

MikroTik

The Dude



Mikrotrain

- Gevestigd te Zwolle



- Trainingsruimte Meppel

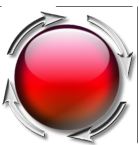


In-company training



- ITN Groep in Nieuwdorp (Zeeland)
- www.itngroep.nl

- Stigho Electro in IJsselstein
- www.stigho.nl



Projecten

- Firewall renewall
 - HA, Bridge Firewall
 - 2 x CCR1036, 2 x CRS317
 - www.mk2.nl

 interwijs



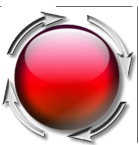
- Netwerk vernieuwing
 - Inclusief WiFi, LTE failover
 - www.interwijs.nl


MikroTrain
MikroTik Opleidingen & Consultancy

Training

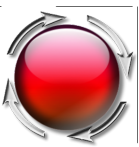


infracom ict
verbonden met
mijn business



Mikrotrain

- Henk Veldkamp
- MTCNA, MTCRE
- MTCWE, MTCTCE
- MTCIPv6E, MTCINE, MTCUME
- Trainer (TR0551)
- CCNA, MCSE
- Mikrotik consultancy & training



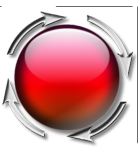
Presentatie

- Doel van de presentatie
 - Introductie/quickstart “The Dude”
 - requirements
 - Overview van een aantal mogelijkheden zoals
 - Layout aanpassingen
 - Logging
 - Notification



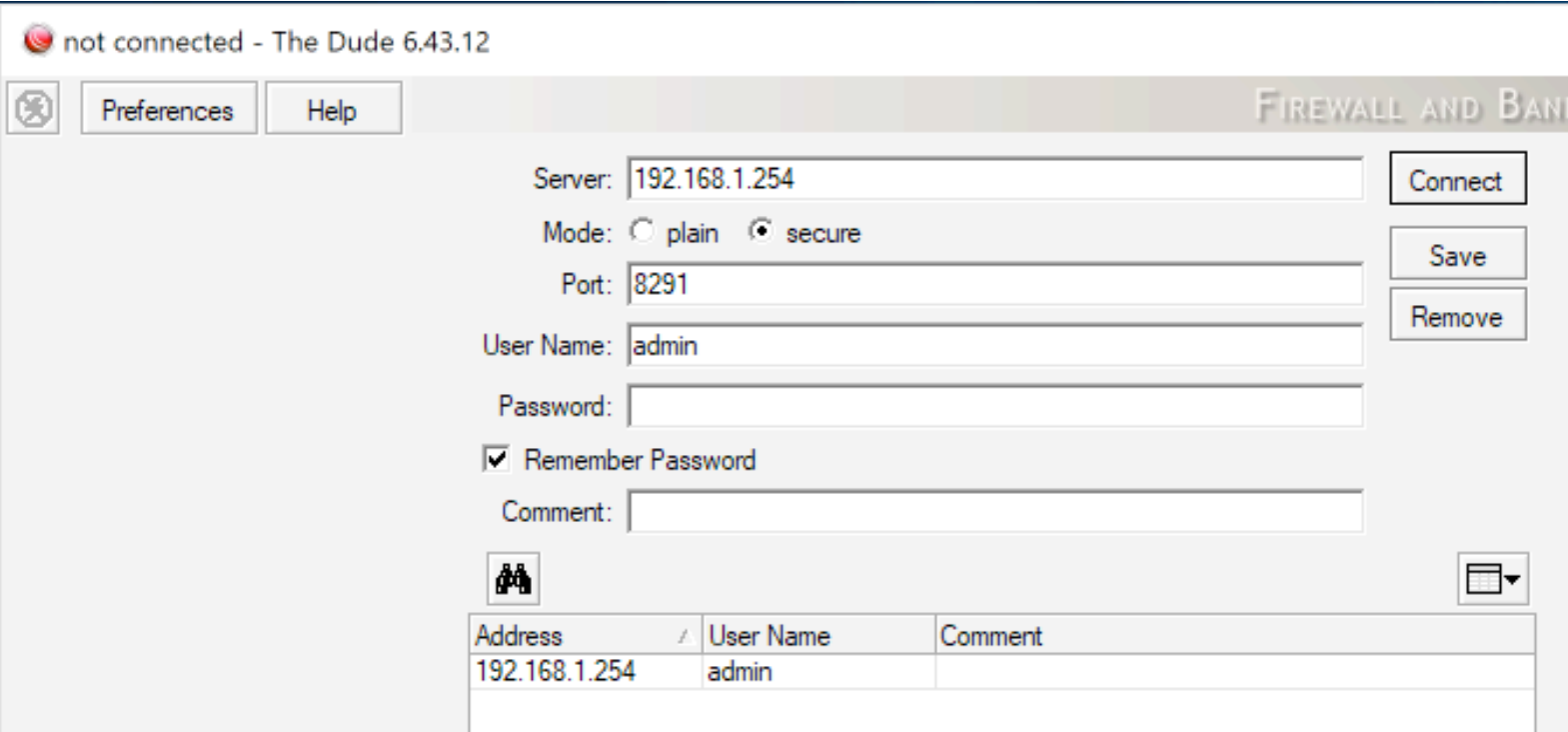
Requirements server deel

- \geq ROS 6.34rc13
- TILE
- ARM
- MMIPS
- X86
- CHR
- >16 Mb storage anders USB of μ SD



Client

- Op alle recente Windows versies
- Interface soortgelijk aan Winbox (zelfde poort: 8291)

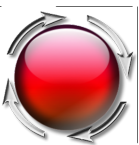


The screenshot shows the 'The Dude' interface for connecting to a server. The title bar reads 'not connected - The Dude 6.43.12'. The main window has a menu bar with 'Preferences' and 'Help'. The title of the main area is 'FIREWALL AND BAND'. The settings are as follows:

- Server: 192.168.1.254
- Mode: plain secure
- Port: 8291
- User Name: admin
- Password: (empty)
- Remember Password
- Comment: (empty)

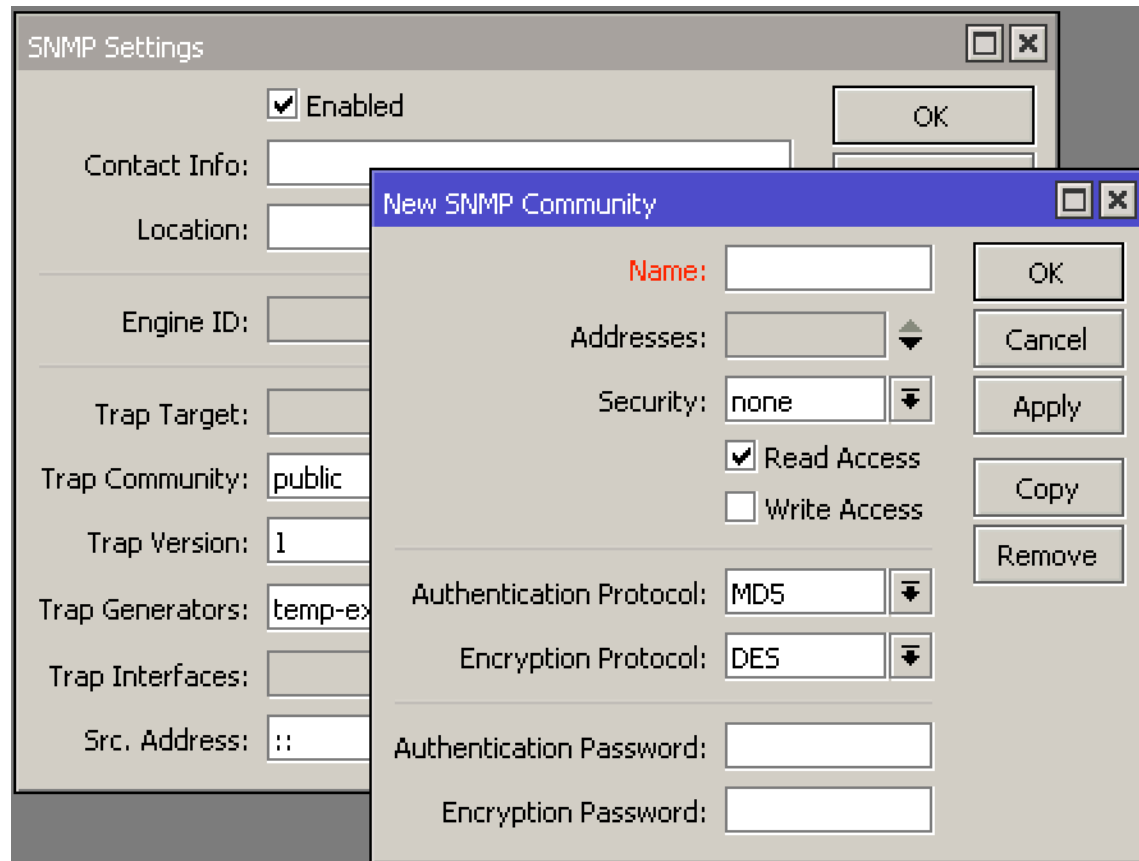
Buttons on the right side include 'Connect', 'Save', and 'Remove'. At the bottom, there is a table with the following data:

Address	User Name	Comment
192.168.1.254	admin	



SNMP enable

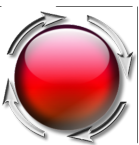
- Enable SNMP, verander community en authentication



The image shows two overlapping windows from the Mikrotik WinBox interface. The background window is titled "SNMP Settings" and has the "Enabled" checkbox checked. The "Trap Community" field is set to "public". The foreground window is titled "New SNMP Community" and contains the following fields:

- Name: [Empty text box]
- Addresses: [Empty dropdown menu]
- Security: none [Dropdown menu]
- Read Access
- Write Access
- Authentication Protocol: MD5 [Dropdown menu]
- Encryption Protocol: DES [Dropdown menu]
- Authentication Password: [Empty text box]
- Encryption Password: [Empty text box]

Buttons on the right side of the "New SNMP Community" window include OK, Cancel, Apply, Copy, and Remove.



Dude client Login

- Username & Password = Winbox->System->Users

User Name:	admin
Password:	

- Maak Dude groep(en)
 - Dude+read, Dude+read+write+ftp+test
 - Voeg gebruikers toe

- Users zichtbaar in Panels

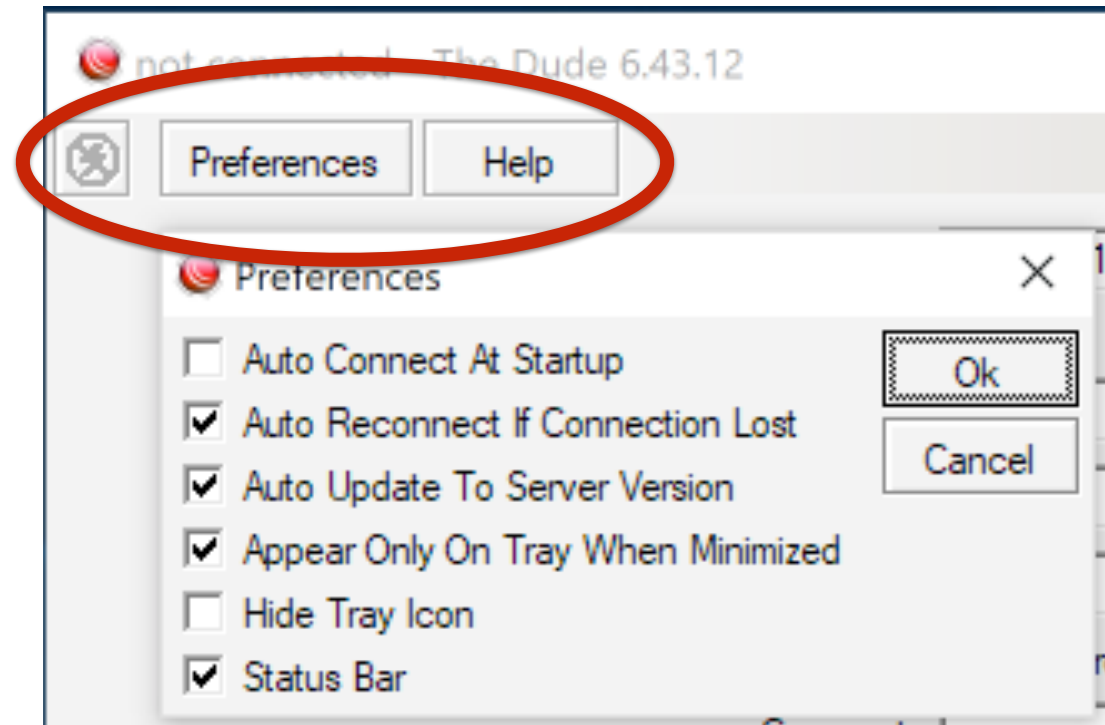
[-]	[grid]	Panels
	[grid]	Henk :ffff:192.16...
	[grid]	admin :ffff:192.1...

