# Configuration examples for the D-Link NetDefend Firewall series

# DFL-210/800/1600/2500

## Scenario: Configure lan-to-lan tunnels between a main office and two remote offices (sometimes called Hub and Spoke)

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.

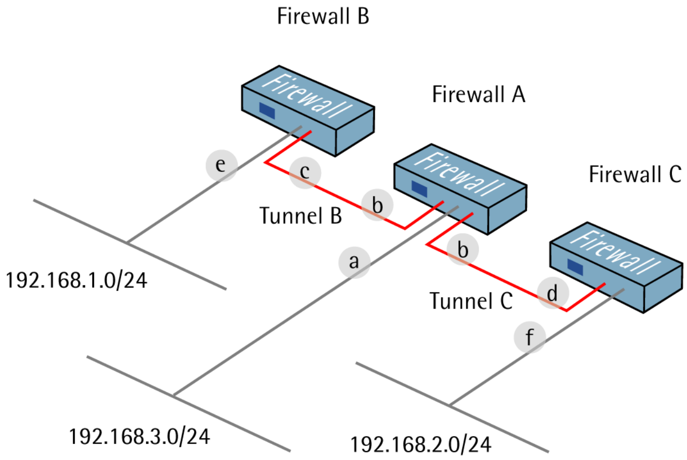
The screenshots in this document is from firmware version 2.04.00. If you are using a later version of the firmware, the screenshots may not be identical to what you see on your browser.

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

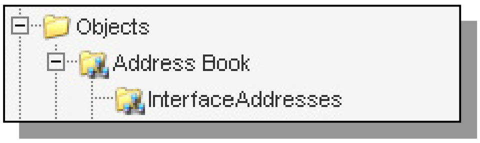
# 6 Configure lan-to-lan tunnels between a main office and two remote offices (sometimes called Hub and Spoke).

This guide shows how to configure tunnels between three firewalls. First create one tunnel from firewall A to firewall B and then a second tunnel from firewall A to firewall C. Users behind firewall B should be able to reach resources behind firewall C (and the other way around).

| | |
|---|---|
| a | IP: 192.168.3.1/24 |
| b | IP: 192.168.110.5/24 |
| c | IP: 192.168.110.1/24 |
| d | IP: 192.168.110.3/24 |
| e | IP: 192.168.1.1/24 |
| f | IP: 192.168.2.2/24 |



# 1. Firewall A - Addresses



Go to *Objects -> Address book -> InterfaceAddresses*.
Edit the following items:
Change **lan_ip** to **192.168.3.1**
Change **lannet** to **192.168.3.0/24**

Change **wan1_ip** to **192.168.110.5**
Change **wan1net** to **192.168.110.0/24**

Go to *Objects -> Address book*.

Add a new Address Folder called **RemoteHosts**.

In the new folder, add a new IP4 Host/Network:
Name: **fwB-net**
IP Address: **192.168.1.0/24**

Click Ok

Add a new IP4 Host/Network:
Name: **fwB**
IP Address: **192.168.110.1**

Click Ok

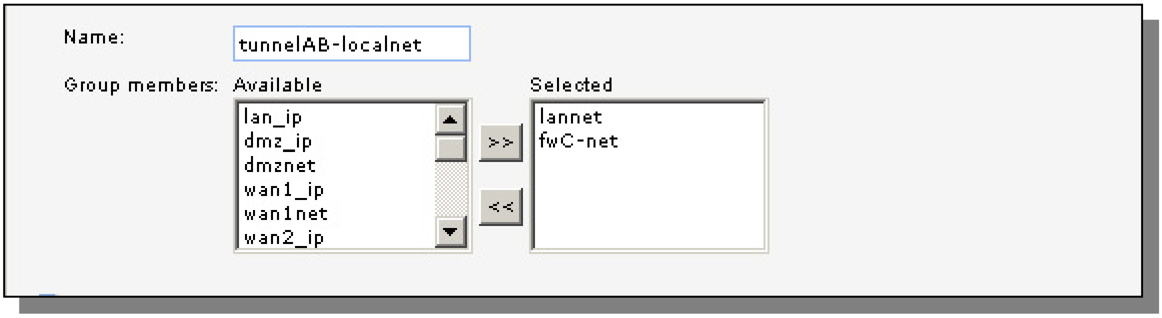
Add a new IP4 Host/Network:
Name: **fwC-net**
IP Address: **192.168.2.0/24**

Click Ok

Add a new IP4 Host/Network:
Name: **fwC-remotegw**
IP Address: **192.168.110.3**

Click Ok

Add a new IP4 Address Group:



Name: tunnelAB-localnet

Group members: Available
lan_ip
dmz_ip
dmznet
wan1_ip
wan1net
wan2_ip

Selected
lannet
fwC-net

Name: **tunnelAB-localnet**
Add **lannet** and **fwC-net** to the Group members

Click Ok

Add a new IP4 Address Group:
Name: **tunnelAC-localnet**
Add **lannet** and **fwB-net** to the Group members

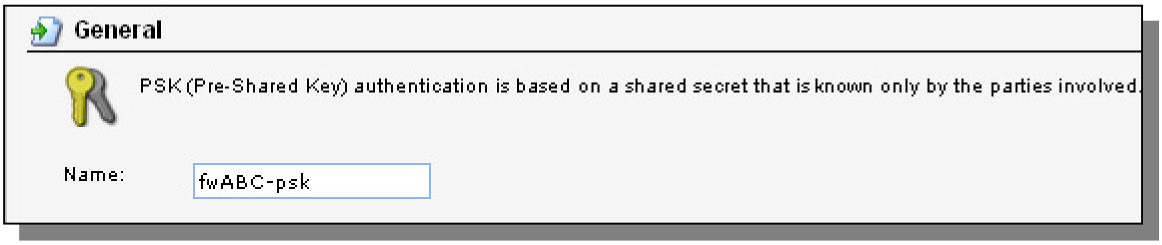
Click Ok

## 2. Firewall A - Pre-shared keys

Go to *Objects -> VPN Objects -> Pre-Shared Keys*.

Add a new Pre-Shared Key.

***General:***



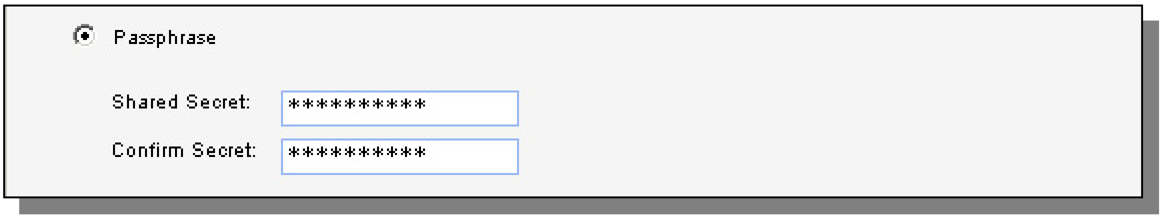
General

PSK (Pre-Shared Key) authentication is based on a shared secret that is known only by the parties involved.

Name: fwABC-psk

Name: **fwABC-psk**

***Shared Secret:***



● Passphrase

Shared Secret: **********

Confirm Secret: **********

Select **Passphrase** and enter a shared secret.

Click Ok.

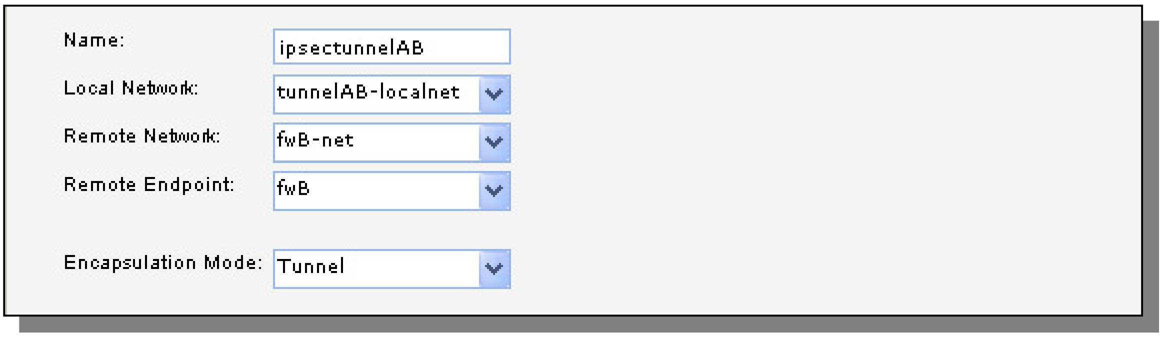
## 3. Firewall A - IPsec tunnel interface

Go to *Interfaces -> IPsec tunnels*.

Add a new IPsec Tunnel.

