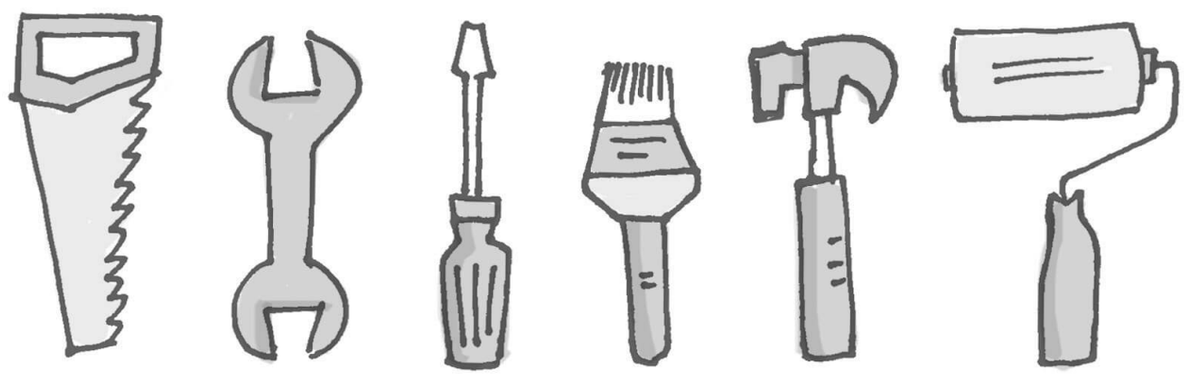
MikroTik

RouterOS Tools



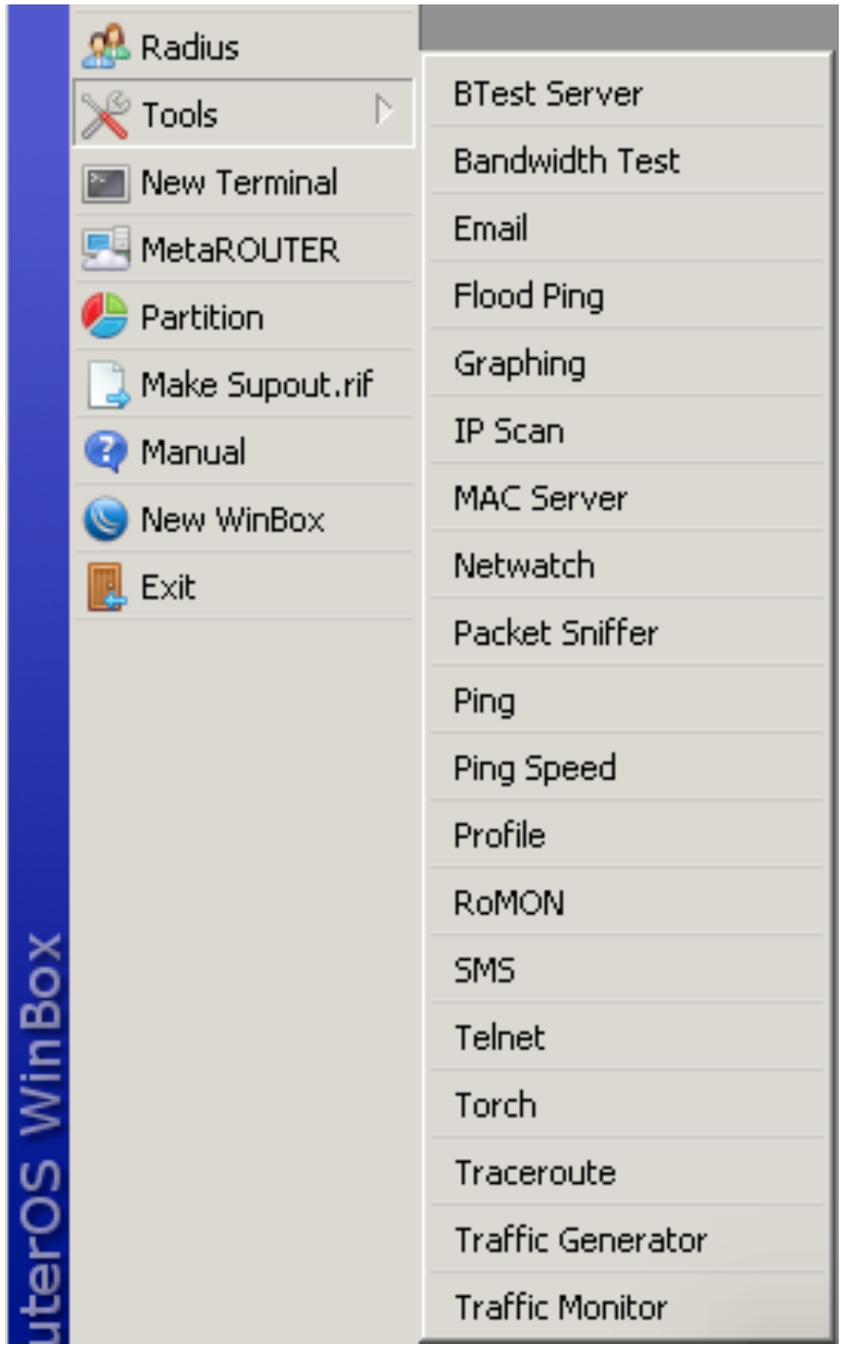
About Me

- **Name: Chan Ty**
- **Experience: Routing, Switching and QoS**
- **Certified to deliver: MTCNA, MTCRE, MTCINE and MTCTCE**

Agenda

- I am going to present some usual tools that is available in RouterOS

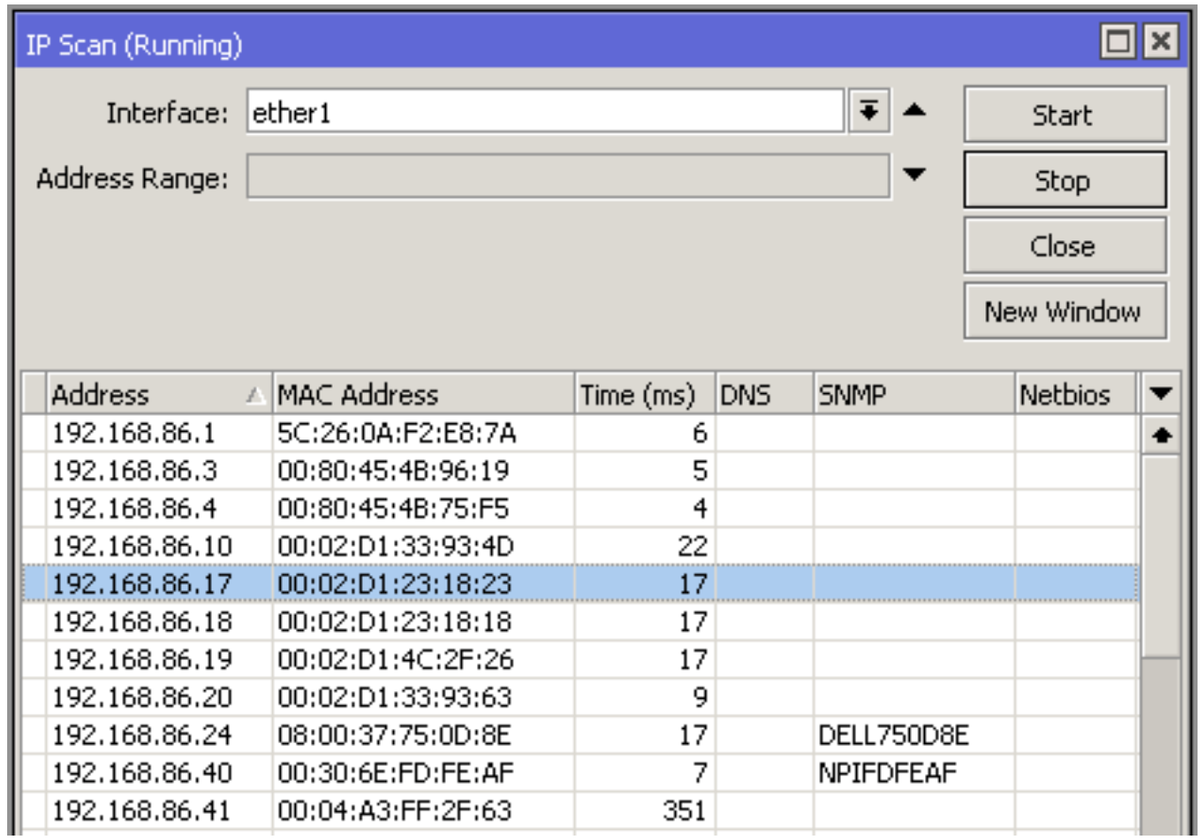
- Most of them are under **Tools** menu



IP Scan

- IP Scan tool allows user to scan network based on some network prefix or by setting interface to listen to

