



Basic guidelines on RouterOS
configuration and debugging

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RouterOS is the **same**
everywhere



Management Tools

RouterOS Management tools

- CLI (Command Line Interface)

<https://wiki.mikrotik.com/wiki/Manual:Console>

- WebFig,

<https://wiki.mikrotik.com/wiki/Manual:Webfig>

- TikApp,

<https://forum.mikrotik.com/viewtopic.php?t=98407>

- Winbox,

<https://wiki.mikrotik.com/wiki/Manual:Winbox>

The fastest configuration

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- MetaROUTER
- Partition
- Make Supout.rif
- Manual
- New WinBox
- Exit

Home AP Dual Quick Set

2GHz 5GHz

Network Name: MikroTik-279BE1 MikroTik-279BE0

Frequency: auto auto MHz

Band: 2GHz-B/G/N 5GHz-A/N/AC

Country: no_country_set

Use Access List (ACL)

WiFi Password: [] WPS Accept

- Guest Wireless Network -

Guest Network: []

- Wireless Clients -

MAC Address	In ACL	Last IP	Uptime	Signal Strength
[]				

Signal Strength: []

Copy To ACL Remove From ACL

- Internet -

Port: Eth1

Address Acquisition: Static Automatic PPPoE

IP Address: 172.16.1.243 Renew Release

Netmask: 255.255.255.0 (/24)

Gateway: 172.16.1.1

MAC Address: 6C:3B:6B:27:9B:DA

Firewall Router

- Local Network -

IP Address: 192.168.88.1

Netmask: 255.255.255.0 (/24)

DHCP Server

DHCP Server Range: 192.168.88.10-192.168.88.254

NAT

UPnP

- VPN -

VPN Access

VPN Address: 6f120665c726.sn.mynetname.net

- System -

Check For Updates Reset Configuration

Password: []

Confirm Password: []

OK
Cancel
Apply

QuickSet

QuickSet

- Easy to use
- Contains the most commonly used features and should be enough for basic usage
- “If you use QuickSet, then use QuickSet!”

Security

Simple Security

- Specify user password
/user set admin
password=***
- Use different username
/user set admin name=serg

The screenshot displays the Mikrotik WinBox interface. The top navigation bar includes 'Session', 'Settings', and 'Dashboard'. Below this, there are navigation icons and a 'Safe Mode' button. The left sidebar contains a menu of system components such as Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, MetaROUTER, Partition, Make Supout.nif, Manual, New WinBox, and Exit.

The main window shows the 'User List' configuration page. It has tabs for 'Users', 'Groups', 'SSH Keys', 'SSH Private Keys', and 'Active Users'. The 'Users' tab is active, showing a table with columns for Name, Group, Allowed Address, and Last Logged In. The table contains two entries: 'system default user' and 'martins' (grouped as 'full').

A 'User <martins>' configuration dialog is open, showing fields for Name (martins), Group (full), Allowed Address, and Last Logged In. It includes buttons for OK, Cancel, Apply, Disable, Comment, Copy, Remove, and Password... The status 'enabled' is shown at the bottom of the dialog.

A 'Change Password' dialog is also open, with fields for New Password and Confirm Password, and buttons for OK, Cancel, and Apply.

Simple Security

- Specify password for wireless access

```
/interface wireless security-  
profiles set default=  
authentication-types=wpa2-  
psk mode=dynamic-keys  
wpa2-pre-shared-  
key=*****
```

8.88.1 (MikroTik) - WinBox v6.38.5 on hAP ac (mipsbe)

Dashboard

Wireless Tables

Name	Mode	Authenticatio...	Unicast Ciphers	Group Ciphers	WPA Pre-Shared ...
default	dynamic keys	WPA2 PSK	aes ccm	aes ccm	*****

Security Profile <default>

General | RADIUS | EAP | Static Keys

Name: default

Mode: dynamic keys

Authentication Types: WPA PSK WPA2 PSK
 WPA EAP WPA2 EAP

Unicast Ciphers: aes ccm tkip

Group Ciphers: aes ccm tkip

WPA Pre-Shared Key:

WPA2 Pre-Shared Key: *****

Supplicant Identity: MikroTik

Group Key Update: 00:05:00

Management Protection: disabled

Management Protection Key:

default

1 item (1 selected)

Security

- Disable unused interfaces

```
/interface ethernet disable  
ether3,ether5,sfp 1
```

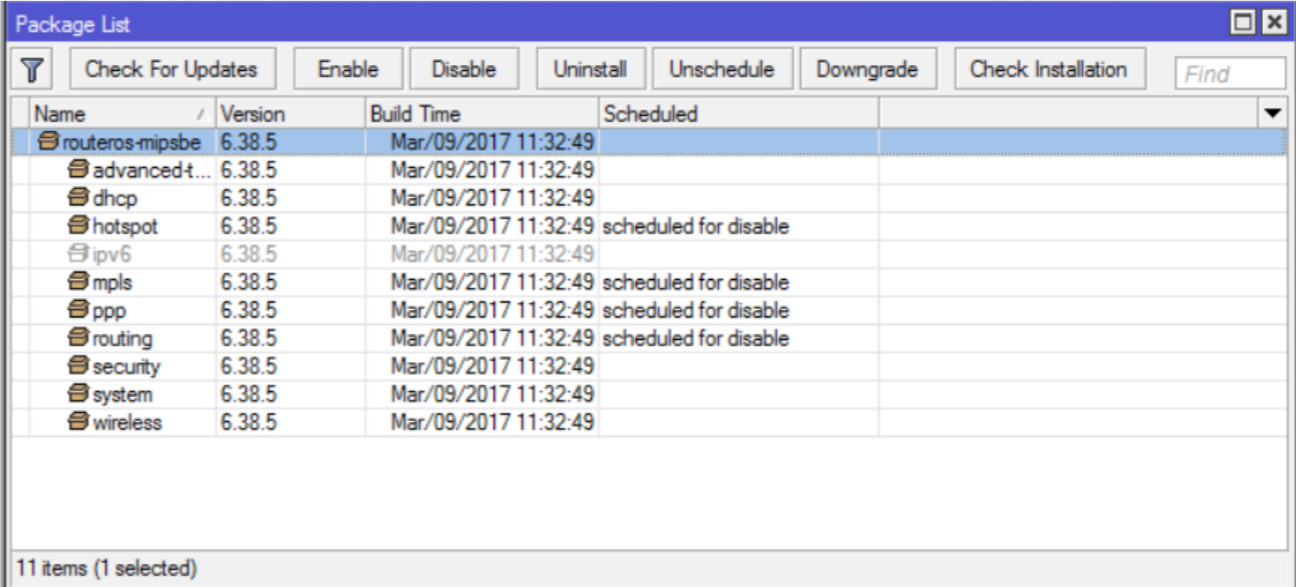
	Name	Type	Actual MTU	L2 M
::: defconf				
R	bridge	Bridge	1500	159
R	ether1	Ethernet	1500	159
RS	ether2-master	Ethernet	1500	159
XS	ether3	Ethernet	1500	159
RS	ether4	Ethernet	1500	159
XS	ether5	Ethernet	1500	159
XS	sfp1	Ethernet	1500	160
S	wlan1	Wireless (Atheros AR9...	1500	160
S	wlan2	Wireless (Atheros AR9...	1500	160

9 items

Security

- Disable unused packages (mainly IPv6)

