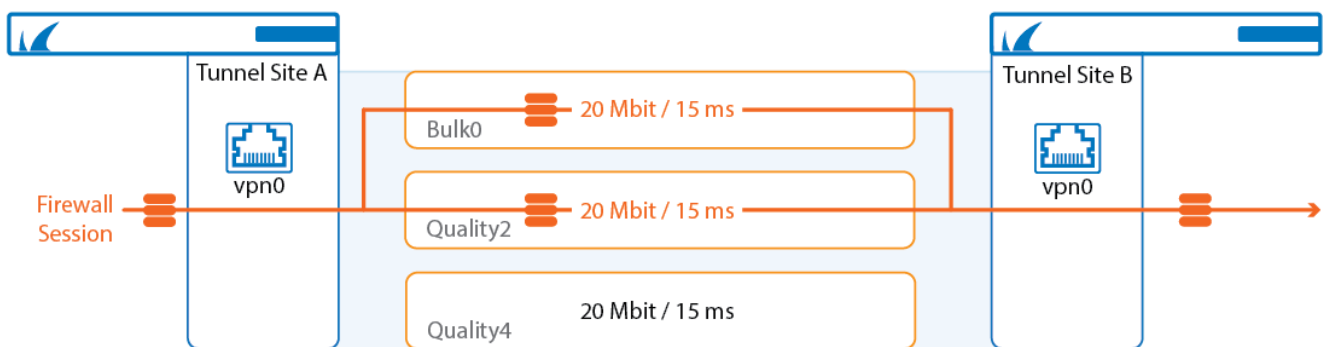


How to Configure Traffic Duplication for VPN Tunnels with SD-WAN

<https://campus.barracuda.com/doc/79462911/>

Traffic Duplication copies packets and sends them over the primary and secondary transport simultaneously to ensure that traffic continues uninterrupted even if one VPN transport goes down. At the other VPN endpoint, the packet stream is reassembled. Traffic Duplication should be used only for critical, real-time traffic using two transports with the same latency and bandwidth.



Limitations

- Not available for transports using IPv6 VPN envelopes.
- Latency (Round Trip Time) and bandwidth must be identical for both transports.

Before You Begin

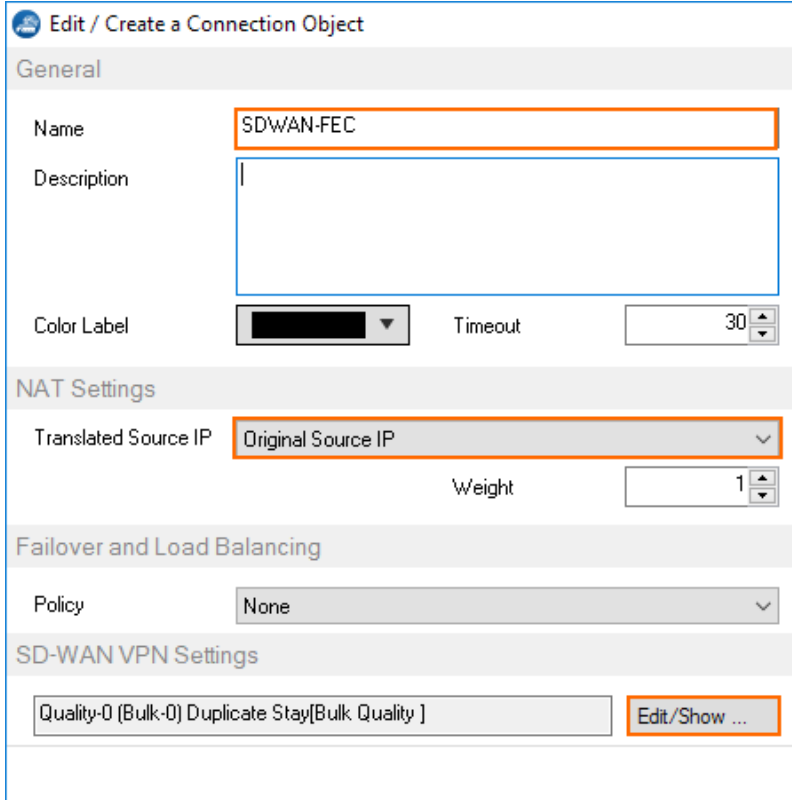
Create a multi-transport VPN tunnel between two CloudGen Firewalls:

- Create a TINA site-to-site VPN tunnel. For more information, see [How to Create a TINA VPN Tunnel between CloudGen Firewalls](#) or [How to Create a VPN Tunnel with the VPN GTI Editor](#).
- Add one or more additional transports to the VPN tunnel. For more information, see [How to Add a VPN Transport to a TINA VPN Tunnel with Explicit Transport Selection](#) or [How to Configure SD-WAN Using the VPN GTI Editor](#).

