



Configuration examples for the D-Link NetDefend Firewall series

DFL-210/800/1600/2500

Scenario: How to configure VLAN and route failover

Last update: 2007-01-31

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 a later version of the firmware, the screenshots may not be identical to what you see on your browser.

To prevent existing settings to interfere with the settings in these guides, reset the firewall to factory defaults before starting.

How to configure VLAN and route failover

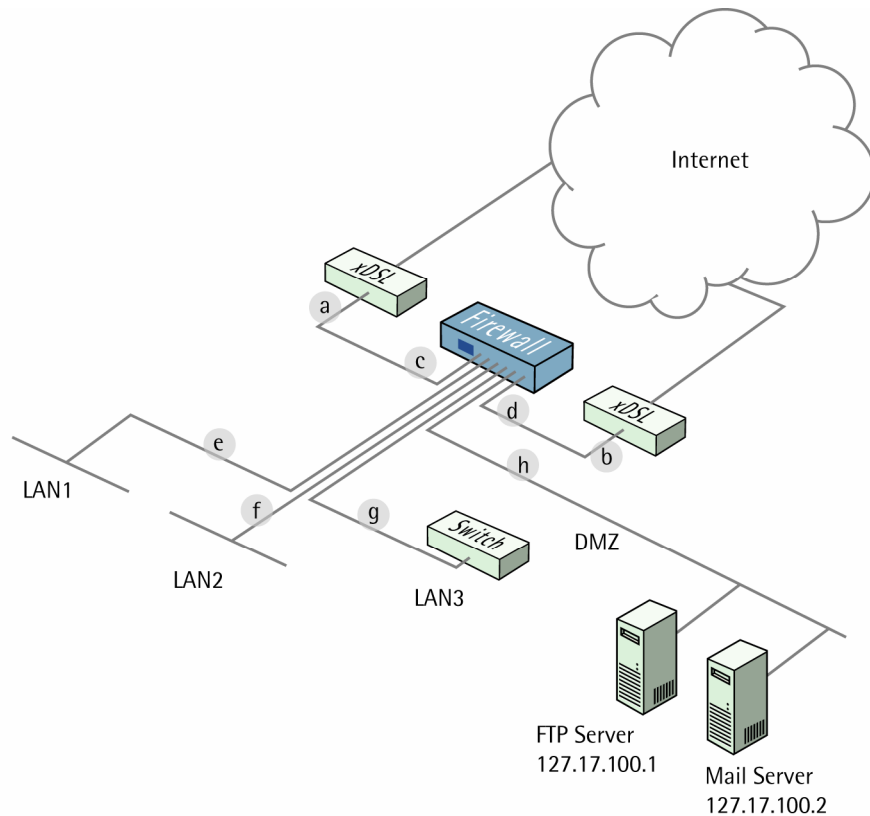
This example requires a DFL-1600 or 2500 to be fully implemented. Most settings can however also be used on a DFL-210 or DFL-800.

Two tag based VLANs will be created on lan3, that connect to switch port with VLAN tag.

Details:

- From lan1, lan2 and lan3: HTTP, HTTPS and DNS connect to Internet via wan2.
- From dmz: inbound and outbound SMTP services connect to Internet via wan1.
- All internal nets can also access the Mail server in dmz.
- Only VLAN2 can access the FTP server in dmz.
- If anyone of the wan interfaces is disconnected, the traffic from that interface will be redirected to the other wan interface.

- a IP: 192.168.110.254
NetMask: 255.255.255.0
- b IP: 192.168.120.254
Netmask: 255.255.255.0
- c IP: 192.168.110.1
Netmask: 255.255.255.0
gateway: 192.168.110.254
- d IP: 192.168.120.1
Netmask: 255.255.255.0
gateway: 192.168.120.254
- e IP: 192.168.1.1
Netmask: 255.255.255.0
- f IP: 192.168.2.1
Netmask: 255.255.255.0
- g VLAN 1 IP: 192.168.5.254
VLAN 2 IP: 192.168.10.254
Netmask: 255.255.255.0
- h IP: 172.17.100.254
Netmask: 255.255.255.0



1. Addresses

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

Make sure the configured addresses match the following list, and add the objects that not already exist. To add new objects, select **IP address** from the add dropdown, enter name and address and click ok.