/system package disable
hotspot, ipv6, mpls, ppp,
routing



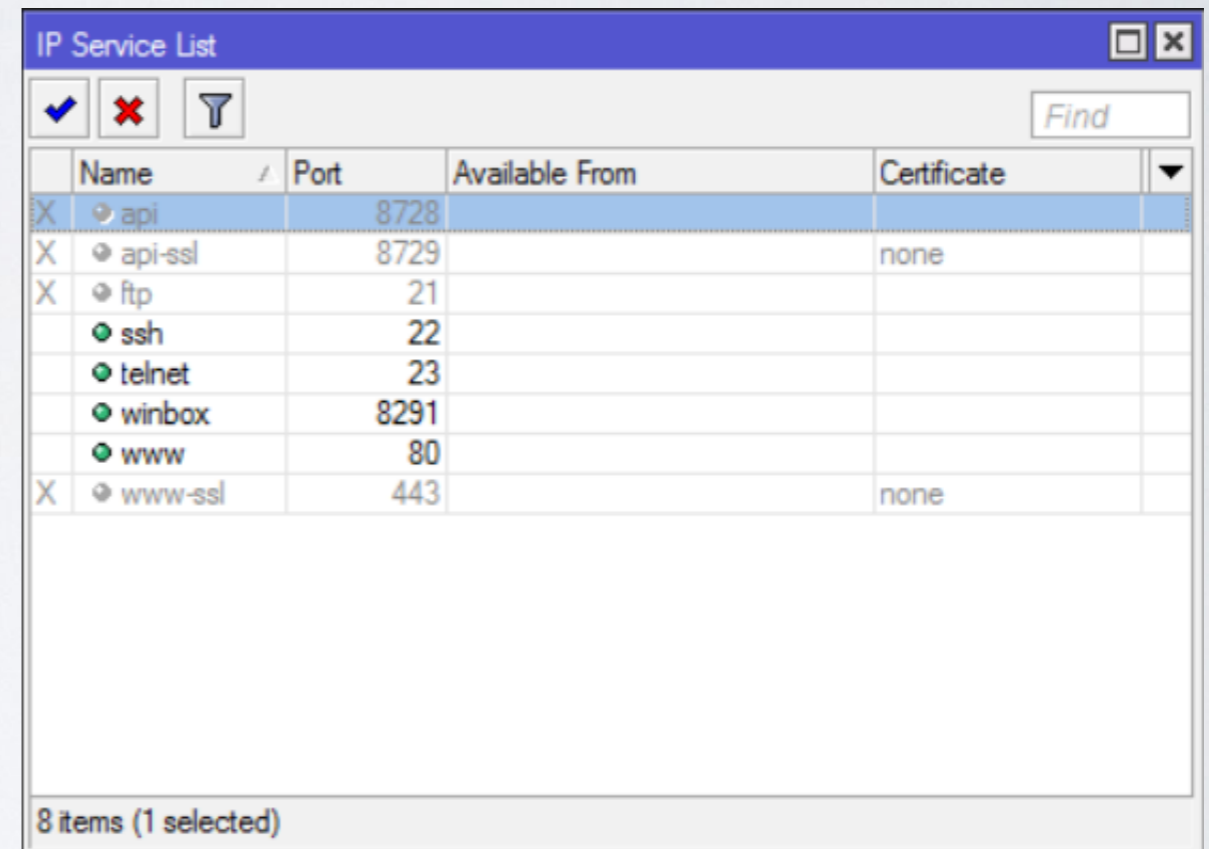
The screenshot shows the 'Package List' window in Mikrotik WinBox. It features a toolbar with buttons for 'Check For Updates', 'Enable', 'Disable', 'Uninstall', 'Unschedule', 'Downgrade', 'Check Installation', and a 'Find' search box. Below the toolbar is a table with columns for Name, Version, Build Time, and Scheduled. The 'routeros-mipsbe' package is selected. Other packages listed include advancedt..., dhcp, hotspot, ipv6, mpls, ppp, routing, security, system, and wireless. The 'Scheduled' column for hotspot, mpls, ppp, and routing shows 'scheduled for disable'. The status bar at the bottom indicates '11 items (1 selected)'.

Name	Version	Build Time	Scheduled
routeros-mipsbe	6.38.5	Mar/09/2017 11:32:49	
advancedt...	6.38.5	Mar/09/2017 11:32:49	
dhcp	6.38.5	Mar/09/2017 11:32:49	
hotspot	6.38.5	Mar/09/2017 11:32:49	scheduled for disable
ipv6	6.38.5	Mar/09/2017 11:32:49	
mpls	6.38.5	Mar/09/2017 11:32:49	scheduled for disable
ppp	6.38.5	Mar/09/2017 11:32:49	scheduled for disable
routing	6.38.5	Mar/09/2017 11:32:49	scheduled for disable
security	6.38.5	Mar/09/2017 11:32:49	
system	6.38.5	Mar/09/2017 11:32:49	
wireless	6.38.5	Mar/09/2017 11:32:49	

Security

- Disable IP/Services

/ip service disable api,api-ssl,ftp,www-ssl



The screenshot shows a window titled "IP Service List" with a table of services. The table has columns for Name, Port, Available From, and Certificate. The "api" service is selected, indicated by an 'X' in the first column and a blue highlight. Other services listed include api-ssl, ftp, ssh, telnet, winbox, www, and www-ssl.

	Name	Port	Available From	Certificate
X	api	8728		
X	api-ssl	8729		none
X	ftp	21		
	ssh	22		
	telnet	23		
	winbox	8291		
	www	80		
X	www-ssl	443		none

8 items (1 selected)

Security

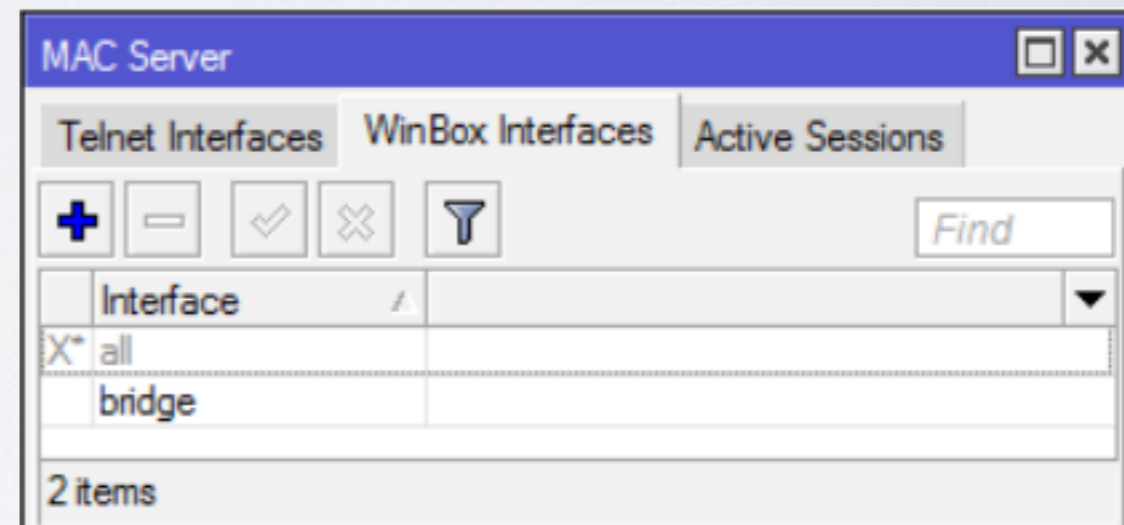
- Adjust MAC access

```
/tool mac-server set [ find  
default=yes ] disabled=yes
```

```
/tool mac-server add  
interface=bridge
```

```
/tool mac-server mac-winbox set  
[ find default=yes ] disabled=yes
```

