

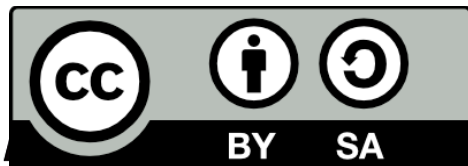


# Fitur yang Terlupakan

by: **Pujo Dewobroto**

Citraweb Nusa Infomedia, Indonesia

[www.mikrotik.co.id](http://www.mikrotik.co.id)



# Perkenalan



- **Pujo Dewobroto**
- Citraweb Nusa Infomedia
  - Mikrotik distributor, training partner ([mikrotik.co.id](http://mikrotik.co.id))
  - ISP ([citra.net.id](http://citra.net.id))
  - Web developer ([citra.web.id](http://citra.web.id))
- MTCNA, MTCTCE, MTCWE, MTCUME, MTCRE, MTCINE
- Certified Trainer

# Fitur RouterOS

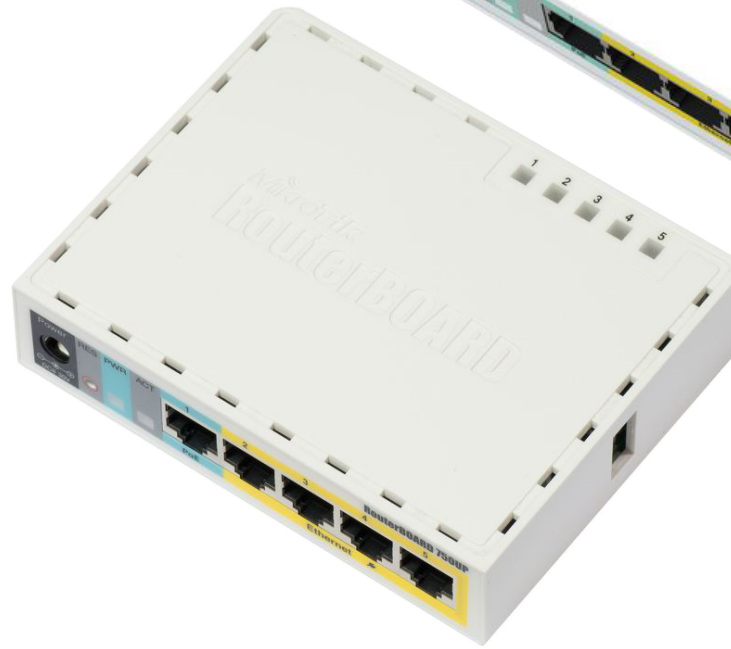
- Routing
  - Static Route, Dynamic Route (RIP, OSPF, BGP), VRF, Policy Route
- Bandwidth Management / QOS
  - Simple / Queue Tree , HTB, PCQ
- Firewall
  - Filter, Mangle, NAT, L7

# Fitur RouterOS (2)

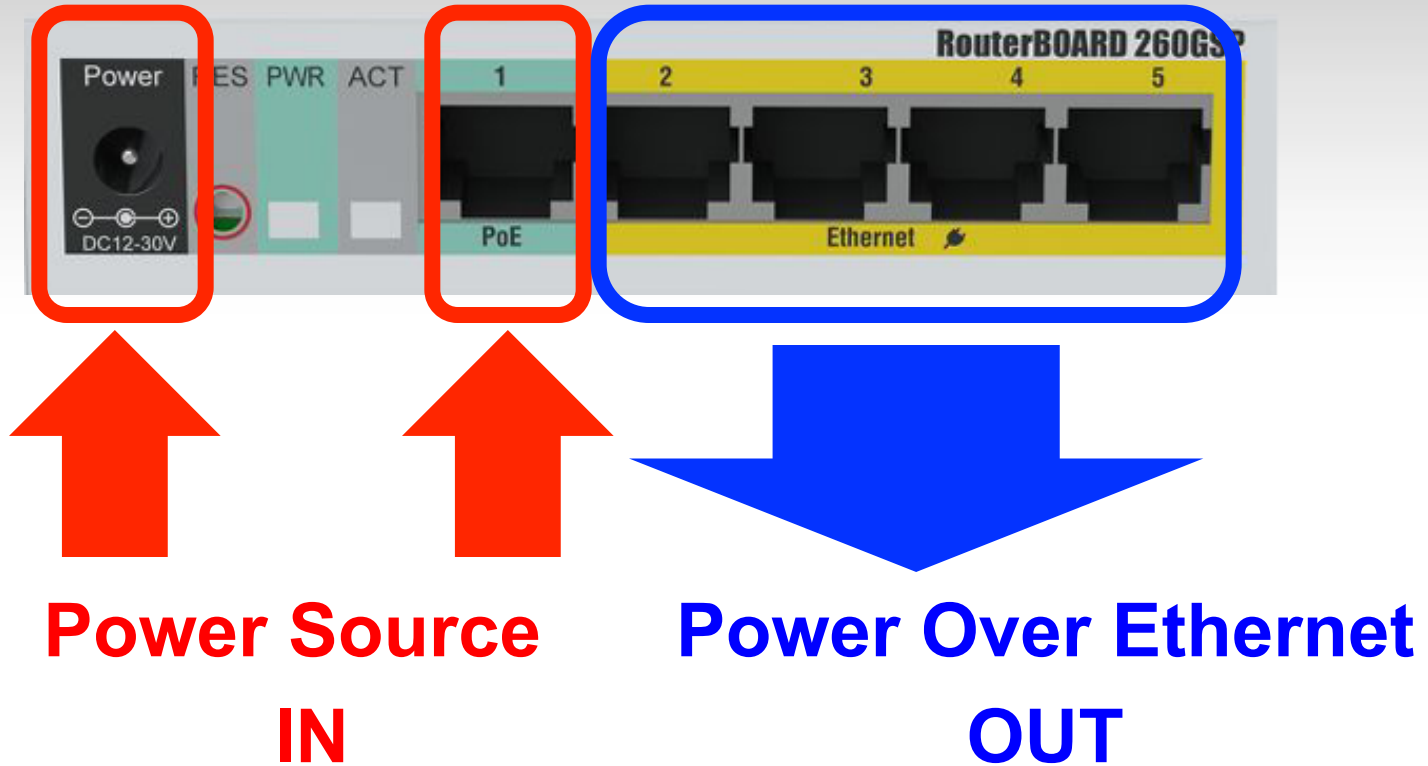
- Wireless 802.11a/b/g/n/ac
  - VAP, WDS, Authentication, Nstreme & NV2, HWMP+, CapsMan
- VPN & Tunnel
  - PPTP, L2TP / IPSec, SSTP, OVPN
  - VLAN, EoIP, IPIP
- Server
  - DNS, DHCP, Hotspot, Webproxy, NTP, Radius

# Fitur RouterOS (3)

[http://wiki.mikrotik.com/wiki/Manual:RouterOS\\_features](http://wiki.mikrotik.com/wiki/Manual:RouterOS_features)



# POE



# POE

Interface <ether2>

General PoE Ethernet Status Overall Stats ...

PoE Out: auto on

PoE Priority: 10

PoE Out Status: powered on

PoE Out Current: 176 mA

PoE Out Voltage: 23.6 V

PoE Out Power: 4.1 W

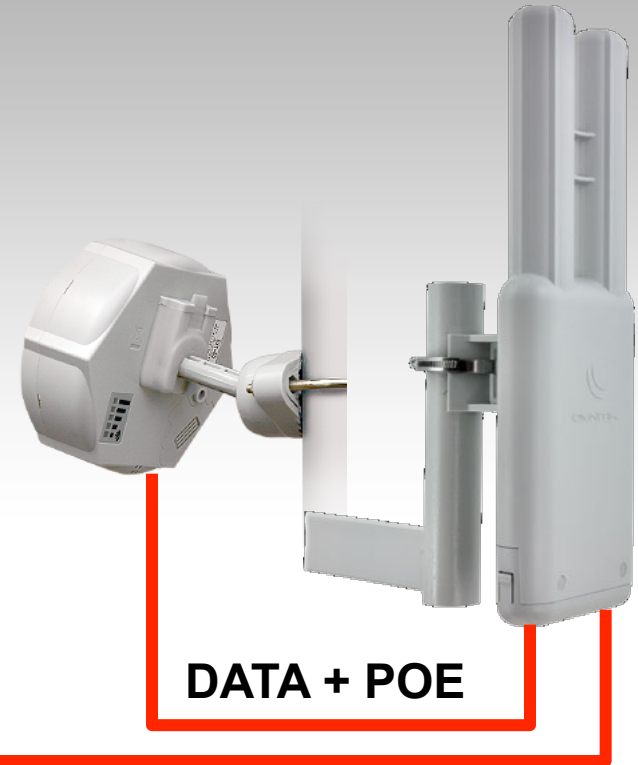
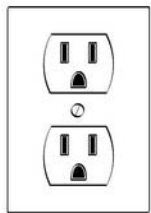
**Voltage Source IN = Voltage POE OUT**

