



Configuration examples for the D-Link NetDefend Firewall series

Scenario: How to configure WAN Load Sharing and Failover for two ISPs

Platform Compatibility: All NetDefend Firewall Series

Last update: 2008-03-10

Overview

In this document, the notation *Objects->Address book* means that in the tree on the left side of the screen **Objects** first should be clicked (expanded) and then **Address Book**.

Most of the examples in this document are adapted for the DFL-800. The same settings can easily be used for all other models in the series. The only difference is the names of the interfaces. Since the DFL-1600 and DFL-2500 has more than one lan interface, the lan interfaces are named lan1, lan2 and lan3 not just lan.

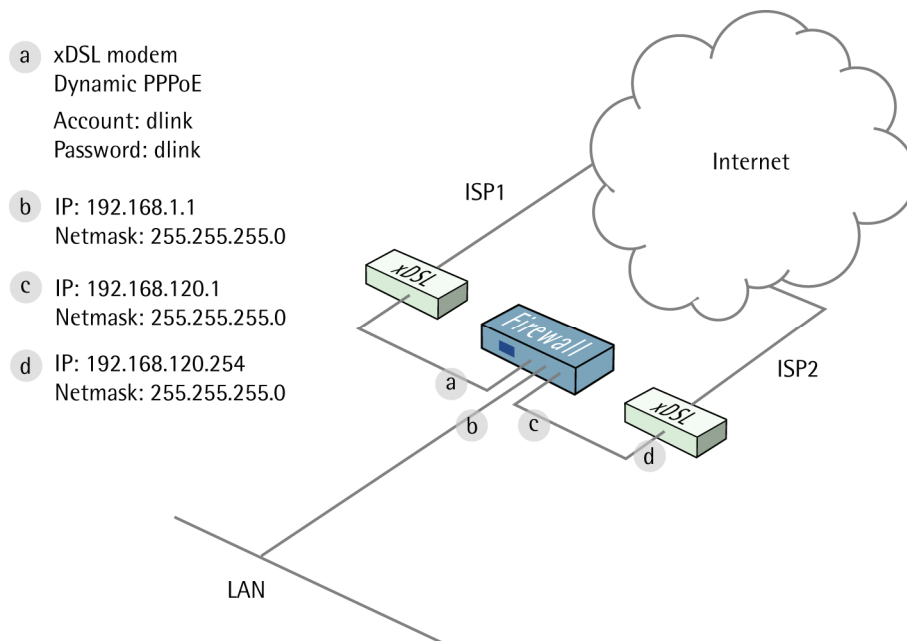
The screenshots in this document is from firmware version 2.11.02. If you are using an earlier version of the firmware, the screenshots may not be identical to what you see on your browser.

How to configure WAN loading sharing and failover for two ISPs

Details for this scenario:

- **WAN1** is using dynamic IP with PPPoE
- **WAN2** is using a static IP
- From LAN to WAN direction on **WAN1** interface, HTTP, HTTPS and FTP services are allowed to connect to Internet.
- From LAN to WAN direction on **WAN2** interface, SMTP, POP3 and Ping services are allowed to connect to Internet.

WAN1 and WAN2 interface serve for different Internet services at the same time; meanwhile if any WAN circuit fails, all services will be redirected to the other WAN interface. When the failed circuit returns to normal, these services will come back to original WAN circuit.



1. Addresses

Go to *Objects* -> *Address book* -> *InterfaceAddresses*:

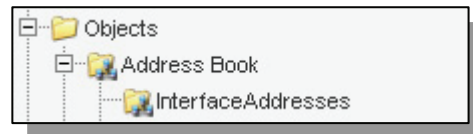
Edit the following items:

Change **lan_ip** to 192.168.1.1

Change **lan_net** to 192.168.1.0/24

Change **wan2_ip** to 192.168.120.1

Change **wan2_net** to 192.168.120.0/24



Create a new IP address:

Name: wan2-gw

IP address: 192.168.120.254

Click Ok.

2. Ethernet interfaces

Go to *Interfaces* -> *Ethernet*:

Edit the **WAN2** interface.

In the **General** tab:

General:

Name:	<input type="text" value="wan2"/>
IP Address:	<input type="text" value="wan2_ip"/>
Network:	<input type="text" value="wan2net"/>
Default Gateway:	<input type="text" value="wan2-gw"/>

Leave IP Address as **wan2_ip** and Network as **wan2net**.

Select **wan2-gw** as Default Gateway.

