D-Link
Building Networks for People

NetDefend

Configuration examples for the D-Link NetDefend Firewall series

DFL-210/800/1600/2500

Scenario: VLAN and route failover

Last update: 2005-10-20

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 2.04.00. 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.

4 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

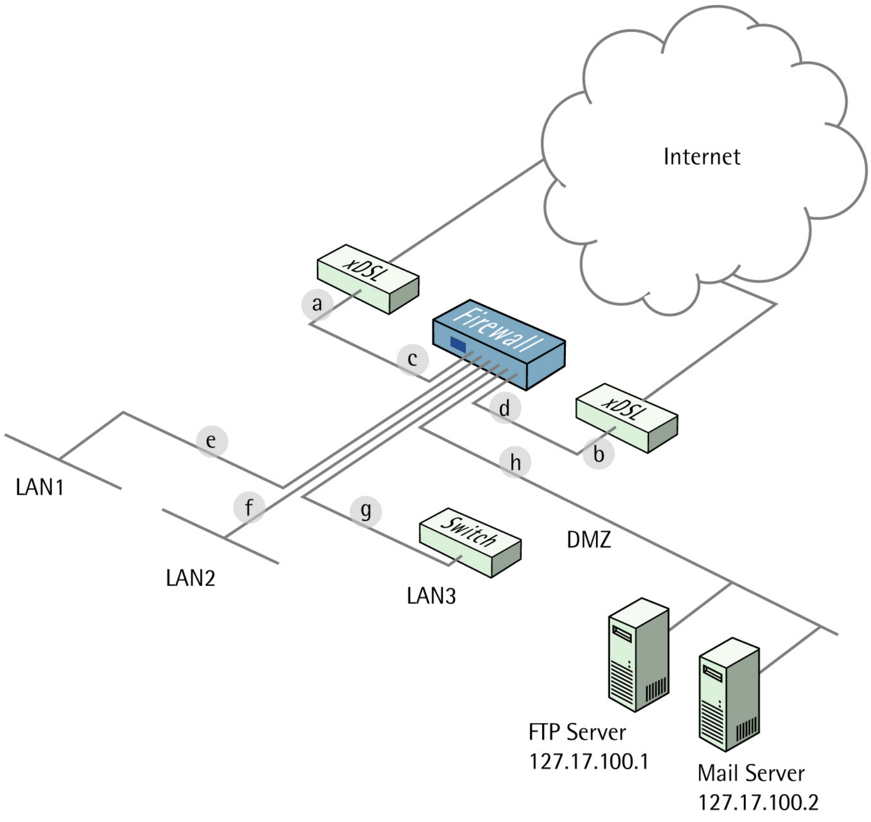
d IP: 192.168.120.1
Netmask: 255.255.255.0
gateway: 192.168.120.254

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*

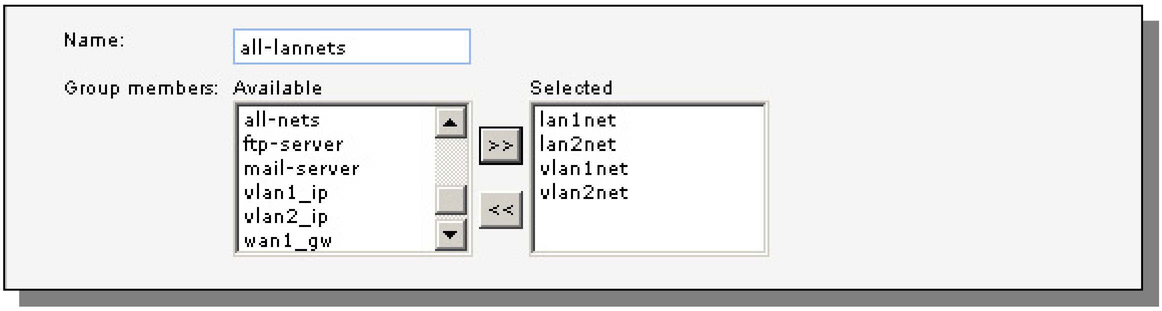
Make sure the configured addresses match the following list, and add the objects that not already exist. To add new objects, select IP4 Host/Network from the add dropdown, enter name and address and click ok.

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 Address Group.