In the General tab:

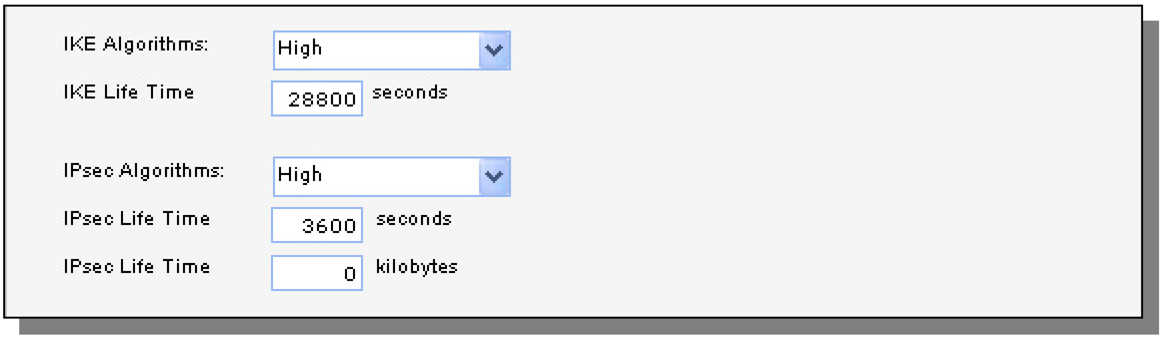
*General:*



|  |  |
|---|---|
| Name: | ipsectunnelAB |
| Local Network: | tunnelAB-localnet |
| Remote Network: | fwB-net |
| Remote Endpoint: | fwB |
| Encapsulation Mode: | Tunnel |

Name: **ipsectunnelAB**
Local Network: **tunnelAB-localnet**
Remote Network: **fwB-net**
Remote Endpoint: **fwB**
Encapsulation Mode: **Tunnel**

*Algorithms:*

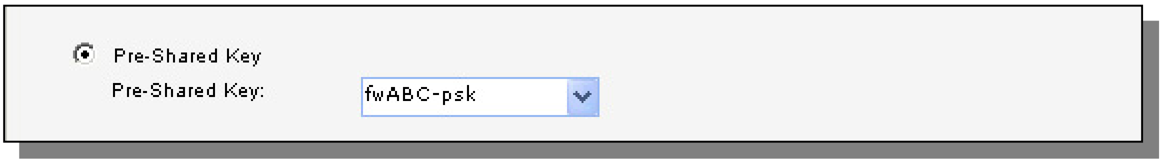


|  |  |  |
|---|---|---|
| IKE Algorithms: | High |  |
| IKE Life Time | 28800 | seconds |
| IPsec Algorithms: | High |  |
| IPsec Life Time | 3600 | seconds |
| IPsec Life Time | 0 | kilobytes |

IKE Algorithms: **High**
IKE Life Time: **28800**
IPsec Algorithms: **High**
IPsec Life Time: **3600**
IPsec Life Time: **0**

In the Authentication tab:

*Authentication:*



● Pre-Shared Key
Pre-Shared Key: fwABC-psk

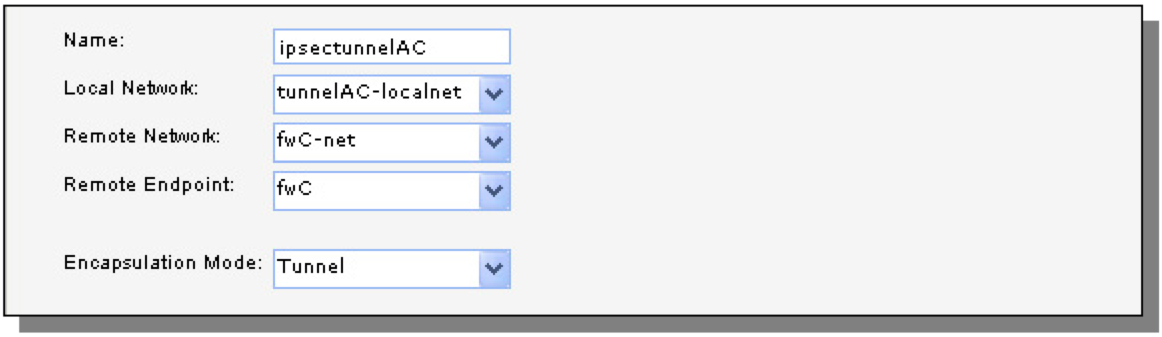
Enable **Pre-Shared Key** and select **fwABC-psk** from the dropdown list.

Click Ok.

Add a new IPsec Tunnel.