- Maak zelfde gebruikers system-wide



Client Preferences

- Stel preferences in
 - Auto Connect altijd naar laatste Sessie
- Auto Connect + Reconnect naar behoefte



Layout menu

- Opties voor Default en Discovery settings

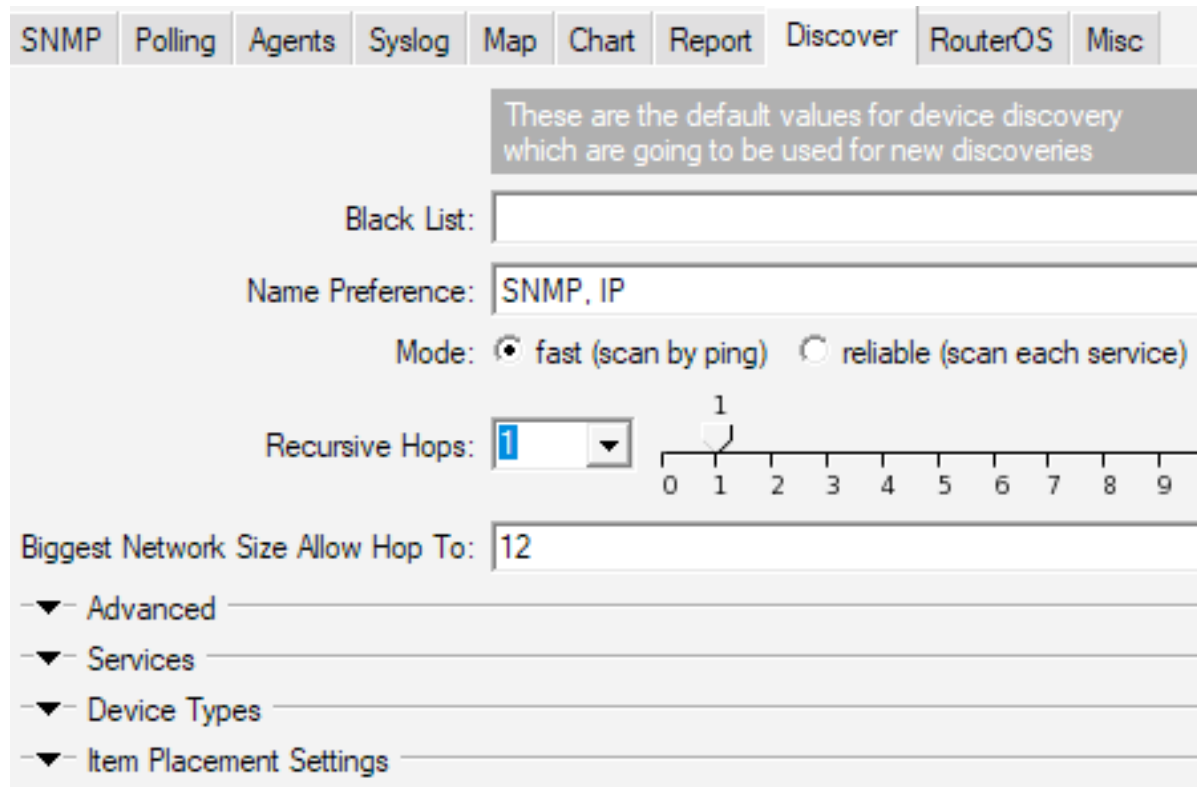
The image shows a screenshot of the Mikrotik WinBox interface. The main window title is "admin@192.168.1.254 - The Dude 6.43.12". The interface includes a menu bar with "Preferences" and "Help", a toolbar with icons for "Settings" and "Discover", and a "Contents" sidebar with "Charts", "Ping statistics", and "Devices". The "Discover" button in the toolbar is highlighted with a black arrow. Below the main window, the "Device Discovery" dialog box is open, showing the "General" tab. The dialog box contains the following fields and options:

- Scan Networks: 10.1.0.0/24
- Agent: default
- Add Networks To Auto Scan
- Black List: [empty]
- Device Name Preference: SNMP, IP
- Discovery Mode: fast (scan by ping) reliable (scan each service)
- Recursive Hops: 1
- Layout Map After Discovery Complete

The "Discover" and "Cancel" buttons are visible on the right side of the dialog box.

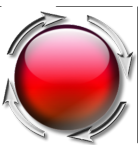
Discover defaults

- Default worden vrij veel services onderzocht
- Aanpassen voordat discovery gedaan wordt



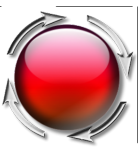
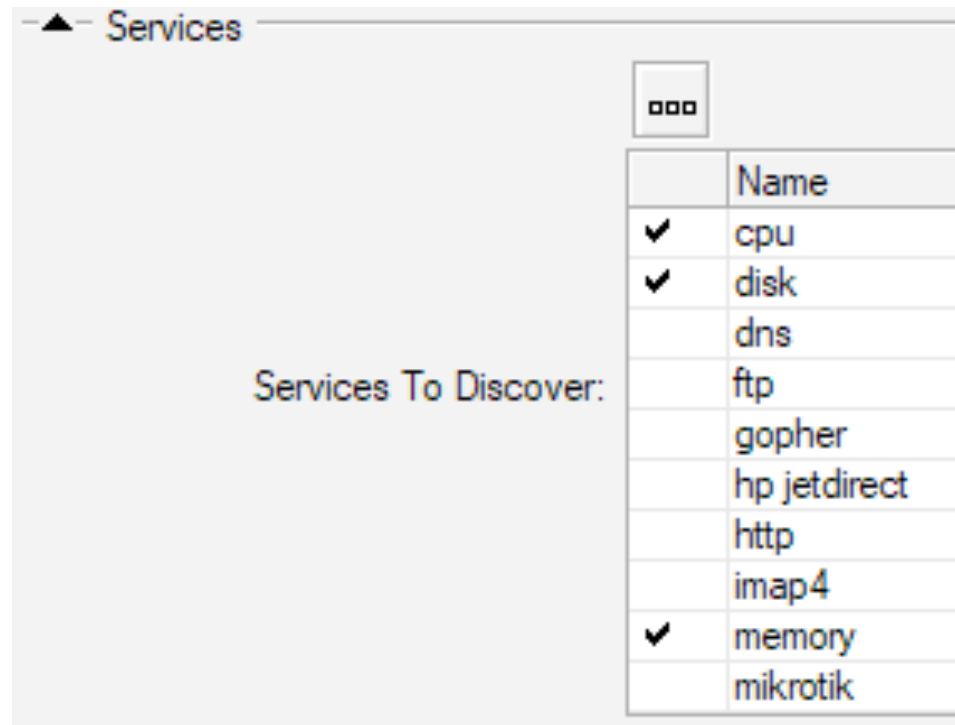
The screenshot shows the 'Discover' tab in a Mikrotik configuration interface. At the top, there are navigation tabs: SNMP, Polling, Agents, Syslog, Map, Chart, Report, Discover (selected), RouterOS, and Misc. Below the tabs, a grey box contains the text: 'These are the default values for device discovery which are going to be used for new discoveries'. The configuration fields are as follows:

- Black List: [Empty text box]
- Name Preference: [SNMP, IP]
- Mode: fast (scan by ping) reliable (scan each service)
- Recursive Hops: [1] (with a slider below it ranging from 0 to 9)
- Biggest Network Size Allow Hop To: [12]
- Advanced: [Dropdown arrow]
- Services: [Dropdown arrow]
- Device Types: [Dropdown arrow]
- Item Placement Settings: [Dropdown arrow]



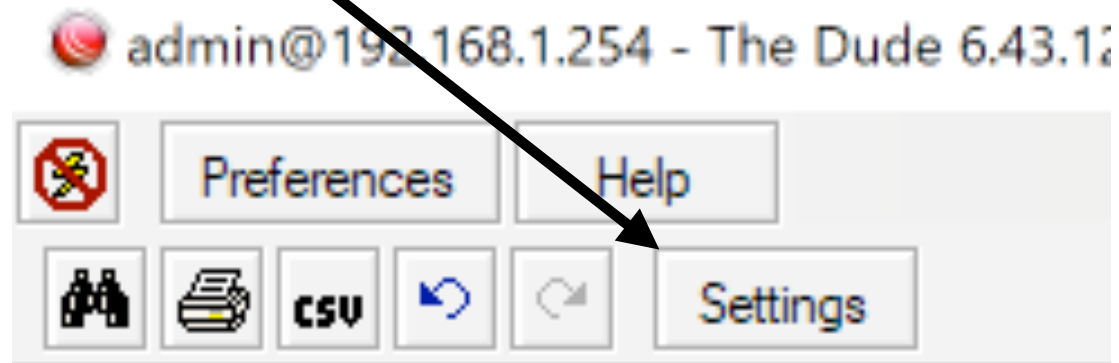
Discover defaults

- Selekteer services die je wilt



Server settings

- Server Default settings

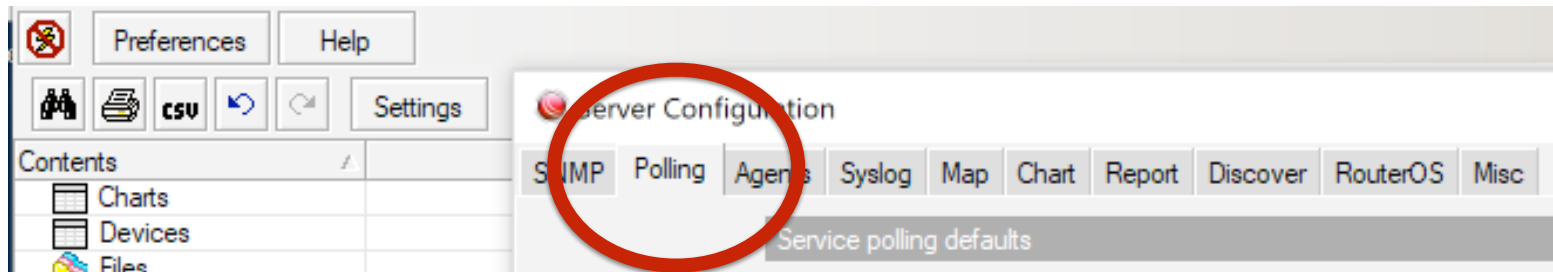


- Indien Submenu setting = default dan gelden deze settings

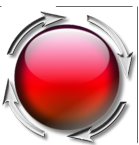
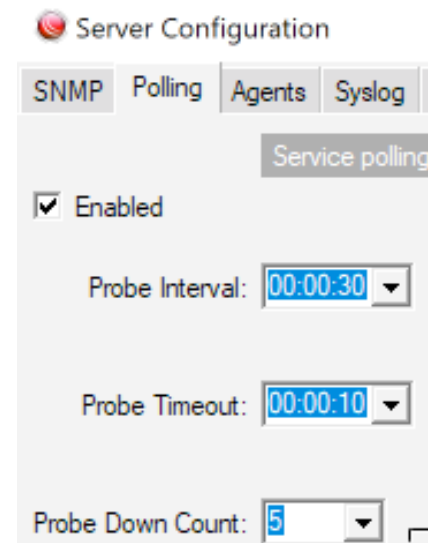