In the General tab:

General:



Name: all-lannets

Group members: Available

all-nets
ftp-server
mail-server
vlan1_ip
vlan2_ip
wan1_gw

Selected

lan1net
lan2net
vlan1net
vlan2net

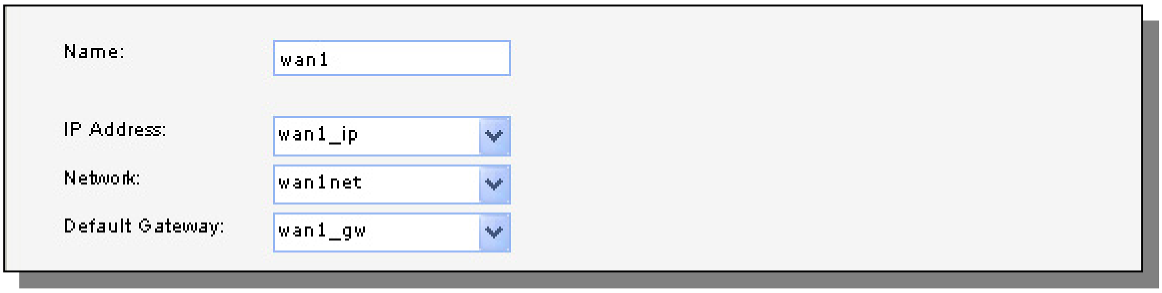
Name: **`all-lannets`**
Add **`lan1net`**, **`lan2net`**, **`vlan1net`** and **`vlan2net`**.

Click Ok.

2. Ethernet interfaces

Go to *Interfaces* -> *Ethernet*.

Edit the **wan1** interface to use the following settings.
In the General tab:



Name: wan1

IP Address: wan1_ip

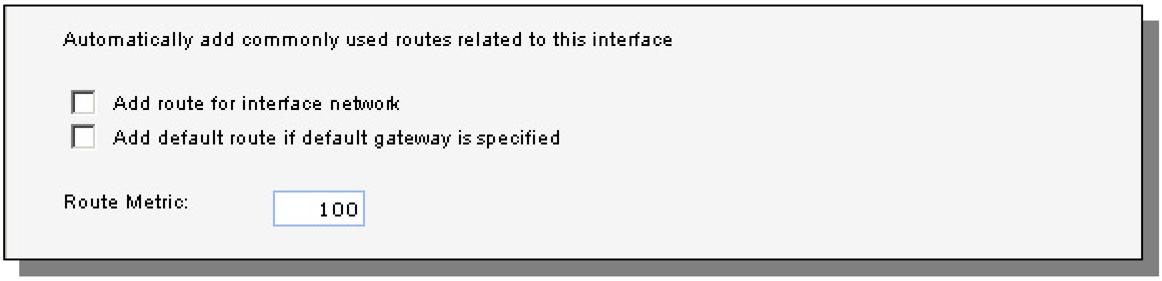
Network: wan1net

Default Gateway: 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

□ Add route for interface network

□ Add default route if default gateway is specified

Route Metric: 100

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

Click Ok.

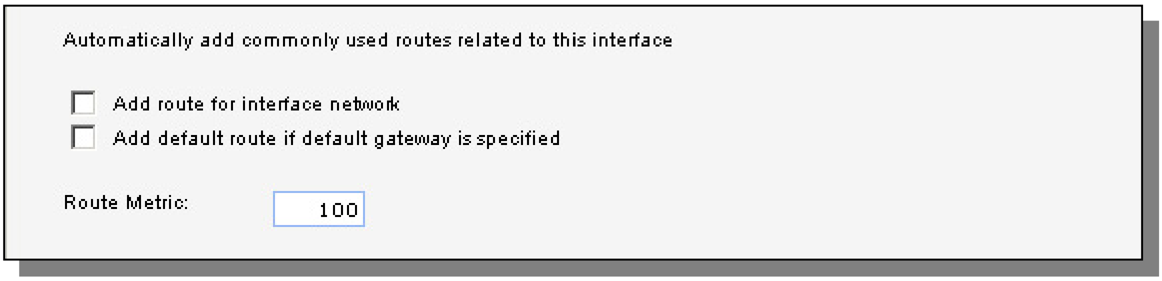
Edit the **wan2** interface according to the following settings.

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: 100

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

Click Ok.