In the General tab:

*General:*



Name: ipsectunnelAC

Local Network: tunnelAC-localnet

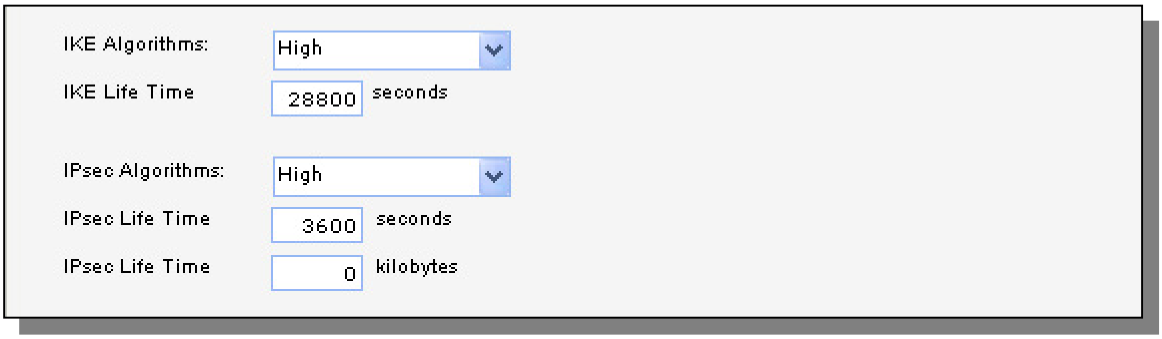
Remote Network: fwC-net

Remote Endpoint: fwC

Encapsulation Mode: Tunnel

Name: **`ipsectunnelAC`**
Local Network: **`tunnelAC-localnet`**
Remote Network: **`fwC-net`**
Remote Endpoint: **`fwC`**
Encapsulation Mode: **`Tunnel`**

*Algorithms:*



IKE Algorithms: High

IKE Life Time 28800 seconds

IPsec Algorithms: High

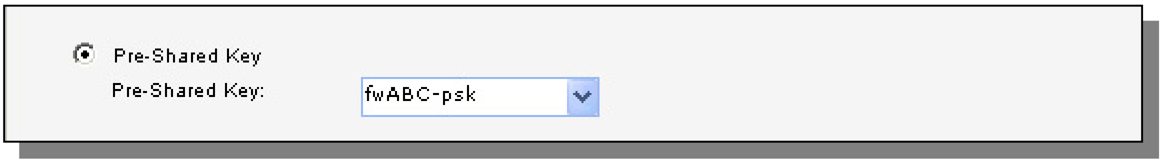
IPsec Life Time 3600 seconds

IPsec Life Time 0 kilobytes

IKE Algorithms: **`High`**
IKE Life Time: **`28800`**
IPsec Algorithms: **`High`**
IPsec Life Time: **`3600`**
IPsec Life Time: **`0`**

In the Authentication tab:

*Authentication:*



● Pre-Shared Key

Pre-Shared Key: fwABC-psk

Enable **`Pre-Shared Key`** and select **`fwABC-psk`** from the dropdown list.

Click Ok.

## 4. Firewall A - Rules

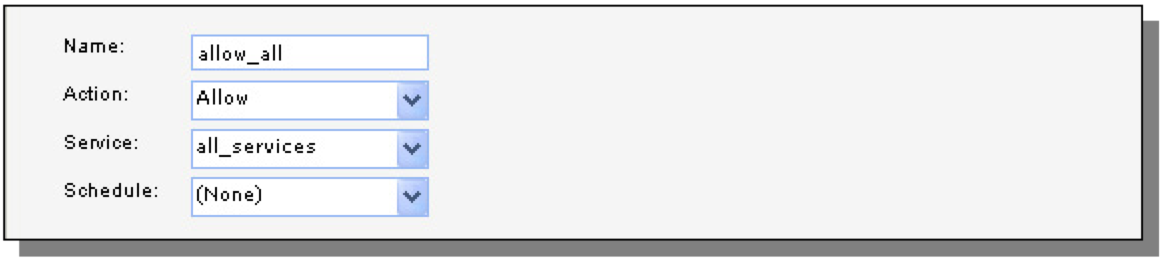
Go to *Rules -> IP Rules*.

Create a new IP Rule Folder called **`lan_to_fwBC`**.

In the new folder, add a new IP Rule.

In the General tab:

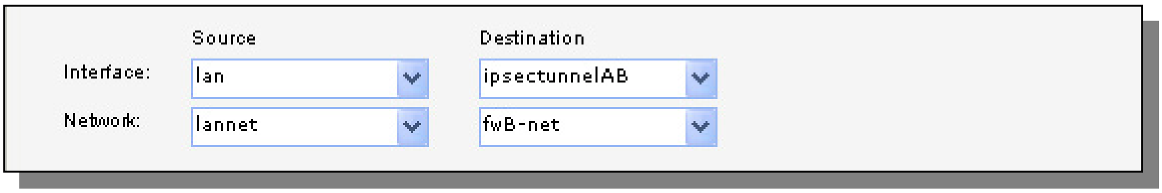
***General:***



Name: allow_all
Action: Allow
Service: all_services
Schedule: (None)

Name: **`allow_all`**
Action: **`Allow`**
Service: **`all_services`**

***Address Filter:***



| | Source | Destination |
|---|---|---|
| Interface: | lan | ipsectunnelAB |
| Network: | lannet | fwB-net |