Polling settings

- De tijden waarop polling, timeouts en “down” gebeuren



- Default settings in tabbladen



Menu opbouw

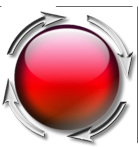
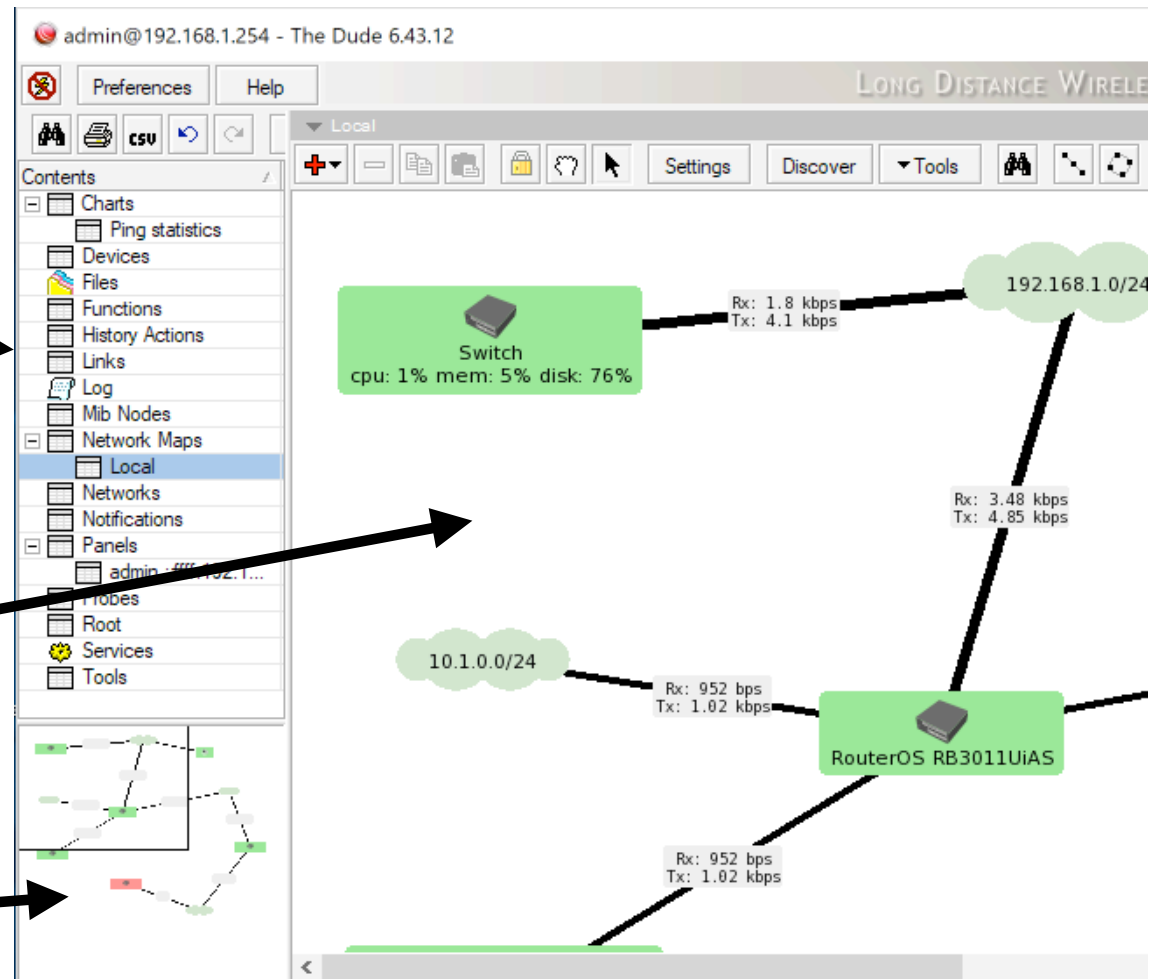
- Panes, vensters

- Menu

- Dubbelklik

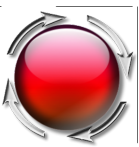
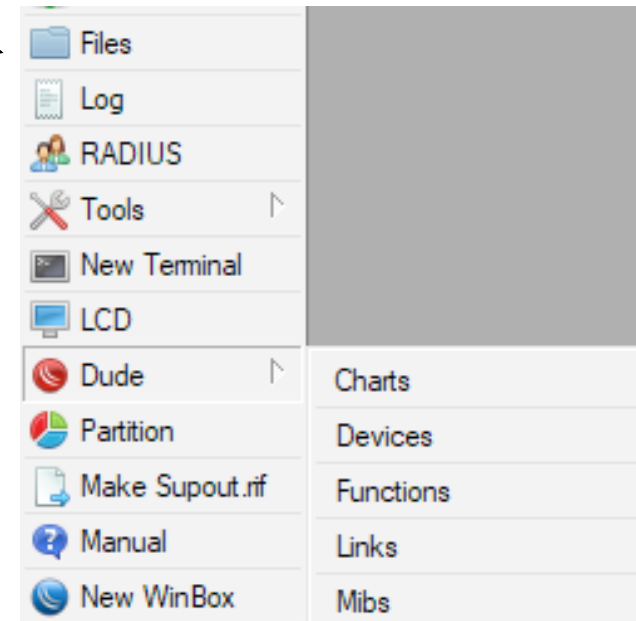
- Main

- Overview



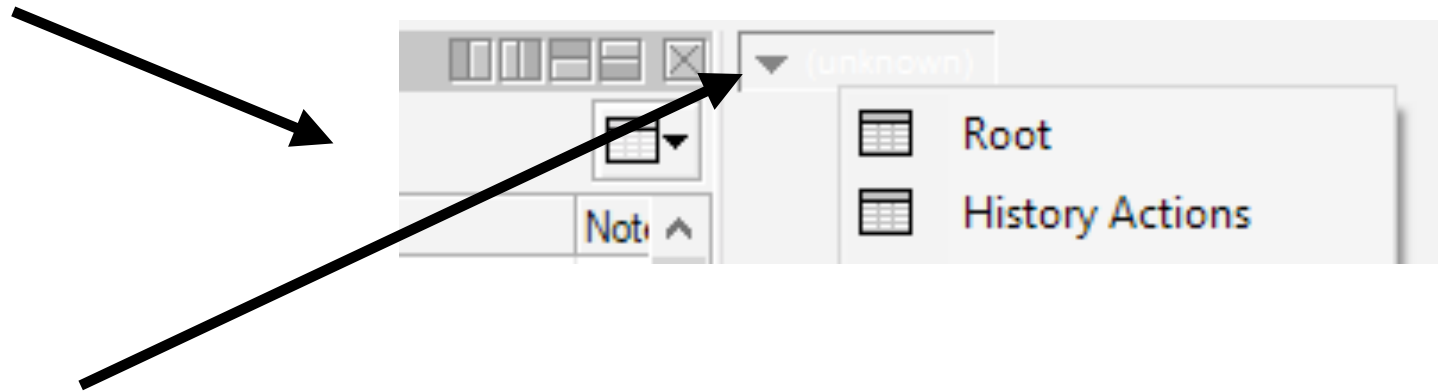
Server (winbox)

- Winbox->Dude
 - Files uploaden alleen via Winbox
 - Packages
 - MIB's
 - Graphics (images)
- Dude menu
 - Voedingsbron voor Client

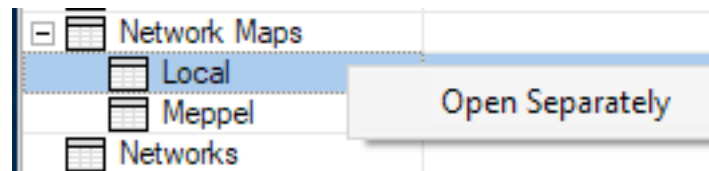


Schermen opdelen

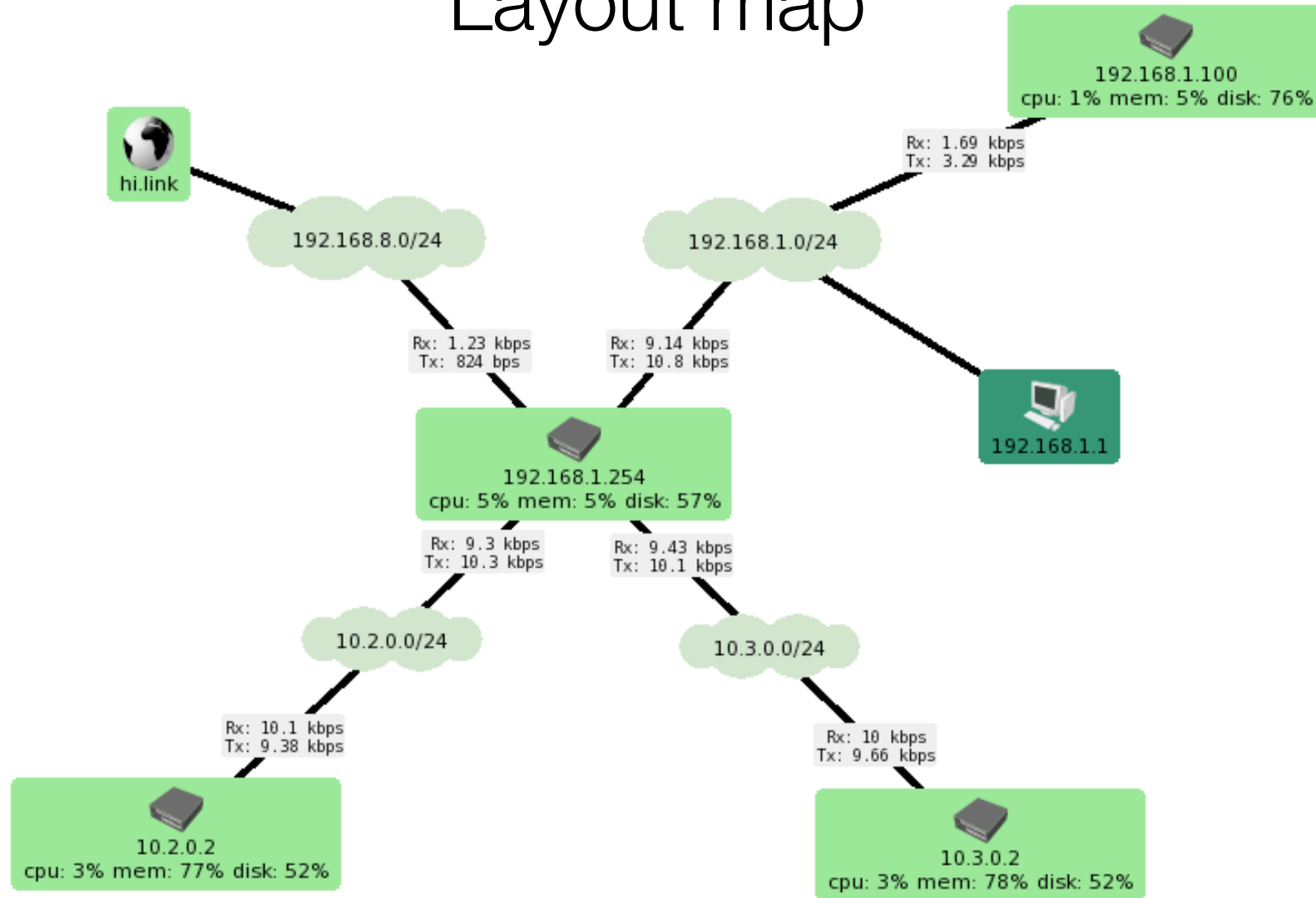
- Twee vensters naast elkaar of onder elkaar



- Selecteer tweede venster of sleep uit Menu
- Rechtsklik op Menu-> Open los venster

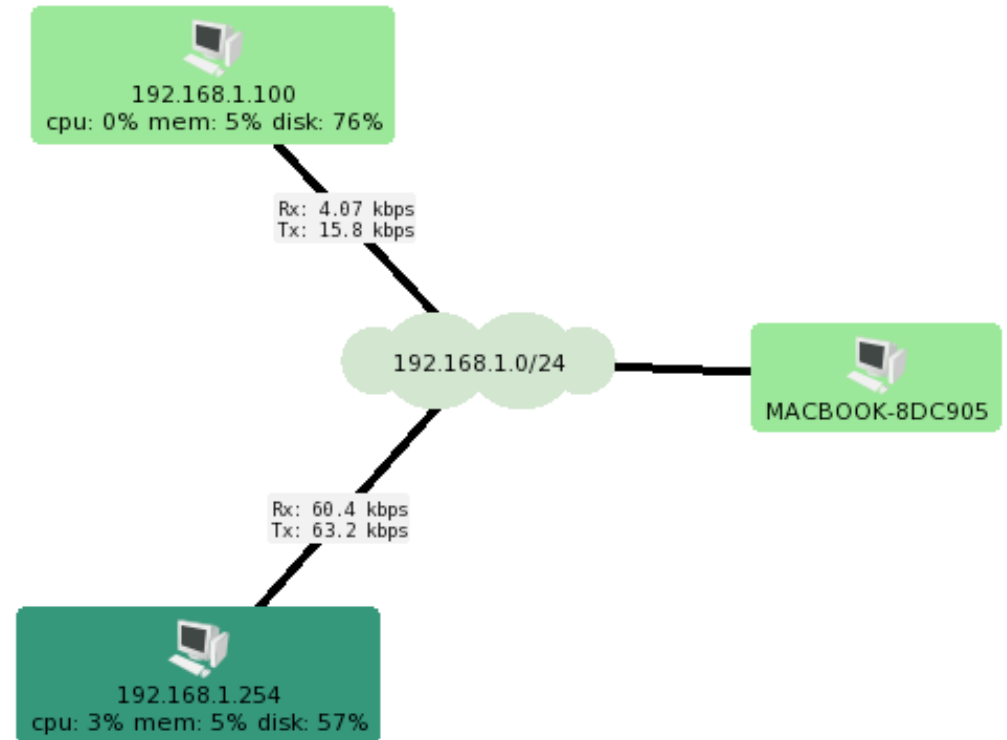
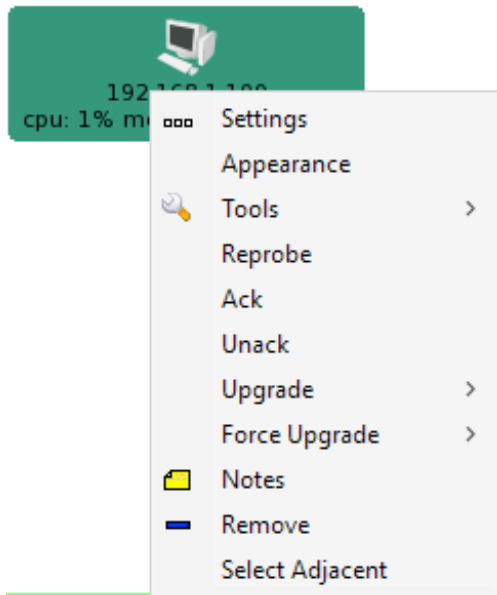


