Lanka Education and Research Network

Network Management & Monitering

Sri Lanka

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Workshop on Campus Network Best Practices

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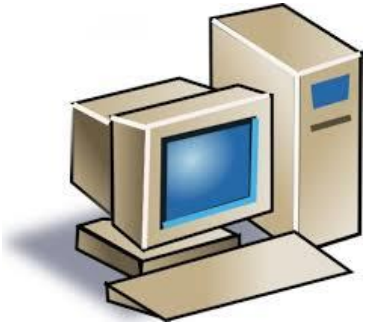
Network Management & Monitering

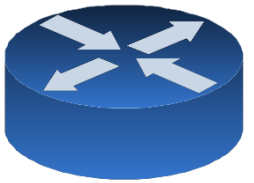
Definition

Network monitoring is the use of a system that constantly or periodically monitors a computer network for slow or failing components and that notifies the network administrator in case of outages or other trouble

What we monitor

- Routers
- Switches
- Firewalls
- Servers
- VMs
- Many more





Why monitor

- The network is the life line of the IT infrastructure.
- When networks fail, the flow of information required by applications and business operations stop.
- When network problems arise, Network Admins are pressured to identify the root cause before it impacts users, applications and the business.

Precisely moniter for

- Any faults
- Check the performance level
- Report issues
- Eliminate the need for manual checks
- Proactive approach
- Track trends

Functions of Network Monitoring system (NMS)

1. Discover
2. Map
3. Monitor
4. Alert
5. Report

- NMSs differ in the capabilities they delivery for each of these functions.

Functions of NMS

Discover: Find the Devices on Your Network

Network monitoring begins with the discovery process.

Simply put, if you don’t know what’s on the network and how its all connected, you can’t monitor it.

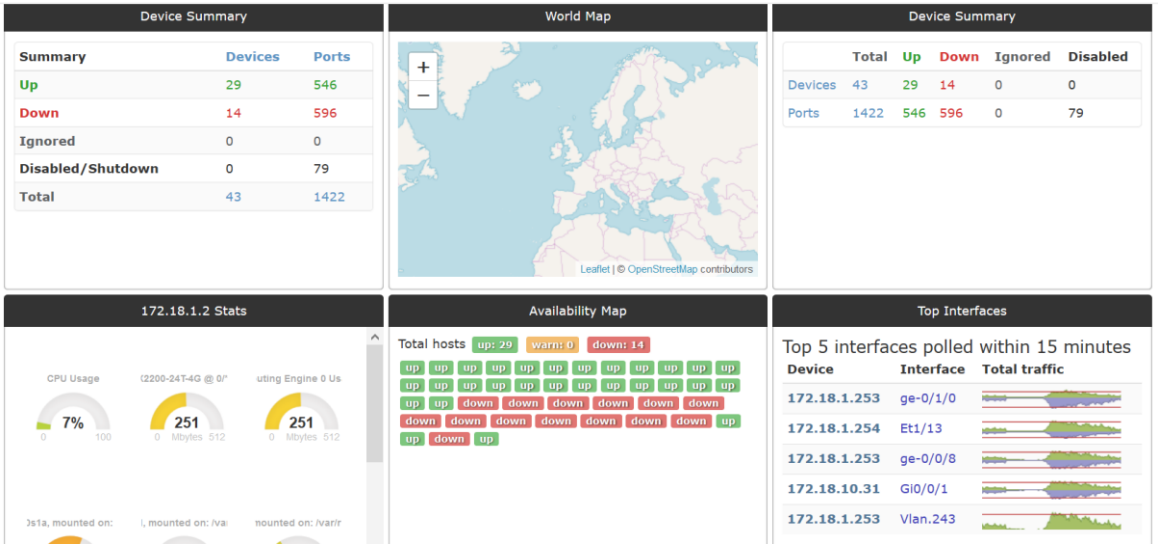
NMSs discover the devices on the network

Functions of NMS

Map: Visualize Your Network

A network admins eyes are their most valuable diagnostic tool.

Their ability to visualize their networks can saves hours, and even days troubleshooting network problems.