**Arus per POE out port = 500mA / 1A\***

**Total Arus POE out = 2A / 2.2 A\***



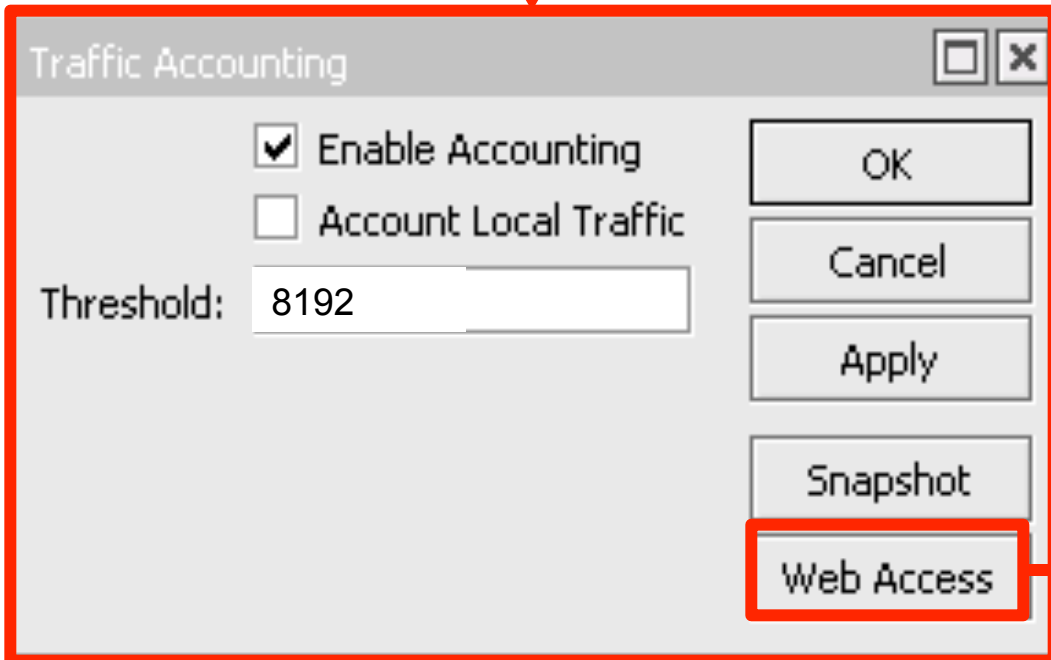
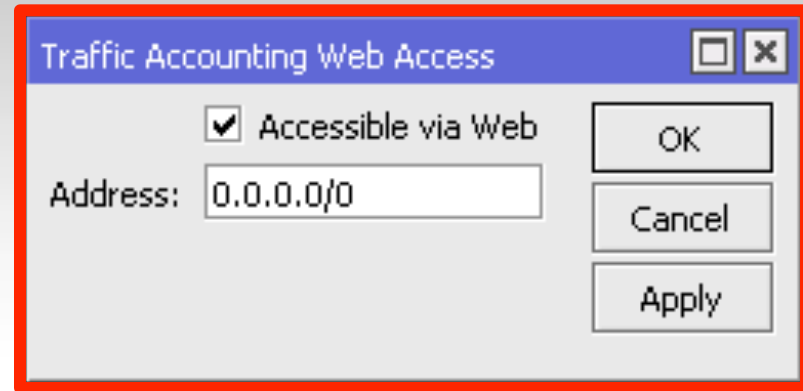
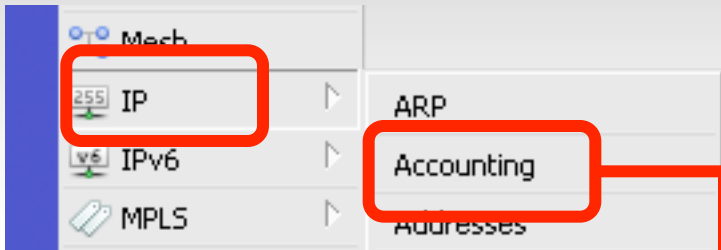
# POE IN



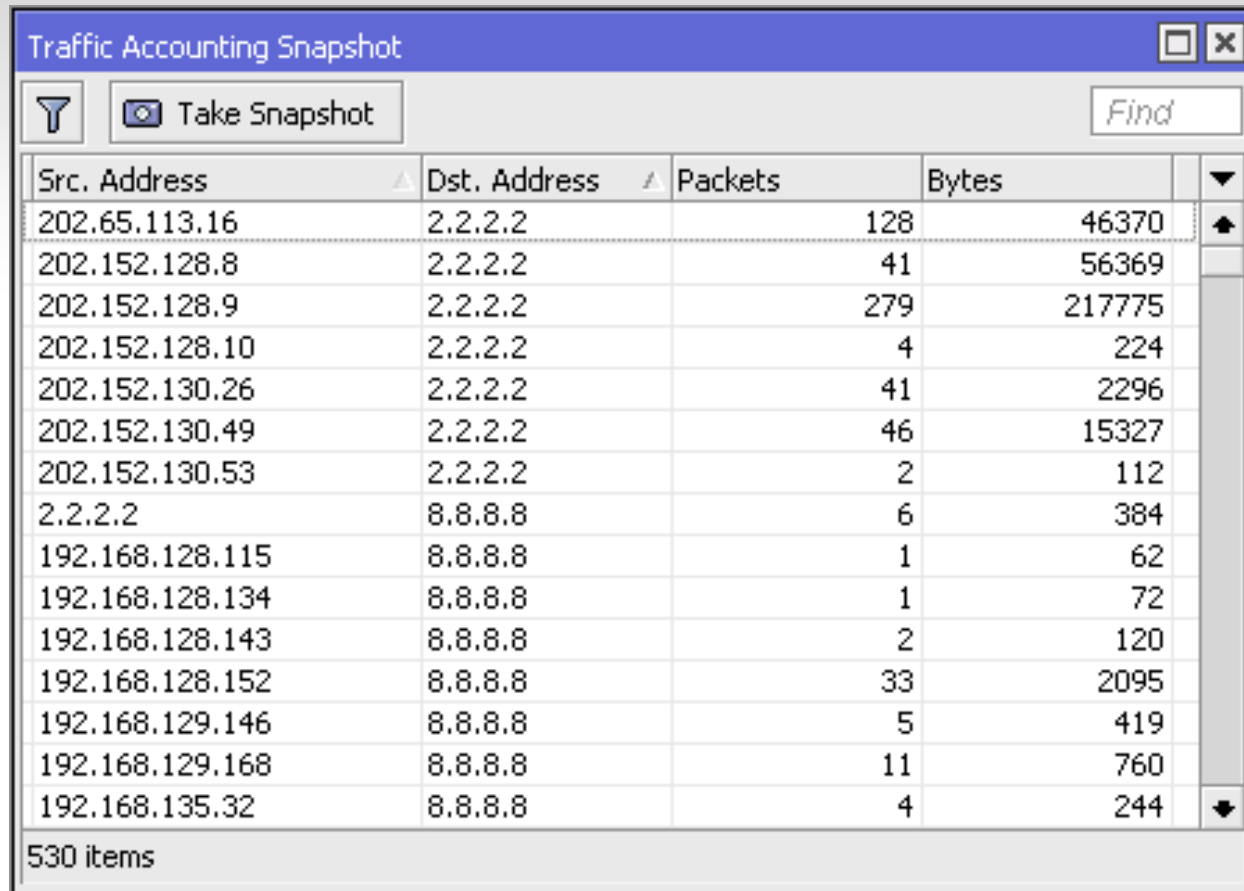
**DATA + POE**  
**Long Cable**

```
/interface ethernet poe  
settings set ether1-poe-in-long-cable=yes
```