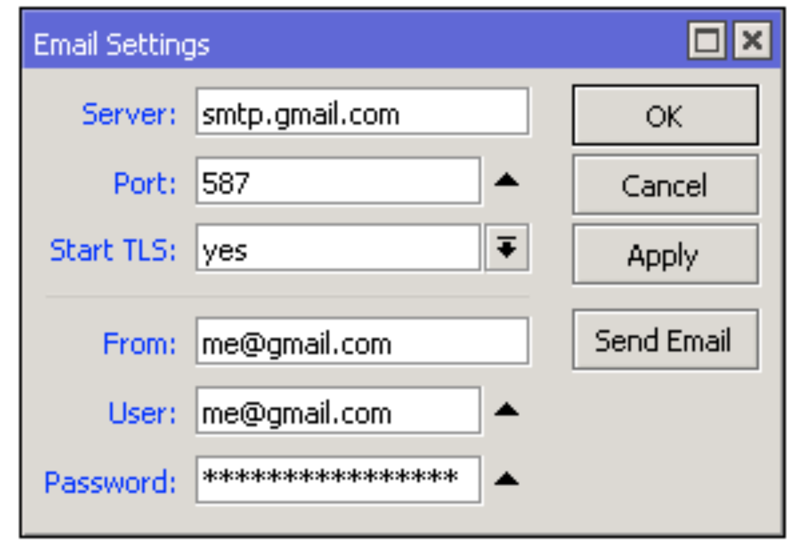
- Either way tool collects data from the network



Tools → IP Scan

E-mail

- Allows to send e-mails from the router
- For example to send router backup



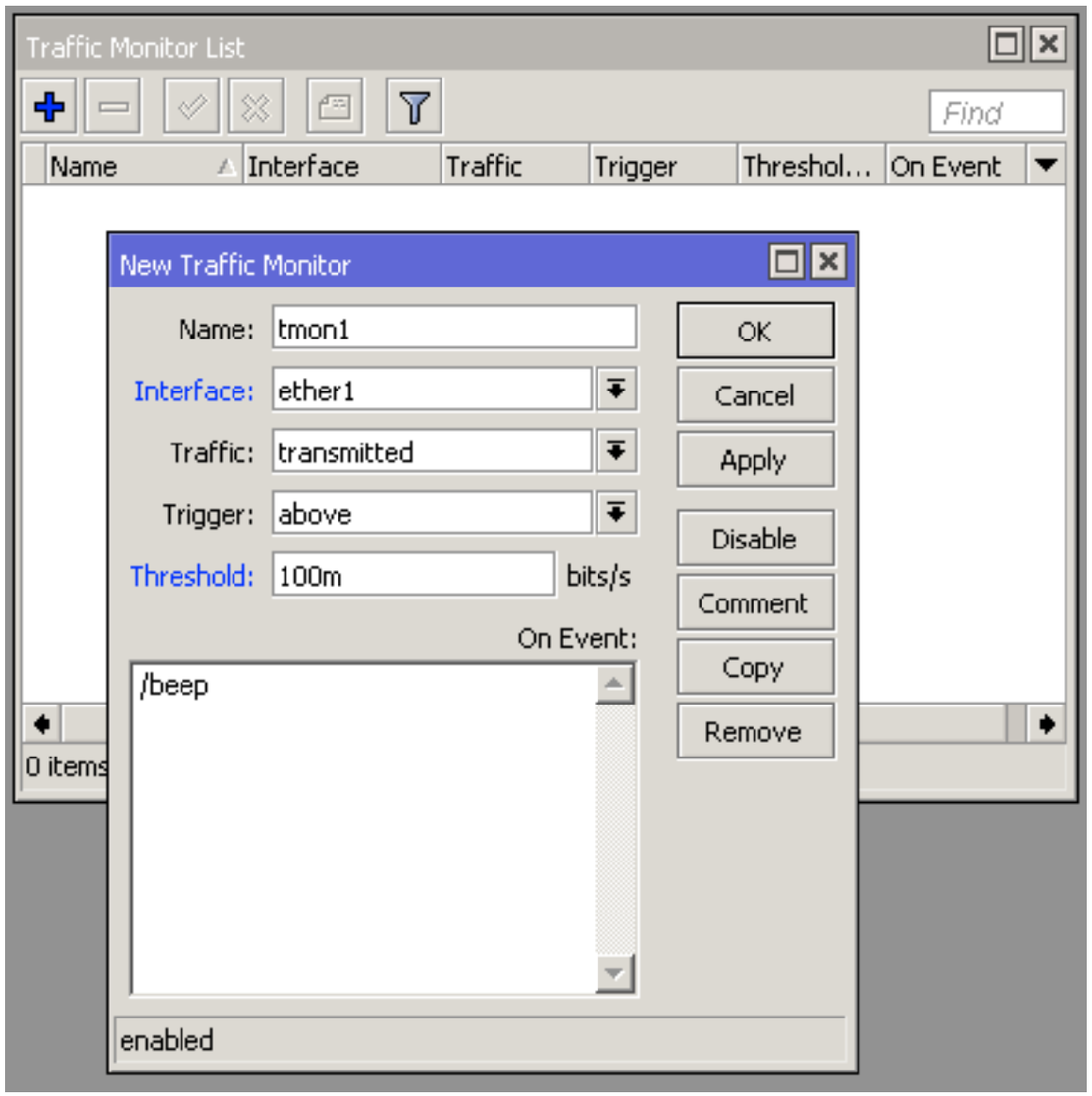
Tools → Email

```
/export file=export
/tool e-mail send to=you@gmail.com\
  subject="$[/system identity get name] export"\
  body="$[/system clock get date]\
  configuration file" file=export.rsc
```

A script to make an export file and send it via e-mail

Traffic Monitor

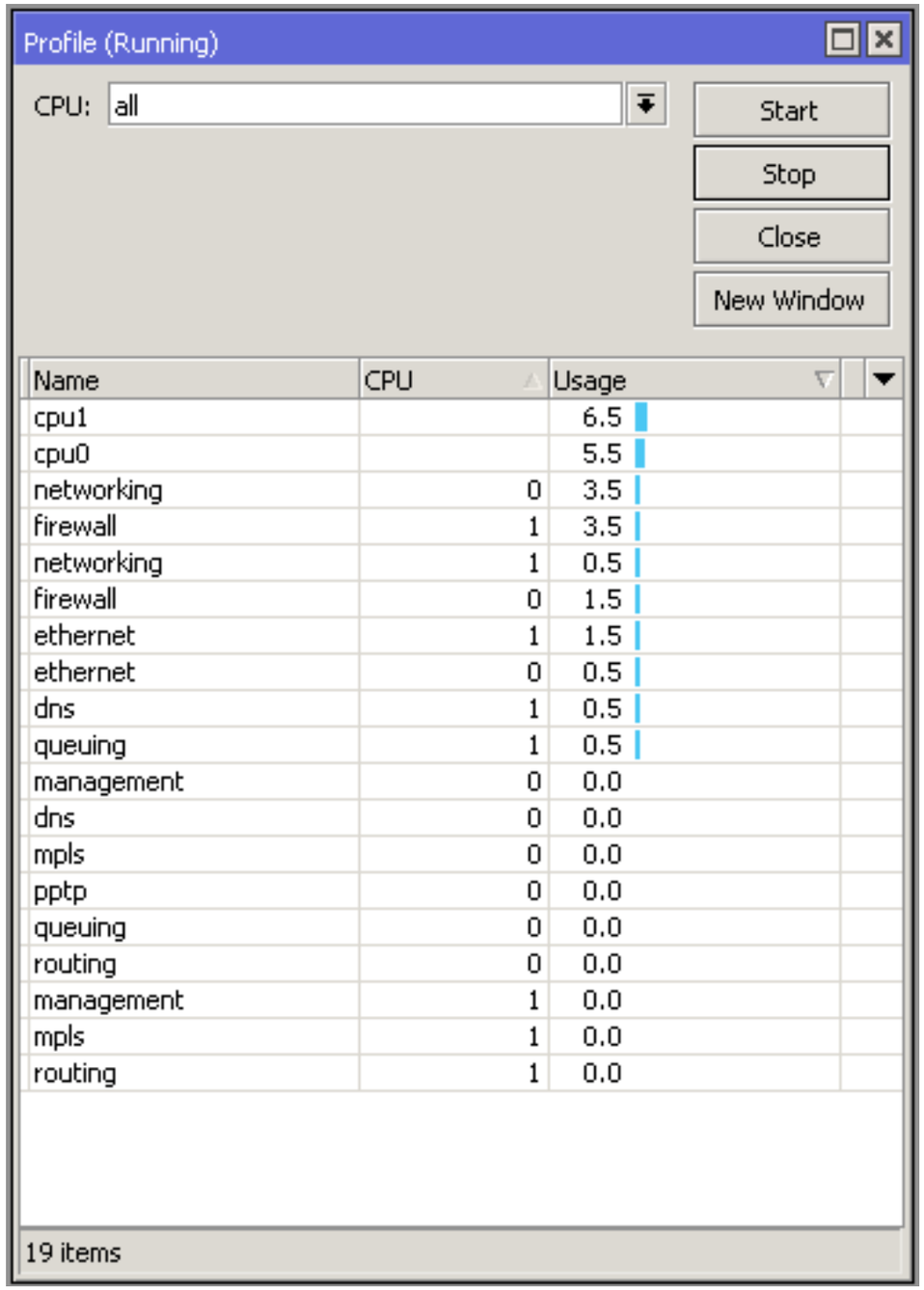
- Traffic Monitor tool is used to execute console script when interface traffic crosses a given threshold



Tools → Traffic Monitor

Profiler

- Profiler tool show CPU usage for each process running in RouterOS
- It helps to identify which process is using most of the CPU resources

