

# MikroTik



We Attend 173<sup>th</sup>

The logo for Mikrotik User Meeting (MUM) features the lowercase letters 'mum' in a white, rounded, sans-serif font. The letters are set against a dark blue background that has a subtle pattern of small, light blue dots. The 'm' and 'm' are connected at the top, and the 'u' is in the middle. The overall design is clean and modern.

Mikrotik User Meeting

# Monitoring Large Scale Network by The Dude

**Abdul Kader Linkon**

Network Engineer  
Fareast Islami Life Insurance Company Ltd.



# i m " Abdul Kader Linkon "

Network engineer

Grade of senior executive officer from 2013 to till now in

Fareast islami life insurance co ltd.

CSE, MTCNA, MTCRE, CWNA, PHP Programmer.

. Mikrotik use & Configure from 2011

. Mikrotik Certified From 2015



# About Our Company:

## Fareast Islami Life Insurance company Ltd

The largest insurance company in Bangladesh.

- Our Head office workstation Node 600+
- We Have 10G DATA center.
- 500+ IP PBX Phone in head office and Branch offices.
- We Have 59 Offices in our where we used E1 DATA connectivity.
- We Have 500+ DATA Modem which used for remote locations Connectivity.





# Why need to Monitor a Network ?

- **Keep informed**

With real-time monitoring, if a failure or irregularity is detected, you can immediately be informed via methods such as SMS, pager, emails or a network message. Therefore, you will be notified of any problem on your network, wherever you may be thus allowing you to fix the issues swiftly. Without a network monitoring solution, you would have to look for issues yourself, or wait for the issue to be reported to you, to work toward a solution.

- **Plan for change**

Network monitoring solutions allow you to study a constant problem with a closer eye. For example, if a piece of hardware is constantly tripping, it may be the time to replace this hardware. The same would apply for a constant crashing service. Should you notice that a service or a particular application is frequently crashing, it might be a good idea to look into troubleshooting the application.

- **Diagnose issues**

Imagine a scenario where one of your company's websites goes down. Without network monitoring, you may not be able to tell if the problem is with just the website, the web server or the applications which the site runs on. Network monitoring will pinpoint the point of failure, saving you time and money when having to diagnose the problem.

- **Reports issues**

Network monitoring reports can help you spot trends in system performance, demonstrate the need for upgrades or replacements and prove your value, by documenting the otherwise 'unseen' work that keeps the IT systems you manage in top form.

- **Remediate disasters**

If you are immediately notified that there is an issue with one of your systems on a network, and the issue is going to take quite some time to fix, the time saved by being alerted immediately can be used to bring in a backup system to replace the current failure, thereby providing a seamless and efficient service to your users and/or customers. Furthermore, some network monitoring solutions, such as GFI Network Server Monitor can automatically move to correct the problem by restarting a service (or multiple services) upon failure; rebooting a server upon failure; or launching an executable, batch job or VBScript.

- **Ensure Operation of Security Systems**

Although business spend a lot of money, time and resources on security software and hardware, without a network monitoring solution, they cannot be sure that the security devices are up and functioning as wanted to. With network monitoring solutions such as GFI MAX Remote Management, you can effectively monitor and manage the health of these critical software and hardware security systems. With another feature this product offers, Patch Management, you can also streamline the automation and management of Microsoft software updates and patches.

- **Keep Track of Your Web Applications**

Many services that your company offers to your users and customers are really just web applications running on a server. Network monitoring solutions allow you to stay on top of website problems, spot issues before your users or customers notice and remediate the issues in a timely fashion.

- **Fix problems, anytime, anywhere**

Network Monitoring products nowadays are shipping with Remote Access features. These offer one-click remote support for any server or workstation in your environment. Apart from providing a much faster service, remote access also saves you a lot of money without having to commute to branch offices or customer sites.

- **Ensure uptime**

Network Monitoring maximizes network availability by monitoring all systems on your network, including servers, workstations and network devices and applications. Whenever a failure is detected, you will immediately be notified via the alerts you configure in the product allowing you to take corrective action in a highly efficient manner.

- **Save Your Business Money**

Network Monitoring products such as GFI Network Server Monitor and GFI MAX Remote Management, fix issues faster with instant alerts, spot small and big issues, eliminate the need for manual checks on event logs, backup systems, antivirus systems, hard disks and other devices. Having a network monitoring solution also avoids the need of complex and expensive systems. All this in turn facilitates cost saving and revenue building.

# As a Network Engineer my Job Threats are

- Under Our Network Administrator we are 4 people in our Team who are monitoring & Troubleshooting our full network with data center.
- So it does can be a big challenge for our team.

## Threads for our team is:

- Online UPS Down, Distribution switch down, PAC down, Mikrotik / CISCO router power supply down, WiFi AP down, NVR Down, Fingerprint devices down,
- DATA center EMS, Server down, DATA connectivity lost with ISP, Modem connectivity down with TELCO and others.