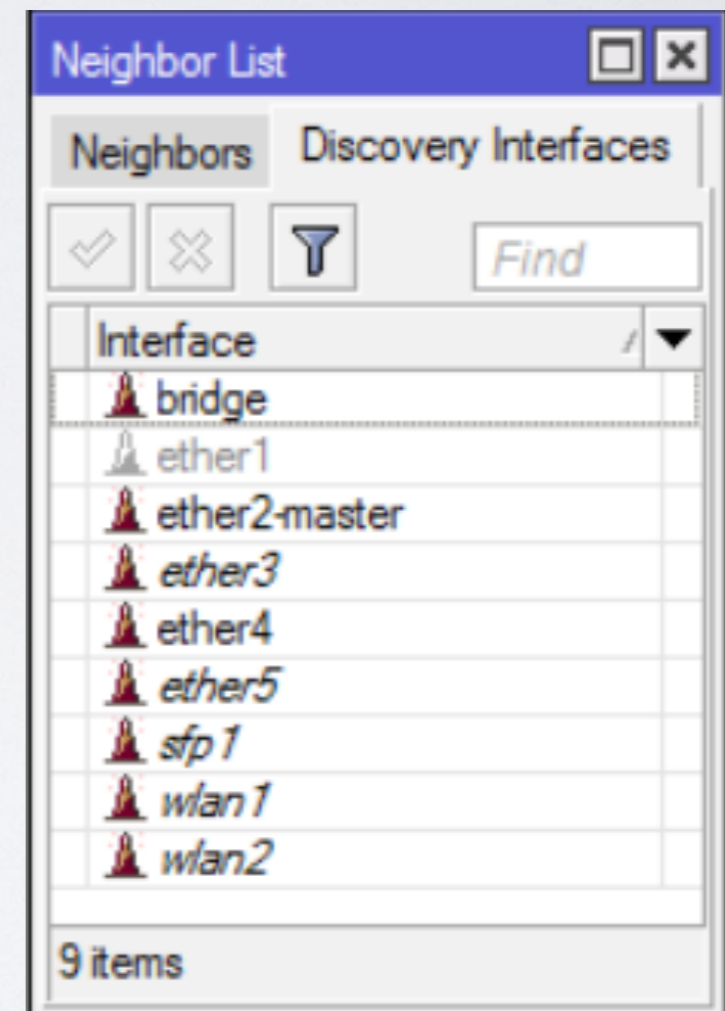
```
/tool mac-server mac-winbox  
add interface=bridge
```



Security

- Hide device in Neighbor Discovery

```
/ip neighbor discovery set  
ether1 discover=no
```



Security

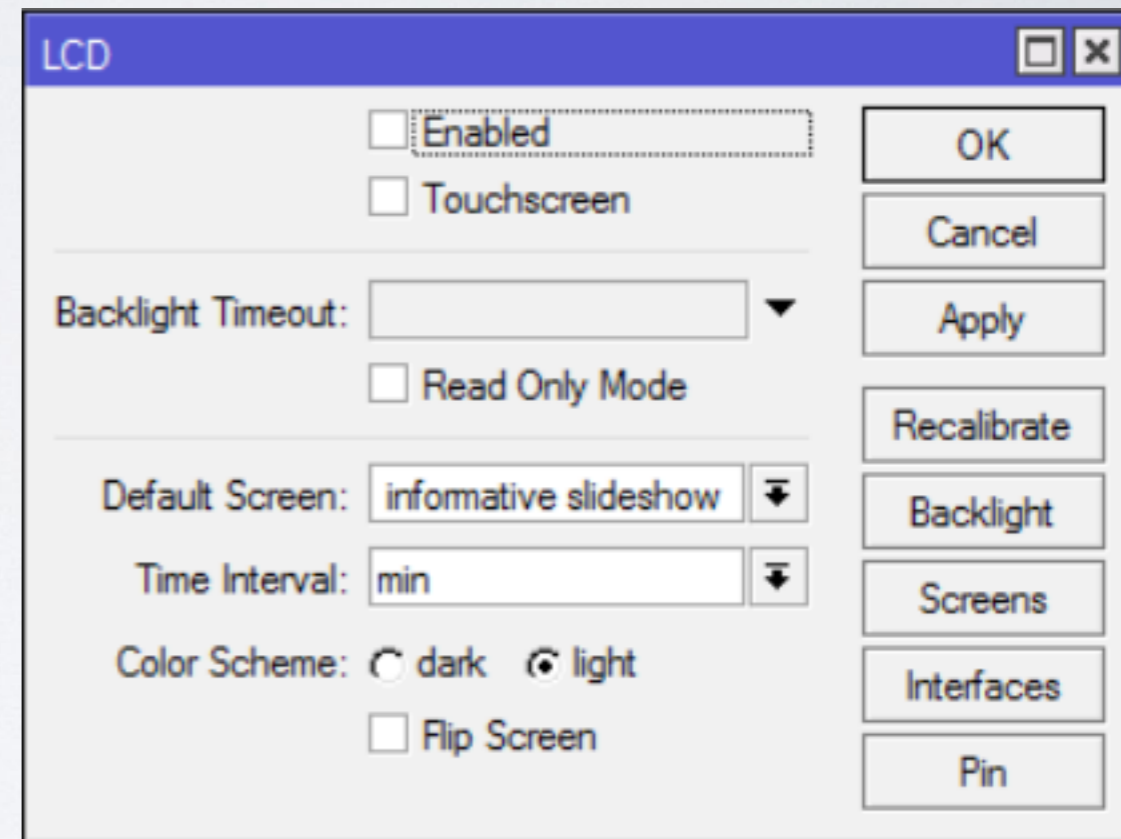
- Disable serial port if not used (and if included)

`/system console disable [find where port=serial0]`

- Disable LCD

`/lcd set enabled=no`

`/lcd set touch-screen=disabled`



Security

- Place router in secure location
- Protect reset button,

/system routerboard settings set protected-
routerboot=enabled reformat-hold-button=30s

<https://wiki.mikrotik.com/wiki/>

[Manual:RouterBOARD_settings#Protected_bootloader](#)

Firewall

Firewall

- Two most popular approaches
 - Drop untrusted and allow remaining (default accept)
 - Allow trusted and drop remaining (default drop)

```
/ip firewall filter add chain=forward action=accept src-address=192.168.88.2 out-interface=ether1
```

```
/ip firewall filter add chain=forward action=drop src-address=192.168.88.0/24 out-interface=ether1
```

Firewall

- Secure input (traffic to a router)

```
/ip firewall filter
```

```
add chain=input action=accept protocol=icmp
```

```
add chain=input action=accept connection-  
state=established,related
```

```
add chain=input action=drop in-interface=ether1
```

Firewall

The screenshot shows the Mikrotik WinBox Firewall Filter Rules configuration window. The window title is "Firewall". The "Filter Rules" tab is selected, with other tabs including NAT, Mangle, Raw, Service Ports, Connections, Address Lists, and Layer7 Protocols. The interface includes several control buttons: a plus sign for adding rules, a minus sign for removing rules, a checkmark for enabling, an 'X' for disabling, a document icon for editing, and a funnel icon for filtering. There are also buttons for "Reset Counters" and "Reset All Counters". A search bar labeled "Find" is set to "input".

