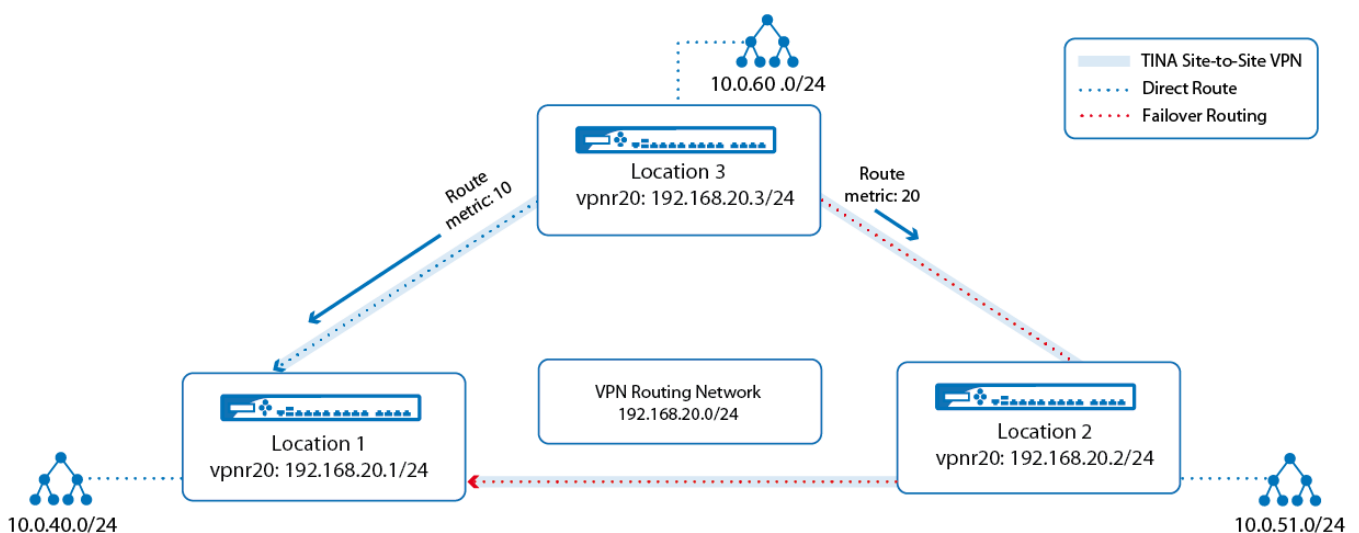


How to Configure a Routed VPN Network

<https://campus.barracuda.com/doc/53248797/>

In cases where Traffic Intelligence cannot handle failover scenarios in your VPN network, use a routed VPN network. A routed VPN network uses the IP addresses assigned to the VPNR interface of the TINA VPN tunnels as gateways. This means that the routing table and the assigned route metrics of the routes determine which tunnel is chosen. When a VPN tunnel goes down, the gateway IP address on the other side of the VPN is no longer reachable and the route metric for the failing route is automatically increased to 65556. The backup route with the lower metric now matches and redirects the traffic over the failover route to its destination. As soon as the VPN tunnel is back up, the original route becomes available again, and traffic is sent through the direct VPN tunnel again.



Before You Begin

- A free subnet (e.g., 192.168.20.0/24) for the intermediary network is needed.

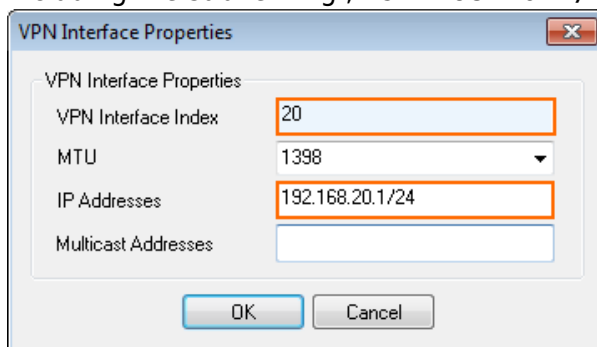
Step 1. Add a VPN Next Hop Interface to Each Firewall

Add a VPN next hop interface using a /24 subnet (e.g., 192.168.20.0/24). Use the same VPNR index for each firewall.

1. Go to **CONFIGURATION > Configuration Tree > Box > Virtual Servers > your virtual server > Assigned Services > VPN-Service > VPN Settings**.
2. Click **Lock**.
3. In the **Settings** tab, click the **Click here for Server Settings** link. The **Server Settings**

window opens.