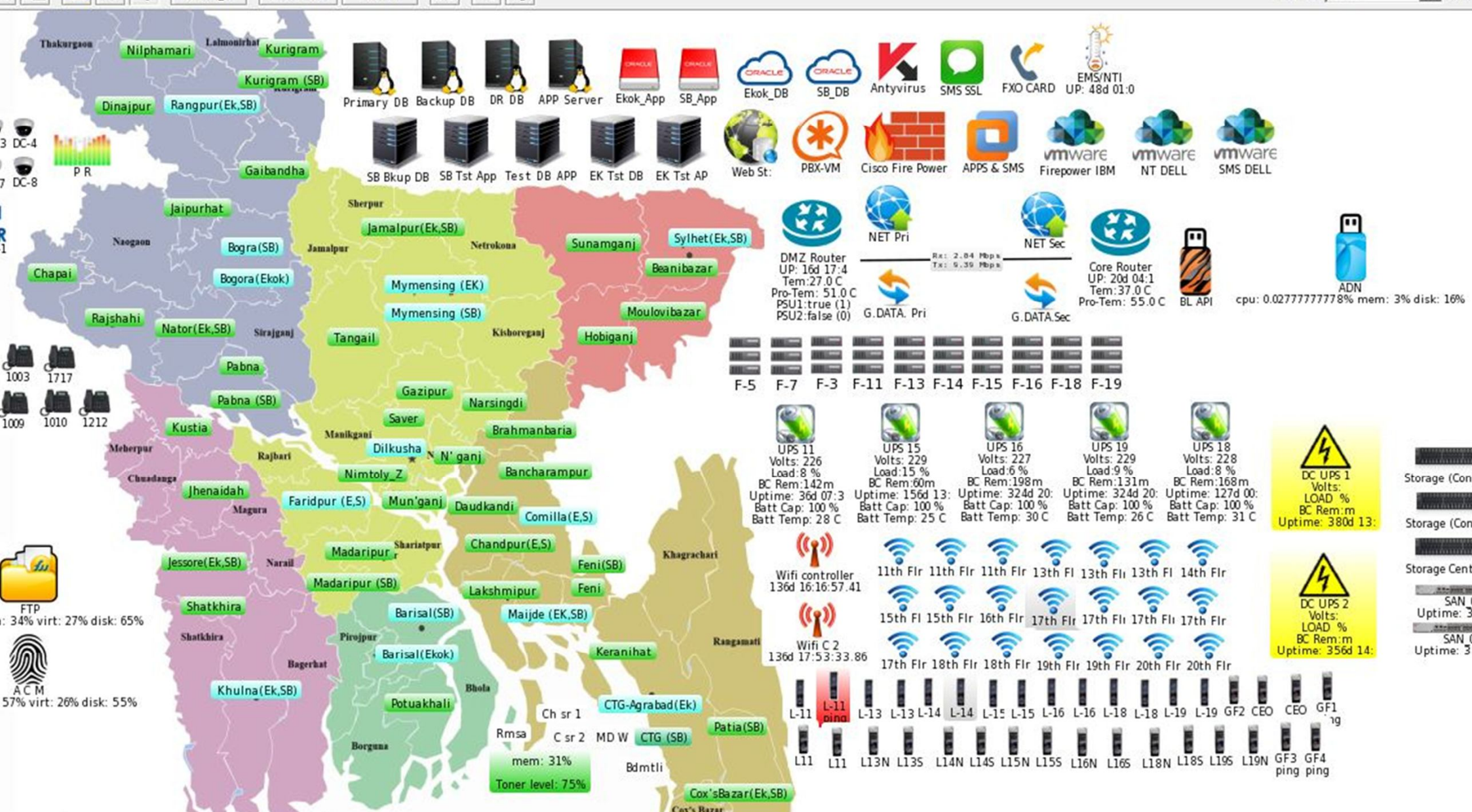


# How do we do this

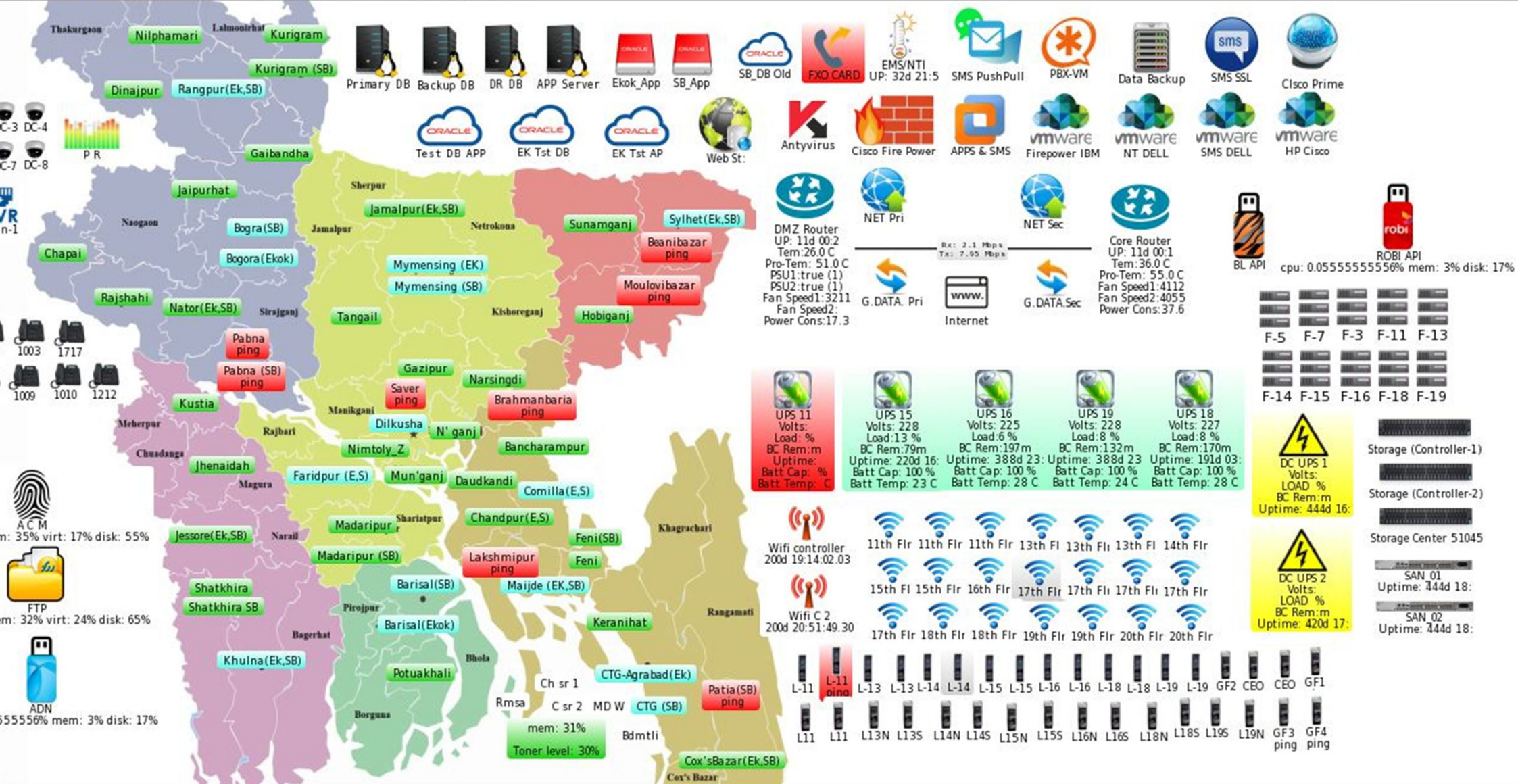
It's a big challenge for maintain a big Enterprise network without enough manpower.

**BUT WE CAN.**

In 2014 January we implement The DUDE software in our Company for network monitoring software.  
And now its actual view is:







# Monitoring Large Scale Network by The Dude



- **Install DUDE package in Router and create DUDE user in router.**
- **Install Dude client in pc and connect with server.**
- **Discovery Local LAN subnet devices.**
- **Add any Network device manually.**
- **Add and monitoring Mikrotik router use dude.**
- **Mikrotik OiD for DUDE.**
- **Control Mikrotik router Use DUDE.**
- **Monitor Server PC & Network devices use DUDE Software.**
- **Real time bandwidth Monitoring use DUDE.**
- **Notification from DUDE when any service down or UP.**
- **How Backup and Restore The Dude.**
- **View office network from anywhere use Internet.**
- **Others.**
























# DUDE Package Installation process in Router

- Go to <https://www.mikrotik.com/download> this link then Download The dude Client application and The Dude server for your router architecture.

MikroTik Home About Buy Jobs Hardware Software Support Training Account

Software Downloads Changelogs Download archive RouterOS The Dude

RouterOS  

	6.40.6 (Bugfix only)	6.41.2 (Current)	5.26 (Legacy)	6.42rc37 (Release candidate)
<b>MIPSBE</b>	CRS1xx, CRS2xx, DISC, LDF, LHG, NetBox, NetMetal, PowerBox, QRT, RB9xx, hAP, hAP ac, hAP ac lite, mANTBox, mAP, RB4xx, cAP, hEX, wAP, BaseBox, DynaDish, RB2011, SXT, OmniTik, Groove, Metal, Sextant, RB7xx			
Main package				
Extra packages				
<b>SMIPS</b>	hAP mini, hAP lite			
Main package			-	
Extra packages			-	
<b>TILE</b>	CCR			
Main package			-	
Extra packages			-	
<b>The Dude server</b>			-	



# DUDE Package Installation process in Client PC

Cloud Hosted Router



	6.40.6 (Bugfix only)	6.41.2 (Current)	5.26 (Legacy)	6.42rc37 (Release candidate)
<b>Images</b>	vmdk, vhdx, vdi, ova, img			
VHDX image			-	
VMDK image			-	
VDI image			-	
OVA template			-	
Raw disk image			-	
Extra packages			-	
The Dude server			-	
<b>The Dude client</b>			-	
Changelog			-	
Checksum			-	

# DUDE Enable In Router

```
/dude set enabled=(yes/no)
```

After that just check, If dude server is up and running with command:  
**"/dude print**

```
[admin@MikroTik] > /dude print enabled: yes data-directory: dude  
status: running
```

# Only DUDE User role in router

- We need to create a user group for dude monitoring engineer we can do this from **System >Users > Groups > Then click some rules.**

The screenshot shows the Mikrotik WinBox interface. The top menu bar includes 'Session', 'Settings', and 'Dashboard'. Below the menu, there are navigation buttons for 'Safe Mode' and 'Session: 103.254.85.129'. The left sidebar contains a tree view of system components: Quick Set, Interfaces, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, LCD, Dude, Partition, Make Supout.tif, Manual, New WinBox, and Exit. The main window displays the 'User List' tab, which contains a table of users and their policies. The 'Dude' user is selected. Below the table, the 'Group <Dude>' configuration window is open, showing the 'Name' field set to 'Dude' and a list of policies with checkboxes. The 'Skin' dropdown is set to 'default'.