| Name | Address |
|-------------|------------------|
| lan1_ip | 192.168.1.1 |
| lan1net | 102.168.1.0/24 |
| lan2_ip | 192.168.2.1 |
| lan2net | 192.168.2.0/24 |
| lan3_ip | 192.168.3.1 |
| lan3net | 192.168.3.0/24 |
| | |
| dmz_ip | 172.17.100.254 |
| dmznet | 172.17.100.0/24 |
| | |
| wan1_ip | 192.168.110.1 |
| wan1net | 192.168.110.0/24 |
| wan1-gw | 192.168.110.254 |
| wan2_ip | 192.168.120.1 |
| wan2net | 192.168.120.0/24 |
| wan2-gw | 192.168.120.254 |
| | |
| vlan1_ip | 192.168.5.254 |
| vlan1net | 192.168.5.0/24 |
| vlan2_ip | 192.168.10.254 |
| vlan2net | 192.168.10.0/24 |
| | |
| ftp-server | 172.17.100.1 |
| mail-server | 172.17.100.2 |

Add a new IP4 Group.

In the **General** tab:

General:

Name: **all-lannets**

Add **lan1net**, **lan2net**, **vlan1net** and **vlan2net**.

Click **Ok**.

2. Ethernet interfaces

Go to *Interfaces -> Ethernet*.

Edit the **wan1** interface to use the following settings.

In the **General** tab:

| | |
|------------------|--|
| Name: | <input type="text" value="wan1"/> |
| IP Address: | <input type="text" value="wan1_ip"/> ▼ |
| Network: | <input type="text" value="wan1net"/> ▼ |
| Default Gateway: | <input type="text" value="wan1_gw"/> ▼ |

IP Address: **wan1_ip**

Network: **wan1net**

Default Gateway: **wan1_gw**

In the **Advanced** tab:

Automatic Route Creation:

| | |
|--|---|
| Automatically add commonly used routes related to this interface | |
| <input type="checkbox"/> | Add route for interface network |
| <input type="checkbox"/> | Add default route if default gateway is specified |
| Route Metric: | <input type="text" value="100"/> |

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

Click **Ok**.

Edit the **wan2** interface according to the following settings.

In the **General** tab:

General:

IP Address: **wan2_ip**

Network: **wan2net**

Default Gateway: **wan2_gw**

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. Routes

Go to *Routing -> Routing Tables*.

Select **main** routing table and add a new **Route**. (This route is mainly for WAN1 interface routing with link status monitoring only)

In the **General** tab:

Interface: ▼
Network: ▼
Gateway: ▼
Local IP Address: ▼
Metric:

Interface: **wan1**

Network: **wan1net**

Gateway: **(None)**

Local IP Address: **(None)**

Metric: **90**

In the **Monitor** tab:

Monitoring for Route Failover:

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: <input type="text" value="1000"/> milliseconds |

Select **Monitor Interface Link Status**

Click **Ok**.

Add a new **Route** in **main** routing table. (This route is mainly for WAN1 default route with link status and ARP lookup monitoring)

In the **General** tab:

General:

| | |
|-------------------|---------------------------------------|
| Interface: | <input type="text" value="wan1"/> |
| Network: | <input type="text" value="all-nets"/> |
| Gateway: | <input type="text" value="wan1_gw"/> |
| Local IP Address: | <input type="text" value="(None)"/> |
| Metric: | <input type="text" value="90"/> |

Interface: **wan1**

Network: **all-nets**

Gateway: **wan1_gw**

Local IP Address: **(None)**

Metric: **90**

In the **Monitor** tab:

Monitoring for Route Failover:

Select **Monitor This Route**

| |
|--|
| <input checked="" type="checkbox"/> 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**.

Add a new **Route** in **main** routing table. (This route is mainly for WAN2 interface route with link status monitoring only)

In the **General** tab:

General:

Interface: **wan2**

Network: **wan2net**

Gateway: **(None)**

Local IP Address: **(None)**

Metric: **80**

In the **Monitor** tab:

Monitoring for Route Failover:

Select **Monitor This Route**

Method:

Select **Monitor Interface Link Status**

Click **Ok**.