In the **Advanced** tab:

Automatic Route Creation:

Automatically add commonly used routes related to this interface

Add route for interface network

Add default route if default gateway is specified

Route Metric:

Deselect **Add route for interface network** and **Add default route if default gateway is specified**

Click Ok

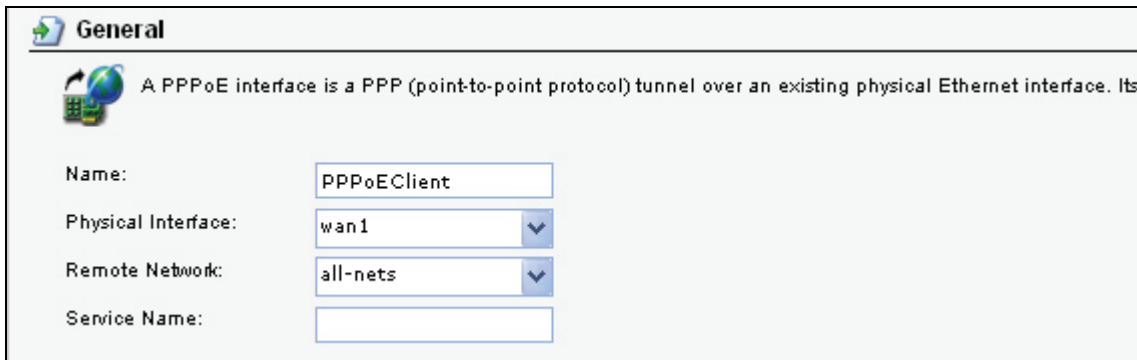
3. PPPoE Client Configuration

Under *Interfaces* -> *PPPoE*:

Add a new PPPoE tunnel.

In the general tab:

General:



The screenshot shows the 'General' configuration tab for a PPPoE client. At the top, there is a title bar with a folder icon and the word 'General'. Below the title bar, there is a small globe icon and a descriptive text: 'A PPPoE interface is a PPP (point-to-point protocol) tunnel over an existing physical Ethernet interface. Its'. Below this, there are four configuration fields: 'Name:' with a text input containing 'PPPoEClient'; 'Physical Interface:' with a dropdown menu showing 'wan1'; 'Remote Network:' with a dropdown menu showing 'all-nets'; and 'Service Name:' with an empty text input.

Name: **PPPoEClient**

Physical Interface: **WAN1**

Remote Network: **all-nets**

Authentication:



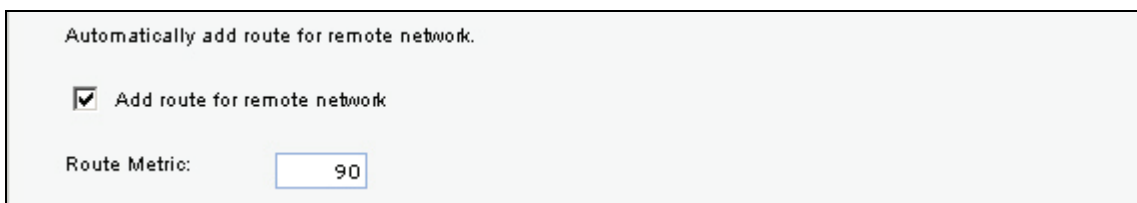
The screenshot shows the 'Authentication' configuration tab. It contains three fields: 'Username:' with a text input containing 'dlink'; 'Password:' with a text input containing '*****'; and 'Confirm Password:' with a text input containing '*****'.

Username: **dlink**

Password: **dlink**

Confirm password: **dlink**

Advanced tab:



The screenshot shows the 'Advanced' configuration tab. It starts with the text 'Automatically add route for remote network.' followed by a checked checkbox labeled 'Add route for remote network'. Below this, there is a 'Route Metric:' label and a text input containing the value '90'.

Select **Add route for remote network** and set **Route metric** to **90**.

Click **OK**.

4. Routes

Go to *Routing* -> *Routing Tables* -> *main*.

Add a new Route.

In the **General** tab:

General:

Interface:	wan2
Network:	wan2net
Gateway:	(None)
Local IP Address:	(None)
Metric:	80

Interface: **wan2**

Network: **wan2net**

Gateway: **(None)**

Local IP Address: **(None)**

Metric: **80**

In the **Monitor** tab:

Monitoring for Route Failover:

<input checked="" type="checkbox"/> Monitor This Route
--

Select **Monitor This Route**

Method:

<input checked="" type="checkbox"/> Monitor Interface Link Status
<input type="checkbox"/> Monitor Gateway Using ARP Lookup
<input type="checkbox"/> Manual ARP Lookup Interval: 1000 milliseconds

Select **Monitor Interface Link Status**

Click **Ok**.

Add a new Route.