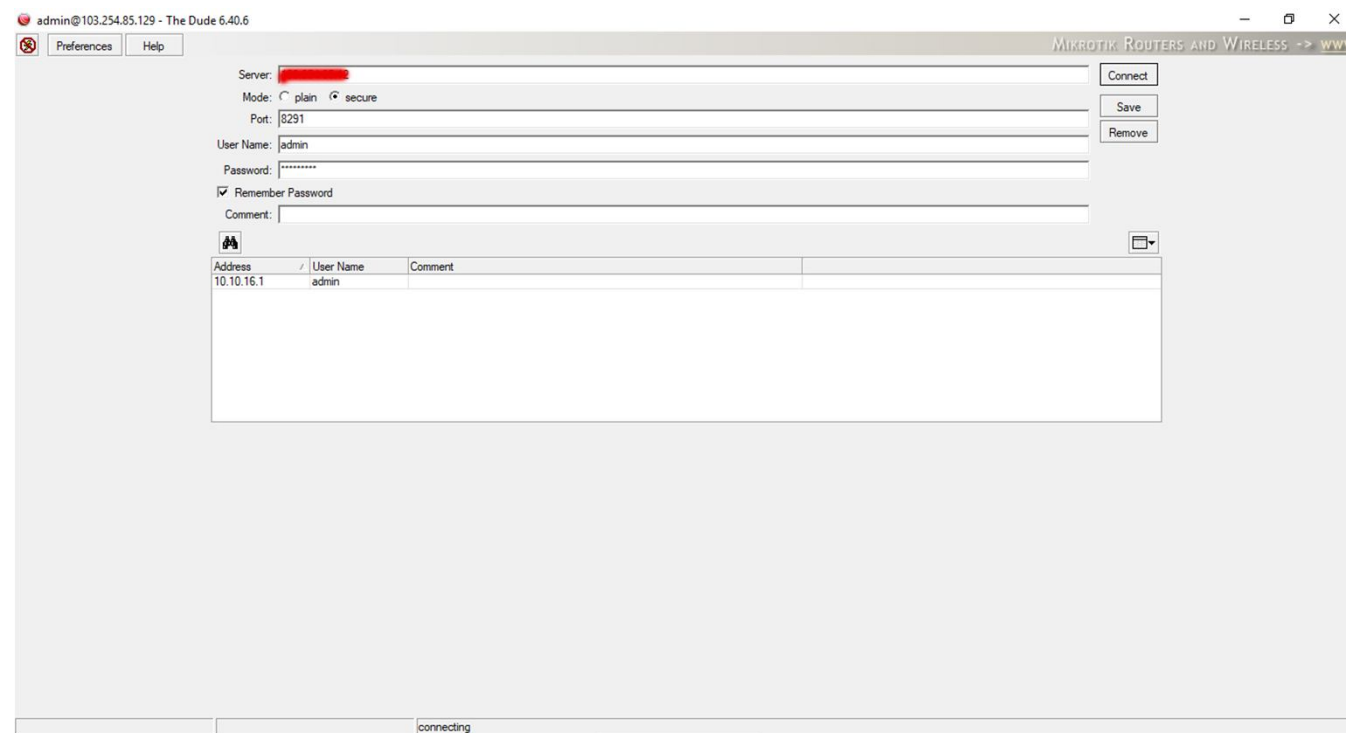
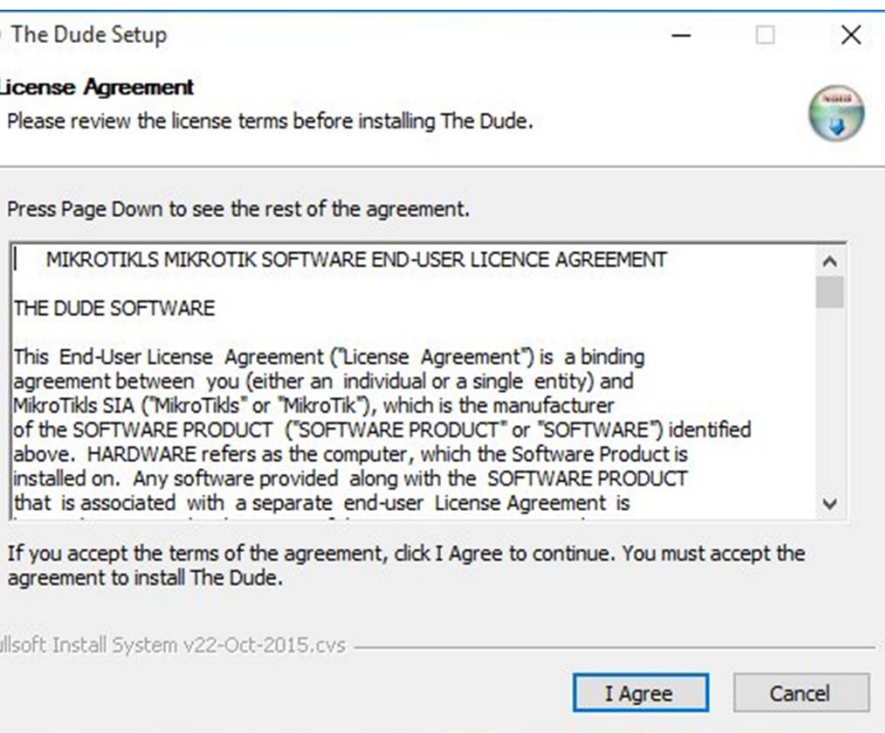
Name	Policies	Skin
Dude	local telnet ssh ftp reboot read policy test web sniff api dude	default
full	local telnet ssh ftp reboot read write policy test winbox passw...	default
read	local telnet ssh reboot read test winbox password web sniff s...	default
sniffer	ssh read	default
write	local telnet ssh reboot read write test winbox password web ...	default

Group <Dude> configuration details:

- Name: Dude
- Policies:
  - local
  - ssh
  - reboot
  - write
  - test
  - password
  - sniff
  - api
  - dude
  - telnet
  - ftp
  - read
  - policy
  - winbox
  - web
  - sensitive
  - romon
  - tikapp
- Skin: default

