



The Dude is dead

long live The Dude



Agenda

- FMS Company Profile
- The Dude's history
- The Dude on CHR
- Basic security settings
- The Dude's RouterOS features
- Custom Statistics



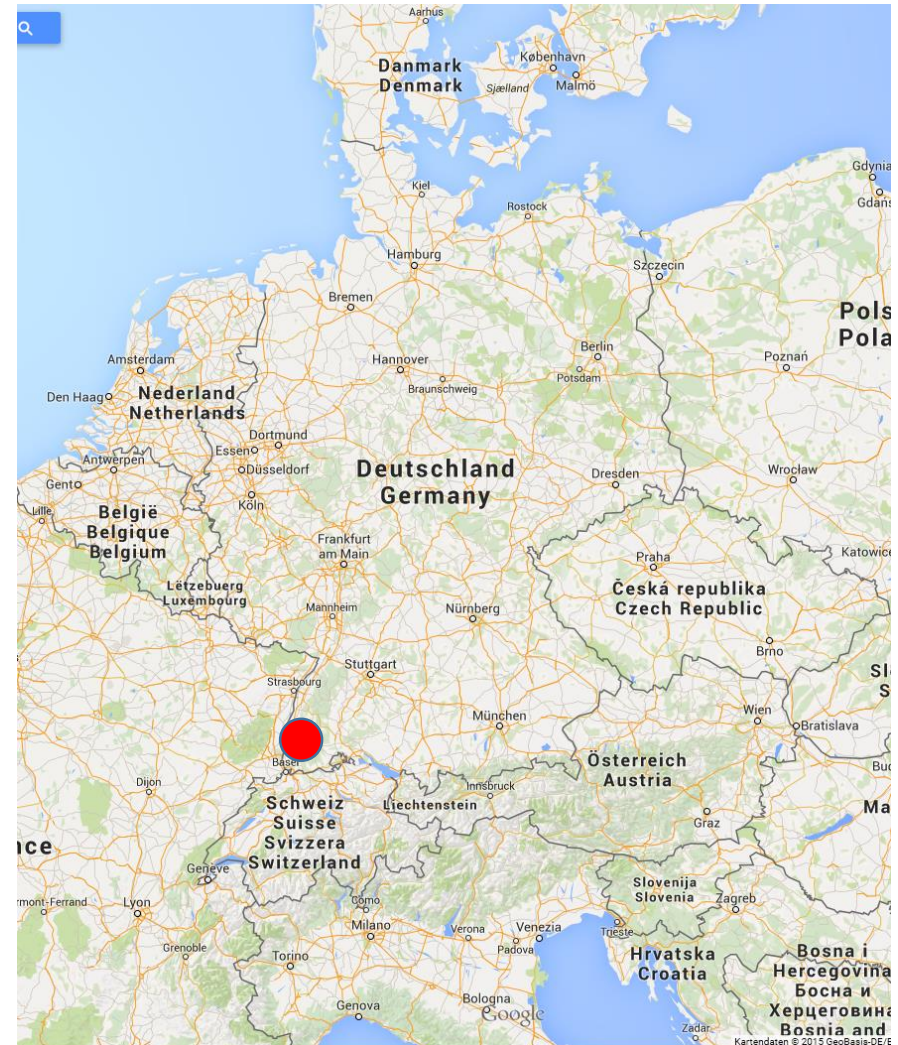
FMS Internetservice GmbH

Value Added Distribution



FMS Internetservice GmbH

- Value Added Distributor
 - Distribution
 - Training
 - Consulting
 - Support
- Founded 1997
- 11 employees
- Southern Germany





Get in Touch

- Website: <http://www.fmsweb.de>
- MikroTik Mirror: <http://www.mikrotik-software.de>
- Shop: <http://www.mikrotik-shop.de>
- Wiki: <http://wiki.fmsweb.de>
- Twitter: https://twitter.com/fmsweb_de
- Facebook: <https://www.facebook.com/fmsinternetservice>

- Phone: +49 761 2926500
- Email: sales@fmsweb.de



Training Center

- Official MikroTik trainings
- All certification levels
- First German speaking partner
- Two trainers
- Own training facility
- Inquiries: sales@fmsweb.de

Sebastian Inacker: TR11

Patrik Schaub: TR23





Distributor Table



Alcatel·Lucent



SUB10
systems.com

MARS ANTENNAS & RF SYSTEMS LTD.

MikroTik





Distributor Table

- See our MikroTik based appliances
- Learn about VDSLplus and G.FAST with Alcatel-Lucent
- Get an update on SAF Tehnika 2048 QAM support
- See new Spectrum Analysers





Distributor Table



Do you need towers or masts? Contact sales@fmsweb.de



The Dude's history

Unique NMS threatened by extinction



History

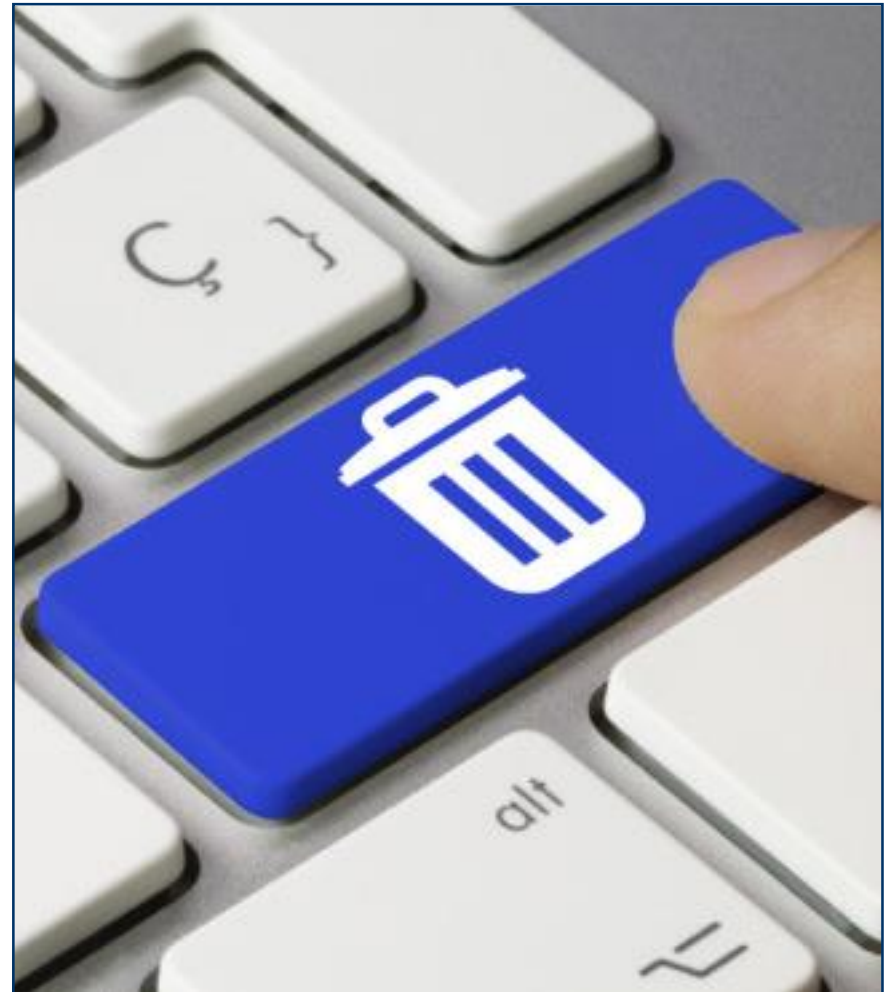
- First NMS choice for many IT professionals
- Users outside the MikroTik community
- easy to use
- fast creation of maps
- little overhead
- free but powerful
- no web application





Development stopped

- No updates for years
- RouterOS functionality breaking
- Bugs not fixed
- A lot of complains
- No alternatives
- Even more frustration





The Dude is finally back

- During 6.34:

***) dude - The reports of my death have been greatly exaggerated;**



Major changes

	4.0 Beta 3	From 6.33.5
Server, RouterOS Plattformen	All	CHR, x86, CCR (Tile)
Server, Windows	Yes	No
Web GUI	Yes	No
Language	Multi language	English only



Get The Dude running

Installing from scratch



Choose the Platform

- Tile, Bare Metal x86, Virtualisation?
- Virtualisation with x86 or CHR?
- CHR optimized for virtualisation
 - 64Bit Kernel
 - Driver Support

The VMware logo, consisting of the word 'vmware' in a white, lowercase, sans-serif font with a registered trademark symbol (®) to the upper right, set against a dark blue background with a geometric pattern of triangles.



Download CHR Image

	6.32.4 (Bugfix only)	6.34.2 (Current)	5.26 (Legacy)	6.35rc12 (Release candidate)
images	img, vmdk, vhdx, vdi			
The Dude client	-	↓	-	↓
The Dude server	-	↓	-	↓
VMDK image	-	↓	-	↓
VHDX image	-	↓	-	↓
VDI image	-	↓	-	↓
Raw disk image	-	↓	-	↓
Extra packages	-	↓	-	↓
Changelog	-	📄	-	📄
MD5	-	Σ	-	Σ

- Download VMDK CHR Image
- Create Guest with VMware Workstation Player
- Use downloaded VMDK image as disk



CHR Licensing

- Option A: Use free license
- Option B: Use MikroTik cloud hosting from FMS (contact sales@fmsweb.de)

License	Speed limit
Free	1Mbit
P1	1Gbit
P10	10Gbit
P-Unlimited	Unlimited

- Option C: Buy a license for your installation
- P1 will be sufficient in most cases (= 1Gbps per interface)



CHR Installation





CHR Installation

New Virtual Machine Wizard

Welcome to the New Virtual Machine Wizard
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

Installer disc:
DVD-RW-Laufwerk (D:)

Installer disc image file (iso):
Browse...

I will install the operating system later.
The virtual machine will be created with a blank hard disk.

Help < Back Next > Cancel

New Virtual Machine Wizard

Select a Guest Operating System
Which operating system will be installed on this virtual machine?

Guest operating system

Microsoft Windows
 Linux
 Novell NetWare
 Solaris
 Other

Version
Other 64-bit

Help < Back Next > Cancel



CHR Installation

New Virtual Machine Wizard

Specify Disk Capacity

How large do you want this disk to be?

The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB):

Recommended size for Other 64-bit: 8 GB

- Store virtual disk as a single file
- Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Help

< Back

Next >

Cancel

New Virtual Machine Wizard

Ready to Create Virtual Machine

Click Finish to create the virtual machine. Then you can install Other 64-bit.

The virtual machine will be created with the following settings:

Name:	CHR #2
Location:	C:\Users\schaub\Documents\Virtual Machines\CHR #2
Version:	Workstation 12.0
Operating System:	Other 64-bit
Hard Disk:	8 GB, Split
Memory:	256 MB
Network Adapter:	NAT
Other Devices:	CD/DVD, Sound Card

Customize Hardware...

< Back

Finish

Cancel



CHR Installation

The screenshot shows the VMware Workstation 12 Player interface. The window title is "VMware Workstation 12 Player (Non-commercial use only)". The interface is divided into a left sidebar and a main display area. The sidebar contains a "Home" icon and a list of virtual machines: "CHR.#2", "RouterOS (CHR)", and "RouterOS (Standard ISO)". The "CHR.#2" VM is selected and highlighted. The main display area shows a black screen representing the virtual machine. Below the screen, the following information is displayed:

CHR#2

State: Powered Off
OS: Other 64-bit
Version: Workstation 12.0 virtual machine
RAM: 256 MB

At the bottom of the interface, there are two buttons: "Play virtual machine" (with a green play button icon) and "Edit virtual machine settings" (with a gear icon). The "Edit virtual machine settings" button is highlighted with a red rectangular box, and a mouse cursor is pointing at it.