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets
::: defconf: accept ICMP											
1	✓ acc...	input			1 (ic...					0 B	0
::: defconf: accept established,related											
2	✓ acc...	input								159.7 KB	1 693
::: defconf: drop all from WAN											
3	✗ drop	input						ether1		81.8 KB	1 090

3 items out of 8

Firewall

- Secure forward (customers traffic through a router)

```
/ip firewall filter
```

```
add chain=forward action=accept connection-  
state=established,related
```

```
add chain=forward action=drop connection-state=invalid
```

```
add chain=forward action=drop connection-state=new
```

```
connection-nat-state=!dstnat in-interface=ether1
```

Firewall

The screenshot shows the Mikrotik WinBox Firewall Filter Rules configuration window. The window title is "Firewall". The "Filter Rules" tab is selected, with other tabs including "NAT", "Mangle", "Raw", "Service Ports", "Connections", "Address Lists", and "Layer7 Protocols". The interface includes a toolbar with icons for adding, deleting, enabling, disabling, and refreshing rules, as well as buttons for "Reset Counters" and "Reset All Counters". A search bar labeled "Find" contains the text "forward". Below the toolbar is a table of filter rules. The table has columns for "#", "Action", "Chain", "Src. Address", "Dst. Address", "Proto...", "Src. Port", "Dst. Port", "In. Inter...", "Out. Int...", "Bytes", and "Packets". Three rules are visible, with the first three rows showing the rule details and the last two rows showing the statistics for each rule. The status bar at the bottom indicates "3 items out of 6".

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets
::: defconf: accept established,related											
3	✓ acc...	forward								157.3 KB	575
::: defconf: drop invalid											
4	✗ drop	forward								40 B	1
::: defconf: drop all from WAN not DSTNATed											
5	✗ drop	forward						ether1		0 B	0

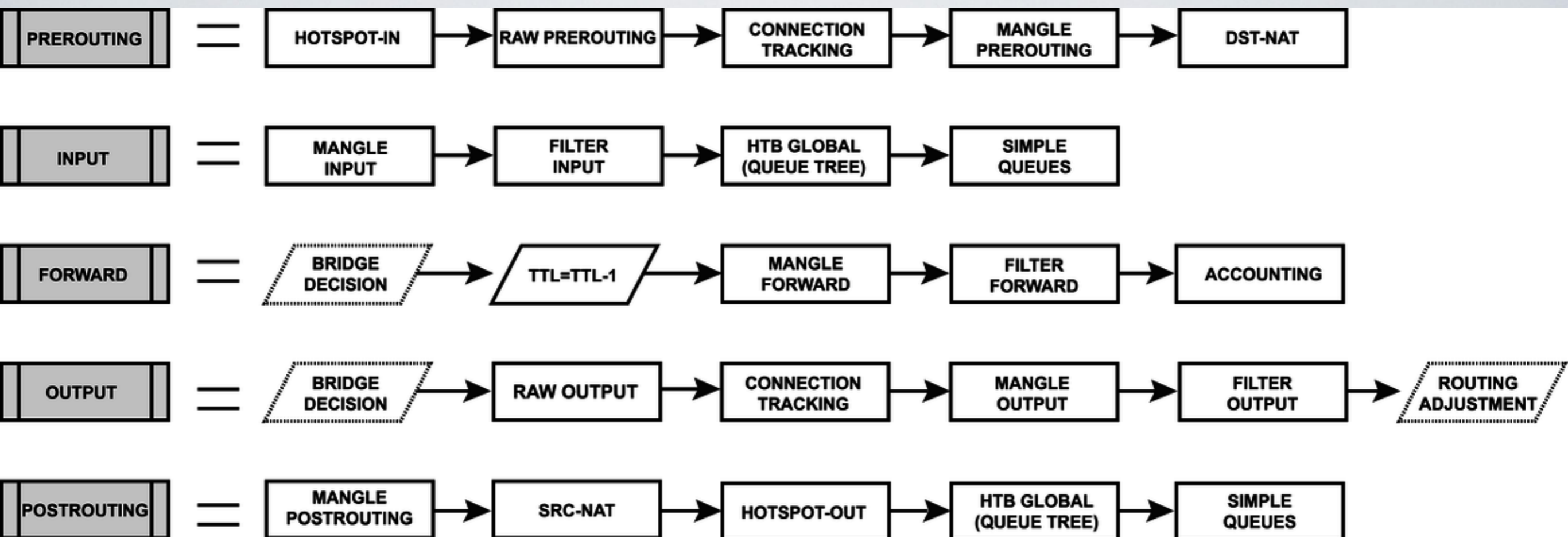
3 items out of 6

Firewall

- NAT to outside (if you can, use src-nat instead of masquerade)

```
/ip firewall nat add chain=srcnat out-  
interface=ether1 action=masquerade
```

- [https://wiki.mikrotik.com/wiki/Manual:IP/Firewall/
NAT#Masquerade](https://wiki.mikrotik.com/wiki/Manual:IP/Firewall/NAT#Masquerade)



Firewall

https://wiki.mikrotik.com/wiki/Manual:Packet_Flow_v6

Firewall

- NAT to LAN

```
/ip firewall nat add chain=dstnat in-interface=ether1  
protocol=tcp dst-port=22 action=dst-nat dst-  
address=172.16.1.243 to-address=192.168.88.23
```

- Note: In order to make port forwarding work you have to:
configure dst-nat
configure src-nat
- Accept traffic in forward chain (example in previous slides)

Firewall

Firewall

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

+ - ✓ ✕ [Filter Icon] 00 Reset Counters 00 Reset All Counters Find all

#	Action	Chain	Dst. Address	Proto...	Dst. Port	In. Inter...	Out. Int...	To Addresses	Bytes	Packets
::: defconf: masquerade										
0	mas...	srcnat					ether1		46.1 KB	279
1	dst...	dstnat	172.16.1.243	6 (tcp)	22	ether1		192.168.88.23	0 B	0

2 items

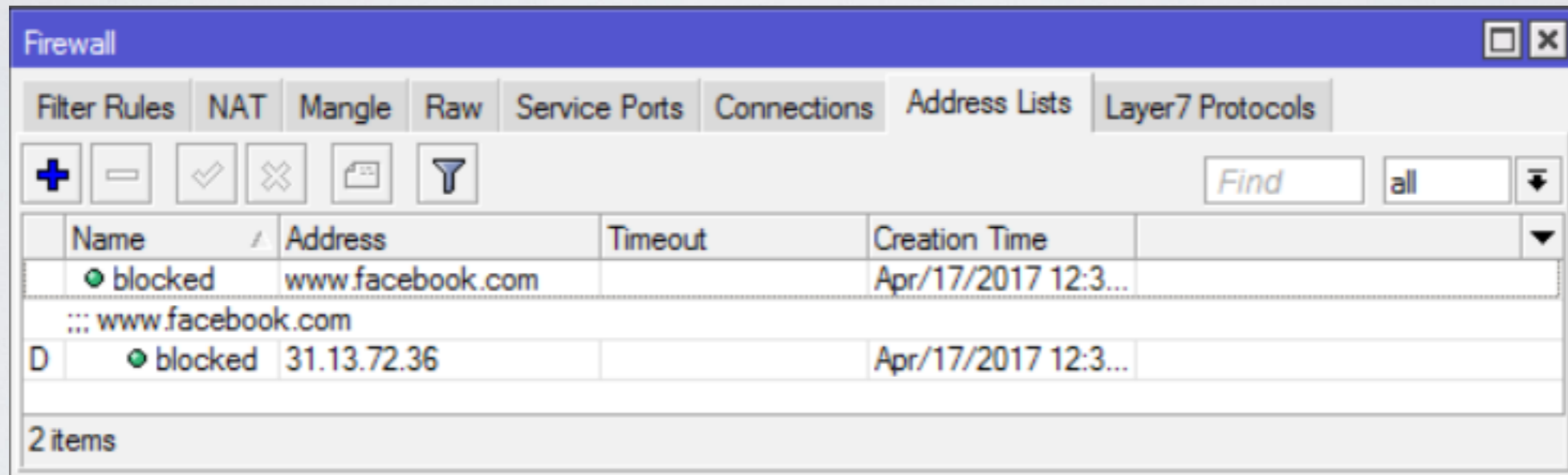
Firewall

- Block specific traffic

```
/ip firewall address-list add list=blocked  
address=www.facebook.com
```

```
/ip firewall filter add chain=forward action=drop  
dst-address-list=blocked out-interface=ether1
```