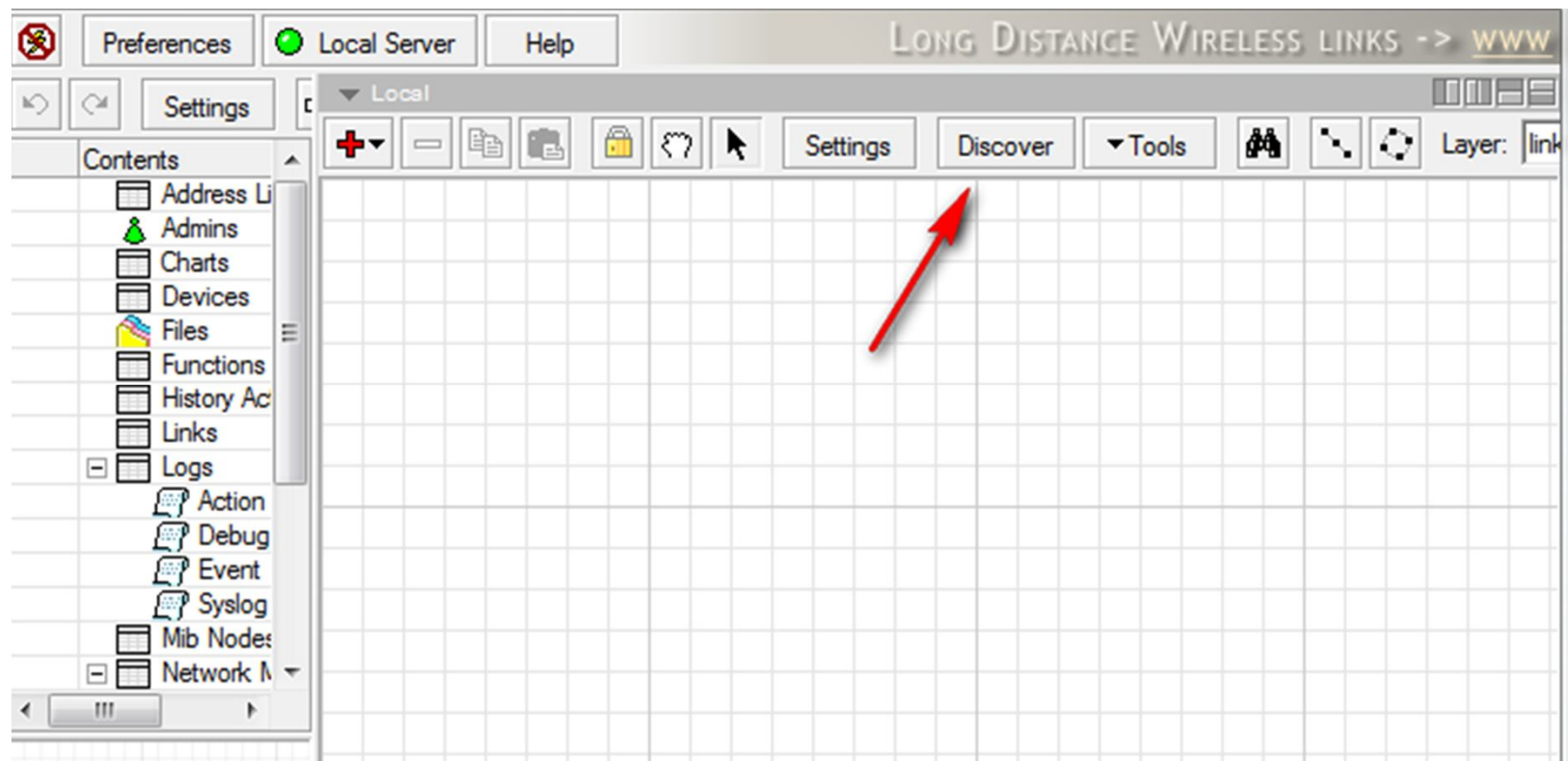
# Windows Client Installation

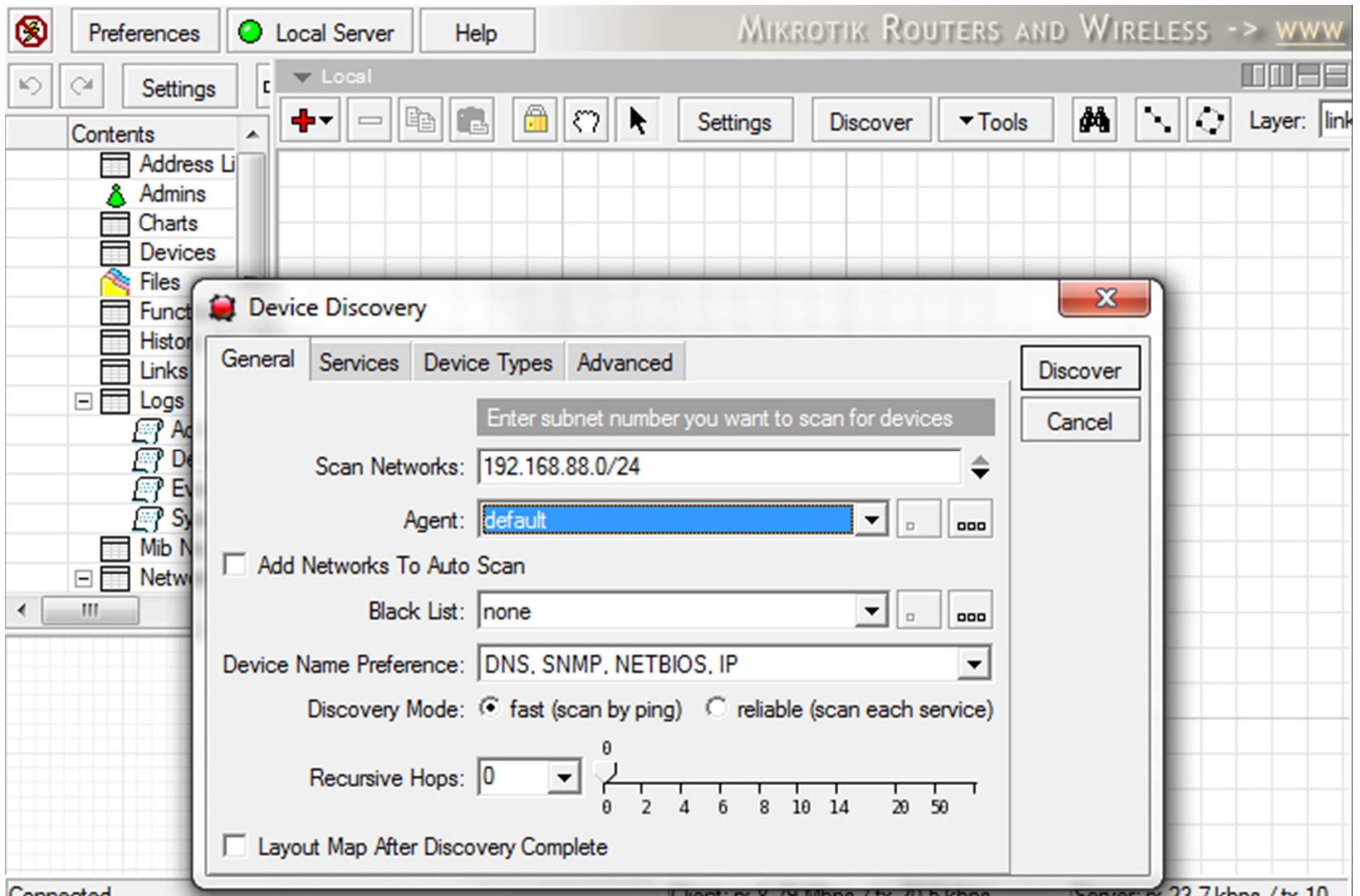
- Client installation is very easy like other windows software installation. After finis installation just go to program and run.



# The Dude/Device discovery

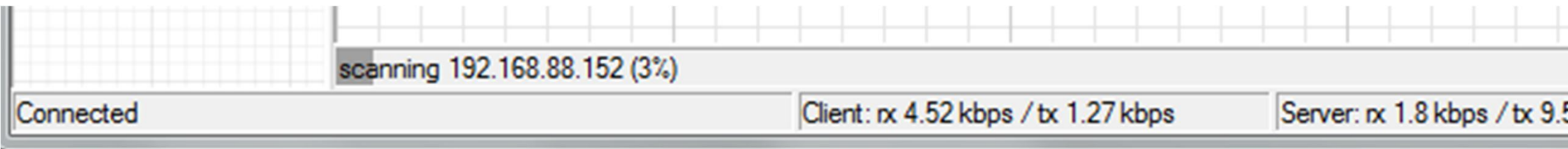
- When login DUDE server then we can discovery our full network just a one click. After clicking DUDE automatically discovered our LAN same subnet devices.







# Discovery Progress



# After Discovery completed

The screenshot displays the HOTSPOT CONTROLLERS web interface. The main area shows a grid of discovered devices, each represented by a green icon with a specific name or IP address. The devices are organized into a grid with 6 columns and 5 rows. The first column contains two devices with names: 'STIL-MOBILE-HAS' and 'TECHART'. The other columns contain devices with IP addresses. The interface includes a left sidebar with a 'Contents' menu, a top navigation bar with 'Preferences' and 'Help' buttons, and a bottom status bar showing client and server statistics.

Device Name	IP Address
STIL-MOBILE-HAS	192.168.2.10
192.168.2.119 mem: 21%	192.168.2.21
TECHART	192.168.2.76
192.168.2.5	192.168.2.154
192.168.2.6	192.168.2.162
192.168.2.11	192.168.2.24
192.168.2.12	192.168.2.8
192.168.2.13	192.168.2.26
192.168.2.266	192.168.2.125
192.168.2.272	192.168.2.153
192.168.2.151	192.168.2.238
192.168.2.159	192.168.2.23

Client: rx 367 bps / tx 187 bps    Server: rx 0 bps / tx 0 bps    connected

# Add Network device Manually

- To add a new device to The Dude, you can either use the Discovery interface, in which case the device will automatically be added with no settings asked from you, or you can add a device manually, by clicking the Add item button above the Map window.
- Once you click the Add Item button, you can then add a new device by clicking anywhere on the Map. The New device window will be opened:

Device

Enter IP address or DNS name

Address: 192.168.88.1

Login for fast access to device with Telnet/Winbox

Name: admin

Password:

Secure Mode

Enter OS

Back Next Cancel

Add Device

Add services you want to monitor on this host

+ - [Icons] [Icons] [Icons] [Icons] [Icons] [Icons] [Icons] [Icons] [Icons] Discover Status: all


Type	Problem	Notes
------	---------	-------

Back Finish Ca

192.168.88.1 - Device

General | Polling | Services | Outages | Snmp | RouterOS | History | Tools

Name:

Addresses:  




DNS Names:

DNS Lookup:  none  address to name  name to address

DNS Lookup Interval:  min

MAC Addresses:

MAC Lookup:  none  ip to mac  mac to ip




Type:    




Parents:

Custom Field 1:

Custom Field 2:

Custom Field 3:

Agent:    

Snmp Profile:    



User Name:

Password:

Secure Mode

Router OS

Dude Server

Services:   Up - 6

Status:

Ok  
Cancel  
Apply  
Notes  
Remove  
Tools  
Reprobe  
Ack  
Unack  
Reboot  
Reconnect

# SNMP = Simple Network Monitoring Protocol

Shows information about device configuration, if this information is available over SNMP. All of these parameters are available from RouterOS. If the device is not RouterOS, it could still provide some of the information, so some tabs would show it, some would be blank. The information is read only.