CHR Installation

Virtual Machine Settings

Hardware Options

Device	Summary
Memory	256 MB
Processors	1
Hard Disk (IDE)	8 GB
CD/DVD (IDE)	Auto detect
Network Adapter	NAT
Sound Card	Auto detect
Display	Auto detect

Disk file
CHR.#2.vmdk

Capacity
Current size: 1.1 MB
System free: 184.7 GB
Maximum size: 8 GB

Disk information
Disk space is not preallocated for this hard disk.
Hard disk contents are stored in multiple files.

Disk utilities
Map this virtual machine disk to a local volume.
Defragment files and consolidate free space.
Expand disk capacity.
Compact disk to reclaim unused space.



CHR Installation

Virtual Machine Settings

Hardware Options

Device	Summary
Memory	256 MB
Processors	1
CD/DVD (IDE)	Auto detect
Network Adapter	Bridged (Automatic)
Sound Card	Auto detect
Display	Auto detect

Device status

Connected

Connect at power on

Network connection

Bridged: Connected directly to the physical network

Replicate physical network connection state

Configure Adapters

NAT: Used to share the host's IP address

Host-only: A private network shared with the host

Custom: Specific virtual network

VMnet0

LAN segment:

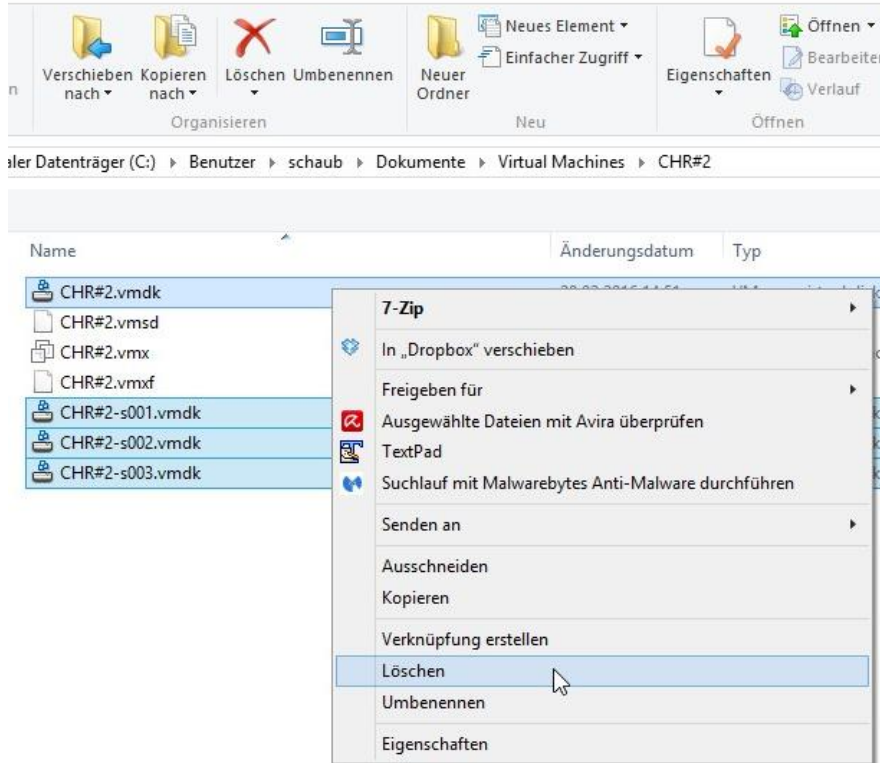
LAN Segments... Advanced...

Add... Remove

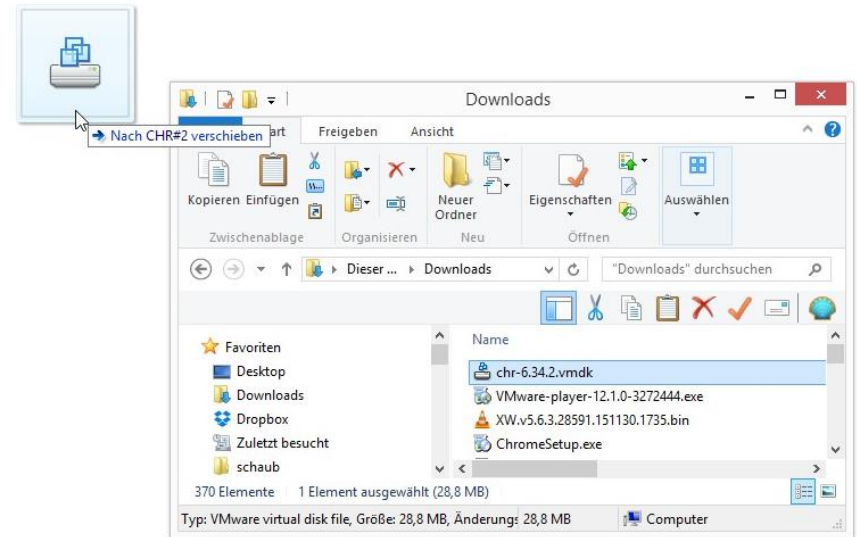
OK Cancel Help



CHR Installation



■ Copy CHR image



■ Delete unused disk files



CHR Installation

Virtual Machine Settings

Hardware Options

Device	Summary
Memory	256 MB
Processors	1
CD/DVD (IDE)	Auto detect
Network Adapter	Bridged (Automatic)
Sound Card	Auto detect
Display	Auto detect

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Add Hardware Wizard

Hardware Type

What type of hardware do you want to install?

Hardware types:

- Hard Disk
- CD/DVD Drive
- Floppy Drive
- Network Adapter
- USB Controller
- Sound Card
- Parallel Port
- Serial Port
- Printer
- Generic SCSI Device

Explanation

Add a hard disk.

< Back Next > Cancel

Add... Remove

OK Cancel Help



CHR Installation

Add Hardware Wizard [X]

Select a Disk Type
What kind of disk do you want to create?

Virtual disk type

- IDE (Recommended)
- SCSI
- SATA

< Back Next > Cancel

Add Hardware Wizard [X]

Select a Disk
Which disk do you want to use?

Disk

- Create a new virtual disk
A virtual disk is composed of one or more files on the host file system, which will appear as a single hard disk to the guest operating system. Virtual disks can easily be copied or moved on the same host or between hosts.
- Use an existing virtual disk
Choose this option to reuse a previously configured disk.
- Use a physical disk (for advanced users)
Choose this option to give the virtual machine direct access to a local hard disk.

< Back Next > Cancel



CHR Installation

Add Hardware Wizard

Select an Existing Disk
Which previously configured disk would you like to use?

Disk file
One disk file will be created for each 2 GB of virtual disk capacity. File names for each file beyond the first will be automatically generated using the file name provided here as a basis.

File name: **Browse...**

Browse for Virtual Disk File

« Virtual Machi... > CHR#2 > "CHR#2" durchsuchen

Organisieren > Neuer Ordner

Name	Änderungsdatum
CHR#2.vmx.lck	20.02.2016 15:05
chr-6.34.2.vmdk	20.02.2016 14:44

Dateiname: chr-6.34.2.vmdk VMware virtual disks (*.vmdk)

Öffnen Abbrechen



Resize Disk

Virtual Machine Settings

Hardware Options

Device Summary

Expand Disk Capacity

Specify the maximum size for the virtual disk:

Maximum disk size (GB): 1

Expand increases only the size of a virtual disk. Sizes of partitions and file systems are not affected.

Expand Cancel Help

VMware Workstation 12 Player

The disk was successfully expanded. You must repartition the disk and expand the file systems from within the guest operating system.

OK

Disk file: chr-6.34.2.vmdk

Capacity: Current size: 28.9 MB, System free: 184.7 GB, Maximum size: 128 MB

Disk information: Disk space is not preallocated for this hard disk. Hard disk contents are stored in a single file.

Disk utilities: Map this virtual machine disk to a local volume, Defragment files and consolidate free space, Expand disk capacity, Compact disk to reclaim unused space

Map... Defragment Expand... Compact Advanced...

OK Cancel Help



Add second Disk

Virtual Machine Settings

Hardware Options

Device	Summary
Memory	256 MB
Processors	1
New Hard Disk ...	1 GB
CD/DVD (IDE)	Auto detect
Network Adapter	Bridged (Automatic)
Sound Card	Auto detect
Display	Auto detect

Disk file: chr-6.34.2.vmdk

Add Hardware Wizard

Hardware Type

What type of hardware do you want to install?

Hardware types:	Explanation
<input checked="" type="checkbox"/> Hard Disk	Add a hard disk.
<input type="checkbox"/> CD/DVD Drive	
<input type="checkbox"/> Floppy Drive	
<input type="checkbox"/> Network Adapter	
<input type="checkbox"/> USB Controller	
<input type="checkbox"/> Sound Card	
<input type="checkbox"/> Parallel Port	
<input type="checkbox"/> Serial Port	
<input type="checkbox"/> Printer	
<input type="checkbox"/> Generic SCSI Device	

< Back Next > Cancel

Add... Remove

OK Cancel Help



Configure Second Disk

The image displays three overlapping screenshots of the 'Add Hardware Wizard' dialog boxes, illustrating the steps to configure a second disk:

- Top Left Screenshot: Select a Disk Type**
Title: Add Hardware Wizard
Question: What kind of disk do you want to create?
Virtual disk type options:
 - IDE (Recommended)
 - SCSI
 - SATA
- Top Right Screenshot: Select a Disk**
Title: Add Hardware Wizard
Question: Which disk do you want to use?
Disk options:
 - Create a new virtual disk
Description: A virtual disk is composed of one or more files on the host file system, which will appear as a single hard disk to the guest operating system. Virtual disks can easily be copied or moved on the same host or between hosts.
 - Use an existing virtual disk
Description: Choose this option to reuse a previously configured disk.
- Bottom Screenshot: Specify Disk Capacity**
Title: Add Hardware Wizard
Question: How large do you want this disk to be?
Maximum disk size (GB):
Recommended size for Other 64-bit: 8 GB
Allocation options:
 - Allocate all disk space now.
Description: Allocating the full capacity can enhance performance but requires all of the physical disk space to be available right now. If you do not allocate all the space now, the virtual disk starts small and grows as you add data to it.
 - Store virtual disk as a single file
 - Split virtual disk into multiple files
Description: Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.