# IP Accounting



# Snapshot

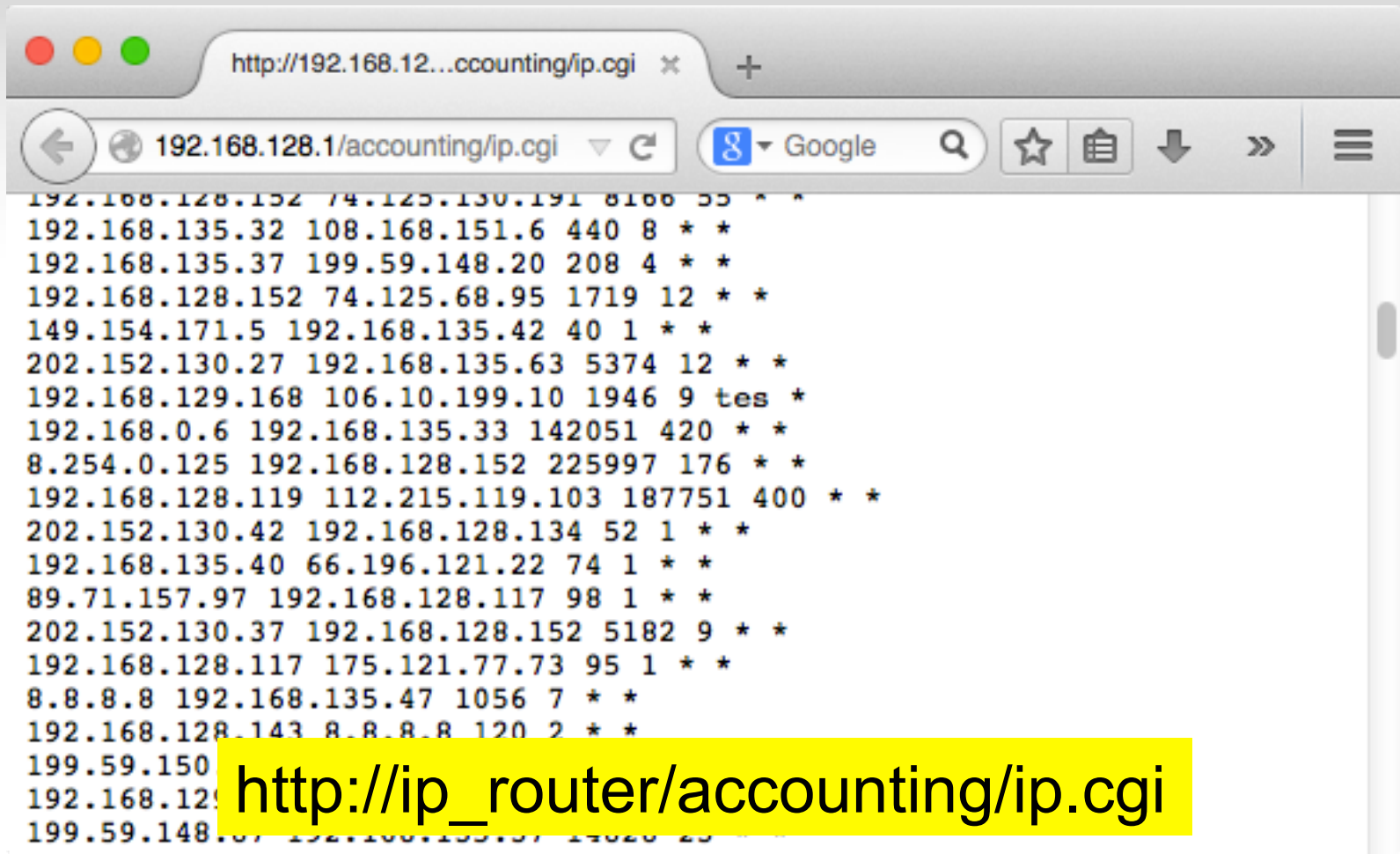


The screenshot shows a window titled "Traffic Accounting Snapshot" with a "Take Snapshot" button and a "Find" search box. The main content is a table with columns for Src. Address, Dst. Address, Packets, and Bytes. The table contains 17 rows of data, with a total of 530 items indicated at the bottom.

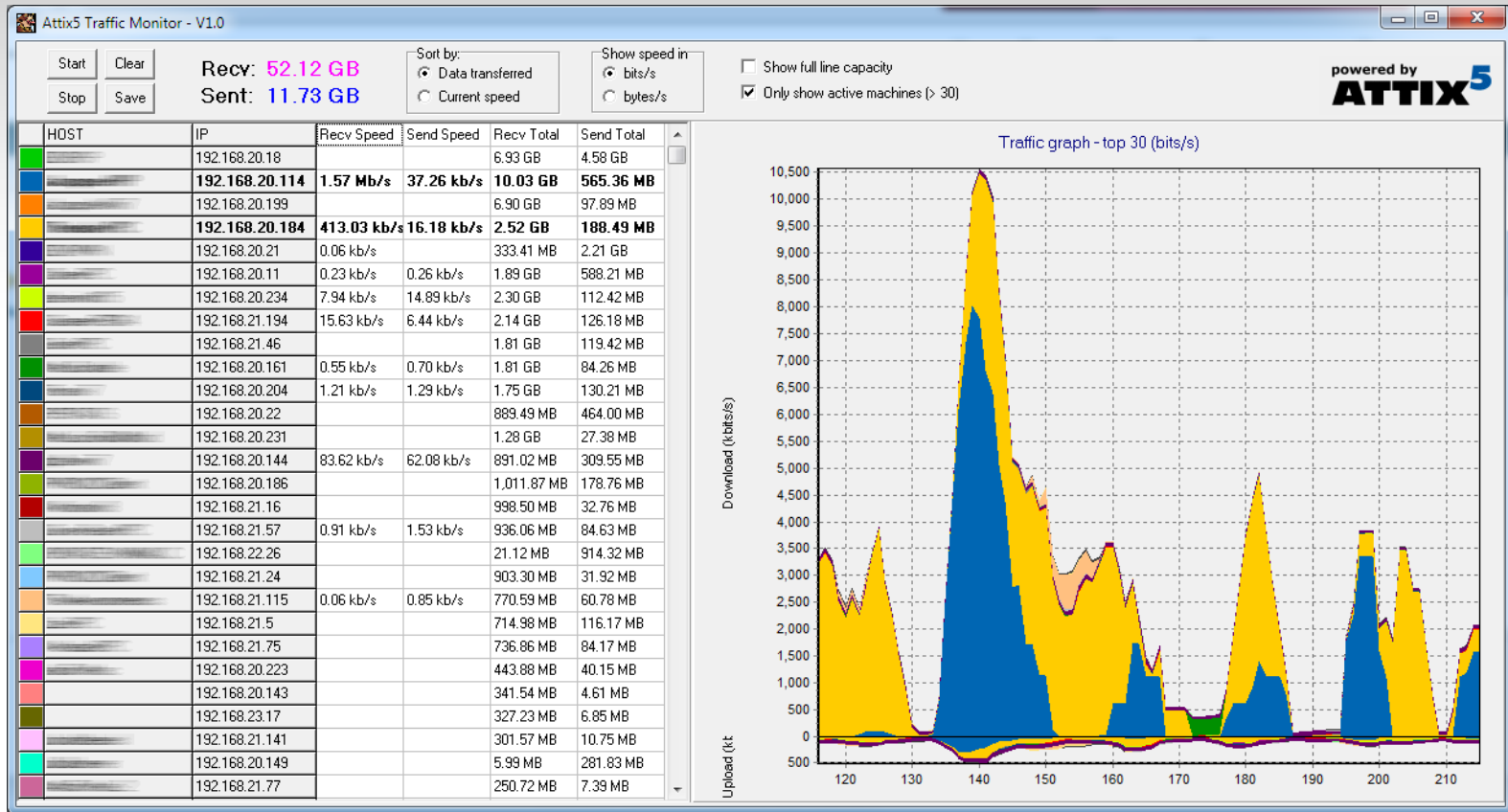
| Src. Address    | Dst. Address | Packets | Bytes  |
|-----------------|--------------|---------|--------|
| 202.65.113.16   | 2.2.2.2      | 128     | 46370  |
| 202.152.128.8   | 2.2.2.2      | 41      | 56369  |
| 202.152.128.9   | 2.2.2.2      | 279     | 217775 |
| 202.152.128.10  | 2.2.2.2      | 4       | 224    |
| 202.152.130.26  | 2.2.2.2      | 41      | 2296   |
| 202.152.130.49  | 2.2.2.2      | 46      | 15327  |
| 202.152.130.53  | 2.2.2.2      | 2       | 112    |
| 2.2.2.2         | 8.8.8.8      | 6       | 384    |
| 192.168.128.115 | 8.8.8.8      | 1       | 62     |
| 192.168.128.134 | 8.8.8.8      | 1       | 72     |
| 192.168.128.143 | 8.8.8.8      | 2       | 120    |
| 192.168.128.152 | 8.8.8.8      | 33      | 2095   |
| 192.168.129.146 | 8.8.8.8      | 5       | 419    |
| 192.168.129.168 | 8.8.8.8      | 11      | 760    |
| 192.168.135.32  | 8.8.8.8      | 4       | 244    |

530 items

# Snapshot (2)



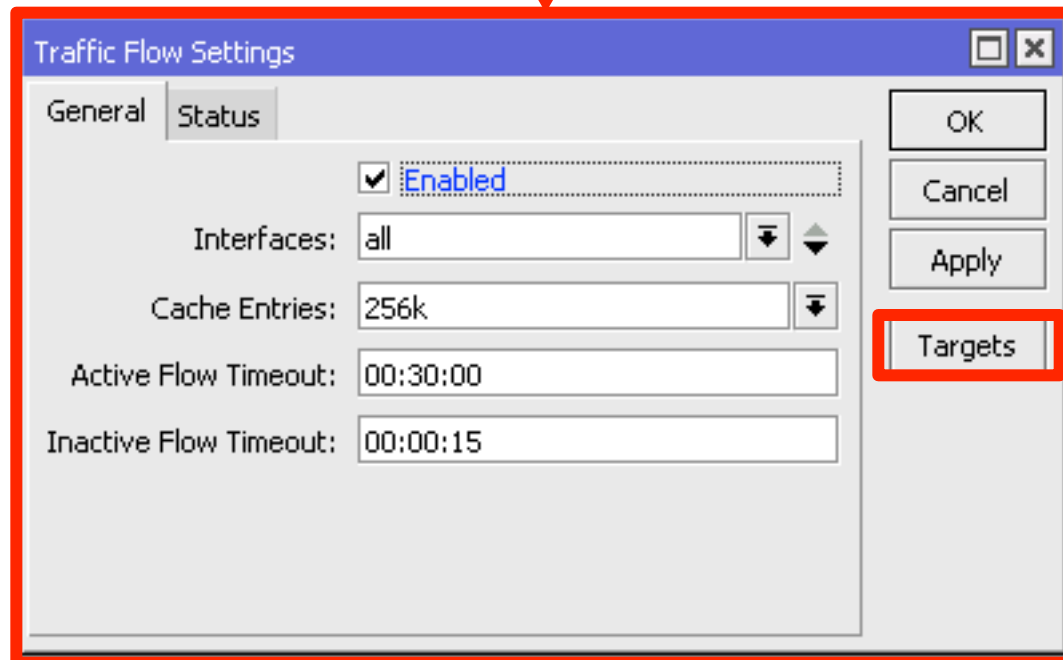
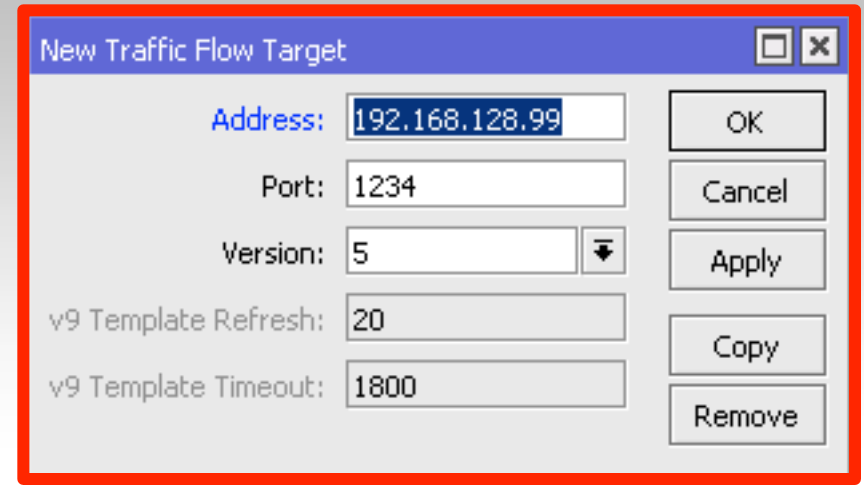
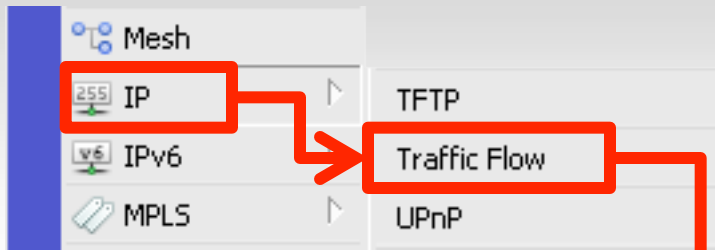
# Snapshot (3)