Functions of NMS

Monitor: Keep an Eye on Your Network

NMSs expose network admins to a large selection of monitors

Sensor		Current	Low Limit	High Limit
FPC: EX2200-24T-4G @ 0/*/*		29 °C	19°C	49°C
FPC: EX2200-24T-4G @ 0/*/*		29 °C	19°C	49°C
FPC: EX2200-24T-4G @ 0/*/*		29 °C	19°C	49°C
FPC: EX2200-24T-4G @ 0/*/*		29 °C	19°C	49°C
Routing Engine 0		29 °C	19°C	49°C
Routing Engine 0		29 °C	19°C	49°C
Routing Engine 0		29 °C	19°C	49°C
Routing Engine 0		29 °C	19°C	49°C
Gi1/0/25 Module		53 °C	0°C	0°C
Level 1 Virtual Module #1		0 °C	-10°C	0°C
Level 2 Virtual Module #-1		0 °C	-10°C	0°C
FPC: EX2200-24T-4G @ 0/*/*		27 °C	17°C	47°C
Routing Engine 0		27 °C	17°C	47°C

Functions of NMS

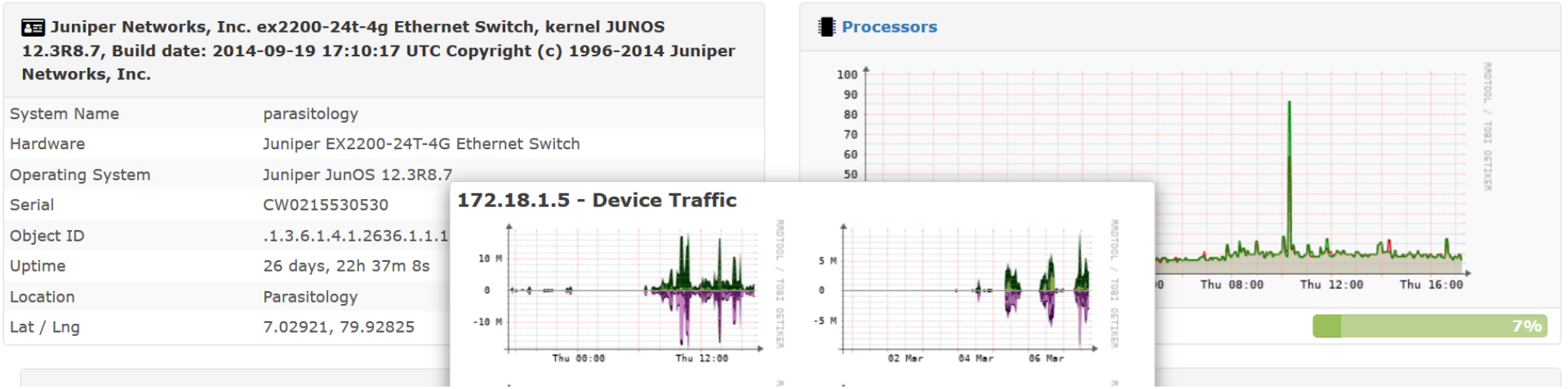
Alert: Get Notified When Devices Go Down

NMS notifies when something goes wrong.

They deliver alerts via email, text and logging.

Functions of NMS

Report: Deliver Real-time and Historical Reporting



Network Monitering Tools

Realm of Network Monitoring Tools, Software and Vendors is Huge

To say the least. New software, tools and utilities are being launched almost every year to compete in an ever changing marketplace of IT monitoring and server monitoring.

Network Monitering Tools

Open Source

- Cacti
- LibreNMS
- Nagios
- Zabbix

Commercial

- Solarwinds
- GFI LanGuard
- Microsoft Network Monitor
- PRTG

Network Monitering Tools

Top Open-Source Network Monitoring Tools of 2019:

1. Nagios
2. Zabbix
3. Incinga
4. Libre NMS
5. Pandora FMS

Top Open-Source NMS of 2019:

Nagios

The best way to describe Nagios is the grandfather of network monitoring because it has been around for so long (18 years).

By default, all the configuration (e.g. adding hosts and services to be monitored) for Nagios is done through text files.