First Boot of Guest

```
Welcome to MikroTik Router Software hard disk installation 6.34.2  
Press Ctrl-Alt-Delete to abort
```

```
Loading drivers  
Looking for harddrives...  
Reading: routeros-x86-6.34.2...  
Reading: dude-6.34.2...
```

```
Creating partition...  
Formatting data partition 100%  
Formatting boot partition 100%
```

```
installed routeros-x86-6.34.2  
installed dude-6.34.2
```

```
Software installed.
```

```
-
```



Default Situation

Package List

Name	Version	Build Time	Scheduled
dude	6.34.2	Feb/18/2016 06:31:18	
routeros-x86	6.34.2	Feb/18/2016 06:31:18	
advancedt...	6.34.2	Feb/18/2016 06:31:18	
dhcp	6.34.2	Feb/18/2016 06:31:18	
hotspot	6.34.2	Feb/18/2016 06:31:18	
ipv6	6.34.2	Feb/18/2016 06:31:18	
...	6.34.2	Feb/18/2016 06:31:18	

14 items (1 selected)

Dude part of CHR image

Terminal

```
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] >
[admin@MikroTik] > /dude print
      enabled: no
data-directory: dude
      status:
[admin@MikroTik] >
```

Dude is disabled, default Directory set to main disk

Disk List

Name	Label	Type	Disk	Free	Size
		unknown	VMware Virtual IDE Hard Drive	0 B	2048.0 MiB

1 item

Second disk not ready to use

File List

File Name	Type	Size	Creation Time
skins	directory		Feb/20/2016 15:15:43

1 item

43.4 MiB of 984.1 MiB used 95% free

No Dude store has been created



Format second Drive

1 ext3 file system recommended

1

Name	Label	Type	Disk	Free	Size
disk1	Dude-Di...	ext3	VMware Virtual IDE Hard Drive	1967.7 MiB	2048.0 MiB

File Name	Type	Size	Creation Time
disk1	disk		Feb/20/2016 15:42:02
disk1/lost-found	directory		Feb/20/2016 15:42:01
skins	directory		Feb/20/2016 15:15:43



Change Data-Store and Enable Dude

The screenshot displays the Mikrotik WinBox interface. On the left is a sidebar with navigation options: Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, and New Terminal. The main area is divided into two windows:

- File List:** A window showing a directory listing. A red box highlights the following entries:

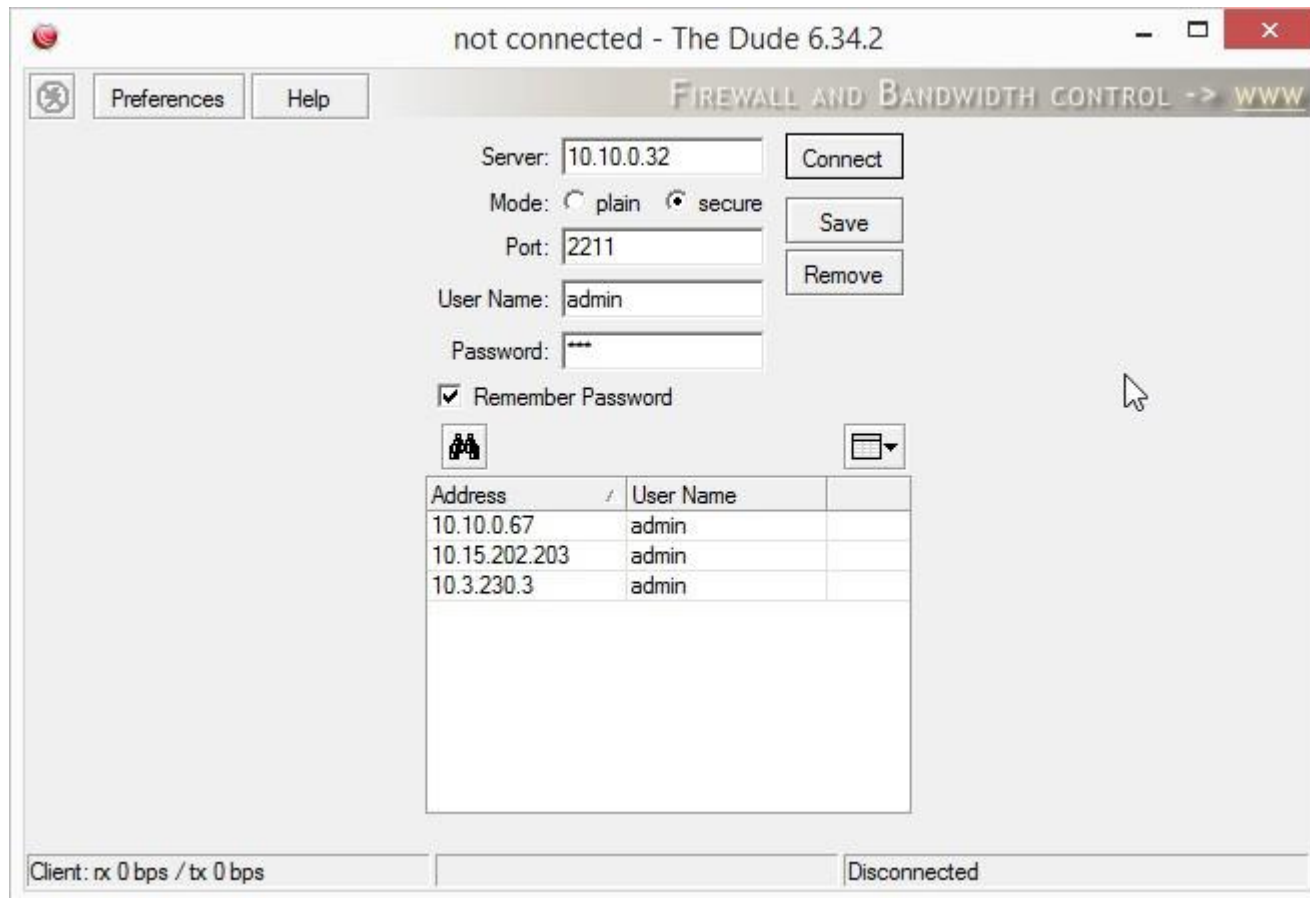
File Name	Type	Size	Creation Time
disk 1	disk		Feb/20/2016 15:42:02
disk 1/dude-store	dude store		Feb/20/2016 15:45:49
disk 1/lost+found	directory		Feb/20/2016 15:42:01
skins	directory		Feb/20/2016 15:15:43

Below the table, it shows "4 items" and "43.4 MiB of 984.1 MiB used" (95% free). A red arrow points from the "disk 1/dude-store" entry to the terminal window.
- Terminal:** A window showing command-line input and output. A red box highlights the following commands and their output:

```
[admin@MikroTik] > /dude set data-directory=disk1/dude-store
[admin@MikroTik] > /dude set enabled=yes
[admin@MikroTik] > /dude print
      enabled: yes
data-directory: disk1/dude-store
      status: running
[admin@MikroTik] >
```



Connect using the Dude Client





Basic Security Setting

Securing the Dude



Setting the Admin Password

The screenshot shows the FMS Admin interface. On the left is a tree view of the system's contents, with 'Admins' selected. The main area displays a table of admin users. A dialog box titled 'admin - Admin' is open, allowing configuration of the 'admin' user. The 'Name' field is 'admin', the 'Group' is 'full', and the 'Allowed Address' is '0.0.0.0/0'. The 'Password' field is highlighted with a red box. The 'Allow More Than One' and 'Separate Panels' checkboxes are checked.

Name	Group	Notes
admin	full	

admin - Admin

Name:

Group:

Allowed Address:

Allow More Than One

Separate Panels

Buttons: Ok, Cancel, Apply, Notes, Copy, Remove



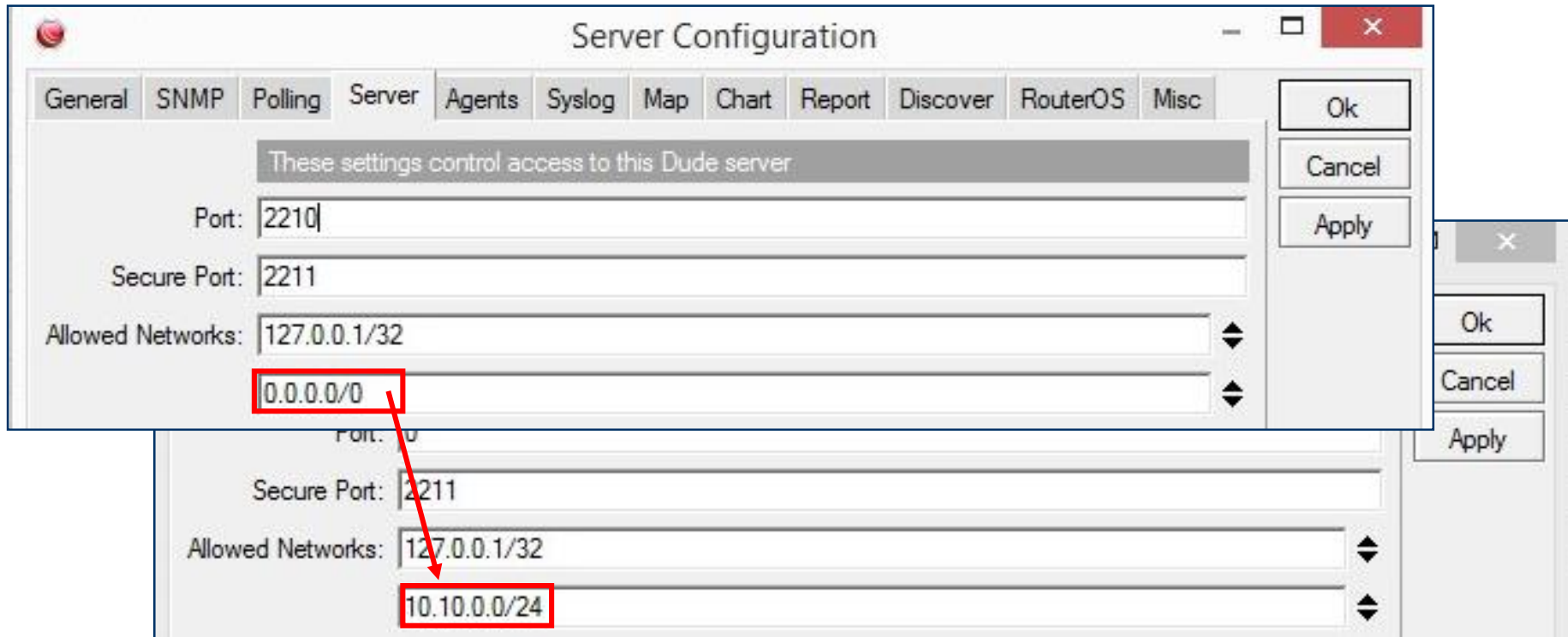
Disable Plain Access

The screenshot shows the Dude software interface. On the left is a 'Contents' tree with various categories like Address Lists, Admins, Agents, etc. The 'Settings' button in the top toolbar is highlighted with a red box, and a red arrow points from it to the 'Server Configuration' dialog box. The dialog box has tabs for General, SNMP, Polling, Server, Agents, Syslog, Map, Chart, Report, Discover, RouterOS, and Misc. The 'Server' tab is selected. A text box at the top of the dialog says 'These settings control access to this Dude server'. Below this, the 'Port' field is highlighted with a red box and contains the value '0'. Other fields include 'Secure Port' (2211) and 'Allowed Networks' (127.0.0.1/32 and 0.0.0.0/0). Buttons for 'Ok', 'Cancel', and 'Apply' are on the right.