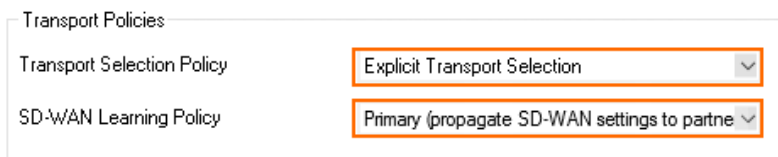
Step 1. Create a Custom Connection Object for the SD-WAN Primary

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > Firewall > Forwarding Rules**.

2. In the left menu, click **Connections**.
3. Right-click the table and select **New Connection**. The **Edit/Create a Connection Object** window opens.
4. Enter the **Name**.
5. From the **Translated Source IP** list, select **Original Source IP**.



6. To edit the **SD-WAN VPN** settings, click **Edit/Show**. The **SD-WAN Settings** window opens.
7. Configure the **Transport Policies**:
 - **Transport Selection Policy** – Select **Explicit Transport Selection**.
 - **SD-WAN Learning Policy** – Select **Primary**.



8. Configure the **Explicit Transport Selection**:
 - **Primary Transport Class** – Select the primary transport.
 - **Primary Transport ID** – Select the ID for the primary transport.
 - **Secondary Transport Class** – Select the secondary transport.
 - **Secondary Transport ID** – Select the ID for the secondary transport.
9. From the **Traffic Duplication (FEC)** list, select **Yes**.

Explicit Transport Selection

Primary Transport Class

Quality

Primary Transport ID

0

Secondary Transport Class

Bulk

Secondary Transport ID

0

Further Transport Selection

First try Cheaper then try Expensive

☒ Allow Bulk Transports

☒ Allow QualityTransports

☒ Allow FallbackTransports

Simultaneous Transport Usage

Session Balancing

None


Traffic Duplication

Yes

10. Click **OK**.
11. Click **Send Changes** and **Activate**.

Step 3. Create a Custom Connection Object for the SD-WAN Secondary

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > Firewall > Forwarding Rules**.
2. In the left menu, click **Connections**.
3. Right-click the table and select **New Connection**. The **Edit/Create a Connection Object** window opens.
4. Enter the **Name**.
5. From the **Translated Source IP** list, select **Original Source IP**.

 Edit / Create a Connection Object

General

Name

Description

Color Label Timeout

NAT Settings

Translated Source IP Weight

Failover and Load Balancing

Policy

SD-WAN VPN Settings

6. To edit the **SD-WAN VPN** settings, click **Edit/Show**. The **SD-WAN Settings** window opens.
7. From the **SD-WAN Learning Policy** drop-down list, select **Secondary**.

