

## How to Configure Failover with Multiple xDSL or DHCP WAN Connections

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If you are using a mix of static and dynamic connections, or WAN connections in Standby mode, see [How to Configure Link Balancing and Failover for Multiple WAN Connections](#) or [How to Configure Automatic Failover Dynamic WAN Connections in Standby Mode](#).

When using multiple DHCP or xDSL Internet connections from the same ISP, you must configure the connections to create the default route for each connection in a source-based route table. Use custom connection objects to determine which WAN connection is used. You can configure failover and load balancing settings in the connection object, depending on your needs.

To be able to also use failover for connections not using the custom connection object, each WAN connection is assigned a unique route metric. These routes are cloned into the default route table. Access rules using **Dynamic NAT** as the connection method now use the default route with the lowest metric. If that connection goes down, the route with the next higher metric is used. This is also useful as a fallback to retain connectivity even if the load-balancing access rules do not match.

### Before you begin

- Each Internet connection requires one free port.
- For xDSL connections, you need the connection settings provided by your provider.
- Configure DNS servers. For more information, see [How to Configure DNS Settings](#).

### Step 1. Configure multiple xDSL or DHCP WAN connections

Configure multiple WAN or DHCP connections. A unique metric must be set for each connection. The connection with the lowest metric is used as the default connection by access rules using Dynamic NAT as the connection method.

#### DHCP WAN connection(s)

1. Go to **CONFIGURATION > Configuration Tree > Box > Network**.
2. Click **Lock**.
3. In the left menu, click **xDSL/DHCP/ISDN**.
4. In the **DHCP Enabled** list, click **yes**.
5. For each DHCP connection, click + to add a connection to the **DHCP Links** list.
  1. Enter a **Name** and click **OK**.


- From the **DHCP Interface** list, select the interface the ISP is connected to.


**Connection Details**


DHCP Interface   Other 


- In the **DNS** section, select **no** from the **Use Provider Domain Name** list.

**DNS**

Use Provider DNS  


Use Provider Domain Name  







Use Dynamic DNS  


Dynamic DNS Params   Disabled 


- In the **Routing** section, set **Create Default Route** to **no**.
- Click **+** to add **0.0.0.0/0** to the **Target Networks** list.
- Enter a unique **Route Metric**. Routes with lower metrics are preferred when a routing lookup (Dynamic NAT) is used to determine the egress interface.


**Routing**

Create Default Route  

Target Networks      

Advertise Route  

Trust Level  

Route Metric  

- Click **OK**.
- Click **Send Changes** and **Activate**.

#### xDSL WAN connection(s)

- Go to **CONFIGURATION > Configuration Tree > Box > Network**.
- Click **Lock**.
- In the left menu, click **xDSL/DHCP/ISDN**.
- In the left menu, expand **Configuration Mode** and click **Switch to Advanced View**.
- In the **xDSL Enabled** list, click **yes**.
- For each xDSL connection, click **+** to add a xDSL connection to the **xDSL Links** list.
  - Enter a **Name** and click **OK**. The **xDSL** window opens.
  - Select the **Connection Type** and other connection settings as specified by your ISP. For more information, see [How to Configure an ISP with xDSL](#).
  - In the **Authentication** section, set **Use Provider DNS** to **no**.

**Authentication**

Authentication Method	PAP_or_CHAP	
User Access ID	user1	
User Access Sub-ID		
Access Password	New: ●●●● Confirm: ●●●● Strength: [ ] [ ] [ ] [ ]	
Provider Name		
PPPoE Acceleration	no	
Access Concentrator		
Service Name		
Use Provider DNS	no	
Use Dynamic DNS	no	
Dynamic DNS Params	Edit... Clear Disabled	

- In the **Routing** section, set **Create Default Route** to **no**.
- Click **+** to add **0.0.0.0/0** to the **Target Networks** list.
- Enter a unique **Route Metric**. Routes with lower metrics are preferred when a routing lookup (Dynamic NAT) is used to determine the egress interface.

**Routing**

Own Routing Table	yes	
Use Assigned IP	yes	
Source Networks		
Create Default Route	no	
Target Networks	0.0.0.0/0	
Advertise Route	no	
Trust Level	Untrusted	
Route Metric	51	
Clone Routes	yes	
GRE with Assigned IP	no	

- Click **OK**.

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

## Step 2. Activate the network configuration

Trigger a **Failsafe** network activation.

For more information, see [How to Activate Network Changes](#).