Source Interface: **`lan`**
Source Network: **`lannet`**
Destination Interface: **`ipsectunnelAB`**
Destination Network: **`fwB-net`**

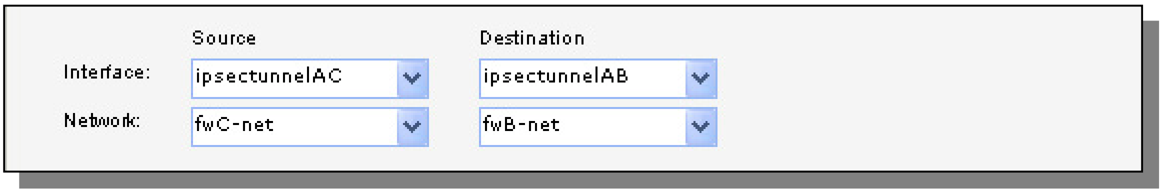
Click Ok.

Add a new IP Rule.

In the General tab:

***General:***
Name: **`allow_all`**
Action: **`Allow`**
Service: **`all_services`**

*Address Filter:*



|  | Source | Destination |
|---|---|---|
| Interface: | ipsectunnelAC | ipsectunnelAB |
| Network: | fwC-net | fwB-net |

Source Interface: **ipsectunnelAC**
Source Network: **fwC-net**
Destination Interface: **ipsectunnelAB**
Destination Network: **fwB-net**

Click Ok.

Add a new IP Rule.

In the General tab:

***General:***
Name: **allow_all**
Action: **Allow**
Service: **all_services**

***Address Filter:***
Source Interface: **ipsectunnelAB**
Source Network: **fwB-net**
Destination Interface: **lan**
Destination Network: **lannet**

Click Ok.

Add a new IP Rule.

In the General tab:

***General:***
Name: **allow_all**
Action: **Allow**
Service: **all_services**

***Address Filter:***
Source Interface: **ipsectunnelAB**
Source Network: **fwB-net**
Destination Interface: **ipsectunnelAC**
Destination Network: **fwC-net**

Click Ok.

Add a new IP Rule.

In the General tab:

*General:*
Name: allow_all
Action: Allow
Service: all_services

*Address Filter:*
Source Interface: ipsectunnelAC
Source Network: fwC-net
Destination Interface: lan
Destination Network: lannet

Click Ok.

Add a new IP Rule.

In the General tab:

*General:*
Name: allow_all
Action: Allow
Service: all_services

*Address Filter:*
Source Interface: lan
Source Network: lannet
Destination Interface: ipsectunnelAC
Destination Network: fwC-net

Click Ok.

Save and activate the configuration on firewall A.

## 5. Firewall B - Addresses

Go to *Objects -> Address book -> InterfaceAddresses*.
Edit the following items:
Change lan_ip to 192.168.1.1
Change lannet to 192.168.1.0/24

Change wan1_ip to 192.168.110.1
Change wan1net to 192.168.110.0/24

Go to *Objects -> Address book*.

Add a new Address Folder called RemoteHosts.

In the new folder, add a new IP4 Host/Network:
Name: fwA-net
IP Address: 192.168.3.0/24

Click Ok

Add a new IP4 Host/Network:
Name: **`fwA`**
IP Address: **`192.168.110.5`**

Click Ok

Add a new IP4 Host/Network:
Name: **`fwC-net`**
IP Address: **`192.168.2.0/24`**

Click Ok

Add a new IP4 Address Group:
Name: **`fwB-remotenets`**
Add **`fwA-net`** and **`fwC-net`** to the Group members

Click Ok

## 6. Firewall B - Pre-shared keys

Follow the instructions in step 2 to add a pre-shared key called fwABC-psk to firewall B. The passphrase has to be the same as the passphrase on firewall A.

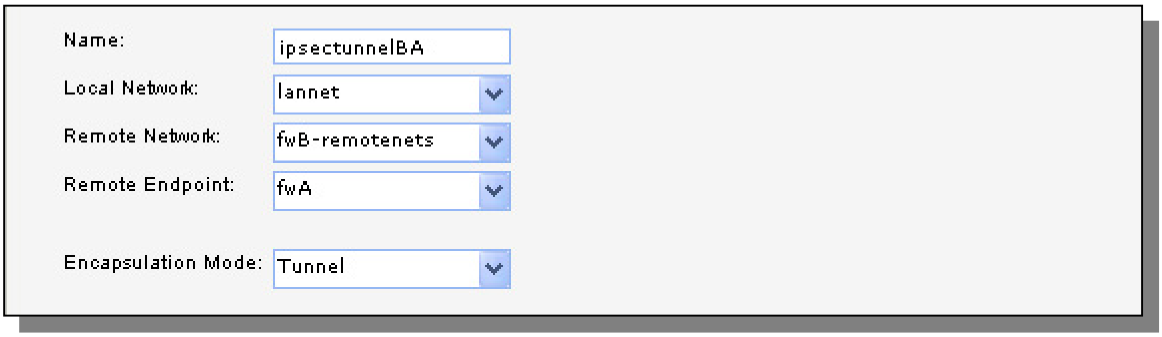
## 7. Firewall B - IPsec tunnel interface

Go to *Interfaces -> IPsec tunnels*.