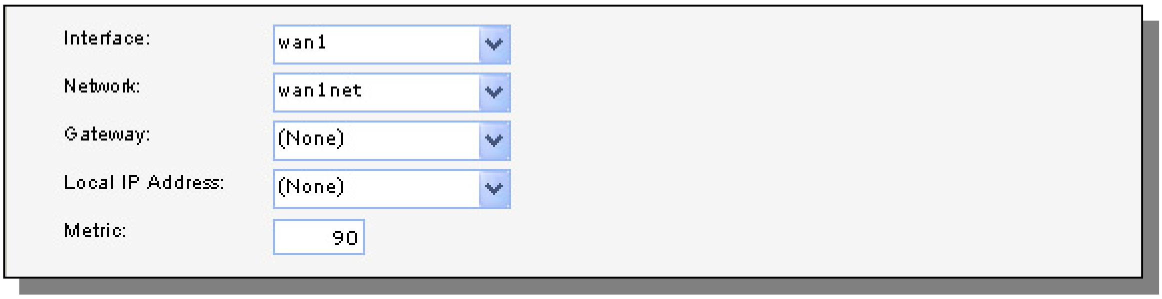
3. Routes

Go to *Routing -> Main Routing Table*.

Add a new Route.

In the General tab:

General:

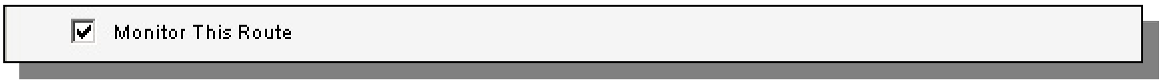


Interface:	wan1
Network:	wan1net
Gateway:	(None)
Local IP Address:	(None)
Metric:	90

Interface: **`wan1`**
Network: **`wan1net`**
Gateway: **`(None)`**
Local IP Address: **`(None)`**
Metric: **`90`**

In the Monitor tab:

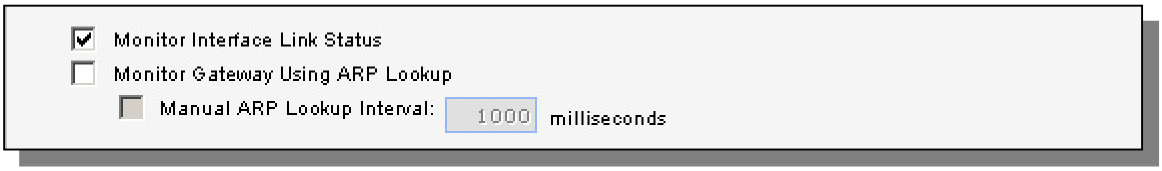
Monitoring for Route Failover:



☑ Monitor This Route

Select **`Monitor This Route`**

Method:



☑ Monitor Interface Link Status
□ Monitor Gateway Using ARP Lookup
□ Manual ARP Lookup Interval: 1000 milliseconds

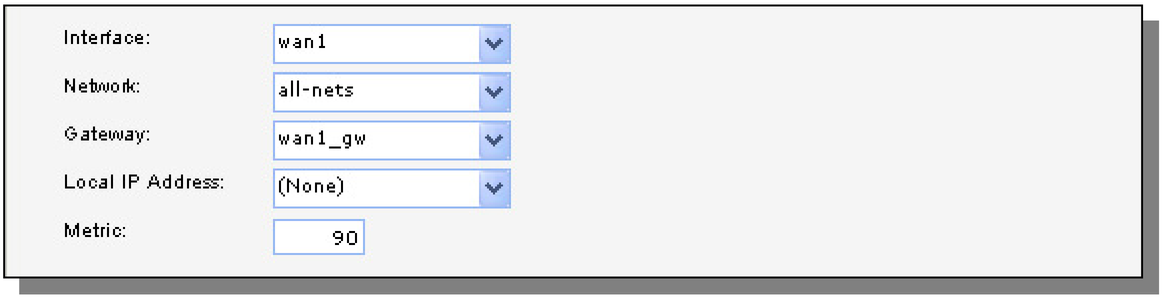
Select **`Monitor Interface Link Status`**

Click Ok.

Add a new Route.