Add a new **Route** in **main** routing table. (This route is mainly for WAN2 default route with link status and ARP lookup monitoring)

In the **General** tab:

General:

Interface: **wan2**

Network: **all-nets**

Gateway: **wan2_gw**

Local IP Address: **(None)**

Metric: **80**

In the **Monitor** tab:

Monitoring for Route Failover:

Select **Monitor This Route**

Method:

Select **Monitor Interface Link Status**

Select **Monitor Gateway Using ARP Lookup**

Click **Ok**.

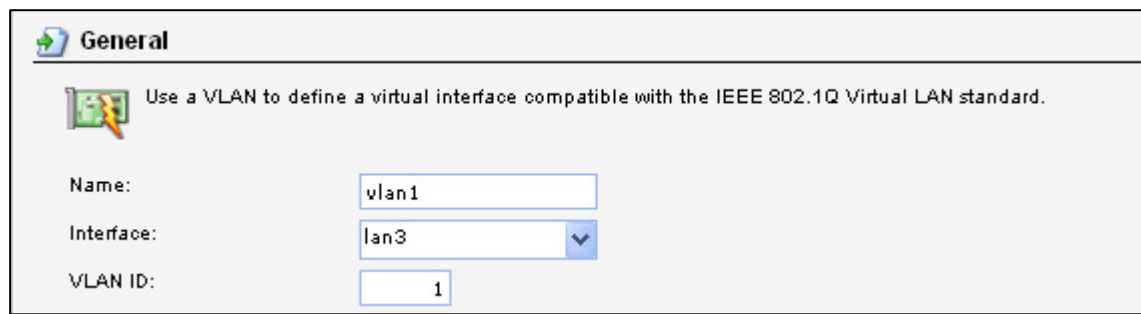
4. VLAN interfaces

Go to *Interfaces* -> *VLAN*.

Add a new **VLAN**.

In the General tab:

General:



General

Use a VLAN to define a virtual interface compatible with the IEEE 802.1Q Virtual LAN standard.

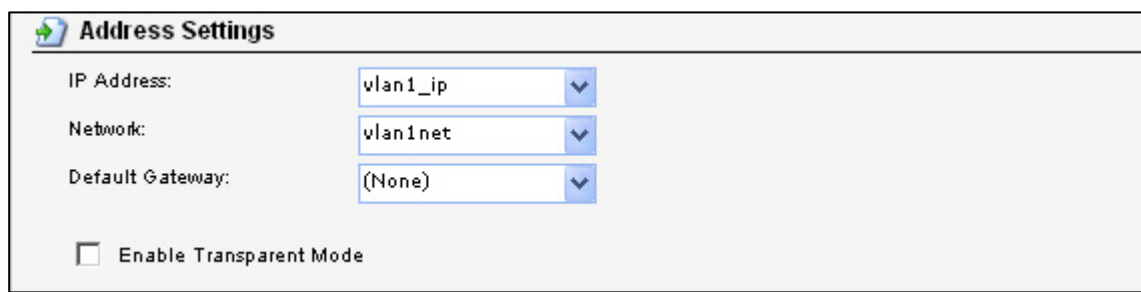
Name:

Interface:

VLAN ID:

Name: **vlan1**
Interface: **lan3**
VLAN ID: **1**

Address Settings:



Address Settings

IP Address:

Network:

Default Gateway:

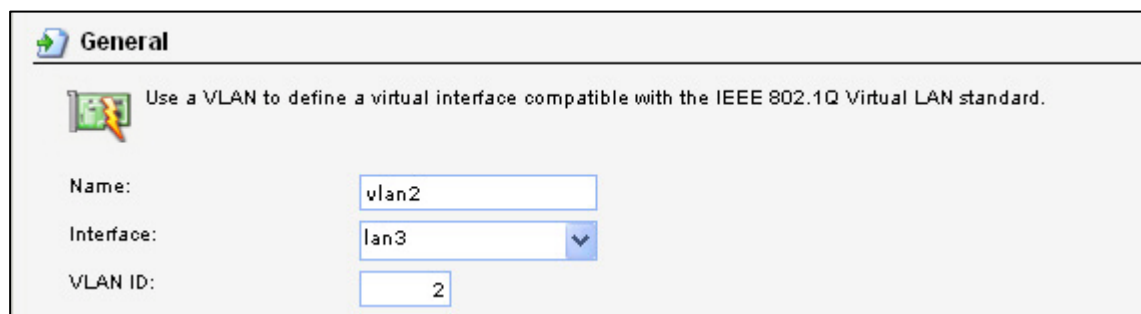
Enable Transparent Mode

IP Address: **vlan1_ip**
Network: **vlan1net**
Default Gateway: **(None)**

Click Ok
Add a new VLAN.

