Firewalling co-located servers with RouterOS

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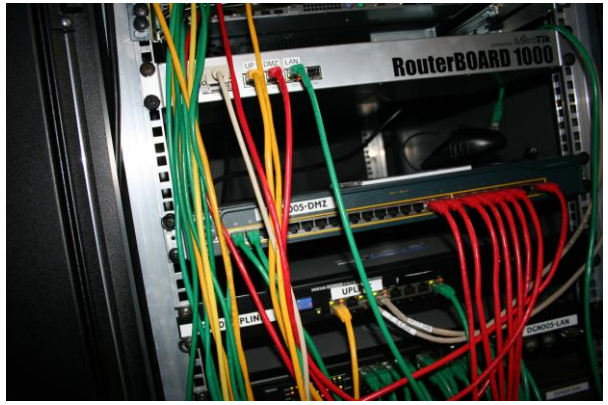
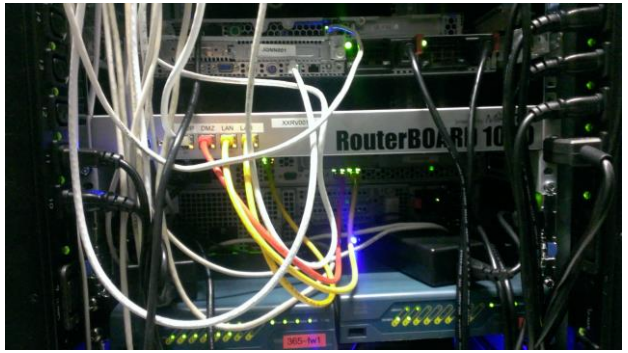
Introductie

- Stephan Szarafinski
- RouterOS gebruiker sinds 2003
- MTCNA sinds 2011

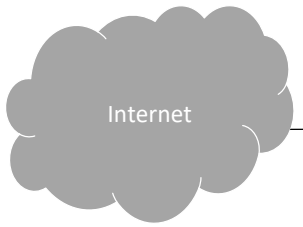
RouterOS / RouterBoard

- Routing
- Firewalling
- WiFi
- Networking
- Tunneling





Co-location?



Datacenter

Hosting provider

Hosting provider

Hosting provider

Hosting provider

Internet Exchange

Hosting provider

Router

Router

Private rack

Router

Private rack

Switch

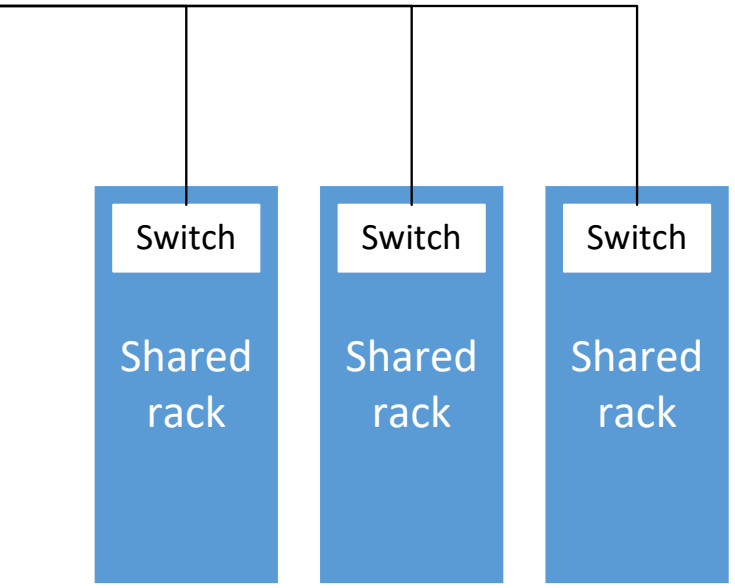
Shared rack

Switch

Shared rack

Switch

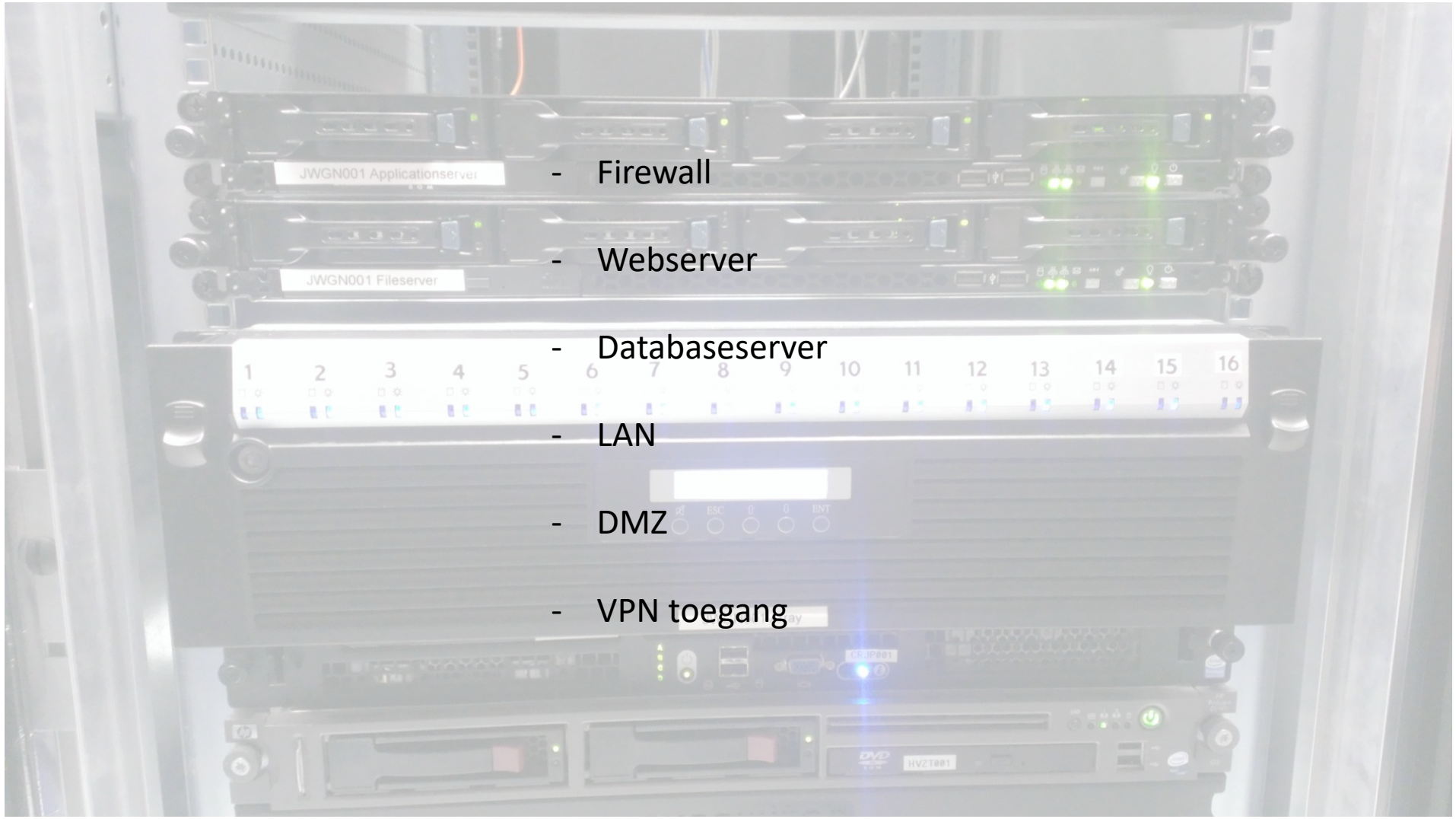
Shared rack



Co-location

- Servers van verschillende klanten in 1 rack
- 1 switchpoort ter beschikking
- Vlan met klein aantal IP adressen
- Gateway IP is de router van de provider
- Firewall in OS op servers

Ik wil meer...

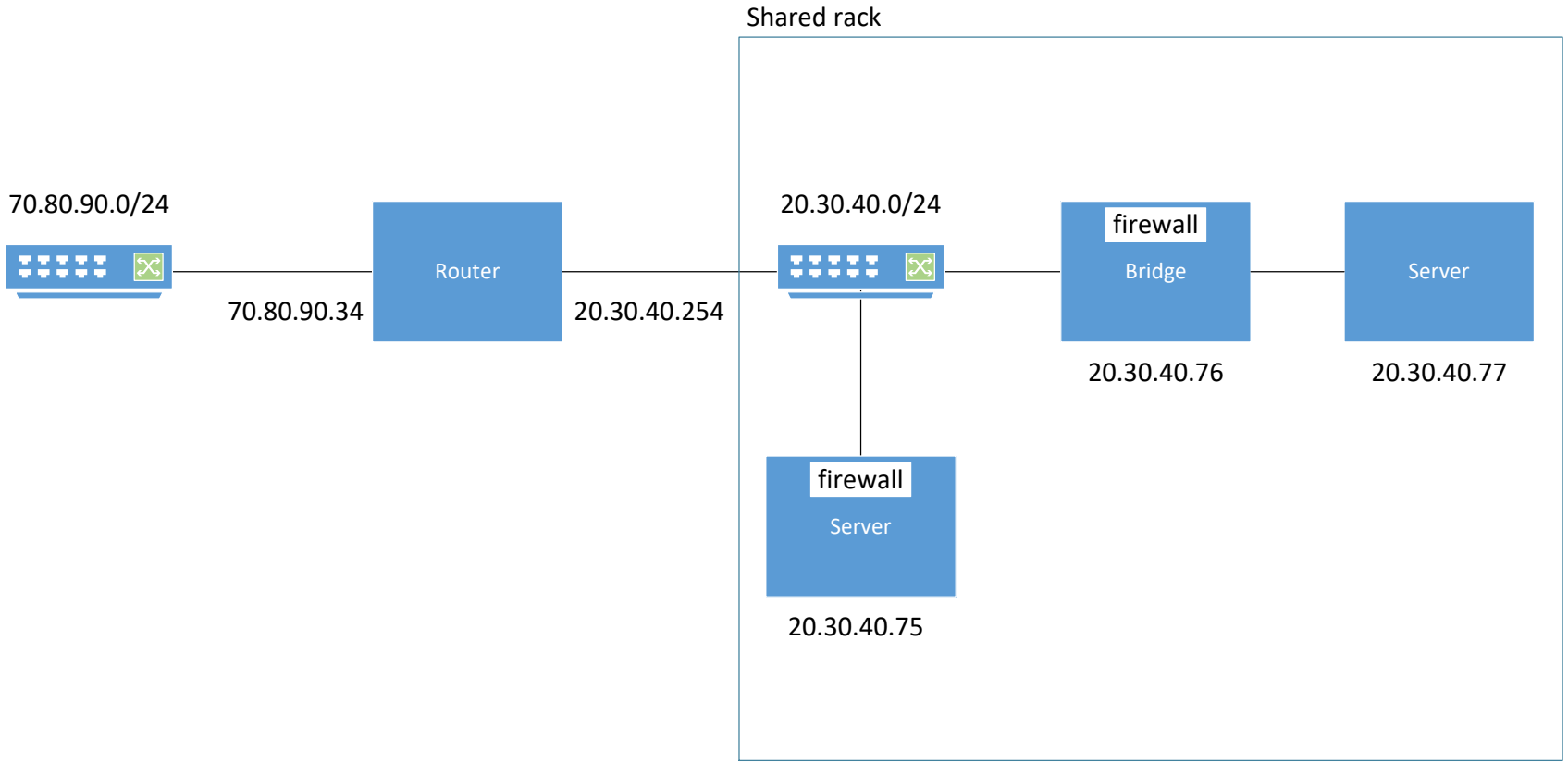


- Firewall
- Webserver
- Databaseserver
- LAN
- DMZ
- VPN toegang

Het probleem

- Weinig ruimte beschikbaar
- Niet teveel stroom gebruiken
- IP reeks is gedeeld
- Firewalling kan niet in de router, want die is van de hosting provider