In the General tab:

General:

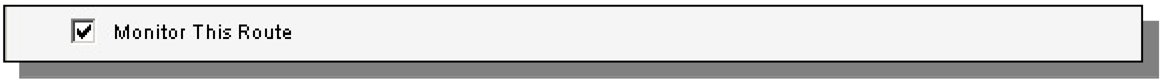


Interface: wan1
Network: all-nets
Gateway: wan1_gw
Local IP Address: (None)
Metric: 90

Interface: **`wan1`**
Network: **`all-nets`**
Gateway: **`wan1_gw`**
Local IP Address: **`(None)`**
Metric: **`90`**

In the Monitor tab:

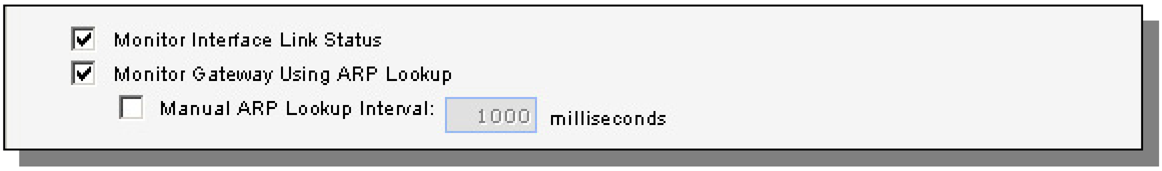
Monitoring for Route Failover:



☑ Monitor This Route

Select **`Monitor This Route`**

Method:



☑ Monitor Interface Link Status
☑ Monitor Gateway Using ARP Lookup
□ 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: **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 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.

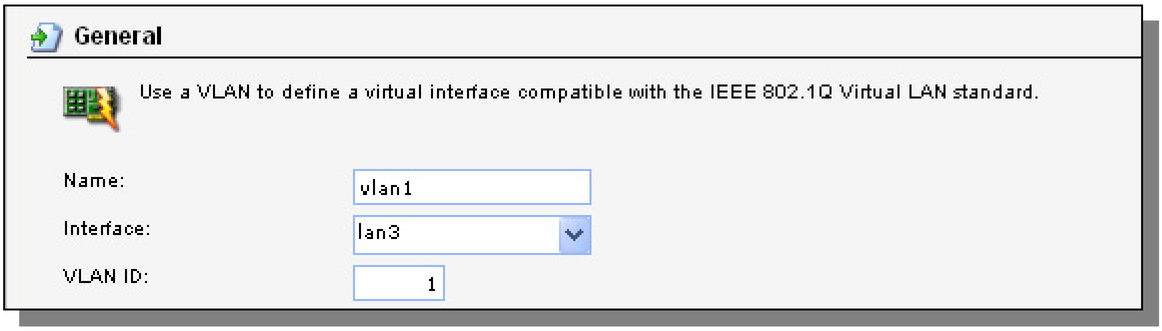
4. VLAN interfaces

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.

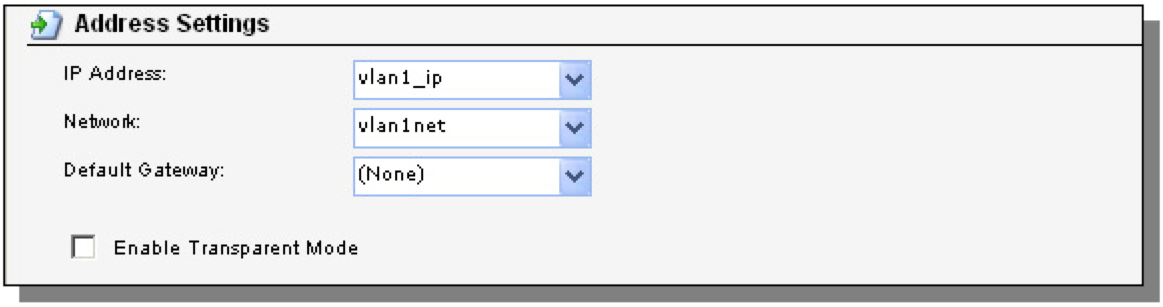
Name: vlan1

Interface: lan3

VLAN ID: 1

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

Address Settings:



Address Settings

IP Address: vlan1_ip

Network: vlan1net

Default Gateway: (None)