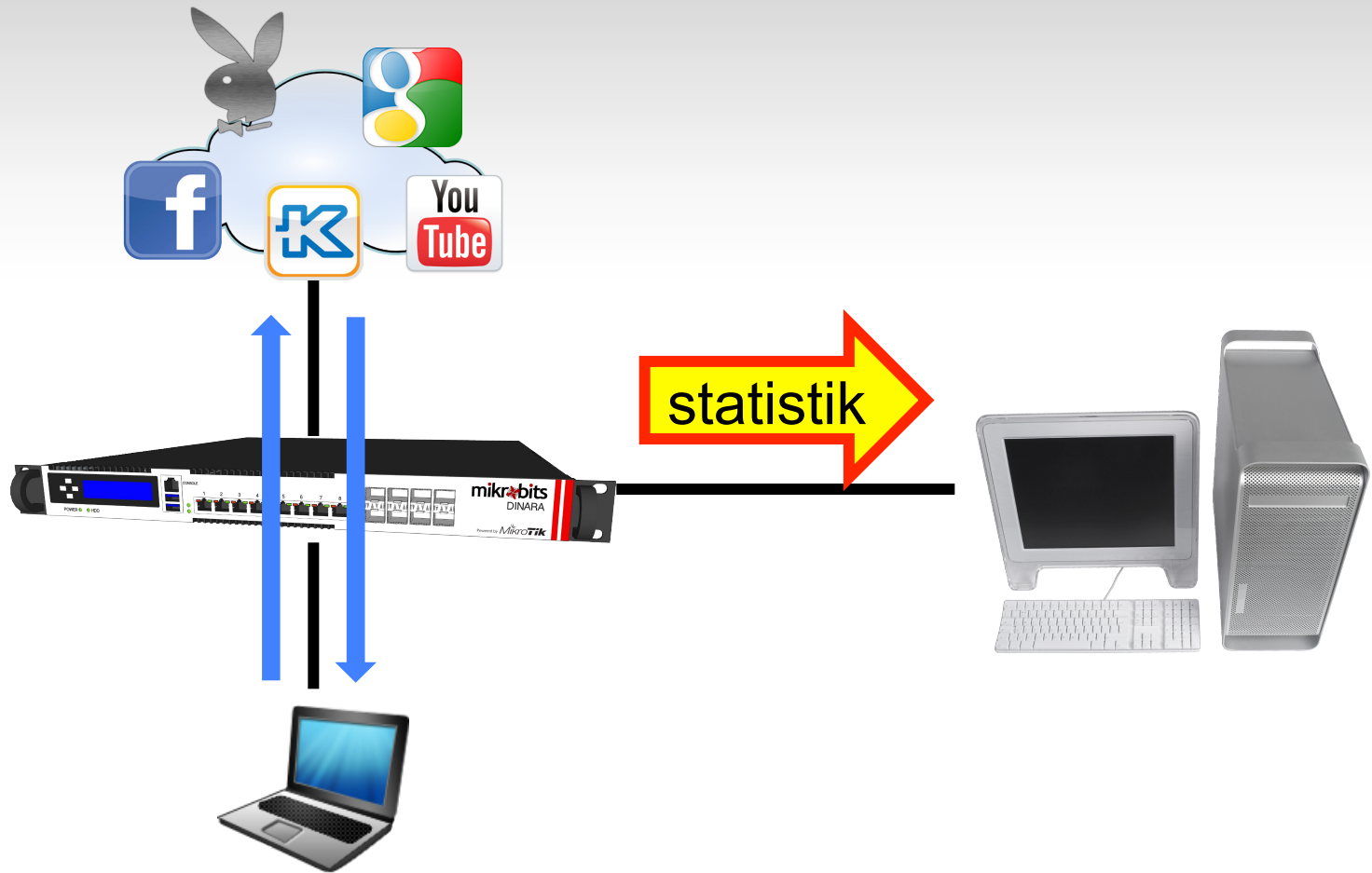
Creator : daniel [ danielm ]

<http://forum.mikrotik.com/viewtopic.php?f=2&t=77193>

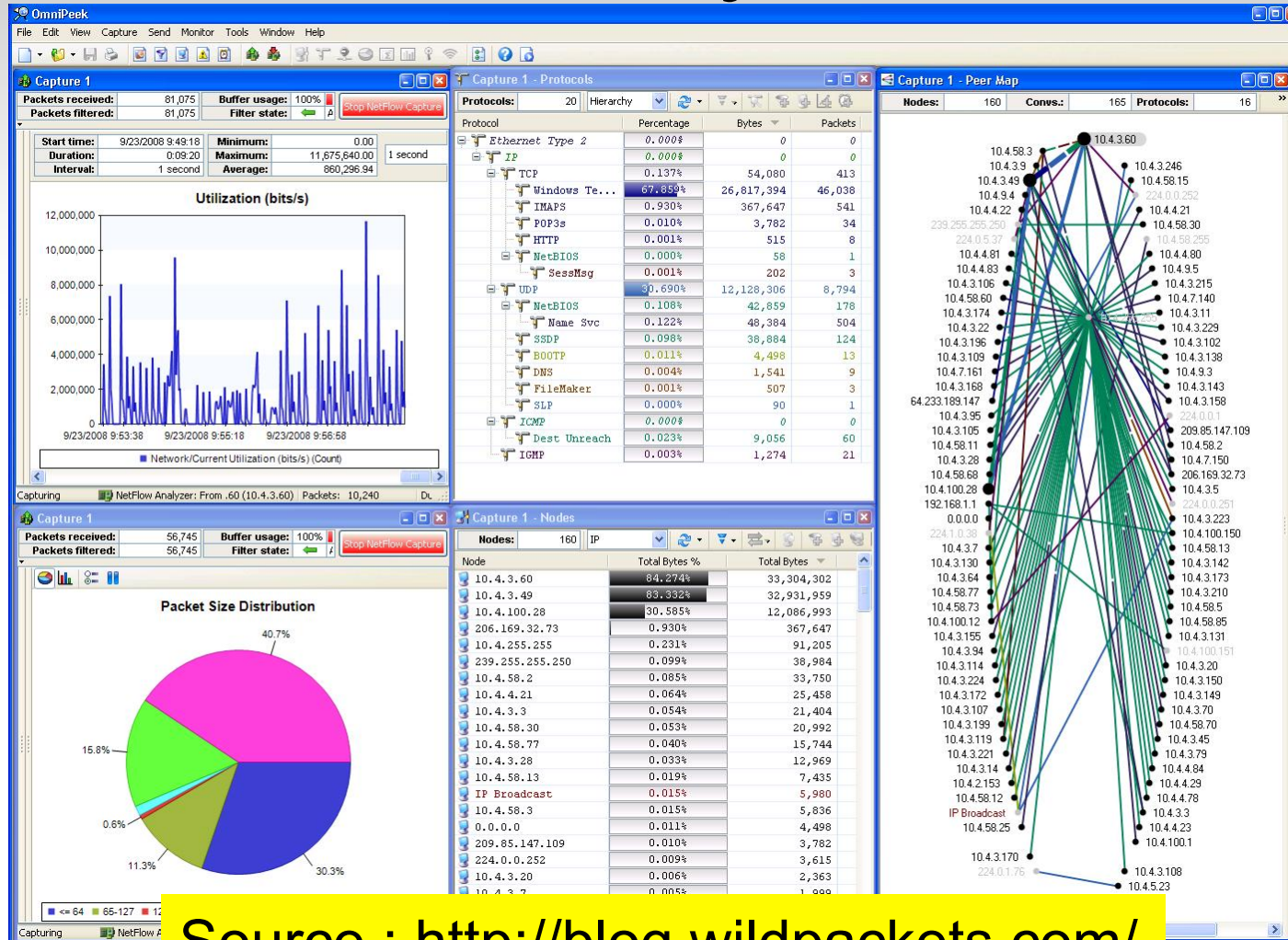
# IP Traffic Flow



# IP Traffic Flow (2)



# Traffic Flow Analysis



Source : <http://blog.wildpackets.com/>



# TFTP Server

The image shows the Mikrotik WinBox interface for configuring a TFTP server. On the left sidebar, the 'IP' service is highlighted with a red box, and an arrow points to the 'TFTP' service in the main window. In the main window, the '+' icon in the TFTP window is highlighted with a red box, and an arrow points to a 'TFTP <>' dialog box. The dialog box contains the following fields and options:

- IP Addresses: [ ]
- Req. Filename: [ ]
- Real Filename: [ ]
- Allow
- Read Only
- Hits: 0

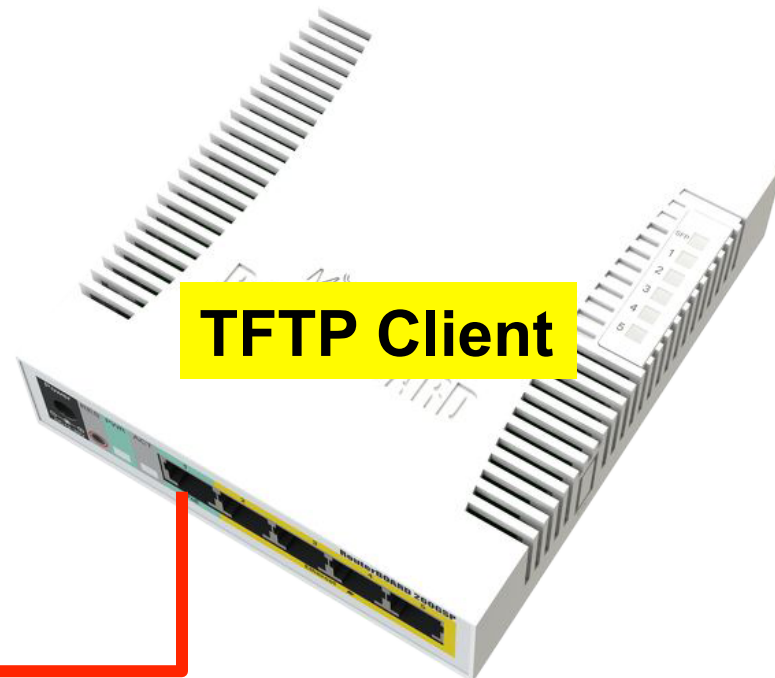
The status bar at the bottom of the dialog shows 'enabled'. Buttons for OK, Cancel, Apply, Disable, Copy, and Remove are also visible.

# Reinstall SwOS

**DHCP server +TFTP server**



- Tekan dan tahan Reset
- Nyalakan power
- Lepaskan reset



**TFTP Client**

**Ether1 RB250/RB260 series**

# Config

The image shows a Mikrotik WinBox interface with two windows open. The 'File List' window shows a directory structure with 'tftp-pujo' selected, and a file 'tftp-pujo/swos-rb260-1.14.lzb' highlighted with a red box. A red arrow points from this file to the 'Real Filename' field in the 'TFTP <192.168.100.2>' configuration window, which is also highlighted with a red box. The configuration window shows the IP address '192.168.100.2', the real filename '/tftp-pujo/swos-rb260-1.14.lzb', and checkboxes for 'Allow' and 'Read Only'.

| # | IP Addresses  | Real Filename                  | Allow | Read ... | Hits |
|---|---------------|--------------------------------|-------|----------|------|
| 0 | 192.168.100.2 | /tftp-pujo/swos-rb260-1.14.lzb | yes   | yes      | 25   |

TFTP <192.168.100.2>

IP Addresses: 192.168.100.2

Req. Filename:

Real Filename: /tftp-pujo/swos-rb260-1.14.lzb

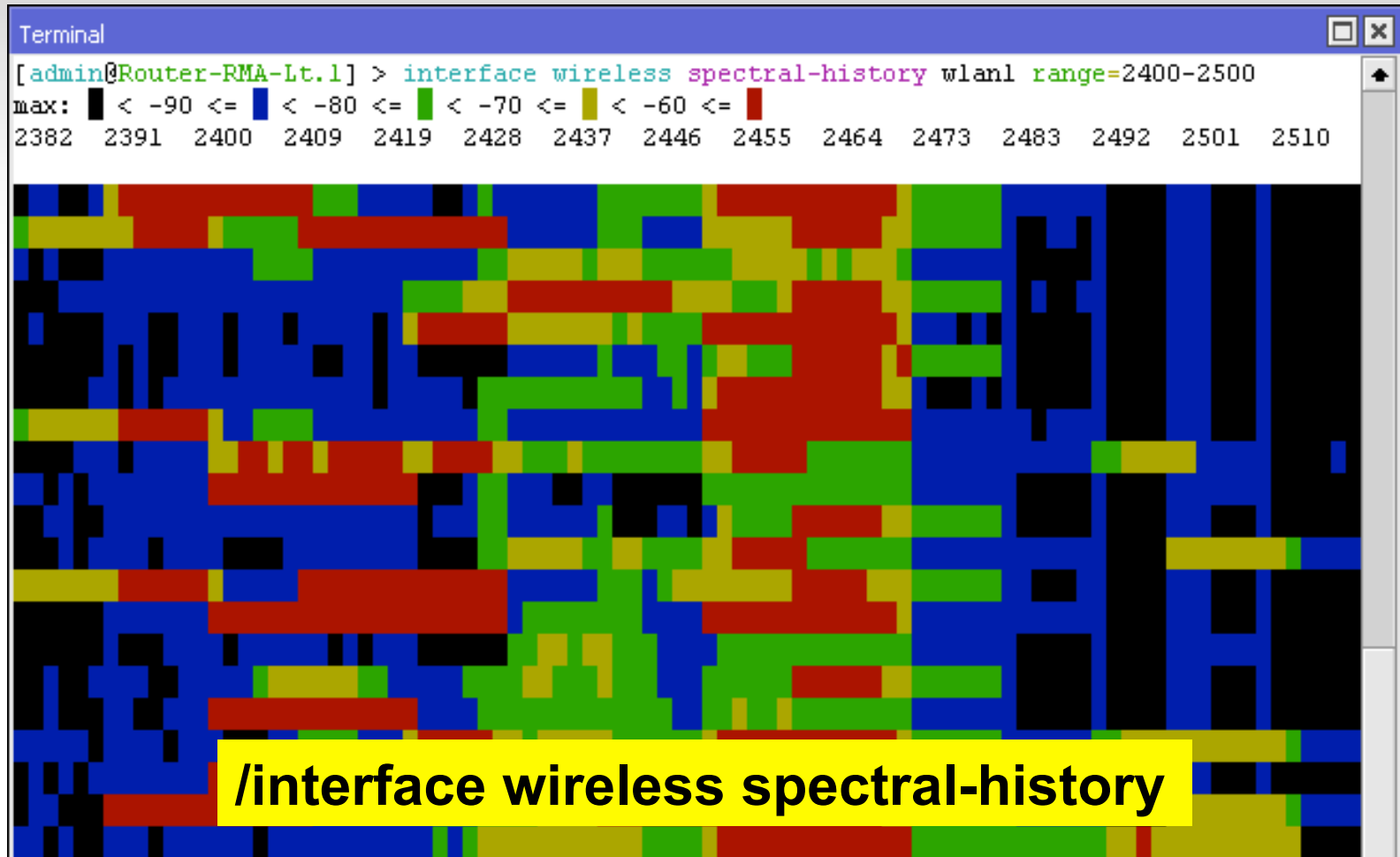
Allow

Read Only

Hits: 25

1 item (1 selected) enabled

# Wireless Spectral



# Wireless Spectral (2)

```
Terminal
[admin@Router-RMA-Lt.1] > /int wire spectral-scan wlan1 range=2400-2500 show-interference=
yes buckets=14
FREQ INTERFERENCE          DBM GRAPH
2386 none                    -89 ::::::::::::::::::::::::::::::::::::
2396 none                    -87 ::::::::::::::::::::::::::::::::::::
2406 none                    -89 ::::::::::::::::::::::::::::::::::::
2416 none                    -87 ::::::::::::::::::::::::::::::::::::
2425 none                    -76 ::::::::::::::::::::::::::::::::::::
2435 none                    -75 ::::::::::::::::::::::::::::::::::::
2445 none                    -74 ::::::::::::::::::::::::::::::::::::
2455 none                    -61 ::::::::::::::::::::::::::::::::::::
2464 none                    -50 ::::::::::::::::::::::::::::::::::::
2474 none                    -60 ::::::::::::::::::::::::::::::::::::
2484 none                    -89 ::::::::::::::::::::::::::::::::::::
2494 none                    -89 ::::::::::::::::::::::::::::::::::::
2504 none                    -86 ::::::::::::::::::::::::::::::::::::
2513 none                    -86 ::::::::::::::::::::::::::::::::::::
-- [Q quit|D dump|C-z] /interface wireless spectral-scan
```

Support untuk chipset Atheros Merlin (AR9220, AR9223, AR9280, AR9281, AR9283)

# Wireless Alignment

Interface <wlan1>

General Wireless HT HT MCS WDS Nstreme NV2 ...