Bridge met firewall

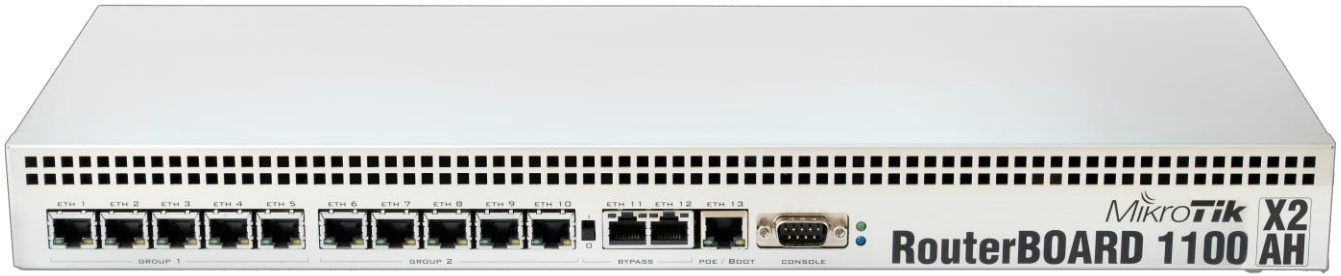


RouterBoard alles in 1 oplossingen

- Kleine behuizing
- Low power
- Twee switchchips met wirespeed transfer
- Genoeg ethernet poorten

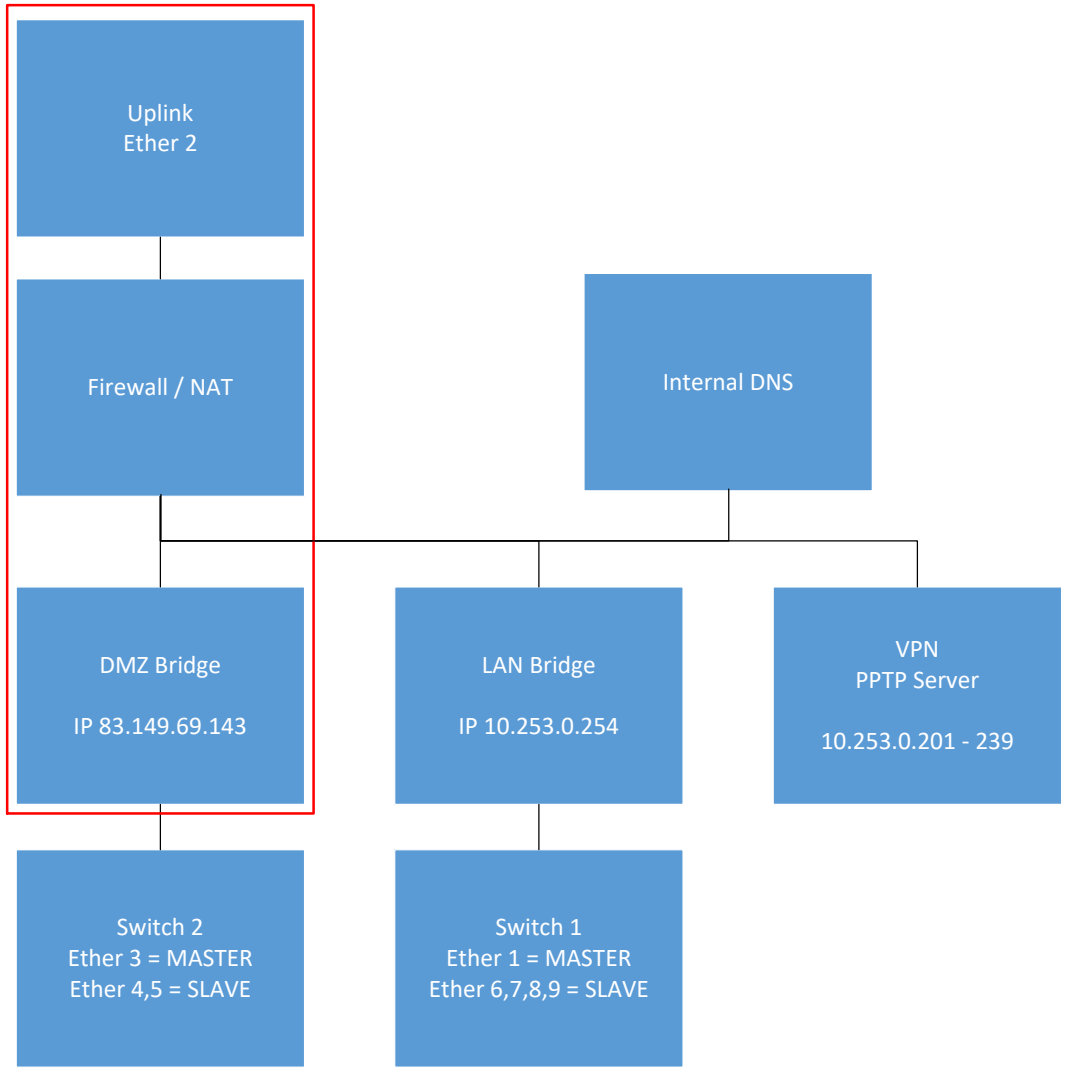
RB3011

RB1100

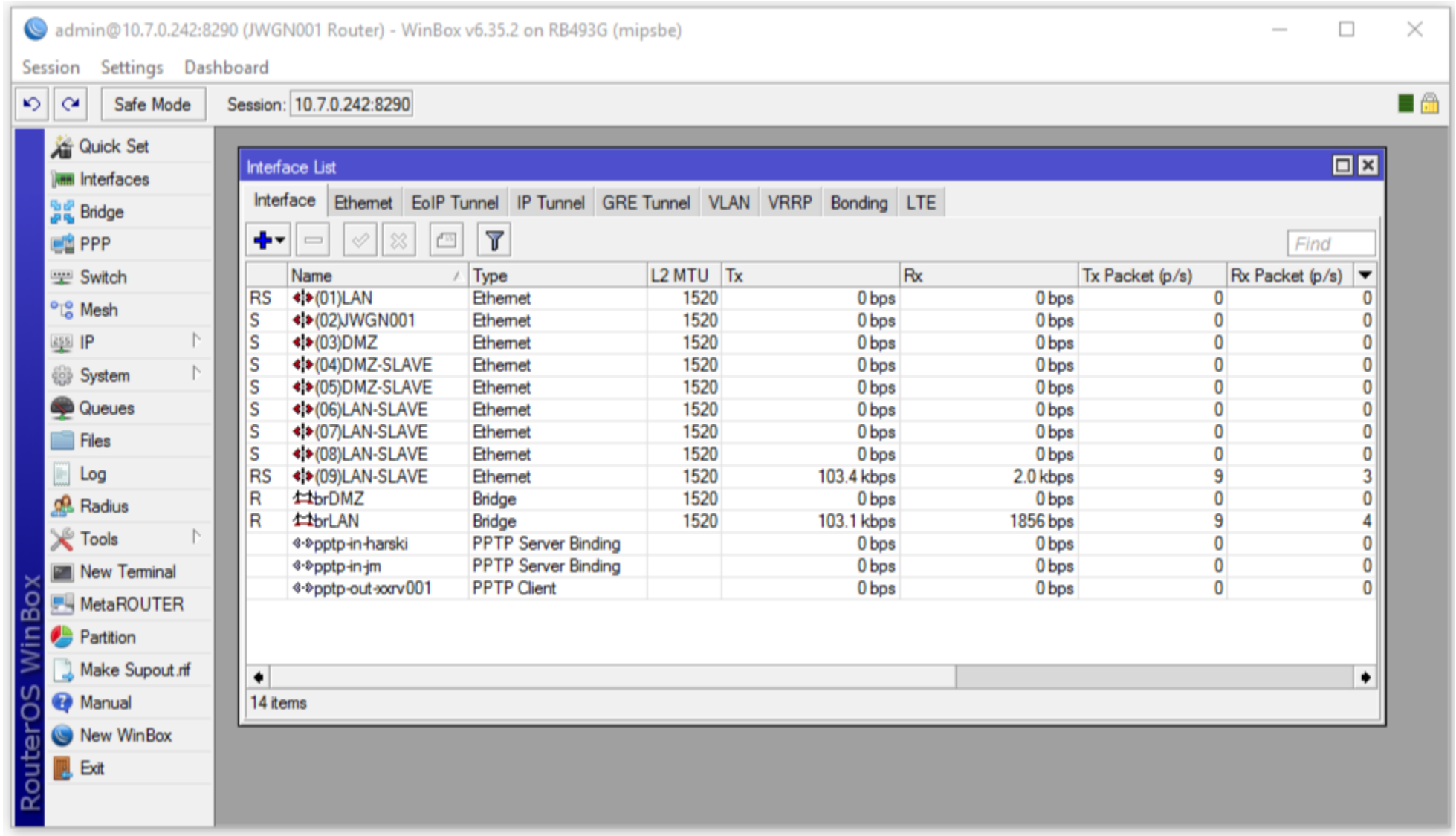


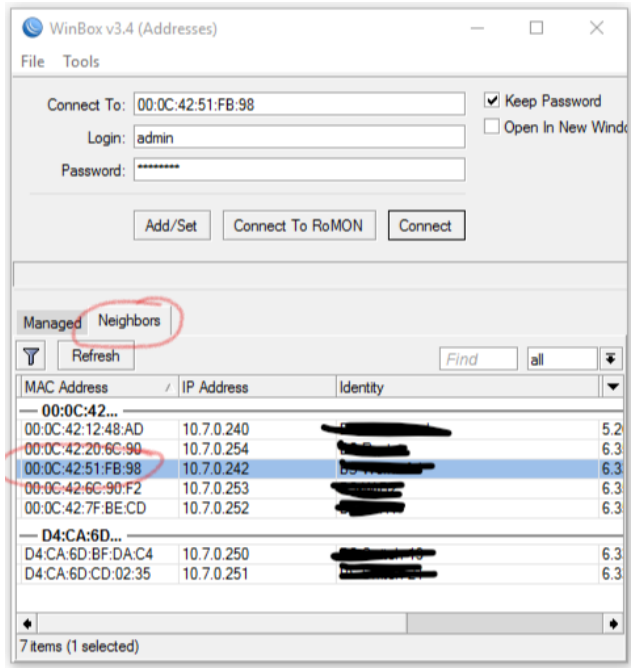
Configuratie

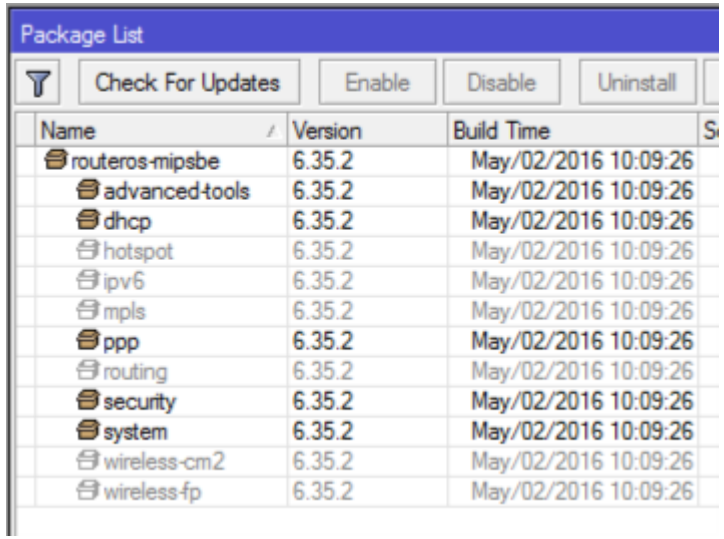
- RB493G
- IP reeks van Provider
  - 83.149.69.128/26
    - Gateway 83.149.69.190
- Toegewezen IP adressen
  - 83.149.69.143, 144, 145, 146, 147
- LAN IP reeks
  - 10.253.0.0/24
- 1x Uplink, 3x DMZ en 5x LAN