In the **General** tab:

General:

Interface:	wan2
Network:	all-nets
Gateway:	wan2-gw
Local IP Address:	(None)
Metric:	80

Interface: wan2

Network: all-nets

Gateway: wan2-gw

Local IP Address: (None)

Metric: 80

In the Monitor tab:

Monitoring for Route Failover:

<input checked="" type="checkbox"/> Monitor This Route
--

Select Monitor This Route

Method:

<input checked="" type="checkbox"/> Monitor Interface Link Status
<input checked="" type="checkbox"/> Monitor Gateway Using ARP Lookup
<input type="checkbox"/> Manual ARP Lookup Interval: 1000 milliseconds

Select Monitor Interface Link Status

Select Monitor Gateway Using ARP Lookup

Click Ok.

Add a new Route.

In the General tab:

General:

Interface: PPPoEClient

Network: all-nets

Gateway: (None)

Local IP Address: (None)

Metric: 90

In the Monitor tab:

Monitoring for Route Failover:

Select Monitor This Route

Method:

<input checked="" type="checkbox"/> Monitor Interface Link Status
<input checked="" type="checkbox"/> Monitor Gateway Using ARP Lookup
<input type="checkbox"/> Manual ARP Lookup Interval: <input type="text" value="1000"/> milliseconds

Select **Monitor Interface Link Status**
Select **Monitor Gateway Using ARP Lookup**


Click **Ok**.

5. Interface groups

Go to *Interfaces -> Interface Groups*.

Create a new **Interface Group**:

General:

 General	
Use an interface group to combine several interfaces for a simplified security policy.	
Name:	<input type="text" value="pppoe-wan2"/>
	<input checked="" type="checkbox"/> Security/Transport Equivalent

Name: **pppoe-wan2**
Select **Security/Transport Equivalent**

Interfaces:

Available		Selected
wan1 dmz lan	<input type="button" value=">>"/> <input type="button" value="<<"/>	wan2 PPPoEClient

Add **PPPoEClient** and **wan2**

Click **Ok**

6. Rules


Go to *Rules -> IP Rules*.


Add a new **IP Rules Folder** called **lan_to_pppoe-wan2**

In the new folder, add a new **IP Rule**.

In the General tab:

General:

 **General**

 An IP rule specifies what action to perform on network traffic that matches the specified filter criteria.

Name:

Action: ▾

Service: ▾

Schedule: ▾

Name: allow-http-all

Action: NAT

Service: http-all

Address Filter:

	Source	Destination
Interface:	<input style="border: 1px solid blue; background-color: #e6f2ff; border-radius: 2px;" type="text" value="lan"/> ▾	<input style="border: 1px solid blue; background-color: #e6f2ff; border-radius: 2px;" type="text" value="pppoe-wan2"/> ▾
Network:	<input style="border: 1px solid blue; background-color: #e6f2ff; border-radius: 2px;" type="text" value="lannet"/> ▾	<input style="border: 1px solid blue; background-color: #e6f2ff; border-radius: 2px;" type="text" value="all-nets"/> ▾

Source interface: lan

Source network: lannet

Destination interface: pppoe-wan2

Destination network: all-nets

Click Ok

Now create four more rules in the same way as the first rule:

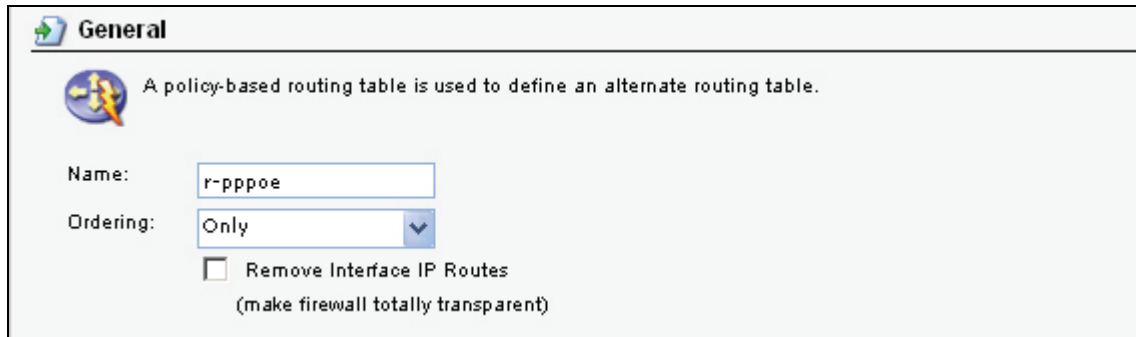
Name	Action	Service	SourceIf	DestIf	SourceNet	DestNet
allow-ftp	NAT	ftp-passthrough	lan	pppoe-wan2	lannet	all-nets
allow-smtp	NAT	smtp	lan	pppoe-wan2	lannet	all-nets
allow-pop3	NAT	pop3	lan	pppoe-wan2	lannet	all-nets
allow-ping	NAT	ping-outbound	lan	pppoe-wan2	lannet	all-nets
allow-dns	NAT	dns-all	lan	pppoe-wan2	lannet	all-nets

7. Policy based routing

Under *Routing* -> *Routing Tables*:

Add a new Routing Table.