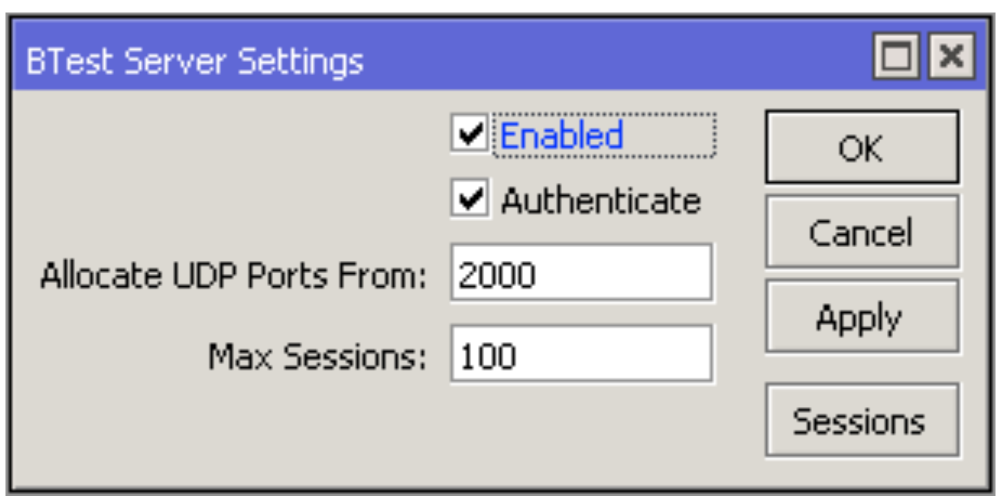


Tools → Profiles

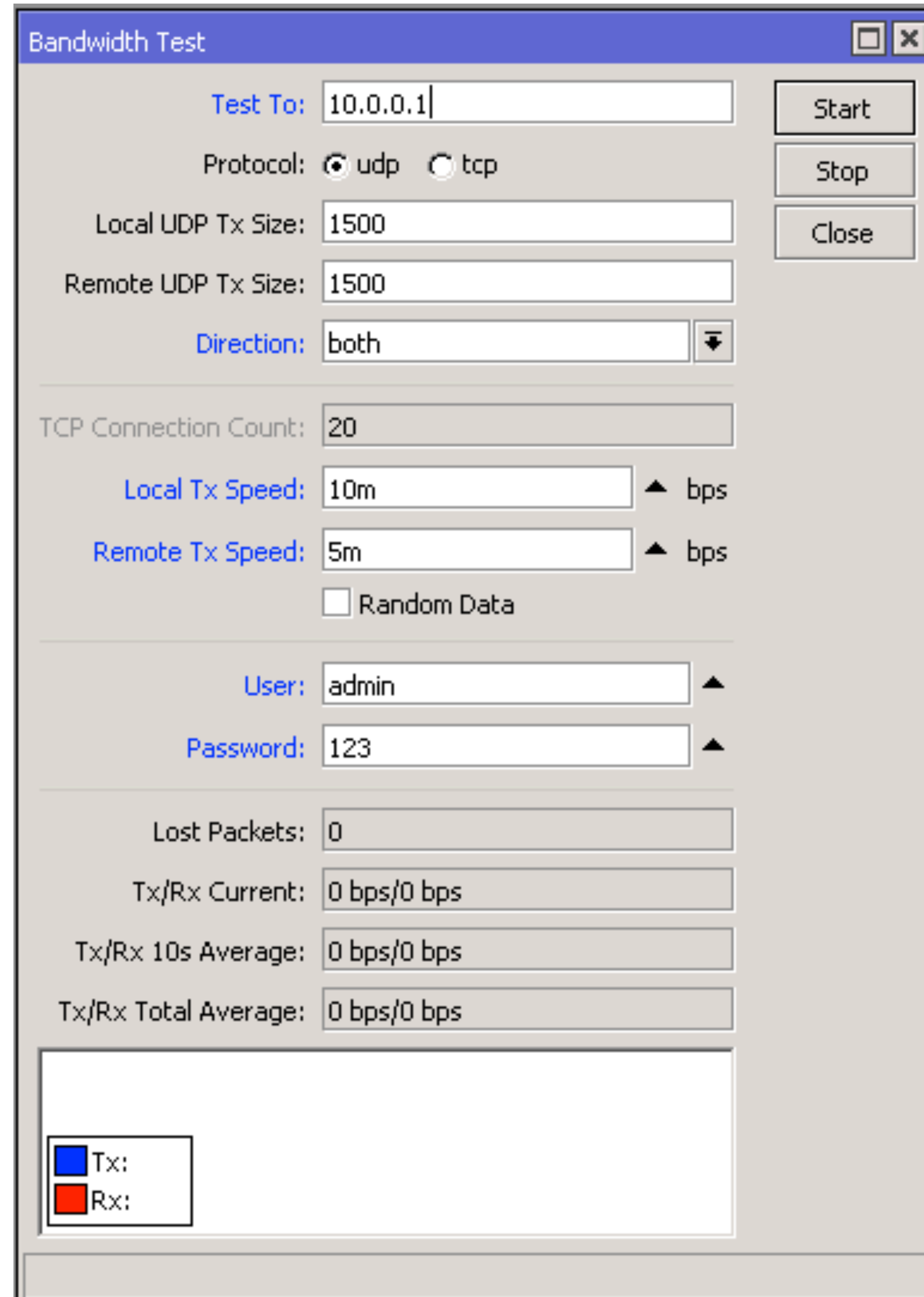
Bandwidth Test

- The Bandwidth Tester can be used to measure the throughput to another MikroTik router and thereby help to discover network bottlenecks