Winbox


admin@10.7.0.242:8290 (JWGN001 Router) - WinBox v6.35.2 on RB493G (mipsbe)
Session Settings Dashboard
Safe Mode
Session: 10.7.0.242:8290
Quick Set
Interfaces
Bridge
PPP
Switch
Mesh
IP
System
Queues
Files
Log
Radius
Tools
New Terminal
MetaROUTER
Partition
Make Supout.rif
Manual
New WinBox
Exit
RouterOS WinBox
Interface List
Interface Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VRRP Bonding LTE
Find
Name Type L2 MTU Tx Rx Tx Packet (p/s) Rx Packet (p/s)
RS (01)LAN Ethernet 1520 0 bps 0 bps 0 0
S (02)JWGN001 Ethernet 1520 0 bps 0 bps 0 0
S (03)DMZ Ethernet 1520 0 bps 0 bps 0 0
S (04)DMZ-SLAVE Ethernet 1520 0 bps 0 bps 0 0
S (05)DMZ-SLAVE Ethernet 1520 0 bps 0 bps 0 0
S (06)LAN-SLAVE Ethernet 1520 0 bps 0 bps 0 0
S (07)LAN-SLAVE Ethernet 1520 0 bps 0 bps 0 0
S (08)LAN-SLAVE Ethernet 1520 0 bps 0 bps 0 0
RS (09)LAN-SLAVE Ethernet 1520 103.4 kbps 2.0 kbps 9 3
R brDMZ Bridge 1520 0 bps 0 bps 0 0
R brLAN Bridge 1520 103.1 kbps 1856 bps 9 4
pptp-in-harski PPTP Server Binding 0 bps 0 bps 0 0
pptp-in-jm PPTP Server Binding 0 bps 0 bps 0 0
pptp-out-xxrv001 PPTP Client 0 bps 0 bps 0 0
14 items





Voorbereidingen

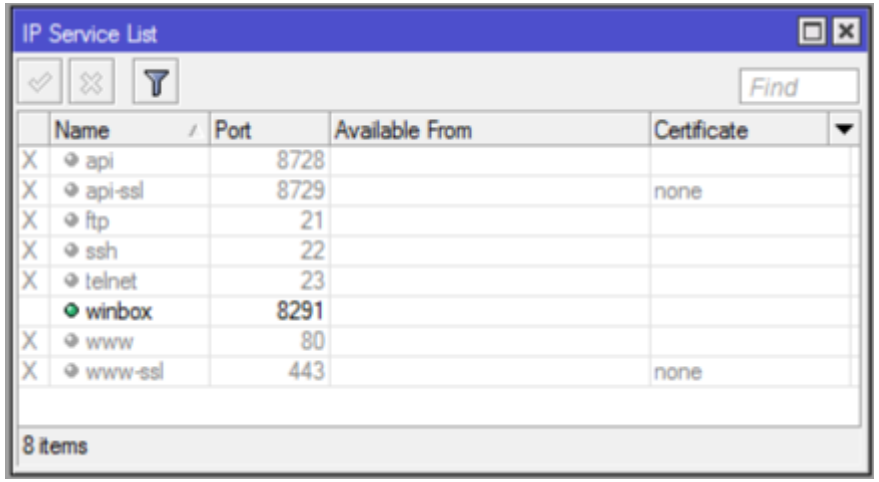
- Maak verbinding via MAC adres
- Upgrade naar laatste stable RouterOS versie
- Firmware update indien nodig
- Disable packages die niet nodig zijn, reboot
- Reset configuratie

```
/system reset-configuration keep-user=no no-defaults=yes skip-backup=yes
```

Systeem instellingen

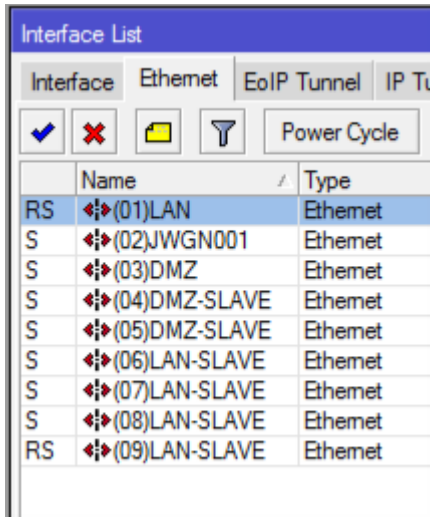
```
/system clock set time-zone-autodetect=no time-zone-name=Europe/Amsterdam

/system identity set name="JWGN001 Router"

/system ntp client set enabled=yes primary-ntp=10.254.0.12

/tool bandwidth-server set enabled=no

/ip dns
set allow-remote-requests=yes servers=85.17.150.123,62.212.64.122
```

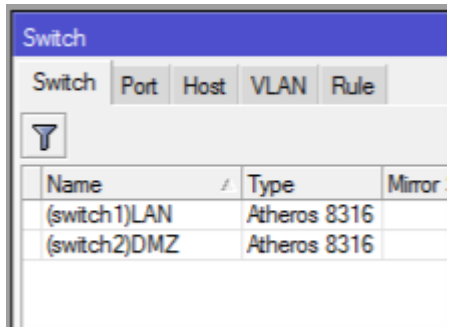
Systeem instellingen

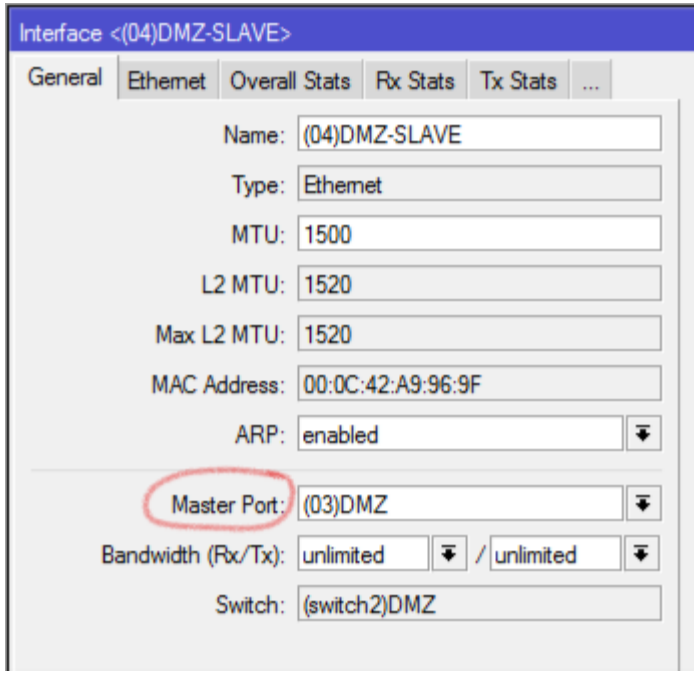



```
/ip service
set telnet disabled=yes
set ftp disabled=yes
set www disabled=yes
set ssh disabled=yes
set api disabled=yes
set api-ssl disabled=yes
```

Interfaces



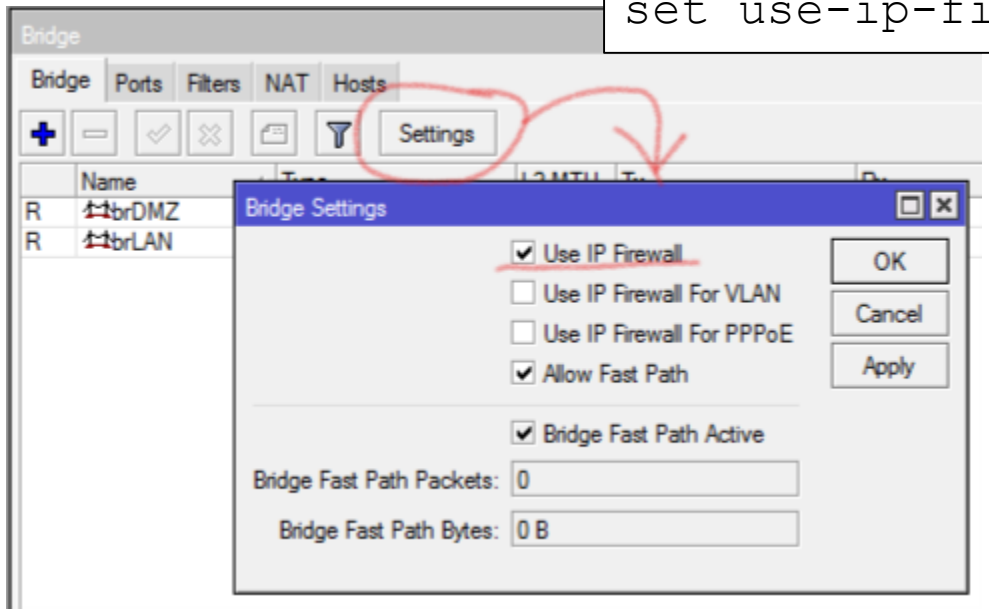





```
/interface ethernet
set ether1 name="(01)LAN"
set ether2 name="(02)JWGN001"
set ether3 name="(03)DMZ"
set ether4 master-port="(03)DMZ" name="(04)DMZ-SLAVE"
set ether5 master-port="(03)DMZ" name="(05)DMZ-SLAVE"
set ether6 master-port="(01)LAN" name="(06)LAN-SLAVE"
set ether7 master-port="(01)LAN" name="(07)LAN-SLAVE"
set ether8 master-port="(01)LAN" name="(08)LAN-SLAVE"
set ether9 master-port="(01)LAN" name="(09)LAN-SLAVE"
```

Bridge

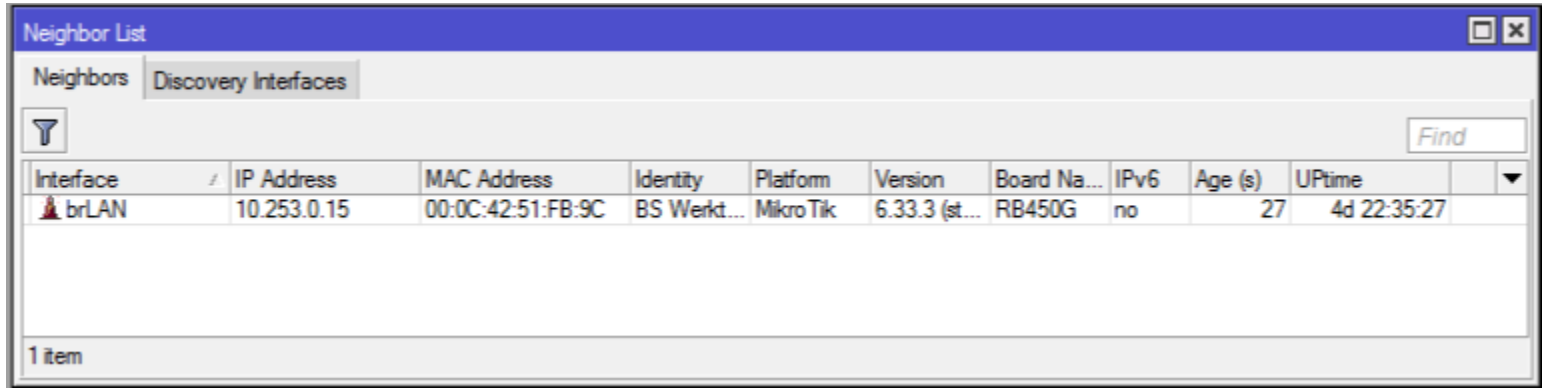
```
/interface bridge
add mtu=1500 name=brDMZ protocol-mode=none
add arp=proxy-arp mtu=1500 name=brLAN protocol-mode=none
/interface bridge port
add bridge=brLAN interface="(01)LAN"
add bridge=brDMZ interface="(02)JWGN001"
add bridge=brDMZ interface="(03)DMZ"
/interface bridge settings
set use-ip-firewall=yes
```