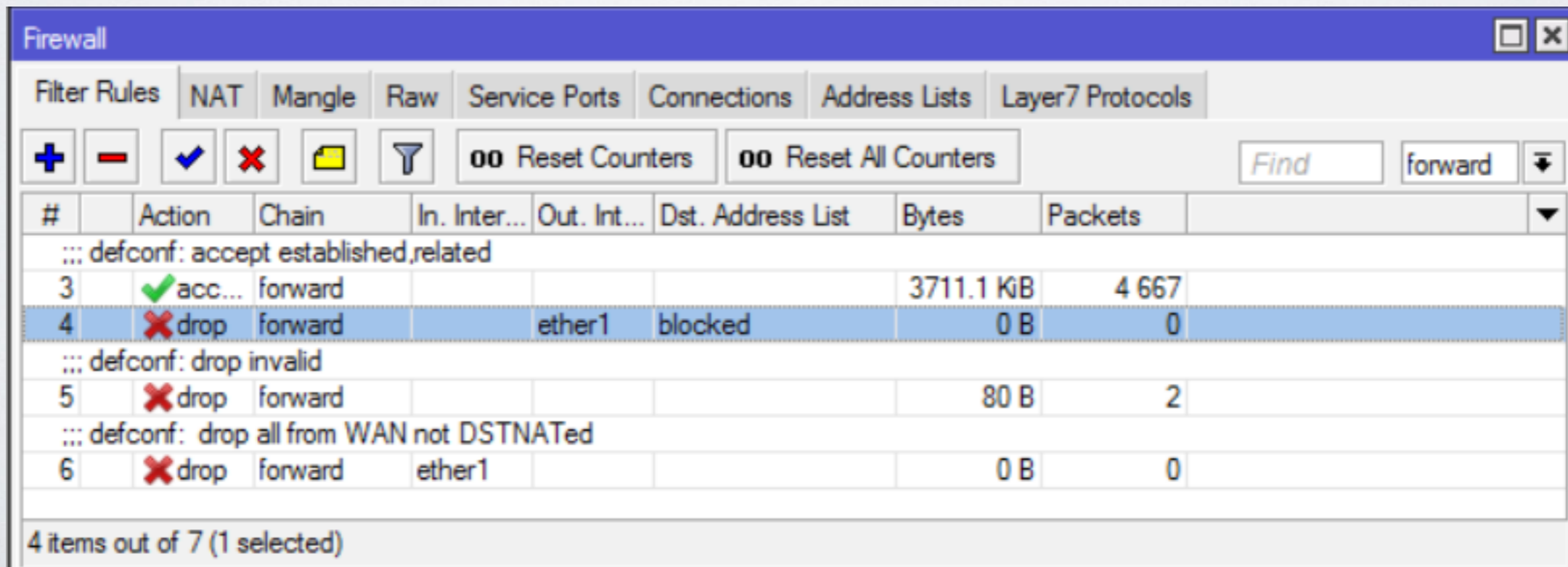
Firewall



The screenshot shows the Mikrotik WinBox Firewall configuration window, specifically the 'Address Lists' tab. The window title is 'Firewall'. The tabs at the top are 'Filter Rules', 'NAT', 'Mangle', 'Raw', 'Service Ports', 'Connections', 'Address Lists', and 'Layer7 Protocols'. Below the tabs is a toolbar with icons for adding (+), removing (-), enabling (checkmark), disabling (X), and filtering (funnel). There is also a 'Find' search box with the text 'all' and a dropdown arrow. The main table displays two entries:

Name	Address	Timeout	Creation Time
• blocked	www.facebook.com		Apr/17/2017 12:3...
::: www.facebook.com			
D • blocked	31.13.72.36		Apr/17/2017 12:3...

At the bottom of the window, it says '2 items'.



The screenshot shows the Mikrotik WinBox Firewall configuration window, specifically the 'Filter Rules' tab. The window title is 'Firewall'. The tabs at the top are 'Filter Rules', 'NAT', 'Mangle', 'Raw', 'Service Ports', 'Connections', 'Address Lists', and 'Layer7 Protocols'. Below the tabs is a toolbar with icons for adding (+), removing (-), enabling (checkmark), disabling (X), and filtering (funnel). There are also buttons for 'Reset Counters' and 'Reset All Counters'. There is a 'Find' search box with the text 'forward' and a dropdown arrow. The main table displays several entries:

#	Action	Chain	In. Inter...	Out. Int...	Dst. Address List	Bytes	Packets
::: defconf: accept established,related							
3	✓ acc...	forward				3711.1 KB	4 667
4	✗ drop	forward		ether1	blocked	0 B	0
::: defconf: drop invalid							
5	✗ drop	forward				80 B	2
::: defconf: drop all from WAN not DSTNATED							
6	✗ drop	forward	ether1			0 B	0

At the bottom of the window, it says '4 items out of 7 (1 selected)'.

Firewall

- Protect device against attacks if you allow particular access

```
/ip firewall filter
```

```
add chain=input protocol=tcp dst-port=23 src-address-list=ssh_blacklist action=drop
```

```
add chain=input protocol=tcp dst-port=23 connection-state=new src-address-list=ssh_stage2  
action=add-src-to-address-list address-list=ssh_blacklist address-list-timeout=10d
```

```
add chain=input protocol=tcp dst-port=23 connection-state=new src-address-list=ssh_stage1  
action=add-src-to-address-list address-list=ssh_stage2 address-list-timeout=1m
```

```
add chain=input protocol=tcp dst-port=23 connection-state=new action=add-src-to-address-  
list address-list=ssh_stage1 address-list-timeout=1m
```

Firewall

The screenshot shows the Mikrotik WinBox Firewall Filter Rules configuration window. The window title is "Firewall". The "Filter Rules" tab is selected, with other tabs including NAT, Mangle, Raw, Service Ports, Connections, Address Lists, and Layer7 Protocols. Below the tabs are several icons for adding, deleting, and editing rules, along with buttons for "Reset Counters" and "Reset All Counters". A search bar contains the text "input".

#	Action	Chain	Proto...	Dst. Port	In. Inter...	Connection State	Src. Address List	Address List	Timeout	Bytes	Packets
::: defconf: accept ICMP											
0	✓ acc...	input	1 (ic...							616 B	11 0
::: defconf: accept established,related											
1	✓ acc...	input				established related				573.1 KB	6 724 2
6	✗ drop	input	6 (tcp)	23			ssh_blacklist			180 B	3 0
7	➡ add...	input	6 (tcp)	23		new	ssh_stage2	ssh_blacklist	10d 00:00:00	60 B	1 0
8	➡ add...	input	6 (tcp)	23		new	ssh_stage1	ssh_stage2	00:01:00	120 B	2 0
9	➡ add...	input	6 (tcp)	23		new		ssh_stage1	00:01:00	180 B	3 0
::: defconf: drop all from WAN											
10	✗ drop	input			ether1					68.7 KB	867 2

7 items out of 11

Bandwidth Control

FastTrack

- Remember this rule?

```
/ip firewall filter
```

```
add chain=forward action=accept connection-  
state=established,related
```

- Add FastTrack rule before previous one

```
/ip firewall filter
```

```
add chain=forward action=fasttrack-connection  
connection-state=established,related
```