- Support both TCP and UDP

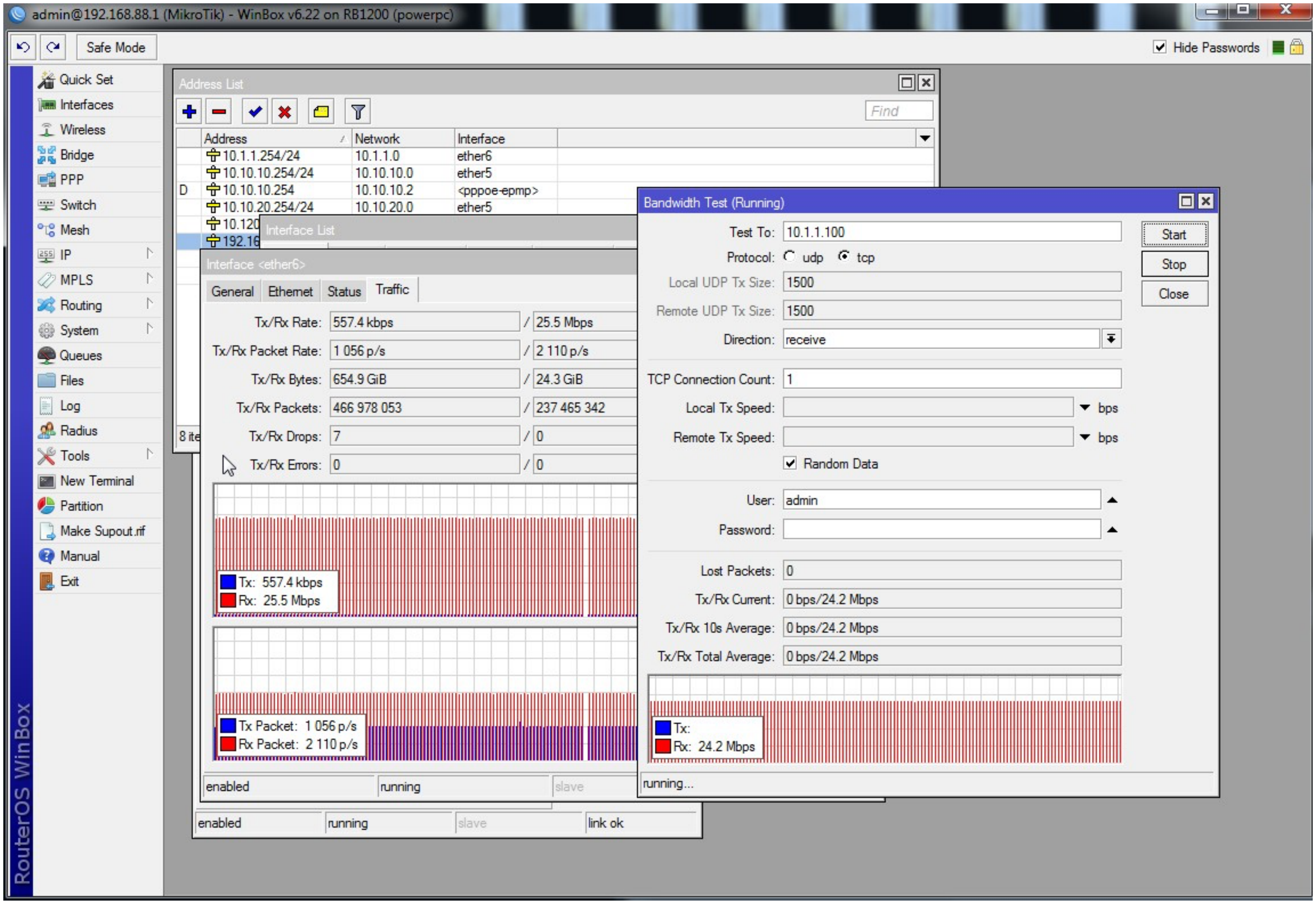


Tools → BTest Server



Tools → Bandwidth Test

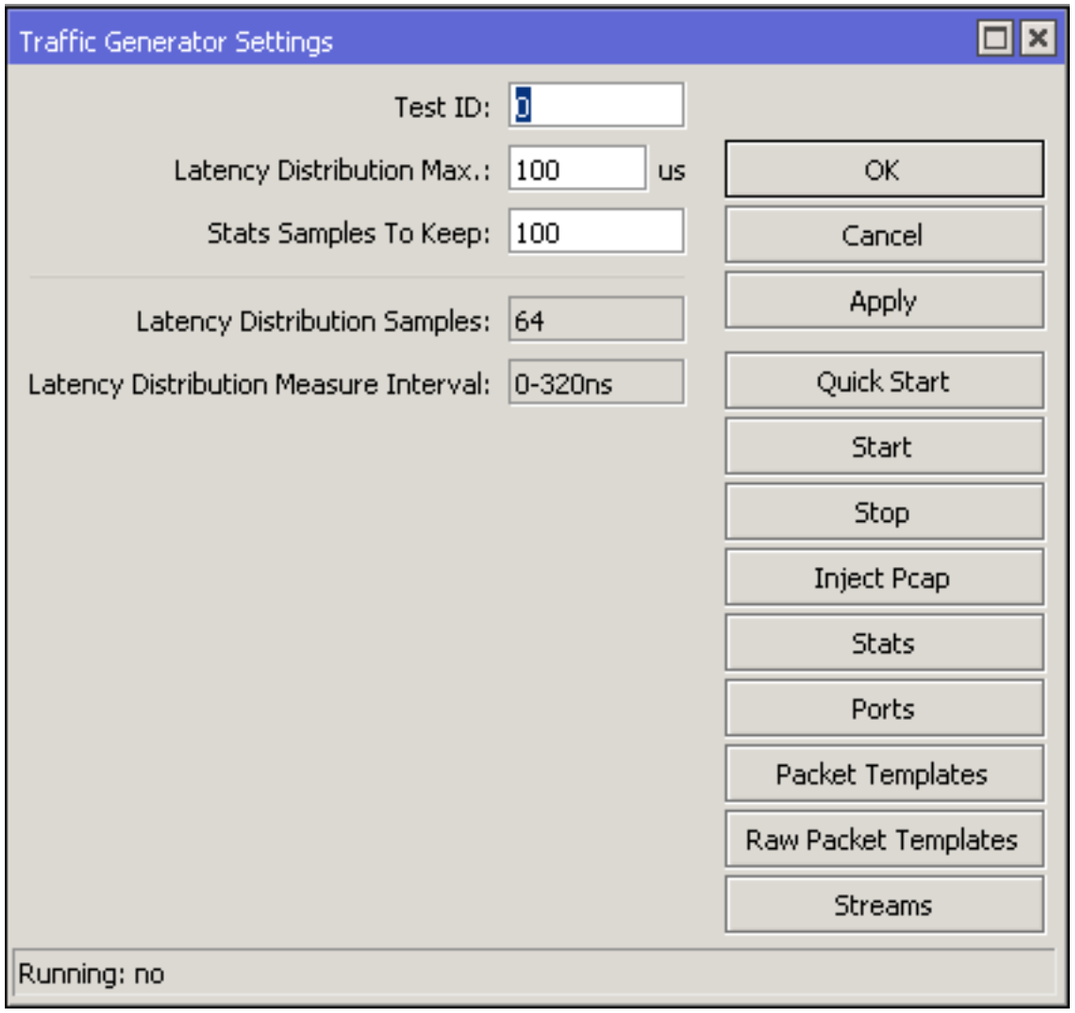
Bandwidth Test



Traffic Generator

- Traffic Generator is a tool that allows to evaluate performance of DUT (Device Under Test)

- Tool can generate and send RAW packets over specific port



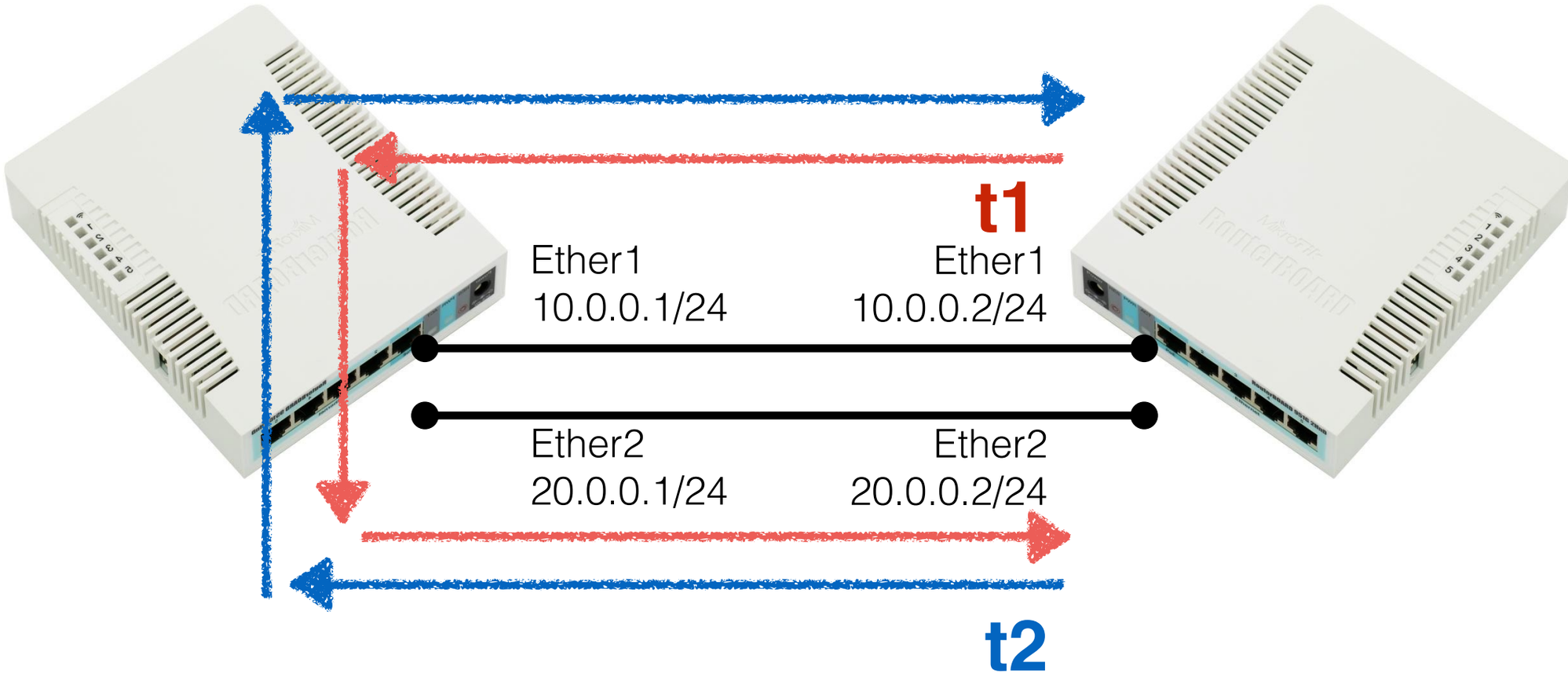
Tools → Traffic Generator

Traffic Generator

DUT

Traffic Generator

Firewall
Queue
Mangle
…



Traffic Generator

- Traffic Generator Configuration

```
/tool traffic-generator packet-template
add header-stack=mac,ip,upd ip-dst=20.0.0.2 ip-gateway=10.0.0.1 name=t1
add header-stack=mac,ip,upd ip-dst=10.0.0.2 ip-gateway=20.0.0.1 name=t2
```

A script to make an T1 and T2 packet template

```
[admin@MikroTik] > tool traffic-generator quick tx-template=t1,t2 packet-size=60 mbps=10
SEQ     ID      TX-PACKET    TX-RATE     RX-PACKET    RX-RATE        RX-OOO   LOST-PACKET LOST-RATE LAT-MIN LAT-AVG LAT-MAX JITTER
9       1          20 834  10.0Mbps         20 834  10.0Mbps             0             0      0bps 26.5us  82.7us  392us   366us
9       TOT        41 669  20.0Mbps         41 669  20.0Mbps             0             0      0bps 24.7us  72.6us  392us   367us
10      0          20 331   9.7Mbps         20 331   9.7Mbps             0             0      0bps 24.6us  49.3us  245us   221us
10      1          20 332   9.7Mbps         20 332   9.7Mbps             0             0      0bps 25.5us  60.2us  298us   272us
10      TOT        40 663  19.5Mbps         40 663  19.5Mbps             0             0      0bps 24.6us  54.7us  298us   273us
11      0          21 335  10.2Mbps         21 335  10.2Mbps             0             0      0bps 24.3us  49.8us  256us   232us
11      1          21 335  10.2Mbps         21 335  10.2Mbps             0             0      0bps 26.3us  61.1us  335us   309us
11      TOT        42 670  20.4Mbps         42 670  20.4Mbps             0             0      0bps 24.3us  55.5us  335us   311us
```