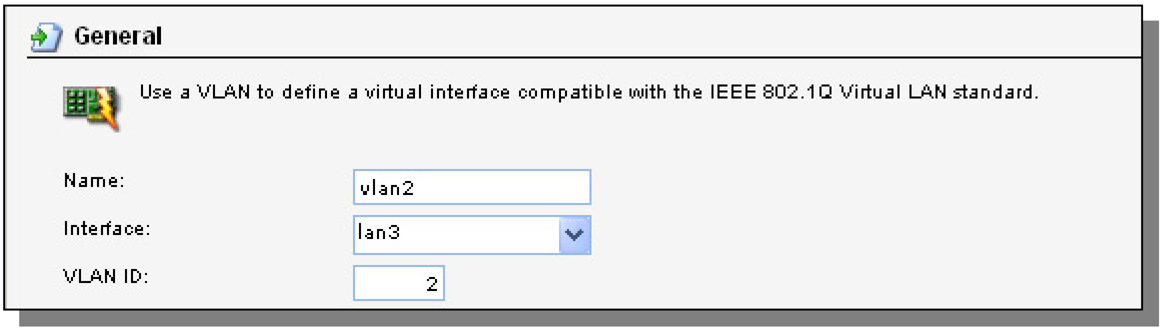
☐ Enable Transparent Mode

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: vlan2

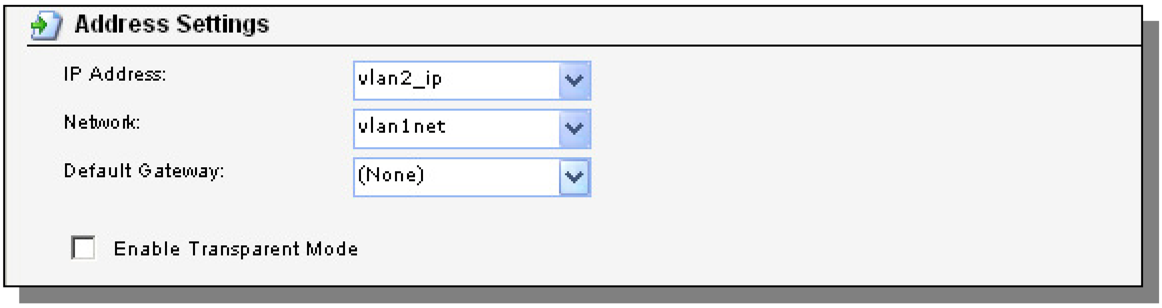
Interface: lan3

VLAN ID: 2

Name: **vlan2**
Interface: **lan3**

VLAN ID: 2

Address Settings:



Address Settings

IP Address: vlan2_ip

Network: vlan1net

Default Gateway: (None)

□ Enable Transparent Mode

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

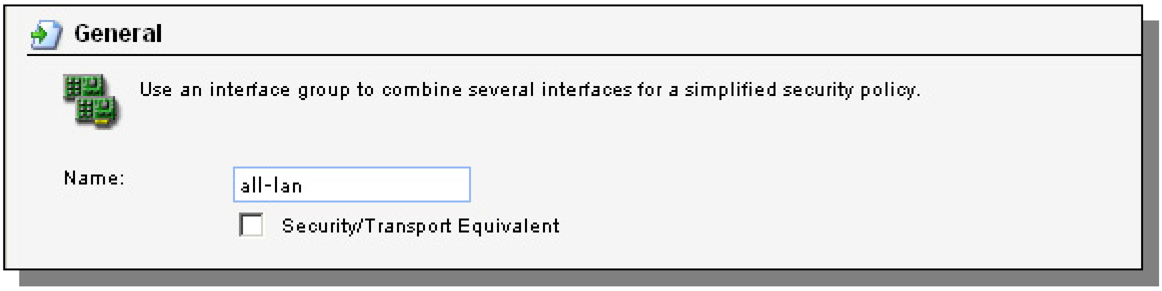
Click Ok

5. Interface groups

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

Add a new Interface Group.

General:



General

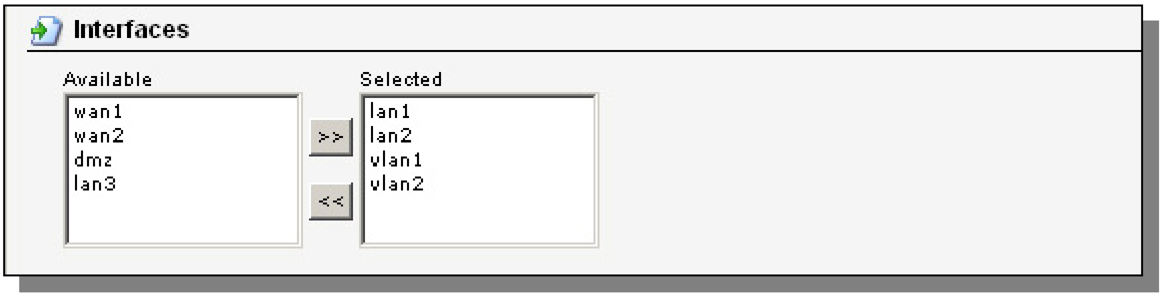
Use an interface group to combine several interfaces for a simplified security policy.