4. In the **Server Settings** window, click the **Advanced** tab.
5. Next to the **VPN Next Hop Interface Configuration** table, click **Add**.
6. In the **VPN Interface Properties** window, configure the following settings, and then click **OK**.
 1. In the **VPN Interface Index** field, enter a number between 0 and 999. E.g., 20
 2. In the **IP Addresses** field, enter a free IP address for the VPN interface IP address, including the subnet. E.g., 192.168.20.1/24



VPN Interface Properties

VPN Interface Properties

VPN Interface Index: 20

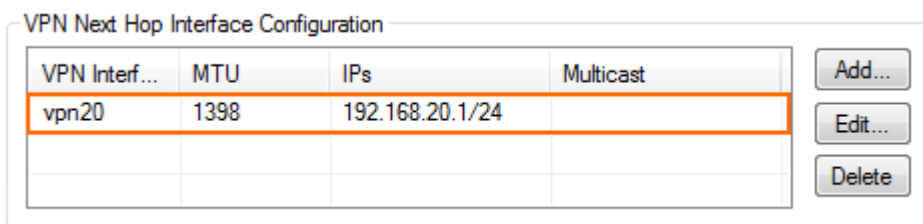
MTU: 1398

IP Addresses: 192.168.20.1/24

Multicast Addresses:

OK Cancel

3. Click **OK**. The interface is now listed in the **VPN Next Hop Interface Configuration** table.



VPN Next Hop Interface Configuration

VPN Interf...	MTU	IPs	Multicast
vpn20	1398	192.168.20.1/24	

Add... Edit... Delete

7. In the **Server Settings** window, click **OK**.
8. Click **Send Changes** and **Activate**.



Repeat for each firewall in the VPN network. If possible, use the same VPNR interface index on each firewall.


Step 2. Add the VPN Next Hop Interface IP Address to the Virtual Server Listening IP Addresses for Each Firewall



Introduce the IP address of the VPN next hop interface as a virtual server IP address on each Firewall.


1. Go to **CONFIGURATION > Configuration Tree > Box > Virtual Servers > your virtual server > Server Properties**.
2. Click **Lock**.
3. In the **Additional IP** table, click **+** to add the IP address of the VPNR interface.







Virtual Server IP Addresses

First-IP [IP1] REF: Loc1_JSP1  

Reply to Ping 

Second-IP [IP2] REF: Loc1_JSP2  









Reply to Ping 

Additional IP      

Additional IP	Label	Reply to Ping	Descrip
10.21.0.80	IP3	1	
10.0.51.3	IP4	1	
10.0.40.3	IP5	1	
192.168.20.1	IP6	1	

4. In the left menu click **Networks**.
5. Remove all entries from the **Server/GTI Networks** table.

Virtual Server/GTI Networks

Server/GTI Networks        

Additional IP	Label	Reply to Ping	Descrip
---------------	-------	---------------	---------

6. Click **Send Changes** and **Activate**.

Repeat for each firewall in the VPN network.

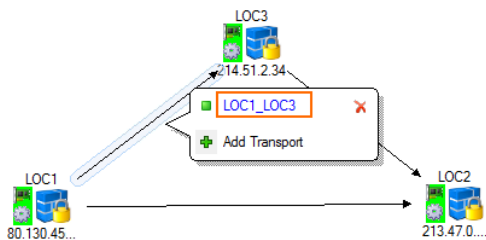
Step 3. Configure the TINA Site-to-Site VPN Tunnel between the Firewalls

You can configure the VPN tunnels connecting the firewalls using the GTI Editor for managed F-Series Firewalls, or using the Site-to-Site configuration dialog if you are using standalone F-Series Firewalls.