In the General tab:

General:



General

Use a VLAN to define a virtual interface compatible with the IEEE 802.1Q Virtual LAN standard.

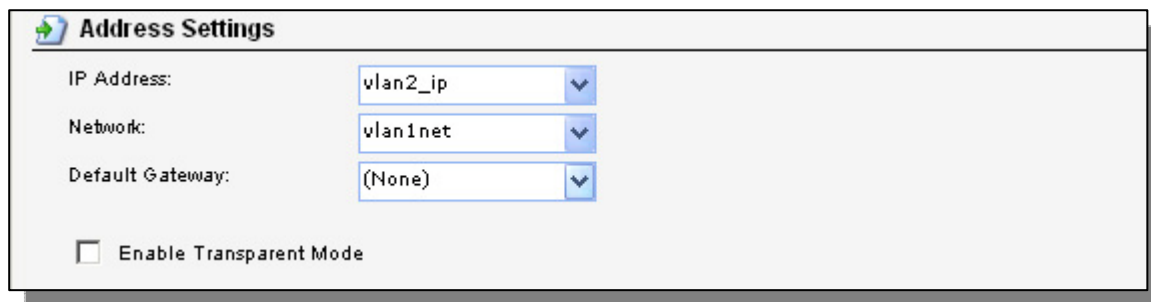
Name:

Interface:

VLAN ID:

Name: **vlan2**
Interface: **lan3**
VLAN ID: **2**

Address Settings:



Address Settings

IP Address:

Network:

Default Gateway:

Enable Transparent Mode

IP Address: **vlan2_ip**
Network: **vlan2net**
Default Gateway: **(None)**

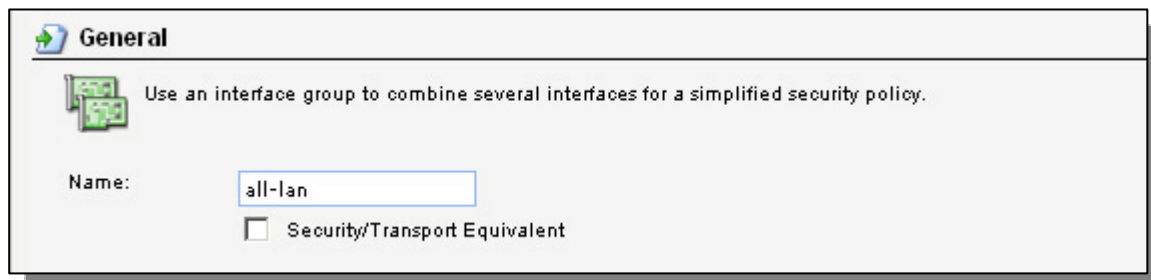
Click Ok

5. Interface groups

Go to *Interfaces* -> *Interface Groups*.

Add a new Interface Group.

General:



General

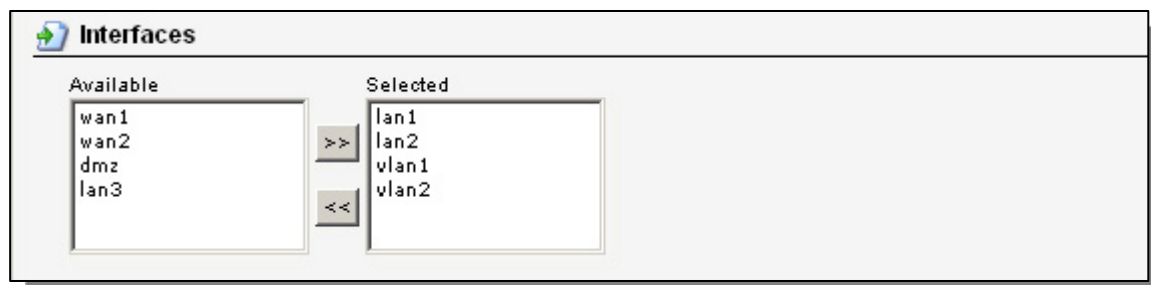
Use an interface group to combine several interfaces for a simplified security policy.