Name: all-lan

□ Security/Transport Equivalent

Name: **all-lan**

Interfaces:



Interfaces

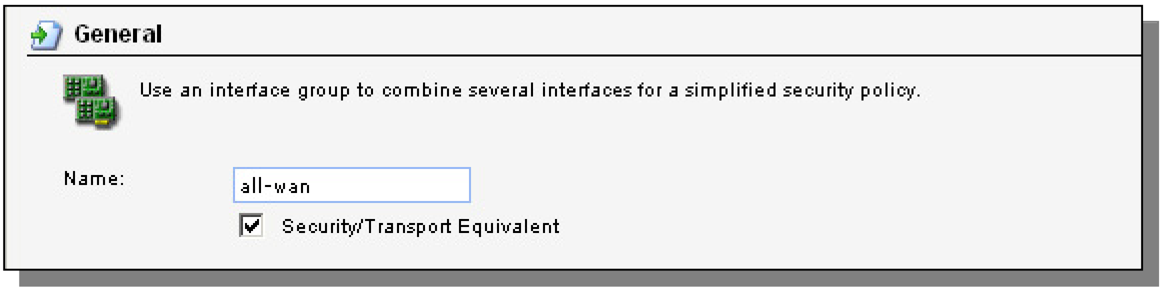
Available	Selected
wan1	lan1
wan2	lan2
dmz	vlan1
lan3	vlan2

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

Click Ok.

Add a new Interface Group.

General:



General

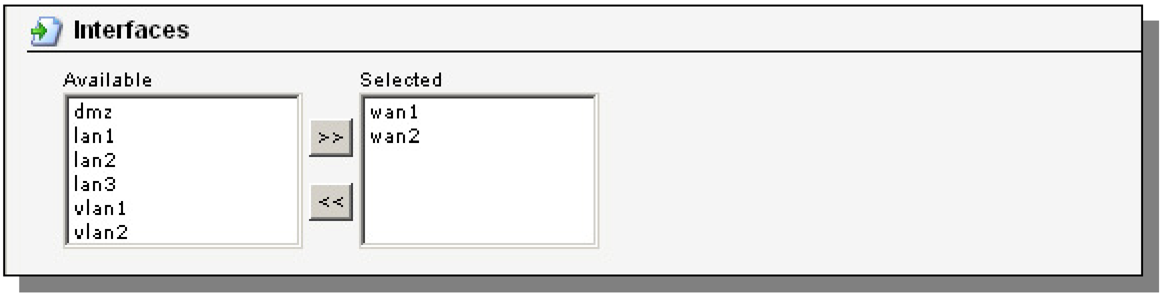
Use an interface group to combine several interfaces for a simplified security policy.

Name: all-wan

☑ Security/Transport Equivalent

Name: **all-wan**
Select **Security/Transport Equivalent**

Interfaces:



Interfaces

Available: dmz, lan1, lan2, lan3, vlan1, vlan2

Selected: wan1, wan2

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

Click Ok.

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

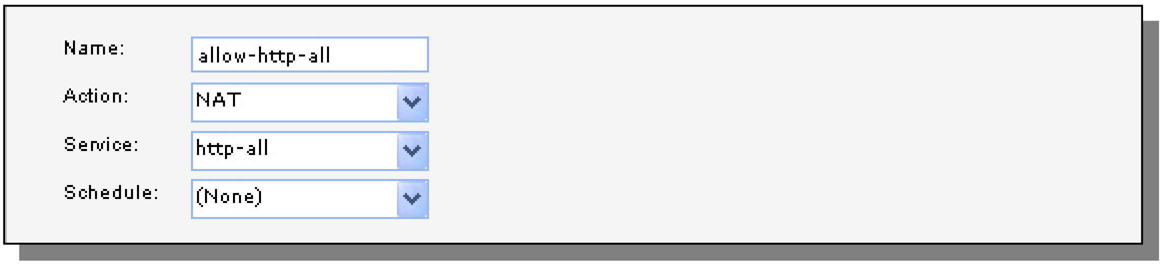
Go to *Rules* -> *IP Rules*.