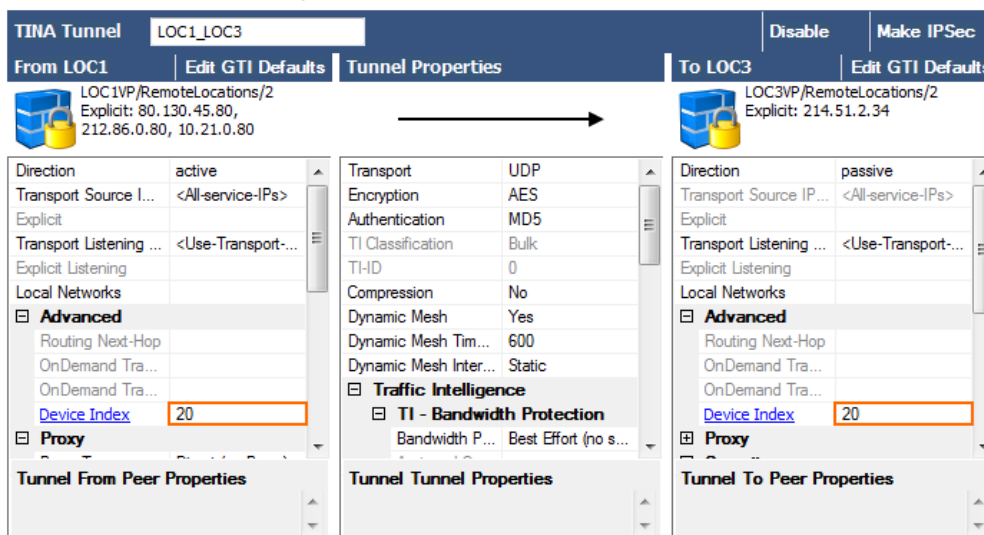
In the GTI Editor

Remove the local and remote networks and add the VPN Next Hop interface ID to the VPN tunnels.

1. Go to the global/range/cluster **GTI Editor**.
2. Click **Lock**.
3. Click on the VPN tunnel, and click on the first Transport to edit the VPN tunnel configuration. For more information, see [How to Create a VPN Tunnel with the VPN GTI Editor](#).



4. Verify that the **Local Networks** for the remote and local VPN services are empty. If not, go back to step 2 and remove the entries from the **Server/GTI Networks** table in the **Server Properties**.
5. Enter the VPN Next Hop interface ID for the remote and local VPN services. E.g., 20



6. Click **OK**.
7. Click **Send Changes** and **Activate**.

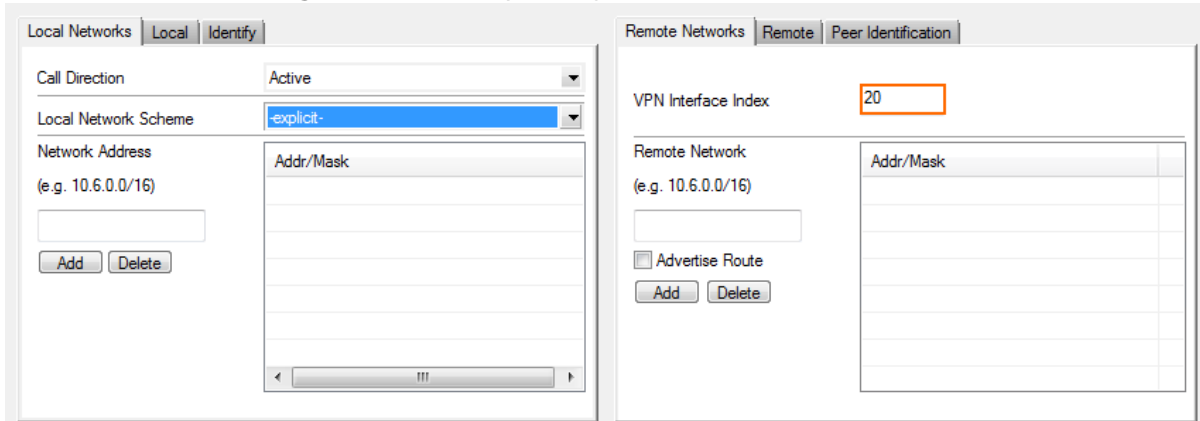
Stand-alone F-Series Firewalls

Configure a TINA VPN tunnel using the VPN next hop interface between all firewalls.

1. Go to **CONFIGURATION > Configuration Tree > Box > Virtual Servers > your virtual server > Assigned Services > VPN-Service > Site to Site**.
2. Click **Lock**.
3. Right-click in the **TINA Tunnels** tab, and select **New TINA tunnel**. The **TINA tunnel** window opens.
4. Enter a **Name**.
5. Configure the **Transport**, **Encryption** and **Authentication** settings as well as the **Local** and **Remote** public IP addresses. For more information, see [How to Create a TINA VPN Tunnel](#)

[between F-Series Firewalls.](#)

6. Leave the **Local** and **Remote Network** empty.
7. In the **Remote Networks** tab, enter the **VPN Interface Index** number that you created in the **VPN Interface Configuration** in step 1. E.g., 20



The screenshot shows the VPN configuration interface with two main panels: 'Local Networks' and 'Remote Networks'.