Layout map



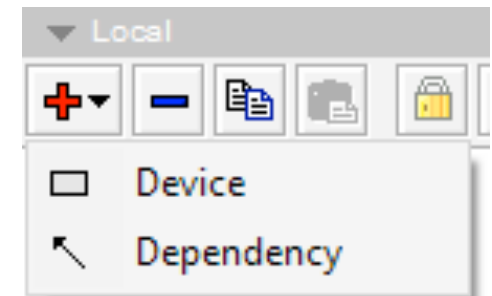
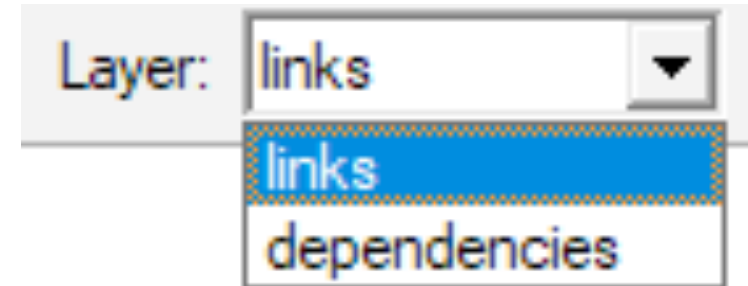
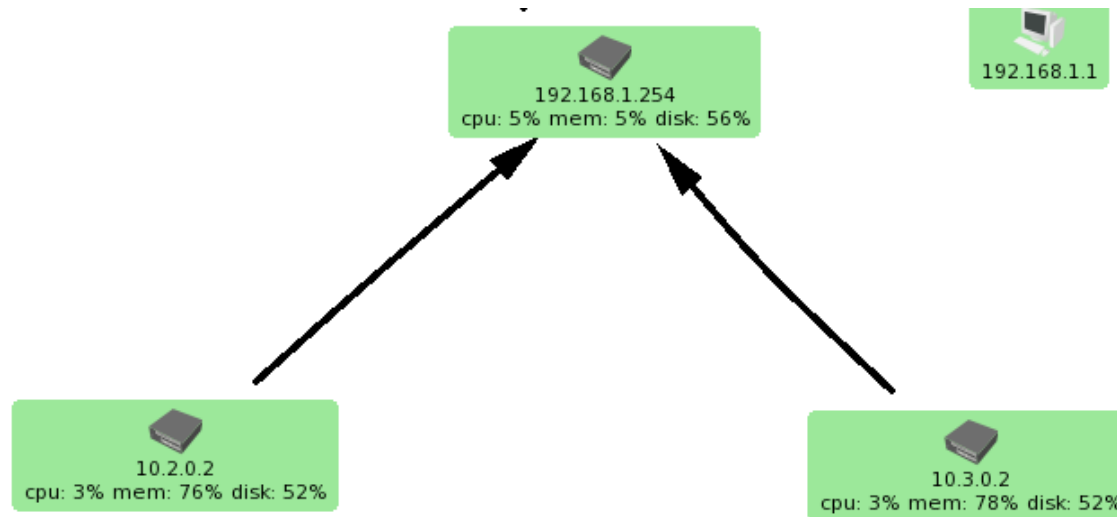
Layout map

- Aanwijzen geeft Grafiek
- Dubbelklik->Device settings
- Rechter muis->submenu:



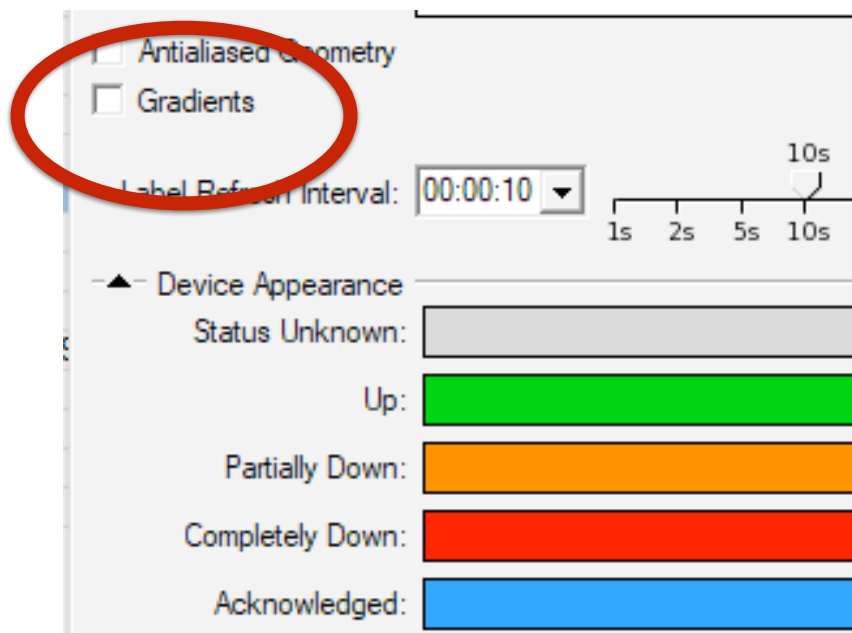
Layout dependancies

- Aangeven wie van wie afhankelijk is om voor de hand liggende meldingen te voorkomen bij upgrade/reboot bijvoorbeeld

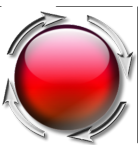


Map settings

- Gradients->verloopt van kleur/ vaste kleur



- Alle "Down" worden zichtbaar:



Map settings

- Label = wat aangegeven wordt (ServicesDown)
- Tooltip = wat zichtbaar is als je hem aanwijst

	<input type="button" value="▼ Insert Variable"/> <input type="button" value="Insert Oid"/> <input type="button" value="Functions..."/>
Label:	<code>[Device.Name] [device_performance()][Device.ServicesDown]</code>
	<input type="button" value="▼ Insert Variable"/> <input type="button" value="Insert Oid"/> <input type="button" value="Functions..."/>
Tooltip:	<code>Device [Device.Name] ([Device.Type]) IP: [Device.AddressesCommaList] MAC: [Device.MacAddressesCommaList] [services_info()][snmp_name()][snmp_description()][snmp_uptime()]</code>



Map settings



hAP lite (R4)

ssh, routers management, mikrotik, cpu, memory, disk, ftp, http



hAP lite (R4)

ssh, routers management, mikrotik, cpu, memory, disk, ftp



hAP lite (R4)

cpu: 6% mem: 72% disk: 52%
cpu, memory



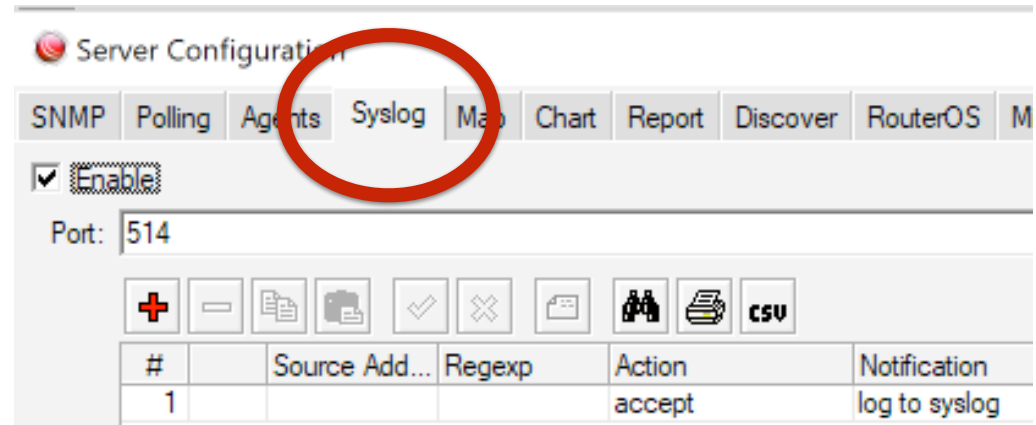
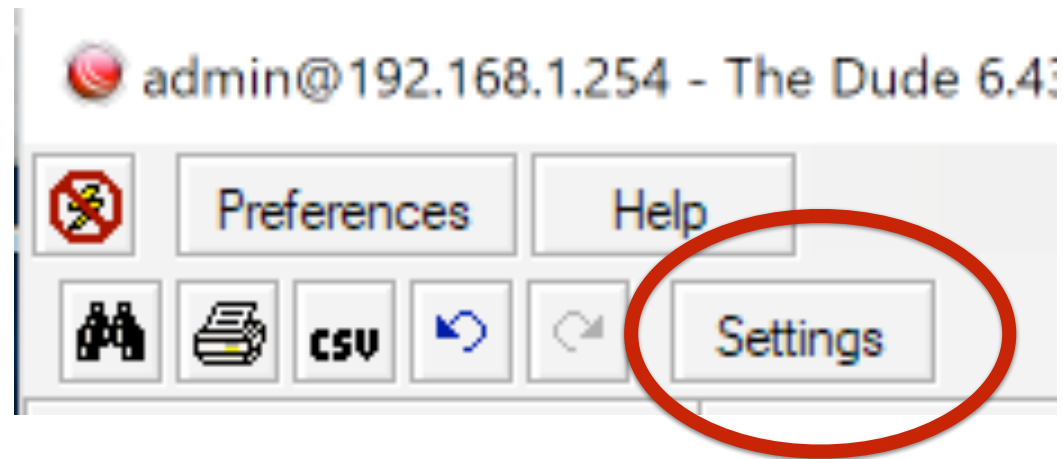
hAP lite (R4)

cpu: 0% mem: 72% disk: 52%



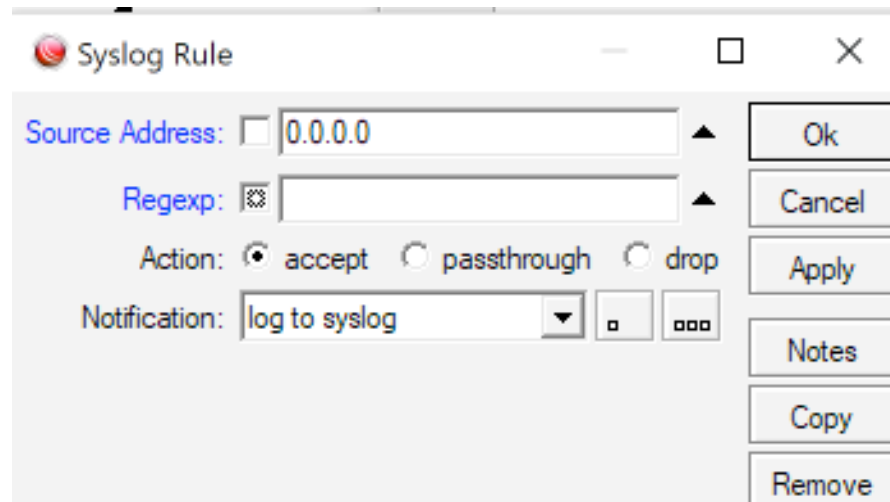
Syslog

- Default 1 regel: accept alles



Syslog

- Veranderen:
 - Source adres: ip van device die je accepteert
 - Regexp.: filteren van regels uit de log die geaccepteerd worden



Screenshot of the Syslog Rule configuration window. The window title is "Syslog Rule". It contains the following fields and options:

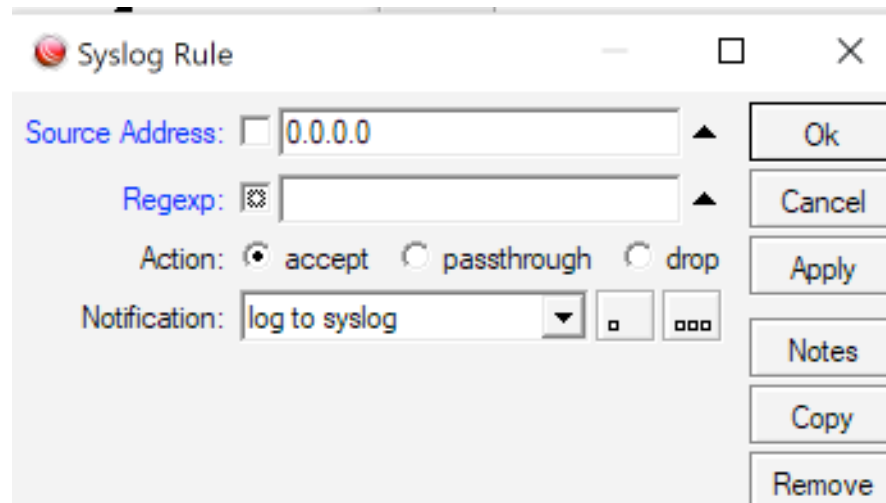
- Source Address: 0.0.0.0
- Regexp: [empty]
- Action: accept passthrough drop
- Notification: log to syslog

Buttons on the right: Ok, Cancel, Apply, Notes, Copy, Remove.