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:



Name: allow-http-all

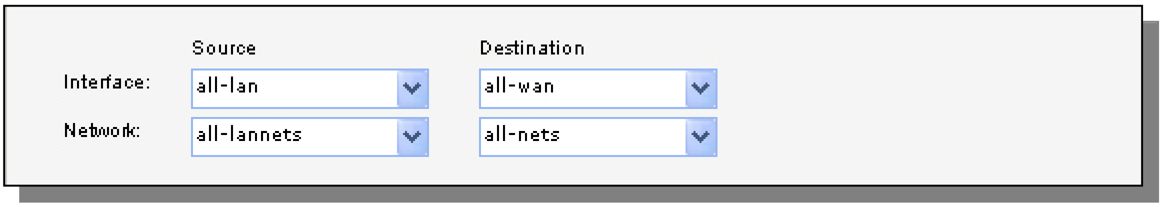
Action: NAT

Service: http-all

Schedule: (None)

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

Address Filter:



	Source	Destination
Interface:	all-lan	all-wan
Network:	all-lannets	all-nets

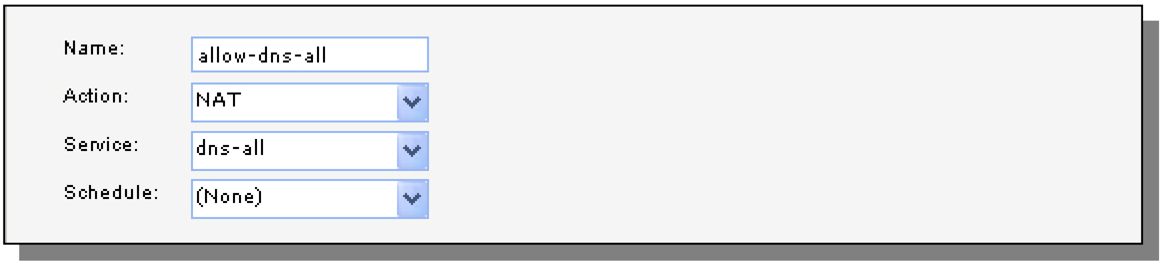
Source interface: **all-lan**
Source network: **all-lannet**
Destination interface: **all-wan**
Destination network: **all-nets**

Click Ok.

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

In the General tab:

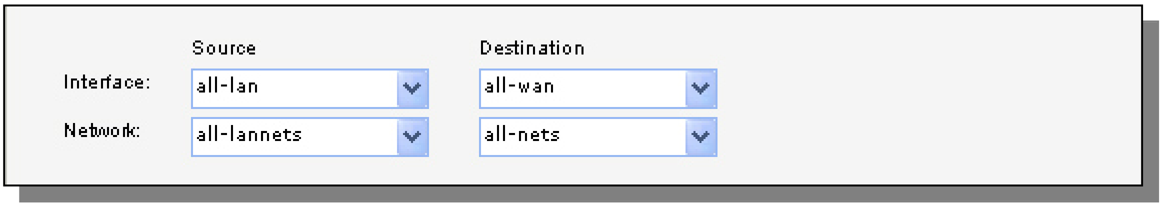
General:



Name:	allow-dns-all
Action:	NAT
Service:	dns-all
Schedule:	(None)

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

Address Filter:



	Source	Destination
Interface:	all-lan	all-wan
Network:	all-lannets	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**

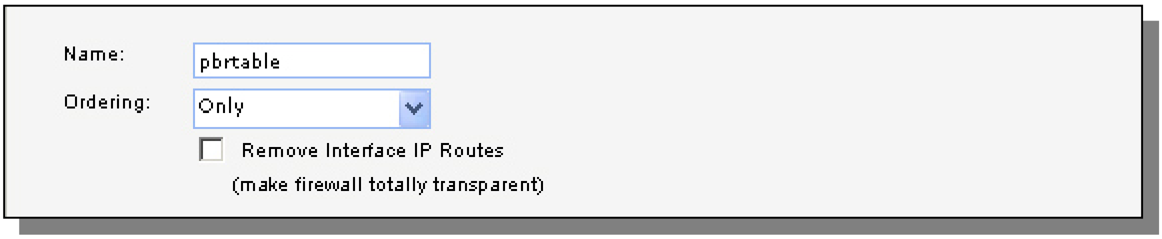
Click Ok.

7. Policy-based Routing

Go to *Routing -> Policy-based Routing Tables*.

Add a new Policy-based Routing Table.