FastTrack

Firewall

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

+ - ✓ ✗ 📁 🏠 00 Reset Counters 00 Reset All Counters Find forward

#	Action	Chain	Proto...	Dst. Port	In. Inter...	Connection State	Src. Address List	Address List	Timeout	Bytes	Packets
::: special dummy rule to show fasttrack counters											
0	D	pas...	forward							1570 B	3
::: defconf: accept established,related											
3	▶	fastt...	forward			established related				675 B	6
::: defconf: accept established,related											
4	✓	acc...	forward			established related				675 B	6
::: defconf: drop invalid											
5	✗	drop	forward			invalid				0 B	0
::: defconf: drop all from WAN not DSTNATed											
6	✗	drop	forward		ether1	new				0 B	0

5 items out of 8 (1 selected)

Queues

- Add queues to limit traffic for specific resources

/queue simple add name=private

target=192.168.88.243 max-limit=5M/5M

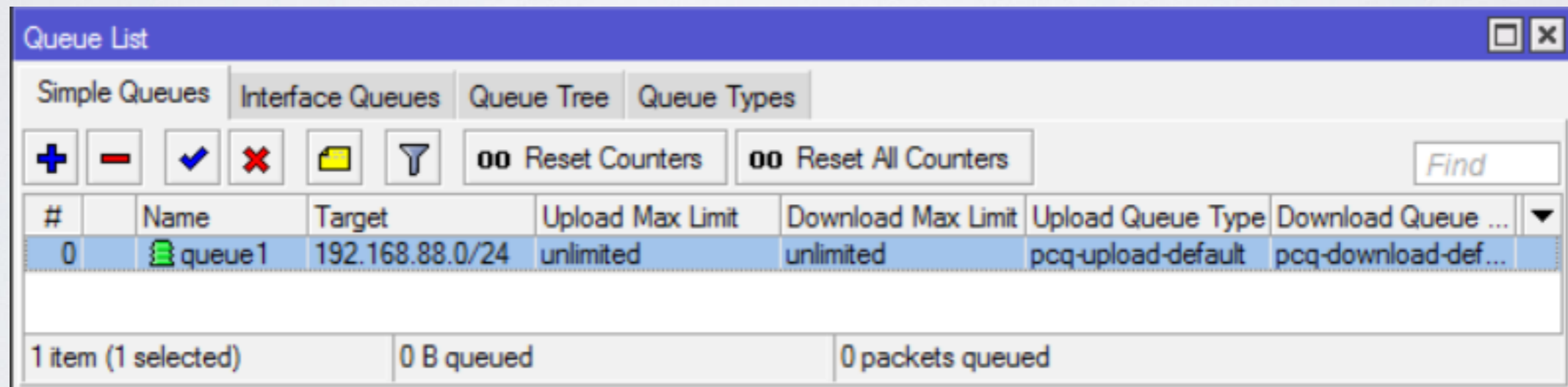
#	Name	Target	Upload Max Limit	Download Max Limit
0	queue1	192.168.88.243	5M	5M

1 item 0 B queued 0 packets queued

Queues

- Add queues to limit traffic equally (PCQ)

```
/queue simple add target-addresses=192.168.88.0/24 queue=pcq-upload-default/  
pcq-download-default
```



The screenshot shows the Mikrotik Queue List window. It has a blue title bar and a menu bar with 'Simple Queues', 'Interface Queues', 'Queue Tree', and 'Queue Types'. Below the menu bar is a toolbar with icons for adding (+), deleting (-), checking (✓), unchecking (✗), folder, filter, and buttons for 'Reset Counters' and 'Reset All Counters'. A 'Find' search box is on the right. The main area is a table with columns: '#', 'Name', 'Target', 'Upload Max Limit', 'Download Max Limit', 'Upload Queue Type', and 'Download Queue ...'. One queue is listed: '# 0', 'Name queue1', 'Target 192.168.88.0/24', 'Upload Max Limit unlimited', 'Download Max Limit unlimited', 'Upload Queue Type pcq-upload-default', and 'Download Queue ... pcq-download-def...'. At the bottom, a status bar shows '1 item (1 selected)', '0 B queued', and '0 packets queued'.

#	Name	Target	Upload Max Limit	Download Max Limit	Upload Queue Type	Download Queue ...
0	queue1	192.168.88.0/24	unlimited	unlimited	pcq-upload-default	pcq-download-def...

- Few advices about queues

<https://wiki.mikrotik.com/wiki/>

[Tips_and_Tricks_for_Beginners_and_Experienced_Users_of_RouterOS#Queues](https://wiki.mikrotik.com/wiki/Tips_and_Tricks_for_Beginners_and_Experienced_Users_of_RouterOS#Queues)

Debugging tools

Logs

- Use logging for firewall

```
/ip firewall filter set [find where src-address-list=ssh_blacklist]  
log=yes log-prefix=BLACKLISTED:
```

- Use logging for debug topics

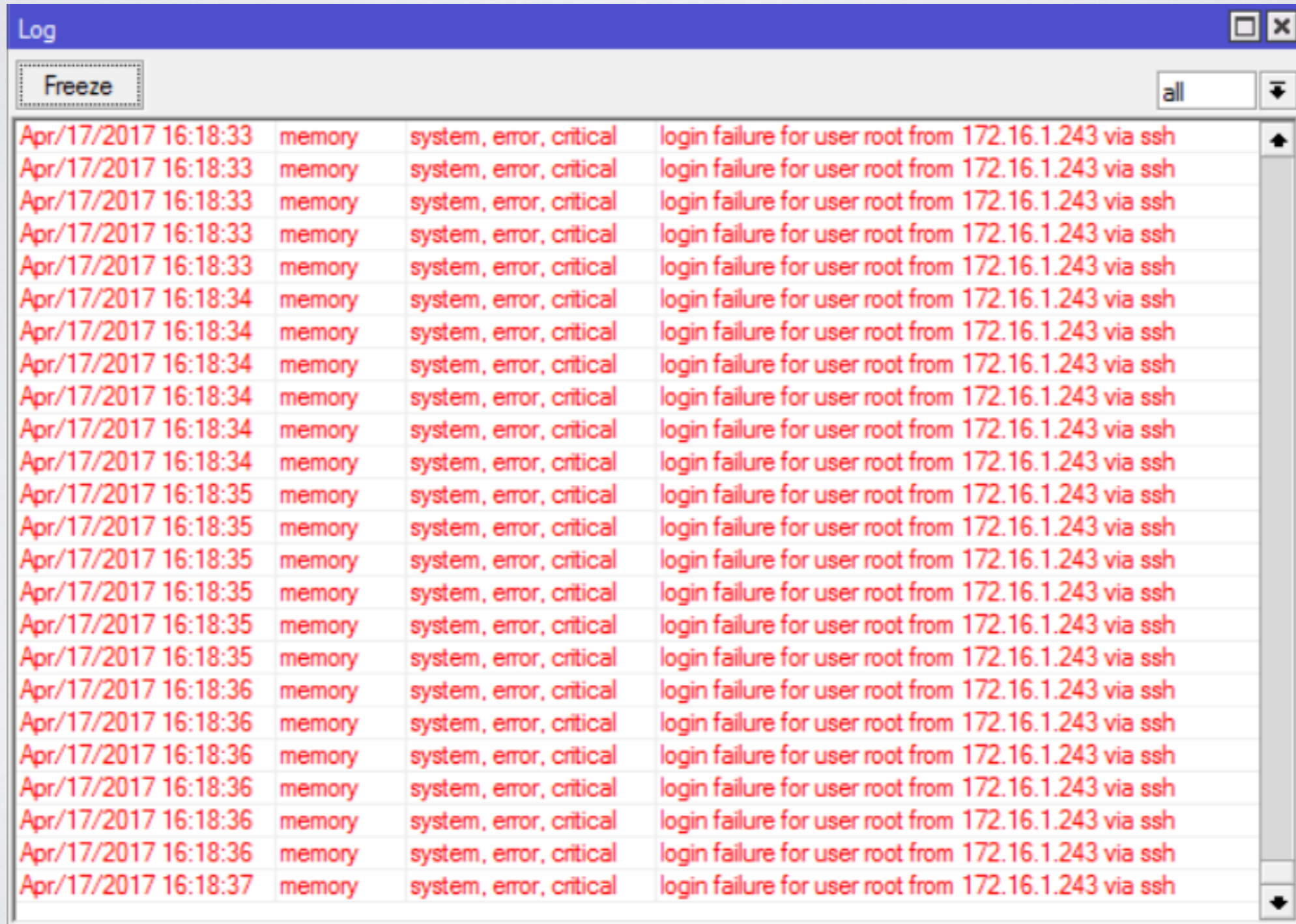
```
/system logging add topics=l2pt,debug action=memory
```