A command to generate T1 and T2 traffic

Traffic Generator

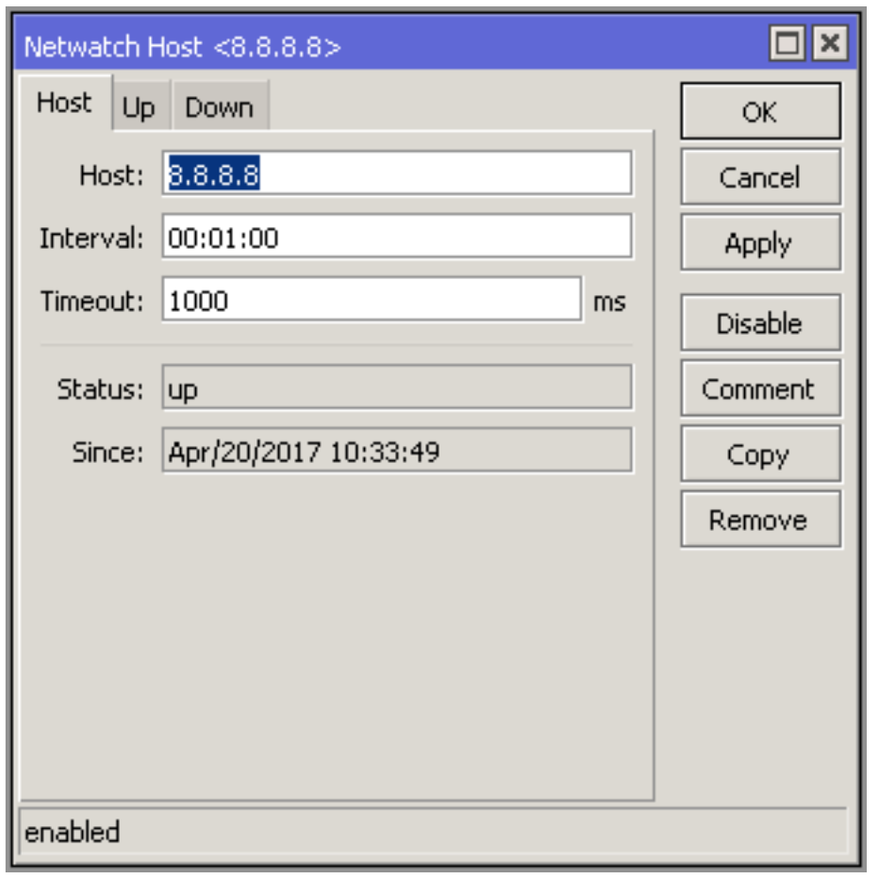
- Device Under Test (DUT)

```
admin@MikroTik] > interface monitor-traffic aggregate,ether1,ether2
                        name:              ether1-gateway ether2-master-local
  rx-packets-per-second:     42 026          21 000                 21 002
    rx-drops-per-second:          0               0                      0
   rx-errors-per-second:          0               0                      0
     rx-bits-per-second:   21.5Mbps        10.7Mbps               10.7Mbps
  tx-packets-per-second:     42 023          21 000                 20 999
    tx-drops-per-second:          0               0                      0
   tx-errors-per-second:          0               0                      0
     tx-bits-per-second:   21.5Mbps        10.7Mbps               10.7Mbps
```

A command to see traffic statistic on Aggregate, Ether1 and Ether2

Netwatch

- Monitor state of hosts on the network
- Send ICMP echo request (ping)
- Can excite a script when a host becomes unreachable or reachable

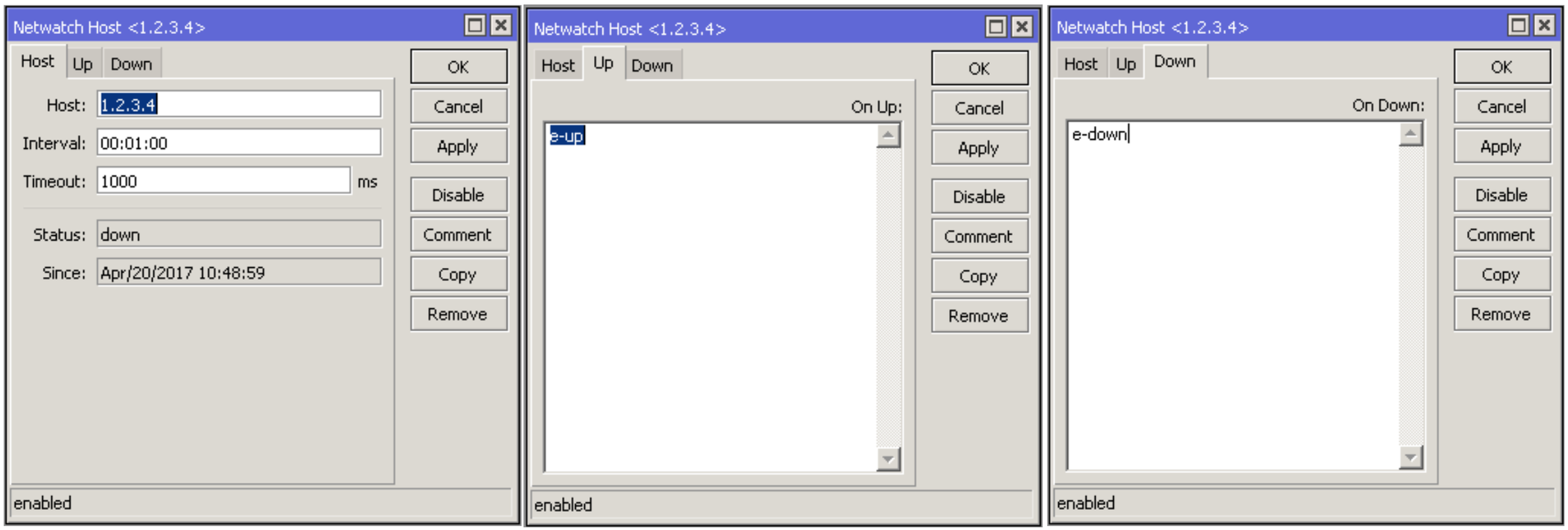


Tools → Netwatch

Netwatch

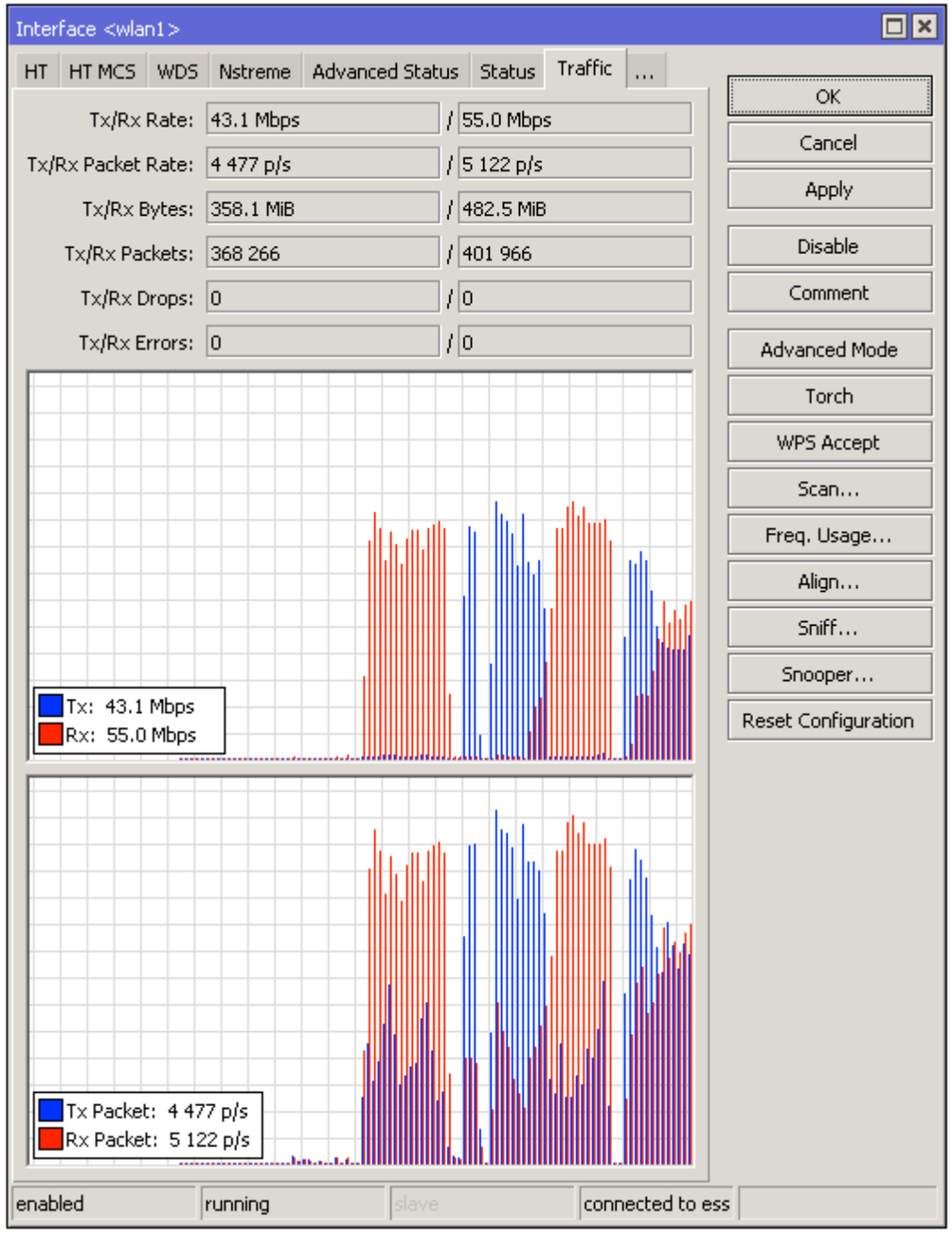
```
/system script add name=e-down source="/tool e-mail send
from=router1@example.com server=smtp.example.com body="Your Internet line
1 is down" to=helpdesk@example.com"

/system script add name=e-up source="/tool e-mail send
from=router1@example.com server=smtp.example.com body="Your Internet line
1 is up" to=helpdesk@example.com"
```



Interface Traffic Monitor

- Real time traffic status
- Available for each interface in traffic tab
- Can also be accessed from both WebFig and command line interface