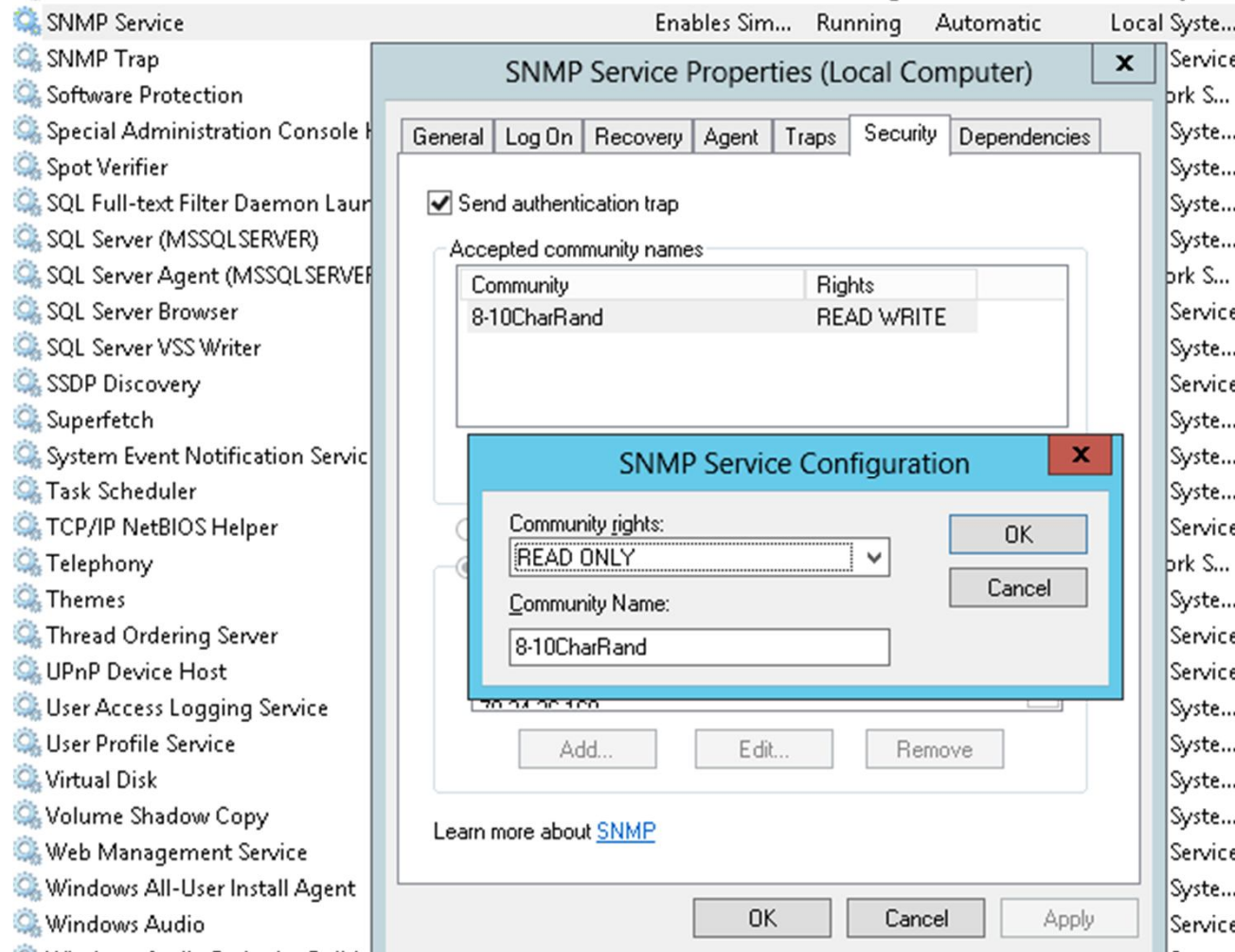
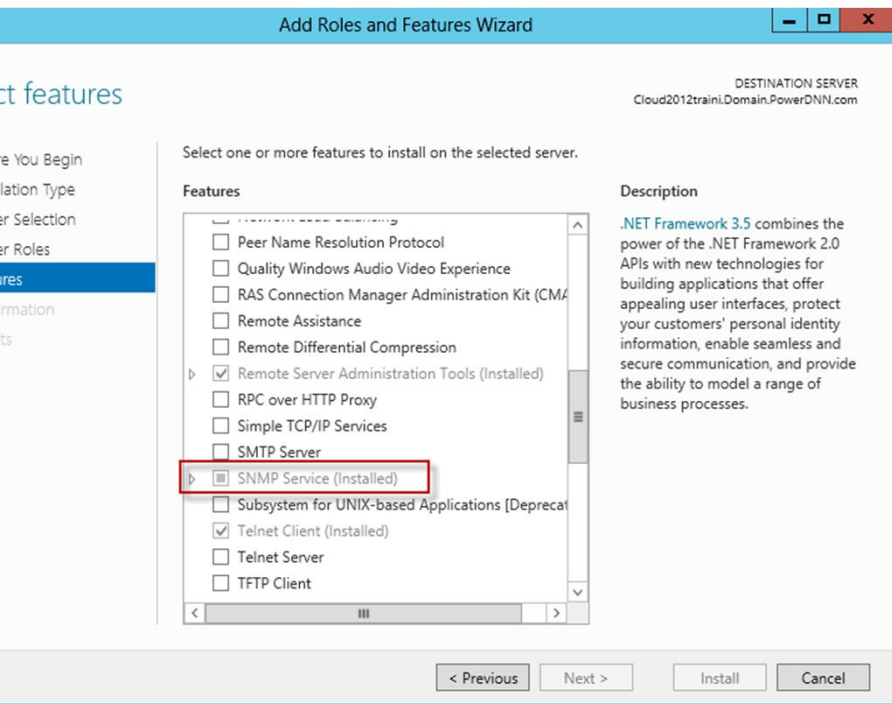
The screenshot shows the Mikrotik WinBox interface for a device at 192.168.88.1. The 'Interface' tab is selected, displaying a table of network interfaces. The table has columns for Name, Type, MTU, Tx Rate, and Rx Rate. The data is as follows:

Name	Type	MTU	Tx Rate	Rx Rate
ether1 (2)	ethernet-csma...	1500	0 bps	0 bps
X sstp-out1 (4)	other	0	0 bps	0 bps
X wlan1 (1)	ieee80211	1500	0 bps	0 bps
wlan2 (3)	ieee80211	1500	0 bps	0 bps



# Windows server 2016 SNMP On and monitoring in DUDE

- Log into your dedicated server using Remote Desktop  
Click on Windows Key > Administrative Tools > Server Manager.  
Click Manage > Add Roles and Features. Click Next > Next > Next > Next. Verify SNMP Services are installed. Click Cancel.  
If SNMP is not installed, contact [Support](#).
- Click on Windows Key > Administrative Tools > Services. Right click on SNMP Service and click on Properties. Click on the Security tab. Type your randomized 8 - 10 character connection string. Be sure to make it Read Only, not Read Write.
- Click on **Add**.