Mode: alignment only

Band: 2GHz-B/G/N

Channel Width: 20MHz

Frequency: 2412 MHz

SSID: MikroTik

Scan List: default

Wireless Protocol: any

Security Profile: default

Bridge Mode: enabled

Default AP Tx Rate: bps

Default Client Tx Rate: bps

Default Authenticate

Default Forward

OK

Cancel

Apply

Enable

Comment

Torch

Scan...

Freq. Usage...

**Align...**

Sniff...

Snooper...

Reset Configuration

Advanced Mode

# Wireless Alignment (2)

Alignment (Running)

Interface: wlan1

Start

Stop

Close

Wireless Alignment Settings

New Window

| Address           | SSID              | Rx Qu... | Avg. Rx |
|-------------------|-------------------|----------|---------|
| A4:DB:30:26:54:0F |                   |          | -49     |
| 4C:5E:0C:82:1F:CA | MikroTik          |          | -60     |
| D0:DF:9A:01:2A:D2 |                   |          | -62     |
| 4C:5E:0C:B6:B4:D7 |                   |          | -66     |
| 00:19:7E:41:4B:F0 |                   |          | -72     |
| 4C:5E:0C:5C:EC:75 |                   |          | -72     |
| D4:22:3F:DB:2C:55 |                   |          | -73     |
| 14:B4:84:3A:B2:E0 |                   |          | -74     |
| 48:5A:B6:82:34:5B |                   |          | -74     |
| C4:46:19:08:67:31 |                   |          | -77     |
| 02:0C:42:61:B8:02 | TEST-2.4          |          | -78     |
| 00:0C:42:61:B8:02 | MikroTik-Karyawan |          | -78     |
| 00:73:E0:19:2F:6D |                   |          | -79     |
| D4:22:3F:D9:B2:0F |                   |          | -79     |

23 items (1 selected)

Wireless Alignment Settings

Frame Size: 300

Active Mode

Receive All

Filter MAC Address: 00:00:00:00:00:00

SSID All

Frames per Second: 25

Audio Monitor: 00:0C:42:61:B8:02

Audio Min: -100

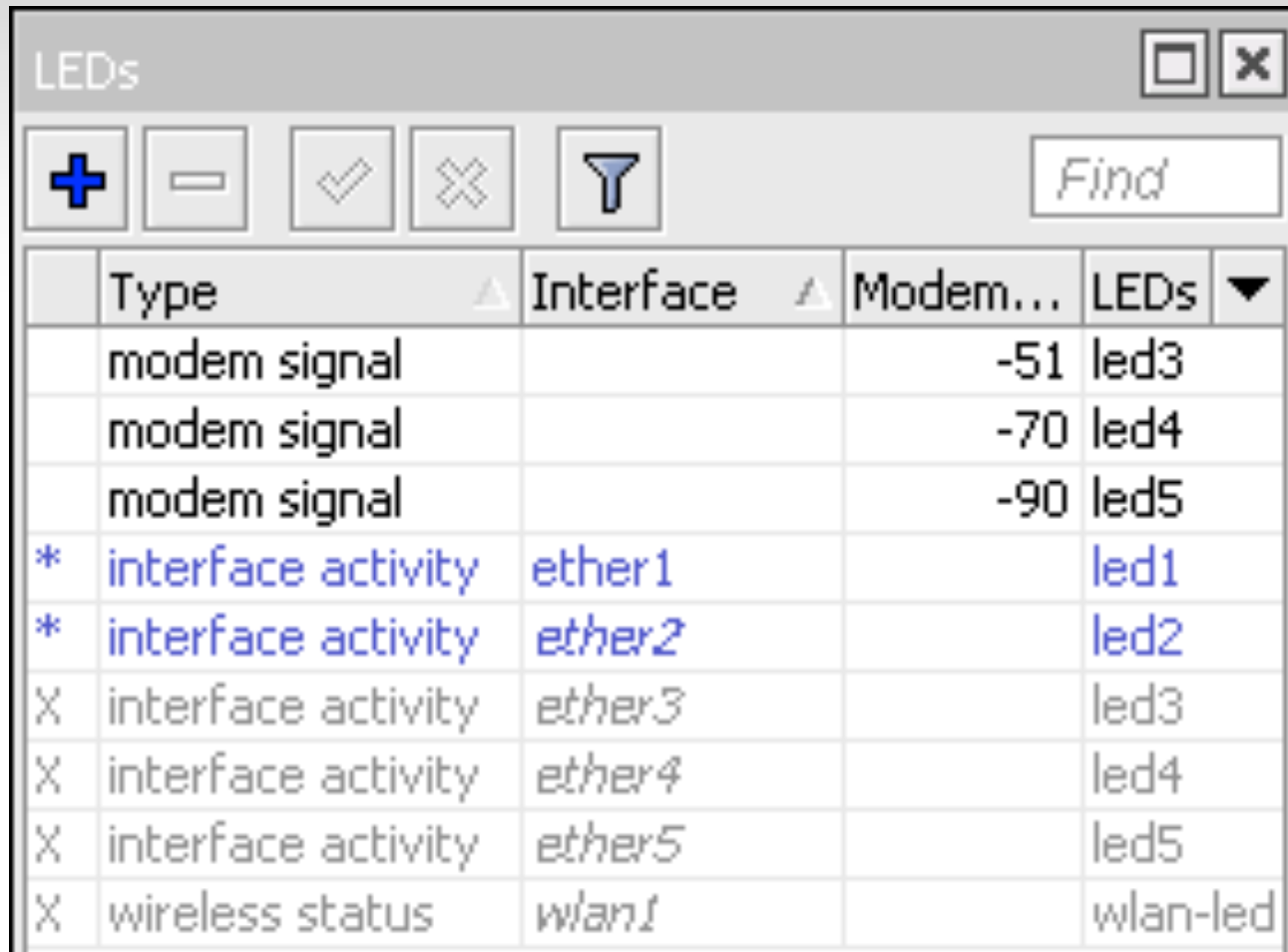
Audio Max: -20

OK

Cancel

Apply

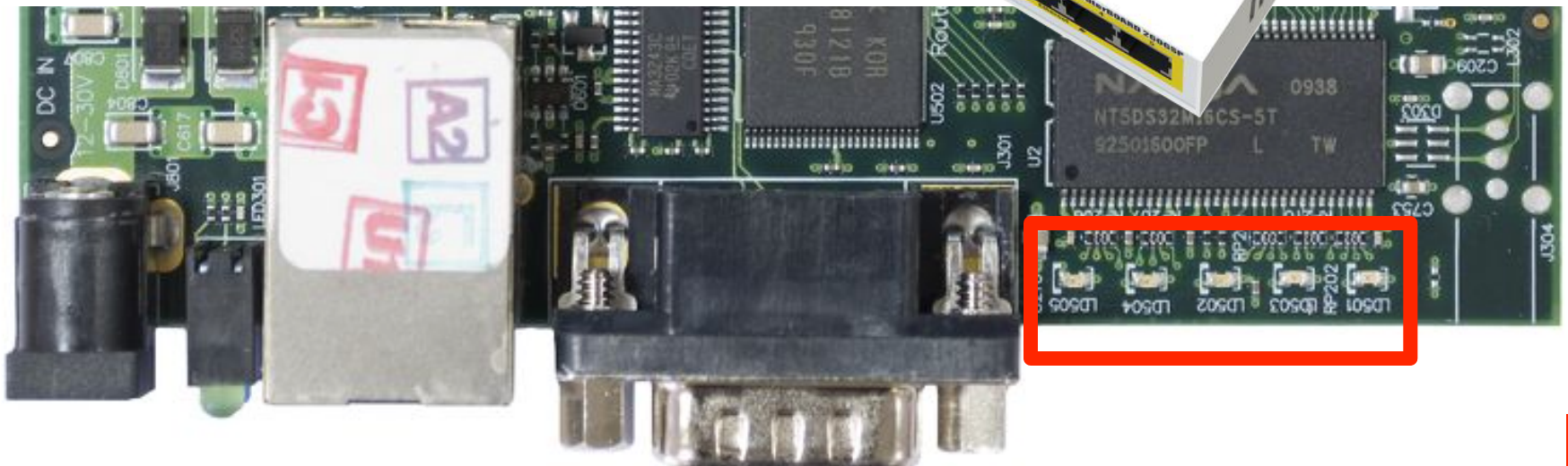
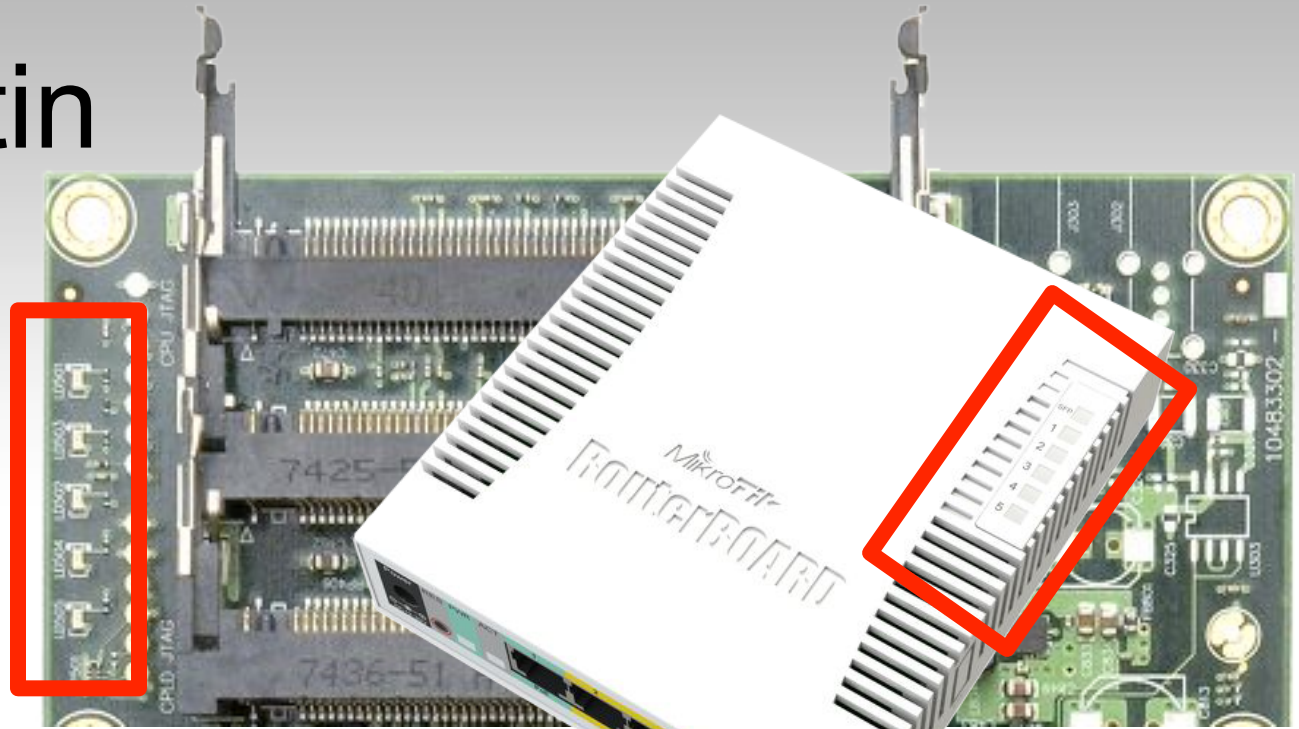
# System LED