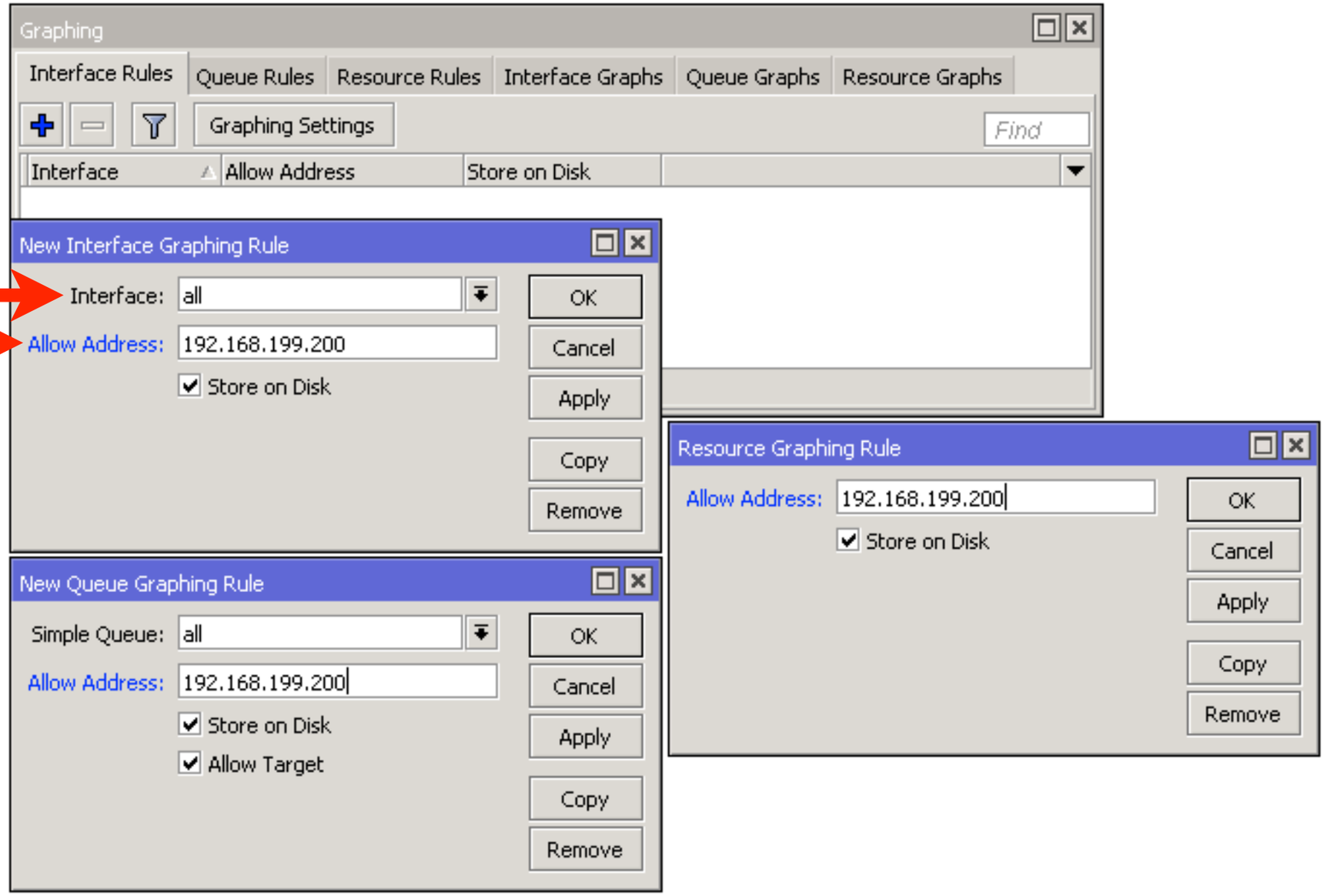
Interfaces → wlan1 → Traffic

Graphing

- RouterOS can generate graphs showing how much traffic has passed through an interface or a queue
- Can show CPU, memory and disk usage
- For each metric there are 4 graphs - daily, weekly, monthly and yearly

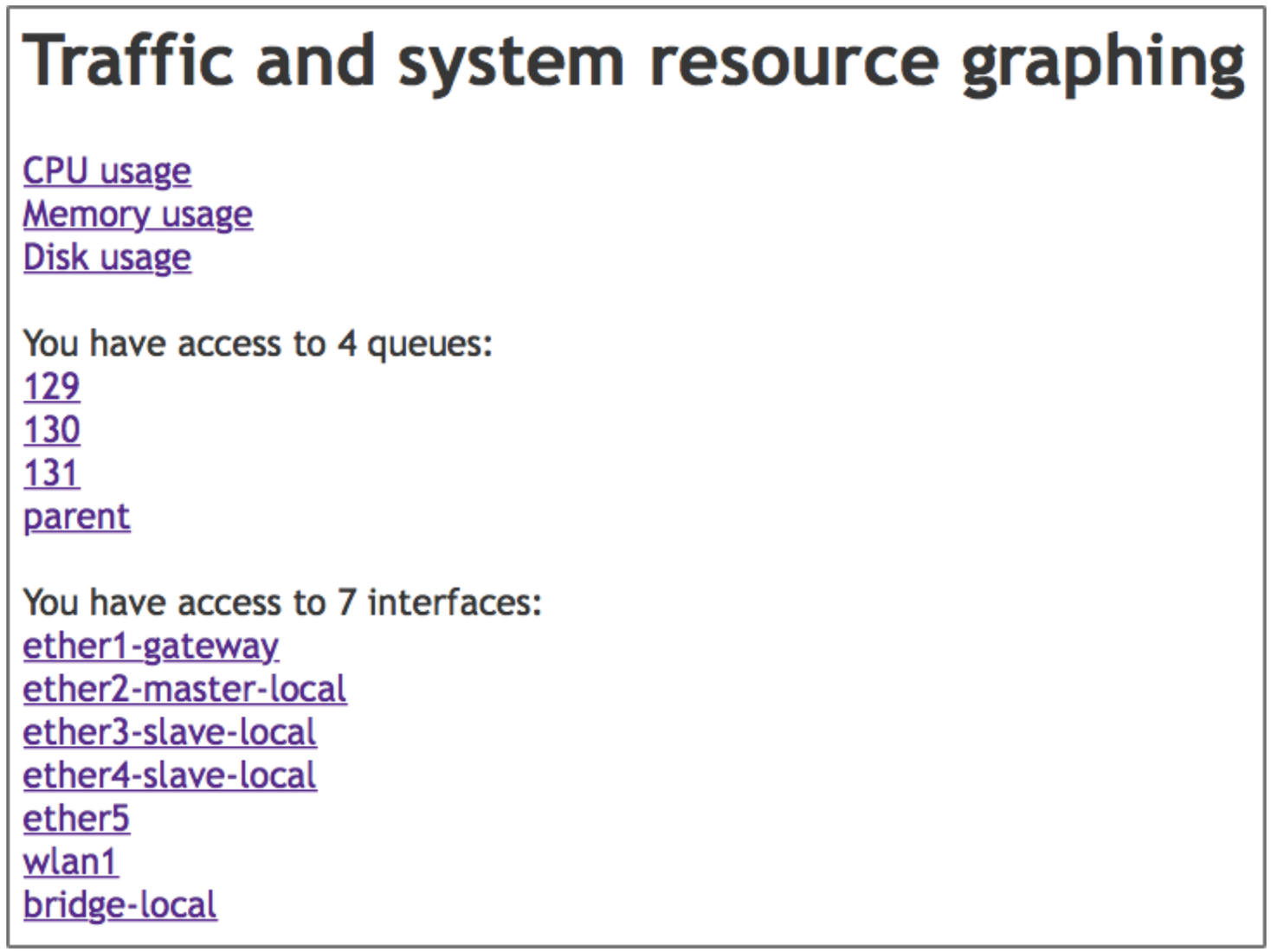
Graphing

Set specific interface to monitor or leave all, set IP address/ subnet which will be able to access the graphs



Tools → Graphing

Graphing



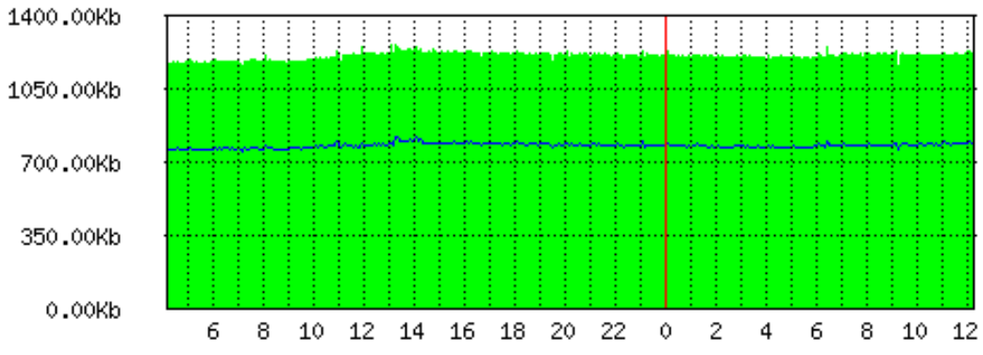
- Available on the router: **http://router_ip/graphs**