Add a new IPsec Tunnel.

In the General tab:

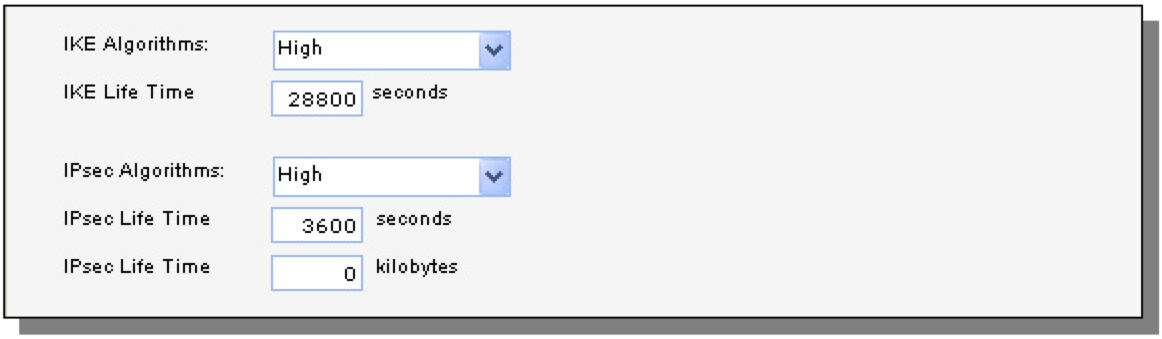
***General:***



| | |
|---|---|
| Name: | ipsectunnelBA |
| Local Network: | lannet |
| Remote Network: | fwB-remotenets |
| Remote Endpoint: | fwA |
| Encapsulation Mode: | Tunnel |

Name: **ipsectunnelBA**
Local Network: **lannet**
Remote Network: **fwB-remotenets**
Remote Endpoint: **fwA**
Encapsulation Mode: **Tunnel**

***Algorithms:***

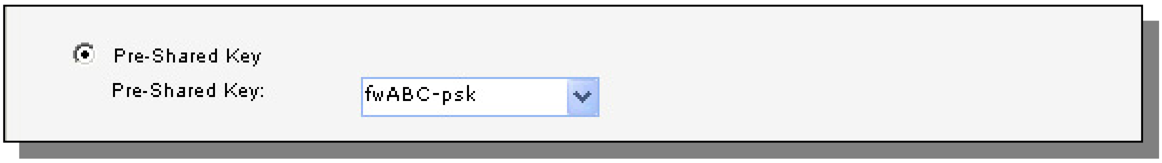


| | | |
|---|---|---|
| IKE Algorithms: | High | |
| IKE Life Time | 28800 | seconds |
| IPsec Algorithms: | High | |
| IPsec Life Time | 3600 | seconds |
| IPsec Life Time | 0 | kilobytes |

IKE Algorithms: **High**
IKE Life Time: **28800**
IPsec Algorithms: **High**
IPsec Life Time: **3600**
IPsec Life Time: **0**

In the Authentication tab:

***Authentication:***



● Pre-Shared Key
Pre-Shared Key: fwABC-psk

Enable **Pre-Shared Key** and select **fwABC-psk** from the dropdown list.

Click Ok.

## 8. Firewall B - Rules

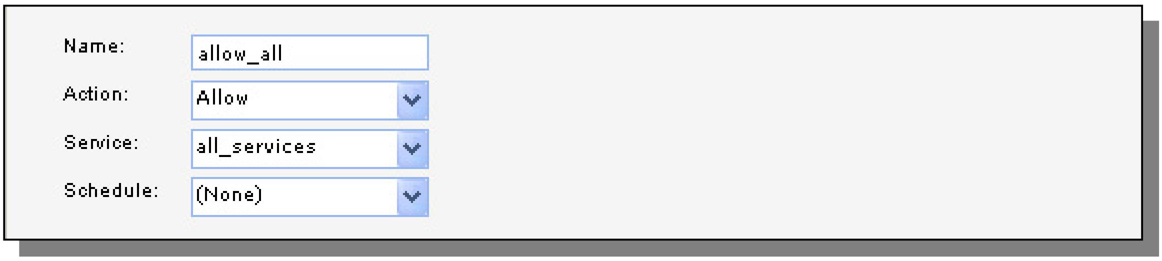
Go to *Rules -> IP Rules*.