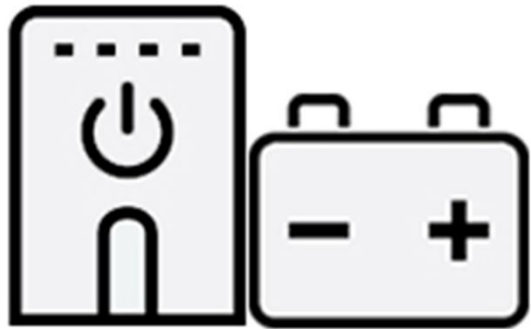
# Now show Server status in DUDE



## **IP Cam Server**

cpu: 0.25% mem: 34% virt: 26% disk: 65%

# Some other Network device Status



## Main UPS-1

Volts: 228

Load:8 %

BC Rem:162m

Uptime: 125d 10:

Batt Cap: 100 %

Batt Temp: 32 C



imageRUNNER2525i  
printer device status



HP-1536  
Toner Black Cartridge HP CE278A ima 51%  
mem: 31%



Canon LBP6670  
Toner Canon Cartridge 719/719H ima 100%



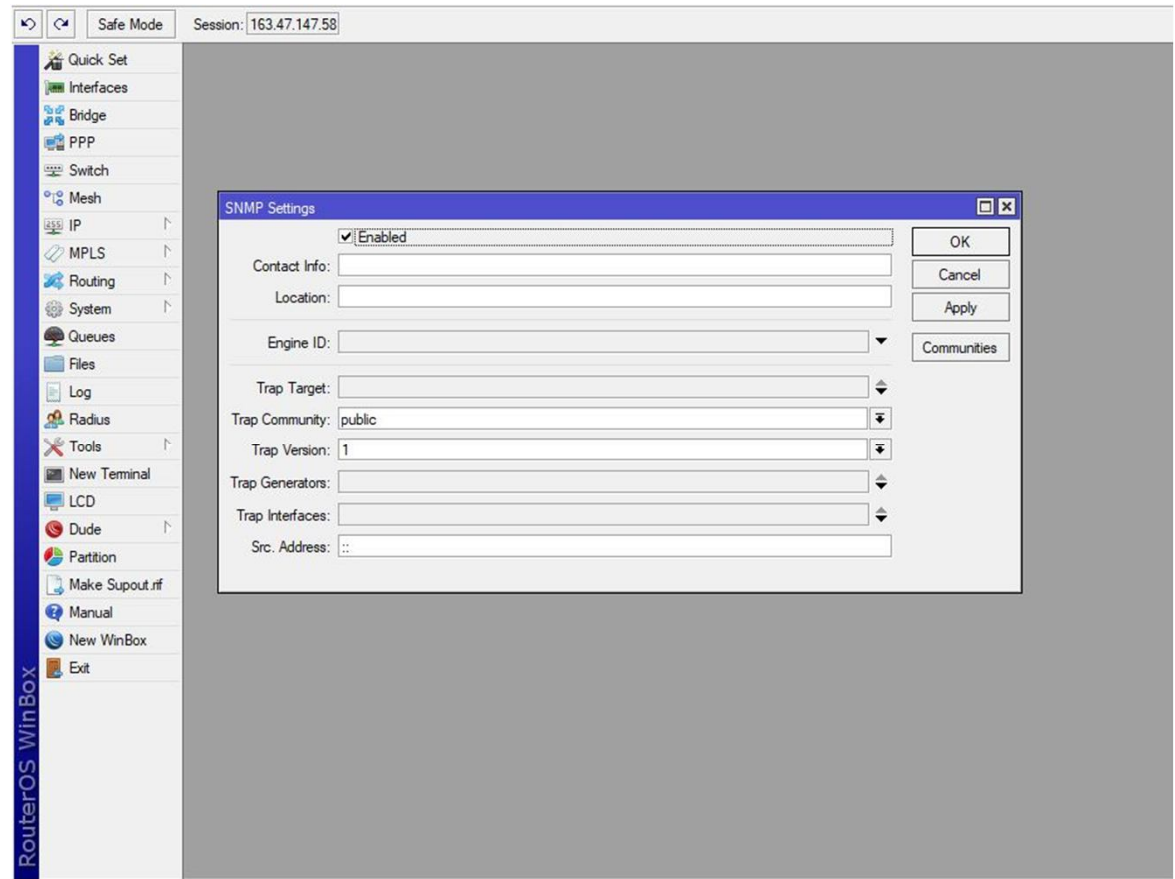
HP 1606  
Toner CE278A ima 70%



Lexmark C736  
Toner Cyan Toner ima -0%  
Toner Magenta Toner ima -0%  
Toner Yellow Toner ima -0%  
Toner Black Toner ima -0%  
cpu: 0% mem: 23%  
printer toner #4, printer toner #3, printer toner #2, printer toner #1, printer device status

# Add Mikrotik Router in DUDE

- Its very easy to add your Mikrotik router on dude Just enable SNMP from >
- IP >SNMP> Tick on Enable
- Then Right click on DUDE > Add a device Like others, Just put your router ID and Password correct information.





I will describe below few OIDs

Uptime:

.1.3.6.1.2.1.1.3.0

CPU load:

.1.3.6.1.2.1.25.3.3.1.2.1

Total memory and how many are used:

.1.3.6.1.2.1.25.2.3.1.5.65536

.1.3.6.1.2.1.25.2.3.1.6.65536

CPU frequency:

.1.3.6.1.4.1.14988.1.1.3.14.0

Mac addresses of LAN and WLAN:

.1.3.6.1.2.1.2.2.1.6.1

Get Mikrotik Oid

/system resource print oid

/system resource cpu print oid

Write OIDs

Right click on device > Appearance > write this code in Level fe  
[string\_substring(oid("1.3.6.1.2.1.1.3.0"),0,8)]

# Main Router

UP: 15d 04:4

Tem:26.0 C

Pro-Tem: 51.0 C

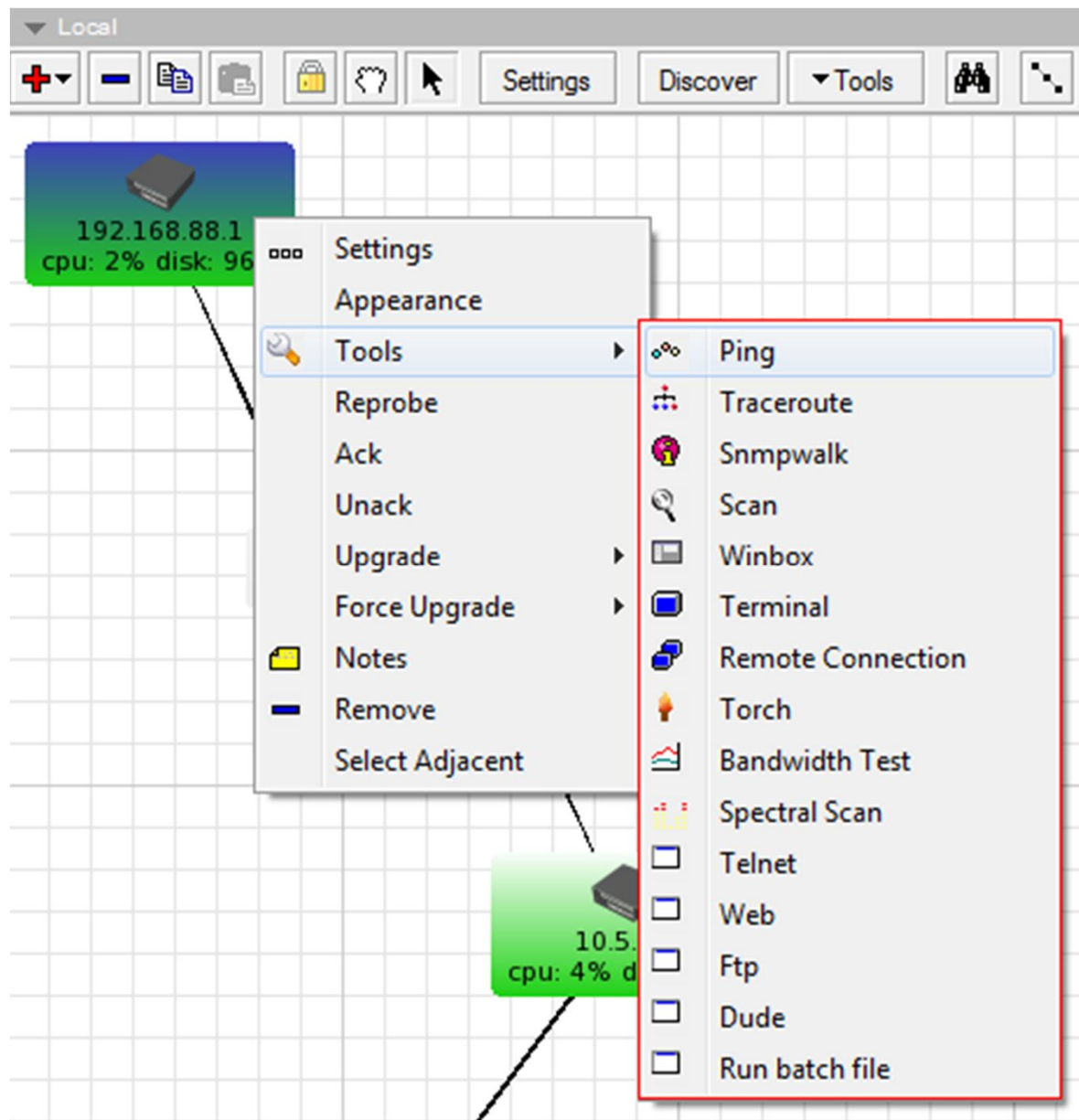
PSU1:true (1)