Local Networks Panel:

- Call Direction: Active
- Local Network Scheme: explicit-
- Network Address (e.g. 10.6.0.0/16): [Empty field]
- Addr/Mask table: [Empty table with 2 columns]
- Buttons: Add, Delete

Remote Networks Panel:

- VPN Interface Index: 20 (highlighted in orange)
- Remote Network (e.g. 10.6.0.0/16): [Empty field]
- Addr/Mask table: [Empty table with 2 columns]
- Advertise Route:
- Buttons: Add, Delete

8. Click **OK**.
9. Click **Send Changes** and **Activate**.

Repeat this step until all three firewalls are connected via a TINA Site-to-Site VPN tunnel with each other.

Step 3. Configure Gateway Routes for the Location 1 Firewall

Create the following primary and backup gateway routes on the Location 1 firewall. For more information, see [How to Configure Gateway Routes](#)

1. Log into the Location 1 firewall.
2. Create a gateway route to Location 3:
 - **Target Network Address** - Enter the Location 3 network in CIDR format:
10.0.60.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall:
192.168.20.3
 - **Metric** - Enter 10.
3. Create a gateway route to Location 2:
 - **Target Network Address** - Enter the Location 2 network in CIDR format:
10.0.51.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 2 firewall:
192.168.20.2
 - **Metric** - Enter 10.
4. Create a backup gateway route to Location 3 via Location 2:
 - **Target Network Address** - Enter the Location 3 network in CIDR format:

- 10.0.60.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall: 192.168.20.2
 - **Metric** - Enter 20.
5. Create a backup gateway route to Location2 via Location 3:
- **Target Network Address** - Enter the Location 3 network in CIDR format: 10.0.51.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall: 192.168.20.3
 - **Metric** - Enter 20.
6. Activate the network configuration on the Location 3 firewall. For more information, see [How to Activate Network Changes](#).

The Location 1 routing table now includes all gateway routes to reach the remote networks with failover routes in case the VPN tunnel goes down.

TABLES

Table / Src Filter	State	Type	Interface	Src IP	Pref	Gateway	Name
Table vpn2mc, From 10.0.16.1							
Table vpn2inet, From 10.0.16.1							
Table vpnlocal, From all							
Table main, From all							
10.0.40.0/24	up	direct-adv	eth0	10.0.40.1	0	-	boxnet
10.21.0.0/24	up	direct-b...	eth3	10.21.0.80	0	-	MPLS
127.0.3.0/24	up	direct-k...	vpn20	127.0.3.1	0	-	
192.168.20.0/24	up	direct-k...	vpn20	192.168.20.1	0	-	
212.86.0.0/24	up	direct-b...	eth1	212.86.0.81	0	-	ISP1
80.130.45.0/24	up	direct-b...	eth2	80.130.45.80	0	-	ISP2
10.0.51.0/24	up	gateway...	vpn20	192.168.20.1	10	192.168.20.2	LOC2
10.0.51.0/24	up	gateway...	vpn20	192.168.20.1	20	192.168.20.3	LOC2-VIA-LOC3
10.0.60.0/24	up	gateway...	vpn20	192.168.20.1	10	192.168.20.3	LOC3
10.0.60.0/24	up	gateway...	vpn20	192.168.20.1	20	192.168.20.2	LOC3-VIA-LOC2
Table ISP1, From 212.86.0.0/24							
Table ISP2, From 80.130.45.0/24							
Table MPLS, From 10.21.0.0/24							
Table default, From all							
0.0.0.0/0	up	gateway...	eth1	212.86.0.81	1	212.86.0.254	ISP1a

Step 4. Configure Gateway Routes for the Location 2 Firewall

Create the following primary and backup gateway routes on the Location 1 firewall. For more information, see [How to Configure Gateway Routes](#)

1. Log into the Location 2 firewall.
2. Create a gateway route to Location 3:
 - **Target Network Address** - Enter the Location 3 network in CIDR format: 10.0.60.0/24

- **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall: 192.168.20.3
 - **Metric** - Enter 10.
3. Create a gateway route to Location 1:
- **Target Network Address** - Enter the Location 2 network in CIDR format: 10.0.15.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 2 firewall: 192.168.20.1
 - **Metric** - Enter 10.
4. Create a backup gateway route to Location 3 via Location 1:
- **Target Network Address** - Enter the Location 3 network in CIDR format: 10.0.51.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall: 192.168.20.1
 - **Metric** - Enter 20.
5. Create a backup gateway route to Location1 via Location 3:
- **Target Network Address** - Enter the Location 3 network in CIDR format: 10.0.15.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall: 192.168.20.3
 - **Metric** - Enter 20.
6. Activate the network configuration on the Location 3 firewall. For more information, see [How to Activate Network Changes](#).