Create a new IP Rule Folder called **`lan_to_fwA`**.

In the new folder, add a new IP Rule.

In the General tab:

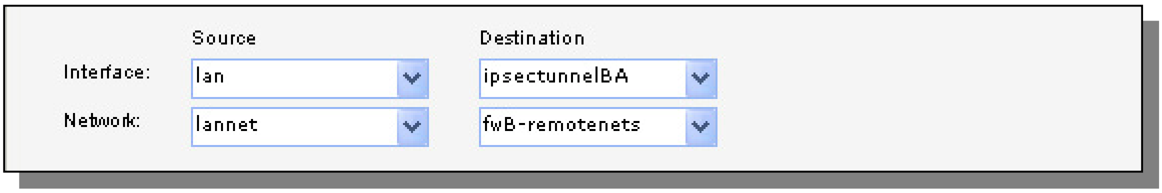
***General:***



Name: allow_all
Action: Allow
Service: all_services
Schedule: (None)

Name: **`allow_all`**
Action: **`Allow`**
Service: **`all_services`**

***Address Filter:***



| | Source | Destination |
|---|---|---|
| Interface: | lan | ipsectunnelBA |
| Network: | lannet | fwB-remotenets |

Source Interface: **`lan`**
Source Network: **`lannet`**
Destination Interface: **`ipsectunnelBA`**
Destination Network: **`fwB-remotenets`**

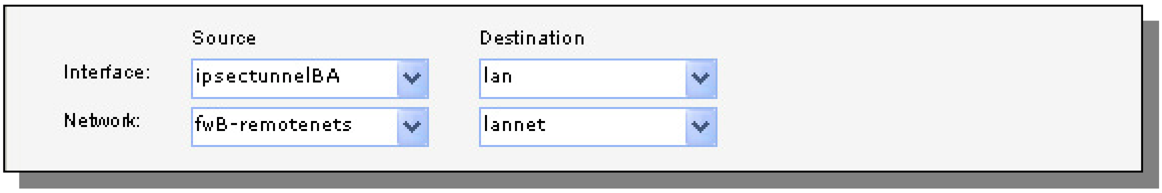
Click Ok.

Add a new IP Rule.

In the General tab:

***General:***
Name: **`allow_all`**
Action: **`Allow`**
Service: **`all_services`**

*Address Filter:*



| | Source | Destination |
|---|---|---|
| Interface: | ipsectunnelBA | lan |
| Network: | fwB-remotenets | lannet |

Source Interface: **ipsectunnelBA**
Source Network: **fwB-remotenets**
Destination Interface: **lan**
Destination Network: **lannet**

Click Ok.

Save and activate the configuration on firewall B.

## 9. Firewall C - Addresses

Go to *Objects -> Address book -> InterfaceAddresses*.
Edit the following items:
Change **lan_ip** to **192.168.2.1**
Change **lannet** to **192.168.2.0/24**

Change **wan1_ip** to **192.168.110.3**
Change **wan1net** to **192.168.110.0/24**

Go to *Objects -> Address book*.

Add a new Address Folder called **RemoteHosts**.

In the new folder, add a new IP4 Host/Network:
Name: **fwA-net**
IP Address: **192.168.3.0/24**

Click Ok

Add a new IP4 Host/Network:
Name: **fwA**
IP Address: **192.168.110.5**

Click Ok

Add a new IP4 Host/Network:
Name: **fwB-net**
IP Address: **192.168.1.0/24**

Click Ok

Add a new IP4 Address Group:
Name: **fwC-remotenets**
Add **fwA-net** and **fwB-net** to the Group members

Click Ok

## 10. Firewall C - Pre-shared keys

Follow the instructions in step 2 to add a pre-shared key called fwABC-psk to firewall C. The passphrase has to be the same as the passphrase on firewall A.