|   | Type ▲             | Interface ▲ | Modem... | LEDs ▼   |
|---|--------------------|-------------|----------|----------|
|   | modem signal       |             | -51      | led3     |
|   | modem signal       |             | -70      | led4     |
|   | modem signal       |             | -90      | led5     |
| * | interface activity | ether1      |          | led1     |
| * | interface activity | ether2      |          | led2     |
| X | interface activity | ether3      |          | led3     |
| X | interface activity | ether4      |          | led4     |
| X | interface activity | ether5      |          | led5     |
| X | wireless status    | wlan1       |          | wlan-led |



# Led Builtin



# System LED (2)

New LED Trigger

Type: interface status

Interface: ether1

Modem Signal Threshold: -51

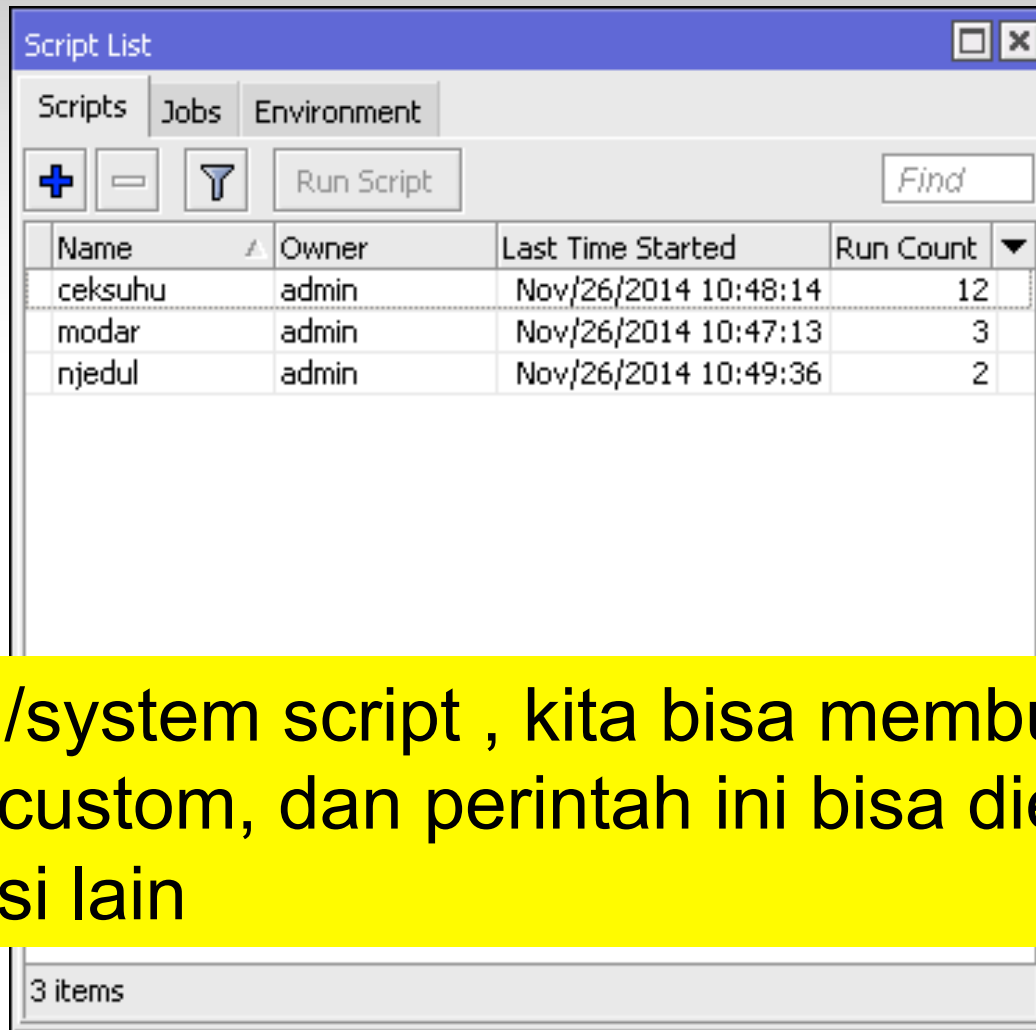
LEDs: led1

enabled

OK  
Cancel  
Apply  
Disable  
Copy  
Remove

- ap cap
- flash access
- interface activity
- interface receive
- interface speed
- interface status
- interface transmit
- modem signal
- poe out
- wireless signal strength
- wireless status

# Script



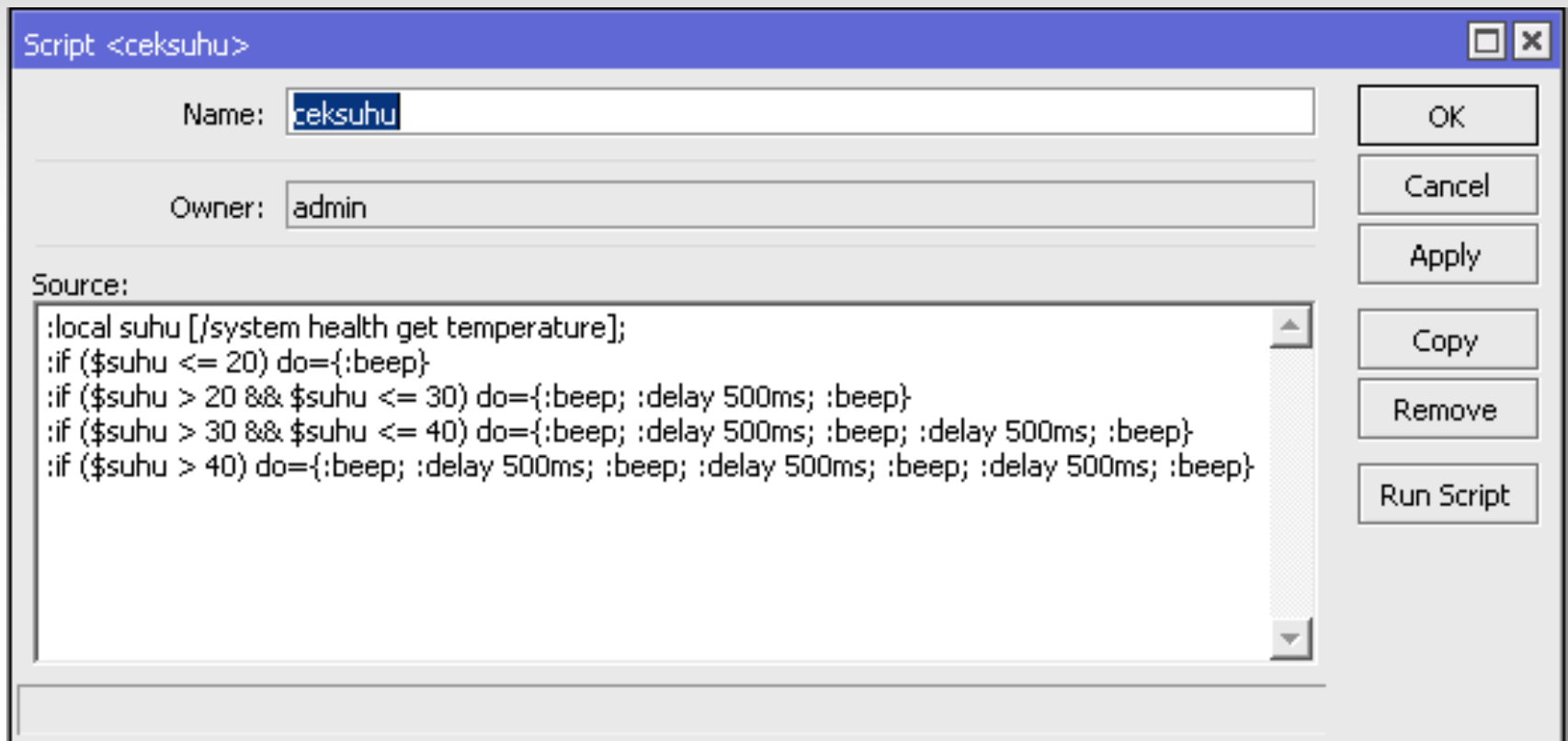
The screenshot shows the 'Script List' window in Mikrotik WinBox. It has tabs for 'Scripts', 'Jobs', and 'Environment'. Below the tabs are buttons for adding (+), removing (-), and filtering (funnel), along with a 'Run Script' button and a search box labeled 'Find'. The main area contains a table with the following data:

| Name    | Owner | Last Time Started    | Run Count |
|---------|-------|----------------------|-----------|
| ceksuhu | admin | Nov/26/2014 10:48:14 | 12        |
| modar   | admin | Nov/26/2014 10:47:13 | 3         |
| njedul  | admin | Nov/26/2014 10:49:36 | 2         |

At the bottom of the window, it indicates '3 items'.

