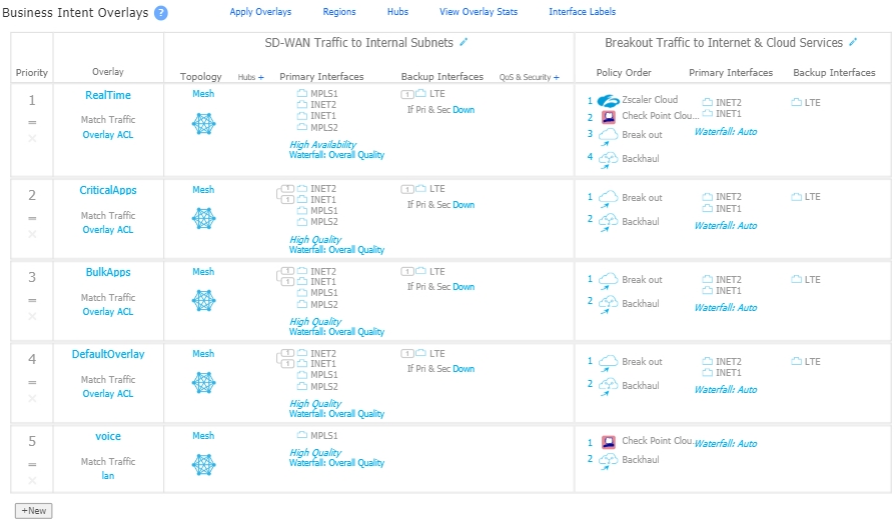
Before creating the IPsec tunnels from the EdgeConnect appliance to the primary and secondary ZENs using **ISP1** and **ISP2**, create a business intent overlay (BIO) on the Orchestrator system that points to the IPsec tunnels. Using access control lists (ACL), specify the applications that you forward to Zscaler on the BIO screen.

TIP Before creating a BIO, create ACLs on the **Configuration** > **Template** screen and apply them on the EdgeConnect appliance.

NOTE Refer to the BIO and ACL online help for more information.

1. From the Orchestrator home screen, select **Configuration** > **Business Intent Overlays**.

   The **Business Intent Overlays** tab opens.



   NOTE In this example, the BIO references a **CriticalApps** ACL that already exists on the EdgeConnect appliance.

2. Click any cell in the **SD-WAN Traffic to Internal Subnets** column. This opens the BIO edit dialog.
3. Select the **Link Bonding Policy** you want to apply to your ACL.
4. Navigate to the tab to the right, **Breakout Traffic to Internet & Cloud Services**.
5. Select the pencil icon next to **Available Policies**.

   The Services screen opens.

6. For **Service Name**, enter a name for the first ZEN, such as **Primary_ZEN**.

   NOTE This service references the traffic sent to the primary ZEN.

7. Select **Add**.
8. For **Service Name**, enter a name for the second ZEN, such as **Secondary_ZEN**.
9. Select **Add**.
10. Select **Save**.

    The two services should display in the **Available Policies** section.
11. Drag the services to the **Preferred Policy Order** section.
12. In the **Preferred Policy Order** section, move the primary ZEN service above the secondary ZEN service.

    NOTE By moving the primary ZEN to the top of the list, traffic is automatically forwarded to the primary ZEN.
13. Select **OK**. Your changes are highlighted in the BIO table, but have not been applied.
14. Select **Save and Apply changes to Overlay**.

You configured a business intent overlay that points to the IPsec VPN tunnels.

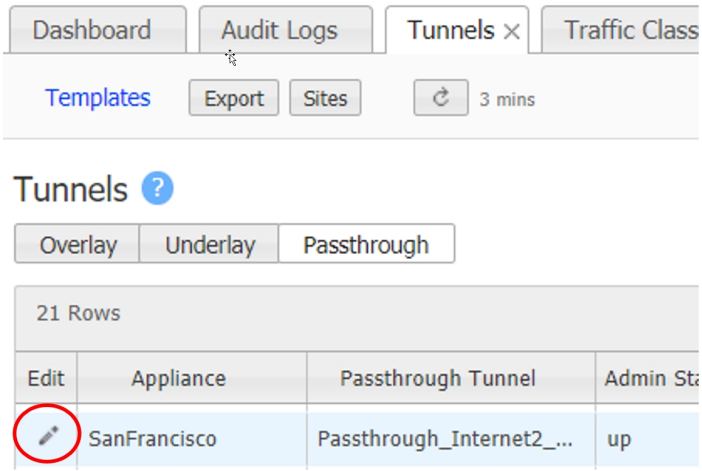
Configure IPsec Tunnels

Follow the steps to configure IPsec tunnels. You will create IPsec VPN tunnels to the primary Zscaler Endpoint Node (ZEN) and secondary ZEN.

Create Tunnel to Primary ZEN

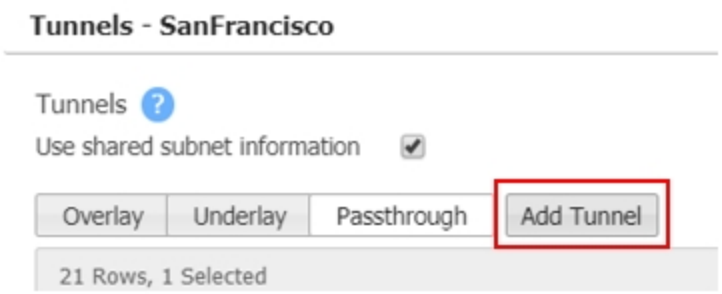
1. Sign in to Orchestrator.
2. From the home screen, select **Configuration > Networking** > **Tunnels** > **Tunnels**.