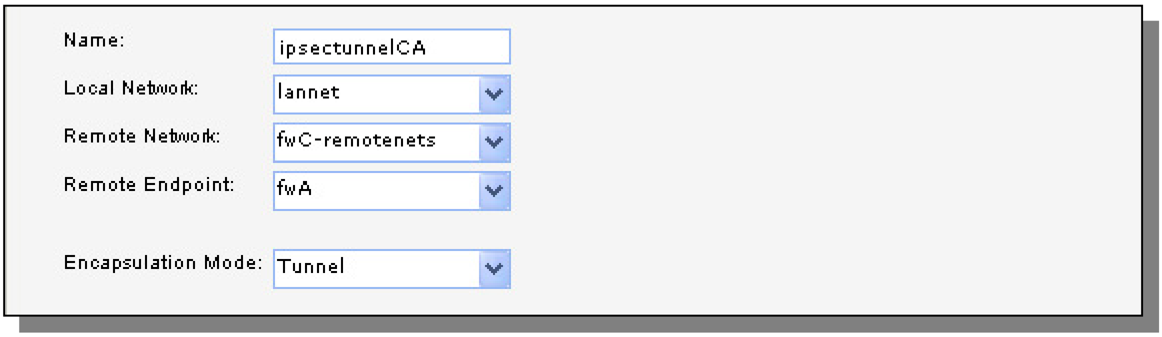
## 11. Firewall C - IPsec interfaces

Go to *Interfaces -> IPsec tunnels*.

Add a new IPsec Tunnel.

In the General tab:

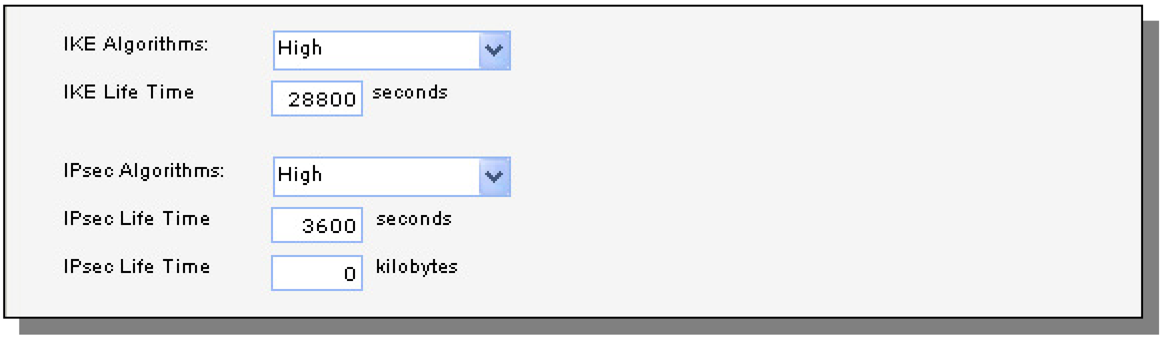
***General:***



Name: ipsectunnelCA
Local Network: lannet
Remote Network: fwC-remotenets
Remote Endpoint: fwA
Encapsulation Mode: Tunnel

Name: **`ipsectunnelCA`**
Local Network: **`lannet`**
Remote Network: **`fwC-remotenets`**
Remote Endpoint: **`fwA`**
Encapsulation Mode: **`Tunnel`**

***Algorithms:***

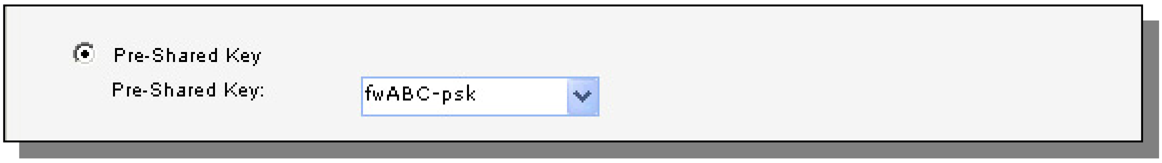


IKE Algorithms: High
IKE Life Time 28800 seconds
IPsec Algorithms: High
IPsec Life Time 3600 seconds
IPsec Life Time 0 kilobytes

IKE Algorithms: **`High`**
IKE Life Time: **28800**
IPsec Algorithms: **`High`**
IPsec Life Time: **3600**
IPsec Life Time: **0**

In the Authentication tab:

***Authentication:***



● Pre-Shared Key

Pre-Shared Key: fwABC-psk

Enable **Pre-Shared Key** and select **fwABC-psk** from the dropdown list.

Click Ok.

## 12. Firewall C - Rules

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

Create a new IP Rule Folder called **lan_to_fwA**.

In the new folder, add a new IP Rule.

In the General tab:

***General:***
Name: **allow_all**
Action: **Allow**
Service: **all_services**

***Address Filter:***
Source Interface: **lan**
Source Network: **lannet**
Destination Interface: **ipsectunnelCA**
Destination Network: **fwC-remotenets**

Click Ok.

Add a new IP Rule.

In the General tab:

***General:***
Name: **allow_all**
Action: **Allow**
Service: **all_services**

*Address Filter:*
Source Interface: **`ipsectunnelCA`**
Source Network: **`fwC-remotenets`**
Destination Interface: **`lan`**
Destination Network: **`lannet`**

Click Ok.

Save and activate the configuration on firewall C.