Name:

Security/Transport Equivalent

Name: **all-lan**

Interfaces:



Interfaces

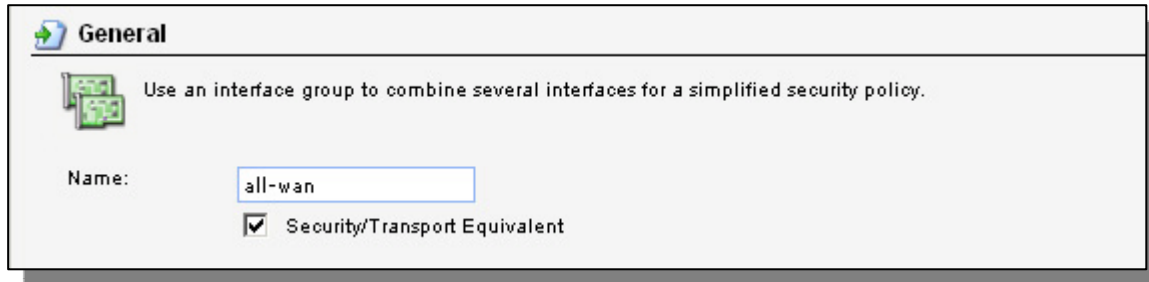
| Available | | Selected |
|-----------|----|----------|
| wan1 | >> | lan1 |
| wan2 | >> | lan2 |
| dmz | >> | vlan1 |
| lan3 | >> | vlan2 |

Add **lan1**, **lan2**, **vlan1** and **vlan2** to this group.

Click Ok.

Add a new Interface Group.

General:

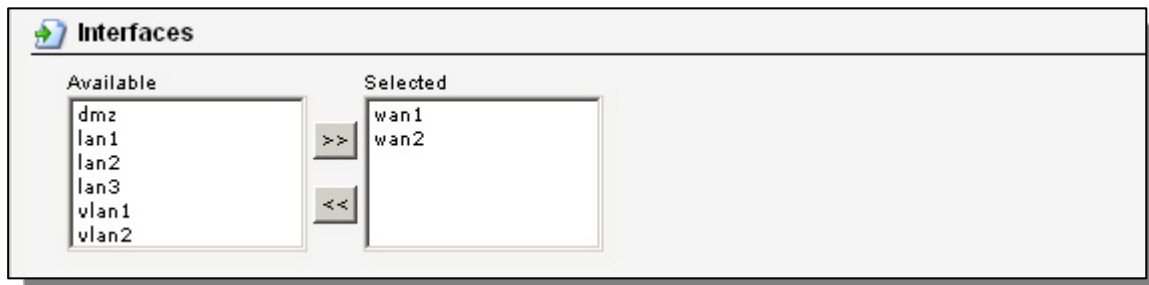


The screenshot shows the 'General' tab of a configuration window. At the top, there is a header with a folder icon and the word 'General'. Below the header, there is a sub-header with a folder icon and the text 'Use an interface group to combine several interfaces for a simplified security policy.' Underneath, there is a 'Name:' label followed by a text input field containing 'all-wan'. Below the input field, there is a checked checkbox labeled 'Security/Transport Equivalent'.

Name: **all-wan**

Select **Security/Transport Equivalent**

Interfaces:



The screenshot shows the 'Interfaces' tab of a configuration window. At the top, there is a header with a folder icon and the word 'Interfaces'. Below the header, there are two columns: 'Available' and 'Selected'. The 'Available' column contains a list of interface names: dmz, lan1, lan2, lan3, vlan1, and vlan2. The 'Selected' column contains a list of interface names: wan1 and wan2. Between the two columns, there are two buttons: '>>' and '<<'. The '>>' button is positioned above the '<<' button.

Add **wan1** and **wan2** to this group.

Click **Ok**.