Syslog

- Accept = doe Notification en stop
- Passthrough = doe Notification en ga naar volgende regel
- Drop = doe niets en stop

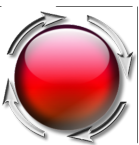


Screenshot of the Syslog Rule configuration window. The window title is "Syslog Rule". It contains the following fields and controls:

- Source Address: 0.0.0.0
- Regexp: [empty]
- Action: accept passthrough drop
- Notification: log to syslog

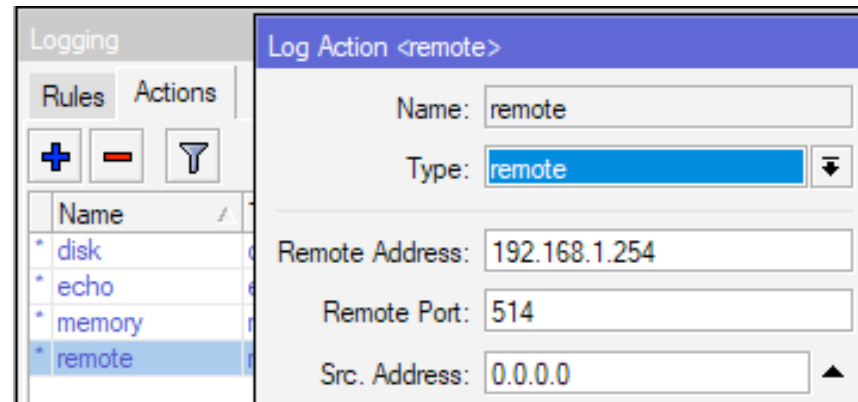
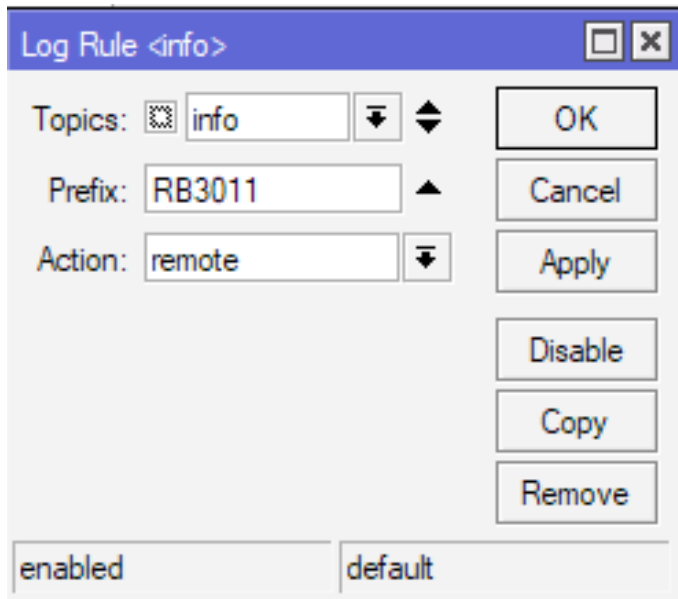
Buttons on the right: Ok, Cancel, Apply, Notes, Copy, Remove.

- Log to Syslog = Menu->Log



Enable logging

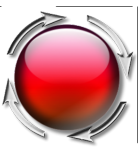
- Winbox->System->Logging
- Add Rule->remote en change prefix om te herkennen
- Action->Remote Address = Dude server IP



Functions

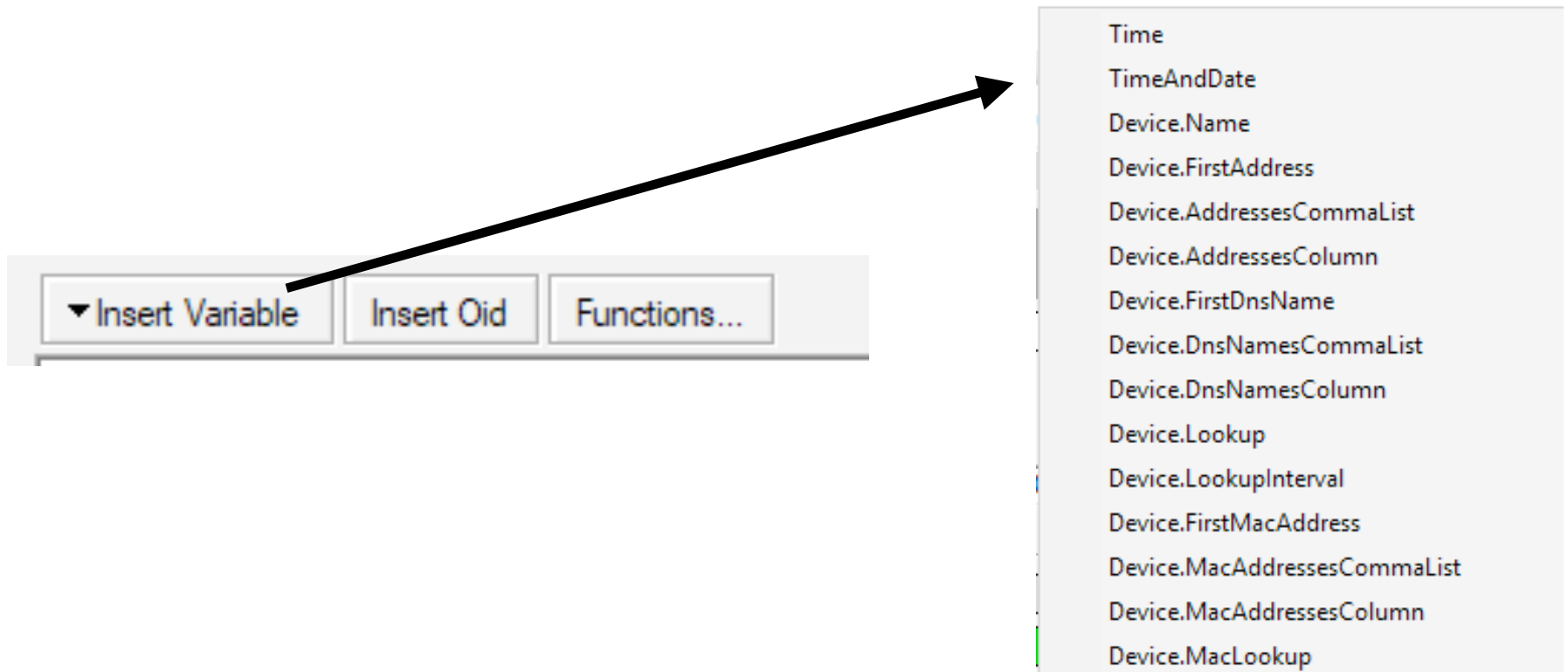
- Bestaande functies gebruiken of zelf toevoegen
- Maakt gebruik van voorgedefinieerd “keywords”:
 - max, min, average, array_find, if, string_find etc.
- En zelfgemaakt functies: bijv. device_performance:

```
if(string_size(cpu_mem_disk()) > 0,  
concatenate(cpu_mem_disk(), ""),""  
)
```



Insert Variables

- Op diverse plaatsen kunnen voorgedefinieerde variabelen , Oid en Function's worden toegevoegd



The screenshot shows a software interface with three buttons: "▼ Insert Variable", "Insert Oid", and "Functions...". The "▼ Insert Variable" button is selected, and a dropdown menu is open, listing the following predefined variables:

- Time
- TimeAndDate
- Device.Name
- Device.FirstAddress
- Device.AddressesCommaList
- Device.AddressesColumn
- Device.FirstDnsName
- Device.DnsNamesCommaList
- Device.DnsNamesColumn
- Device.Lookup
- Device.LookupInterval
- Device.FirstMacAddress
- Device.MacAddressesCommaList
- Device.MacAddressesColumn
- Device.MacLookup

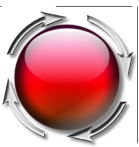


RouterOS commando's

- Zelf ook RouterOS commando's toe te voegen:

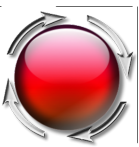
```
[ros_command("::put ([/system health get temperature].\" C\")")]
```

- Begin-Eind = [en]
- ros_command = RouterOS commando
- Begin-Eind = (“ en “)
- Commando =::put ([en])
- ROS commando = /system health get temperature



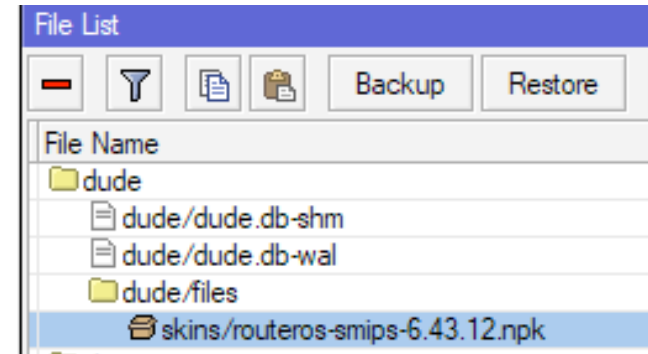
SNMP oid

- Systeem naam opvragen via SNMP:
 - [oid("iso.org.dod.internet.mgmt.mib-2.system.sysDescr.0")]
- Of via nummer:
 - [oid("1.3.6.1.2.1.1.1.0")]
 - Laatste .0 = get value

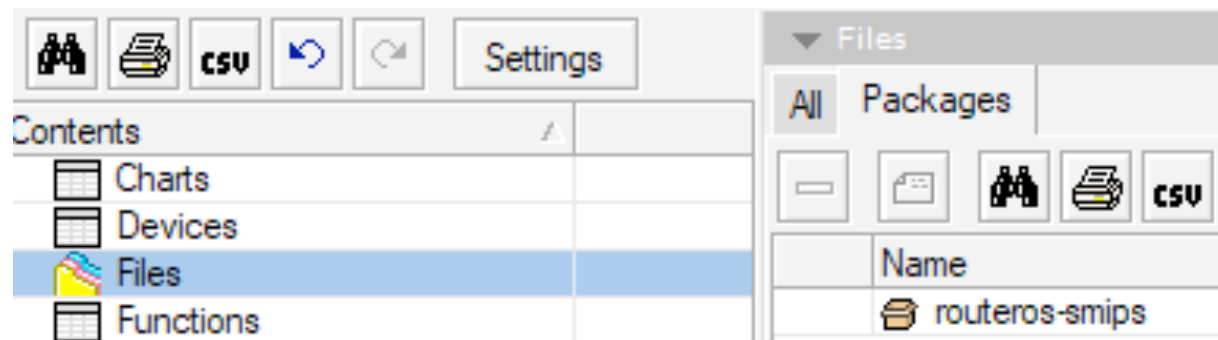


Upgrading

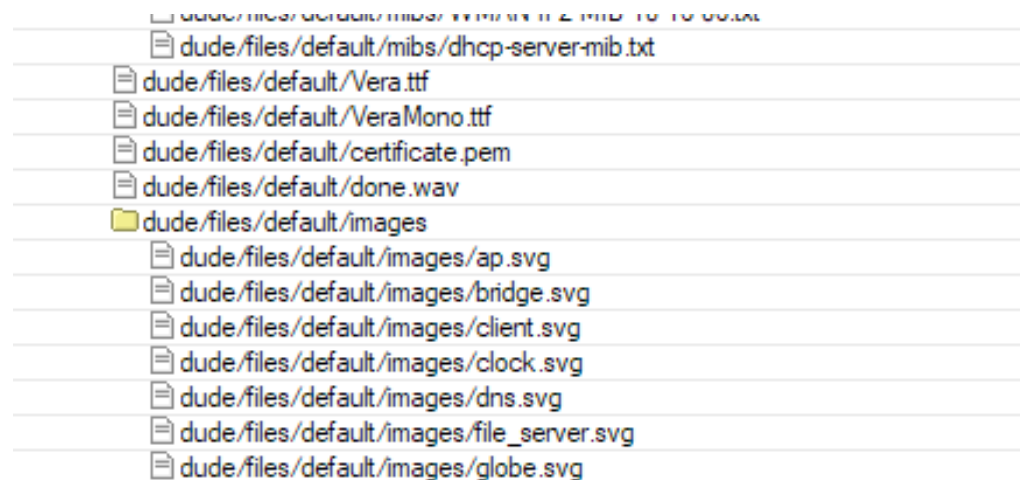
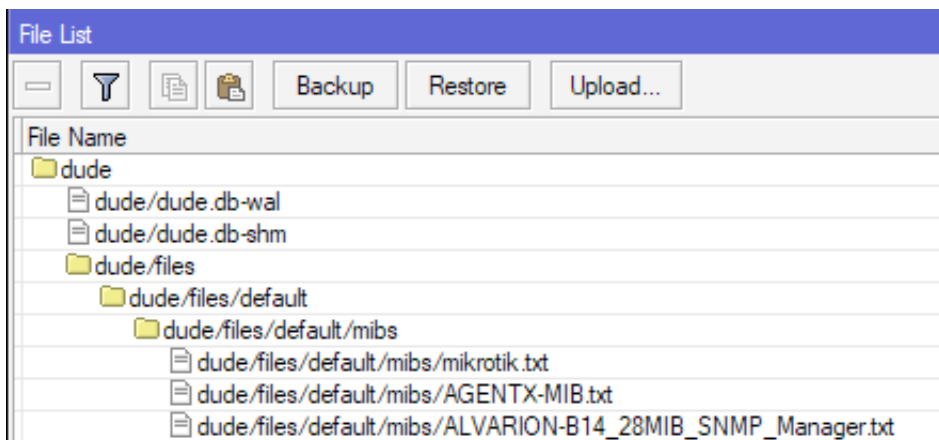
- Upload packages via Winbox in Files menu
- folder: /dude/files