- LAN bridge nu niet perse nodig, maar handig voor later
- Proxy-arp op LAN bridge voor VPN verbindingen
- Al het bridge verkeer moet door de firewall

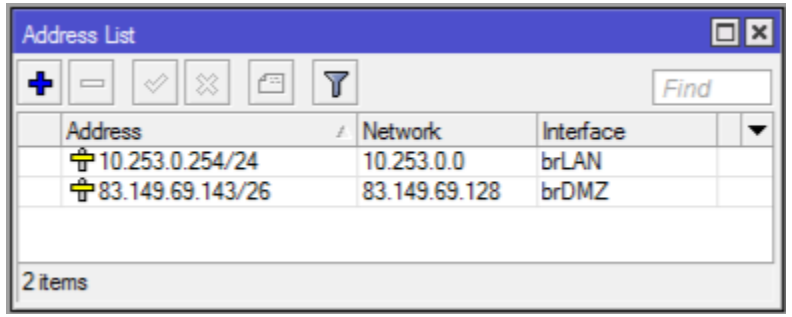
Neighbours

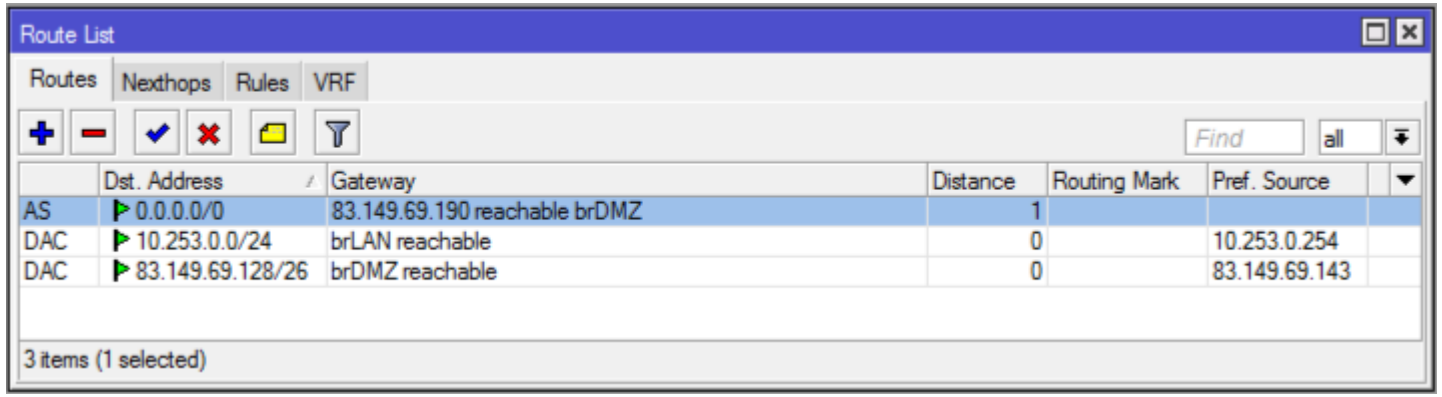
```
/ip neighbor discovery
set "(02)JWGN001" discover=no
set "(03)DMZ" discover=no
set "(04)DMZ-SLAVE" discover=no
set "(05)DMZ-SLAVE" discover=no
set brDMZ discover=no
```



IP adressen en gateway

```
/ip address
add address=10.253.0.254/24 interface=brLAN network=10.253.0.0
add address=83.149.69.143/26 interface=brDMZ network=83.149.69.128

/ip route
add distance=1 gateway=83.149.69.190
```



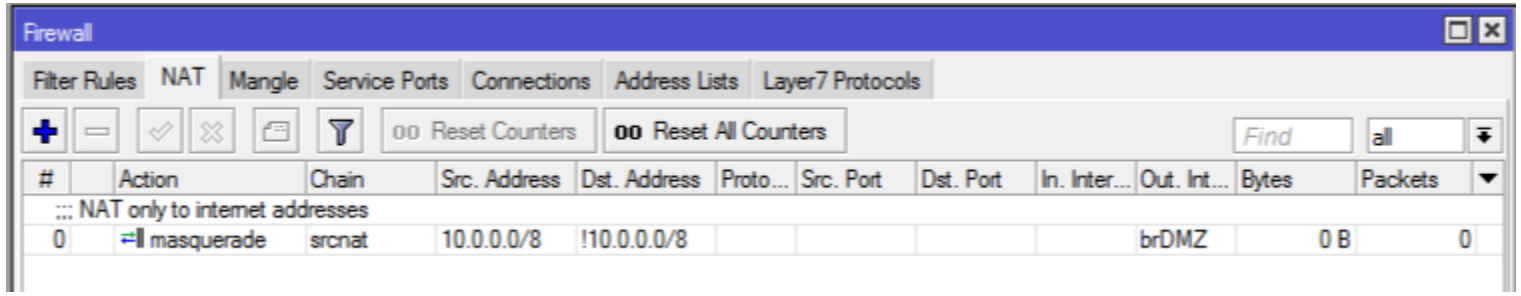


VPN

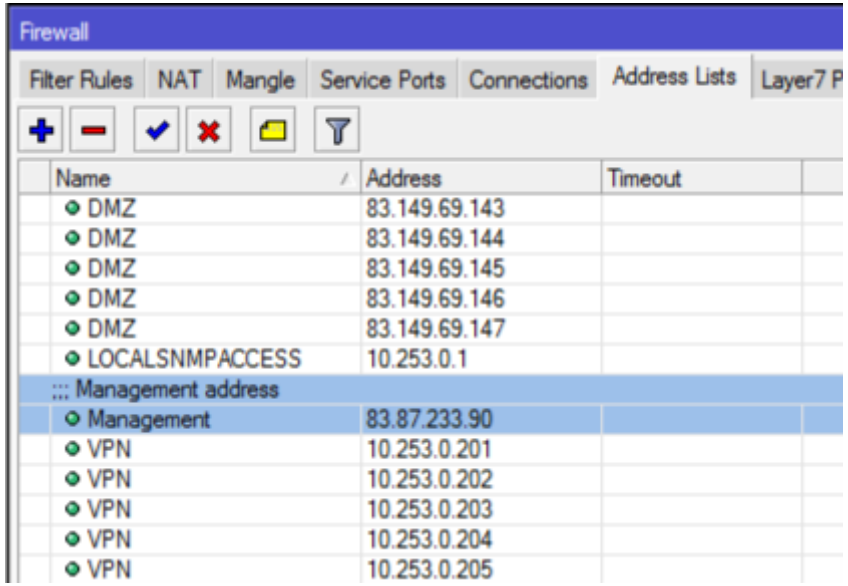
```
/ip pool
add name=pool-VPN next-pool=pool-VPN ranges=10.253.0.201-10.253.0.239
/interface pptp-server server
set enabled=yes
/ppp profile
set default-encryption local-address=10.253.0.200 only-one=\
    yes remote-address=pool-VPN
/ppp secret
add name=harski password="jlkjdsf7343ij4889" profile=default-encryption routes=\
    10.12.0.0/24 service=pptp
add name=jm password="789kjhd6532jljflk8o32" profile=\
    default-encryption routes=10.12.1.0/24 service=pptp
/interface pptp-server
add name=pptp-in-harski user=harski
add name=pptp-in-jm user=jm
```

Connection tracking en NAT

```
/ip settings
set tcp-syncookies=yes

/ip firewall nat
add action=masquerade chain=srcnat \
    dst-address=!10.0.0.0/8 out-interface=brDMZ src-address=10.0.0.0/8
```



Address lists




```
/ip firewall address-list
add address=83.149.69.143 list=DMZ
add address=83.149.69.144 list=DMZ
add address=83.149.69.145 list=DMZ
add address=83.149.69.146 list=DMZ
add address=83.149.69.147 list=DMZ
add address=10.253.0.1 list=LOCALSNMPACCESS
add address=83.87.233.90 list=Management
add address=85.17.150.123 list=trusted-ISP-DNS
add address=62.212.64.122 list=trusted-ISP-DNS
add address=10.253.0.201 list=VPN
add address=10.253.0.202 list=VPN
add address=10.253.0.203 list=VPN
.........
add address=10.253.0.238 list=VPN
add address=10.253.0.239 list=VPN
add address=10.253.0.240 list=VPN
```

Firewall - Input

```
/ip firewall filter
add chain=input dst-port=8291 protocol=tcp src-address-list=Management
add action=drop chain=input in-interface=brDMZ src-address=10.0.0.0/8
add action=drop chain=input comment="Drop blacklist" src-address-list=black
add action=drop chain=input comment="Drop greylist" src-address-list=grey
add action=drop chain=input comment="Drop invalid connections" \
    connection-state=invalid
add chain=input comment="Accept established connections" connection-state=\
    established
add chain=input comment="Accept related connections" connection-state=related
add chain=input comment="Accept ICMP traffic" protocol=icmp
add chain=input comment="Accept winbox traffic from LAN" dst-port=8291 \
    in-interface=brLAN protocol=tcp
add chain=input comment="Accept replies from ISP DNS" in-interface=brDMZ \
    protocol=tcp src-address-list=trusted-ISP-DNS src-port=53
add chain=input comment="Accept replies from ISP DNS" in-interface=brDMZ \
    protocol=udp src-address-list=trusted-ISP-DNS src-port=53
add chain=input comment="Accept DNS requests from LAN" dst-port=53 \
    in-interface=brLAN protocol=tcp
```

Firewall - Input

```
add chain=input comment="Accept DNS requests from LAN" dst-port=53 \
    in-interface=brLAN protocol=udp
add action=add-src-to-address-list address-list=grey address-list-timeout=5m \
    chain=input comment="Winbox protection grey" connection-state=new \
    dst-port=8291 protocol=tcp src-address-list=winbox_darkgrey
add action=add-src-to-address-list address-list=winbox_darkgrey \
    address-list-timeout=30s chain=input comment="Winbox protection darkgrey" \
    connection-state=new dst-port=8291 protocol=tcp src-address-list=\
    winbox_lightgrey
add action=add-src-to-address-list address-list=winbox_lightgrey \
    address-list-timeout=30s chain=input comment=\
    "Winbox protection lightgrey" connection-state=new dst-port=8291 \
    protocol=tcp
add chain=input comment="Accept winbox traffic" dst-port=8291 protocol=tcp
add chain=input comment="Accept broadcasts" dst-address-type=broadcast \
    in-interface=brDMZ
add chain=input comment="Accept PPTP traffic from DMZ" dst-port=1723 \
    in-interface=brDMZ protocol=tcp
```

Firewall - Input

```
add chain=input comment="Accept PPTP traffic from DMZ" in-interface=brDMZ \
    protocol=tcp src-port=1723
add chain=input comment="Accept SSTP traffic from DMZ" disabled=yes dst-port=\
    443 in-interface=brDMZ protocol=tcp
add chain=input comment="Accept EOIP/PPTP/SSTP traffic from DMZ" \
    in-interface=brDMZ protocol=gre
add chain=input comment="Accept SNMP traffic" dst-port=161 in-interface=brLAN \
    protocol=udp src-address-list=LOCALSNMPACCESS
add chain=input comment="Accept neighbour traffic from LAN" dst-port=5678 \
    in-interface=brLAN protocol=udp
add action=add-src-to-address-list address-list=grey address-list-timeout=5m \
    chain=input comment="Port scan to grey list" psd=21,3s,3,1
add action=log chain=input
add action=drop chain=input comment=Default
```