6a. Rules to allow HTTP, HTTPS and DNS to Internet

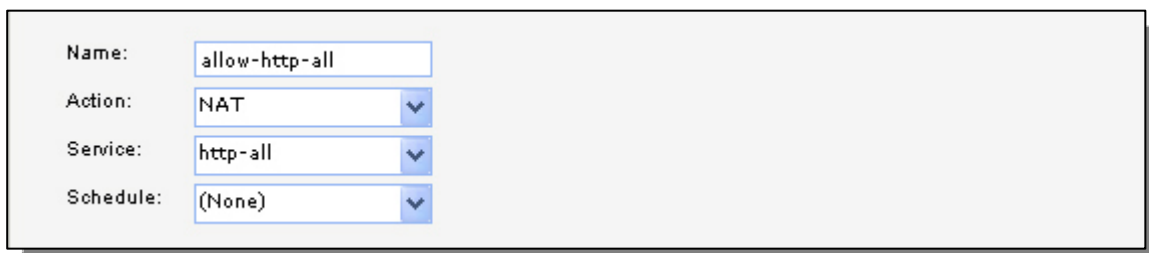
Go to *Rules* -> *IP Rules*.

Add a new IP Rule Folder called **all-lan_to_all-wan**.

In the new folder, add a new IP Rule (to allow outgoing HTTP).

In the **General** tab:

General:



The screenshot shows the 'General' tab of an IP Rule configuration window. It contains four rows of configuration options: 'Name:' with a text input field containing 'allow-http-all'; 'Action:' with a dropdown menu showing 'NAT'; 'Service:' with a dropdown menu showing 'http-all'; and 'Schedule:' with a dropdown menu showing '(None)'. Each dropdown menu has a small downward-pointing arrow on its right side.

Name: **allow-http-all**

Action: **NAT**
Service: **http-all**

Address Filter:

| | Source | Destination |
|------------|--|---------------------------------------|
| Interface: | <input type="text" value="all-lan"/> | <input type="text" value="all-wan"/> |
| Network: | <input type="text" value="all-lannets"/> | <input type="text" value="all-nets"/> |

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

Click Ok.

Add a new IP Rule (to allow outgoing dns).

In the General tab:

General:

| | |
|-----------|--|
| Name: | <input type="text" value="allow-dns-all"/> |
| Action: | <input type="text" value="NAT"/> |
| Service: | <input type="text" value="dns-all"/> |
| Schedule: | <input type="text" value="(None)"/> |

Name: **allow-dns-all**
Action: **NAT**
Service: **dns-all**

Address Filter:

| | Source | Destination |
|------------|--|---------------------------------------|
| Interface: | <input type="text" value="all-lan"/> | <input type="text" value="all-wan"/> |
| Network: | <input type="text" value="all-lannets"/> | <input type="text" value="all-nets"/> |

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

Click Ok.

6b. Rules to allow outgoing SMTP from mail server to Internet

Add a new IP Rule folder called **dmz_to_all-wan**.

In the new folder, add a new IP Rule (to allow outgoing smtp).

In the **General** tab:

General:

Name: **allow-smtp-out**

Action: **NAT**

Service: **smtp**

Address Filter:

Source interface: **dmz**

Source network: **mail-server**

Destination interface: **all-wan**

Destination network: **all-nets**

Click Ok.

6c. Rules to allow Internet and internal users to access mail server

Add a new IP Rule Folder called **all_to_dmz**

In the new folder, add a new IP Rule (to translate incoming smtp traffic to mailserver).

In the **General** tab:

General:

Name: **allow-smtp-ext**

Action: **SAT**

Service: **smtp**

Address Filter:

Source interface: **wan1**

Source network: **all-nets**

Destination interface: **core**

Destination network: **wan1_ip**

In the **SAT** tab.

Select **Destination Address**

New IP Address: **mail-server**

Click Ok.

In the **all_to_dmz** folder, add a new IP Rule (to allow incoming smtp traffic to mailserver).

In the **General** tab:

General:

Name: **allow-smtp-ext**

Action: **Allow**
Service: **smtp**

Address Filter:

Source interface: **wan1**
Source network: **all-nets**
Destination interface: **core**
Destination network: **wan1_ip**

Click Ok.

In the **all_to_dmz** folder, add a new IP Rule (to allow internal smtp traffic to mailserver).

In the **General** tab:

General:

Name: **allow-smtp-int**
Action: **Allow**
Service: **smtp**

Address Filter:

Source interface: **any**
Source network: **all-nets**
Destination interface: **dmz**
Destination network: **mail-server**

Click Ok.

6d. Rules to allow traffic to FTP server from vlan2

Add a new IP Rule folder called **vlan2_to_dmz**.