PSU2:false (0)

# Control Mikrotik Router use DUDE

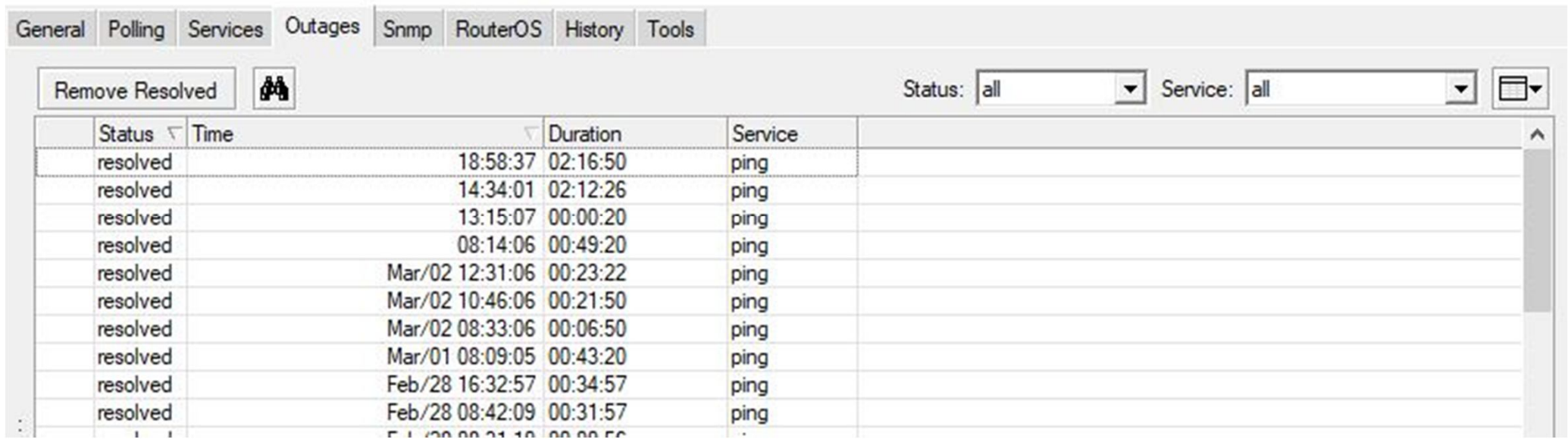
- If we have more than Mikrotik Router it's not difficult to control all routers from DUDE server.
- The Tools pane manages the utilities and programs that can be run when right-clicking a device. Tools can be useful for executing custom programs and passing them variables, which can be practically anything the Dude knows about the device.





# Connection & Router Outages view

- Its very important for us, we can view **Outages** from DUDE Server
  - > Double click on device then select on **Outages Tab**
  - > Then see device status and down time with service.



The screenshot shows the 'Outages' tab in the DUDE Server interface. The table displays a list of resolved outages with columns for Status, Time, Duration, and Service. The status for all entries is 'resolved'. The services listed are 'ping'. The times and durations are as follows:

Status	Time	Duration	Service
resolved	18:58:37	02:16:50	ping
resolved	14:34:01	02:12:26	ping
resolved	13:15:07	00:00:20	ping
resolved	08:14:06	00:49:20	ping
resolved	Mar/02 12:31:06	00:23:22	ping
resolved	Mar/02 10:46:06	00:21:50	ping
resolved	Mar/02 08:33:06	00:06:50	ping
resolved	Mar/01 08:09:05	00:43:20	ping
resolved	Feb/28 16:32:57	00:34:57	ping
resolved	Feb/28 08:42:09	00:31:57	ping

# Real time Mikrotik Port bandwidth view in DUDE

- Write OIDs
- Right click on Router > Appearance > write this code in Level feild
- Port1 bytes In :`[oid("1.3.6.1.2.1.31.1.1.1.6.3")]`
- Port1 bytes Out :`[oid("1.3.6.1.2.1.31.1.1.1.10.3")]`

# Mikrotik Port bandwidth view in DUDE



192.168.2.10

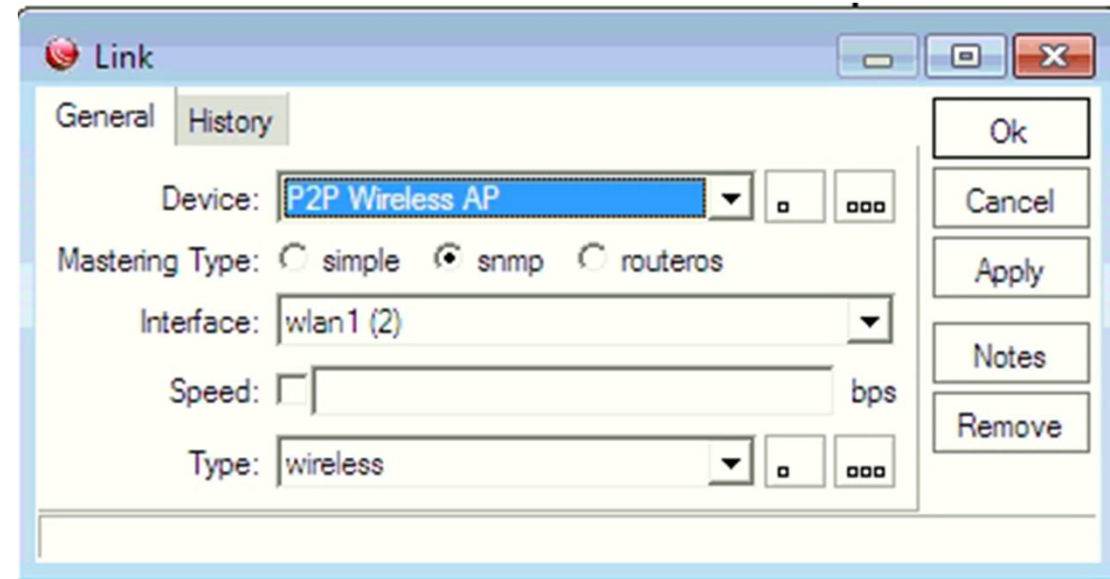
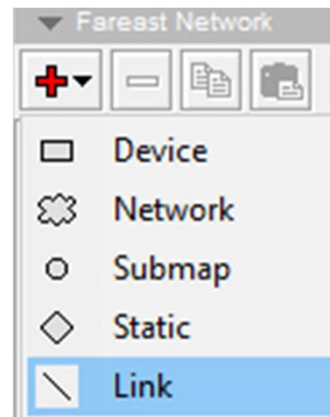
cpu: 0% mem: 4% disk: 33%