- Change from 2210 to 0 to disable



Set ACL



- Limit Dude access to the 10.10.0.0/24 network



Setup Email Notifications

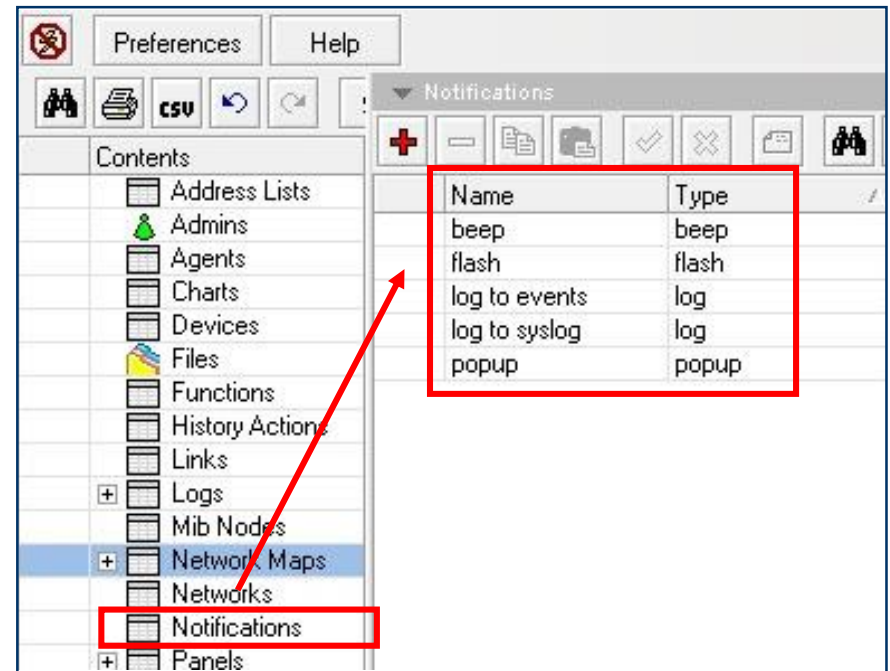
Sending email alerts by Gmail



Preconfigure Notifications

- Notification types for events like outages
- Some preconfigured
- Some unused types

- Not preconfigured: Email
- Generic email notification using Gmail





Email Notification

The screenshot displays the FMS interface with the 'Notifications' section selected in the left-hand 'Contents' pane. A red box highlights 'Notifications' in the list, and a red arrow points from it to the 'Add' (+) button in the top toolbar. The main window shows a table with one notification entry: 'beep' of type 'beep'. A dialog box titled 'email - Notification' is open, showing configuration options. Three red circles with numbers 1, 2, and 3 highlight specific fields: 1 points to the 'Name' field (set to 'email'), 2 points to the 'Type' dropdown (set to 'email'), and 3 points to the 'Server Port' dropdown (set to '587'). Other fields include 'Enabled' (checked), 'User' (myaccount@gmail.com), 'Password' (masked), 'Tls Mode' (yes), and 'To' (receipient@foo.bar). The 'Subject' field contains a template: 'Service [Probe.Name] on [Device.Name] is now [Service Status]'. Buttons for 'Ok', 'Cancel', 'Apply', 'Notes', 'Copy', 'Remove', and 'Test' are visible on the right side of the dialog.

Name	Type	Notes
beep	beep	

1 Name: email

2 Type: email

3 Server Port: 587

User: myaccount@gmail.com

Password:

Tls Mode: yes

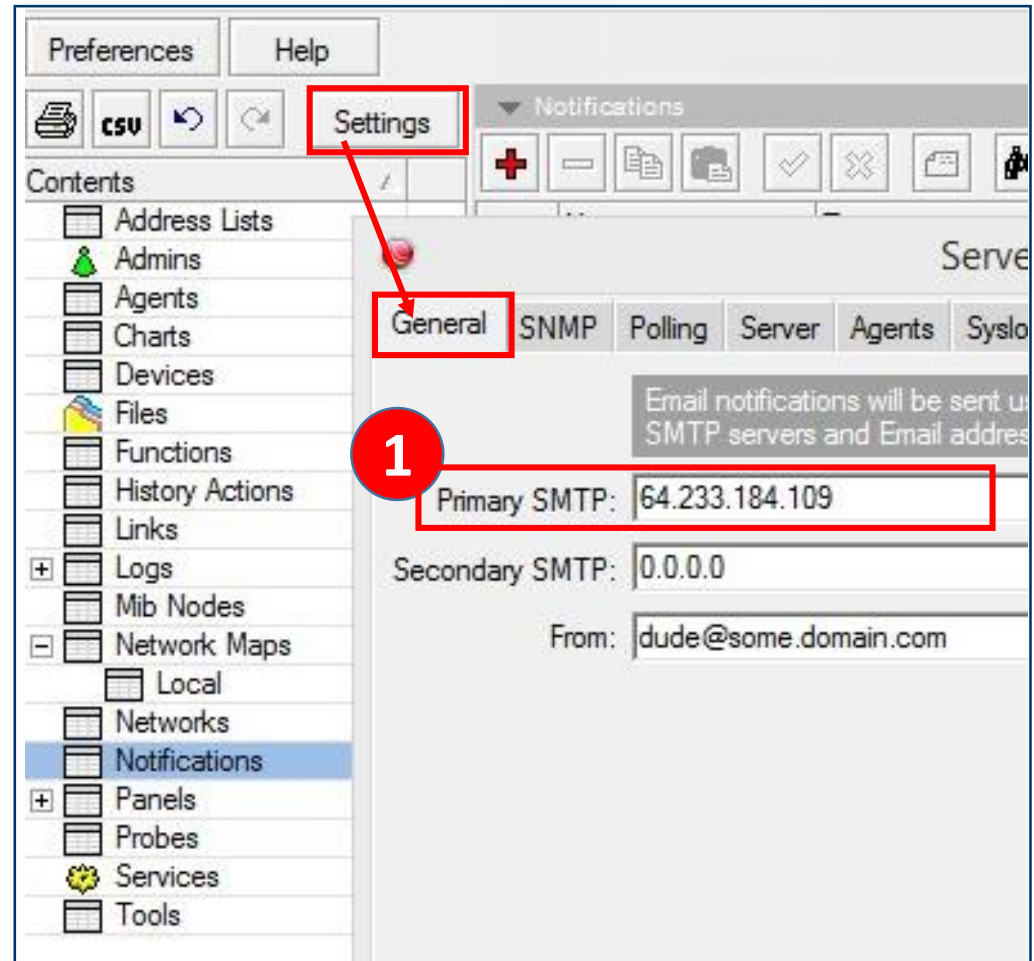
To: receipient@foo.bar

Subject: Service [Probe.Name] on [Device.Name] is now [Service Status]



Email Notification

- Server setup in general settings
- Default for new notifications
- Can be superseded
- IP (not URL) of Gmail SMTP





Testing Email Notification

The image shows a multi-step process for testing email notifications in the FMS interface:

- Configuration Window:** Fields for Server, Server Port (25), User (587), Password, and To (recipient@foo.bar) are visible. The **Test** button is highlighted with a red box.
- System Menu:** The **System** menu item is highlighted with a red box. A red arrow points from it to the Logging window.
- Logging Window:** The **Rules** tab is active. A red box highlights the **+** button to add a new rule.
- New Log Rule Dialog:** The **Topics** field is set to **e-mail** and is highlighted with a red box. Other fields include Prefix, Action (memory), and OK/Cancel buttons.
- Confirmation:** The **Ok** button at the bottom left of the configuration window is highlighted with a red box, with a red arrow pointing to it from the **New Log Rule** dialog.



Gmail Consideration

e-mail, debug	send AUTH PLAIN AHRwdGVjaDAxMEBnbWFpbC5jb20AbnVyMWtvcWlzY2hlc0xvZ2luMg==
e-mail, debug	recv: 534-5.7.14 <https://accounts.google.com/ContinueSignIn?sarp=1&sc=1&plt=AKgnsbvTi
e-mail, debug	recv: 534-5.7.14 FiAliAW-fjiqfJ9B0a6YYaSB5Nfr0aUQ&JGvWus9cSWEdCRPEhBbSjy-LOWFGXaJcf
e-mail, debug	recv: 534-5.7.14 yVUaJyhSdWwbNOgtNaVOOA14HSnOgrlmuyGWj6qAqTMRqGvU4xi9suSh2d5F7X
e-mail, debug	recv: 534-5.7.14 UXTIBgivid0j0KGuVrUXgskPmfzjtqOjHc3HS6eU0pE5oUivQ40\A-eh-MfwVCBnXaXC
e-mail, debug	recv: 534-5.7.14 vDo2vsDFRN9w36NshUcQRllEe0I> Please log in via your web browser and
e-mail, debug	recv: 534-5.7.14 then try again.
e-mail, debug	recv: 534-5.7.14 Learn more at
e-mail, debug	recv: 534 5.7.14 https://support.google.com/mail/answer/78754 jc7sm17523957wjb.33 - gsmt
system, e-mail, error	Error sending e-mail <Service [Probe.Name] on [Device.Name] is now [Service.Status]>: AUTH failed
e-mail, debug	send RSET

- Watch log for
“Please log in via your web browser and then try again.”
- Turn on "Access for less secure apps"
- Probably referring to “OAuth2.0”
- Not referring to lack of encryption



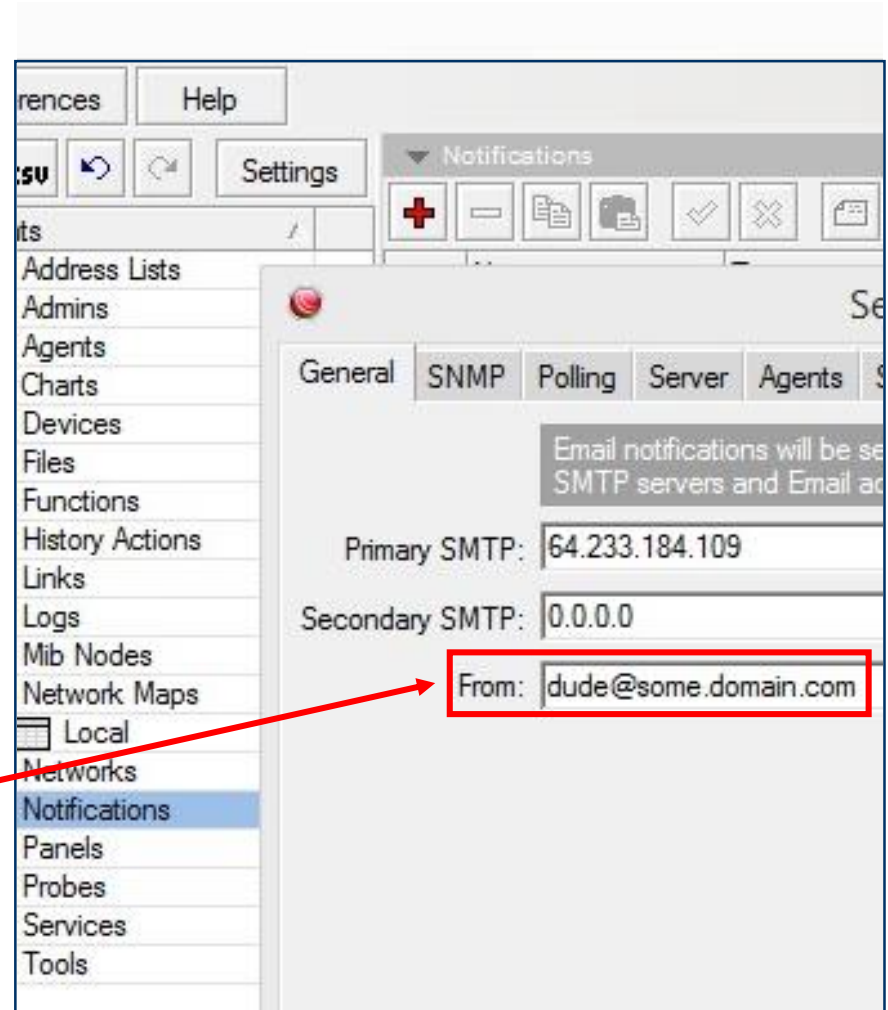
Email Header

Message-ID:

56c7f2db.45312c0a.ac355.ffffc
9a2@mx.google.com

From: myaccount@gmail.com

X-Google-Original-From:
dude@some.domain.com





The Dude for RouterOS

Dedicated RouterOS features and extensions



Enabling Extra Features

AP OG1 - Device

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

Name: AP OG1

Addresses: 192.168.0.246

DNS Names:

DNS Lookup: none address to name name to address

DNS Lookup Interval: 60 min

MAC Addresses: D4:CA:6D:96:FF:7E

MAC Lookup: none ip to mac mac to ip

Type: MikroTik Device

Parents:

Custom Field 1:

Custom Field 2:

Custom Field 3:

Agent: default

Snmp Profile: v1-public


User Name: admin

Password:

Secure Mode

Router OS

Dude Server

Services:  Up - 7

Status: up

Ok
Cancel
Apply
Notes
Remove
Tools
Reprobe
Ack
Unack
Reboot
Reconnect



RouterOS Tab

AP EG - Device

General Polling Services Outages Snmp RouterOS Dude History Tools

Interface Ip Route Arp Package File Neighbor Registration Table Simple Queue Dhcp Lease

Interface	Radio Name	MAC	AP	WDS	Tx/Rx Rate	Tx/Rx ...	Comment	Last IP
wlan2		64:9A:BE:9A:0...	no	no	65Mbps-20MHz/1S/52Mbps-20MHz...	0/-72		192.168.0.29
wlan2		B8:FF:61:0F:84...	no	no	1Mbps/65Mbps-20MHz/1S	0/-59	iPad Patrik	192.168.0.49
wlan2		64:9A:BE:98:2...	no	no	54Mbps/65Mbps-20MHz/1S	0/-62		192.168.0.30
wlan3		8C:FA:BA:8A:7...	no	no	39Mbps-20MHz/1S/65Mbps-20MHz...	0/-59		192.168.0.45
wlan3		74:E2:F5:CB:7...	no	no	65Mbps-20MHz/1S	0/-60		192.168.0.36
wlan3		74:E2:F5:E2:2...	no	no	1Mbps/58.5Mbps-20MHz/1S	0/-76		192.168.0.38

AP EG - Device

General Polling Services Outages Snmp RouterOS Dude History Tools

Interface Ip Route Arp Package File Neighbor Registration Table Simple Queue Dhcp Lease

Name	Type	MTU	Tx Bps	Rx Bps	Tx Pps	Rx Pps
bridge1	bridge		1500	40.5 kbps	6.34 kbps	4 7
ether1	ethernet		1500	56.8 kbps	71.4 kbps	20 22
X wlan1	wireless		1500	0 bps	0 bps	0 0
wlan2	wireless		1500	65.2 kbps	16.3 kbps	17 16
wlan3	wireless		1500	968 bps	0 bps	2 0



Dude Tab

192.168.0.249 - Device

General Polling Services Outages Snmp RouterOS **Dude** History Tools

Settings Discover Tools Layer

Contents

- Address Lists
- Admins
- Agents
- Charts
- Devices
- Files
- Functions
- History Actions
- Links
- Logs
 - Action
 - Debug
 - Event
 - Syslog
- Mib Nodes

Local

192.168.0.249

Rx: 1.42 kbps
Tx: 600 bps

192.168.0.0/24

Rx: 1.83 kbps
Tx: 4.64 kbps

AP Floor 1
cpu: 2% disk: 23%
4 Stations connected

192.168.0.21

APNAS

Ok
Cancel
Apply
Notes
Remove
Tools
Reprobe
Ack
Unack
Reboot
Reconnect



Files/Package Window

The screenshot shows the FMS interface with the 'Files' tab selected in the left sidebar and the 'Packages' tab selected in the main window. The 'Packages' tab displays a table of installed packages.

Name	Size	Version	Architect...	Notes
routeros-mipsbe	10.1 MB	6.34.1	mipsbe	
routeros-mipsbe	10.2 MB	6.34.2	mipsbe	

The 'Transfers' window is also visible, showing a table of transfer operations:

#	File	Time	Device	Direction	Status	Progress	Err
1	routeros-mipsbe-6.34....	23:15:36		upload	done	100	
2	dude-6.34rc41.npk	23:15:44		upload	done	100	
3	routeros-powerpc-6.3...	23:38:15		upload	in process	26	
4	routeros-mipsbe-6.33...	23:38:15		upload	queued	0	
5	routeros-mipsbe-6.33...	23:38:15		upload	queued	0	
6	routeros-mipsbe-6.34...	23:38:15		upload	queued	0	
7	routeros-powerpc-6.3...	23:38:15		upload	queued	0	
8	routeros-powerpc-6.3...	23:38:15		upload	queued	0	

- Drag & Drop Firmware to “Packages” tab
- Available for upgrading RouterOS devices



Devices/RouterOS Window

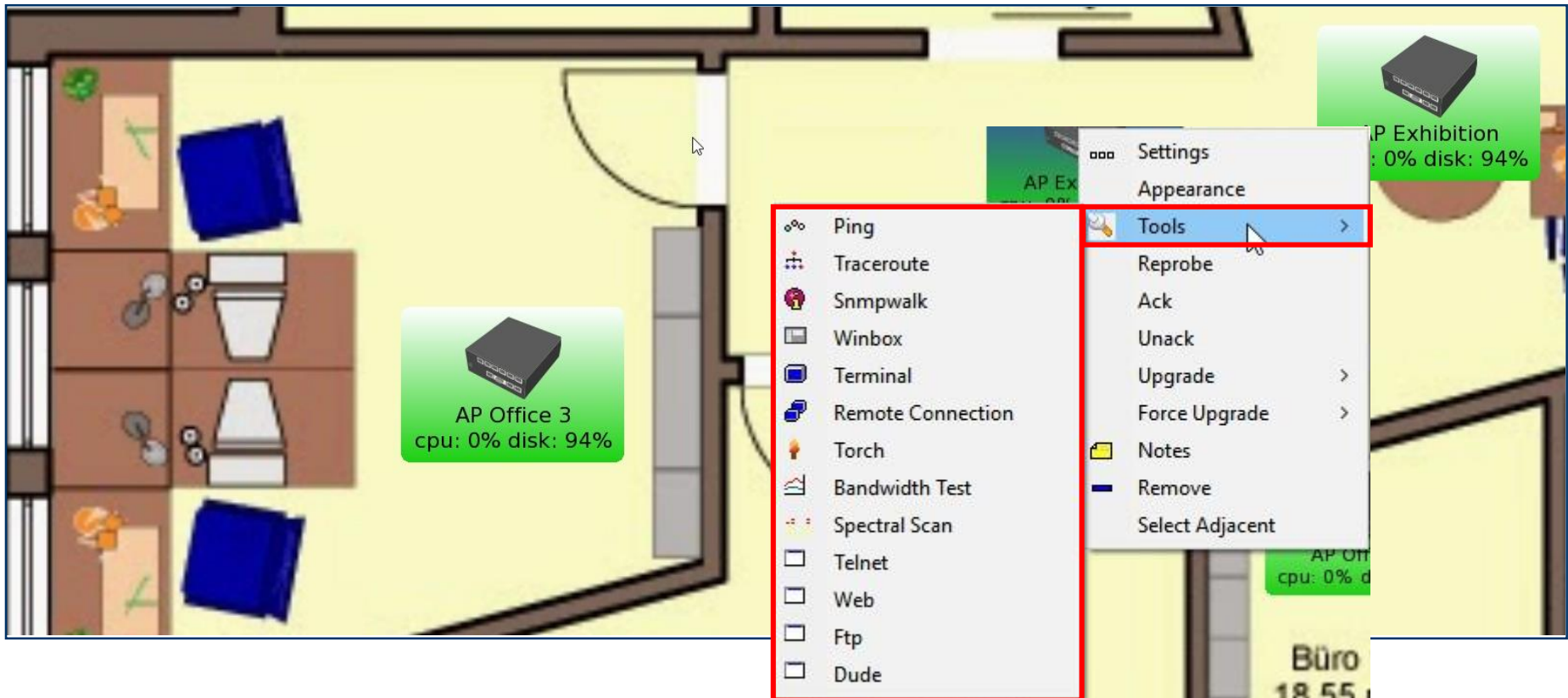
The screenshot shows the RouterOS management interface. On the left is a 'Contents' sidebar with 'Devices' selected. The main area has tabs for 'List', 'Tree', 'RouterOS', 'Types', and 'Mac Mappings'. The 'RouterOS' tab is active, showing a table of devices. A context menu is open over the 'AP Floor 1' device, with the 'Upgrade' option selected, and a sub-menu showing version options: 6.34.2, 6.34.1, 6.33.3, and 6.33.5.

Status	Name	Version	Architecture	Board	Upgrade Status	Packages
ok	192.168.0.21	6.35rc12	x86	CHR		
ok	192.168.0.249	6.35rc12	x86	CHR		
ok	AP Floor 1	6.34.1	mipsbe	RB411AR		
ok	AP Floor 2	6.34.2	mipsbe	RB2011UAS-2H		

- See only RouterOS devices and details
- Run RouterOS updates directly



RouterOS Tools

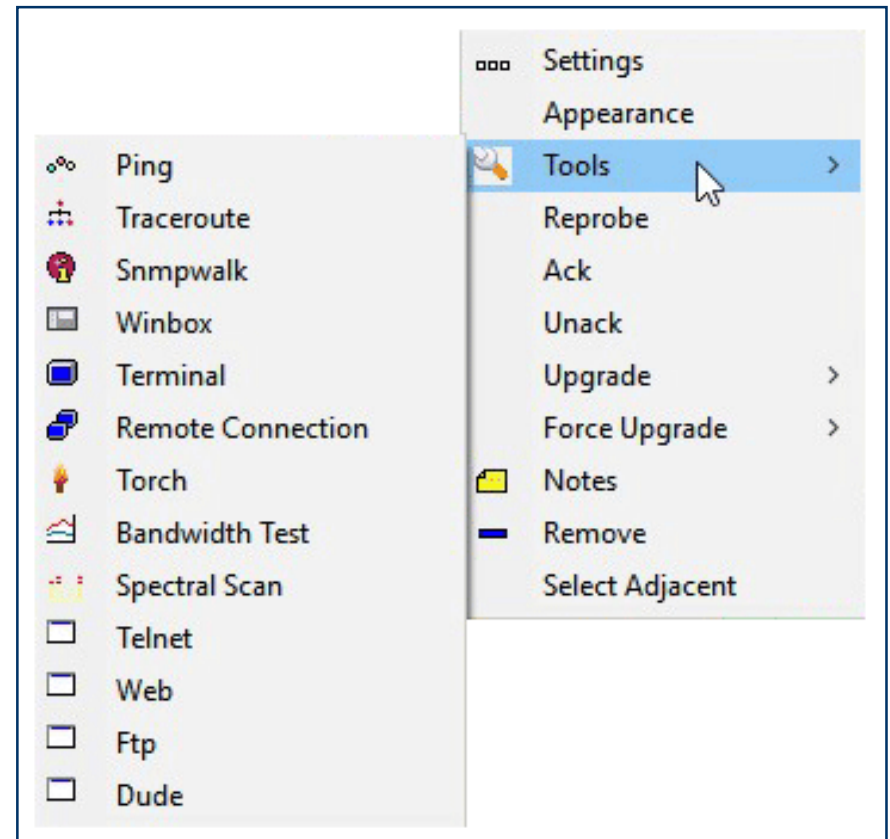


- Context menu shows tools sub menu
- General and RouterOS specific tools



RouterOS Tools (to a Device)

- Winbox
 - Terminal
 - Remote Connection (MAC)
 - Dude
-
- More Tools “from” a Device
 - More powerful than in Winbox