Add a new IP Rule (to allow ftp from vlan2 to dmz).

In the **General** tab:

General:

Name: **allow-ftp**
Action: **Allow**
Service: **ftp-passthrough**

Address Filter:

Source interface: **vlan2**
Source network: **vlan2net**
Destination interface: **dmz**
Destination network: **dmznet**

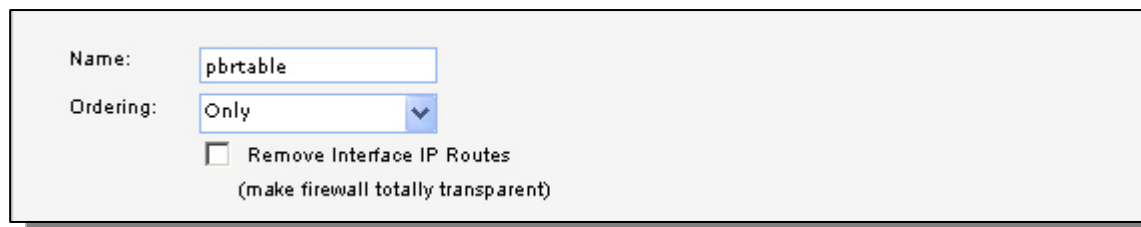
Click Ok.

7. Policy-based Routing

Go to *Routing -> Routing Tables*.

Add a new *Routing Table*.

General:



Name:

Ordering:

Remove Interface IP Routes
(make firewall totally transparent)

Name: **pbtable**

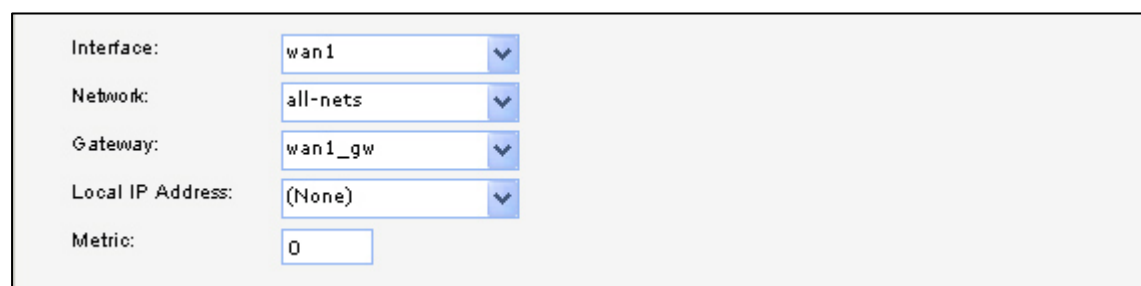
Ordering: **Only**

Click **Ok**.

In this routing table, add a new *Route*.

In the *General* tab:

General:



Interface:

Network:

Gateway:

Local IP Address:

Metric:

Interface: **wan1**

Network: **all-nets**

Gateway: **wan1_gw**

Local IP Address: **(None)**

Metric: **0**

Click **Ok**.

Add a new *Route*.

In the *General* tab:

General:

Interface: **wan2**

Network: **all-nets**

Gateway: **wan2_gw**

Local IP Address: **(None)**

Metric: **1**

Click Ok.

Go to *Routing* -> *Routing rules*.

Add a new RoutingRule.

General:

| | |
|----------------|---|
| Name: | <input type="text" value="pbr-smtp"/> |
| Forward Table: | <input type="text" value="pbtable"/> ▼ |
| Return Table: | <input type="text" value="<main>"/> ▼ |
| Service: | <input type="text" value="smtp"/> ▼ |
| Schedule: | <input type="text" value="(None)"/> ▼ |

Name: **pbr-smtp**

Forward Table: **pbtable**

Return Table: **<main>**

Service: **smtp**

Schedule: **(None)**

Address Filter:

| | Source | Destination |
|------------|---------------------------------------|---|
| Interface: | <input type="text" value="dmz"/> ▼ | <input type="text" value="any"/> ▼ |
| Network: | <input type="text" value="dmznet"/> ▼ | <input type="text" value="all-nets"/> ▼ |

Source Interface: **dmz**

Source Network: **dmznet**

Destination Interface: **any**

Destination Network: **all-nets**

Click Ok.

Save and activate the configuration