Di menu /system script , kita bisa membuat perintah custom, dan perintah ini bisa dieksekusi dari fungsi lain

# Script (2)



Script <ceksuhu>

Name:

Owner:

Source:

```
:local suhu [/system health get temperature];  
:if ($suhu <= 20) do={:beep}  
:if ($suhu > 20 && $suhu <= 30) do={:beep; :delay 500ms; :beep}  
:if ($suhu > 30 && $suhu <= 40) do={:beep; :delay 500ms; :beep; :delay 500ms; :beep}  
:if ($suhu > 40) do={:beep; :delay 500ms; :beep; :delay 500ms; :beep; :delay 500ms; :beep}
```

OK  
Cancel  
Apply  
Copy  
Remove  
Run Script

# Beeper



- Di Routerboard tertentu memiliki fitur beeper.
- Dengan bantuan scheduler / netwatch, fungsi ini bisa digunakan untuk simple monitoring
- Format :  
:beep <frekuensi> <durasi>

# Scheduler

The image shows the Mikrotik Scheduler interface. The main window displays a table with the following data:

| Name      | Start Time | Interval | On Event |
|-----------|------------|----------|----------|
| schedule1 | startup    | 00:01:00 |          |

A dialog box titled "Schedule <schedule1>" is open, showing the configuration for the selected task. The fields are:

- Name: schedule1
- Start Date: Nov/26/2014
- Start Time: startup (highlighted in red)
- Interval: 00:01:00
- On Event: ceksuhu

Buttons on the right side of the dialog include OK, Cancel, Apply, Disable, Comment, and Copy.

Scheduler berfungsi untuk menjalankan script sesuai jadwal yang kita tentukan

# Netwatch

The screenshot displays the Mikrotik Netwatch interface. At the top, there is a title bar 'Netwatch' with standard window controls. Below it is a toolbar with icons for adding, deleting, checking, and unchecking items, along with a search box labeled 'Find'. The main area contains a table with the following data:

| Host           | Interval | Status | Since        | On Up  | On Down |
|----------------|----------|--------|--------------|--------|---------|
| 192.168.88.200 | 00:01:00 | up     | Nov/26/20... | njedul | modar   |

Below the table, there are three configuration windows for the host 192.168.88.200. The first window shows the host details: Host: 192.168.88.200, Interval: 00:01:00, Timeout: 1000, Status: up, and Since: Nov/26/2014 10:49:36. The second window shows the 'On Up' script: njedul. The third window shows the 'On Down' script: modar. Each window has 'OK', 'Cancel', and 'Apply' buttons.

**Netwatch berfungsi untuk melakukan ping ke sebuah host, dan dari hasil pingnya router akan menjalankan script yang sesuai kita definisikan**

# Traffic Monitor

The screenshot displays the Mikrotik Traffic Monitor interface. At the top, there is a 'Traffic Monitor List' window with a toolbar containing icons for adding (+), deleting (-), enabling (checkmark), disabling (cross), creating a new monitor (folder), and filtering (funnel). A 'Find' search box is also present. Below the toolbar is a table listing three monitors:

| Name                 | Interface | Traffic     | Trigger | Thres... | On Event        |
|----------------------|-----------|-------------|---------|----------|-----------------|
| monitor-bos          | ether2    | transmitted | above   | 10000000 | awas-bos-downlc |
| monitor-ob           | ether4    | transmitted | above   | 1000000  | ob-download     |
| monitor-ether-kosong | bridge1   | transmitted | above   | 128000   | curanwidth      |

Below the table, a 'Traffic Monitor <monitor-bos>' configuration dialog is open. It contains the following fields and options:

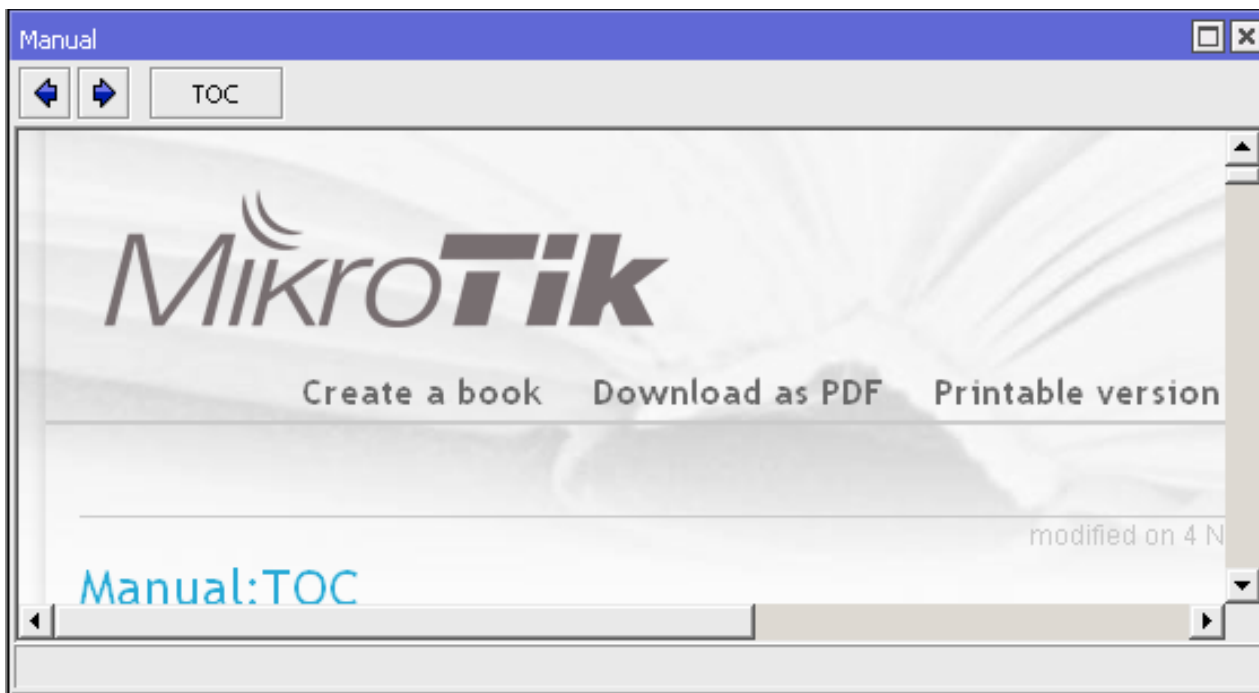
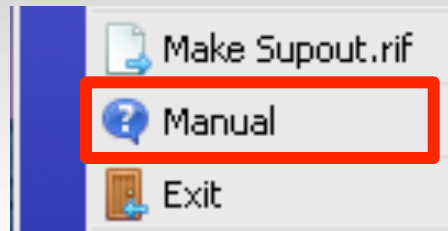
- Name: monitor-bos
- Interface: ether2
- Traffic: transmitted
- Trigger: above
- Threshold: 10000000
- On Event: awas-bos-download

On the right side of the dialog, there are buttons for OK, Cancel, Apply, Disable, Comment, Copy, and Remove. At the bottom left of the main window, a status bar indicates '3 items (1 selected)'.

Traffic Monitor digunakan untuk mentrigger sebuah script berdasarkan besar trafik yang lewat

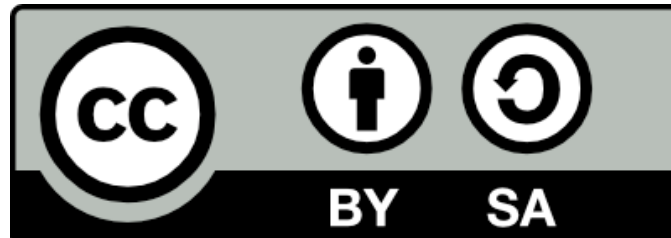


# Manual



# /System Shutdown

Matur Suwun mas dab!  
Terima Kasih mas bro!  
Thank You guys!  
Paldies!



Dijinkan menggunakan sebagian atau seluruh materi pada modul ini, baik berupa ide, foto, tulisan, konfigurasi dan diagram selama untuk kepentingan pengajaran, dan memberikan kredit kepada penulis serta link ke [www.mikrotik.co.id](http://www.mikrotik.co.id)