Bandwidth Test



■ Device selection

■ No credentials



Torch

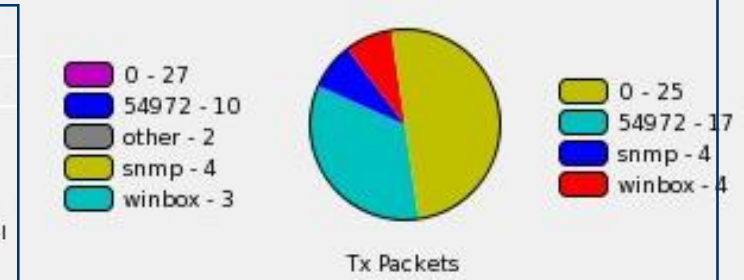
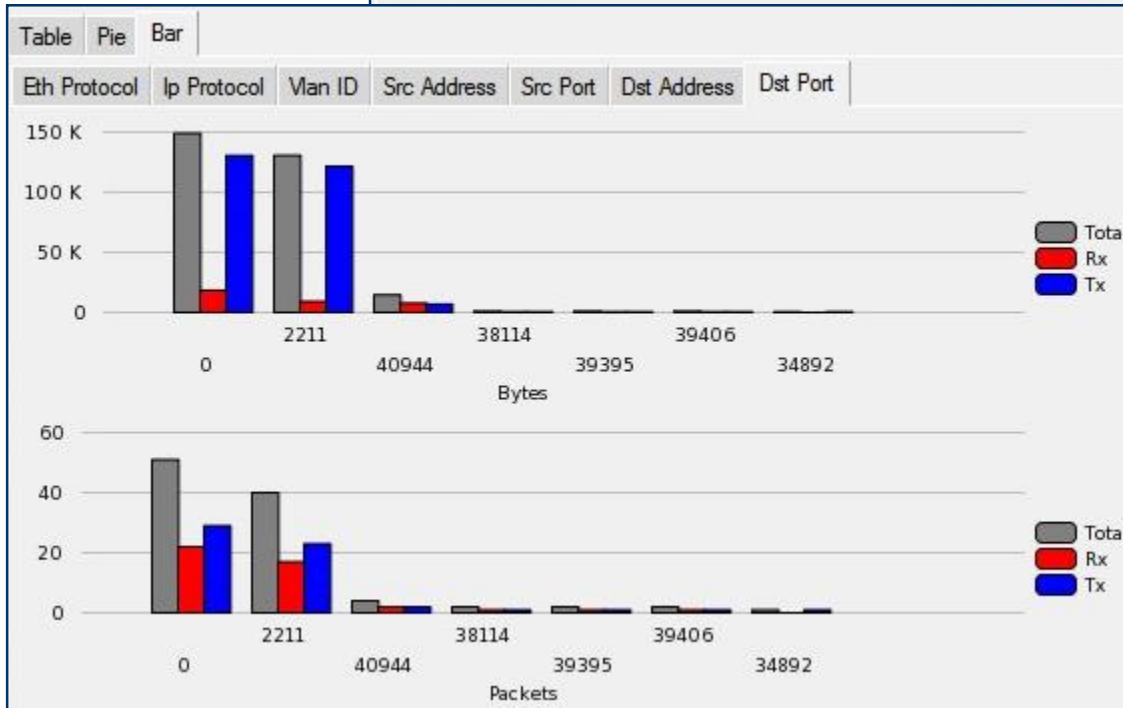
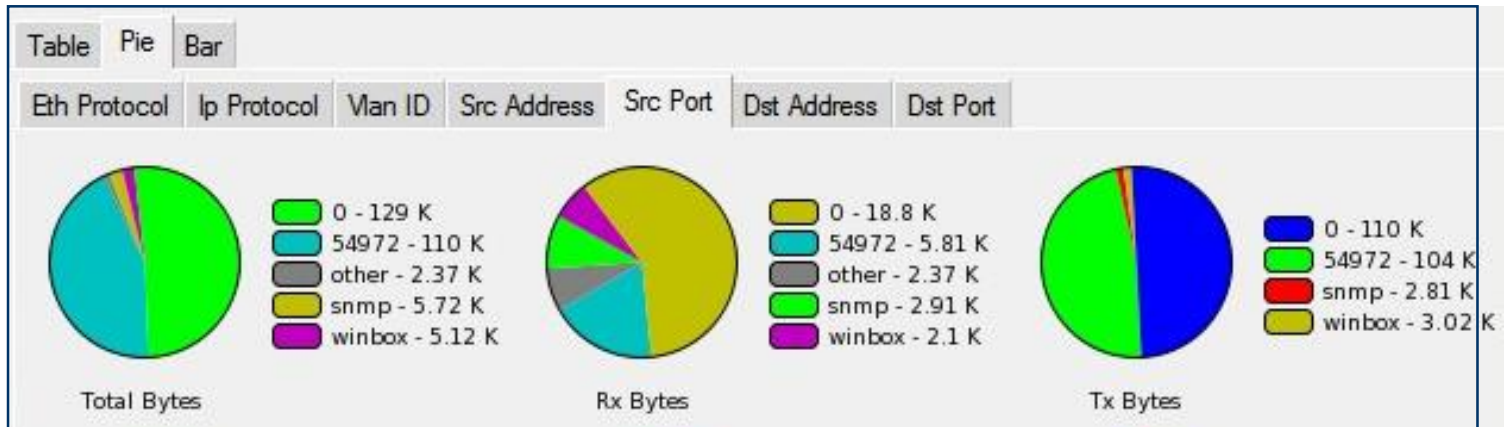
- Select any device
- See network from different views
- Additional charts

The screenshot shows the 'Torch AP Exhibition' interface. The 'General' tab is active, and the 'From' dropdown is set to 'AP Exhibition'. The 'Interface' dropdown is open, showing a list of devices: '192.168.0.21', '192.168.0.249', 'AP Exhibition' (highlighted), 'AP Floor 1', 'AP Floor 2', 'AP Kitchen', 'AP Living Room', 'AP Office 2', 'AP Office 3', 'AP Office 3', and 'AP Office EDV'. The 'Average' dropdown is set to 'AP Floor 1'. The 'Table' view is selected, and the following table is displayed:

#	Eth ...	IP Pr...	Man ID	Src Address	Src Port
...	ip	tcp		192.168.0.250	lpr
...	ip	tcp		192.168.0.250	http
...	ip	udp		192.168.0.250	netbios-ns
...	ip	icmp		192.168.0.250	0
...	ip	tcp		192.168.0.247	winbox
...	ip	tcp		192.168.0.247	winbox
...	ip	tcp		192.168.0.247	winbox

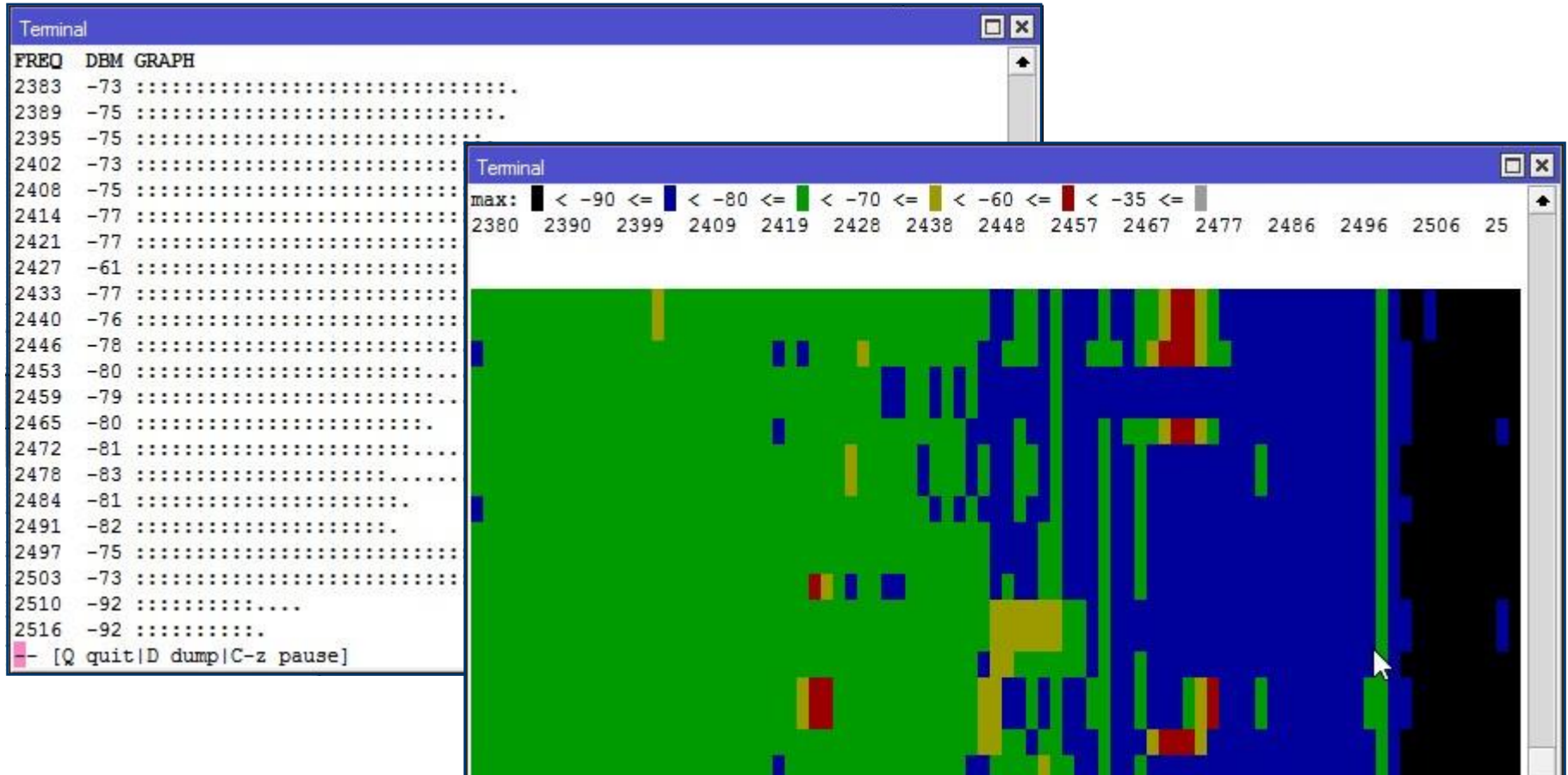


Torch Charts





Spectral Scan (Winbox)