Firewall - Input

Firewall

Filter Rules | NAT | Mangle | Service Ports | Connections | Address Lists | Layer7 Protocols

oo Reset Counters | oo Reset All Counters | Find | input

#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Bridge
0	accept	input			6 (tcp)		8291				Management			
1	drop	input	10.0.0.0/8					brDMZ						
;;; Drop blacklist														
2	drop	input									black			
;;; Drop greylist														
3	drop	input									grey			
;;; Drop invalid connections														
4	drop	input								invalid				
;;; Accept established connections														
5	accept	input								established				
;;; Accept related connections														
6	accept	input								related				
;;; Accept ICMP traffic														
7	accept	input			1 (icmp)									
;;; Accept winbox traffic from LAN														
8	accept	input			6 (tcp)		8291	brLAN						
;;; Accept replies from ISP DNS														
9	accept	input			6 (tcp)	53		brDMZ			trusted-ISP-DNS			
;;; Accept replies from ISP DNS														
10	accept	input			17 (udp)	53		brDMZ			trusted-ISP-DNS			
;;; Accept DNS requests from LAN														
11	accept	input			6 (tcp)		53	brLAN						
;;; Accept DNS requests from LAN														
12	accept	input			17 (udp)		53	brLAN						

Firewall - Input

;;; Winbox protection grey														
13	add src to address list	input			6 (tcp)		8291			new	winbox_darkgrey			
;;; Winbox protection darkgrey														
14	add src to address list	input			6 (tcp)		8291			new	winbox_lightgrey			
;;; Winbox protection lightgrey														
15	add src to address list	input			6 (tcp)		8291			new				
;;; Accept winbox traffic														
16	accept	input			6 (tcp)		8291							
;;; Accept broadcasts														
17	accept	input						brDMZ						
;;; Accept PPTP traffic from DMZ														
18	accept	input			6 (tcp)		1723	brDMZ						
;;; Accept PPTP traffic from DMZ														
19	accept	input			6 (tcp)	1723		brDMZ						
;;; Accept EOIP/PPTP/SSTP traffic from DMZ														
20	accept	input			47 (gre)			brDMZ						
;;; Accept SNMP traffic														
21	accept	input			17 (udp)		161	brLAN			LOCALSNMPACCESS			
;;; Accept neighbour traffic from LAN														
22	accept	input			17 (udp)		5678	brLAN						
;;; Port scan to grey list														
23	add src to address list	input												
24	log	input												
;;; Default														
25	drop	input												

Firewall - Output

```
/ip firewall filter
add chain=output dst-address-list=Management protocol=tcp src-port=8291
add action=drop chain=output dst-address=10.0.0.0/8 out-interface=brDMZ
add action=drop chain=output comment="Drop blacklist" dst-address-list=black
add action=drop chain=output comment="Drop greylist" dst-address-list=grey
add action=drop chain=output comment="Drop invalid connections" \
    connection-state=invalid
add chain=output comment="Accept established connections" connection-state=\
    established
add chain=output comment="Accept related connections" connection-state=\
    related
add chain=output comment="Accept ICMP traffic" protocol=icmp
add chain=output comment="Accept winbox traffic" protocol=tcp src-port=8291
add chain=output comment="Accept requests to ISP DNS" dst-address-list=\
    trusted-ISP-DNS dst-port=53 out-interface=brDMZ protocol=tcp
add chain=output comment="Accept requests to ISP DNS" dst-address-list=\
    trusted-ISP-DNS dst-port=53 out-interface=brDMZ protocol=udp
add chain=output comment="Accept DNS replies to LAN" out-interface=brLAN \
    protocol=tcp src-port=53
```

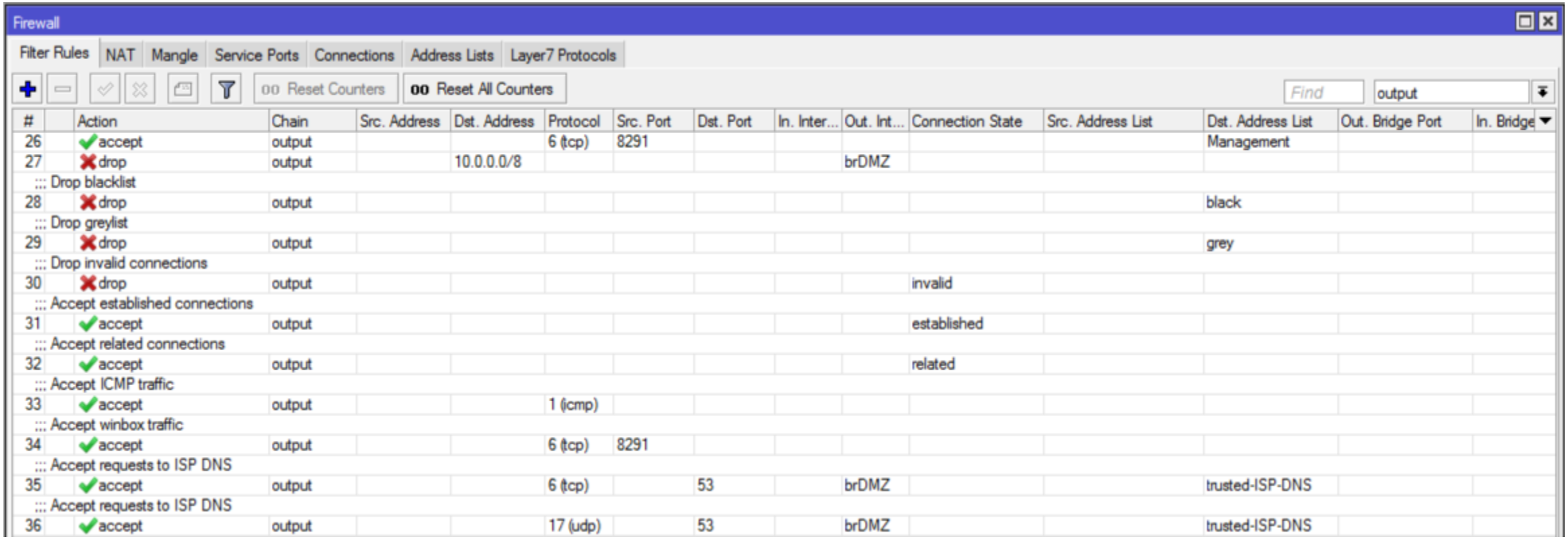
Firewall - Output

```
add chain=output comment="Accept DNS replies to LAN" out-interface=brLAN \
    protocol=udp src-port=53
add chain=output comment="Accept broadcasts" dst-address-type=broadcast \
    out-interface=brDMZ
add chain=output comment="Accept PPTP traffic to DMZ" out-interface=brDMZ \
    protocol=tcp src-port=1723
add chain=output comment="Accept PPTP traffic to DMZ" dst-port=1723 \
    out-interface=brDMZ protocol=tcp
add chain=output comment="Accept SSTP traffic to DMZ" disabled=yes \
    out-interface=brDMZ protocol=tcp src-port=443
add chain=output comment="Accept EOIP/PPTP/SSTP traffic to DMZ" \
    out-interface=brDMZ protocol=gre
add chain=output comment="Time server access" dst-address=10.254.0.12 \
    dst-port=123 protocol=udp
add chain=output comment="Accept SNMP traffic" dst-address-list=\
    LOCALSNMPACCESS out-interface=brLAN protocol=udp src-port=161
add chain=output comment="Accept neighbour traffic to LAN" dst-port=5678 \
    out-interface=brLAN protocol=udp
```

Firewall - Output

```
add chain=output comment="Accept SYSLOG traffic" dst-address-list=\
    LOCALSNMPACCESS out-interface=brLAN protocol=udp src-port=514
add action=log chain=output
add action=drop chain=output comment=Default
```

Firewall - Output

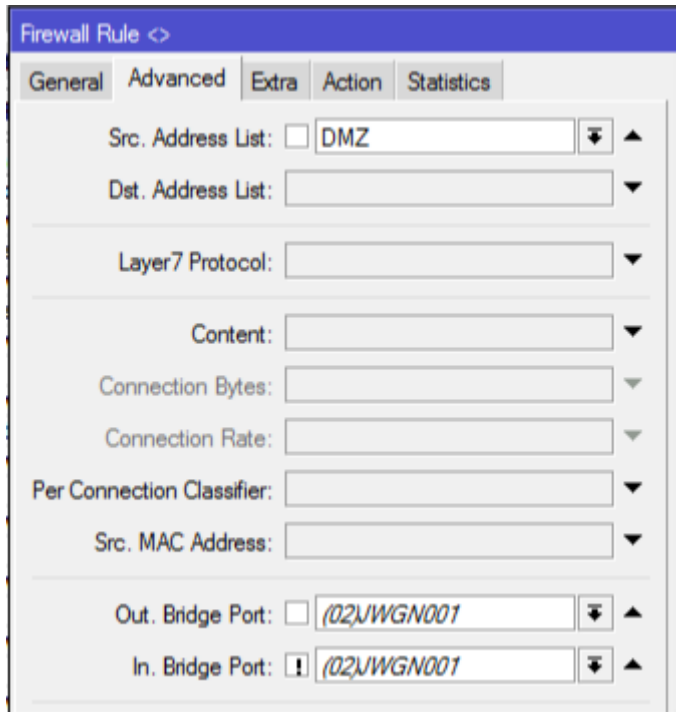


#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Bridge
26	accept	output			6 (tcp)	8291						Management		
27	drop	output		10.0.0.0/8					brDMZ					
;;; Drop blacklist														
28	drop	output										black		
;;; Drop greylist														
29	drop	output										grey		
;;; Drop invalid connections														
30	drop	output								invalid				
;;; Accept established connections														
31	accept	output								established				
;;; Accept related connections														
32	accept	output								related				
;;; Accept ICMP traffic														
33	accept	output			1 (icmp)									
;;; Accept winbox traffic														
34	accept	output			6 (tcp)	8291								
;;; Accept requests to ISP DNS														
35	accept	output			6 (tcp)		53		brDMZ			trusted-ISP-DNS		
;;; Accept requests to ISP DNS														
36	accept	output			17 (udp)		53		brDMZ			trusted-ISP-DNS		

Firewall - Output

;;; Accept DNS replies to LAN														
37	accept	output			6 (tcp)	53			brLAN					
;;; Accept DNS replies to LAN														
38	accept	output			17 (udp)	53			brLAN					
;;; Accept broadcasts														
39	accept	output							brDMZ					
;;; Accept PPTP traffic to DMZ														
40	accept	output			6 (tcp)	1723			brDMZ					
;;; Accept PPTP traffic to DMZ														
41	accept	output			6 (tcp)		1723		brDMZ					
;;; Accept SSTP traffic to DMZ														
42 X	accept	output			6 (tcp)	443			brDMZ					
;;; Accept EOIP/PPTP/SSTP traffic to DMZ														
43	accept	output			47 (gre)				brDMZ					
;;; Time server access														
44	accept	output		10.254.0.12	17 (udp)		123							
;;; Accept SNMP traffic														
45	accept	output			17 (udp)	161			brLAN			LOCALSNMPACC...		
;;; Accept neighbour traffic to LAN														
46	accept	output			17 (udp)		5678		brLAN					
;;; Accept SYSLOG traffic														
47	accept	output			17 (udp)	514			brLAN			LOCALSNMPACC...		
48	log	output												
;;; Default														
49	drop	output												