General:



The screenshot shows the 'General' configuration page for a new routing table. At the top, there is a title 'General' with a plus icon. Below it, a blue globe icon is followed by the text: 'A policy-based routing table is used to define an alternate routing table.' The configuration fields are: 'Name:' with a text box containing 'r-pppoe'; 'Ordering:' with a dropdown menu set to 'Only'; and a checkbox labeled 'Remove Interface IP Routes (make firewall totally transparent)' which is currently unchecked.

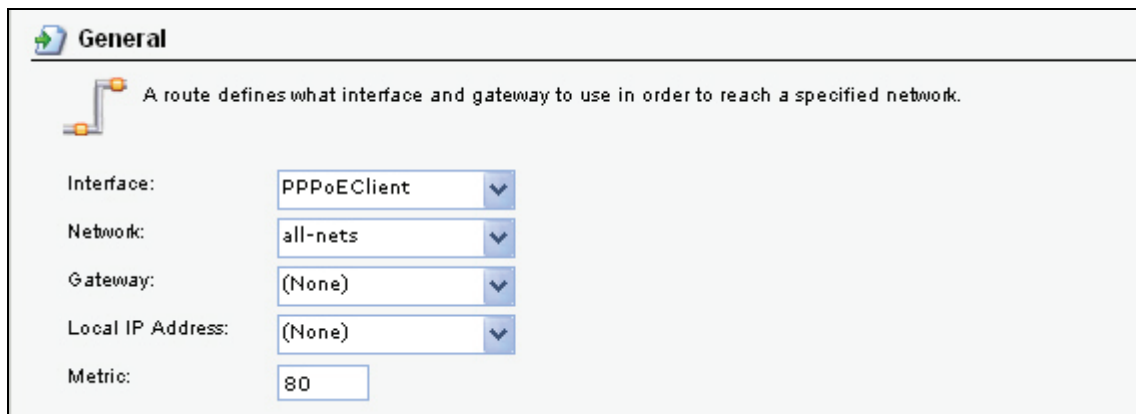
Name: **r-pppoe**

Ordering: **Only**

In the newly created table, add a new Route:

In the **General** tab:

General:



The screenshot shows the 'General' configuration page for a new route. At the top, there is a title 'General' with a plus icon. Below it, a blue globe icon is followed by the text: 'A route defines what interface and gateway to use in order to reach a specified network.' The configuration fields are: 'Interface:' with a dropdown menu set to 'PPPoEClient'; 'Network:' with a dropdown menu set to 'all-nets'; 'Gateway:' with a dropdown menu set to '(None)'; 'Local IP Address:' with a dropdown menu set to '(None)'; and 'Metric:' with a text box containing '80'.

Interface: **PPPoEClient**

Network: **all-nets**


Metric: **80**


Click **Ok**

Add a new Route:

In the **General** tab:

General:

 **General**

 A route defines what interface and gateway to use in order to reach a specified network.

Interface:

Network:

Gateway:

Local IP Address:

Metric:

Interface: **wan2**
Network: **all-nets**
Gateway: **wan2-gw**
Metric: **90**

Click Ok

Go to *Routing* -> *Routing Rules*:

Add a new Routing Rule:

General:

Name:

Forward Table:

Return Table:

Service:

Schedule:

Name: **pbr-http-all**
Forward Table: **r-pppoe**
Return Table: **<main>**
Service: **http-all**

Address Filter:

	Source	Destination
Interface:	<input type="text" value="lan"/>	<input type="text" value="wan2"/>
Network:	<input type="text" value="lannet"/>	<input type="text" value="all-nets"/>

Source interface: **lan**
Source network: **lannet**
Destination interface: **wan2**
Destination network: **all-nets**

Click Ok

Create one more **Policy-based Routing Rules** in the same way as the previous one:

Name	Forward	Return	Service	SourceIf	DestIf	SourceNet	DestNet
pbr-ftp	r-pppoe	<main>	ftp-outbound	lan	wan2	lannet	all-nets

Save and activate the configuration.