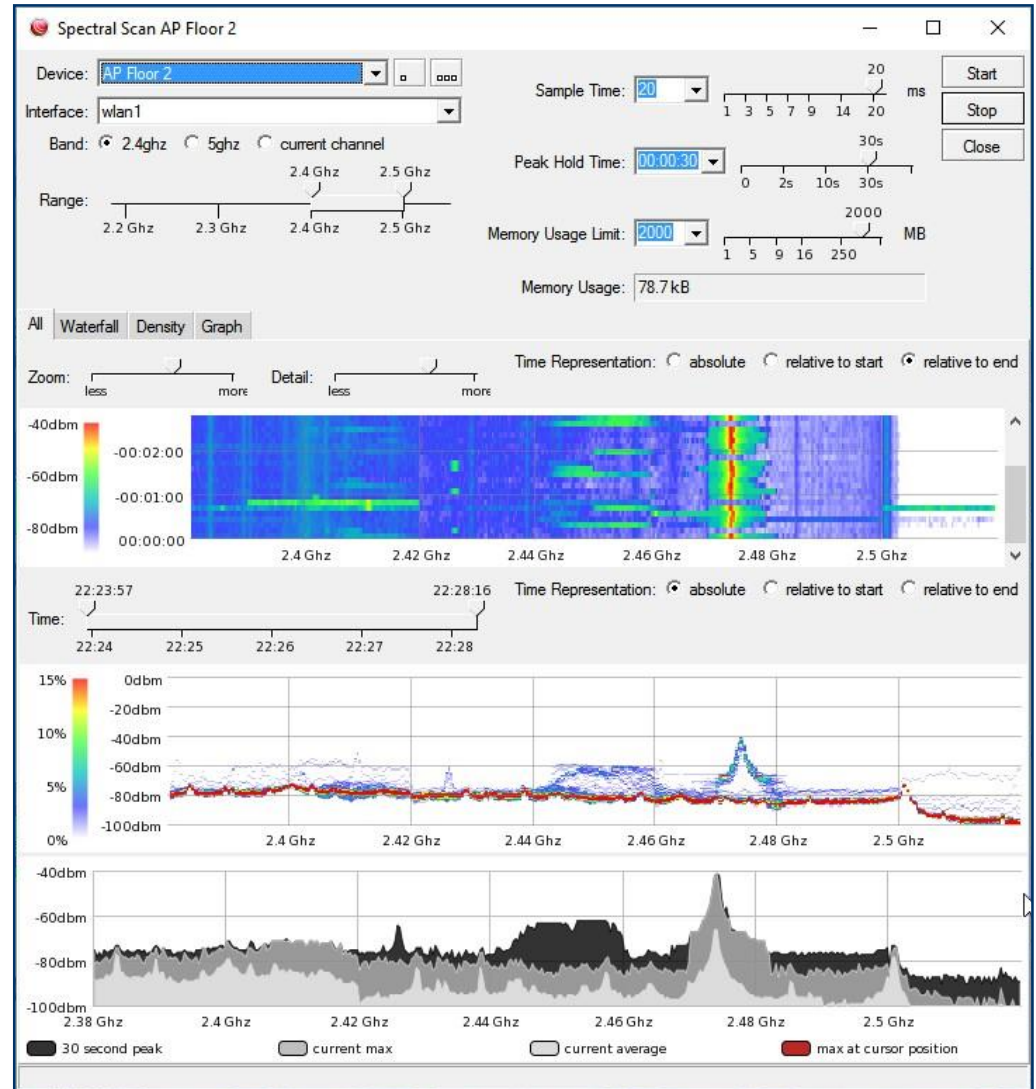
- `/interface wireless spectral-scan number=0`
- `/interface wireless spectral-history value=max`

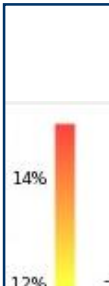
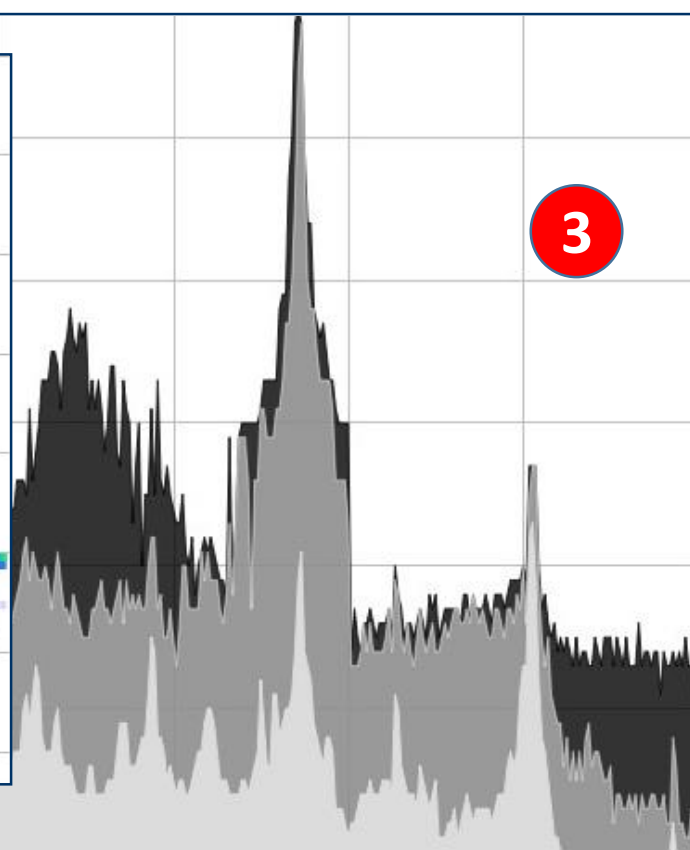
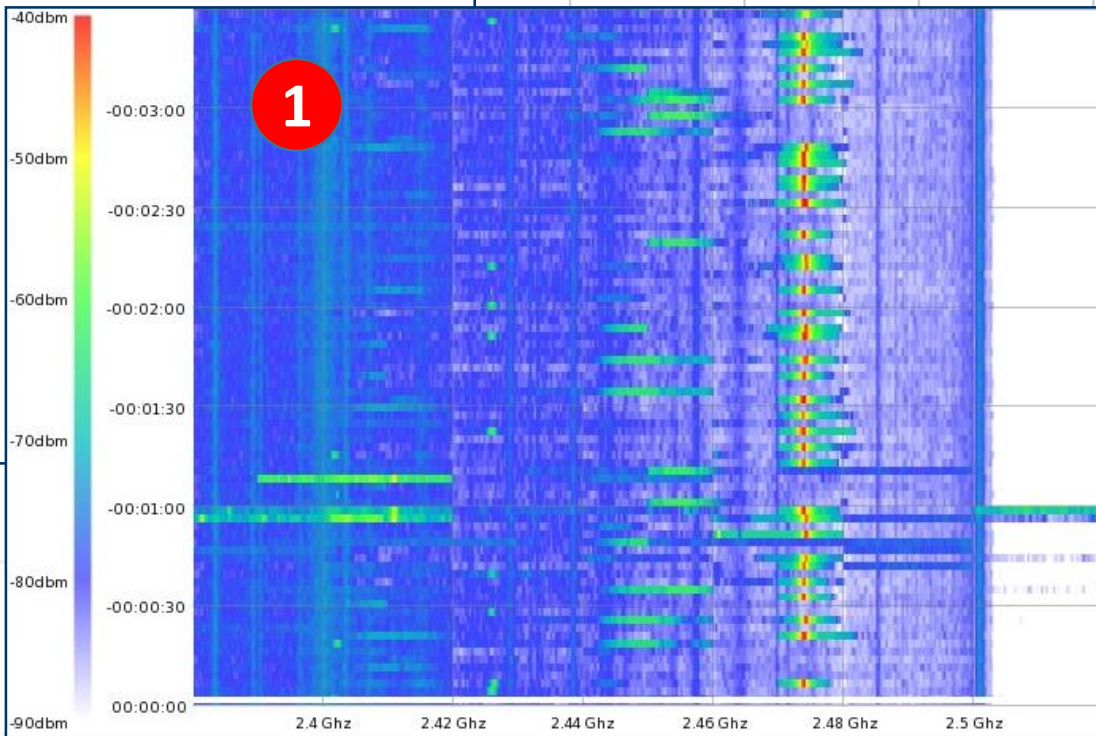


Spectral Scan (Dude)

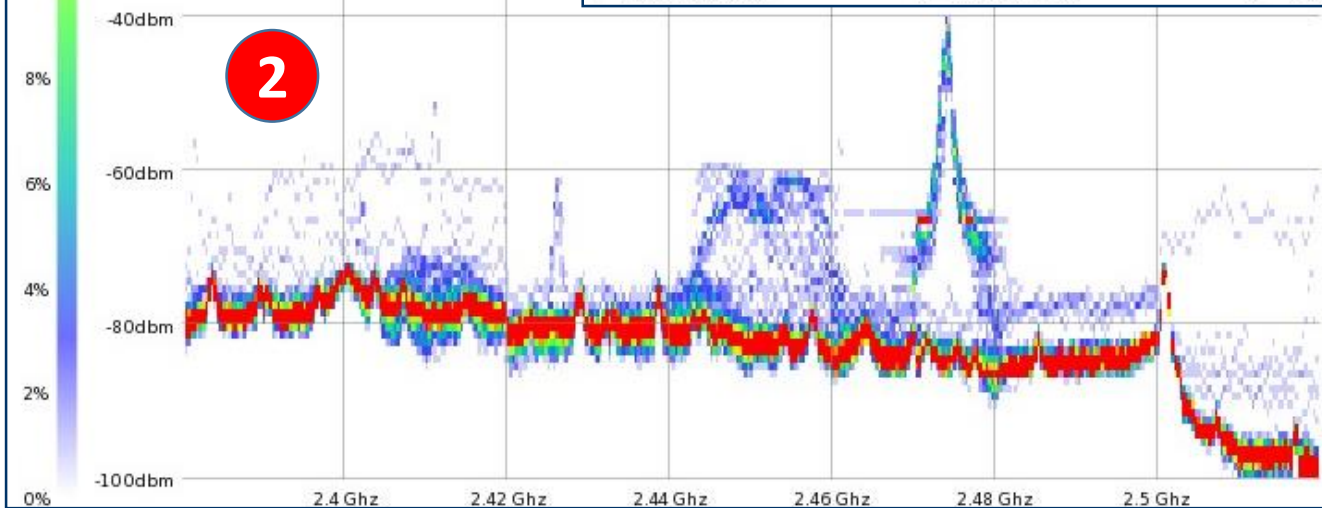
- From any device
- Good representation
- Simultaneous scans

- Spectral view for network with multiple sensors





-100dbm
2.38 GHz 2.4 GHz 2.42 GHz 2.44 GHz 2.46 GHz 2.48 GHz 2.5 GHz
■ 30 second peak ■ current max ■ current average ■ max at cursor position



1. Waterfall
2. Density
3. Graph



Labels

- Great graphical maps
- Devices & links carry information
- Dynamic labels
- RouterOS specific



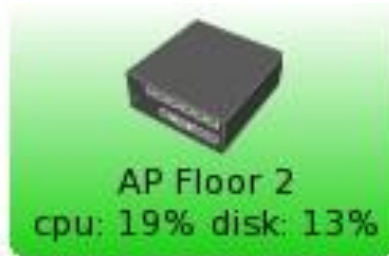


Device Labels



No SNMP

No RouterOS
Function



SNMP on

No RouterOS
Function



SNMP on

RouterOS
Function



Device Labels

The screenshot illustrates the configuration of a device label in a network management system. On the left, a device card for 'AP Floor 2' is shown with a context menu. The card displays 'cpu: 12% disk: 13%' and 'RouterOS: 6.34.2 (mipsbe)'. The context menu includes options like 'Settings', 'Appearance', 'Tools', 'Reprobe', 'Ack', 'Unack', 'Upgrade', 'Force Upgrade', and 'Notes'. On the right, the configuration panel for the device is visible, showing a list of variables and functions used for the device. The list includes '[Device.Name]', '[device_performance()]', and '[ros_info()]'. The configuration panel also has buttons for 'Insert Variable', 'Insert Oid', and 'Functions...'. Red circles with numbers 1, 2, and 3 are overlaid on the image to highlight specific elements: 1 points to the variable '[Device.Name]', 2 points to the function '[device_performance()]', and 3 points to the function '[ros_info()]'. The title bar of the configuration window shows the path: '[Device.Name][device_performance()][Device.ServicesDown][ros_info(...)]'.

1. Variable
2. Function using SNMP
3. Function using RouterOS



Custom RouterOS Functions

- Custom functions combining existing functions
- `ros_command()`
- Calling script / running CLI commands
- Returning output
- Almost anything possible

The screenshot shows the RouterOS WinBox interface. The top bar displays the user 'admin@192.168.0.249' and the version 'The Dude 6.35rc12'. Below the top bar are buttons for 'Preferences', 'Help', 'Settings', and 'CSU'. The main interface is divided into two panes. The left pane, titled 'Contents', shows a tree view of the system's configuration and monitoring tools. The 'Functions' folder is selected and highlighted in blue. The right pane, titled 'Functions', displays a table of built-in functions.