Firewall - Forward



- Gebruik out bridge port en in bridge port
- Voor de snelheid worden accepted en related packets meteen geaccepteerd
- DMZ verkeer gaat naar DMZ-IN en DMZ-OUT
- Firewalling gaat per service, de IP adressen van de servers gaan per service in een address list

Firewall - Forward

```
/ip firewall filter
add action=drop chain=forward comment=\
    "Internal source address not allowed from DMZ" in-interface=brDMZ \
    src-address=10.0.0.0/8
add action=log chain=forward comment=\
    "Internal destination address not allowed to DMZ" dst-address=10.0.0.0/8 \
    out-interface=brDMZ
add action=drop chain=forward comment=\
    "Internal destination address not allowed to DMZ" dst-address=10.0.0.0/8 \
    out-interface=brDMZ
add action=drop chain=forward comment=\
    "VPN source address not allowed from LAN" in-interface=brLAN \
    src-address-list=VPN
add action=drop chain=forward comment=\
    "VPN destination address not allowed to LAN" dst-address-list=VPN \
    out-interface=brLAN
add action=drop chain=forward comment="Drop blacklist" src-address-list=black
add action=drop chain=forward comment="Drop blacklist" dst-address-list=black
add action=drop chain=forward comment="Drop greylist" src-address-list=grey
```

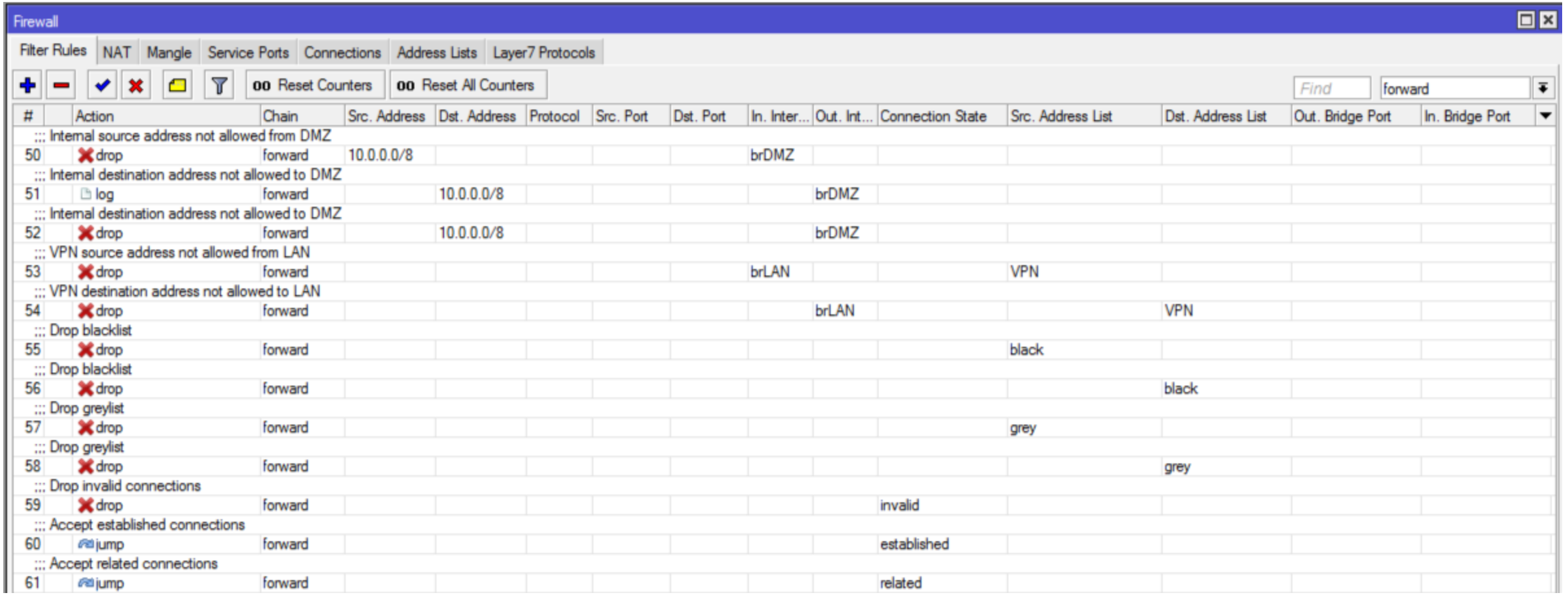
Firewall - Forward

```
add action=drop chain=forward comment="Drop greylist" dst-address-list=grey
add action=drop chain=forward comment="Drop invalid connections" \
    connection-state=invalid
add action=jump chain=forward comment="Accept established connections" \
    connection-state=established jump-target=ConnectionExceptions
add action=jump chain=forward comment="Accept related connections" \
    connection-state=related jump-target=ConnectionExceptions
add action=jump chain=forward comment=\
    "Accept traffic from DMZ to JWGN001 uplink" in-bridge-port="!(02)JWGN001" \
    jump-target=DMZ-OUT out-bridge-port="(02)JWGN001" src-address-list=DMZ
add action=drop chain=forward comment=\
    "Drop other traffic from DMZ to JWGN001 uplink" in-bridge-port=\
    "!(02)JWGN001" out-bridge-port="(02)JWGN001"
add action=jump chain=forward comment=\
    "Accept traffic from JWGN001 uplink to DMZ" dst-address-list=DMZ \
    in-bridge-port="(02)JWGN001" jump-target=DMZ-IN out-bridge-port=\
    "!(02)JWGN001"
add action=drop chain=forward comment=\
    "Drop other traffic from JWGN001 uplink to DMZ" in-bridge-port=\
    "(02)JWGN001" out-bridge-port="!(02)JWGN001"
```

Firewall - Forward

```
add chain=forward comment="Traffic from LAN via NAT to DMZ" dst-address=\
    !10.0.0.0/8 in-interface=brLAN out-interface=brDMZ src-address=10.0.0.0/8
add chain=forward comment="Traffic from DMZ via NAT to LAN" dst-address=\
    10.0.0.0/8 in-interface=brDMZ out-interface=brLAN src-address=!10.0.0.0/8
add chain=forward comment=xxrv001 dst-address=10.253.0.0/24 in-interface=\
    pptp-out-xxrv001 src-address=10.0.0.0/8
add action=jump chain=forward comment="Accept traffic from VPN" jump-target=\
    VPN-IN src-address-list=VPN
add action=jump chain=forward comment=harski in-interface=pptp-in-harski \
    jump-target=VPN-IN src-address=10.12.0.0/24
add action=jump chain=forward comment=jm in-interface=pptp-in-jm jump-target=\
    VPN-IN src-address=10.12.1.0/24
add action=jump chain=forward comment="Accept traffic from VPN" \
    dst-address-list=VPN jump-target=VPN-OUT
add action=jump chain=forward comment=harski dst-address=10.12.0.0/24 \
    jump-target=VPN-OUT out-interface=pptp-in-harski
add action=jump chain=forward comment=jm dst-address=10.12.1.0/24 \
    jump-target=VPN-OUT out-interface=pptp-in-jm
add action=log chain=forward
add action=drop chain=forward comment=Default
```

Firewall - Forward

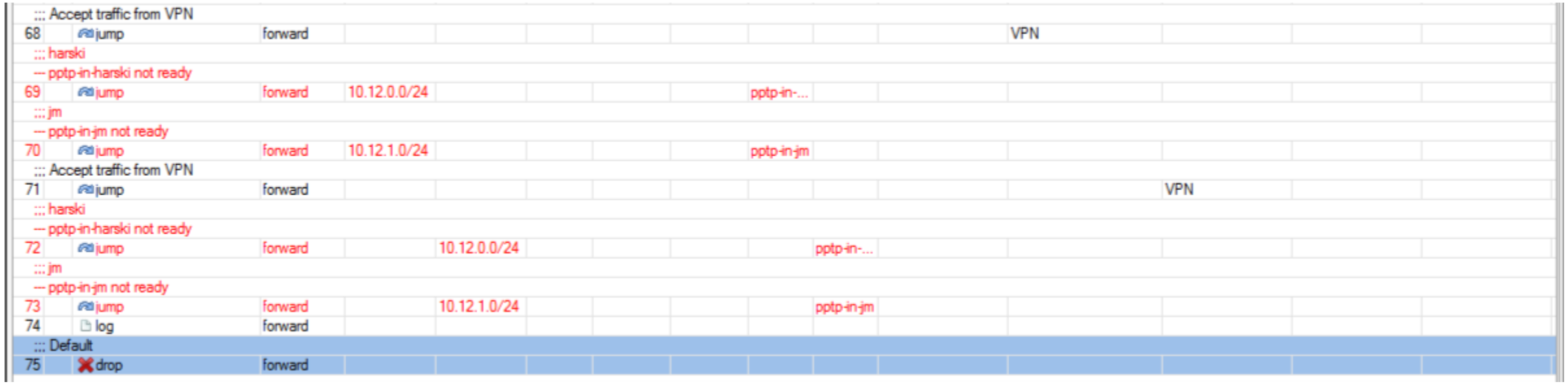


#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Bridge Port
;;; Internal source address not allowed from DMZ														
50	drop	forward	10.0.0.0/8					brDMZ						
;;; Internal destination address not allowed to DMZ														
51	log	forward		10.0.0.0/8					brDMZ					
;;; Internal destination address not allowed to DMZ														
52	drop	forward		10.0.0.0/8					brDMZ					
;;; VPN source address not allowed from LAN														
53	drop	forward						brLAN			VPN			
;;; VPN destination address not allowed to LAN														
54	drop	forward							brLAN			VPN		
;;; Drop blacklist														
55	drop	forward									black			
;;; Drop blacklist														
56	drop	forward										black		
;;; Drop greylist														
57	drop	forward									grey			
;;; Drop greylist														
58	drop	forward										grey		
;;; Drop invalid connections														
59	drop	forward								invalid				
;;; Accept established connections														
60	jump	forward								established				
;;; Accept related connections														
61	jump	forward								related				

Firewall - Forward

;;; Accept traffic from DMZ to JWGN001 uplink														
62	jump	forward								DMZ		(02)JWGN001	!(02)JWGN001	
;;; Drop other traffic from DMZ to JWGN001 uplink														
63	drop	forward										(02)JWGN001	!(02)JWGN001	
;;; Accept traffic from JWGN001 uplink to DMZ														
64	jump	forward									DMZ	!(02)JWGN001	(02)JWGN001	
;;; Drop other traffic from JWGN001 uplink to DMZ														
65	drop	forward										!(02)JWGN001	(02)JWGN001	
;;; Traffic from LAN via NAT to DMZ														
66	accept	forward	10.0.0.0/8	!10.0.0.0/8				brLAN	brDMZ					
;;; Traffic from DMZ via NAT to LAN														
67	accept	forward	!10.0.0.0/8	10.0.0.0/8				brDMZ	brLAN					

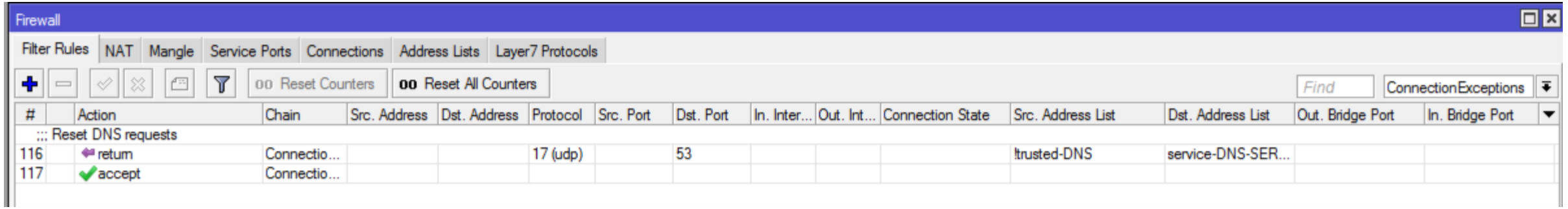
Firewall - Forward



::: Accept traffic from VPN															
68	jump	forward									VPN				
::: harski															
--- pptp-in-harski not ready															
69	jump	forward	10.12.0.0/24					pptp-in-...							
::: jm															
--- pptp-in-jm not ready															
70	jump	forward	10.12.1.0/24					pptp-in-jm							
::: Accept traffic from VPN															
71	jump	forward										VPN			
::: harski															
--- pptp-in-harski not ready															
72	jump	forward		10.12.0.0/24					pptp-in-...						
::: jm															
--- pptp-in-jm not ready															
73	jump	forward		10.12.1.0/24					pptp-in-jm						
74	log	forward													
::: Default															
75	drop	forward													