- Logging to disk or remote server

```
/system logging action set disk disk-file-name=l2tp_logs disk-file-  
count=5 disk-lines-per-file=1000
```

```
/system logging action set remote remote=192.168.88.3
```

Logs



The screenshot shows a Windows Log viewer window titled "Log". The window has a blue title bar and a search bar containing the word "Freeze". A dropdown menu is set to "all". The log entries are displayed in a table with a red font, indicating error messages. The entries are as follows:

Time	Source	Category	Message
Apr/17/2017 16:18:33	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:33	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:33	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:33	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:33	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:34	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:34	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:34	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:34	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:34	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:34	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:35	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:35	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:35	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:35	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:35	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:35	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:36	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh
Apr/17/2017 16:18:37	memory	system, error, critical	login failure for user root from 172.16.1.243 via ssh

Debugging Tools

- Torch
- Analyse processed traffic
- https://wiki.mikrotik.com/wiki/Manual:Troubleshooting_tools#Torch
[28.2Ftool_torch.29](#)

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Debugging Tools

Torch [Window Controls]

- Basic

Interface: ▾

Entry Timeout: s

- Collect

Src. Address Src. Address6
 Dst. Address Dst. Address6
 MAC Protocol Port
 Protocol VLAN Id
 DSCP

- Filters

Src. Address:

Dst. Address:

Src. Address6:

Dst. Address6:

MAC Protocol: ▾

Protocol: ▾

Port: ▾

VLAN Id: ▾

DSCP: ▾

Start
Stop
Close
New Window

Et...	Prot...	Src.	Dst.	VLAN Id	DSCP	Tx Rate	Rx Rate	Tx Pack...	Rx Pack...	▼
800 (ip)	6 (tcp)	172.16.1.243:55392	172.16.1.1:8291 (winbox)			156.3 k...	4.9 kbps	14	7	
800 (ip)	17 (...)	172.16.1.251:20148	85.234.190.33:17943			34.3 kbps	2.0 Mbps	68	178	
800 (ip)	17 (...)	172.16.1.251:137 (netbios...)	172.16.1.255:137 (netbios...)			0 bps	0 bps	0	0	
800 (ip)	17 (...)	172.16.1.251:20148	78.84.230.93:59480			0 bps	11.8 kbps	0	1	
800 (ip)	17 (...)	255.255.255.255:5246	172.16.1.1:57768			0 bps	0 bps	0	0	
800 (ip)	17 (...)	255.255.255.255:5678 (di...)	172.16.1.1:55572			0 bps	0 bps	0	0	
800 (ip)	17 (...)	172.16.1.251:49541	239.255.255.250:1900			0 bps	0 bps	0	0	
800 (ip)	17 (...)	172.16.1.251:49541	172.16.1.1:1900			0 bps	0 bps	0	0	

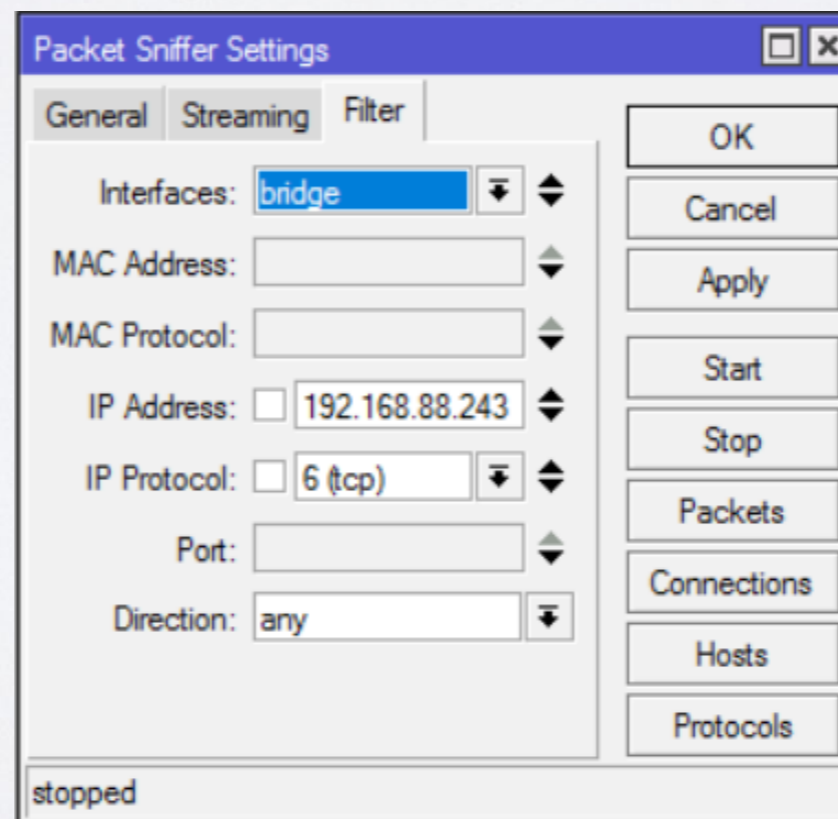
8 items Total Tx: 190.6 kbps Total Rx: 2.1 Mbps Total Tx Packet: 82 Total Rx Packet: 186