Name	Description
and	logical and
array	returns array of given ar
array_element	return array element with
array_find	returns array index from
array_size	returns element count in
average	calculates and returns a
bitrate	formats number as bitrat
bytes	formats number as bytes
concatenate	concatenates two or mo
cpu_mem_disk	
cpu_usage	
cpu_usage_available	
device_performance	
device_property	returns device property
diff32	returns counter differenc
diff64	returns counter differenc
hdd_size	
hdd_usage	
if	first parameter - conditio
link_index	returns link index availa
max	calculates and returns n
mem_size	
mem_usage	
min	calculates and returns n
not	logical not

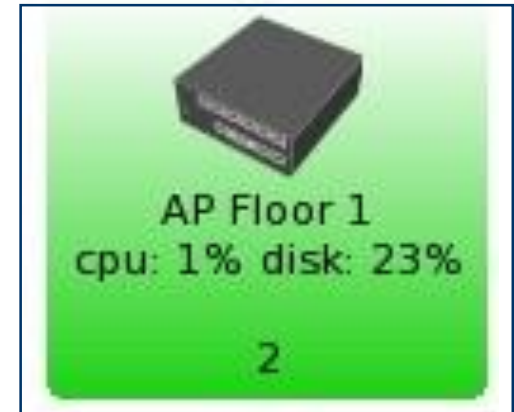


Number of WIFI Connections

- Label:

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

```
[concatenate(round(ros_command("  
/interface wireless registration-table print  
count-only")), " stations connected")]
```





Use Functions inside Label

- Function easier to reuse in labels
- Two functions, 1 x Integer & 1 x String

- `ros_registration_size()`

`ros_command("/interface wireless registration-table print count-only")`

- `ros_registration_size_label()`

`concatenate(round(ros_registration_size()), " stations connected")`





Creating the new Functions

The screenshot shows the FMS interface with the 'Functions' window open. The 'Contents' pane on the left has 'Functions' selected. The 'Functions' window displays a list of functions, with 'ros_registration_size' selected. A red box highlights the '+' icon in the top toolbar of the 'Functions' window. A red arrow points from this icon to the 'New Function' dialog box. The dialog box has the following fields:

- Name: `ros_registration_size_label`
- Description: Returns a formatted string of `ros_registration()` to be used in a label
- Code:

```
concatenate(round(ros_registration_size()), " stations connected")
```

- Choose “+” in functions window
- Enter name, description and source code



Custom Statistics

Using Probes, Services and Charts



Statistics

- Information over time
- In context layer
- In history
- Necessary
 - Probe
 - Service





Creating the Probe

- Type: Function
- Available: 1 = 1
 - always available
- Error: if (1>0, "", "")
 - always up
- Value: ros_registration_size()
- Unit: Stations

The screenshot shows a 'Probes' window with a table of probes. The 'ros_registration_size' probe is selected. A configuration dialog for this probe is open, showing the following settings:

Name	Type	Notes
dns	DNS	
Test-Probe	Function	
cpu	Function	
disk	Function	
memory	Function	
ros_registration_size	Function	

ros_registration_size - Probe

Name:

Type:

Agent:

Performs custom functions to decide if service is available and up. If up graphs value of another function

Should return true if service is available

Available:

If return string is empty then service is assumed up

Error:

Should return value to graph if up

Value:

Unit:



Creating the Service

- Service =

Probe + Device

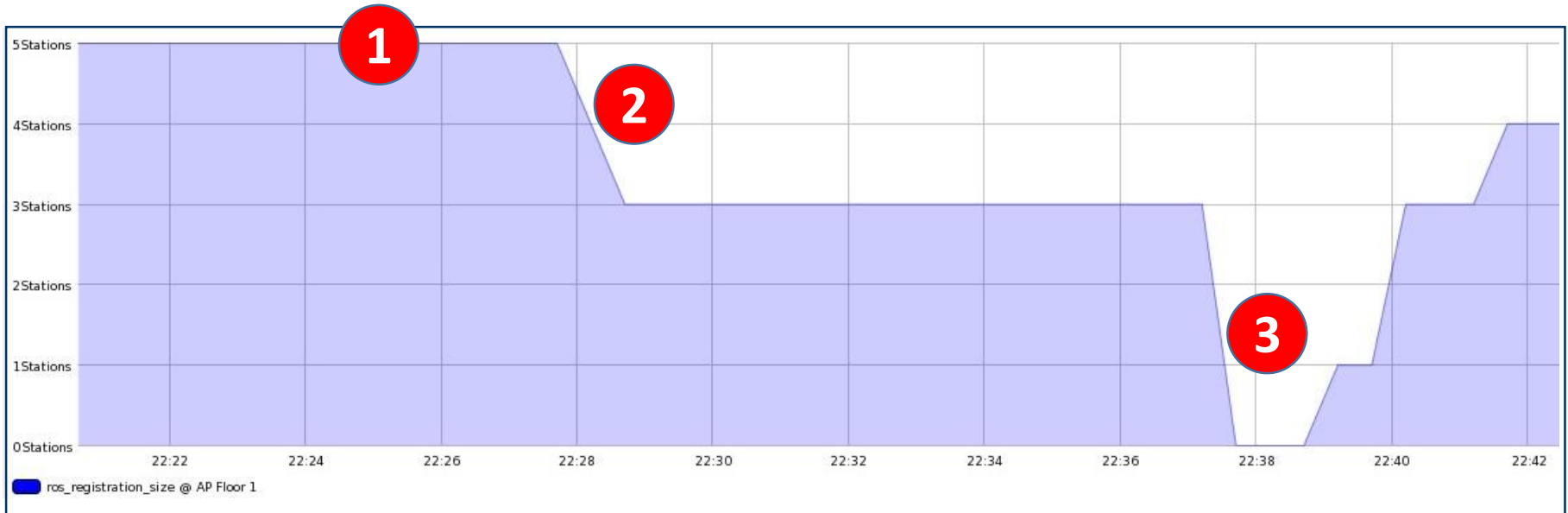
The screenshot shows a network management interface with a 'Services' window. The window has two tabs: 'Services' and 'Outages'. Below the tabs is a toolbar with icons for adding, deleting, copying, pasting, and other actions. The main area displays a table of services with columns for Device, Type, and Problem.

Device	Type	Problem
192.168.0.249	ssh	ok
AP Exhibition	ssh	ok
AP Floor 1	ssh	ok
AP Floor 2	ssh	ok
AP Living Room	ssh	ok
AP Office 3	ssh	ok
AP Office EDV	ssh	ok
AP Exhibition	ros_registration_s...	ok
AP Floor 1	ros_registration_s...	timeout

Below the table is a 'New Service' dialog box with three tabs: 'General', 'Notifications', and 'History'. The 'General' tab is active, showing fields for 'Device', 'Probe', and 'Agent'. The 'Device' field is set to 'AP Exhibition', the 'Probe' field is set to 'ros_registration_size', and the 'Agent' field is set to 'default'. There are also checkboxes for 'Enabled' and 'CSU'.



History



1. 5 stations connected
2. 4 stations connected
3. 0 stations connected



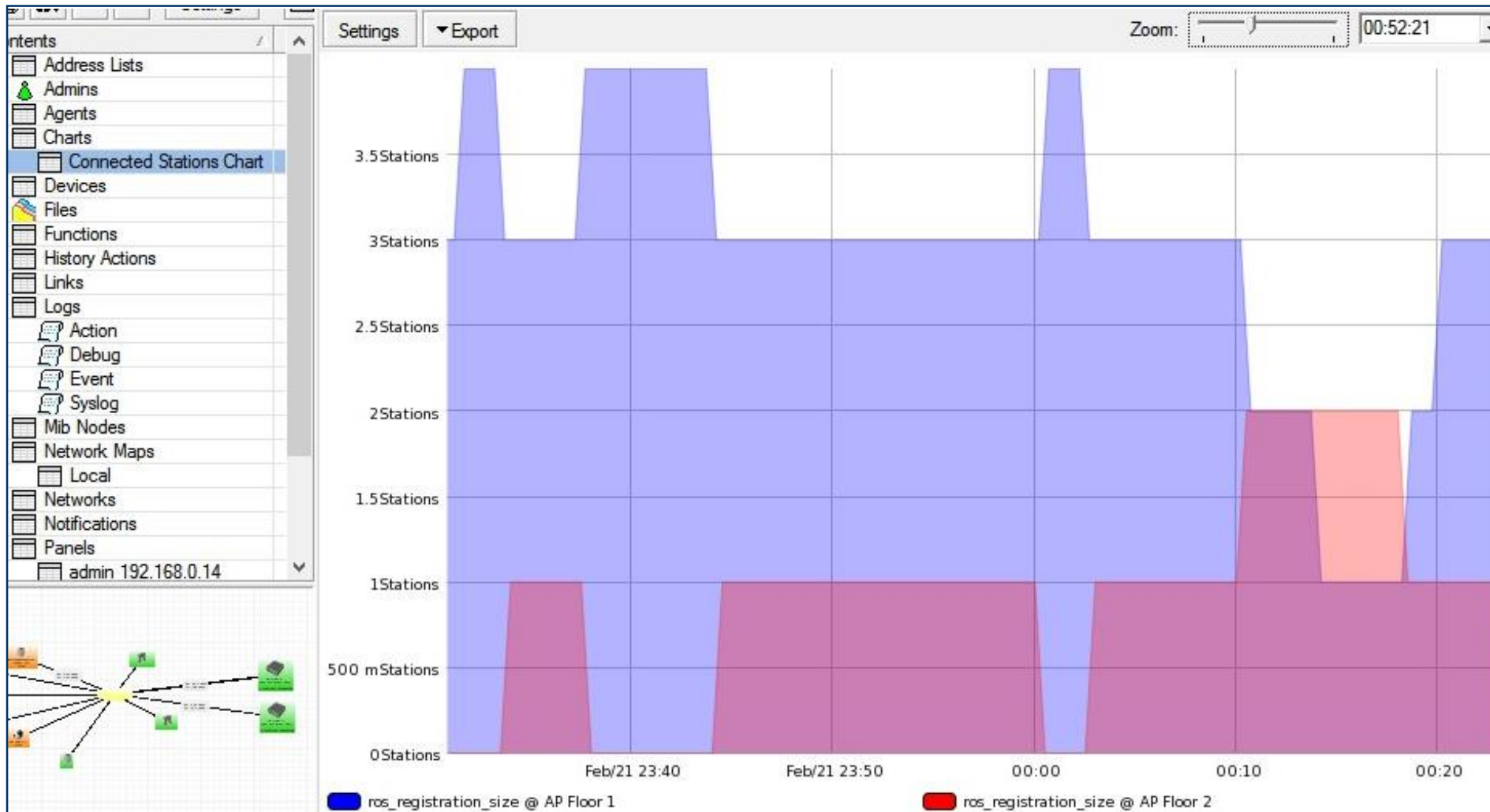
Context History



- Station flapping between „AP Floor 1,, and „AP Floor 2,,



Charts for graphing multiple Services



- Station flapping between „AP Floor 1,, and „AP Floor 2,,



THANK YOU

... and enjoy the Usermeeting



FMS Internetservice GmbH

Phone: +49 761 2926500

Web: www.fmsweb.de

Shop: www.mikrotik-shop.de

Email: sales@fmsweb.de