Firewall Forward

```
add action=return chain=ConnectionExceptions comment="Reset DNS requests" \
    dst-address-list=service-DNS-SERVERS dst-port=53 protocol=udp \
    src-address-list=!trusted-DNS
add chain=ConnectionExceptions
```



- Sommige accepted connections wil je kunnen weigeren of beperken

Firewall – DMZ-IN

```
/ip firewall filter
add action=add-src-to-address-list address-list=grey address-list-timeout=5m \
    chain=DMZ-IN comment="Port scan to grey list" psd=21,3s,3,1
add chain=DMZ-IN comment="From Gateway" protocol=icmp src-address=85.17.3.190
add chain=DMZ-IN comment="PASSTROUGH list" dst-address-list=\
    service-PASSTROUGH
add chain=DMZ-IN comment="DNS servers list port 53" dst-address-list=\
    service-DNS-SERVERS dst-port=53 protocol=tcp
add chain=DMZ-IN comment="DNS servers list port 53" dst-address-list=\
    service-DNS-SERVERS dst-limit=1,5,src-address dst-port=53 protocol=udp
add action=drop chain=DMZ-IN comment="DNS servers list port 53 limited" \
    dst-address-list=service-DNS-SERVERS dst-port=53 protocol=udp
add chain=DMZ-IN comment="VOIP list" dst-address-list=service-VOIP-SERVERS \
    dst-port=5004-5060 protocol=udp src-address-list=service-VOIP-CARRIERS
add chain=DMZ-IN comment="VOIP list" dst-address-list=service-VOIP-SERVERS \
    dst-port=5060 protocol=udp src-address-list=service-VOIP-USERS
add chain=DMZ-IN comment="WEB list port 80" dst-address-list=\
    service-WEB-SERVERS dst-port=80 protocol=tcp
```

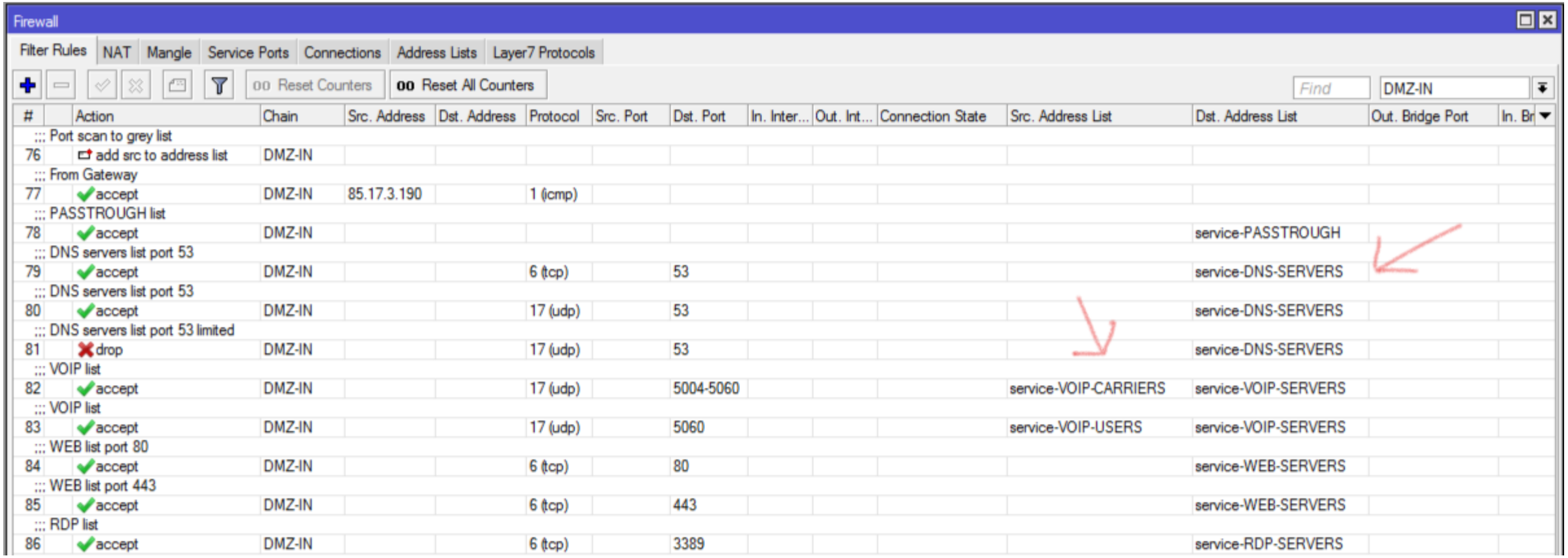
Firewall – DMZ-IN

```
add chain=DMZ-IN comment="WEB list port 443" dst-address-list=\
    service-WEB-SERVERS dst-port=443 protocol=tcp
add chain=DMZ-IN comment="RDP list" dst-address-list=service-RDP-SERVERS \
    dst-port=3389 protocol=tcp
add chain=DMZ-IN comment="SSL list port 22" dst-address-list=service-SSL \
    dst-port=22 protocol=tcp
add chain=DMZ-IN comment="MAIL list port 25" dst-address-list=\
    service-MAIL-SERVERS dst-port=25 protocol=tcp
add chain=DMZ-IN comment="MAIL list port 587" dst-address-list=\
    service-MAIL-SERVERS dst-port=587 protocol=tcp
add chain=DMZ-IN comment="MAIL list port 110" dst-address-list=\
    service-MAIL-SERVERS dst-port=110 protocol=tcp
add chain=DMZ-IN comment="MAIL list port 995" dst-address-list=\
    service-MAIL-SERVERS dst-port=995 protocol=tcp
add chain=DMZ-IN comment="MAIL list port 143" dst-address-list=\
    service-MAIL-SERVERS dst-port=143 protocol=tcp
add chain=DMZ-IN comment="MAIL list port 993" dst-address-list=\
    service-MAIL-SERVERS dst-port=993 protocol=tcp
```

Firewall – DMZ-IN

```
add chain=DMZ-IN comment="FTP list port 20" dst-address-list=\
    service-FTP-SERVERS dst-port=20 protocol=tcp
add chain=DMZ-IN comment="FTP list port 21" dst-address-list=\
    service-FTP-SERVERS dst-port=21 protocol=tcp
add chain=DMZ-IN comment="FTP list port 40000-50000" dst-address-list=\
    service-FTP-SERVERS dst-port=40000-50000 protocol=tcp
add action=drop chain=DMZ-IN comment=Default
```

Firewall – DMZ-IN



#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Br
;;; Port scan to grey list														
76	add src to address list	DMZ-IN												
;;; From Gateway														
77	accept	DMZ-IN	85.17.3.190		1 (icmp)									
;;; PASSTROUGH list														
78	accept	DMZ-IN										service-PASSTROUGH		
;;; DNS servers list port 53														
79	accept	DMZ-IN			6 (tcp)		53					service-DNS-SERVERS		
;;; DNS servers list port 53														
80	accept	DMZ-IN			17 (udp)		53					service-DNS-SERVERS		
;;; DNS servers list port 53 limited														
81	drop	DMZ-IN			17 (udp)		53					service-DNS-SERVERS		
;;; VOIP list														
82	accept	DMZ-IN			17 (udp)		5004-5060				service-VOIP-CARRIERS	service-VOIP-SERVERS		
;;; VOIP list														
83	accept	DMZ-IN			17 (udp)		5060				service-VOIP-USERS	service-VOIP-SERVERS		
;;; WEB list port 80														
84	accept	DMZ-IN			6 (tcp)		80					service-WEB-SERVERS		
;;; WEB list port 443														
85	accept	DMZ-IN			6 (tcp)		443					service-WEB-SERVERS		
;;; RDP list														
86	accept	DMZ-IN			6 (tcp)		3389					service-RDP-SERVERS		

Firewall – DMZ-IN

;;; SSL list port 22												
87	accept	DMZ-IN			6 (tcp)		22				service-SSL	
;;; MAIL list port 25												
88	accept	DMZ-IN			6 (tcp)		25				service-MAIL-SERVERS	
;;; MAIL list port 587												
89	accept	DMZ-IN			6 (tcp)		587				service-MAIL-SERVERS	
;;; MAIL list port 110												
90	accept	DMZ-IN			6 (tcp)		110				service-MAIL-SERVERS	
;;; MAIL list port 995												
91	accept	DMZ-IN			6 (tcp)		995				service-MAIL-SERVERS	
;;; MAIL list port 143												
92	accept	DMZ-IN			6 (tcp)		143				service-MAIL-SERVERS	
;;; MAIL list port 993												
93	accept	DMZ-IN			6 (tcp)		993				service-MAIL-SERVERS	
;;; FTP list port 20												
94	accept	DMZ-IN			6 (tcp)		20				service-FTP-SERVERS	
;;; FTP list port 21												
95	accept	DMZ-IN			6 (tcp)		21				service-FTP-SERVERS	
;;; FTP list port 40000-50000												
96	accept	DMZ-IN			6 (tcp)		40000-50...				service-FTP-SERVERS	
;;; Default												
97	drop	DMZ-IN										