This can take some time to get used to resulting in a steep learning curve and thus, reduces its attractiveness to new users

Top Open-Source NMS of 2019:

Zabbix

Zabbix is a strong contender of Nagios. Even though they started later than Nagios, interest for Zabbix has steadily increased over time.

This is probably because Zabbix is generally easier to manage than Nagios – out of the box, Zabbix already provides many of the features that you will need plugins for in Nagios.

Configuration on Zabbix is done through a web interface

Top Open-Source NMS of 2019:

Inchinga

Icinga has a nice and responsive web interface although configuration is still done through text files (except you use a plugin).

Top Open-Source NMS of 2019:

LibreNMS

Top Open-Source NMS of 2019:

Pandora FMS

manage many facets of your network infrastructure, including Bandwidth usage/monitoring of Switches, Routers, Modem's and other gateway and network devices

On top of just monitoring bandwidth usage, Pandora offers a server monitoring solution with their wide-array of plugins for popular programs and systems including Microsoft Exchange Server, Oracle, Tomcat.

LibreNMS

- SNMP-based auto-discover network monitoring
- Derived from another project (Observium)
- Written in PHP as a web application
- Includes support for a wide range of hardware:–
- Cisco, Linux, FreeBSD, Juniper, Brocade, Foundry, HP and many moreGPLv3
- GNU General Public License V3 (GPLv3)

Available metrics

- CPU Memory and storage statistics
- Interface traffic
- Packet and detailed error statistics
- Temperature, fan speed, voltage, amperage, power humidity and frequency sensors
- Users, processes, load average and uptime statistic

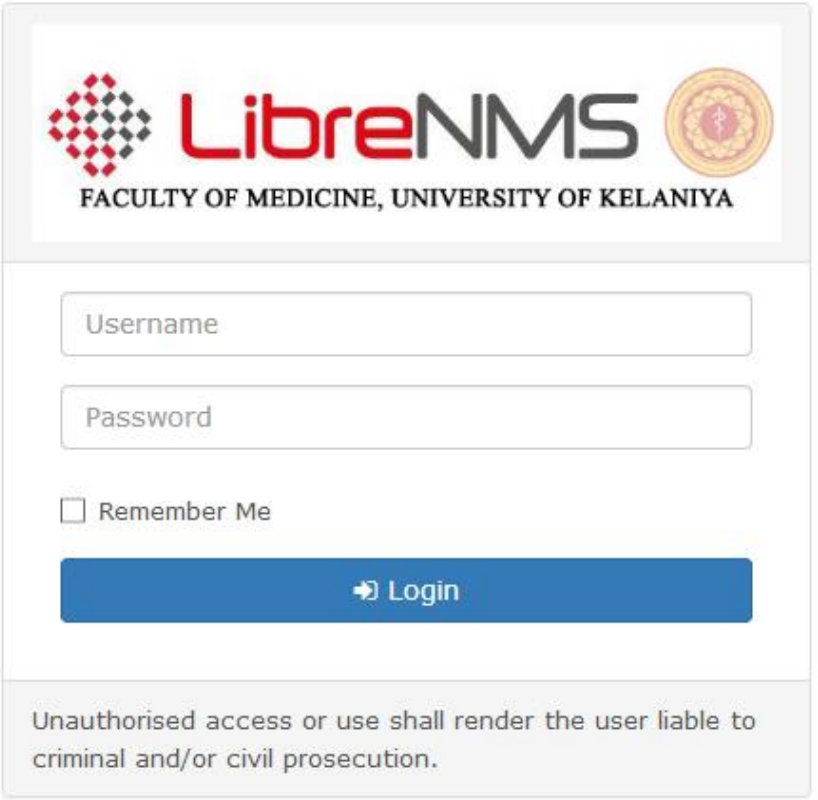
Features

- Linux distribution detection
- Real-time interface traffic graphing
- Device inventory collection
- Detailed IPv4, IPv6, TCP and UDP stack statistics
- BGP and OSPF information
- MAC <-> IP address information

Philosophy

- LibreNMS' approach is that the network monitoring shouldn't take long to set up
- Configure equipment correctly and LibreNMS will do the rest
- Concept of enabled vs. ignored