Transport Policies

Transport Selection Policy

SD-WAN Learning Policy

Explicit Transport Selection

Primary Transport Class

Primary Transport ID

Secondary Transport Class

Secondary Transport ID

Further Transport Selection

☒ Allow Bulk Transports ☒ Allow Quality Transports ☒ Allow Fallback Transports

Simultaneous Transport Usage

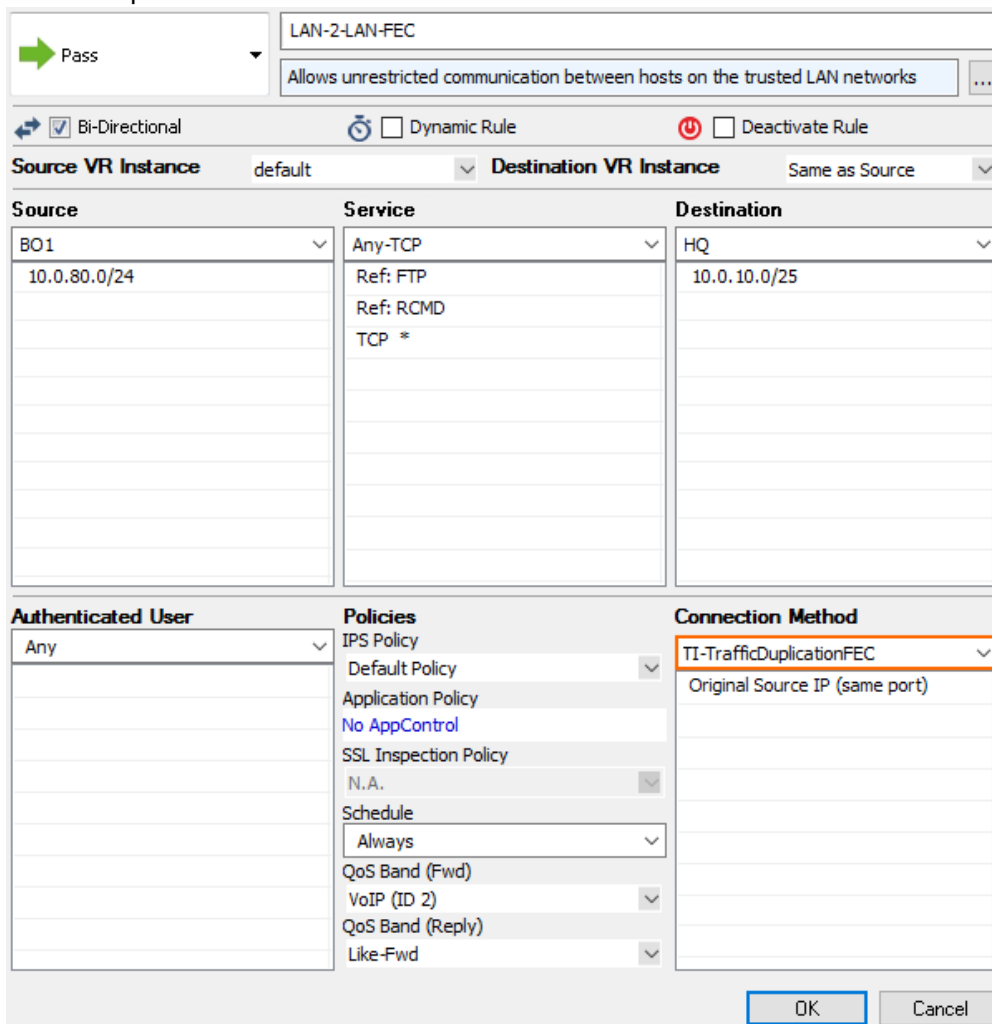
Session Balancing

Traffic Duplication

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

Step 4. Modify Access Rule on the Firewall Acting as SD-WAN Primary

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > Firewall > Forwarding Rules.**
2. Click **Lock**.
3. Right-click the ruleset and select **New > Rule** to create an access rule to match the VPN traffic you want to balance:
 - **Action** - Select **Pass**.
 - **Bi-Directional** - Select the check box to apply the rule in both directions.
 - **Source** - Select a network object for all local networks.
 - **Service** - Select a service object from the list.
 - **Destination** - Select the network object containing the remote networks.
 - **Connection Method** - Select the connection object for the SD-WAN primary created in Step 2.



Pass

LAN-2-LAN-FEC

Allows unrestricted communication between hosts on the trusted LAN networks

☒ Bi-Directional ☐ Dynamic Rule ☐ Deactivate Rule

Source VR Instance: default Destination VR Instance: Same as Source

Source	Service	Destination
BO1 10.0.80.0/24	Any-TCP Ref: FTP Ref: RCMD TCP *	HQ 10.0.10.0/25

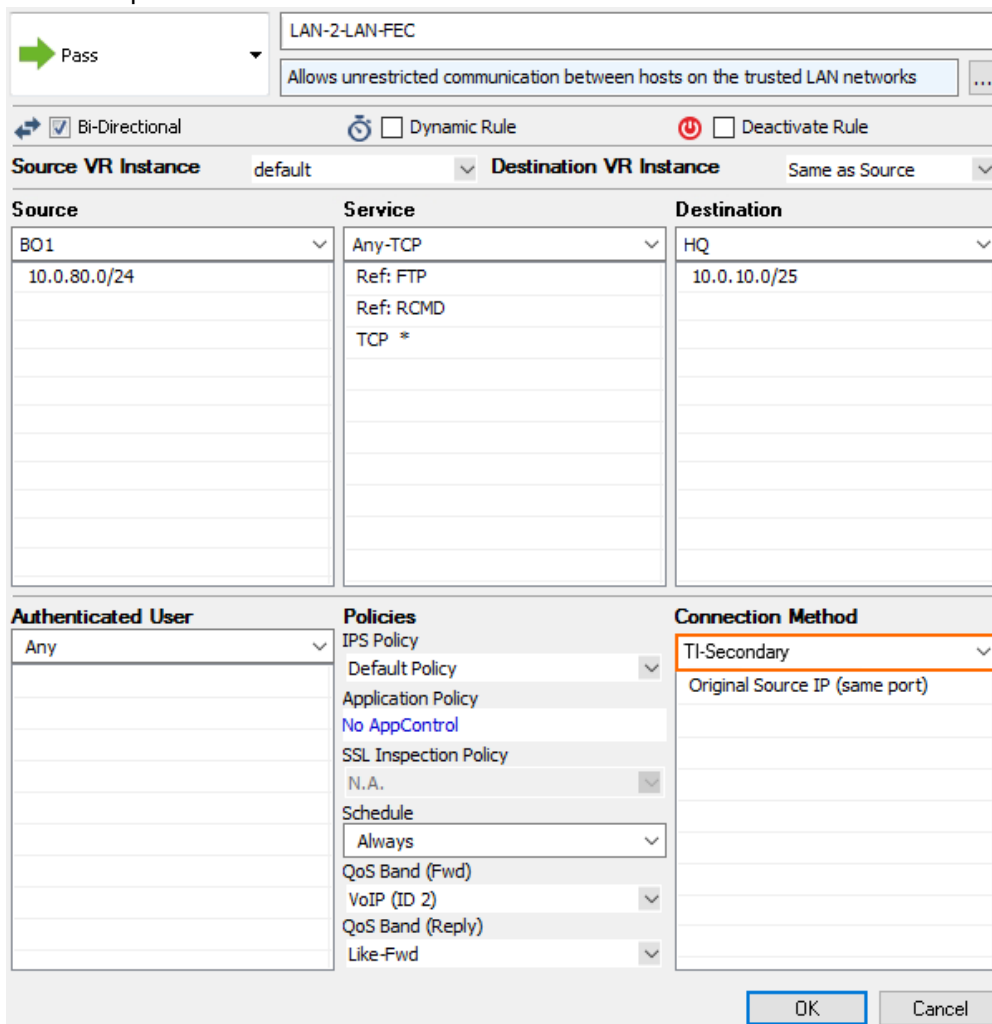
Authenticated User	Policies	Connection Method
Any	IPS Policy Default Policy Application Policy No AppControl SSL Inspection Policy N.A. Schedule Always QoS Band (Fwd) VoIP (ID 2) QoS Band (Reply) Like-Fwd	TI-TrafficDuplicationFEC Original Source IP (same port)