Port1 bytes In :20134935

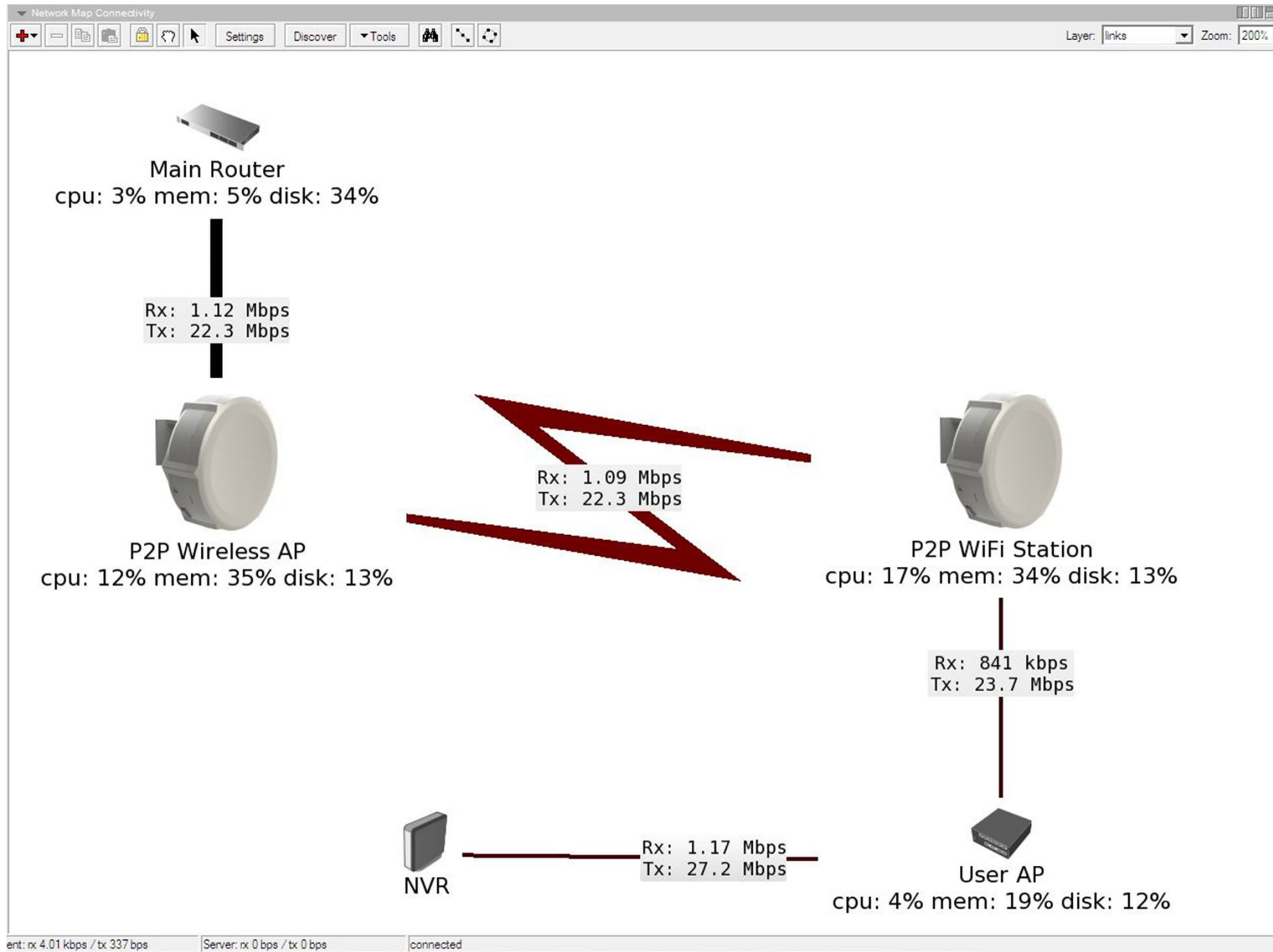
Port1 bytes Out :119044743

# Mikrotik to Mikrotik bandwidth view in DUDE

- Click + icon then click Link Icon
- Then Drag Both of devices
- Now select router , Mastering Type, Interface, Type.









Main Router  
cpu: 4% mem: 5% disk: 34%

Rx: 2.81 Mbps  
Tx: 25.9 Mbps



User AP  
cpu: 5% mem: 19% disk: 12%



# Notification from DUDE

- The Notifications pane configures any actions that can be taken when a device status changes. The predefined Notifications are the following:
  - Beep - Makes a beeping sound from the PC speaker of the server PC
  - Flash - Flashes the Dude taskbar menu
  - Log to Events - Saves information to local Event log
  - Log to Syslog - Saves information to Syslog
  - Popup - Opens a small notification window
  - Notifications can be send Facebook, Twitter and other social Media.
- You can also add new Notifications, more types are available in the add dialog.

# Email Notification

The screenshot displays a network management application with a 'Camera Network Diagram' window. A 'Notifications' table is visible, listing various notification types. A 'New Notification' dialog box is open, showing the configuration for an email notification.

Name	Type	Notes
X beep	beep	
Notification	execute on server	
X flash	flash	
X log to events	log	
X log to syslog	log	
popup	popup	

**New Notification** dialog box configuration:

- General tab selected
- Name: Email Notification
- Enabled:
- Type: email
- Server IP:
- Server Dns Name:
- Server Port:  25
- User: imlenkon@gmail.com
- Password:
- Tls Mode: yes
- From: imlenkon@fareastislamife.com
- To: imlenkon@gmail.com
- Cc:
- Subject: Service [Probe.Name] on [Device.Name] is now [Service.Status]
- Body: Service [Probe.Name] on [Device.Name] is now [Service.Status] ([Service.ProblemDescription])

Client: rx 4.44 kbps / tx 192 bps | Server: rx 0 bps / tx 0 bps | connected

# Alternate Notification use Router

- Its also possible notify / alert automatic to social network by using Mikrotik Script.
- SMS Generate from Mikrotik Router use SMS gateway / Modem or API
- Email Send from Mikrotik Router.

## Live Notification use Telegram APPS





# Backup & Restore DUDE

## For Export

```
/dude export-db Dude-Backup  
status: exporting: 62% complete
```

## For Import

```
/dude import-db Dude-Backup  
status: exporting: 92% complete
```



# View office network from anywhere use Internet with Port

- If you have Public IP in your router then you can see your Network from anywhere use DUDE server IP as a Public IP.
- Win box & DUDE Port is : 8291
- Make sure port is allow or block from router : /ip service



Server: **Public IP**

Mode:  plain  secure

Port: 8291

User Name: admin

Password: \*\*\*\*\*

Remember Password

Comment:

Connect

Save

Remove



# Some Topics which i Skip

- Auto network discovery and layout
- Discovers any type or brand of L3 device
- Device, Link monitoring, and notifications
- Includes icons for devices, and supports custom icons and backgrounds.
- Allows you to draw your own maps and add custom devices
- Supports SNMP, ICMP, DNS and TCP monitoring for devices that support it
- Individual Link usage monitoring and graphs
- Direct access to remote control tools for device management
- Supports remote Dude server and local client. Runs in Linux Wine environment, MacOS Darwine, and Windows

- **RB1100ahx4** is great for networking, very efficient and powerful machine
  - **CCR1036** maximum of 160 services and maximum 4 days of raw value data storage and maximum 300 mega-byte database size
- > For big networks multiple virtualized instances of the dude will be needed, decent SSD storage etc, always keep the dude database size under 500mega-byte to keep good performance.
- > Network monitoring IS NOT a light task It is a very intensive one not only in terms of CPU usage but in terms of storage i/o too
- > NEVER use onboard storage to storage the dude database for long term usage, in the case of rb1100ahx4 dude edition always use the 60gb SSD to host it because monitoring is very write intensive it leads to a premature exhaustion of finite and scarce write cycles of the flash memory.

# For allow me on MUM Specially Thanks to ...

- **Mahmud Hasan** (Network Administrator)  
**Fareast Islami Life Insurance Company Ltd.**
- **All of My colleagues**  
**Fareast Islami Life Insurance Company Ltd.**
- **Syed Abu Saleh**  
**Mikrotik Authorized Trainer in Bangladesh**



# Want to implement DUDE in your Enterprise ?

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[imlenkon@gmail.com](mailto:imlenkon@gmail.com)

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# console clear-history

# Thank You