## Step 3. Create a custom connection object

Create a connection object using network interfaces of the dynamic Internet connections to determine the translated IP address. xDSL connections use ppp1 to ppp4 interfaces. DHCP uses dhcp as the interface name.

**General**

Name

Description

Color Label   Timeout

**NAT Settings**

Translated Source IP

Interface Name  Weight

**Failover and Load Balancing**

Policy

Alternatives			
Type	Value		Weight
Network Interface	ppp2		1
Network Interface	ppp3		1
Network Interface	dhcp		1
Network Interface	dhcp2		1

For more information, see [How to Create a Custom Connection Object](#) and [How to Configure Failover and Load Balancing in Custom Connection Objects](#).

## Step 4. Change the access rule connection method

To use the custom connection object, change the **Connection Method** for the access rules matching the traffic you want to load balance, or for which you want to use load balancing.

Source	Service	Destination
Trusted LAN Ref: Trusted LAN Networks Ref: Trusted Next-Hop Networks	Any Ref: Any-TCP Ref: Any-UDP Ref: ICMP ALLIP	Internet Ref: Any NOT 10.0.0.0/8 NOT 172.16.0.0/12 NOT 192.168.0.0/16

Authenticated User	Policies	Connection Method
Any	IPS Policy Default Policy Application Policy AppControl, Virus Scan, ATD Schedule Always QoS Band (Fwd) Internet (ID 4) QoS Band (Reply) Like-Fwd	MultiplexDSL Network Interface ppp1 Weighted Random ppp2 ppp3 dhcp dhcp2

## Monitoring

Go to the **CONTROL > Network** page. For each dynamic WAN connection there is a premain source-based routing table. Also, since **Clone Routes** is set to **yes**, the default routes (with different metrics) are cloned to the default route table.

Table / Src Filter	State	Type	Interface	Src IP	Pref	Gateway	Name
<b>Table vpnlocal, From all</b>							
<b>Table adsl3, From 192.168.1.3</b>							
<b>Table adsl2, From 192.168.1.2</b>							
<b>Table adsl1, From 192.168.1.1</b>							
0.0.0.0/0	up	gateway...	xDSL[ppp1]	192.168.1.1	51	192.168.1.254	
192.168.1.254/32	up	direct-b...	xDSL[ppp1]	192.168.1.1	51	-	
<b>Table dhcp2, From 194.93.0.205</b>							
<b>Table dhcp1, From 194.93.0.204</b>							
0.0.0.0/0	up	gateway...	dhcp	194.93.0.204	100	194.93.0.254	
194.93.0.0/24	up	direct-b...	dhcp	194.93.0.204	0	-	
<b>Table main, From all</b>							
<b>Table default, From all</b>							
0.0.0.0/0	up	gateway...	dhcp	194.93.0.204	100	194.93.0.254	
0.0.0.0/0	up	gateway...	dhcp2	194.93.0.205	111	194.93.0.254	
0.0.0.0/0	up	gateway...	xDSL[ppp1]	192.168.1.1	51	192.168.1.254	
0.0.0.0/0	up	gateway...	xDSL[ppp2]	192.168.1.2	52	192.168.1.254	
0.0.0.0/0	up	gateway...	xDSL[ppp3]	192.168.1.3	53	192.168.1.254	

## Testing

Remove access to the gateway IP address used by the connection, or configure monitoring and remove access to the monitored IP address. Check the **Interface** column to check which egress interface is being used by the connection. When a WAN connection goes down the egress interface is replaced according to the policy in the custom connection object.

ID	State	IP ...	Port	Source	Interface	User	Destination	Output-IF	A...	Rule	Bit/s	Total	Idle	
12004		ICMP		10.0.10.11	eth0	mzoller	8.8.4.4	ppp3		LAN-2-INTERNET	960	2.8 K	0s	-
11988		ICMP		10.0.10.11	eth0	mzoller	80.109.163.8	dhcp		LAN-2-INTERNET	960	5.3 K	0s	-
11900		ICMP		10.0.10.11	eth0	mzoller	8.8.8.8	dhcp2		LAN-2-INTERNET	960	17.8 K	0s	-

## Figures

1. multi\_dyn\_WAN\_03.png
2. multi\_dyn\_WAN\_04.png
3. multi\_dyn\_WAN\_05.png
4. multi\_dyn\_WAN\_01.png
5. multi\_dyn\_WAN\_02.png
6. multi\_dyn\_WAN\_06.png
7. multi\_dyn\_WAN\_07.png
8. multi\_dyn\_WAN\_08.png
9. multi\_dyn\_WAN\_09.png

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