Network Management & Monitering



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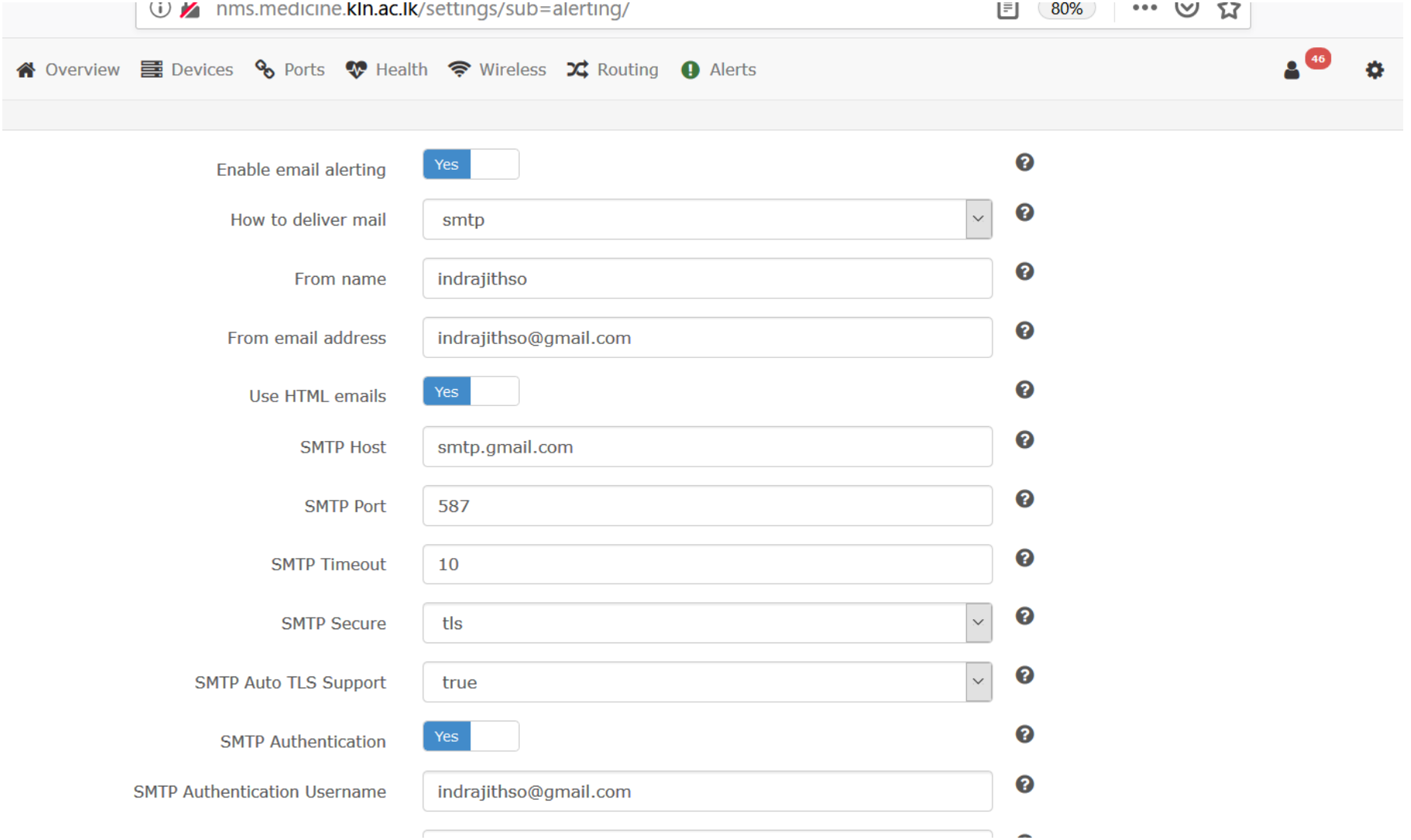

Transfer to another server

1. mysql DB
2. RRD files
3. Config.php

mysqldump -u root -p librenms > /home/solanga/libre.sql

LibreNMS Android APP

- myLibreNMS

Thank You

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