The Location 2 routing table now includes all gateway routes to reach the remote networks with failover routes in case the VPN tunnel goes down.

TABLES ALL

Table / Src Filter	State	Type	Interface	Src IP	Pref	Gateway	Name
Table vpn2nc, From 10.0.16.2							
Table vpn2inet, From 10.0.16.2							
Table vpnlocal, From all							
Table main, From all							
10.0.40.0/24	up	gateway...	vpn20	192.168.20.2	10	192.168.20.1	LOC1
10.0.40.0/24	up	gateway...	vpn20	192.168.20.2	20	192.168.20.3	LOC1-VIA-LOC3
10.0.51.0/24	up	direct-b...	eth0	10.0.51.1	0	-	boxnet
10.0.60.0/24	up	gateway...	vpn20	192.168.20.2	10	192.168.20.3	LOC3
10.0.60.0/24	up	gateway...	vpn20	192.168.20.2	20	192.168.20.1	LOC3-VIA-LOC1
10.22.0.0/24	up	direct-b...	eth2	10.22.0.80	0	-	MPLS
127.0.3.0/24	up	direct-k...	vpn20	127.0.3.1	0	-	
192.168.20.0/24	up	direct-k...	vpn20	192.168.20.2	0	-	
213.47.0.0/24	up	direct-b...	eth1	213.47.0.88	0	-	IPAD01
Table default, From all							
0.0.0.0/0	up	gateway...	eth1	213.47.0.88	0	213.47.0.254	ISP1

Step 5. Configure Gateway Routes for the Location 3 Firewall

Create the following primary and backup gateway routes on the Location 3 firewall. For more information, see [How to Configure Gateway Routes](#)

1. Log into the Location 3 firewall.
2. Create a gateway route to Location 1:
 - **Target Network Address** - Enter the Location 3 network in CIDR format:
10.0.15.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall:
192.168.20.1
 - **Metric** - Enter 10.
3. Create a gateway route to Location 2:
 - **Target Network Address** - Enter the Location 2 network in CIDR format:
10.0.51.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 2 firewall:
192.168.20.2
 - **Metric** - Enter 10.
4. Create a backup gateway route to Location 1 via Location 2:
 - **Target Network Address** - Enter the Location 3 network in CIDR format:
10.0.15.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall:
192.168.20.2
 - **Metric** - Enter 20.
5. Create a backup gateway route to location 2 via location 1:
 - **Target Network Address** - Enter the Location 3 network in CIDR format:
10.0.51.0/24
 - **Route Type** - Select **gateway**.
 - **Gateway** - Enter the IP address assigned to the VPNR interface of the Location 3 firewall:
192.168.20.1
 - **Metric** - Enter 20.
6. Activate the network configuration on the Location 3 firewall. For more information, see [How to Activate Network Changes](#).

The Location 3 routing table now includes all gateway routes to reach the remote networks with failover routes in case the VPN tunnel goes down.

TABLES ALL

Table / Src Filter	State	Type	Interface	Src IP	Pref	Gateway	Name
Table vpn2mc, From 10.0.16.3							
Table vpn2net, From 10.0.16.3							
Table vpnlocal, From all							
Table main, From all							
127.16.3.0/24	off	direct	eth1	-	0	-	DMZ
10.0.40.0/24	up	gateway...	vpn20	192.168.20.3	10	192.168.20.1	LOC1
10.0.40.0/24	up	gateway...	vpn20	192.168.20.3	20	192.168.20.2	LOC1-VIA-LOC2
10.0.51.0/24	up	gateway...	vpn20	192.168.20.3	10	192.168.20.2	LOC2
10.0.51.0/24	up	gateway...	vpn20	192.168.20.3	20	192.168.20.1	LOC2-VIA-LOC1
10.0.60.0/24	up	direct-b...	eth0	10.0.60.1	0	-	boxnet
127.0.3.0/24	up	direct-k...	vpn20	127.0.3.1	0	-	
192.168.20.0/24	up	direct-k...	vpn20	192.168.20.3	0	-	
214.51.2.0/24	up	direct-b...	eth2	214.51.2.35	0	-	IPAD01
Table default, From all							
0.0.0.0/0	up	gateway...	eth2	214.51.2.35	0	214.51.2.254	ROUT01

Monitoring

The VPN tunnels are now monitored like all other gateway routes. When a tunnel goes down, the VPNR interface IP address of the remote firewall is no longer reachable and the gateway route metric is automatically increased to 65556. Traffic will then use the backup route with the lower metric to reach the destination through the other VPN tunnel. Go to **CONTROL > Network** to see the routing table.