General:



Name: pbrtable

Ordering: Only

□ Remove Interface IP Routes

(make firewall totally transparent)

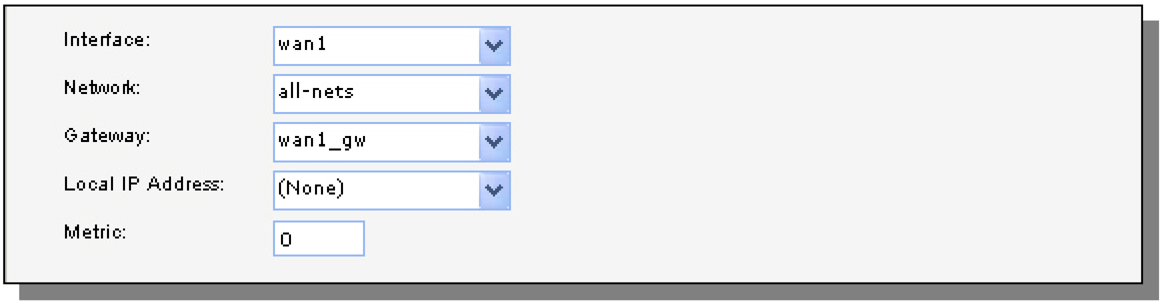
Name: **`pbrtable`**
Ordering: **`Only`**

Click Ok.

In this routing table, add a new Route.

In the General tab:

General:



Interface: wan1

Network: all-nets

Gateway: wan1_gw

Local IP Address: (None)

Metric: 0

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:

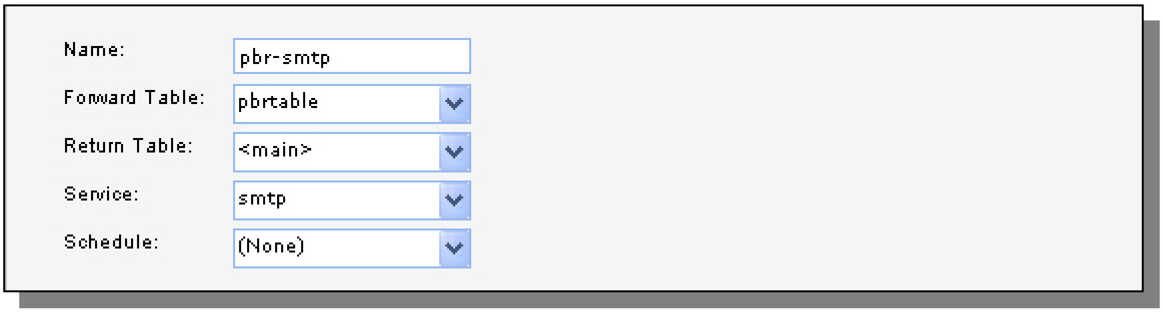
Interface: **wan2**
Network: **all-nets**
Gateway: **wan2_gw**
Local IP Address: **(None)**
Metric: **1**

Click Ok.

Go to *Policy-based Routing Policy*.

Add a new Policy-based Routing Rule.

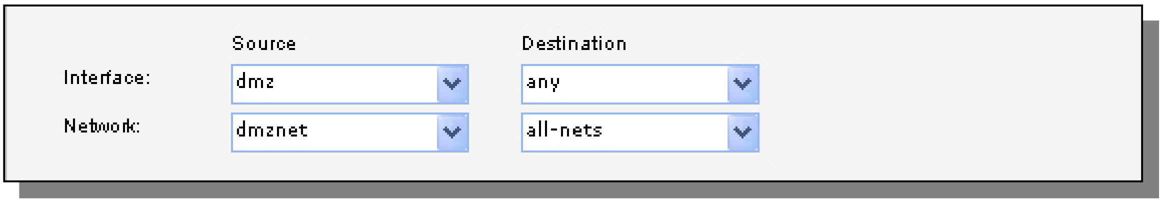
General:



Name: pbr-smtp
Forward Table: pbrtable
Return Table: <main>
Service: smtp
Schedule: (None)

Name: **pbr-smtp**
Forward Table: **pbrtable**
Return Table: **<main>**
Service: **smtp**
Schedule: **(None)**

Address Filter:



	Source	Destination
Interface:	dmz	any
Network:	dmznet	all-nets

Source Interface: **dmz**
Source Network: **dmznet**
Destination Interface: **any**
Destination Network: **all-nets**

Click Ok.

Save and activate the configuration