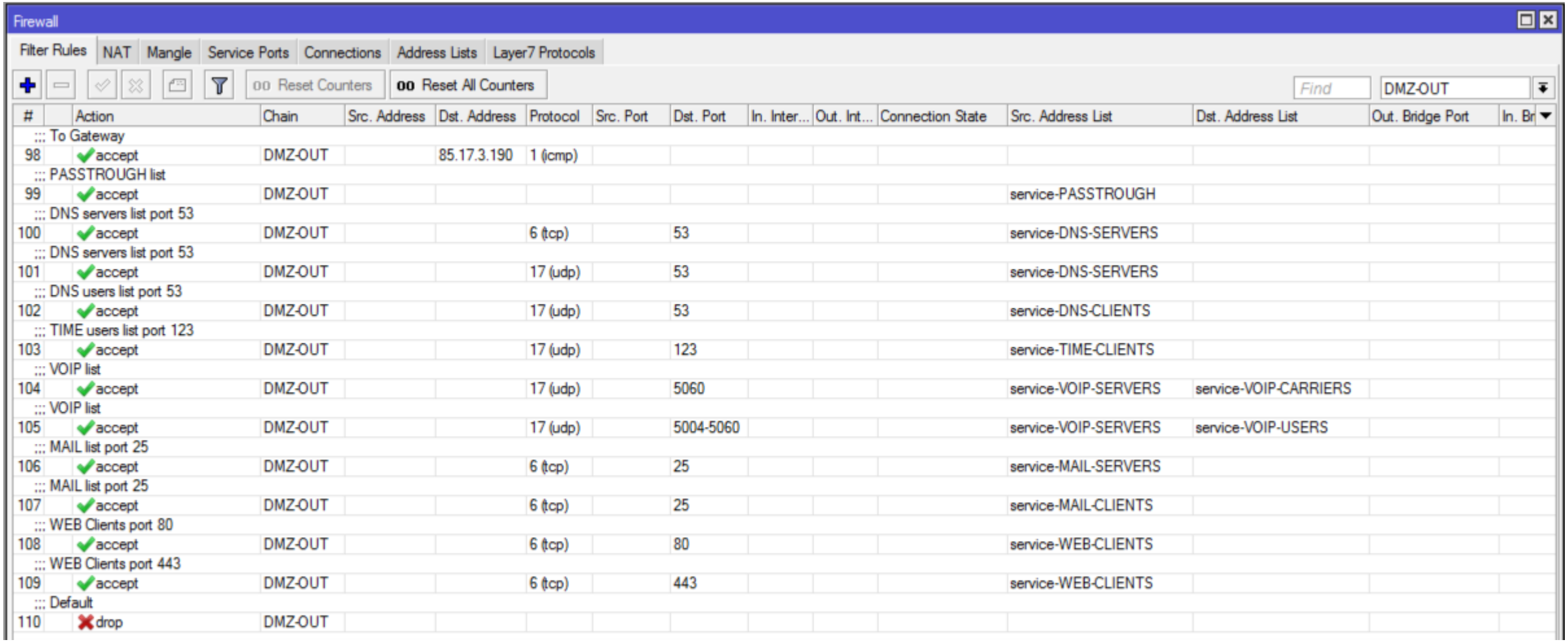
Firewall – DMZ-OUT

```
/ip firewall filter
add chain=DMZ-OUT comment="To Gateway" dst-address=85.17.3.190 protocol=icmp
add chain=DMZ-OUT comment="PASSTROUGH list" src-address-list=\
    service-PASSTROUGH
add chain=DMZ-OUT comment="DNS servers list port 53" dst-port=53 protocol=tcp \
    src-address-list=service-DNS-SERVERS
add chain=DMZ-OUT comment="DNS servers list port 53" dst-port=53 protocol=udp \
    src-address-list=service-DNS-SERVERS
add chain=DMZ-OUT comment="DNS users list port 53" dst-port=53 protocol=udp \
    src-address-list=service-DNS-CLIENTS
add chain=DMZ-OUT comment="TIME users list port 123" dst-port=123 protocol=\
    udp src-address-list=service-TIME-CLIENTS
add chain=DMZ-OUT comment="VOIP list" dst-address-list=service-VOIP-CARRIERS \
    dst-port=5060 protocol=udp src-address-list=service-VOIP-SERVERS
add chain=DMZ-OUT comment="VOIP list" dst-address-list=service-VOIP-USERS \
    dst-port=5004-5060 protocol=udp src-address-list=service-VOIP-SERVERS
add chain=DMZ-OUT comment="MAIL list port 25" dst-port=25 protocol=tcp \
    src-address-list=service-MAIL-SERVERS
```

Firewall – DMZ-OUT

```
add chain=DMZ-OUT comment="MAIL list port 25" dst-port=25 protocol=tcp \
    src-address-list=service-MAIL-CLIENTS
add chain=DMZ-OUT comment="WEB Clients port 80" dst-port=80 protocol=tcp \
    src-address-list=service-WEB-CLIENTS
add chain=DMZ-OUT comment="WEB Clients port 443" dst-port=443 protocol=tcp \
    src-address-list=service-WEB-CLIENTS
add action=drop chain=DMZ-OUT comment=Default
```

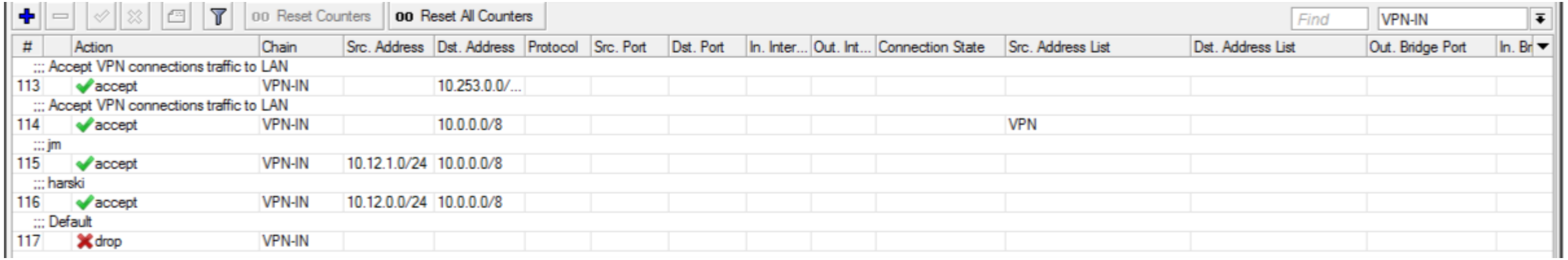
Firewall – DMZ-OUT



#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Br
;;; To Gateway														
98	accept	DMZ-OUT		85.17.3.190	1 (icmp)									
;;; PASSTROUGH list														
99	accept	DMZ-OUT									service-PASSTROUGH			
;;; DNS servers list port 53														
100	accept	DMZ-OUT			6 (tcp)		53				service-DNS-SERVERS			
;;; DNS servers list port 53														
101	accept	DMZ-OUT			17 (udp)		53				service-DNS-SERVERS			
;;; DNS users list port 53														
102	accept	DMZ-OUT			17 (udp)		53				service-DNS-CLIENTS			
;;; TIME users list port 123														
103	accept	DMZ-OUT			17 (udp)		123				service-TIME-CLIENTS			
;;; VOIP list														
104	accept	DMZ-OUT			17 (udp)		5060				service-VOIP-SERVERS	service-VOIP-CARRIERS		
;;; VOIP list														
105	accept	DMZ-OUT			17 (udp)		5004-5060				service-VOIP-SERVERS	service-VOIP-USERS		
;;; MAIL list port 25														
106	accept	DMZ-OUT			6 (tcp)		25				service-MAIL-SERVERS			
;;; MAIL list port 25														
107	accept	DMZ-OUT			6 (tcp)		25				service-MAIL-CLIENTS			
;;; WEB Clients port 80														
108	accept	DMZ-OUT			6 (tcp)		80				service-WEB-CLIENTS			
;;; WEB Clients port 443														
109	accept	DMZ-OUT			6 (tcp)		443				service-WEB-CLIENTS			
;;; Default														
110	drop	DMZ-OUT												

Firewall – VPN-IN

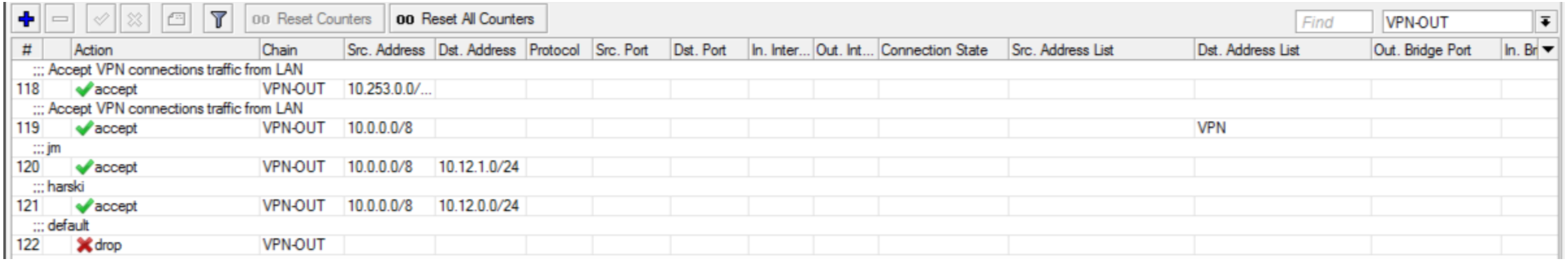
```
/ip firewall filter
add chain=VPN-IN comment="Accept VPN connections traffic to LAN" dst-address=\
    10.253.0.0/24
add chain=VPN-IN comment="Accept VPN connections traffic to LAN" dst-address=\
    10.0.0.0/8 src-address-list=VPN
add chain=VPN-IN comment=jm dst-address=10.0.0.0/8 src-address=\
    10.12.1.0/24
add chain=VPN-IN comment=harski dst-address=10.0.0.0/8 src-address=\
    10.12.0.0/24
add action=drop chain=VPN-IN comment=Default
```



#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Br
;;; Accept VPN connections traffic to LAN														
113	accept	VPN-IN		10.253.0.0/...										
;;; Accept VPN connections traffic to LAN														
114	accept	VPN-IN		10.0.0.0/8							VPN			
;;; jm														
115	accept	VPN-IN	10.12.1.0/24	10.0.0.0/8										
;;; harski														
116	accept	VPN-IN	10.12.0.0/24	10.0.0.0/8										
;;; Default														
117	drop	VPN-IN												

Firewall – VPN-OUT

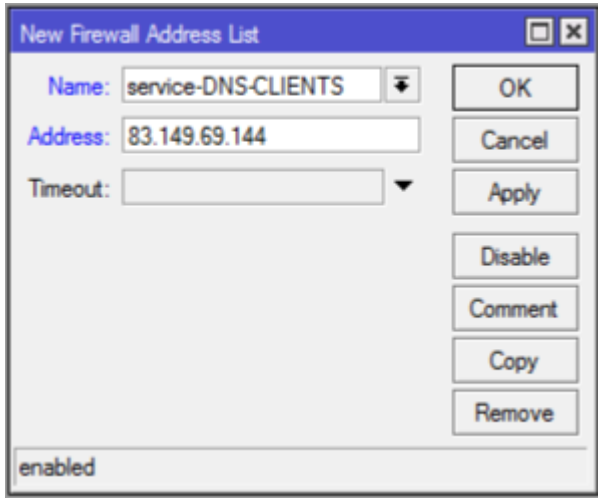
```
/ip firewall filter
add chain=VPN-OUT comment="Accept VPN connections traffic from LAN" \
    src-address=10.253.0.0/24
add chain=VPN-OUT comment="Accept VPN connections traffic from LAN" \
    dst-address-list=VPN src-address=10.0.0.0/8
add chain=VPN-OUT comment=jm dst-address=10.12.1.0/24 src-address=\
    10.0.0.0/8
add chain=VPN-OUT comment=harski dst-address=10.12.0.0/24 src-address=\
    10.0.0.0/8
add action=drop chain=VPN-OUT comment=default
```

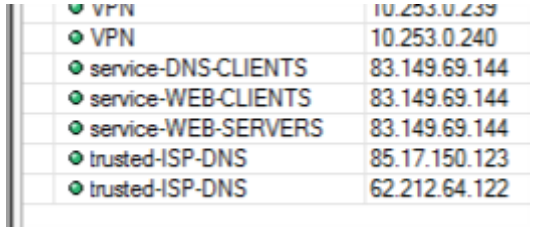


#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. Port	Dst. Port	In. Inter...	Out. Int...	Connection State	Src. Address List	Dst. Address List	Out. Bridge Port	In. Br
;;; Accept VPN connections traffic from LAN														
118	accept	VPN-OUT	10.253.0.0/...											
;;; Accept VPN connections traffic from LAN														
119	accept	VPN-OUT	10.0.0.0/8									VPN		
;;; jm														
120	accept	VPN-OUT	10.0.0.0/8	10.12.1.0/24										
;;; harski														
121	accept	VPN-OUT	10.0.0.0/8	10.12.0.0/24										
;;; default														
122	drop	VPN-OUT												

Toestaan van verkeer naar en van een server

- Op 83.149.69.144 zit een webserver
- Toevoegen aan address list ‘service-WEB-SERVERS’
- Meestal heeft een server ook een DNS-CLIENT en een WEB-CLIENT





Afsluiting

- Vragen?
- U kunt altijd mailen naar stephan@szarafinski.net voor meer info en advies.
- Bedankt voor uw aandacht!