OK Cancel

4. Click **OK**.
5. Click **Send Changes** and **Activate**.

Step 5. Modify Access Rule on the Firewall Acting as SD-WAN Secondary

1. Go to **CONFIGURATION > Configuration Tree > Box > Assigned Services > Firewall > Forwarding Rules**.
2. Click **Lock**.
3. Right-click the ruleset and select **New > Rule** to create an access rule to match the VPN traffic you want to balance:
 - **Action** - Select **Pass**.
 - **Bi-Directional** - Select the check box to apply the rule in both directions.
 - **Source** - Select a network object for all local networks.
 - **Service** - Select a service object from the list.
 - **Destination** - Select the network object containing the remote networks.
 - **Connection Method** - Select the connection object for the SD-WAN secondary created in Step 3.



The screenshot shows the 'New Rule' configuration window in the Barracuda CloudGen Firewall. The rule is named 'LAN-2-LAN-FEC' and has the description 'Allows unrestricted communication between hosts on the trusted LAN networks'. The action is set to 'Pass'. The rule is configured to be bi-directional and is not a dynamic rule or deactivated. The source VR instance is 'default' and the destination VR instance is 'Same as Source'. The source is set to 'BO1' (10.0.80.0/24) and the destination is set to 'HQ' (10.0.10.0/25). The service is set to 'Any-TCP' (Ref: FTP, Ref: RCMD, TCP *). The authenticated user is set to 'Any'. The policies are set to 'IPS Policy' (Default Policy), 'Application Policy' (No AppControl), 'SSL Inspection Policy' (N.A.), 'Schedule' (Always), 'QoS Band (Fwd)' (VoIP (ID 2)), and 'QoS Band (Reply)' (Like-Fwd). The connection method is set to 'TI-Secondary' (Original Source IP (same port)).

Source	Service	Destination
BO1 10.0.80.0/24	Any-TCP Ref: FTP Ref: RCMD TCP *	HQ 10.0.10.0/25

Authenticated User	Policies	Connection Method
Any	IPS Policy Default Policy Application Policy No AppControl SSL Inspection Policy N.A. Schedule Always QoS Band (Fwd) VoIP (ID 2) QoS Band (Reply) Like-Fwd	TI-Secondary Original Source IP (same port)

4. Click **OK**.
5. Click **Send Changes** and **Activate**.

Traffic matching these access rules is now duplicated on the primary and secondary transport. Failure of one of the transports is completely transparent and no packet is dropped. In the **VPN** tab, Traffic Duplication is not visualized. Traffic Duplication can be tested very easily by disabling one transport. If traffic fails over instantly with no packets dropped and with no delay, Traffic Duplication is working correctly.

Figures

1. ti_traffic_replication.png
2. sdwan_FEC_01.png
3. sdwan_FEC_01a.png
4. sdwan_FEC_01b.png
5. sdwan_FEC_01.png
6. sdwan_FEC_03.png
7. sdwan_FEC_04a.png
8. sdwan_FEC_04.png

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