TABLES ALL

Table / Src Filter	State	Type	Interface	Src IP	Pref	Gateway	Name
Table vpn2mc, From 10.0.16.1							
Table vpn2net, From 10.0.16.1							
Table vpnlocal, From all							
Table main, From all							
10.0.40.0/24	up	direct-adv	eth0	10.0.40.1	0	-	boxnet
10.21.0.0/24	up	direct-b...	eth3	10.21.0.80	0	-	MPLS
127.0.3.0/24	up	direct-k...	vpn20	127.0.3.1	0	-	
192.168.20.0/24	up	direct-k...	vpn20	192.168.20.1	0	-	
212.86.0.0/24	up	direct-b...	eth1	212.86.0.81	0	-	ISP1
80.130.45.0/24	up	direct-b...	eth2	80.130.45.80	0	-	ISP2
10.0.51.0/24	up	gateway...	vpn20	192.168.20.1	10	192.168.20.2	LOC2
10.0.51.0/24	dis	gateway...	vpn20	192.168.20.1	65556	192.168.20.3	LOC2-VIA-LOC3
10.0.60.0/24	dis	gateway...	vpn20	192.168.20.1	65546	192.168.20.3	LOC3
10.0.60.0/24	up	gateway...	vpn20	192.168.20.1	20	192.168.20.2	LOC3-VIA-LOC2
Table ISP1, From 212.86.0.0/24							
Table ISP2, From 80.130.45.0/24							
Table MPLS, From 10.21.0.0/24							
Table default, From all							
0.0.0.0/0	up	gateway...	eth1	212.86.0.81	1	212.86.0.254	ISP1a

Go to **FIREWALL > Live** to see which VPN tunnel is used.

Monitor Live History Threat Scan ATD Audit Log Shaping Users Dynamic Host Rules Forwarding Rules Sync Filter

Traffic Selection Forward, Local In, Local Out, IPv4, IPv6 Status Selection Closing, Established, Failing, Pending Source/Destin... | 10.0.60*

ID	State	IP Protocol	Port	Source	Interface	Destination	Output-IF	Rule	Bit/s	Total	Idle	TI ID
11...		ICMP		10.0.40.44	eth0	10.0.60.44	vpn20@FW2FW-LOC1-LOC2	LOC-2-ALLVPNLOCATIONS	1.3 K	41.3 K	0s	B0

Go to **VPN > Status** to see if the VPN tunnels are up.

Site-to-Site Client-to-Site Status Access Cache Drop Cache Client Downloads Selection

Tunnel	Name	Type	Group	Info	State	Succ.	Fail	Last Access	Last Peer	Last Info	Last Duration
	TINA LOC1-LOC2			FW Tunnel	ACTIVE	4	0	33m 28s	213.47.0.80	Resp. Access Granted	33m 28s
	TINA LOC1-LOC3			FW Tunnel	ACTIVE	4	26		214.51.2.34	Resp. Access Granted	

Figures

1. vpn_routing.png
2. routed_VPN_01.png
3. routed_VPN_02.png
4. routed_VPN_03.png
5. routed_VPN_03a.png
6. routed_VPN_GTI_00.png
7. routed_VPN_GTI_01.png
8. routed_VPN_04.png
9. routed_VPN_05.png
10. routed_VPN_06.png
11. routed_VPN_07.png
12. routed_VPN_08.png
13. routed_VPN_09.png
14. routed_VPN_10.png

© Barracuda Networks Inc., 2019 The information contained within this document is confidential and proprietary to Barracuda Networks Inc. No portion of this document may be copied, distributed, publicized or used for other than internal documentary purposes without the written consent of an official representative of Barracuda Networks Inc. All specifications are subject to change without notice. Barracuda Networks Inc. assumes no responsibility for any inaccuracies in this document. Barracuda Networks Inc. reserves the right to change, modify, transfer, or otherwise revise this publication without notice.