   The Tunnels screen opens.
3. Click the pencil icon to edit the tunnel.



4. Select the **Passthrough** tab, then select **Add Tunnel**.

   The **Add Passthrough Tunnel** screen opens.



5. Select the **General** tab.

6. Fill in the following fields.

General	Task
Alias	Enter a name for the tunnel.
Mode	Select **IPsec**.
Admin	Select **up**.
Local IP	Enter the EdgeConnect internet WAN interface IP address.
Remote IP	Enter the ZEN IP address that you discovered using an **nslookup** command.
NAT	Keep the default option, **none**. NAT is always none because no source NAT is performed. Zscaler inspects the private branch addresses. If the source NAT is used, all the source addresses have the EdgeConnect's WAN interface IP address. This isn't useful when performing advanced security inspection.
Peer/Service	Enter the service name that you assigned to you tunnel on the BIO screen.
Auto Max BW Enabled	Select the check box.
Max BW Kbps	Leave this field blank.

7. Select the **IKE** tab.

8. Fill in the following fields for IKEv2.

IKE	Task
Preshared Key	Enter the same preshared key that you entered when creating the VPN credential on the Zscaler website.
Authentication Algorithm	Select **SHA1**.
Encryption Algorithm	Select **auto**.
Diffie-Hellman Group	Select **2**.
Rekey Interval/Lifetime	Enter **480**.
Dead Peer Detection	Delay time: the amount of time, in seconds, to wait for traffic from the destination IKE peer. This should be set to **300**. Retry Count: the number of times to retry the connection before determining that the connection is dead. This should be set to **3**. **NOTE:** Dead Peer Detection is only supported on EdgeConnect appliances running VXOA software version 8.2.1 and higher.

IKE Identifier	From the list, select **FQDN**. Select **USER_FQDN** as the IKE identifier.
Phase 1 Mode	Select **Aggressive** as the phase 1 mode.
IKE Version	Select IKEv1.

TIP Make sure the algorithms and pre-shared key match the ones in Zscaler Internet Access.

9. Select the **IPsec** tab.
10. Fill in the following fields.

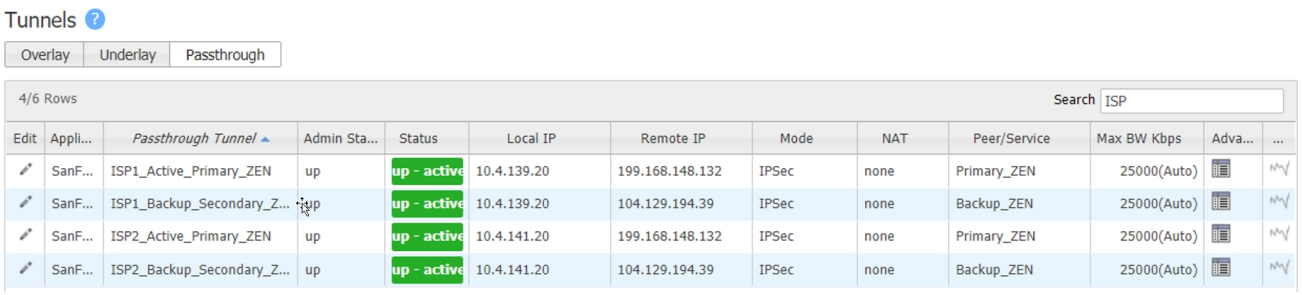
IPsec	Task
Authentication Algorithm	Select **SHA1**.
Encryption Algorithm	Select **NULL**. For the IPsec tunnels, use null encryption because internet bound traffic is encrypted by the applications themselves using HTTPS protocol. This removes an extra layer of encryption using IPsec null encryption. You can set the IKE encryption to the default **auto** selection.
Enable IPsec Anti-Replay Window	Select the check box.
Rekey Interval/Lifetime	In the **Mins** field, enter **60**. In the **Megabytes** field, enter **0**.
Perfect Forward Secrecy Group	Select **disable**.

11. Select **Save**.

    On the **Tunnels** screen, the IPsec tunnel to the primary ZEN displays.

Create Remaining Tunnels

1. Select the **Passthrough** tab.
2. Select **Add Tunnels**.
3. Create the remaining IPsec VPN tunnels by entering the same values that you used for the first tunnel. However, make sure the public IP addresses and service names are different from the ones you used for the primary ZEN.



NOTE Because of the preferred policy order, an EdgeConnect appliance does not need a separate IP SLA rule to handle the failure of an IPsec tunnel to a primary ZEN. If both IPsec tunnels to the primary ZEN are down, new sessions from the client devices are moved to the secondary ZEN by using the secondary tunnels on **ISP1** and **ISP2**.

Verify Client Traffic is Sent to ZIA

1. In your web browser address bar, enter http://ip.zscaler.com/.
2. Use the Zscaler Internet Access test page to verify access to the ZIA.