- Worden zichtbaar in Dude->Files->Packages



File structuur



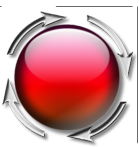
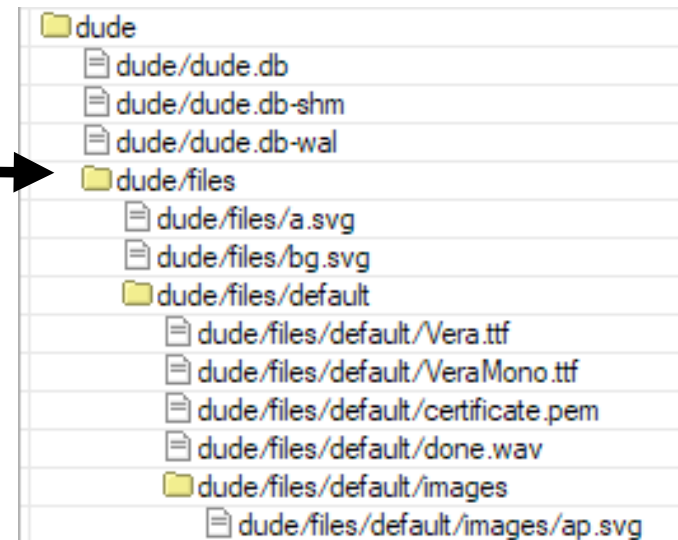
dude/files/bg.svg	.svg file	80.9 KiB
dude/dude.db	.db file	3652.0 KiB

- dude/files/default/mibs = MIBS
- dude/files/default/images = images voor devices
- dude/files/dude.db = de algemene database



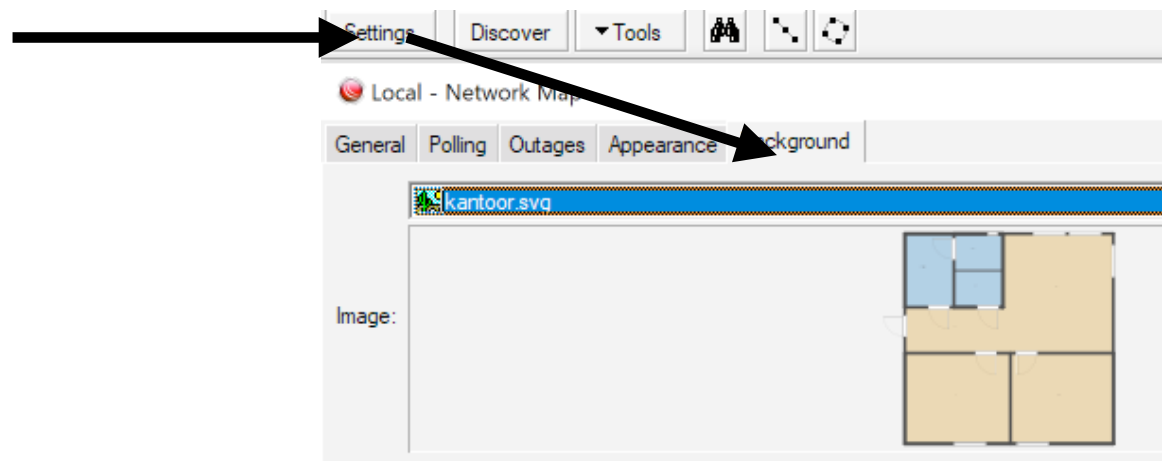
Files, MIBS, Images

- Images en MIBS uploaden via Winbox->Files
- Images in svg: scaled vector graphics
- Upload folder →
- Images zijn groter en kleiner te maken in Dude zelf

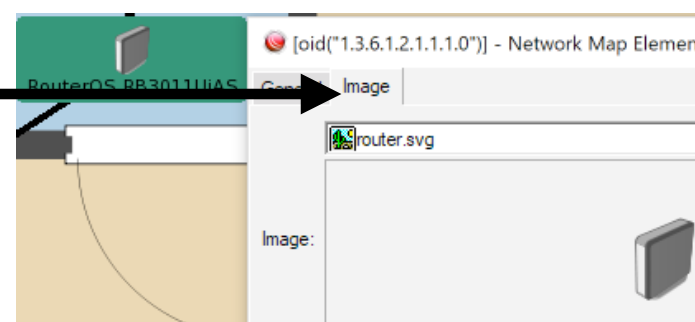


Images

- Background

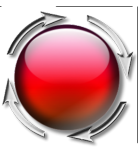
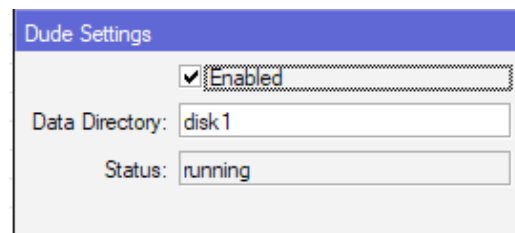


- Device->Rechtsklik->appearance->image



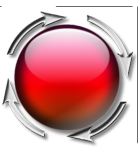
Database locatie

- Verander de database locatie, standaard staat deze naar de interne disk
- Indien db al bestaat:
 - Disable dude (Winbox->dude->settings->disable)
 - Verplaats dude.db naar gewenste lokatie (bijv. disk1)
 - Alleen de db dus niet de rest
 - `/dude set data-directory=disk1`
- Enable Dude



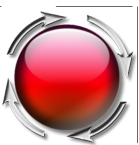
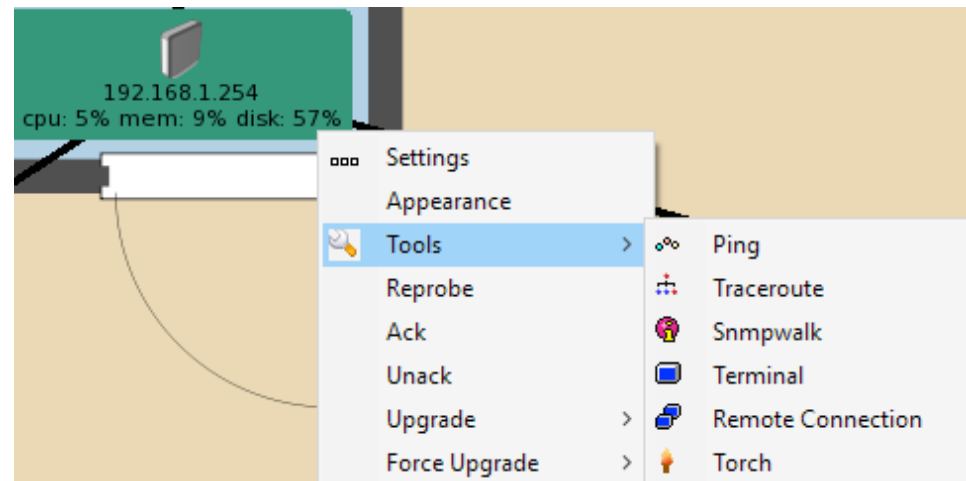
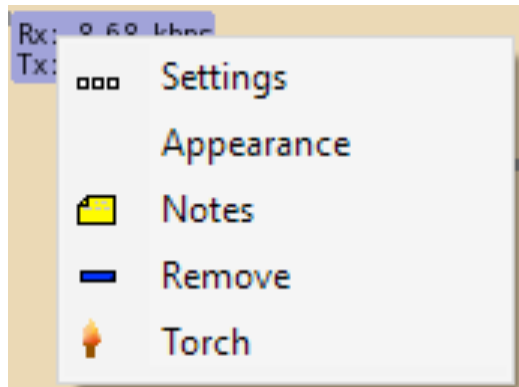
Database backup

- Backup database:
 - Disk1 = externe disk aangesloten op USB bijvoorbeeld
 - Winbox->CLI->/dude export-db backup-file=disk1/dude-bu.db
 - Importeer = /dude import-db backup-file=disk1/dude-bu.db



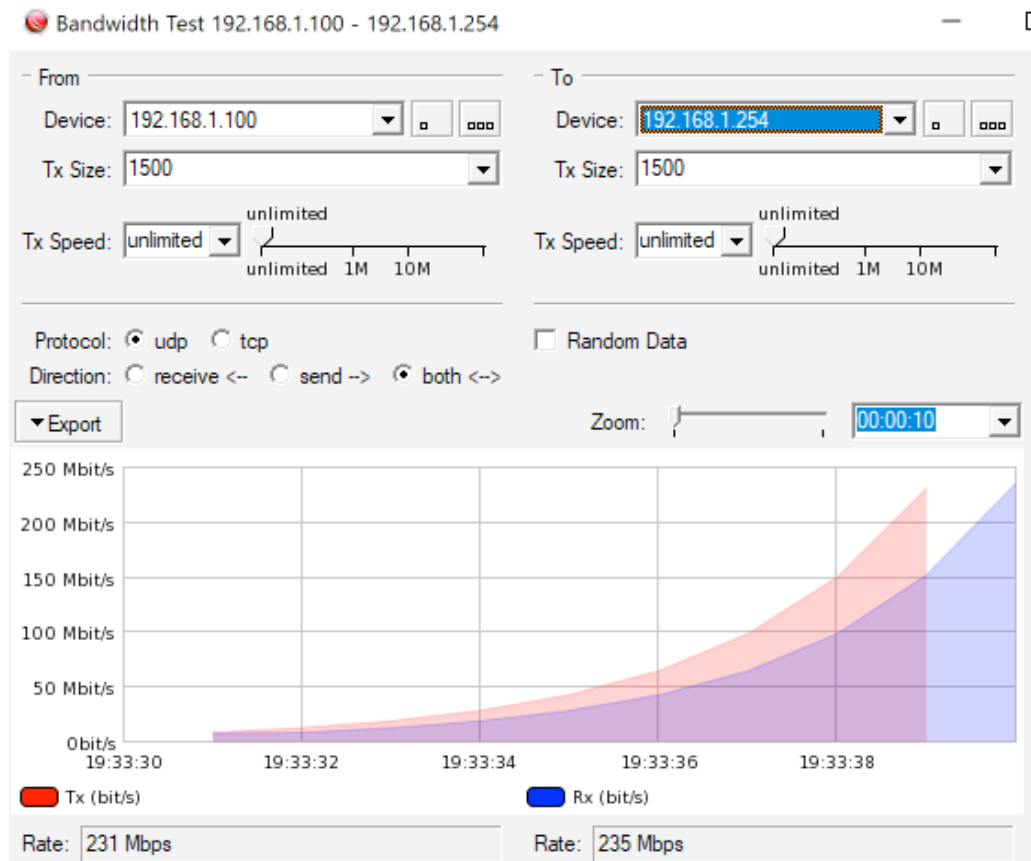
Torch

- Twee opties:
 - Direct op interface of op Device->Rechtsklik->Tools



Bandwith test

- Op Device->Rechtsklik->Tools->Bandwith test



SNMP Walk

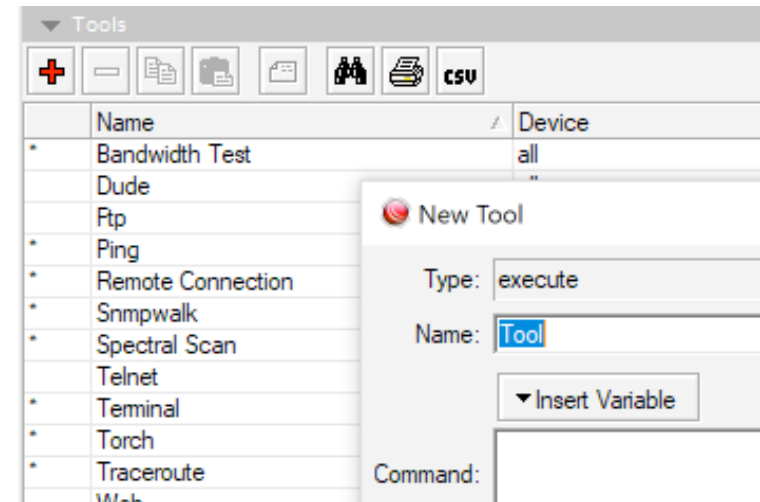
- Selekteer IP->Start

Oid	Type	Value
iso.std.iso8802.ieee802dot1.ieee802dot1mibs.IldpMIB.IldpObjects.IldpLocalSystemData.IldpLocSysName.0	octet string	R1
iso.std.iso8802.ieee802dot1.ieee802dot1mibs.IldpMIB.IldpObjects.IldpLocalSystemData.IldpLocSysDesc.0	octet string	MikroTik RouterOS 6.43.12 (stable) RB30
iso.std.iso8802.ieee802dot1.ieee802dot1mibs.IldpMIB.IldpObjects.IldpLocalSystemData.IldpLocSysCapSupported.0	integer	20



