We Attend 173th 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.

imlenkon@gmail.com                        fb.com/imlenkon
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.
# DUDE Package Installation process in Client PC

## Cloud Hosted Router

<table>
<thead>
<tr>
<th>Images</th>
<th>6.40.6 (Bugfix only)</th>
<th>6.41.2 (Current)</th>
<th>5.26 (Legacy)</th>
<th>6.42rc37 (Release candidate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VHDX image</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>VMDK image</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>VDI image</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>OVA template</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>Raw disk image</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>Extra packages</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>The Dude server</td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td><strong>The Dude client</strong></td>
<td>✅</td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
<tr>
<td>Changelog</td>
<td></td>
<td>✅</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Checksum</td>
<td></td>
<td>✅</td>
<td>-</td>
<td>✅</td>
</tr>
</tbody>
</table>

*imlenkon@gmail.com fb.com/imlenkon*
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.
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
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:
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.
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 10h
Batt Cap: 100%
Batt Temp: 32 C
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 field
[string_substring(oid("1.3.6.1.2.1.1.3.0"),0,8)]
• If we have more than one 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

- It's 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.
Real time Mikrotik Port bandwidth view in DUDE

- **Write OiDs**
- Right click on Router > Appearance > write this code in Level field
- 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")]

imlenkon@gmail.com                        fb.com/imlenkon
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: 3%
- mem: 5%
- disk: 34%

Rx: 1.12 Mbps
Tx: 22.3 Mbps

P2P Wireless AP
- cpu: 12%
- mem: 35%
- disk: 13%

Rx: 1.09 Mbps
Tx: 22.3 Mbps

P2P WiFi Station
- cpu: 17%
- mem: 34%
- disk: 13%

Rx: 841 kbps
Tx: 23.7 Mbps

NVR
- Rx: 1.17 Mbps
- Tx: 27.2 Mbps

User AP
- cpu: 4%
- mem: 19%
- disk: 12%
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

[Image of a software interface with options for notification settings]

- Email Notification: imlenkon@gmail.com, fb.com/imlenkon
Alternate Notification use Router

• It's 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
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?
Contact with Me –
imlenkon@gmail.com

https://www.facebook.com/imlenkon

www.mikrotikgroup.com

Join Group
My Mikrotik
# console clear-history
Thank You