Graphing

Interface <ether1-gateway> Statistics

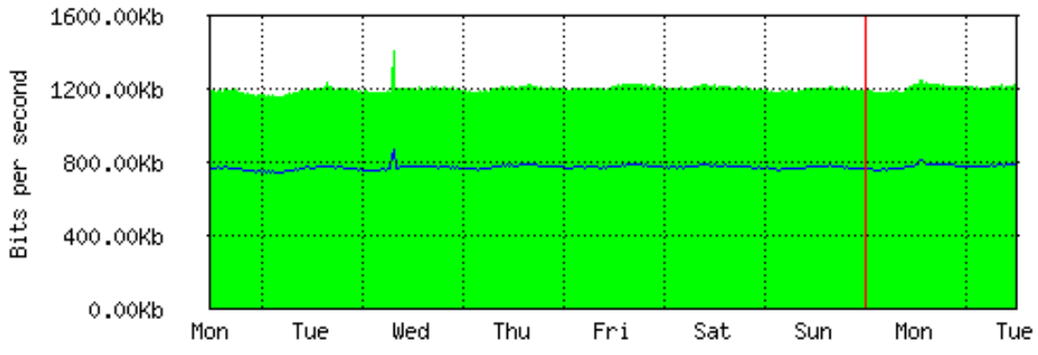
- Last update: Wed Dec 31 23:59:59 2015

"Daily" Graph (5 Minute Average)



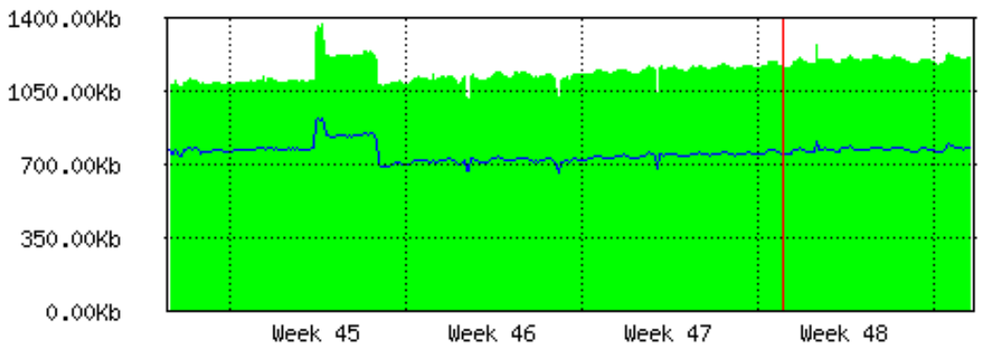
Max In: 1.26Mb; Average In: 1.21Mb; Current In: 1.22Mb;
Max Out: 821.58Kb; Average Out: 780.56Kb; Current Out: 793.75Kb;

"Weekly" Graph (30 Minute Average)



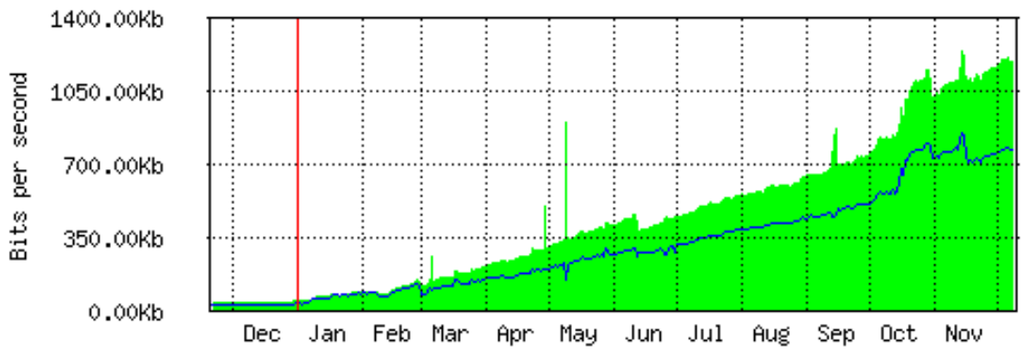
Max In: 1.41Mb; Average In: 1.20Mb; Current In: 1.22Mb;
Max Out: 872.20Kb; Average Out: 772.71Kb; Current Out: 792.54Kb;

"Monthly" Graph (2 Hour Average)



Max In: 1.37Mb; Average In: 1.15Mb; Current In: 1.21Mb;
Max Out: 922.93Kb; Average Out: 757.19Kb; Current Out: 786.12Kb;

"Yearly" Graph (1 Day Average)



Max In: 1.24Mb; Average In: 445.51Kb; Current In: 1.20Mb;
Max Out: 850.52Kb; Average Out: 303.36Kb; Current Out: 772.42Kb;

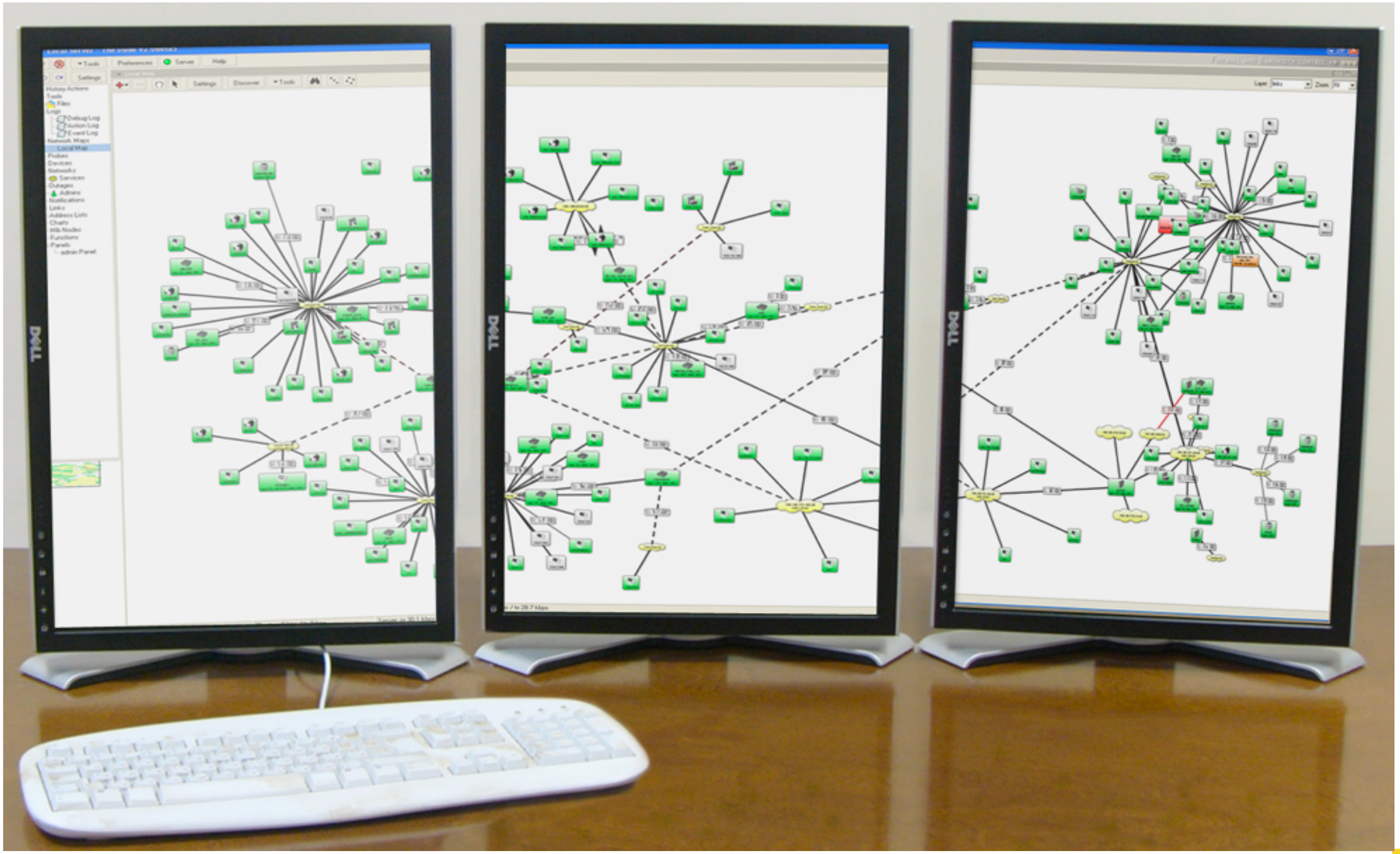
The Dude

- Application by MikroTik which can dramatically improve the way you manage your network environment
- Automatic discovery and layout map of devices
- Monitoring of services and alerting
- Free of charge

The Dude

- Support SNMP, ICMP, DNS and TCP monitoring
- Server part run on RouterOS (CCR, CHR, or x86)
- Client on Windows (works on Linux and OS X using Wine)