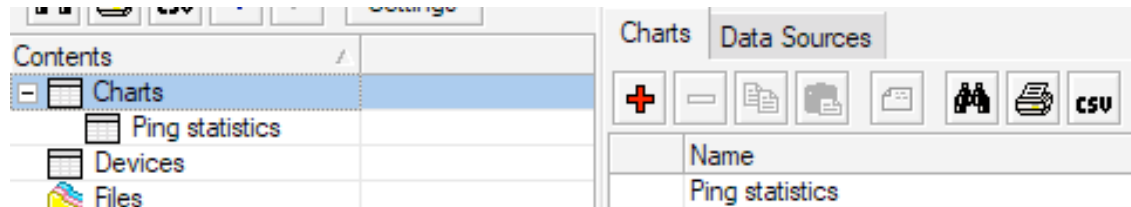
Tools toevoegen

- Dubbelklik Menu->Tools->+
- Voeg bijvoorbeeld Winbox toe:
 - Code = het pad naar Winbox
 - Variabelen te gebruiken
- C:\Users\henk\Desktop\winbox.exe [Device.FirstAddress]
[Device.UserName] "[Device.Password]"
- Zoals in Settings per Device ingegeven

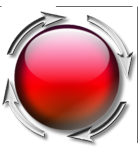


Charts

- Eigen grafieken aanmaken voor overzicht
 - Op basis van Data Sources
 - Dubbelklik Menu->Charts->+

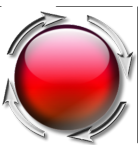
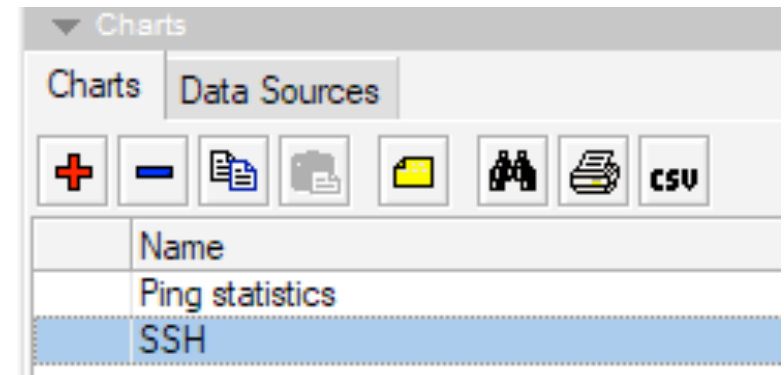
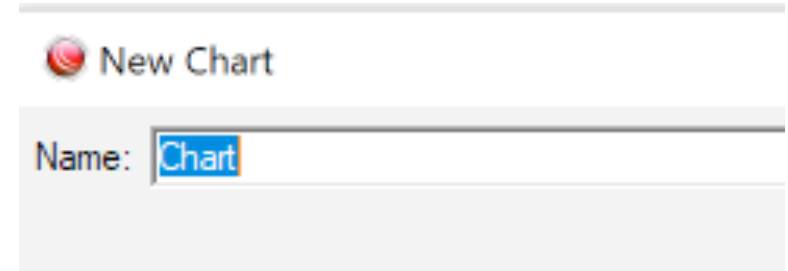
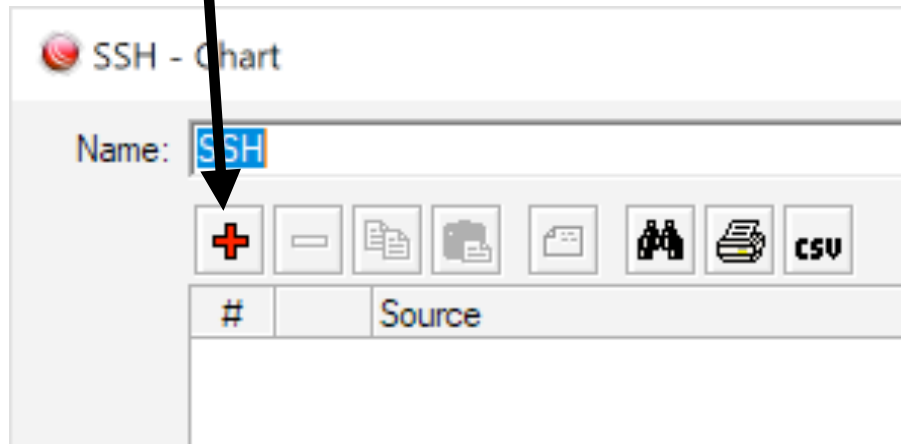


- Ontwerp kaart op basis van Data Sources



Charts

- Kaart naam geven:
- Verschijnt in lijst->Dubbelklik
- Voeg Data Sources toe



Charts

- Bepaal kleur etc.

Deze Source Alle Sources

New Chart Line

Source: ssh @ RB3011

Line Style: 1 pt

Line Color: [Green]

Line Opacity: 30 %

Fill Color: [Green]

Fill Opacity: 30 %

Ok

Cancel

Apply

Notes

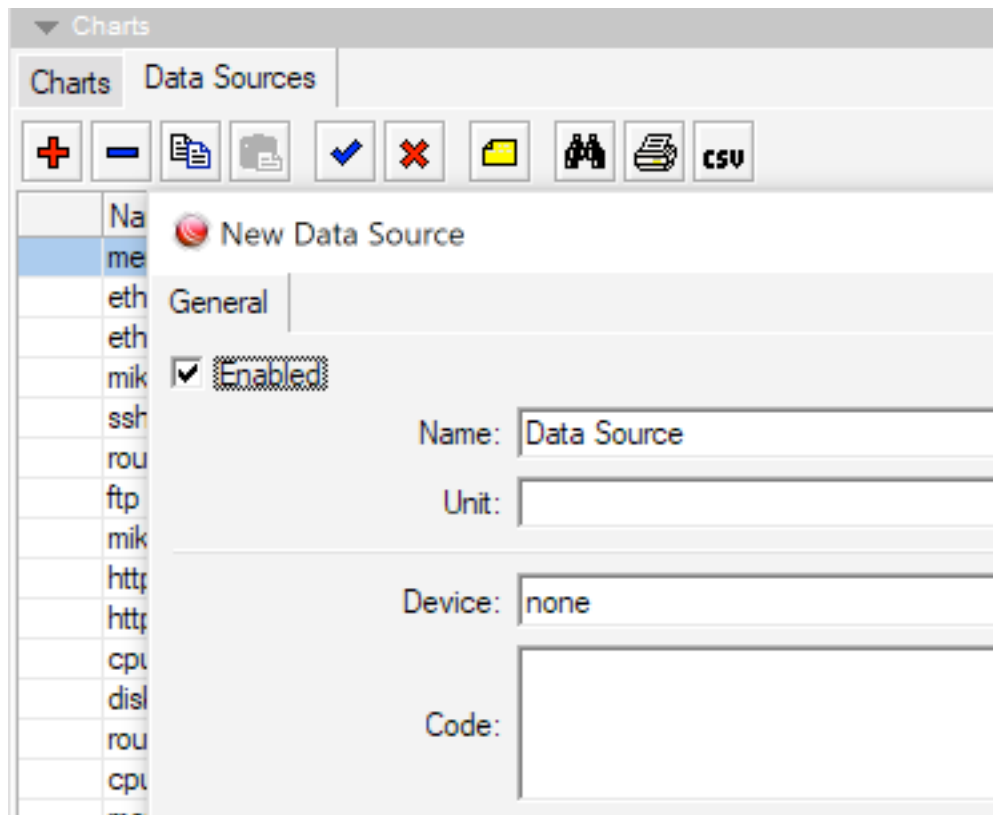
Copy

Remove



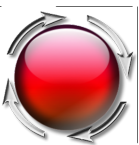
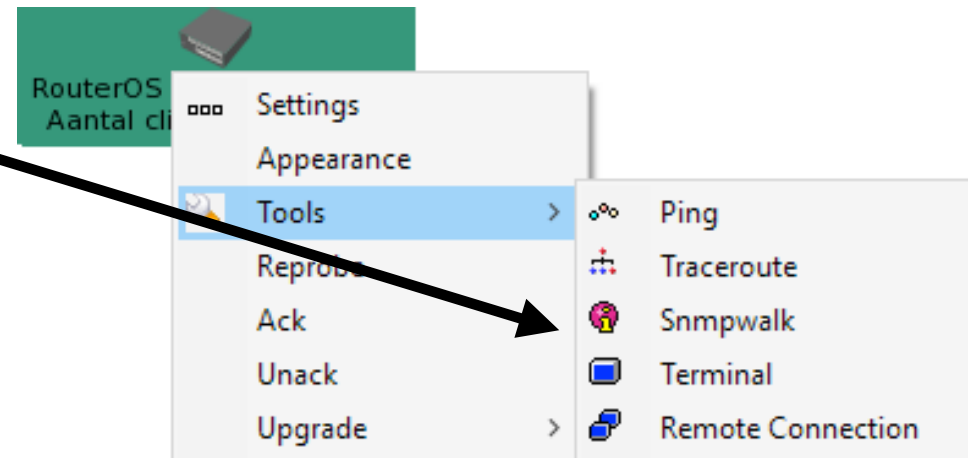
Eigen Data Source

- Zelf definiëren m.b.v. Functions of direct Code invullen



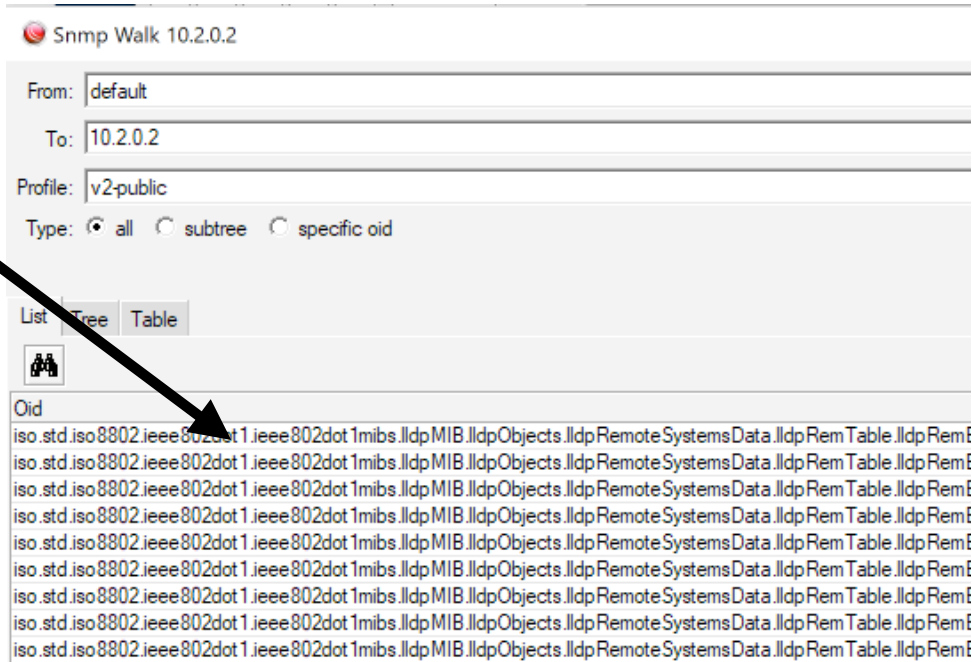
Eigen Data Source

- `ros_command("/interface wireless registration-table print count-only where interface=wlan1")`
- oid ("....")
- Gebruik snmpwalk in tool