Debugging Tools

- Sniffer
- Analyse processed packets

<https://wiki.mikrotik.com/wiki/>

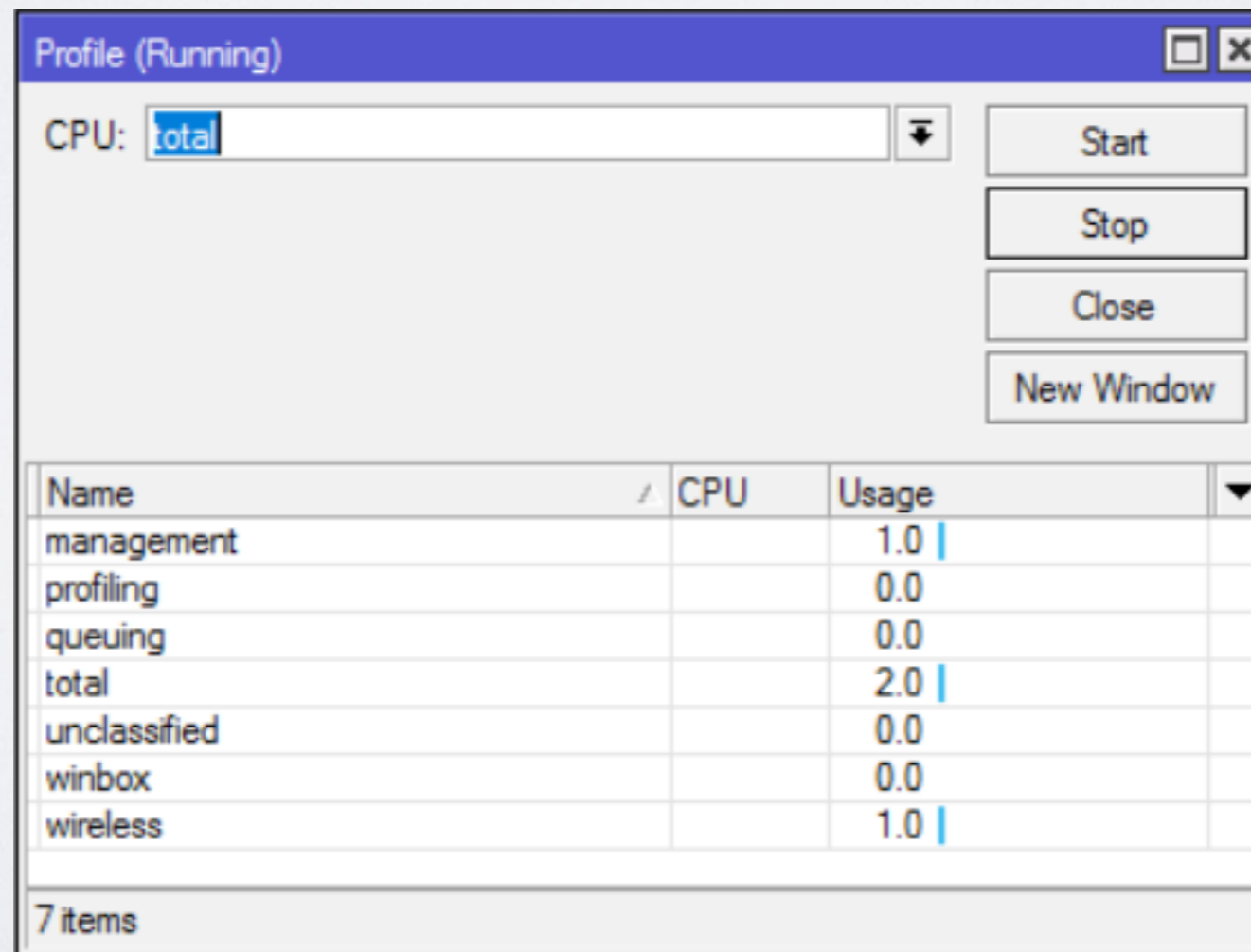
[Manual:Troubleshooting_tools#Packet_Sniffer_.28.2Ftool_sniffer.29](#)



Debugging Tools

- Profiler
- Find out current CPU usage

<https://wiki.mikrotik.com/wiki/Manual:Tools/Profiler>



The screenshot shows the 'Profile (Running)' window of the Mikrotik Profiler tool. At the top, there is a dropdown menu for 'CPU:' set to 'total'. To the right of this menu are four buttons: 'Start', 'Stop', 'Close', and 'New Window'. Below these controls is a table with the following data:

Name	CPU	Usage
management		1.0
profiling		0.0
queuing		0.0
total		2.0
unclassified		0.0
winbox		0.0
wireless		1.0

At the bottom left of the window, it indicates '7 items'.

Debugging Tools

- Graphing
- Find out information about Interfaces/Queues/
Resources per interval:
[https://wiki.mikrotik.com/wiki/Manual:Tools/
Graphing](https://wiki.mikrotik.com/wiki/Manual:Tools/Graphing)

Debugging Tools

- The Dude
- Powerful network monitor tool:
https://wiki.mikrotik.com/wiki/Manual:The_Dude

Keep everything up-to-date

Upgrade Device

- Current
Latest full release (tested on many different scenarios for a long time) with all fully implemented features
- Bugfix
Latest full release (tested on many different scenarios for a long time and admitted as trustworthy) with all safe fixes

Upgrade Device

Check For Updates

Channel:

Installed Version:

Latest Version:

OK

Download

Download&Install

What's new in 6.38.5 (2017-Mar-09 11:32):

- !) www - fixed http server vulnerability;

What's new in 6.38.4 (2017-Mar-08 09:26):

- *) chr - fixed problem when transmit speed was reduced by interface queues;
- *) dhcpv6-server - require "address-pool" to be specified;
- *) export - do not show "read-only" IRQ entries;
- *) filesystem - implemented procedures to verify and restore internal file structure integrity upon upgrading;
- *) firewall - do not allow to set "time" parameter to 0s for "limit" option;
- *) hotspot - fixed redirect to URL where escape characters are used (requires newly generated HTML files);
- *) hotspot - show Host table commentaries also in Active tab and vice versa;
- *) ike1 - fixed "auth" Radius login;
- *) ike2 - also kill IKEv2 connections on proposal change;
- *) ike2 - always limit empty remote selector;
- *) ike2 - fixed proposal change crash;
- *) ike2 - fixed responder subsequent new child creation when PFS is used;
- *) ike2 - fixed responder TS updating on wild match;
- *) ipsec - deducted policy SA src/dst address from src/dst address;
- *) ipsec - do not require "sa-dst-address" if "action=none" or "action=discard";
- *) ipsec - fixed SA address check in policy lookup;
- *) ipsec - hide SA address for transport policies;

New version is available

When software stops working?

Troubleshoot issue

- Backup RouterBOOT
 - 1) Power device off, press and hold reset button
 - 2) Power device on and after 1-2 seconds release button
- Netinstall
 - 1) Test Netinstall
<https://wiki.mikrotik.com/wiki/Manual:Netinstall>
 - 2) Try to re-install any other router
- Reset device
- <https://wiki.mikrotik.com/wiki/Manual:Reset>

Troubleshoot issue

- Serial port
 - 1) Shows all available information (also booting)
 - 2) Will work if problem is related to Layer2/Layer3 connectivity and/or interfaces themselves
- Exchange device
- Choose more powerful device (or multiple devices)

I can not figure it out by myself

Configuration issue

- Consultants/Distributors:

<https://mikrotik.com/consultants>

<https://mikrotik.com/buy>

- Ask for help in forum:

<https://forum.mikrotik.com/>

- Look for an answer in manual

https://wiki.mikrotik.com/wiki/Main_Page

Hardware Troubleshooting

Hardware Troubleshooting

- Replace involved accessories
 - Power adapter
 - PoE
 - Cables
 - Interfaces (SFP modules, wireless cards, etc.)
 - Power source

MikroTik Support

Software Issues

- Configuration is not working properly
Logs and supout file;
https://wiki.mikrotik.com/wiki/Manual:Support_Output_File
- Out of memory
 - 1) Upgrade device (mandatory)
 - 2) Reboot device and generate supout file (normal situation)
 - 3) When RAM is almost full generate another supout file (problematic situation)

Software Issues

- Device freezes
 - 1) Upgrade device (mandatory)
 - 2) Connect serial console and monitor device
 - 3) Generate supout file (problematic situation)
 - 4) Copy serial output to text file
- Any other kind of issue (for example reboot)
 - 1) Upgrade device (mandatory)
 - 2) Reproduce problem or wait for it to appear
 - 3) Generate supout file (problematic situation)

Support

- Briefly explain your problem
- Send all files (mentioned in previous slides depending on problem)
- Make notes and document results (even if problem persists)
- Make new files after configuration changes
- Reply within same ticket and provide new information

The logo for MikroTik, featuring the word "MikroTik" in a stylized font. The "Mikro" part is in a lowercase, italicized sans-serif font, and the "Tik" part is in a bold, uppercase, italicized sans-serif font. Above the "i" in "Mikro" are three curved lines. The entire logo is reflected on a light gray surface below it.

MikroTik