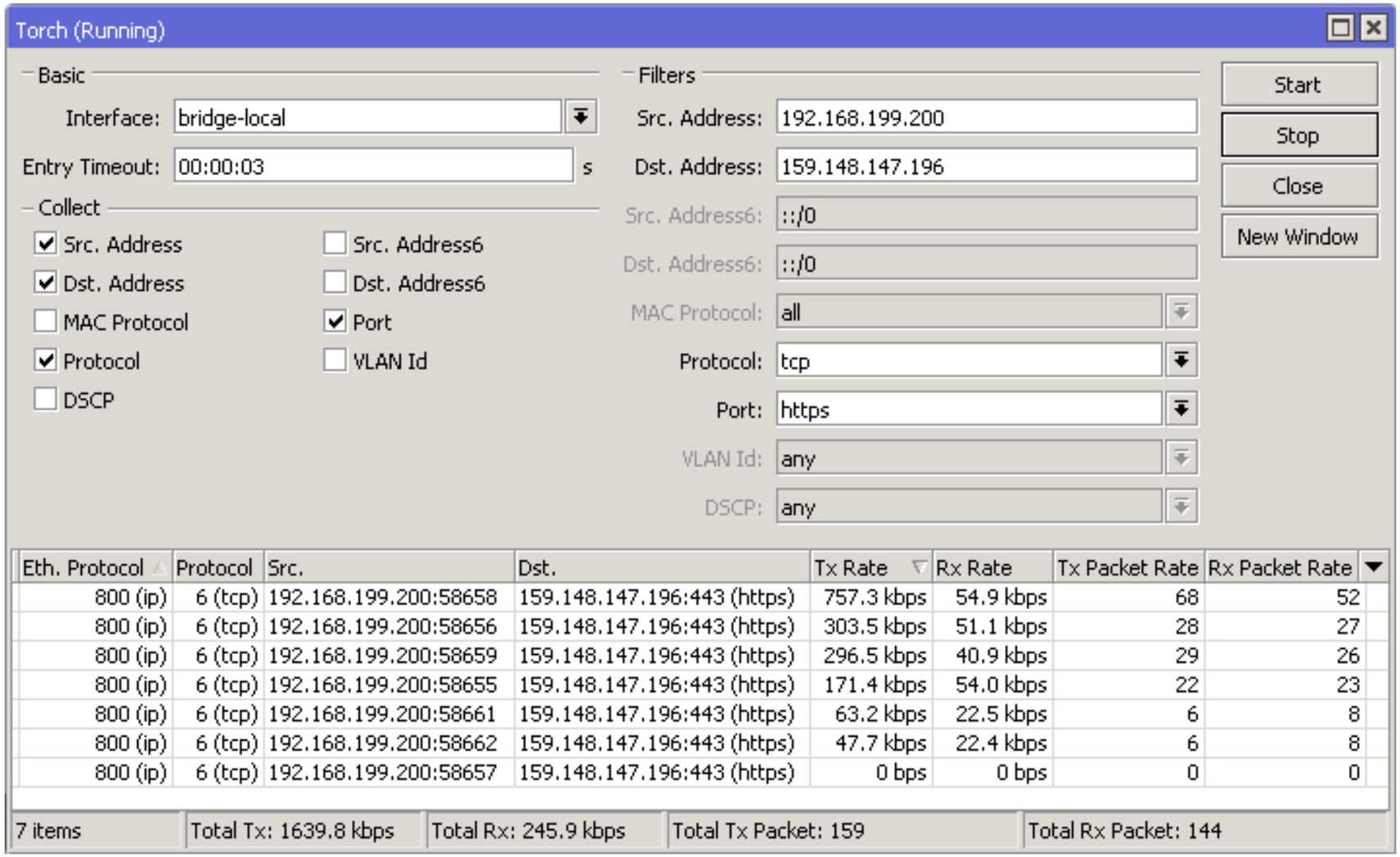
The Dude



Torch

- Real-time monitoring tool
- Can be used to monitor the traffic flow through the interface
- Can monitor traffic classified by IP protocol name, source/destination address (IPv4/IPv6), port number

Torch

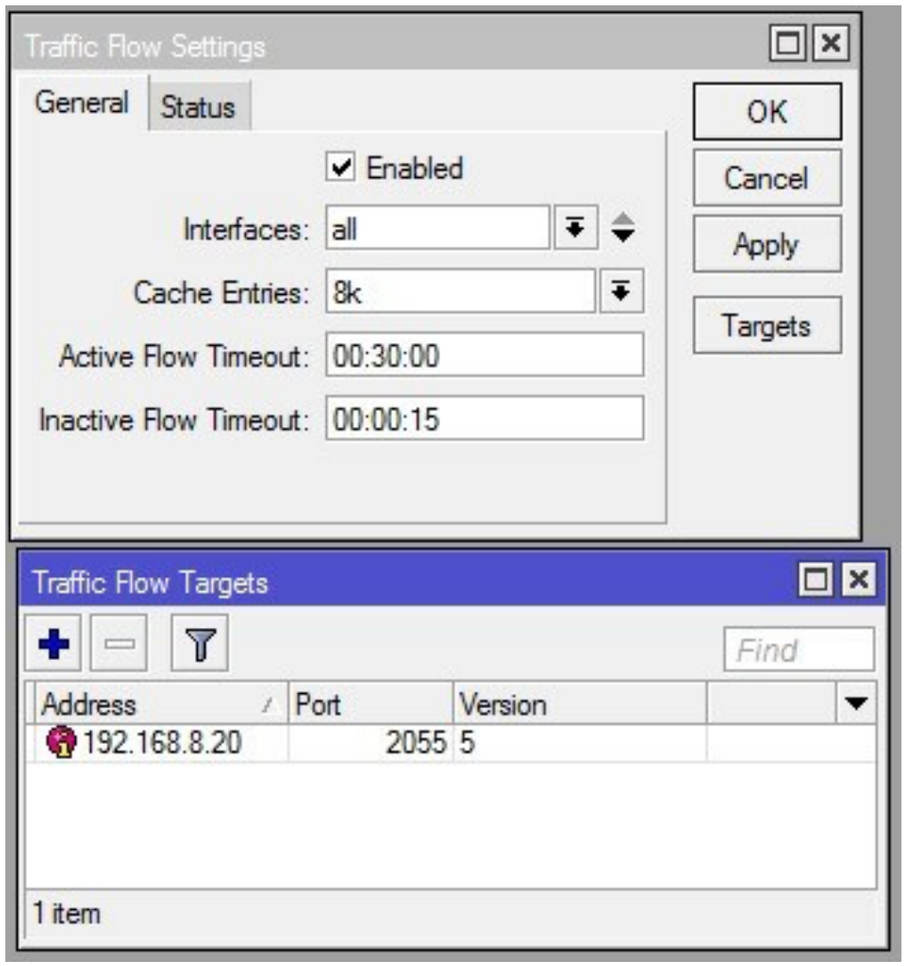


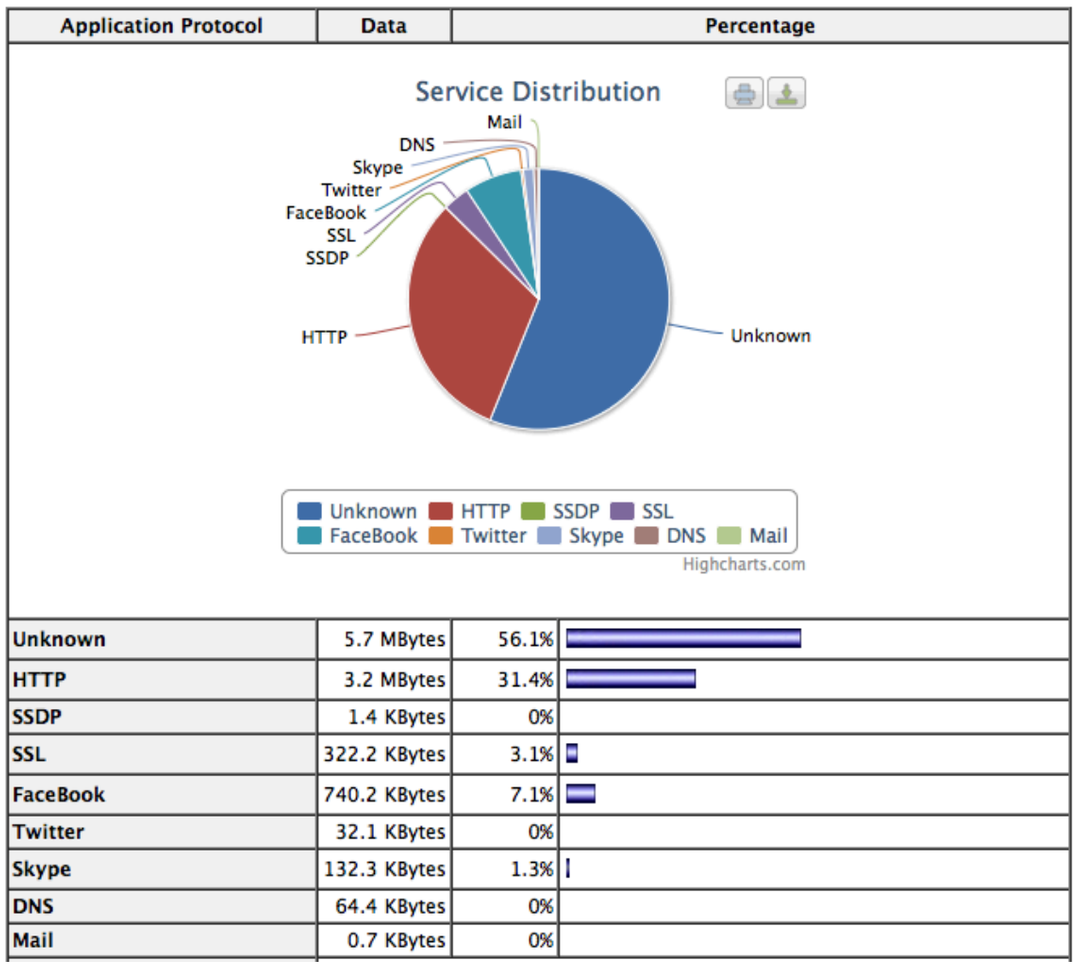
Tools → Torch

- Traffic flow from the laptop to the mikrotik.com web server HTTPS port

Traffic Flow

- Traffic Flow is a system that provides statistic information about packets which pass through the router





Tools → Traffic Flow

www.ntop.org

That is it!!

Or Khun
(Thanks)