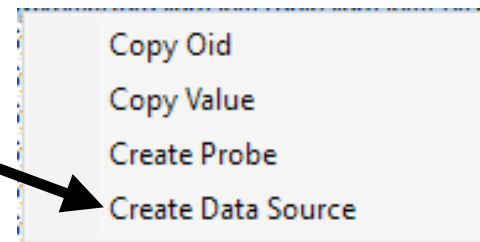


Eigen Data Source

- Zoek in lijst

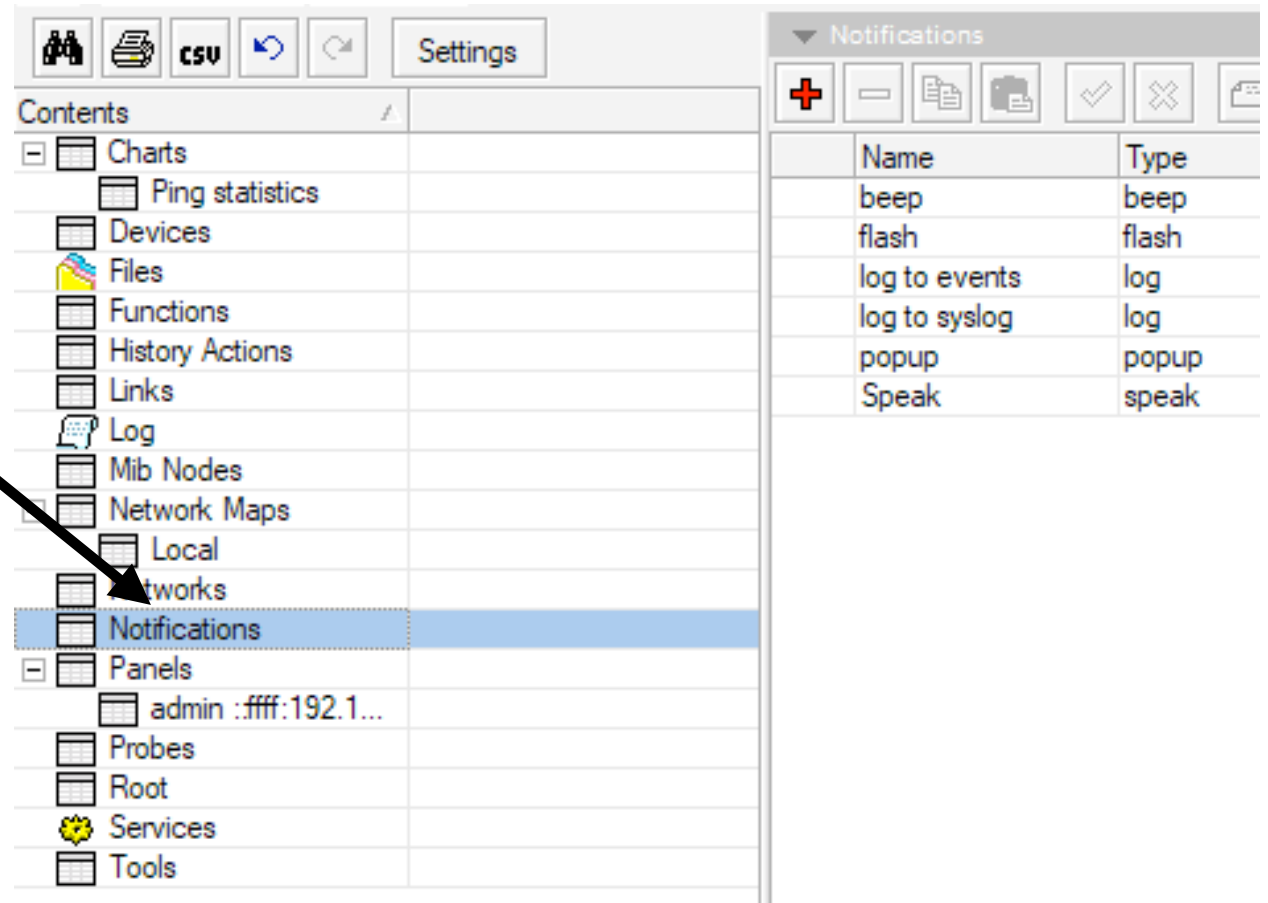


- Rechtsklik->Create Source



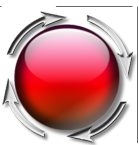
Notifications

- Meldingen die gebruikt kunnen worden in verschillende menu's
- Toevoegen:
 - Dubbelklik->+



The screenshot shows the Mikrotik WinBox interface. On the left, the 'Contents' menu is visible, with 'Notifications' highlighted. An arrow points from the text 'verschillende menu's' to the 'Notifications' menu item. On the right, the 'Notifications' panel is open, displaying a table of notification types.

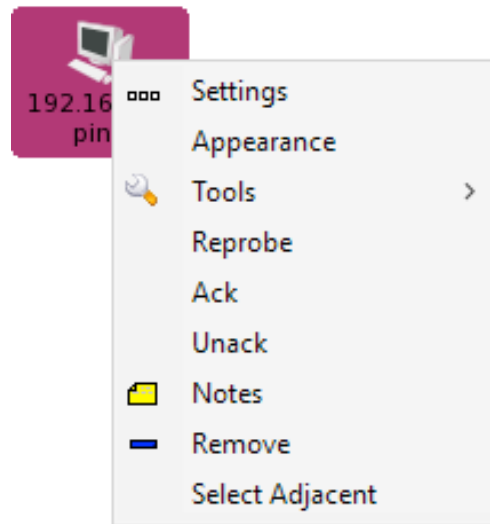
Name	Type
beep	beep
flash	flash
log to events	log
log to syslog	log
popup	popup
Speak	speak



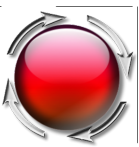
Outages

- Via Menu->Services: tabblad Outages
- Algemeen overzicht van alle down/up meldingen in een lijst

- In Layout:



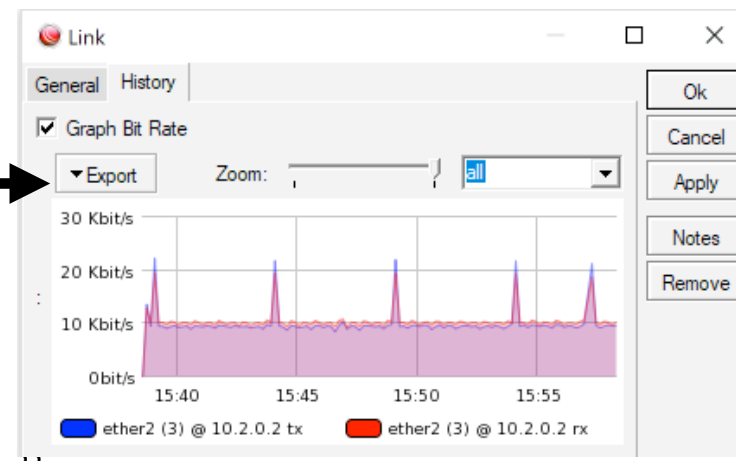
- Rechtsklik: Ack



Links

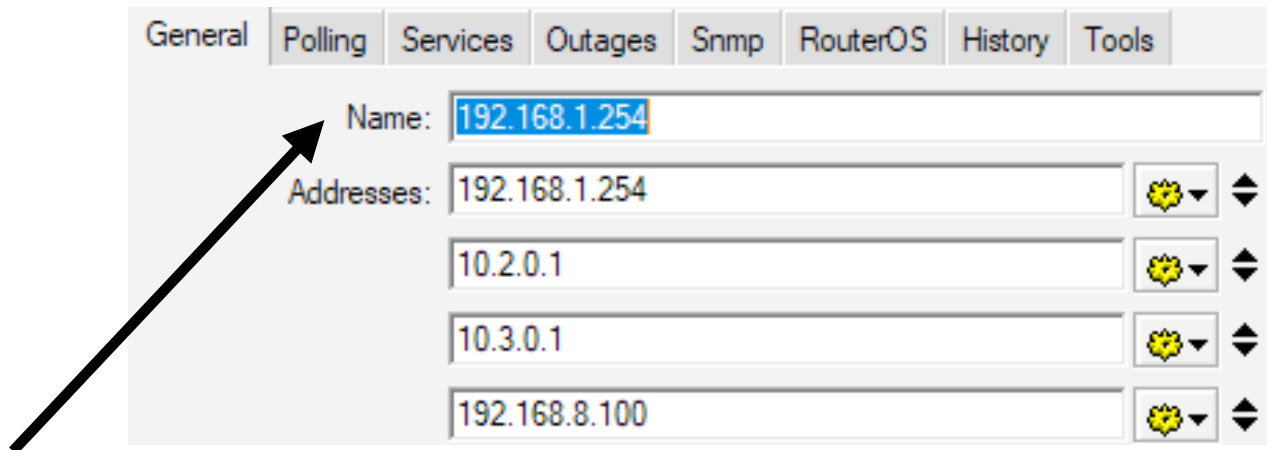
- Verbindingen tussen device's
 - Niet automatisch gevonden dan zelf toevoegen
 - Wireless links naar Internet bijvoorbeeld
- Klik menu (in Layout)->+ en sleep tussen twee devices
 - Bestaande link, dubbelklik: type en grafieken te zien

- Export opties

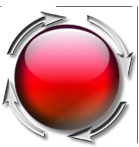


Devices veranderen

- Dubbelklik op Device in layout
- Overzicht van veel info
- Bijvoorbeeld gevonden IP adressen:



- Naam in layout aanpassen



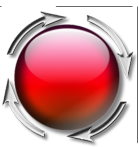
Devices appearance

- Label via Functies te veranderen



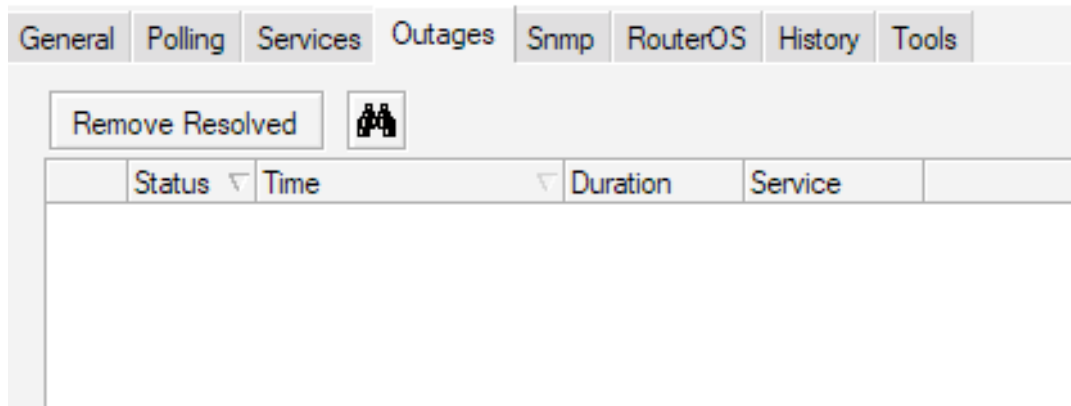
The image shows a screenshot of the Mikrotik WinBox interface. On the left, a configuration window for a device is open, showing a text field for the 'Label' with the value `[Device.Name]` and `[device_performance()] [Device.ServicesDown]`. Above the text field are buttons for 'Insert Variable', 'Insert Oid', and 'Functions...'. A black arrow points from the 'Functions...' button to the 'Label' field. On the right, a context menu is open over a device icon, showing options like 'Settings', 'Appearance', 'Tools', 'Reprobe', 'Ack', 'Unack', 'Upgrade', 'Force Upgrade', 'Notes', 'Remove', and 'Select Adjacent'. A black arrow points from the 'Appearance' option to the 'Label' field in the configuration window.

- `[ros_command("/interface wireless registration-table print count-only where interface=wlan1")]`

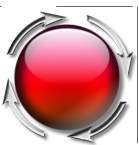
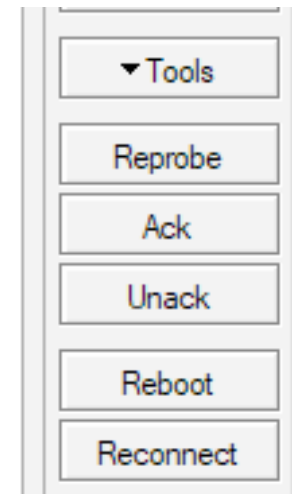


Devices bekijken

- Outages: up/down meldingen



- Meldingen bevestigen/verwijderen
 - Ack/Unack
 - Nogmaals checken (Reprobe)



Aangepaste layout

